CENTRAL SAN

CENTRAL CONTRA COSTA SANITARY DISTRICT

SEWER SYSTEM MANAGEMENT PLAN

APPROVED
OCTOBER 6, 2022
REVISED SEPTEMBER 11, 2024

CENTRAL CONTRA COSTA SANITARY DISTRICT
SEWER SYSTEM MANAGEMENT PLAN

5019 Imhoff Place
Martinez, CA 94553

CIWQS WDID: 2SSO10105

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES *(continued)*

LIST OF FIGURES

LIST OF FIGURES *(continued)*

LIST OF ACRONYMS

ABAG	Association of Bay Area Governments
AMIP	Asset Management Implementation Plan
AMP	Asset Management Program
AVL	Automatic Vehicle Location
BACWA	Bay Area Clean Water Agencies
BMP	Best Management Practices
BWF	Base Wastewater Flow
CASA	California Association of Sanitation Agencies
CCTV	Closed Circuit Television
Central San	Central Contra Costa Sanitary District
CIB	Capital Improvement Budget
CIP	Capital Improvement Plan
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CODE	Central Contra Costa Sanitary District Code
COF	Consequence of Failure
CSO	Collection Systems Operations
CWEA	California Water Environment Association
CWMP	Comprehensive Wastewater Master Plan
EC	Environmental Compliance
EPA	United States Environmental Protection Agency
ESRI	Environmental Systems Research Institute
EUM	Effective Utility Management
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
FY	Fiscal Year
GARR	Gauge Adjusted Radar Rainfall
GIS	Geospatial Information System
GRD	Grease Removal Devices
GWI	Groundwater Infiltration
I/I	Inflow and Infiltration
IPM	Integrated Pest Management
LGIM	Local Government Information Model

LIST OF ACRONYMS *(continued)*

LOF	Likelihood of Failure
LRO	Legally Responsible Official for CIWQS System Reporting
MRP	Monitoring and Reporting Program
NIMS	National Incident Management System
NOV	Notice of Violation
NPDES	National Pollution Discharge and Elimination System
O&M	Operations and Maintenance
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
PDWF	Peak Dry Weather Flows
PM	Preventive Maintenance
PWWF	Peak Wet Weather Flows
QA/QC	Quality Assurance and Quality Control
R&R	Rehabilitation and Replacement
RCM	Reliability Centered Maintenance
RDI/I	Rainfall Dependent Inflow and Infiltration
RWQCB	San Francisco Regional Water Quality Control Board
SEMS	Standard Emergency Management System
SL-RAT	Sewer Line Rapid Assessment Tool
SOP	Standard Operating Procedure
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOBRP	Sanitary Sewer Overflow and Backup Response Plan
Standard Specs	Standard Specifications for Design and Construction
SWRCB	State of California Water Resources Control Board
TCP	Technical Certification Program
USEPA	See EPA
VCP	Vitrified Clay Pipe
WDR	Waste Discharge Requisites
WEF	Water Environment Federation
WN	Warning Notice

CHANGE LOG

WDR, MONITORING AND REPORTING PROGRAM ORDER No. WQ 2013-0058-EXEC REQUIREMENTS

E. RECORD KEEPING REQUIREMENTS

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.

CENTRAL SAN COMPLIANCE

Element	Change Description	Approving Authority (LRO)	Date
1- Goals	Added narrative on Central San's Strategic Plan Reformatted Element Added Table 1.1 – Service Area Infrastructure Estimates Added Table 1.2 – Inventory of Sewer Lines by Size Added Table 1.3—Inventory of Sewer Lines by Material Type Added Table 1.4 – Inventory of Sewer Lines by Pipe Age	Paul Seitz Paul Seitz	August 3, 2017 October 15th, 2018
2- Organization	Updated LRO names Added Responsible Party for each Element Updated Organization Chart Updated staff role descriptions Reformatted Element Added Pump Stations Role Descriptions Added Table 2.3—Sewer Overflow Responder List Added Table 2.4— Chain of Command for Reporting Added Pump Stations to Org Chart Figure 2.1 Updated LRO names Updated Data Submitters	Paul Seitz Paul Seitz Paul Seitz	August 3, 2017 October 15th, 2018 September 11, 2024
3- Legal Authority	Added additional narrative regarding Central San's legal authority Reformatted Element	Paul Seitz	August 3, 2017
4- Operations and Maintenance	Item A: Sewer System Infrastructure Mapping • Added narrative on new GIS system Item B: • Updated narrative on Operations description • Added select metrics	Paul Seitz	August 3, 2017

4-	Operations and Maintenance *(continued)*	• Expanded narrative on Preventive Maintenance • Updated Pipe Maintenance Schedule Flowchart • Added narrative on private sewer laterals • Added narrative for pipe cleaning QA/QC program • Added narrative on Remote Manhole Level Monitoring system • Added narrative on new CMMS system <u>Item C</u>: Rehabilitation & Replacement • Updated budget narrative and budget forecast • Included narrative on risk-based planning (InfoMaster®) program • Included narrative on asset management program <u>Item D</u>: Training • Expanded training program narrative. • Included emergency response training narrative Reformatted Element General Changes Updated Figure 4.5 Table number changes Additional language added regarding Chemical Root Control – CRW Additional language added regarding Bloodborne Pathogen and Infection Disease training - CRW	Paul Seitz Paul Seitz	August 3, 2017 October 15th, 2018 October 15, 2020
5-	Design Performance Provisions	Central San Specifications Amended in 2014; Amendment noted in the SSMP Reformatted Element	Paul Seitz	August 3, 2017
6-	Overflow Emergency Response Plan	Included narrative and flow charts from Central San's 2017 Sanitary Sewer Overflow & Backup Response Plan Reformatted Element Additional language added regarding Sanitary Sewer Overflow Response – CRW Additional language added regarding water quality sampling for Category 1 sanitary sewer overflows – CRW **Additional language added to the chart for Sanitary Sewer Overflow notification to EBMUD**	Paul Seitz Paul Seitz **Paul Seitz**	August 3, 2017 October 15, 2020 **March 12, 2021**
7-	FOG Control Program	Reformatted Element Added Table 7.1—FOG Control Statistics	Paul Seitz Paul Seitz	August 3, 2017

			October 15th, 2018
8- System Evaluation and Capacity Assurance	Added narrative on Central San's new hydraulic model and large-scale flow monitoring activities Reformatted Element	Paul Seitz	August 3, 2017
9- Monitoring, Measurement and Program Modifications	Item A: Maintain Relevant Information • Added narrative and list of Collection System Metrics Central San tracks Item B: Monitor and Measure Effectiveness • Added performance indicator summary table Item C: Assess Success of Maintenance Program • Added additional narrative, annual SSO trend and statewide comparison for calendar year 2016 Item D: Update program elements based on performance • Added table to summarize recent Central San initiatives to improve overall collection system performance Item E: Identify and Illustrate Trends • Added charts pertaining to various SSO-related data • Added commentary on trends, strategic SSO reduction, and future priorities to further optimize collection system performance Reformatted Element Updated Table 9.2	Paul Seitz Paul Seitz	August 3, 2017 October 15th, 2018
10- SSMP Audits	Reformatted Element Replaced Audit Template with current template Updated Audit Report	Paul Seitz Paul Seitz Paul Seitz	August 3, 2017 October 15th, 2018 September 11, 2024
11- Communication Program	Added additional narrative to better convey key Central San Communications Program components Reformatted Element	Paul Seitz	August 3, 2017

Appendices	Added Appendix A – Completed 2018 SSMP Audit *Replaced Appendix A – Completed 2020 SSMP Audit* Added Appendix B – Available Equipment Inventory Added Appendix C – Available Parts Inventory Added Appendix D – Water Quality Monitoring Program Updated Appendix E – Capital Projects Sewer Line Repair List – CRW	Paul Seitz *Paul Seitz* Paul Seitz Paul Seitz Paul Seitz	October 15th, 2018 *June 5th, 2020* October 15th, 2018 October 15th, 2018 July 26, 2019 March 8, 2022
	Updated Appendix E – Capital Projects Sewer Line Repair List – CRW Updated Appendix E – Capital Projects Sewer Line Repair List- CRW	Paul Seitz Paul Seitz	February 6, 2023 January 23, 2024

SSMP ELEMENT 1:
GOALS

WDR REQUISITES

D.13. (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.*

INTRODUCTION

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 a sanitary sewer overflow (SSO). A proactive system-wide operation, maintenance, and management plan helps reduce the number and frequency of SSOs.

To reduce the number and volume of SSOs and their impact to human health and the environment, the California State Water Resources Control Board (SWRCB) adopted the Statewide General Waste Discharge Requirements (WDR) Water Quality Order No. 2006-0003, approved on May 2, 2006, Provisions D.13.

The order requires public agencies that own or operate sanitary sewer systems greater than one mile in length to develop, implement and maintain a Sewer System Management Plan (SSMP). The SSMP is a living document: to facilitate proper funding and management of the sanitary sewer system.

CENTRAL SAN OVERVIEW

Central Contra Costa Sanitary District (Central San) manages and maintains approximately $2.5 billion in physical collection system assets and provides roughly 487,300 customers and 3,000 businesses with sanitary sewer service in the central Contra Costa area. Formed in 1946 as a Special District in Contra Costa County, California, Central San has 294 budgeted employees. Central San operates a 1,500-mile network of collection system piping and a treatment plant that processes an average daily flow of 32 million gallons. Refer to Figure 1.1 for Central San's Service Area Map.

Central San is responsible for collection and treatment of wastewater from the following communities:

- Alamo
- Clyde
- Danville
- Lafayette
- Martinez
- Moraga
- Orinda
- Pacheco
- Pleasant Hill
- San Ramon
- Walnut Creek

Central San also receives and treats wastewater from the City of Concord and City of Clayton collection systems.

Central San's proven record of excellence includes more than 24 consecutive years of 100% compliance with our National Pollutant Discharge Elimination System (NPDES) permit; innovative recycled water, household hazardous waste, and pharmaceutical collection programs; and award-winning public outreach and student educational programs. We are very proud of the recognition and awards Central San has received over the years for innovation and excellence from regional, state, and national associations. These accomplishments have been the result of our skilled and knowledgeable workforce, our emphasis on continuous improvement, and our effective use of technology in all areas of operation.

A long-range goal of Central San is to provide the public with the most reliable collection system possible. To do this in a fiscally prudent manner, Central San is investing in new computer software and technological resources so that cleaning crews can maintain sewers efficiently and effectively, and engineers can collect valuable data needed to prioritize sewer renovation and replacement projects. This requires a comprehensive information system with interconnected software programs and hardware tools that are user-friendly, accessible to field and office staff, and available across departments.

Collection System Overview

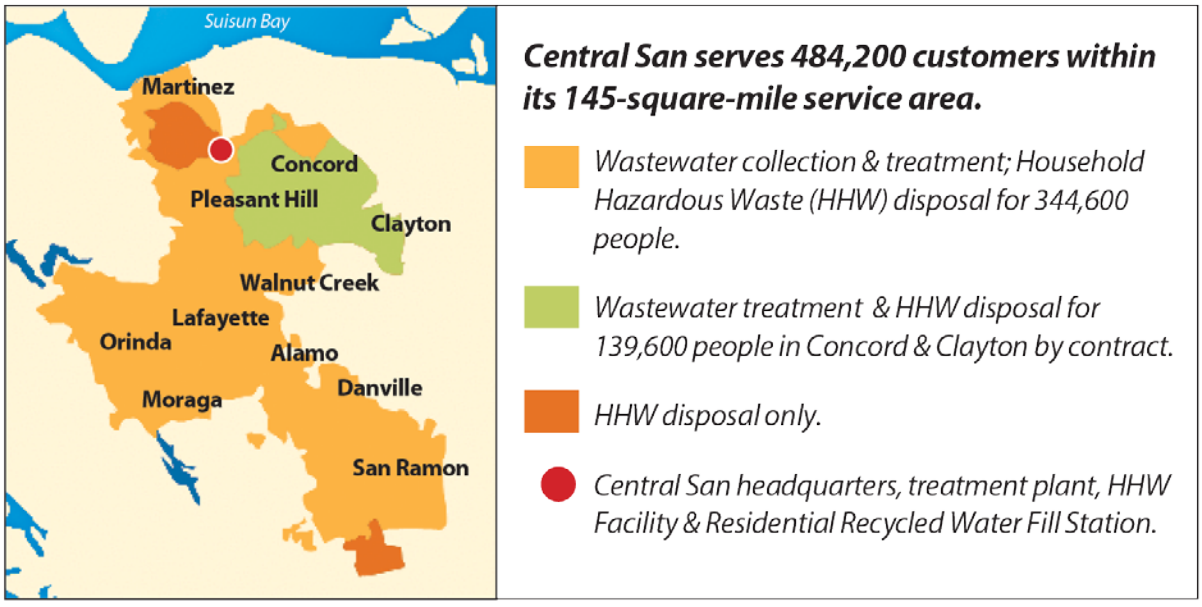


Figure 1.1 Central San Service Area Map

The following four tables provide additional details to describe Central San's Collection System. Table 1.1 provides the miles of sewer lines, number of manholes, and number of pumping stations in the collection system.

Table 1.1 Service Area Infrastructure Estimates

Asset	Total
Pipelines, estimated miles	1,535
Manholes, each	30,887
Pumping Stations, each*	18
Siphons, each	51

* 3 are private but maintained by Central San

Table 1.2 shows a breakdown of the collection system by pipe diameter.

Table 1.2 Inventory of Sewer Lines by Size

Pipe Size Inches	Total Linear Feet	Total Percent
<6	1,279,093	15.8%
8	5,379,895	66.4%
10	334,492	4.1%
12	245,760	3.0%
14	21,289	0.3%
15	172,467	2.1%
16	26,632	0.3%
18	137,801	1.7%
20	29,966	0.4%
21	36,178	0.4%
24	87,657	1.1%
27	36,068	0.4%
30	88,831	1.1%
32	4,803	0.1%
33	9,815	0.1%
36	48,606	0.6%
39	22,452	0.3%
42	12,060	0.1%
45	12,405	0.2%
48	11,333	0.1%
54	5,279	0.1%
60	44,739	0.6%
63	5,726	0.1%
66	13,959	0.2%
72	8,325	0.1%

Table 1.2 continued

78	7,726	0.1%
84	7,457	0.1%
87	90	0.0%
90	2,102	0.0%
96	4,051	0.0%
102	5,726	0.1%
Total	8,102,783	100.0%

Table 1.3 shows a breakdown of the collection system by pipe materials.

Table 1.3 Inventory of Sewer Lines by Material Type

Pipe Material	Total Linear Feet	Total Percent
ABS	865,166	10.7%
AC	1,467,070	18.1%
CAS	115,923	1.4%
CLTW	9,029	0.1%
CLTWC	40	0.0%
CML	1,019	0.0%
CMLC	34,877	0.4%
CMP	2,627	0.0%
DIP	369,713	4.6%
FRP	8,666	0.1%
HDPE	280,293	3.5%
PC	7,146	0.1%
PVC	1,631,470	20.1%
RCP	411,291	5.1%
SP	50	0.0%
VCP	2,684,667	33.1%
VAR	213,736	2.6%
Total	8,102,783	100.0%

Table 1.4 shows a breakdown of the collection system by the age of the sewer line.

Table 1.4 Inventory of Sewer Lines by Pipe Age

Age, Years	Construction Period	Total Linear Feet	Total Percent
0-18	2000 - Current	1,119,708	13.8%
19-38	1980 - 1999	2,157,240	26.6%
39-58	1960 - 1979	3,145,778	38.8%
59-78	1940 - 1959	1,642,610	20.3%

Table 1.4 continued

79-98	1920 - 1939	34,633	0.4%
99-118	1900 - 1919	2,397	0.0%
Unknown		417	0.0%
Total		8,102,783	100.0%

CENTRAL SAN MISSION, VISION & VALUES

MISSION

To protect public health and the environment.

VISION

To be an innovative industry leader in environmental stewardship and sustainability while delivering exceptional service at responsible rates.

VALUES

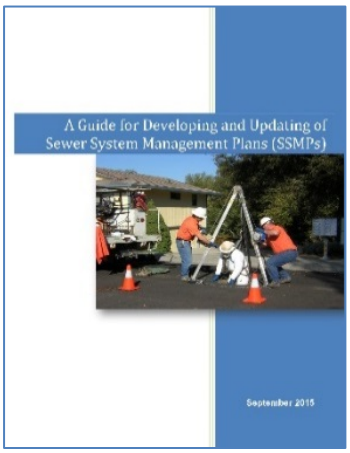
Our core values guide our daily decisions and how we fulfill our mission, vision, and goals

- Customer Service
- Employees
- Integrity
- Innovation
- Environmental Sustainability
- Diversity, Equity, and Inclusion

Central San has an excellent track record in preventing SSOs through its scheduled cleaning program, routine inspections, and careful planning. Some SSOs are unavoidable, such as those related to vandalism and contractor error. All overflows are reported in accordance with the Regional Water Quality Control Board (RWQCB) California Integrated Water Quality System (CIWQS).

Central San is proud of its record and its employees and looks forward to meeting future challenges.

CENTRAL SAN COMPLIANCE



To assist in the development of the 2017 SSMP Update, Central San used "A Guide for Developing and Updating of Sewer System Management Plans (SSMPs)," (2015). This guide is endorsed by the Bay Area Clean Water Association (BACWA), California Water Environment Association (CWEA), California Association of Sanitary Agencies (CASA), and other professional organizations.

WDR ITEM:
GOAL OF THE SSMP

In addition to meeting the requirements of the WDR Element 1: *to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system*, Central San strives to:

- Provide adequate capacity to convey design peak flows
- Minimize the frequency of SSOs
- Mitigate the impact of SSOs

CENTRAL SAN STRATEGIC PLAN

Every two years Central San updates its Strategic Plan: a roadmap to enable Central San to increase efficiencies, fulfill its mission and continue in its role as stewards of the environment.

STRATEGIC PLAN

The Strategic Plan was developed in cooperation between staff and the Board of Directors and is revised every two years. Challenges identified through the strategic planning process include: enhanced customer expectation and public awareness, aging infrastructure, continued regulatory requirements, financial constraints, expanded challenges associated with employee recruitment and retention, security and emergency response concerns, sustainable regional water supply concerns and increased focus on resource recovery.

When developing the Strategic Plan, Central San used the Effective Utility Management (EUM) model as an overreaching tool to define attributes to be considered in implementing practices to improve our operations and move towards continued sustainability. The EUM framework was originally developed by the Environmental Protection Agency (EPA) and water industry leaders in 2007. The framework is made up of 10 attributes that provide a succinct indication of where effectively managed utilities should focus and what they should strive to achieve. The 10 attributes are: product quality, customer satisfaction, employee leadership and development, operational optimization, financial viability, infrastructure strategy and performance, enterprise resiliency, water resource sustainability and stakeholder understanding and support. The Strategic Plan is comprised of four categories: goals, strategies, initiatives, and key success measures. Goals define where we are going, strategies define our plan for achieving the goals, initiatives describe the tasks and actions we need to accomplish in the near term, and key success measures describe how we will evaluate our progress along the way.

CONTINUOUS IMPROVEMENT

Central San strives to continually enhance the performance of its infrastructure and in addition, pursue opportunities to grow its contribution to community and the environment. Examples of leading initiatives undertaken within the last five years, or within the coming five years, are presented below:

Standard Specifications Update: Central San updated its Standard Specifications in 2022. A key component of that update was enhancing the readability of the document to make it easier for contractors and homeowners to find information within the document.

COVID Wastewater Surveillance: Central San has been participating in COVID wastewater surveillance since Summer 2020. This includes participating in a coordinated effort between the US Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) on a national effort to track the SARS-CoV-2 virus in wastewater as HHS announced the initiation of the National Wastewater Surveillance System (NWSS). Central San is also actively engaged in county and regional initiatives for COVID wastewater surveillance.

Siphon Grit Trap: Central San utilizes siphons to dip under obstructions to the gravity sewers. These pipe dips can accumulate unwanted debris and cause operational and maintenance issues. Central San is piloting a manhole design to capture the grit before it enters siphons, to reduce cleaning frequency.

Manhole Cutter: Central San has a need to frequently adjust manhole frames, to ensure the top of manholes are flush with newly paved roads. Central San has acquired technology to enhance the efficiency of this activity, and reduce the manual labor required to perform these on-going frame adjustments.

Remote Manhole Monitoring Technology: This technology allows real-time monitoring of the depth of wastewater within manholes. This timely information can better inform Central San on the performance of its infrastructure. In 2021 Central San completed a pilot of remote manhole monitoring technologies and is presently brainstorming strategies for a phased scale-up of a remote manhole monitoring program for the collection system.

Large Diameter Pipe Program: Central San has embarked on a project (District Project (DP) 8443) to commence focused inspection on its large diameter pipes. Central San is also pursuing a goal to develop a large diameter pipe management program, to ensure this critical infrastructure is administered optimally into the future.

Force Main Program: Central San will be embarking on a force main inspection project (DP 8444) and associated management program to ensure continued optimum asset performance.

Collection System Master Plan Update: Central San is commencing a new Collection System Master Plan Update project (DP 100028) in 2022, to support its Capital Improvement Budget forecasting, including the 100-year sewer renovation forecast; and to identify significant projects to support the continued performance of the infrastructure.

Hydraulic Modeling: Central San will be updating the spatial, geometric, and commercial water consumption data in its hydraulic modelling tools in 2023, to ensure the tool continues to facilitate informed decisions regarding the capacity of its sewers, both during dry weather and peak wet weather events.

SSMP ELEMENT 2: ORGANIZATION

WDR REQUISITES

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

(a) The name of the responsible or authorized representative as described in Section J of the WDR;

(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organizational 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).

WDR ITEMS A & B:
AUTHORIZED REPRESENTATIVE & RESPONSIBLE PARTIES

CENTRAL SAN COMPLIANCE

The Collection Systems Operations (CSO) Division Manager has the overall responsibility for the development, management, and implementation of Central San's SSMP. Table 2.1 identifies Central San's Legally Responsible Officials (LRO).

Table 2.1 Legally Responsible Officials

LRO Position	Responsible Name	Phone Number	Email Address
CSO Division Manager	Paul Seitz	925-335-7743	pseitz@centralsan.org
Superintendent - Operations and Maintenance	Steve Sauter	925-229-7150	steve@centralsan.org
Maintenance Supervisor	Alex Benavidez	925-383-0795	abenavidez@centralsan.org
Maintenance Supervisor	Tifton Gantt	925-229-7163	tiff@centralsan.org
Maintenance Supervisor	Chris Johnsen	925-383-0686	cjohnsen@centralsan.org
Maintenance Supervisor	Ed Silva	925-229-7176	esilva@centralsan.org

Central San's chain of communication for individuals who are responsible for the SSMP Elements are shown in Table 2.2.

Table 2.2. Staff Contacts Responsible for SSMP

Element	Element Name	Responsible Party	Responsible Name	Phone Number	Email Address
1	Goals	CSO Division Manager	Paul Seitz (LRO)	925-335-7743	pseitz@centralsan.org
2	Organization	CSO Division Manager	Paul Seitz (LRO)	925-335-7743	pseitz@centralsan.org
3	Legal Authority	Environmental & Regulatory Compliance Division Manager	Lori Schectel	925-229-7143	lschectel@centralsan.org
4	O&M Program	Superintendent – Operations and Maintenance	Steve Sauter (LRO)	925-229-7150	steve@centralsan.org
5	Design & Performance Provisions	Capital Projects – Collection System Program Senior Engineer	Alexandr Mestetsky	925-229-7261	smestets@centralsan.org
6	Overflow Emergency Response Program	Superintendent – Operations and Maintenance	Steve Sauter (LRO)	925-229-7150	steve@centralsan.org
7	FOG Control Program	Environmental Compliance Superintendent	Tim Potter	925-229-7380	tpotter@centralsan.org
8	System Evaluation & Capacity Assurance	Planning & Applied Research Associate Engineer	Justin Waples	925-229-7368	jwaples@centralsan.org
9	Monitoring, Measurement & Program Modifications	Senior Engineer	Jason DeGroot	925-383-0171	jdegroot@centralsan.org
10	SSMP Program Audits	CSO Division Manager	Paul Seitz (LRO)	925-335-7743	pseitz@centralsan.org
11	Communications Program	Communication Services & Inter-governmental Relations Manager	Emily Barnett	925-229-7310	ebarnett@centralsan.org

The most current version of Central San's organizational structure is located on its website at centralsan.org.

ROLE DESCRIPTIONS

The roles are briefly stated as follows:

Director of Operations: Directs, manages, and administers all operational, engineering, and administrative activities of Central San.

Collection System Operations Division Manager: The CSO Division Manager is the responsible representative for declaring all reports required by the State Water Resources Control Board Order No. 2006-003. The CSO Division Manager directs the activities of the CSO field operations and maintenance activities and provides input for Engineering and Technical Services Department staff to optimize capital construction projects for sewers in need of renovation or upgrade.

Superintendent - Operations and Maintenance: The authorized representative for reporting SSOs to the State and Regional Water Boards and other agencies as applicable. The Field Operations Superintendent plans, organizes, directs, controls, and reports on the activities of the Field Operations Section and coordinates activities among the groups of the Section, within the Division, the Department, and the District.

Maintenance Supervisor: Plans, organizes, directs, reviews, and reports on the work of field crews in the construction, repair, cleaning, locating and inspection of the sewer collection system. Assigned as Supervisor for one of the sections in the CSO Field Operations Section.

Lead Maintenance Crew Member: Directs the work of a crew and participates in the construction, repairing, cleaning, locating, and closed-circuit television (CCTV) inspection for the sewer collection system and recycled water distribution systems; performs administrative duties as assigned such as daily reporting and monthly inventories; regularly assist in the training of Maintenance Crew Members or Utility Workers in equipment operations, departmental procedures, and safety practices.

Plant Maintenance Division Manager: The Plant Maintenance Division Manager directs the activities of the Pumping Stations field operations and maintenance activities and provides input for Engineering and Technical Services Department staff to optimize capital construction projects for pumping stations in need of renovation or upgrade.

Superintendent - Operations and Maintenance: The Pumping Stations Superintendent plans, organizes, directs, and reviews the activities of the Pumping Stations. The Pumping Stations Superintendent reports and coordinates activities among the Operators of the stations, within the Division, the Department, and the District.

Pumping Stations Operator III: Directs the work of a crew and participates in the operation, inspection, maintenance, and repair for the pumping stations facilities; performs administrative duties as assigned such as daily reporting and monthly inventories; regularly assist in the training of lower-level Pumping Stations Operators in equipment and system operations, departmental procedures, and safety practices.

SSMP IMPLEMENTATION

CSO focuses on the day-to-day tasks such as cleaning, CCTV inspection, locating, repairs, maintenance, and SSO response and reporting. The Engineering and Technical Services Department oversees the long-term needs of the collection system such as renovation and capacity planning, mapping, and enforcing of Central San standards. While the physical activities of CSO and the Engineering and Technical Services Department are different, management and staff share information and work together as a team.

SSMP UPDATING

The documents that are referred to in the SSMP are each the responsibility of a particular workgroup to maintain and update, as needed. For example, the Environmental Compliance workgroup is responsible for writing and updating the Fats, Oils, and Grease (FOG) control program document, and the CSO Division is responsible for the Sanitary Sewer Overflow & Backup Response Plan (SSOBRP). Refer to Table 2.2.

WDR ITEM C:
CHAIN OF COMMUNICATION FOR SSO REPORTING

KEY COMMUNICATION ELEMENTS

Central San's chain of communications for reporting SSOs is documented in the SSOBRP and can be found online at centralsan.org.

CSO is responsible for responding to overflows, cleanup, and reporting these overflows in accordance with regional and state requirements. Central San's SSOBRP and the Pumping Station Emergency Response Plan contain Central San's procedures and staff responsibilities.

Key elements of these plans include:

1. SSO notification chain of command
2. First responder responsibilities
3. Documentation requirements
4. SSO tracking
5. Regional reporting requirements
6. Contact phone numbers

Central San has participated in the online reporting process, as required by the RWQCB, beginning in September 2004 as a beta-test agency and as part of the formal required process beginning in December 2004. The document describing the requirements can be accessed from RWQCB's website. All overflows are tracked in a database administered by CSO.

In addition to the notification of SSOs, Central San has developed contact numbers for other collection system issues, such as odor complaints and illegal discharges that may be associated with the sewer system. This system allows any individual who identifies such issues to report the problem to Central San. The phone is answered 24 hours per day. Contact information is also available at centralsan.org.

The following two tables provide additional information regarding response to a Sanitary Sewer Overflow and reporting the SSO to regulatory agencies. Table 2.3 lists the name of staff, in order, for responding to an ongoing SSO event. This staff member is responsible for all regulatory notifications, verify that procedures are followed, and to call for additional resources if needed. Table 2.4 lists the name of the staff who is responsible, in order, for submitting and certifying information in CIWQS.

Table 2.3 - Sewer Overflow First Responders List

Name	Title	24-hour Contact Number
Alex Benavidez - LRO	Maintenance - Supervisor - Rodding	925-383-0795
Chris Johnsen - LRO	Maintenance - Supervisor - CCTV and Locating	925-383-0686
Ed Silva - LRO	Maintenance - Supervisor - Hydro	925-260-0557
Tifton Gantt - LRO	Maintenance - Supervisor - Construction	925-766-0165
Steve Sauter - LRO	Superintendent - Operations and Maintenance	925-260-2046
Paul Seitz - LRO	Collection System Operations Division Manager	925-383-0033
Jason DeGroot	Senior Engineer	925-383-0171

Table 2.4 - Chain of Command for Reporting

Name	Title
Chris Johnsen - LRO	Maintenance Supervisor - CCTV and Locating
Alex Benavidez - LRO	Maintenance Supervisor - Rodding
Ed Silva - LRO	Maintenance Supervisor - Hydro
Tifton Gantt - LRO	Maintenance Supervisor - Construction
Steve Sauter - LRO	Superintendent - Operations and Maintenance
Paul Seitz - LRO	Collection System Operations Division Manager

ORGANIZATION

An organization chart identifying lines of authority within CSO is presented in Figure 2.1 below.

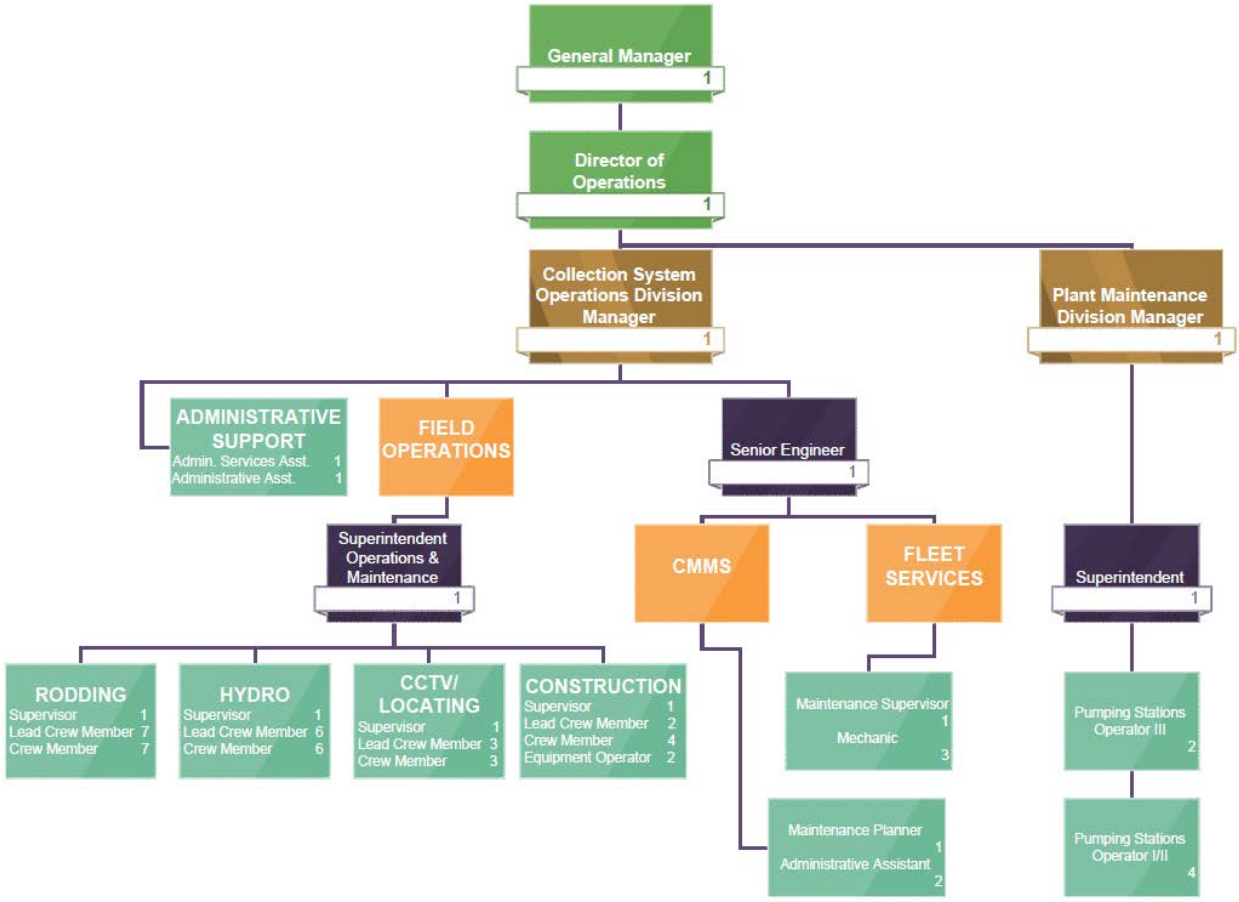


Figure 2.1. Collection System Operations Division Schematic
(Number indicates quantity of authorized positions)

SSMP ELEMENT 3: LEGAL AUTHORITY

WDR REQUISITES

D.13. (iii) Legal Authority: *Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:*

(a) Prevent illicit discharges into its sanitary sewer system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);

(b) Require that sewers and connections be properly designed and constructed;

(c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;

(d) Limit the discharge of fats, oils, grease, and other debris that may cause blockages; and

(e) Enforce any violation of its sewer ordinances.

CENTRAL SAN COMPLIANCE

Central San receives its legal authority from the California Health & Safety Code, Division 6, Part 1. This statute is referred to as the Sanitary District Act of 1923. Central San was established in 1946 as a special district in Central Contra Costa County.

With this authority, Central San's Board of Directors passes ordinances that are incorporated into the Central San Code (Code), and the Standard Specifications for Design and Construction (Standard Specs). These documents govern all aspects of the sewage collection system, from the connection of the private lateral to the terminus of Central San's outfall in Suisun Bay.

CENTRAL SAN CODE

The Code is available on Central San's website and at the following link:

https://library.municode.com/ca/central_contra_costa_sanitary_district/codes/code_of_laws

The Code is composed of the following Titles:

Title 1	GENERAL PROVISIONS
Title 2	ADMINISTRATION
Title 3	(Reserved)
Title 4	PERSONNEL
Title 5	PERMITS AND LICENSES
Title 6	FEES AND CHARGES
Title 7	REAL PROPERTY AND IMPROVEMENTS

Title 8 (Reserved)
Title 9 SEWERS
Title 10 SOURCE CONTROL (PRETREATMENT)
Title 11 RECYCLED WATER

Title 1 of the Code grants Central San the power to enter private property to inspect sewer facilities, levy fines, and terminate service if users fail to comply with Central San's rules and policies. Other titles have additional enforcement provisions that expand upon these powers granted in Title 1. For example, Title 10 enables Central San staff to conduct inspections and obtain samples from businesses discharging to Central San's system to ensure compliance with the Source Control (Pretreatment) standards. FOG discharges are regulated under Title 10 (see Element 7 FOG Control Program).

Provisions in Title 6 of the Code grant Central San the power to assess fees to recoup operating and capital costs of Central San from users.

Central San uses its Standard Specs to describe how to properly install and operate sewer lines in Central San's service area. The legal authority for this document is cited from Title 9 of the Code, Section 9.08.010 – Planning, Design and Construction:

Sewers that are intended for dedication to Central San as public sewers shall be planned, designed, constructed, installed and repaired in accordance with this code and Central San's Standard Specs for Design and Construction (referred in this code as "standard Specs"). The standard Specs shall be established and may be amended from time to time by ordinance and kept on file with Central San's Secretary [of the District] in an uncodified manner. The use of any sewer facility connected to Central San system that fails to comply with the standard Specs applicable at the time of its connection to Central San sewer facilities constitutes a danger to human health and safety, public and private property and the environment, and shall be considered a public nuisance.

(Ord. 253 § 1 (Exh. A (part)), 2008)

Central San's Standard Specs also establish standards for installation of pretreatment equipment including grease removal devices.

Central San's current Standard Specs can be located on its website and by using the following link:

http://centralsan.org/documents/Standard_Specs_2014_Edition_Amended_August_2015.pdf

SERVICE AGREEMENTS WITH TRIBUTARY SYSTEMS

In addition to serving its prescribed territory, Central San provides sewage treatment services for the City of Concord (Concord) and the City of Clayton (Clayton). These cities operate and maintain their own collection systems, which ultimately deliver their sewage to Central San's Martinez treatment facility. Concord has entered into a service agreement with Central San that stipulates they must operate their collection systems in accordance with Central San codes and policies; the flow from Clayton is treated as a portion of Concord's flow since Concord performs the maintenance on the sanitary sewer collection system in Clayton. As part of this service agreement, Central San has authority to conduct pretreatment inspections to enforce the requirements of the Source Control Ordinance (Title 10) in the cities of Concord and Clayton.

WDR ITEM A:
PREVENT ILLICIT DISCHARGES

Central San's Source Control ordinance in Title 10 contains section 10.08.040 (quoted below) which prohibits a wide range of illicit discharges (e.g., inflow, storm water, chemical dumping, and unauthorized debris).

> *10.08.040 Prohibited substances or characteristics.*
>
> *A user shall not discharge, or cause to be discharged, directly or indirectly to a District facility any of the following:*
>
> *A. Any liquids, solids, or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or damage to District facilities or to be injurious to human health and safety or to the operation of District facilities. At no time shall a waste stream exceed a closed cup flash point of less than one hundred forty degrees (140 º) Fahrenheit or sixty degrees (60 º) Centigrade using the test method specified in 40 CFR Part 261.21. Also, at no time shall two (2) successive readings on a combustible gas meter, at the point of discharge into the system (or at any point in the system) be more than five percent (5%) nor any single reading over ten percent (10%) of the Lower Explosive Limit (LEL) of the meter. The meter shall be properly calibrated in accordance with the manufacturer's instructions using pentane as the calibration standard. The materials which may be prohibited if they cause explosive or fire dangers as defined herein include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides, or any other substance which is a fire or explosion hazard.*
>
> *B. Any solid or viscous substance in amounts or concentrations which may cause or threaten to cause obstruction to the flow in a sewer or pass-through of, or interference with, the operations of any District facilities such as, but not limited to, feathers, ashes, cinders, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastic, tar, asphalt residues, residues from refining or processing of fuel or lubricating oil, petroleum oil, non-biodegradable cutting or machine oils, products of mineral origin, mud, cement grout, glass, grinding or polishing wastes, grease, garbage with particles greater than one-half inch (1/2") in any dimension, animal guts or tissues, paunch manure, bones, hair, hides or fleshings, entrails, or whole blood.*
>
> *C. Any wastewater having a pH less than 5.5 or equal to or greater than 11.5, or wastewater having any other corrosive property capable of causing damage or hazard to structures, equipment, humans, or animals.*
>
> *D. Any wastewater containing hazardous pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to human or animal health or safety, create an adverse effect on the waters of the State, or to exceed the limitations set forth in a national pretreatment standard.*
>
> *E. Any wastewater having a temperature which will inhibit biological activity in the treatment plant resulting in interference or pass through, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed forty degrees (40º)*

Centigrade (one hundred four degrees (104º) Fahrenheit) or with a temperature at the point of discharge to the District's collection system which exceeds sixty-five degrees (65º) Centigrade (one hundred fifty degrees (150º) Fahrenheit).

F. *Any pollutants, including oxygen- demanding pollutants (BOD, COD, etc.) released at a flow rate and/or pollutant concentration that alone or in combination with others, may cause interference or pass through. Regardless of whether a slug load causes or will cause interference or pass through, in no case shall a slug load have a flow rate or contain concentrations or quantities of pollutants that exceed for any time period longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation.*

G. *Any discharge which results in toxic gases, vapors, or fumes in a quantity that may cause acute worker health and safety problems within any District facility.*

H. *Any noxious or malodorous liquids, gases, or solids.*

I. *Any wastewater containing any radioactive wastes or isotopes exceeding any limits set forth in 10 CFR 20.2003.*

J. *Any storm water, groundwater, rainwater, street drainage, subsurface drainage, yard drainage, diatomaceous earth filter backwash, or swimming pool drainage, unless a specific permit is issued by the District. The District may approve such discharge only when no reasonable alternative is available or such water is determined to constitute a pollution hazard if not discharged to the sewer.*

K. *Any unpolluted water, including but not limited to cooling water, process water or blow-down from cooling towers or evaporative coolers, or any other unpolluted water unless a permit for such has been obtained from the District prior to the discharge. The District may approve the discharge of such water only when no reasonable alternative method of disposal is available or such alternative, in the determination of the District, is unacceptable.*

L. *Any septic tank waste, holding tank waste, portable toilet waste, grease interceptor waste, or oil and sand interceptor waste, unless a permit is issued by the District, or unless such sludge or waste is transported to the District by a permitted waste hauler in accordance with the regulations set forth in Chapter 10.28 of this Ordinance.*

M. *Any waste defined as hazardous, by any definition set forth in federal and/or state statutes or regulations, unless such waste has been delisted or decertified by the appropriate federal or state agency, and/or a variance has been granted by the appropriate federal or state agency, including provisions for discharge to a District facility, and said variance provisions are approved by the District.*

N. *Any substance, waste, wastewater, or constituent thereof as may be specifically prohibited or prohibited by concentration levels as may be set forth in local limits adopted by resolution of the District Board and a copy of said standards having been placed on file at the District office.*

O. *Any substance, waste, wastewater, or constituent thereof which may by itself or in combination with other discharges cause the District to violate any permit conditions related to toxicity of the effluent or otherwise cause or contribute to the potential for toxic substances being released from District facilities into the environment in toxic amounts.*

P. *The following constituents are subject to a discharge prohibition standard in lieu of setting numeric discharge limits. The presence of these constituents documented through approved analytical methods shall be a violation of this section and be subject to corrective actions by*

the user to control the discharge of the constituent present. Wastewater discharge permits may establish discharge prohibition(s) for constituents not included in this section for specific Industrial Users.

a. Cyanide for unpermitted users
b. Dioxin compounds
c. Polychlorinated Biphenyls (PCBs)
d. Tributyltin (TBT)
e. Dieldrin
f. 4,4'-DDE
g. Perchloroethylene wastes and wastewaters from dry cleaner operations

(Ord. 253 § 1 (Exh. A (part)), 2008)

Infiltration is regulated in Sections 4-01 and 4-02 of Central San's Standard Specs. The area of the property and the mean annual rainfall are used to calculate an acceptable volume of infiltration flow.

Central San has entered into an interagency agreement with the City of Concord to receive and treat flow from its collection system. While this agreement does not specifically address inflow and infiltration (I/I) issues, it states that the City of Concord must follow the same practices in their collection systems that are employed in Central San's system. The City of Clayton discharges sewer flow from their collection system into the City of Concord's collection system, and a memorandum of understanding between Central San and the City of Clayton also states that Central San practices must be followed in their service territory.

In accordance with the service agreement and memorandum of understanding, the City of Concord receives bills from Central San that are based on volume received. The City of Concord then shares these costs with the City of Clayton. Therefore, both Concord and Clayton have an incentive to control I/I flows to reduce their bills.

Central San's Environmental Compliance workgroup enforces the requirements of Title 10 that includes section 10.08.040 referenced above. Customers that have connections or discharges that violate this section (e.g., roof leaders connected to sanitary sewer drains) are cited and required to remedy the condition.

WDR ITEM B:
PROPER DESIGN AND CONSTRUCTION

Central San uses Title 5 (Permits and Licenses) and Title 9 (Sewers) of the Code and Central San's Standard Specs to ensure that any changes to the collection system are properly designed and constructed. The ordinances that create this authority are Central San Ordinances 116, 154, 198, and 223.

Chapter 5.04 (General Provisions of Permits and Licenses) of the Code and Section 11 of Central San's Standard Specs (Control of the Work) describe the requirements for installation, testing, and inspection of collection system modifications. The ordinances that create this authority are Central San Ordinances 198 and 223.

WDR ITEM C:
ENSURE ACCESS

Central San has rights to enter private property for maintenance, inspection, or repairs of Central San's collection system or for work being conducted on private laterals as specified in Section 1.08.020 of the Code. In addition, Central San establishes and maintains easements in private property where Central San's system is located to establish rights for access but also to restrict certain activities (e.g., building structures over sanitary sewer main lines).

Section 10.12.080 Rights of Entry ensures access for Central San's Environmental Compliance workgroup to private property to inspect, sample, or monitor the operations of businesses subject to Title 10 of the Code.

WDR ITEM D:
CONTROL DISCHARGES (E.G., FOG, DEBRIS)

Any discharge that causes a broad range of prohibited effects within Central San's system is in violation of sections 10.08.030A-D of the Code (quoted below). Remedies available to Central San include assessing penalties, suspension of service, permanent disconnection, and criminal prosecution which are described in more detail in the enforcement section in this element.

> *10.08.030 Prohibited effects*.
>
> *A user may not discharge, or cause to be discharged, wastewater into any District facility if it contains substances or has characteristics which either alone or by interaction with other wastewater, cause or threaten to cause:*
>
> *A. Damage to District facilities;*
>
> *B. Interference or impairment of operation or maintenance of District facilities;*
>
> *C. Obstruction of flow in District facilities;*
>
> *D. Hazard to human life;*
>
> *E. Interference with treatment plant or disposal processes, including recycling or any reclamation processes;*
>
> *F. The treatment plant's effluent or any other product of the treatment plant such as residues, sludge, ash, or scum, to be unsuitable for reclamation and reuse. In no case shall substances discharged to the District facilities cause the plant to be in noncompliance with sludge use or disposal criteria, guidelines, or regulations;*
>
> *G. The District to violate its National Pollutant Discharge Elimination System (NPDES) permit or the receiving water quality standards;*
>
> *H. Flammable or explosive conditions;*
>
> *I. A noxious or malodorous condition, a public nuisance, a hazard to life, or conditions sufficient to prevent normal entry into the sewers or other District facilities for maintenance and repair;*

J. *Objectionable coloration or other condition in the quality of the District's treatment plant influent which interferes with or passes through the treatment plant;*

K. *Conditions which violate any statue, rule, regulation, or ordinance of any public agency, relating to releases of hazardous waste, hazardous substances, or other pollutants to the environment when such release is to a publicly owned sanitary sewer;*

L. *Any alteration or change of the District's NPDES permit or any additional regulatory supervision, intervention, or oversight of the District's operations;*

M. *Any alteration of the District's treatment plant processes; and*

N. *Any significant alteration of District operations, including but not limited to, affecting the ability of the District to procure adequate insurance and/or subjecting the District operations to significantly increased potential liability.*

Chapter 10.32 of the Code contains standards specific to controlling FOG discharges to Central San's collection system including authority to require installation of, and maintenance standards for, grease removal devices. Element 7 FOG Control Program identifies the program activities conducted to enforce the standards in Chapter 10.32.

Central San's Environmental Compliance workgroup uses the standards established in Title 10 that include Section 10.08.030, Chapter 10.32, or Discharge Permits to regulate the quantity and quality of discharges from businesses operating in Central San's service area. These standards apply to fixed facilities with permanent connections to Central San's collection system and temporary dischargers (e.g., dewatering from construction projects, and mobile service providers).

WDR ITEM E: *ENFORCEMENT*

Sections 1.08-1.20, 5.10, 6.24.050, and 10.16.010 of the Code prescribe the enforcement actions available to Central San when violations of the Code are documented. Central San Ordinances 117, 198, and 223 are used as the legal basis for these chapters. All enforcements and remedies are cumulative. Violation of the Code is a misdemeanor in accordance with Central San Code Sections 1.08.060A and 10.16.080A, and section 6523, Health and Safety Code, State of California.

Customers or contractors who violate the provisions of the Code will receive a notice of violation and may be assessed penalties, charged cost recovery, have their service suspended or disconnected, or charged with a misdemeanor. Contractors may forfeit any bonds in association with their work, and lose the ability to do future work with Central San. Central San may disconnect and/or correct any defective work and collect the costs from the customer or the contractor.

SSMP ELEMENT 4:
OPERATIONS AND MAINTENANCE PROGRAM

WDR REQUISITES

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

(a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities;

(b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;

(c) Develop rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;

(d) Provide training on a regular basis for staff in sanitary sewer system operations, maintenance, and require contractors to be appropriately trained; and

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

CENTRAL SAN COMPLIANCE

GENERAL

Central San was established in 1946 under the Sanitary District Act of 1923. Central San is a special district, with fiscal and administrative autonomy. Central San is empowered to tax its residents to fund its operations. Central San uses an enterprise fund to provide for its operations and currently has one enterprise fund which is comprised of four internal sub-funds:

- Running Expense – accounts for the general operations of Central San. Substantially all operating revenues and expenses are accounted for in this fund (also referred to as Operations & Maintenance or O&M).

- Sewer Construction – accounts for non-operating revenues that are to be used for acquisition or construction of plant, property and equipment (also referred to as the Capital Fund).
- Self-Insurance – accounts for interest earnings on cash balances in this sub-fund and cash allocations from other funds, as well as costs of insurance premiums and claims not covered by Central San's insurance policies.
- Debt Service Fund – accounts for activity associated with the payment of Central San's long-term debt in the form of bonds and loans.

Each year, the Board adopts the following four budgets: Capital Improvement, Operations and Maintenance, Self-Insurance, and Debt-Service.

Central San publishes a Comprehensive Annual Financial Report that is submitted to the Government Finance Officers Association for independent review. These are available on Central San's website at centralsan.org.

RESOURCES

Central San employs 294 budgeted employees organized in three departments led by Department Directors, who are responsible for their budgets and expenses, and report to the General Manager. The three departments are: Administration, Engineering & Technical Services, and Operations.

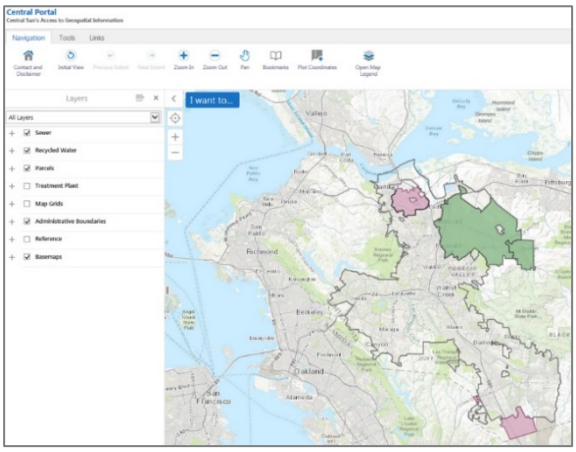
The division responsible for the maintenance and operation of the sewer system is CSO. The other departments provide support to CSO as needed. The Administration Department provides human resources, purchasing, financial, and outreach support. The Engineering & Technical Services Department is responsible for Capital Projects to renovate, replace, and increase capacity of the sewer system. In addition, the Engineering & Technical Services Department also manages new customer connections and long-range planning.

Within CSO, there are 56 budgeted positions, not including the General Manager, Director of Operations, CSO Collection System Division Manager, or the Plant Maintenance Division Manager, who operate and maintain Central San's 1,500 miles of sewer. They are supported by staff in fleet maintenance services, maintenance data management, and safety.

WDR ITEM A:
SANITARY SEWER SYSTEM INFRASTRUCTURE MAPPING

GEOSPATIAL INFORMATION SYSTEM

Central San uses a new Geospatial Information System (GIS) to manage sewer-related spatial data using ESRI® GIS software. In addition, Geocortex software is used to link external databases to geospatial data in the GIS and further enhance functionality.



The GIS system was developed using Environmental Systems Research Institute's (ESRI) Local Government Information Model (LGIM). The LGIM incorporates many best practices for water and wastewater utilities and is configured to Central San's needs. The LGIM makes deploying and updating maps and applications more efficient and promotes ease of sharing data with satellite agencies through standardization.

The internal web mapping solution is referred to as GeoPortal by Central San staff. Pipe segments, manholes, junction structures, pumping stations, Central San-owned properties, or other fixed assets are depicted on a dynamic map.

AVAILABLE DATA

GeoPortal allows staff to turn on/off combinations of layers and/or base maps to display the information they need.

Map layers available through GeoPortal include:

- Collection System Assets – including structures and pipelines, and pumping stations
- Waterways
- Roadways
- Administrative Boundaries
- Parcel Boundaries
- Right-of-Way and Easement Boundaries (as available)
- Other Agencies' Utilities (as available, such as water, storm water, and power)

Datasets or reports associated with map features include:

- Asset-related information including:
    - Record Drawings
    - Maintenance Records
    - Hydraulic Analysis results
    - Condition Assessment results (i.e., CCTV data)
- Parcel-related information including:
    - Permit Records
    - Rates & Fees
    - Assessor parcel information
    - Environmental Compliance activities such as source control program inspections
    - Right-of-Way and easement documents

Base maps available through GeoPortal include:

- Aerial imagery
- Topographic maps
- Street view

Staff can click on a map feature to display additional details, as shown in Figure 4.1, and access external databases such as record drawings, inspections, and maintenance history via embedded hyperlinks. In addition to panning the map to view assets or selecting the features to access linked datasets, staff can also use the search tool by entering in a whole or partial address, parcel number, or facility ID.

Each asset has a GIS ID, which is automatically assigned by the system to ensure that each asset has a unique identifier, and a facility ID, which is a semi-intelligent naming system that concatenates the Central San's map grid, structure type, and structure number to create a common name for the asset that is familiar to staff. For example, a facility ID of 75A2-M47 indicates a manhole 47 is on Central San map quadrant 75A2.

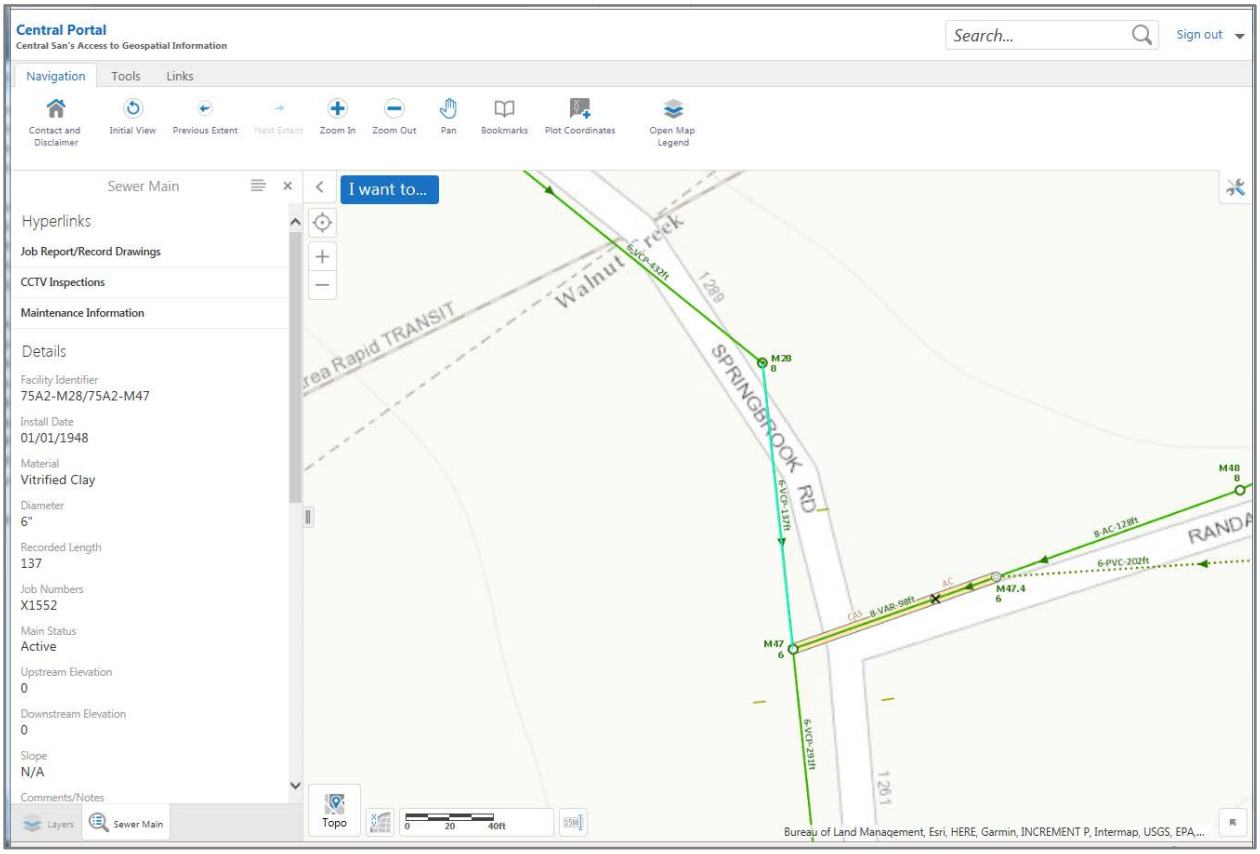


Figure 4.1 GIS - Additional Details for Asset

Another tool within GeoPortal allows staff to plot the coordinates, i.e., the latitude and longitude values of the mouse position, which can be used by staff when reporting SSOs to the SWRCB.

MAPPING CUSTOMIZATION FOR FIELD STAFF

During the replacement of the GIS software, GIS staff conferred with CSO staff and other workgroups to develop map “themes”. These “themes” can tailor the viewable layers and labels to meet the needs of the individual work groups. In addition, feedback was solicited on symbology and labels so that the most useful attributes were easy to view by field staff. For example, the label along a pipe displays the diameter, material, and length of the pipe segment from structure to structure, which is valuable information for cleaning crews.

MAP UPDATES

The collection system maps are updated when record drawings are received from Central San inspectors. Changes are usually made within a few months of completion of the work, but the maximum update interval goal is one year. Other datasets, such as aerial imagery, are updated as they become available.

Any staff can submit map updates via a common e-mail address that is monitored by the GIS group.

Field staff can also submit map update requests through the computerized maintenance management system (CMMS). Work Order templates include a required field where field staff must select yes or no for “GIS Update”. An inbox for these submissions is monitored by GIS staff who then update GIS accordingly.

The GIS software maintains an audit log with the date, time, and staff’s name.

WDR ITEM B:
ROUTINE OPERATION AND MAINTENANCE PROGRAM

OVERVIEW

APPROACH

Central San has a proactive approach to preventive maintenance. All lines that are 18 inches in diameter or less are on cleaning schedules ranging from 1 to 84-month intervals. The maintenance schedules are predicated based on the lines’ history, results of TV inspection, and proximity to environmentally sensitive areas, as well as other factors.

Areas with a history of overflows and other issues (or “hotspots”) are assigned a more frequent cleaning schedule to prevent SSOs. Central San’s definition of hotspots are lines that are maintained on a 1, 2, or 3-month cleaning frequency. Central San’s approach to the cleaning and maintenance of sewer lines can be collectively described as "quality cleaning”.

COLLECTION SYSTEM OPERATIONS DESCRIPTION

Central San’s service area is approximately 145-square miles with a population of over 484,200. The collection system is over 1,500 miles of pipe in sizes from 4- to 102-inch diameter with approximately 15% located in hilly areas and 30% in easements, many of which are adjacent to creeks. Over 50% of the system is vitrified clay or asbestos cement pipe.

CSO is responsible for cleaning, maintenance, repair, locating, and CCTV inspection of the underground pipelines that make up Central San's sewer system, along with the emergency response. In 2021, over 753 miles of sewer were cleaned by an average daily number of seven crews on rodding trucks and six crews on hydro-vacuum trucks.

Maintaining this system is an ongoing process involving approximately 45 field employees. A designated crew is assigned weekly to be the on-call crew for any after-hours emergencies. This on-call team can also call in additional staff to help with emergencies.

Central San also manages the operation and maintenance of 18 pumping stations that are located throughout its service area. A dedicated team of seven, not including the Plant Maintenance Division Manager, employees operate and maintain these critical facilities. In addition to the daily inspections of each pumping station, staff can remotely monitor the status of each station and receive automated alerts. A designated team is assigned every week to be the on-call crew for any after-hours emergencies. This on-call team can also call in additional staff to help with emergencies.

METRICS

Table 4.1 Select Metrics for Operations and Maintenance Activities

	2017	2018	2019	2020	2021
Total Length of Pipes Cleaned (miles)	759	796	797	761	753
Total Length of Pipes CCTV'd (miles)	167	188	186	130	120
Total Number of Spot Repairs	70	65	47	45	64
Total Number of Structure Adjustments	60	103	195	105	194
QA/QC Pass Rate	89%	92%	98%	96%	95%

COLLECTION SYSTEM PREVENTIVE MAINTENANCE PROGRAM

OVERVIEW

The CSO Preventive Maintenance Program involves cleaning sewers on a recurring schedule and regularly inspecting the sewers using CCTV. Depending on the pipe's physical condition, sewers are assigned a cleaning frequency from 1 to 84 months, and the appropriate equipment is assigned to clean the line. Each month work orders are assigned to maintenance crews who complete the scheduled cleaning of pipes. The tools used and cleaning results are recorded by the crews and reviewed in the office. Cleaning frequencies are adjusted as needed to prevent overflows.

Concurrent with that cleaning activity, other sewers are inspected internally using CCTV. If the inspection reveals the sewer needs cleaning, a work order is created for the unscheduled cleaning. From July 2020 to June 2021, 11 work orders were initiated by the CCTV program. This process has been instrumental in our continued reduction of SSOs. CSO uses CMMS to schedule cleaning, record cleaning results and CCTV data, and create work orders for scheduled and unscheduled maintenance. Of Central San's approximately 1,500 miles of sewers, 1,425 miles are on a cleaning schedule. The remaining pipes are the larger trunk sewers, and they are cleaned on an as-needed basis.

Table 4.2 shown below provides the monthly cleaning frequencies and the linear footage of sewer lines associated with those frequencies.

Table 4.2 Cleaning Frequency Schedule

Frequency	Total
	Linear Feet
1 Month	19,882
2 Month	16,934
3 Month	93,391
6 Month	612,796
12 Month	902,360
24 Month	616,071
36 Month	967,686
48 Month	26,418
72 Month	90,794
84 Month	4,179,222
Total*	7,525,554

* Does not include force mains or lines over 18" because these lines do not get cleaned by CSO.

In some sewers, the defect is not in the pipe, but roots infiltrating via the manhole. In those cases, limiting cleaning activity to removing roots in the manhole is more efficient than using cleaning equipment through an entire sewer line. Focusing on manholes with root infiltration has saved Central San considerable man-hours as most of the manholes with root infiltration are in easements requiring two crews to clean the line. There are currently 1,198 manholes on a cleaning schedule.

CREEK CROSSINGS

Another preventive maintenance activity that CSO crews perform is regular inspections of sewers crossing creeks. Crews complete an inspection form within the CMMS, attach photos of the sewer and appurtenant supports, and look for obvious defects. If there are any significant changes since the last inspection, the Engineering and Technical Services Department is notified to complete a detailed survey and correct any problems. CSO has identified 154 locations where sewers cross creeks. This proactive approach finds potential problems in environmentally sensitive areas and documents conditions for the Asset Management Program.

GRAVITY PIPES

Central San's assets have an average age of approximately 37 years, with some facilities approaching 100 years. Keeping all these components in working order requires a methodical approach of condition assessment, cleaning, maintenance, repair, renovation, and planning.

Central San uses video inspection and feedback from cleaning crews to evaluate the condition of its 1,500-mile network. Data analysis is conducted by planning engineers and used to develop the Capital Improvement Plan (CIP) and the Capital Improvement Budget (CIB).

Central San cleans 4- to 18-inch sewers in the collection system and employs two types of cleaning methodologies: mechanical "rodders" (pictured in Figure 4.3), and high pressure "hydroflush" (pictured in Figure 4.4). Rodders are effective in the removal of roots. Hydroflush is used mainly in the removal of grease and debris but can be used to remove roots as well. Cleaning crews are given a monthly schedule of locations to service and carry out the cleaning work with rodders or hydroflush equipment appropriately.

Central San does not have a Chemical Root Control Program, nor does it use any type of chemicals in its cleaning activities. As indicated above, Central San utilizes mechanical methods to clean and maintain its sewer system. Mechanical methods are achieved by using a Rodder Truck (pictured in Figure 4.2) or a Hydro Truck (pictured in Figure 4.3). If in the future, Central San decides to institute a Chemical Root Control Program, the SSMP will be revised to include several constraints such as: chemicals must be used in a safe and effective manner, chemicals must be approved and/or recommended by the EPA or the RWQCB, chemicals shall have a half-life of 60 days, chemicals shall be used in accordance with the manufacturers recommendations, and monitoring of plant life in the vicinity of where chemicals were applied shall be discussed.

Figure 4.2 Central San Rodder Truck

Figure 4.3 Central San Hydroflush Truck

Central San's goal is to clean or inspect all lines every 84 months. Different cleaning tools are evaluated, and the most effective tools for various situations are identified. An overview of the cleaning frequency decision process is shown in Figure 4.4.

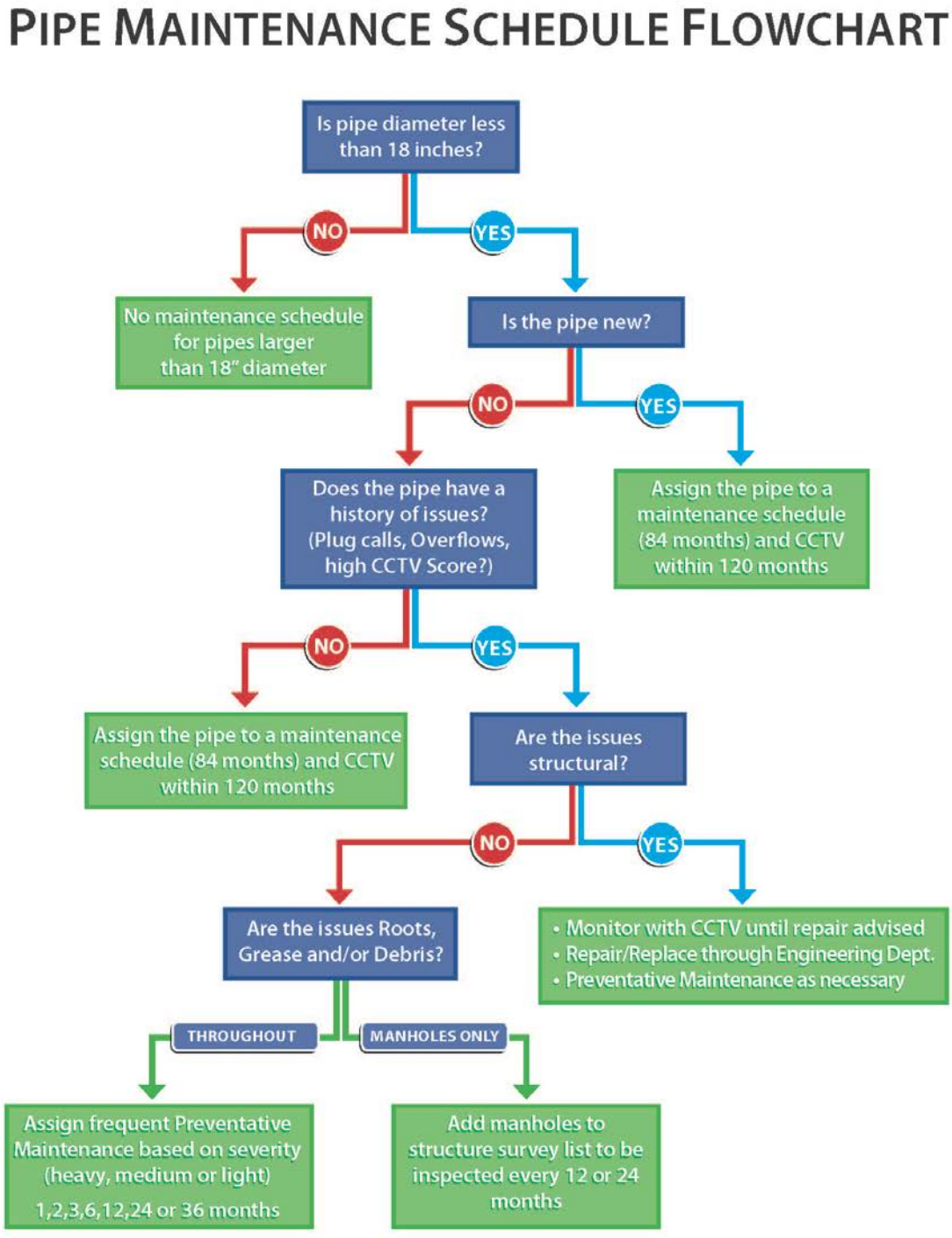


Figure 4.4 Cleaning Frequency Flow Chart

FORCE MAINS

Central San has approximately 25 miles of pressurized sewer pipes, which are commonly referred to as force mains. Force mains are scoured daily with high velocity flow, and occasionally the slime layer (a precursor to hydrogen sulfide corrosion) is removed with a shock treatment of sodium hydroxide or other chemical. This treatment is performed throughout the year, but more frequently in the summer as conditions warrant.

PUMPING STATIONS

The Pumping Stations Operations staff are the primary personnel responsible for the day-to-day operation and maintenance of the Pumping Stations, 24 hours a day, 365 days a year. This includes daily, weekly, monthly, bi-annual, and annual inspection and testing of equipment and systems. Tasks include items such as:

- Monitoring the Pumping Stations SCADA system and response to alarms or operational issues requiring correction
- Continually testing generators and alarms throughout the year
- Testing portable equipment once a year and routine training exercises for staff to hook up emergency portable equipment in case normal procedures fail
- Exercising all station valves once per month
- Annual servicing of all generators
- Annual servicing of transfer switches to ensure a smooth transition from PG&E to emergency power
- Watching the weather reports and staffing appropriately when needed
- Ensuring that sandbags are filled and ready to go in case of emergencies during wet weather
- Ensuring that all generators and portable fuel tanks are full and ready to go

Additional support with the maintenance and repair of the pumping stations equipment and systems is provided by the Plant Maintenance Division. This comprises staff from Reliability Engineering, Electrical, Mechanical, Controls, IT, and Instrumentation shops. Services contractors also assist with regular maintenance and emergency repairs of the pumping stations, such as annual generator testing. Staff from Pumping Stations, Electrical, Instrumentation, and Mechanical shops are on standby 24/7 to assist with any urgent or emergency situations that require immediate response outside normal business hours.

Some of the metrics used to measure the Maintenance programs success include Key Performance Indicators (KPI) such as:

- Preventative Maintenance (PM) completed to planned – target 95% completion
- Safety Work Orders completed to planned – 100% completion

Within Central San's Maintenance program, there are various maintenance categories. The maintenance categories are shown in Figure 4.5.

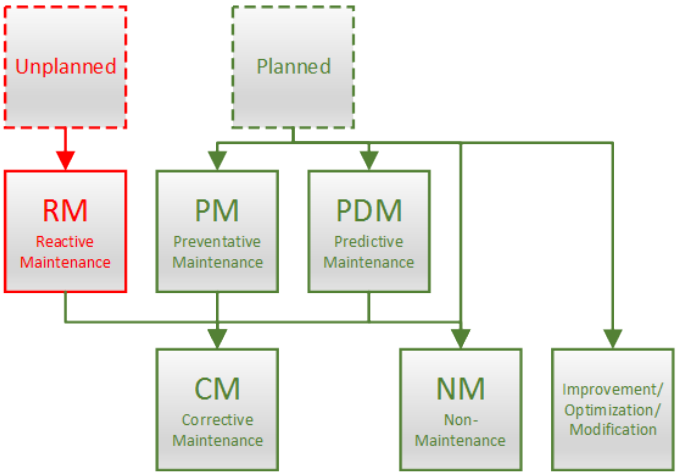


Figure 4.5 Central San Maintenance Categories

RELIABILITY-CENTERED MAINTENANCE

Central San has commenced the implementation of a Reliability-Centered Maintenance (RCM) program to further optimize the existing maintenance program for non-pipeline assets, such as mechanical, electrical, and electronic equipment found at Pumping Stations and the Treatment Plant.

The RCM program systematically focuses on asset criticality and consequence of failure, and is a qualitative decision methodology that identifies the most effective PM task for equipment and systems. Together with CMMS, it establishes a repeatable program with documented processes and procedures.

The benefit of RCM is having a specific maintenance strategy for each facility asset, optimizing productivity and labor resources.

The four principals of RCM are:

- Preserve system function
- Identify failure modes that can affect system function
- Prioritize failure modes
- Selection of effective tasks to control failure modes

CLOSED CIRCUIT TELEVISION

Central San has a comprehensive CCTV inspection program for its collection system. The plan is that all sewer lines will be inspected by video; manholes and other structures will be visually inspected as part of the process. Central San uses internal crews and contractors selected by a competitive bid process to carry out this work. Virtually the entire collection system will be inspected every 10 years. Video inspection results are analyzed; sewer pipes needing immediate attention and modified cleaning activities/schedules and future sewer replacement are identified.

Sewers identified for replacement are evaluated for other significant factors – maintenance accessibility, sewer capacity, sewer stoppage history, and utility/road surface renovation coordination. Pipe segments are then prioritized and organized into projects by geographic area.

The inspection schedules run from once every 10 years for pipes in excellent condition to much more frequently for pipes in poor condition. The condition of the pipe is assessed using a numerical system that sum scores for each televised defect for that pipe segment.

The CCTV inspection is proof positive of existing pipe deficiencies. CSO uses CCTV information to determine the most efficient cleaning frequency. By adjusting the preventive maintenance frequency, CSO can direct cleaning crews to pipelines in most need of cleaning. CCTV inspection has also prevented several overflows by finding partially blocked sewers, allowing crews to clean the pipe before it becomes completely plugged.

The video is recorded in digital format and the report and pictures of defects are accessible through GeoPortal. All data is archived and organized in a database for access.

In addition to the work performed by the contractor, Central San owns three trucks equipped for video inspection that are used to inspect new installations and repairs, quality assurance and quality control, and to provide assistance to cleaning crews. Two of the trucks are used for daily CCTV inspections, and the third truck is the Perma-Liner Spot Repair Van.

CSO provides CCTV and maintenance data of sewers to the Engineering and Technical Services Department to assist in determining which sewer lines are selected for renovation or replacement each year. CSO supervisors meet with Central San Engineers monthly to review and prioritize collection system sewer repairs to be included in capital projects. During a project's design phase, CSO staff review the plans and provide comments to the engineers for inclusion into the final contract documents prior to bidding.

During Fiscal Year (FY) 2016-17, Central San replaced its CCTV software systems with IT Pipes®, which integrates with both the ESRI® GIS and Cityworks® CMMS. During this implementation, legacy data from previous CCTV software systems were migrated into IT Pipes®. The new system has a viewer plug-in that allows easy access through GeoPortal for all staff to access the CCTV data including the report, pictures of defects, and video.

PRIVATE SEWER LATERALS

In Central San's service area, the property owner is responsible for the entire sewer lateral pipe coming from the owner's structure, to where it connects to the public sewer. As a courtesy to its customers, if while televising a main line it is discovered that a lateral needs cleaning, Central San staff will notify the homeowner. A picture of their lateral, a letter explaining the situation, and a request that Central San be informed when the cleaning is completed is mailed to the homeowner. After the homeowner finalizes the cleaning, the main line is re-checked.

QUALITY ASSURANCE AND CONTROL PROGRAM

During the past fiscal year, Central San televised 590 lines for its Quality Assurance and Quality Control (QA/QC) Program. There are, on average, 49 lines per month that are chose by the Maintenance Planner to be cleaned, and then televised to verify results. Lines are selected based on the cleaning frequency, the results of the last cleaning, and the date that the line was last televised. Of these 49 lines, an average of 27 are for the Rodding Section with a history of roots, and an average of 22 are for the Hydroflush Section that have had a history of grease or deposits.

The Maintenance Planner reviews the lines that have completed cleaning in the past 3 calendar days, reviews their history, cleaning results, and selects lines to be CCTV'd for QA/QC. These selected lines are noted on the QA/QC spreadsheet and work orders are created in Cityworks® for CCTV. Once televised, the results and the video are then shared with the Crew Leader who cleaned that particular line segment. Of the 590 lines that were a part of the QA/QC program, 25 failed and had to be re-cleaned. This amounts to a 96% pass rate.

ODOR CONTROL

Central San has a hotline for the public to report any foul odor locations. Staff investigates each report and takes the appropriate actions to eliminate the odor source. The hotline number is (925) 335-7703 and is posted on Central San's website under the "Contact Us" link.

Central San employees respond to odor complaints with a visit to the site and an interview with the customer. Methods used to deal with odors include carbon/permanganate air scrubber systems, pumping stations operation changes, and chemicals added to the force mains such as nitrate solutions, air injection, caustic soda, or hydrogen peroxide.

CORROSION CONTROL

Central San's Corrosion Control Program focuses mainly on the metal piping network, pumping stations, and the treatment plant facilities. The cathodic protection for metal pipes in the collection system is primarily sacrificial anodes. While at the pumping stations and some force mains, an impressed current cathodic protection system is used. Pumping Stations Operators perform monthly rectifier readings, and the Engineering and Technical Services Department maintains an Access database inventory of cathodic protection locations and components, as well as annual survey and evaluation data such as pipe-to-soil potentials.

CATHODIC PROTECTION SYSTEM

Cathodic protection is a technique used to control the corrosion of metal. Several Central San facilities and systems (Treatment Plant, Collection Systems, and Recycled Water) require continuous cathodic protection. Central San has a program to survey the existing cathodic protection systems, identify deficiencies, and provide recommendations for required maintenance, replacement, and/or addition of new cathodic protection for facilities requiring such protection.

HYDROGEN SULFIDE PROTECTION

A natural microbiological process that occurs in sewers leads to the creation of hydrogen sulfide. Corrosion due to the presence of hydrogen sulfide may arise from the biological conversion of hydrogen sulfide gas to sulfuric acid in the presence of moisture. This mechanism can cause corrosion of sewers and associated infrastructure.

To reduce the presence of hydrogen sulfide, Central San uses air injection and chemical additives to prolong the life of the collection system. These preventive methods are significantly less expensive than the alternative of having Capital Projects replace the structural deficiencies caused by corrosion. Central San uses specialized instruments to monitor hydrogen sulfide levels in the collection system throughout the year.

REMOTE AREA INSPECTION

Another inspection program focuses on Central San assets that are easements, often residential backyards, and are not readily accessible by vehicle. Central San employees walk the pipelines, inspect for damage along the pipelines and inspect inside manholes to verify proper flow conditions as well as for root growth. Inspectors look for tell-tale signs of leaks such as heavy vegetation growth during the dry summer season, and inconsistent flow between manholes. This program was initiated in 2005 and has been successful in detecting areas in need of maintenance.

PIPE SPOT REPAIRS

Central San has its own construction crews that make urgent repairs to the sewer system. CSO construction crews use Perma-Liner cured-in-place technology when making spot repairs to sewers ranging from 6- to 10-inches. CSO crews utilize this spot repair method on an average of three times per month. Central San pioneered the use of pipe bursting, directional drilling, micro tunneling, and other trenchless technologies in the late 1980s and 1990s. Central San's Engineering and Technical Services Department regularly uses trenchless technologies as part of their ongoing sewer renovation and replacement program. Large-scale pipe repairs are typically included in capital projects due to the scale of resources that are needed.

CSO Supervisors meet with Central San Engineers monthly to review and prioritize urgent sewer repairs to be included in capital projects. In addition, project location maps are posted for cleaning crews to provide comments to the engineers regarding sewer cleaning access issues. Before Central San collection systems projects go out to bid, CSO staff reviews the plans and provide comments to the engineer for inclusion in the final contract documents.

REMOTE MANHOLE LEVEL MONITORING

Central San has a network of remote manhole level monitors that alerts CSO staff to rising wastewater levels within the monitored manholes. When wastewater within manholes rises above the top of the sewer pipe, it indicates surcharging conditions. In such scenarios, CSO staff receive an automated alert that identifies the associated manhole. This early warning provides staff the ability to quickly respond to the situation and alleviate any associated pipe blockage before a SSO occurs. Refer to Figure 4.6 for a basic overview of the system.

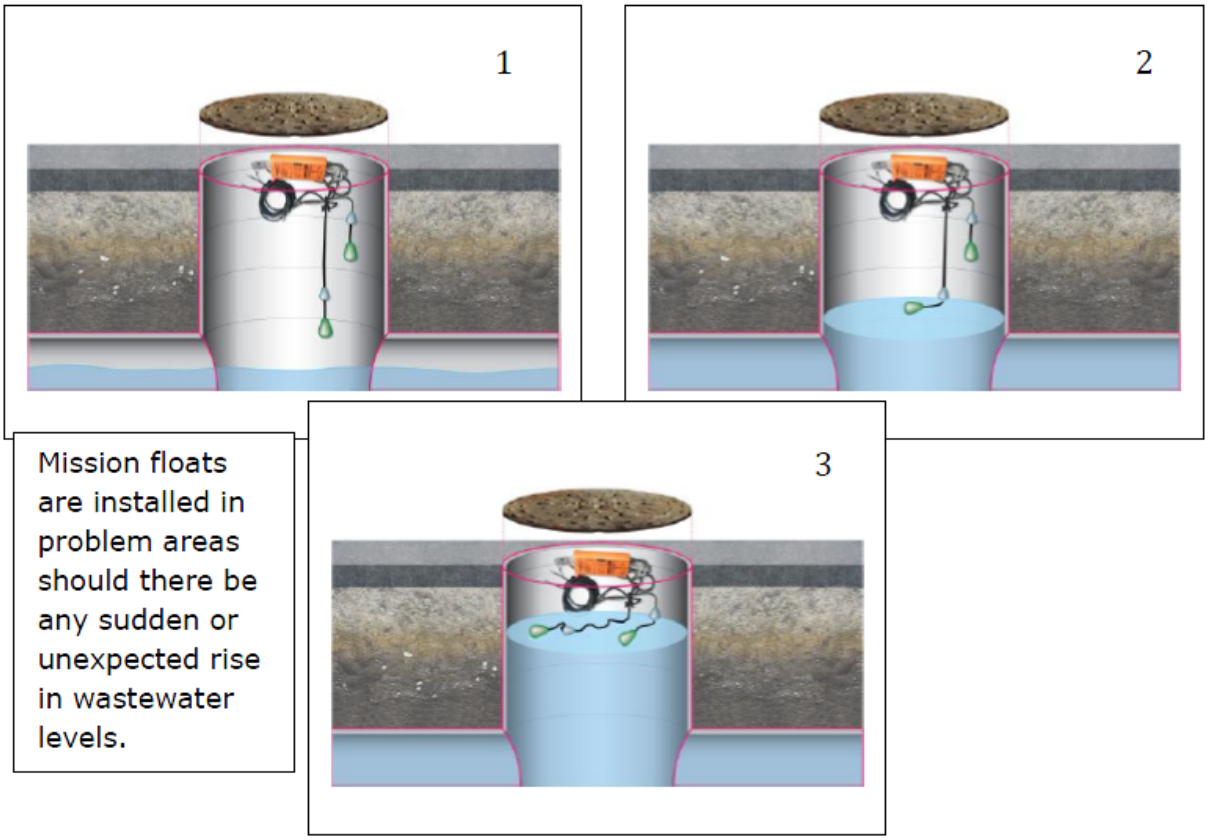


Figure 4.6 Representation of Remote Level Monitoring System in Alarm Mode

COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM

Central San uses a new GIS-centric software platform (Cityworks®) for CMMS. The new platform consolidates all assets into a single system to manage Central San's Preventive Maintenance Program. Central San field crews use mobile devices to remotely access the system.

The CMMS manages Service Requests, Work Orders, and Inspections. The new system has a simple graphical user interface where staff (depending on security and permissions) can view, edit, or update work activities; search for assets in a table or map view; or run reports. Legacy data from the obsolete system was migrated into the new system for the past 10 years of work activities and linked to the asset in the new system for easy retrieval by staff.

The new system includes a dashboard that staff can customize with inboxes and charts specific to the staff, supervisor, workgroup, management, or combination thereof. Staff can also save searches to the map to show Service Requests or Work Order locations by status, time period, staff, etc. Refer to Figure 4.7.

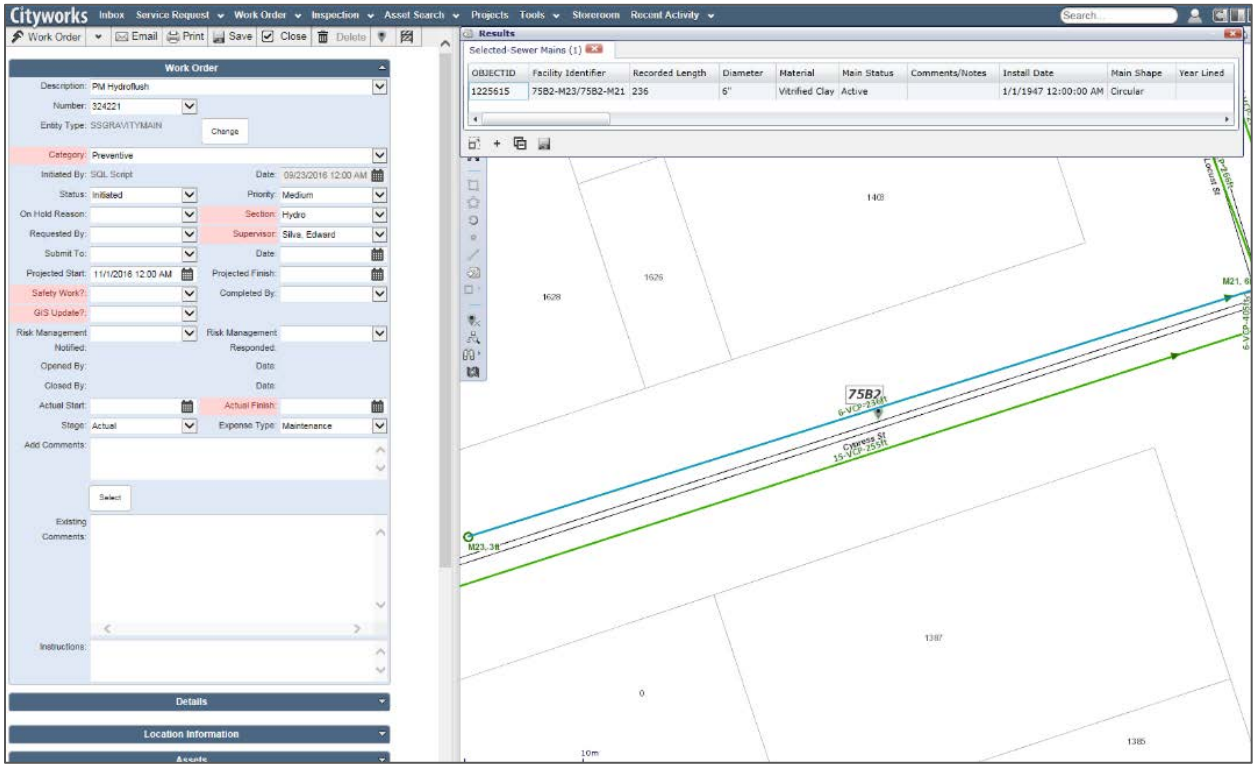


Figure 4.7 CMMS - Work Order with Asset Mapped

The new system also allows documents, pictures, or other files to be attached to the Work Order. For example, a cleaning crew may discover a repair is needed to a manhole and can attach a photo to the repair Work Order.

Additionally, Standard Operating Procedures (SOPs) are attached to Work Order Templates, so they are easily accessible to field staff.

The “Overflow Response” Work Order Template was configured to include custom fields to document the information needed for reporting to CIWQS.

Within the new CMMS system, comments made on Work Orders or Service Requests are stamped with the user’s name, date, and time to easily pass information along to subsequent staff or supervisors regarding the work activity.

WDR ITEM C:
REHABILITATION AND REPLACEMENT PROGRAM

BUDGET

OVERVIEW

Central San operates under a fiscal year budget cycle beginning July 1 and ending June 30. By law, Central San uses an enterprise fund to account for its operations. Central San currently has one enterprise fund which is comprised of four internal sub-funds:

- O&M Running Expense Fund
- Sewer Construction Fund (Capital Fund)
- Self-Insurance Fund
- Debt Service Fund

The revenue sources to support this budget include the following:

- Residential Sewer Service Charges
- Commercial Sewer Service Charges
- Sewer Connection Fees (Capacity Fee and Pump Zone Fee)
- City of Concord (contract to treat wastewater)
- Ad Valorem Property Taxes
- Other Reimbursements (i.e., proceeds from the sale of recycled water and permit fees)

The budget incorporates Central San's Strategic Goals and Initiatives and provides the resources necessary to advance the Strategic Plan and meet the challenges Central San faces as it strives to increase service quality and minimize cost to its customers. At the same time, the budget allows Central San to accomplish its mission in the most cost-effective and financially sustainable manner to ensure best value to our customers.

Central San's Board of Directors authorizes the budget for the organization. Central San staff leverage technology, equipment, and professional expertise to optimize the use of the authorized budget, to best address collection system infrastructure needs.

Refer to centralsan.org for the most current budget information.

COLLECTION SYSTEM OPERATIONS AND MAINTENANCE BUDGET

Fiscal Year 2021-22

For FY 2021-22, Central San's budget for Collection Systems Operations and Maintenance is $15 million.

COLLECTION SYSTEM RENOVATION AND REPLACEMENT BUDGET

Fiscal Year 2022-23

For FY 2022-23, Central San's Collection System CIB is $37 million.

Renovation and Replacement Budget 10 Year Estimate

In 2016, Central San renovated or replaced over eight miles of 6- to 10-inch sewers in streets and easements throughout the service area.

In 2017, Central San completed its Comprehensive Wastewater Master Plan (CWMP). The CWMP investigated Central San's Collection System and Treatment Plant as an integral system and provided guidance for making decisions to ensure the infrastructure is maintained appropriately into the future. In alignment with the CWMP recommendations, Central San is preparing to increase the total length of pipe replaced per year, for the foreseeable future.

Figure 4.8 provides a summary of the 10-year estimated fiscal year capital budget for Collection System Rehabilitation and Replacement (R&R), as of May 2017. These estimates will be updated every year to ensure Central San is responsive to the changing needs of the infrastructure.

Figure 4.9 provides a summary of the 100-year estimated expenditures for the Collection System R&R, as of May 2017. These estimates will be updated periodically to ensure Central San is responsive to the long-term needs of the infrastructure.

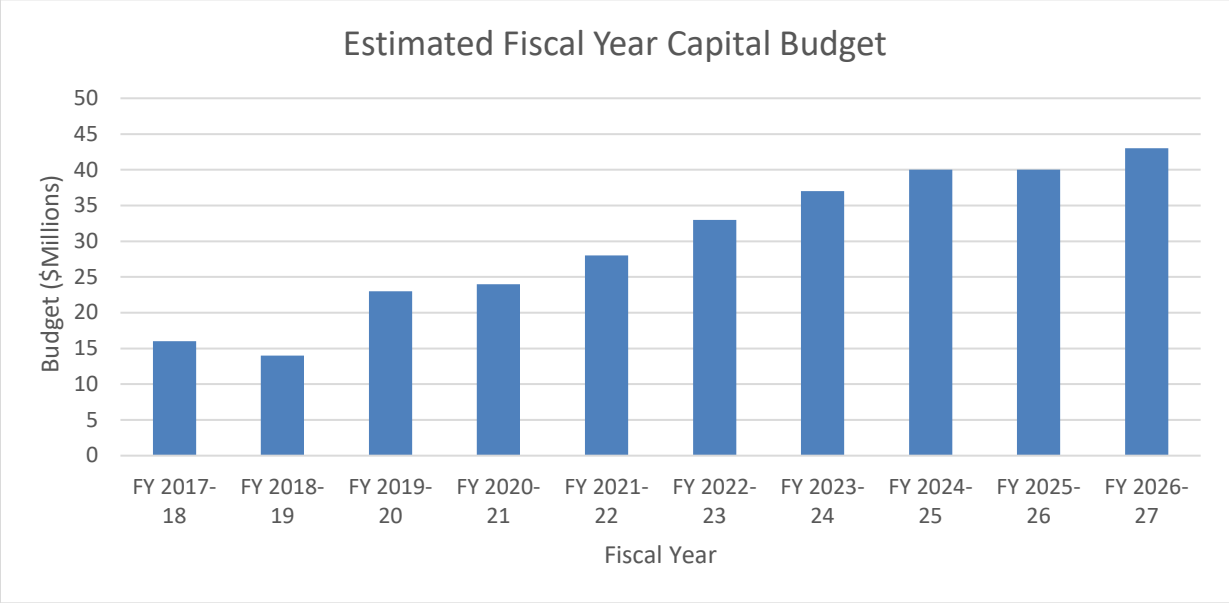


Figure 4.8 Ten-Year Estimated Expenditure – Collection System Replacement and Rehabilitation

Forecasting and prioritizing replacement needs is an iterative process. Refer to Figure 4.9 for the draft renovation forecast.

Period	Cost ($M)	Mileage
0-5 Years	$99	38
5-10 Years	$180	42
10-20 Years	$441	184
20-30 Years	$724	281
30-50 Years	$1,156	403
50-75 Years	$575	206
75-100 Years	$808	276

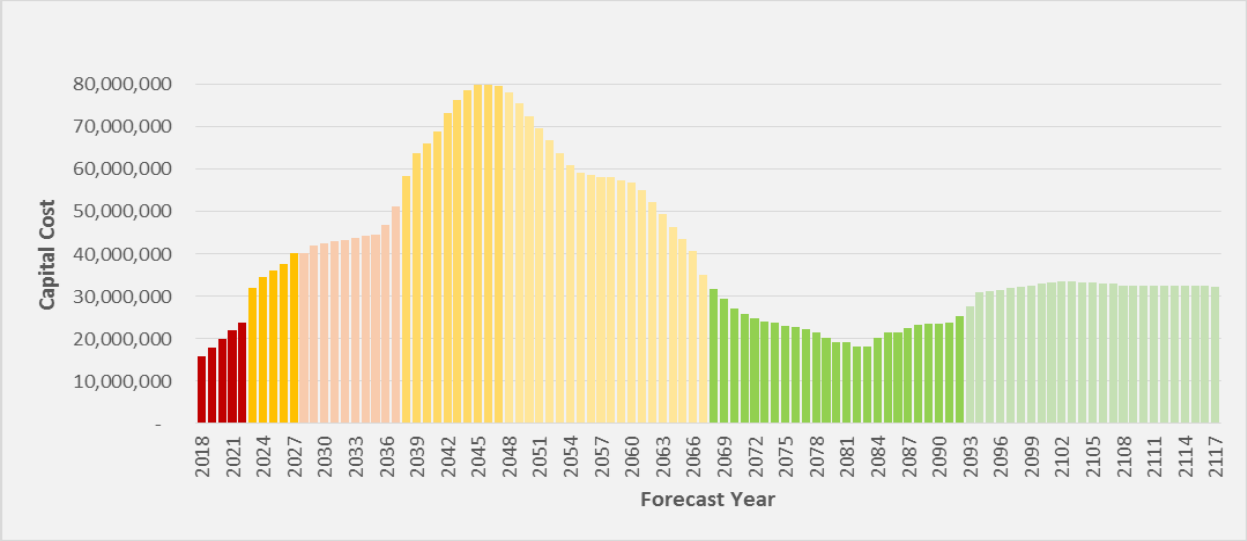


Figure 4.9 CWMP Draft 100-Year Sewer Renovation Forecast

Please refer to centralsan.org for the most current budget information.

RISK-BASED PLANNING

Central San uses a risk-based analysis to develop its 10-year plan for sewer R&R projects. To assist in this task, Central San uses a risk-based asset management software that leverages existing GIS and CMMS data, hydraulic model output data from Central San's hydrodynamic model using Innovyze's InfoWorks® software, and CCTV and sewer cleaning data to optimize the capital improvement strategy for replacing sewers and reducing SSOs.

Central San owns and maintains approximately 1,500 miles of collection system sewers containing over 37,000 pipe segments. Each pipe segment is analyzed by InfoMaster® from a risk perspective, which includes the likelihood of failure (LOF) of both structural and operational elements (e.g., cleaning frequency and CCTV score), the consequence of failure (COF) based on modeled wastewater flows, and proximity to critical features within the service area (e.g., hospitals and waterways). The risk model facilitates a proactive approach to identifying and managing high-risk sewer pipes to help preserve structural integrity and reduce SSOs over time. Reducing and eliminating SSOs is Central San's ultimate level of service goal.

The data used by InfoMaster® will be updated on a recurring basis to ensure that the risk model results leverage the latest data available and reflect most pertinent LOF and COF factors. The LOF and COF are based on feedback from collection system field crews to ensure that Central San's sewer replacement strategy reduces SSOs over time.

This proactive approach allows Central San to:

1) Identify the most at-risk sewers for incorporation into our CIB, and

2) Project future sewer CIP sewer replacement needs so that Central San can plan ahead for an optimal budget that addresses Central San's aging infrastructure. R&R needs are identified using Innovyze® InfoMaster® software. This software uses the COF and LOF for each pipe segment to

determine the relative risk of the asset. R&R needs are then prioritized based on risk and are grouped geographically into projects and incorporated into the CIP and CIB. InfoMaster® places each pipe segment into R&R bins for zero to five years, five to ten years, and beyond. Criteria used for bin placement include:

- Risk
- LOF
- COF
- Age
- Remaining Useful Life

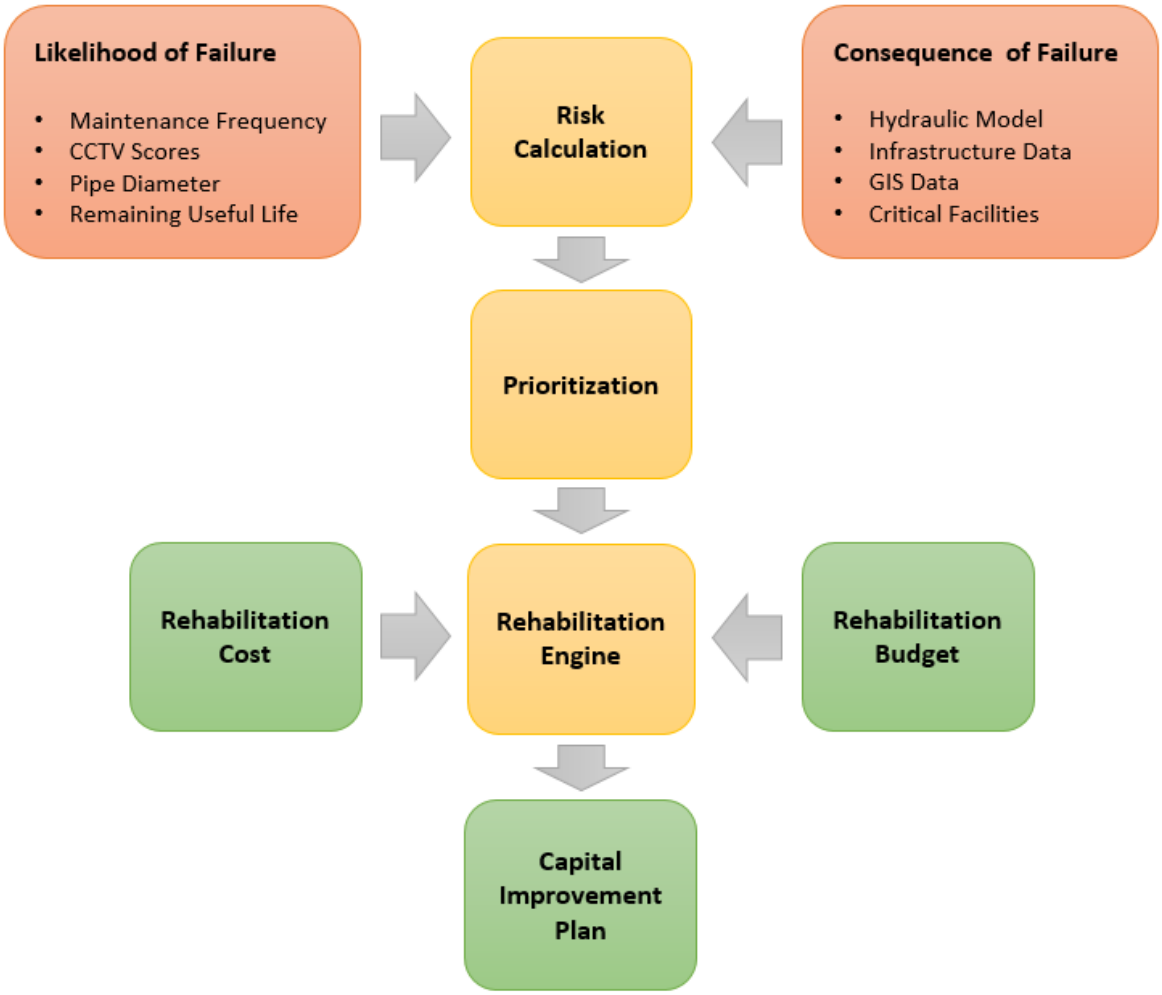


Figure 4.10 Risk-Based Analysis Process

Risk is a product of LOF and COF and ranges from negligible to extreme.

LOF is based on:

- Maintenance Frequency
- CCTV Scores
- Pipe Diameter
- Remaining Useful Life

The expected total life of pipe is based on an analysis of CCTV scores for each pipe type. The remaining useful life is based on installation year and expected total life.

COF is based on proximity to:

- Street Types
- Railroads
- BART
- Schools
- Hospitals
- Creeks
- Diameter of pipe
- Flow in pipe

ASSET MANAGEMENT PROGRAM

OVERVIEW

Central San's initial Asset Management Program (AMP) effort began in 2002 with a condition assessment of the gravity system through CCTV inspections, which allowed Central San to target capital improvement projects and maintenance on the pipes in the worst conditions. Since the CCTV program began, Central San has reduced SSOs by approximately 70% through these investments.

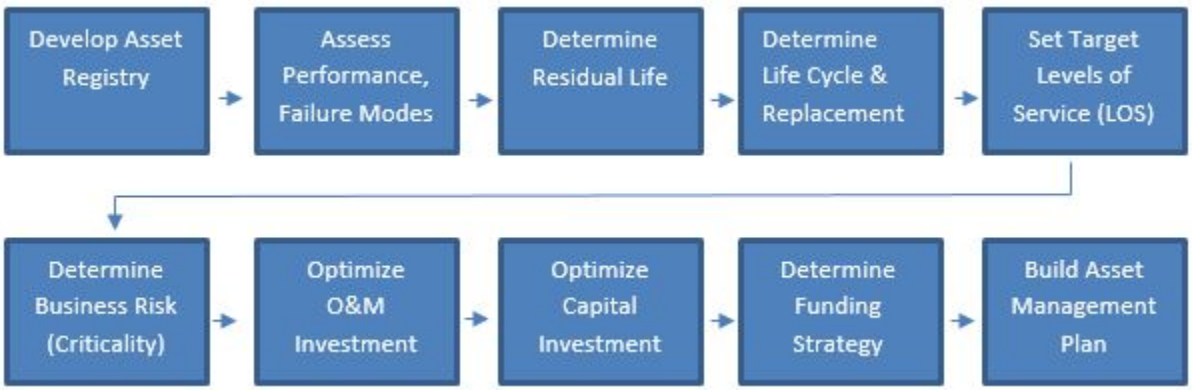


Figure 4.11 Asset Management Plan Evolution

Upon successfully implementing asset management for collection system assets, Central San wanted to expand the AMP to the wastewater treatment plant, which led to a more formal pursuit of an AMP in 2014 with a dedicated AMP coordinator, Asset Management Implementation Plan (AMIP), and adoption of an Asset Management Board Policy. Central San's AMP evolution has followed the United States Environmental Protection Agency's (USEPA) asset management 10-step process framework, summarized in Figure 4.11.

Central San employs six full-time staff in its Asset Management Group, which includes GIS administration and technical support of the CMMS, CCTV software, and other relational software. By presenting the business needs and benefits to customers, Central San staff have obtained the support of management and Board members for necessary investments in the AMP.

FORCE MAINS

The most efficient method to convey wastewater to a treatment plant is by gravity, essentially sloping the sewer pipes towards the direction of the treatment plant. However, in some areas of hilly terrain or low-lying areas, the wastewater must be pumped for a distance, to a location in the sewer system where it can once again flow by gravity to the treatment plant. These pressurized sewer pipes are commonly referred to in the wastewater industry as force mains.

Central San owns approximately 25 miles of force mains and maintains an additional 2,900 linear feet of private force mains under contract. In 2013, Central San completed a study to develop risk scores for each of its force mains, using the COF and LOF approach. Each force main was subsequently ranked into one of the three following categories using a Tolerable Risk Curve graph:

- Tolerable Zone – Periodic review of force main data
- Yellow Zone – Triggers periodic condition assessments
- Red Zone – Triggers rehabilitation or replacement

If the calculated risk score for a force main moves from the Tolerable Zone to the Yellow Zone, then condition assessments are required on a periodic basis. If a force main moves into the Red Zone, it will be included in the CIP for rehabilitation or replacement.

PUMPING STATIONS

Central San's CWMP was completed in 2017. It includes an Asset Management component that reviewed Central San's gravity mains, force mains, and pumping stations. During this project, all of Central San's 19 (Via Robles Pumping Station was de-commissioned in 2017) pumping stations underwent a condition assessment investigation by both specialized consultants and Central San staff. Recommendations were prioritized and cost estimates were developed for each pumping station. A timeline for undertaking identified capital improvements was developed and incorporated into the capital budget.

GRAVITY MAINS

The most recent development for the Collection System AMP is the expansion of its gravity main renovation planning, from a condition-based approach (i.e., CCTV scores) to a more rigorous risk-based approach. Innovyze's InfoMaster® software calculates COF for all the gravity pipes, based on multiple factors and uses GIS spatial analysis (i.e., proximity to schools, hospitals, waterbodies, and transportation features such as freeways) and combines that with LOF (derived from condition assessments and maintenance records) to prioritize renovations based on risk. This allows Central San to anticipate renovation needs for the next 20 years and beyond, allowing the Board members and management to determine the appropriate funding strategies and modify its renovation program to address future needs. For more detailed information on this risk-based approach, refer to the Rehabilitation and Replacement section above.

LARGE DIAMETER PIPES

Following up on the CWMP recommendations, Central San will commence a condition assessment program for its large diameter pipes in FY 2022-23 to quantify the condition of this critical infrastructure and to optimize R&R forecasting.

WDR ITEM D:
TRAINING PROGRAM

TRAINING OVERVIEW

ORIENTATION

One of the unique challenges Central San has faced is the influx of new employees into field positions. Central San has developed an orientation and training process designed to give them the tools, knowledge, and safety awareness they need to be successful at CSO. Central San developed an in-house, CWEA award-winning video that gives an overview of the tools used in rodding and hydro work which shows the functionality of each tool.

Central San has also developed an orientation program that covers the basic administrative issues, behavior guidelines, and general safety policies that new employees need to be aware of prior to working in the field. The CSO Employee Training Matrix, which outlines required safety training for each job classification, works in conjunction with Central San's Training Database to track the employees' progress as they complete various training modules.

In addition, exposure to wastewater presents its own set of safety challenges due to the likelihood of exposure to disease causing pathogens or other potentially infectious materials. Central San's Safety Directive 6 – Exposure Control Plan for Bloodborne and Infectious Pathogens outline the policy and procedures used to keep staff and members of the public safe. This safety directive mandates annual Bloodborne Pathogen training be performed for all collection system staff and that adequate personal protection equipment is available to staff. If there is any reasonable risk that the public may come into contact with sewage, Central San will post and maintain appropriate notification signs and place barricades and/or other traffic control devices to keep vehicle and pedestrian traffic away from contact with sewage.

SSMP TRAINING

CSO staff are trained annually on the Elements and procedures within the SSMP, including the SSOBRP. Training consists of theory and practical exercises. A Training Log is kept for all formal training. Informal training also takes place amongst CSO staff in the form of workgroup meetings and mentoring of new staff by experienced personnel.

COMPENTENCY PROGRAM – YELLOW BOOK

Shortly after being hired, each new crew member is given a CSO-tailored training log called the "Yellow Book" because it is traditionally bound in a yellow cover. Over the years, the contents of the Yellow Book

have been refined and updated as training needs change, perfecting the task checklists for each of the different CSO sections – Rodding, Hydro, Construction, and CCTV/Locating. As the new crew member becomes proficient in various skills, the crew leader signs and dates the book to verify that they have observed the crew member in action and can move on to learning the next assignment. It takes approximately 18 months, the usual probationary period, for each crew member to complete their Yellow Book. During the 18-month training period, the supervisors work closely with the new employees as they rotate through the various sections.

CWEA TECHNICAL CERTIFICATION

During their initial probation period, the crew members are also required to pass the CWEA Technical Certification Program (TCP) Grade I examination and to obtain a Class A driver's license. We provide training in-house to assist them in both these efforts as well as pay for and send them to CWEA TCP preparation classes. Our driver training class for new employees is based on the Teamsters' model, and our "students" have a 100% success rate in taking and passing the California Commercial Driver test.

Central San's training program consists of both introductory and continuing education on the topics of health, safety, and O&M activities. Training is customized to serve different needs of Central San's workers and is provided by both Central San staff and consultants. The training program has the following basic structure.

- New Employee and Contractor Orientation
- Refresher Training Programs
- Special Training Sessions
- Tailgate Training Sessions
- Emergency Response Training
- Emergency Operations Center Training
- Training Records

EMPLOYEE AND CONTRACTOR ORIENTATION

Employees and contractors who work on Central San projects receive training on safety topics to provide orientation, information on safe work practices, and background on Central San's Safety Program. The following outline lists the course subjects. Appropriate items from the outline are selected for the orientation based on the job requirements:

- District Safety Policy & Responsibilities
- New Employee Plant Orientation
- Unique Hazards
- Methane & Hydrogen Sulfide
- General Safe Work Practices
- Personal Protective Equipment
- Respirators
- Hard Hats
- Eye & Face Protection
- Safety Shoes
- Hearing & Body Protection
- Emergency Evacuation Procedure

- Fire Evacuation
- Safety Directives and Safety Directive Quiz
- Accident Prevention and First Aid
- Hazard Communication Standard (Hazardous Materials/Material Safety Data Sheets)
- District Smoking Policies
- Vehicle Safe Driving Practices
- Confined Space Training and Rescue Exercise
- Traffic Control

TRAINING TOPICS

MANDATORY TRAINING TOPICS

CSO staff have the following mandatory training schedule:

- SSMP Training
- Excavation/Competent Person
- Traffic Control/Flagger Training
- SCBA/Confined Space Training
- Driver Commentary Training
- SSOBRP
- Volume Estimation and Start Time Training
- Waste Discharge Requirement Training
- Monitoring and Reporting Program Training
- Bloodborne and Infectious Pathogen Training

SPECIAL TRAINING TOPICS

Special topics are presented to employees on an as needed basis. An employee's supervisor or Central San Safety and Risk Management team may determine what type and amount of training may be appropriate for an individual employee based on their work tasks, previous training, and projected work tasks. These topics vary each year but are represented by the following list:

- Respirator Care and Use
- Hazard Communication
- Ladder Safety
- Electrical Safety
- Forklift/Heavy Equipment
- Ergonomics
- Cranes and Rigging
- Emergency Preparedness Drill
- Personal Protective Equipment
- Fire Drill
- Fire Extinguisher Safety
- Heat Illness Prevention

TRAINING SESSIONS

REFRESHER TRAINING

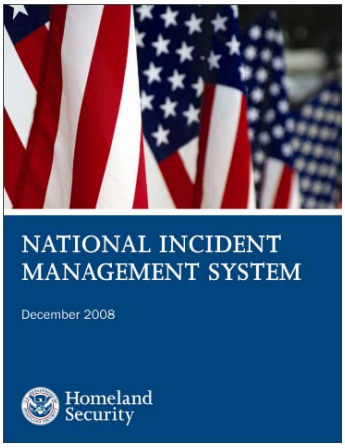
Central San employees receive periodic refresher training such as respiratory protection training, emergency response/evacuation training, and others as necessary. Refresher sessions are provided on topics when new materials or processes are added to the workplace, or when new regulatory requirements or new hazards are identified. Ongoing refresher training is an essential element of Central San's training program.

TAILGATE TRAINING SESSIONS

Tailgate training sessions are provided at plant, pumping stations, and remote jobsite locations when preparing crews for specific jobs and are a part of the ongoing safety training program. These sessions are logged and documented in the field. A representative list of these training sessions is included below:

- Confined Space Hazards
- Materials Handling Safety
- Hydrogen Sulfide Control
- Storage and Use of Chemicals
- Occupational Safety and Health Administration (OSHA) Asbestos Standard
- Permissible Exposure Limits
- Exposure to Hazardous Materials
- Material Safety Data Sheets

EMERGENCY RESPONSE TRAINING



Central San maintains an ongoing emergency response training program to ensure both field operations staff and management can respond to local and regional disasters. The program focuses on California's Standardized Emergency Management System (SEMS) and National Incident Management System (NIMS) compliance, coordination with other agencies, interoperable communications, and proper documentation.

Training activities include practical exercises and training within the Operations Department (Treatment Plant and Collection System), damage assessment team exercises and training, emergency communications protocols and training on how to use various communications tools, joint or shared training with other agencies in the area, and training on Common Operating Picture systems.

TRAINING RECORDS

Central San training records are kept on file for each employee. Additionally, a training database is maintained for reviewing employee qualifications and adding or modifying training requirements for individual employees.

CONTRACTOR AND PLUMBER OUTREACH

Central San's outreach program consists of jobsite interaction between inspectors and contractors, and outreach materials sent by mail. Contractors and plumbers who live in areas served by Central San receive *The Pipeline*, a newsletter sent to all customers. Every issue provides valuable information on how customers can make the operations of Central San run more smoothly.

Contractors and plumbers who work in Central San's service area must register with Central San. This registration list is used to send mailings to them whenever the Standards and Specifications or Central San Code are changed, or there is a need to notify them of some other revision or concern. Through these methods of contact, Central San keeps contractors and plumbers up to date on current Best Management Practices (BMP).

Central San has identified building demolition as a potential source of SSOs because the contractors may not cap the cleanout of the sewer lateral during the demolition and foreign material entering there may then cause a blockage. Central San is establishing communications with city and county building departments to confirm their awareness of the importance of these caps and to make sure that the potential for these overflows is minimized.

Refer to Element 11 for further information on Central San's outreach activities.

WDR ITEM E:
EQUIPMENT AND REPLACEMENT PART INVENTORIES

EMERGENCY EQUIPMENT

CSO maintains several emergency response vehicles as well as Hydrovac Combination trucks, Rodding trucks, and CCTV trucks. Collection system maintenance equipment and emergency equipment are in the Walnut Creek location, which is centrally located in Central San's service area to provide an efficient emergency response.

When an emergency call is received during normal working hours, the closest crew is dispatched to the emergency location and a maintenance supervisor is informed of the specifics of the emergency. During non-working hours, there is always a crew on stand-by ready to receive the call. Crew members are assigned on-call vehicles and tablets.

The on-call vehicles are pickup trucks that are equipped with the necessary equipment to perform routine sewer maintenance and investigations. If the situation causes a need for a Hydrovac or Rodding truck, one crew member will pick up the piece of equipment in Walnut Creek while the other crew member drives directly to the site. The iPad contains systems maps, as-built drawings, maintenance history, and CCTV inspection data which may be used for determining the cause of the overflow or stoppage.

If it is determined that additional crews or equipment is needed the crew member relays this information to his supervisor and additional crews are dispatched to the emergency. The additional crews are instructed to transport any additional equipment to the overflow site as needed. Equipment consists of:

- Vactor Combination Trucks
- Vactor Jetter Trucks
- Champion Rodding Trucks
- CUES CCTV Trucks
- Bypass Pump Van
- Confined Space Van
- 6" Gorman Rupp Portable Pump
- Bypass Pipe Trailer
- Laboratory Water Sampling Kit and Chain of Custody Forms

A complete list of equipment that can be used for emergencies is in Appendix B – Available Equipment Inventory.

The purpose of these emergency vehicles and equipment is to quickly restore flow and repair the damage in the pipe. The Sewer Overflow and Backup Response Plan and the Pumping Station Overflow Response Plan describe how to use these vehicles to react to an overflow event. Because system problems range from simple plugs to complex failures of pipes or pumping equipment, not all the vehicles are used in every situation.

CSO maintains a warehouse of material for repairs at its location in Walnut Creek. In addition, each pumping station maintains an inventory of spare parts such as belts, hoses, and other critical components. Whenever possible, pumps and other equipment are standardized to optimize emergency response efficiency.

Central San's confined space vehicle (Figure 4.12) carries all the necessary equipment to safely enter the sewer system, including tripods and retrieval equipment. CSO staff are trained for confined space entry and rescue.

Figure 4.12 Confined Space Van

Central San's emergency pump vehicle (Figure 4.13) carries various pumps ranging from two to four inches, as well as intake and discharge hoses, and Victaulic couplings. This equipment can be used to bypass failed pumping stations or areas of the collection system that are blocked and cannot be quickly cleared.

Figure 4.13 Emergency Pump Truck

Central San's construction vehicle (Figure 4.14) carries tools, equipment, and parts needed for spot repairs and other construction emergencies. Central San also has two backhoe excavators and dump trucks in its inventory for repair work.

Figure 4.14 Construction Vehicle

Central San's emergency response pipe trailer (Figure 4.15) carries 20-foot sections of 6-inch aluminum pipe for emergencies. The trailer also carries street crossing equipment and flexible intake and discharge hose.

Figure 4.15 Emergency Response Pipe Trailer

Figure 4.16 CCTV Van

Central San's large pumping stations have emergency equipment on site ready to go, such as emergency bypass pumps (Figure 4.17). Other trailer-mounted equipment is kept ready to go at the Pumping Stations' Corporation Yard at the Martinez campus.

Figure 4.17 Portable Emergency Bypass Pump at Martinez Pumping Station

Central San currently owns two trailer-mounted Cornell pumps and two trailer-mounted Gorman-Rupp pumps (Figure 4.18) for bypass pumping.

Figure 4.18 Gorman-Rupp Bypass Pump at CSO

PARTS INVENTORY

The Materials Services Group, located in Martinez, maintains the replacement part inventory for assets and equipment, except for vehicles, which is maintained in the financial system (Oracle). The Materials Services Group purchases replacement and spare parts and tracks discrete items in its inventory. Spare parts are stored in a 6,000 square-foot warehouse at the treatment plant in Martinez, the CSO warehouse in Walnut Creek, and locally at pumping stations. Operations staff collaborate with the Material Services Group to adequately stock spare parts and identify both the maximum on-hand as well as the minimum reorder points.

Spare parts kept at the CSO warehouse include the items listed in Table 4.2 below. In addition, Central San's Vehicle and Equipment Shop, located at CSO in Walnut Creek, performs maintenance on 108 vehicles and other CSO equipment, which range from backhoes to small generators, and maintains their warehouse with spare parts.

Table 4.3 CSO Warehouse Spares

Vehicle Type	Tooling
Vactor Combination and Jetter Trucks	Reel hose, guide hose, various spare nozzles, and guide hose splicing machine
Champion Rodder Trucks	Continuous rod and various cutting blades
CCTV Trucks	Redundancy provided with (3) CCTV Trucks
Construction	Pneumatic plugs sizes 4" – 36" Couplings for various materials sizes 6" – 18" Various materials of pipe sizes 6" – 18" Speed shores Mini-cams Perma-liner repair kits Grade rings Castings Covers Quick set AC patch ¾" Class II Aggregate Base ¾" Crushed rock Various traffic signage Generators Light towers Trash pumps

A complete list of parts that can be used in emergencies is located in Appendix C – Available Parts Inventory.

SSMP ELEMENT 5:
DESIGN AND PERFORMANCE PROVISIONS

WDR REQUISITES

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

(a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pumping 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.

CENTRAL SAN COMPLIANCE

WDR ITEM A:
DESIGN SPECIFICATIONS AND STANDARDS

DEVELOPER PROJECTS

Developer projects are projects designed and constructed with private funds. The projects range from housing complexes to shopping centers.

STANDARD SPECIFICATIONS

Central San has published minimum design and construction standards for the use of customers, contractors, and engineers beginning in 1956. The title of the document is “Standard Specifications for Design and Construction (Standard Specs)”. The legal authority for this document comes from the following section of Central San’s Code.

9.08.010 Planning, design, and construction.

Sewers that are intended for dedication to Central San as public sewers shall be planned, designed, constructed, installed and repaired in accordance with this code and Central San's Standard Specifications for Design and Construction (referred in this code as "standard specifications"). The standard specifications shall be established and may be amended from time to time by ordinance and kept on file with Central San Secretary in an uncodified manner. The use of any sewer facility connected to Central San system that fails to comply with the standard specifications applicable at the time of its connection to Central San sewer facilities constitutes a danger to human health and safety, public and private property and the environment, and shall be considered a public nuisance.

(Ord. 253 § 1 (Exh. A (part)), 2008)

Future revisions to the code will occur as needed. Whenever a section or the entire document is modified, a letter is sent to all engineers and contractors who are registered with Central San.

The Standard Specs govern requirements for the design and all work regarding sewer construction and/or projects financed by private individuals within the jurisdiction of Central San in Contra Costa County, California. The Code and all ordinances of Central San are considered a part of these Specifications and all plans, profiles, cut sheets, right-of-way documents, and specifications must conform to the standards and requirements herein established. The jurisdiction of Central San includes the entire sewerage system and its appurtenances from the point of connection with the building plumbing to the discharge terminus of the treatment plant outfall. Ownership and maintenance of the building lateral to the point of connection with the sewer main is the responsibility of the property owner.

The following is a list of the section titles in the 2020 edition of the Central San Standard Specifications document:

Part I. General Requirements
Part II. Private Sewage Disposal Systems
Part III. Public Sewer Collection Systems
Part IV. Recycled Water Distribution Systems
Part V. Construction Requirements
Part VI. Technical Specifications
Part VII. Standard Drawings
Pat VIII. Glossary
Part IX. Index

These standards ensure that infrastructure built in Central San's service area will conform to accepted practices and that equipment will operate properly. Ensuring new pipelines constructed during new development project adhere to Central San specifications is of primary importance because the developer is often responsible for constructing new sewer mains, and then dedicates them to Central San upon completion of the project. Central San must ensure that the new infrastructure will not cause any short term or long-term operational problems once Central San has ownership of the collection assets. Adherence to the Standard Specs supports this aim. Project plans must be approved by Central San prior to issuance of a construction permit.

CENTRAL SAN PROJECTS

Central San projects, also known as capital projects, are construction or rehabilitation projects on District-owned facilities. These projects are managed by staff and are funded by Central San.

STANDARD SPECIFICATIONS

The Standard Specs are used as guidelines for Central San's projects and variance from these requirements may only be allowed when existing conditions prevent conformance to the Standard Specs and when such variance is deemed permissible. Such conditions include existing underground facilities and elevations of connection points to the existing sewer system, among others. In cases where materials and construction techniques not covered in the Standard Specs are used, Central San Engineers use best engineering judgment to approve or develop the design of the new/replacement sewers and pumping stations.

Central San uses standard General Conditions and project-modified Special Conditions and Technical Specifications for bidding and constructing District projects.

Central San sewer projects may be designed by staff or by consultants. They are reviewed typically at the 10%, 50%, 95%, and 100% design completion level. Staff also conducts a scope check with CSO between 30%-50% of the design phase to ensure that all operational issues are addressed. Construction of Central San sewer projects is managed and inspected by staff or contract staff.

COLLECTION SYSTEM PROJECTS

All the construction projects performed by CSO staff consist of spot repairs in pipe segments and manhole repairs/replacements. The typical length of these spot repairs is six to ten feet. CSO staff relies on Central San Standard Specs for Design and Construction for all projects.

CSO projects use the same design and construction standards as Developer and Central San projects.

WDR ITEM B:
INSPECTING AND TESTING PROCEDURES AND STANDARDS

DEVELOPER AND CENTRAL SAN PROJECTS

STANDARD INSPECTIONS AND TESTING

All plans for sewer projects are reviewed for compliance with Central San design standards at several points before construction. At least two preliminary reviews and a final review occur before a construction permit is issued. Cut sheets are prepared by the developer's engineer and reviewed by Central San staff prior to construction. The designed pipeline is staked in the field and the Development Inspection group compares the cut sheets they have approved to the stakes in the field.

Inspectors use Central San's Standard Specs, Code, approved project plans, the permit, and the construction contract as the basis for inspection. Sewer projects are inspected during construction as to the quality and acceptability of materials furnished, work performed, and manner of the performance of construction.

The permit states that it is the contractor’s responsibility to arrange for timely inspection throughout the project and to coordinate with Central San staff. Central San inspects and approves work in accordance with Part V, Construction Requirements, in the Standard Specs. Inspection occurs during the construction project and prior to the end of the contractor's one-year warranty period.

During construction, a Central San inspector will inspect the construction of a developer sewer on a regular basis. During critical construction sequences, a Central San inspector is always present, and inspection reports are prepared daily for Capital Projects.

After trench backfilling and before final acceptance of sewer projects, all sewers are inspected by CCTV, and for new sewer installation, a low-pressure air test is conducted. After the sewer is inspected, a one-year warranty period begins. When the warranty is about to expire, the line is re-televised to determine if any defects are present. Construction files are archived following the completion of the projects.

COLLECTION SYSTEM PROJECTS

Capital Projects are CCTV-inspected by CSO staff after backfilling, but prior to asphalt installation.

SSMP ELEMENT 6:
OVERFLOW EMERGENCY RESPONSE PLAN

WDR REQUISITES

D.13. (viii) Overflow Emergency Response Plan: *The 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:*

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;

(b) A program to ensure appropriate response to all overflows;

(c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g., health agencies, regional water boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDR or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;

(d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;

(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

(f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater: to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

CENTRAL SAN COMPLIANCE

Central San's collection system is a sanitary sewer system that is separate from the regional storm water conveyance system. It is not a combined sewer system.

Central San strives to operate, manage, and maintain all parts of the publicly owned sanitary sewer system in a manner that will prevent SSOs and mitigate the impact of the SSOs that do occur.

To improve our SSO response, Central San has invested in an Automatic Vehicle Location (AVL) system. Office staff immediately knows which crew is nearest to an SSO and will dispatch that crew to respond. The new AVL system has the added benefit of providing valuable data to our fleet maintenance group, improving vehicle maintenance scheduling, and thus keeping our cleaning trucks in the best operating condition for sewer cleaning.

To help promote quick response to any emergency associated with the collection system, Central San's website has a list of call-in numbers for the public:

Table 6.1 Central San Emergency Contact Numbers

Emergency Contact	Phone Number
Sewer Spills	(925) 933-0990
Odors-Sewers or Treatment Plant	(925) 335-7703
Manhole Adjustment & Repairs	(925) 933-0990
Reporting Illegal Discharges or Spills into Sewer System	(925) 229-7288 (during business hours) (925) 229-7214 (after business hours)

RESPONSE PLANS

Central San maintains two types of emergency plans to reduce the risk and consequences of such occurrences:

a) Sanitary Sewer Overflow & Backup Response Plan
b) Pumping Station Emergency Response Plan

Central San's SSOBRP contains standard procedures and guidelines for responding to, cleaning up, and reporting SSOs that may occur within its service area. Central San's SSOBRP satisfies the SWRCB Statewide General WDR for Wastewater Collection Agencies, which require wastewater collection agencies to have an overflow emergency response plan.

Information contained in this Element is sourced from Central San's SSOBRP, and is available upon request, and can also be found on our website centralsan.org.

The Pumping Station Emergency Response Plans contain procedures for the individual pumping station. Each pumping station has a customized Pumping Station Emergency Response Plan to accommodate the presence of specific engines, fuels, chemicals, electrical equipment, and high flows of wastewater at that pumping station. A Pumping Station Emergency Response Plan is similar to the SSOBRP but has additional sections to cover topics such as personnel evacuation, first aid, fire, and the specific equipment at the station.

WDR ITEM A:
PROPER NOTIFCATION PROCEDURES

Beginning December 1, 2004, Central San was required to report SSOs in accordance with the San Francisco Bay RWQCB online reporting system. Central San also maintains an internal database of all overflows to track system performance. As of May 2, 2007, Central San began reporting overflows to the State's electronic reporting system (CIWQS), as required by State Board Order No. 2006-0003.

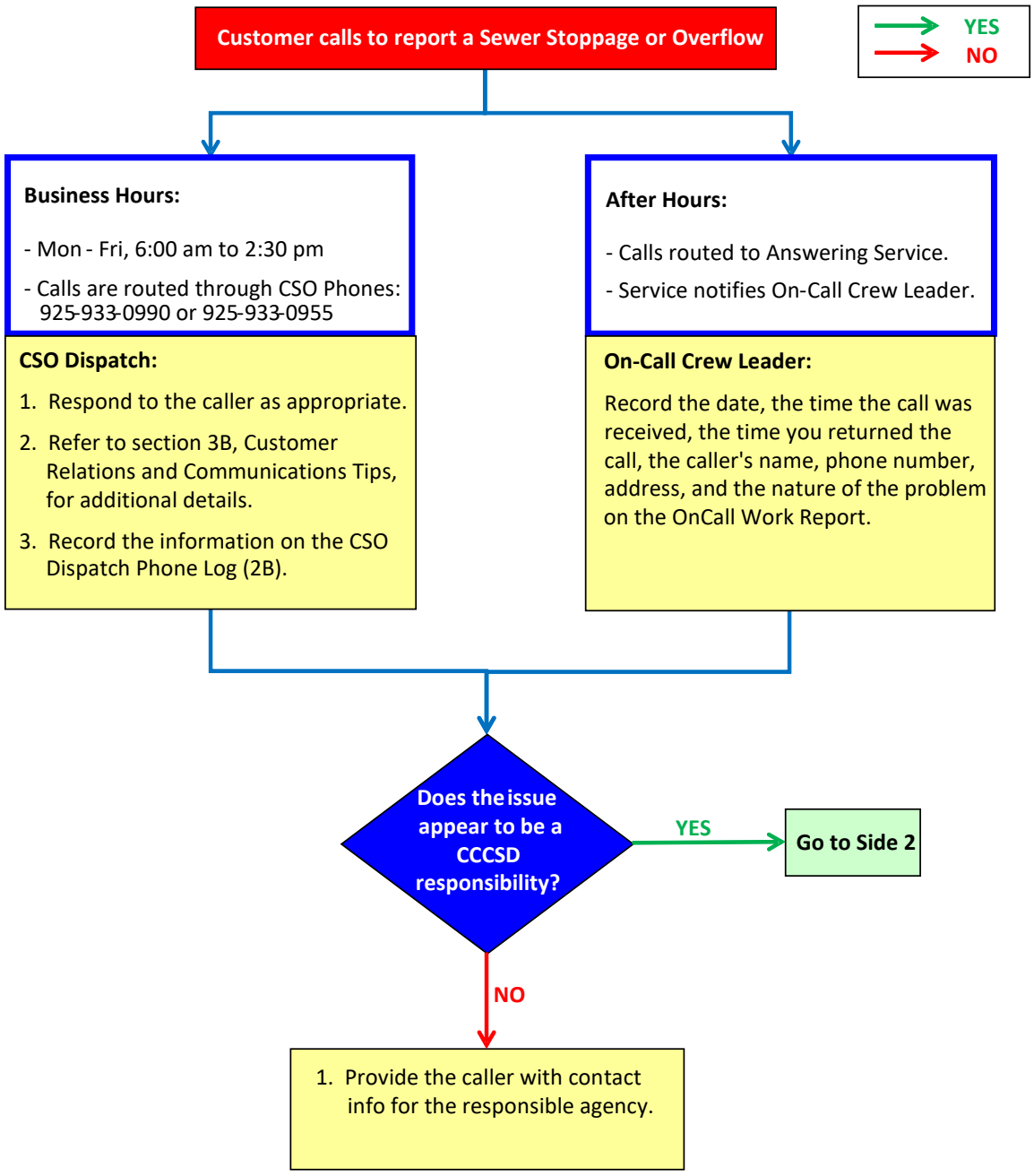


Figure 6.1. SSO Intake Procedure, Slide 1

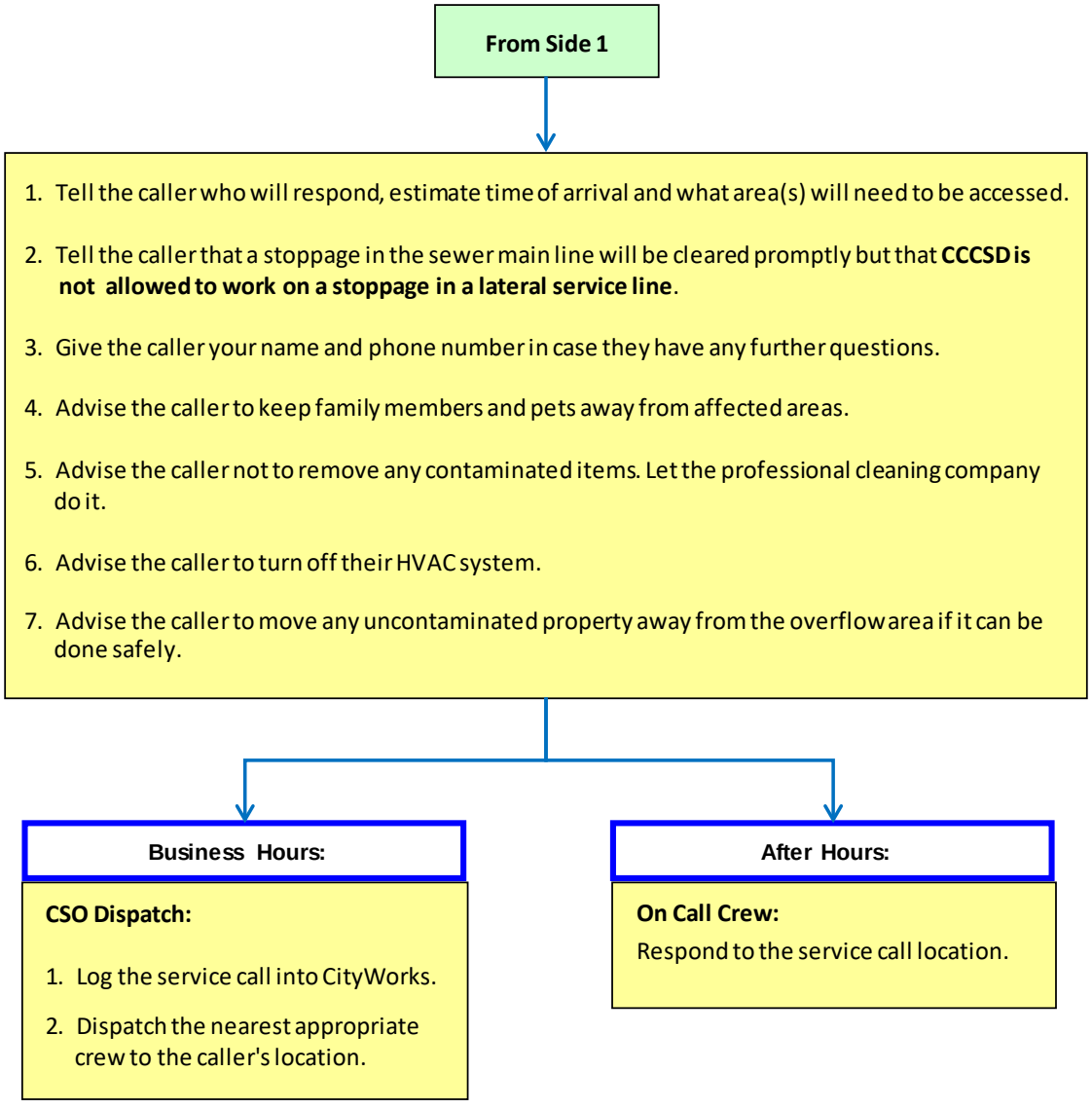


Figure 6.2. SSO Intake Procedure, Slide 2

WDR ITEM B:
PROGRAM TO ENSURE APPROPRIATE RESPONSE

Central San responds to all SSOs on a Risk Basis, regardless of the size or location of the SSO. High risk areas shall include, but not be limited to:

1. the proximity of the SSO to sensitive populations, specifically public and private schools, parks and recreational areas, as well as high density commercial and residential locales
2. discharges to surface waters, especially during the recreational season from May to September
3. any other location which poses an imminent and substantial endangerment to the public health or the environment

After a crew arrives on the scene and determines the appropriate course of action, they classify the spill as a Category 1, 2, or 3 and follow the procedure described in the SSOBRP. During this time, the cause of the overflow may be determined, and the crew will notify the responsible party or resident.

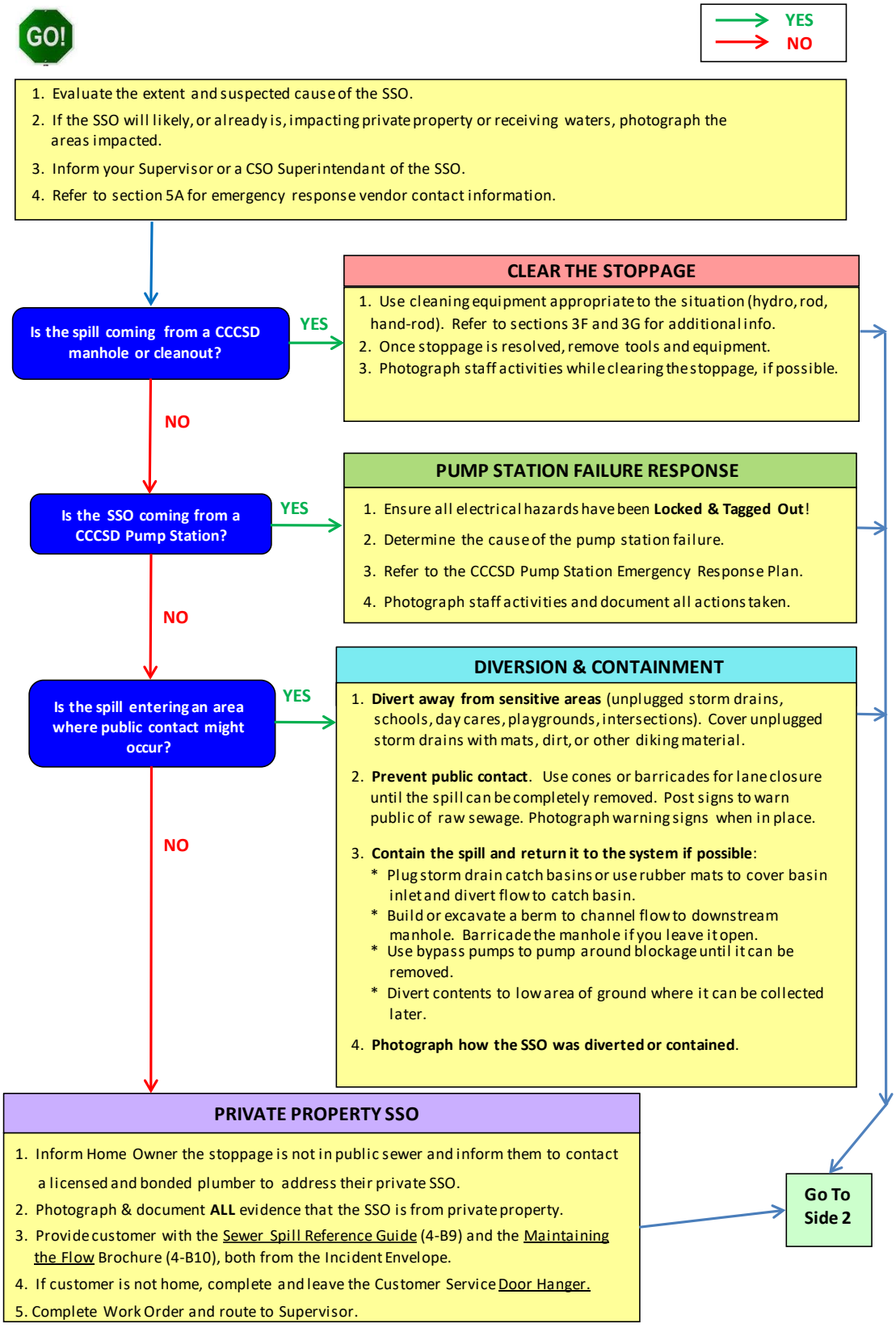


Figure 6.3. Responding to a Sanitary Sewer Overflow, Slide 1

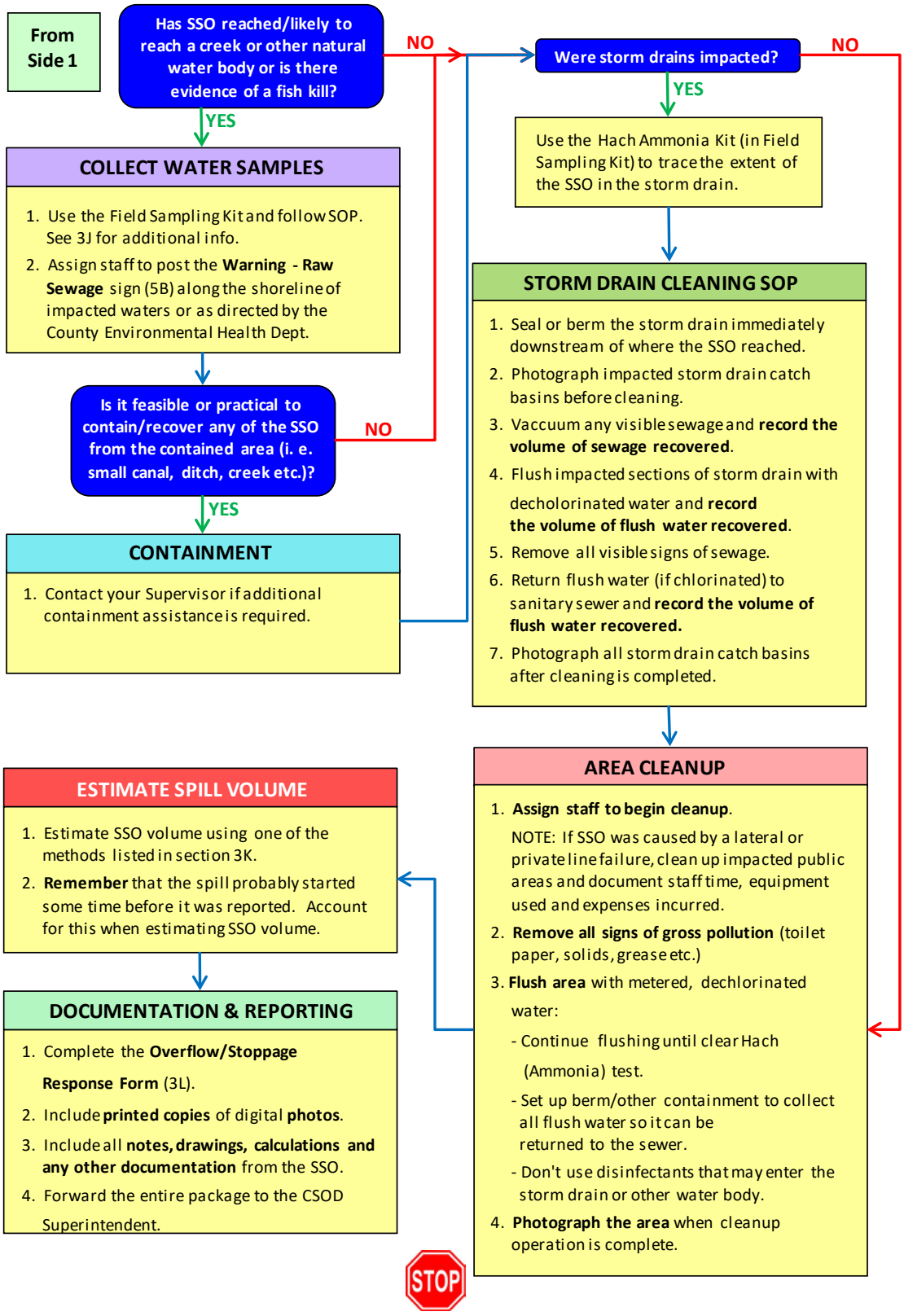


Figure 6.4. Responding to a Sanitary Sewer Overflow, Slide 2

The following table (Table 6.2) is intended as a guide on how to respond to sewer overflows. Each indicated response tactic may not be appropriate for a given sewer overflow. Central San staff choose the tactic that best meets the circumstances at the time and the resources available. Protecting employees, the public, and environmental health are top considerations when responding to a sewer overflow.

Table 6.2 Central San Overflow Response Tactics

	SSO Cause										
Possible Solutions	Capacity due to Gradient	Capacity due to undersized line	Capacity due to surcharged system	Collapse	Debris in Manhole	Debris in Line	Grease	Miscellaneous Plug	Roots	Pump Station Failure	Power Failure
Hydro Jet				✓		✓	✓	✓	✓		
Rodder				✓		✓	✓	✓	✓		
Vacuum Truck	✓	✓		✓	✓	✓	✓	✓	✓		
TV Van						✓	✓	✓	✓		
Backhoe*				✓							
Hand Tools					✓						
Bypass Piping	✓	✓		✓				✓	✓		
Bypass Pumping	✓	✓		✓				✓	✓	✓	✓
Manhole Entry**					✓						
Storage Tanks or Set Up Ponds	✓	✓	✓								
USA Request*				✓							
Backup Generators										✓	✓

*USA Requests: (800) 227-2600

**Confined Space Entry Procedures are required

POST-RESPONSE DEBRIEF

After a stoppage, CSO CCTVs the line within two days. By doing so, we can assure the line is completely clean and any defects are noted and repaired immediately. By reviewing the video in the Operations Meeting, we can discuss and decide on a proper cleaning schedule and what tool should be used for the cleaning.

WDR ITEM C:
NOTIFICATION TO OTHER ENTITIES

Central San's website has emergency contact information for events such as sewer spills. Sewer spill calls are routed to CSO Dispatch during normal business hours. After-hours calls are routed to the On-Call Crew Leader. When an SSO to surface waters or public areas is confirmed, the CSO Division Manager notifies the Director of Operations, who then notifies the General Manager.

Central San's reporting and notification procedures follow the requirements of the SWRCB Monitoring and Reporting Program requirements for Wastewater Collection Agencies. Refer to Table 6.3 below.

Table 6.3 Notification, Reporting, Monitoring and Record Keeping Requirements

Element	Requirement	Method
Notification	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	Category 1 SSO: Submit draft report within 3 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 the SSO 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 certified by the Legally Responsible Official(s) (http://ciwqs.waterboards.ca.gov/)
Water Quality Monitoring	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

Table 6.3 continued

Record Keeping	• SSO event records. • Records documenting Sewer System 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

Refer to the Sanitary Sewer Overflow & Backup Response Plan for further information.

CalWARN – MUTUAL ASSISTANCE PROGRAM

If an emergency arises, Central San also has the option to call upon neighboring agencies for assistance; or as needed, assist other agencies; as part of CalWARN: the California Water/Wastewater Emergency Response Network for mutual assistance. This program provides its member utilities with:

- A standard omnibus mutual assistance agreement and process for sharing emergency resources among Signatories statewide.
- The resources to respond and recover more quickly from a disaster.
- A mutual assistance program consistent with other statewide mutual aid programs and the SEMS and the NIMS.
- A forum for developing and maintaining emergency contacts and relationships.
- New ideas from lessons learned in disasters.

CalWARN functions in coordination with the State Office of Emergency Services. Additional information on CalWARN is provided at www.calwarn.org.

Central San also has Purchasing procedures in place to expedite assistance from private industry professionals, service providers and contractors as needed.

WDR ITEM D:
TRAINING PROCEDURES FOR STAFF & CONTRACTORS

OVERVIEW

The most important component of any emergency response plan is competent and prepared staff. Central San employees receive initial and periodic refresher training on safety and emergency response skills that cover a range of scenarios.

Central San also undertakes emergency operations training to prepare for both local and regional emergencies and natural disasters, such as earthquakes. Central San has strong relationships with its Bay Area neighboring agencies and frequently helps other agencies during times of emergency.

Contracted staff are not provided such training because Central San does not employ contractors to perform emergency response work. In the case of a large overflow, where outside assistance is necessary, on-site supervision and direction will be provided by trained and competent Central San staff and management.

Refer to the Training Program section in Element 4 for more information on Central San's training program.

MANDATORY SAFETY TRAINING

CSO staff have the following mandatory training schedule:

1. SSMP Training
2. Excavation/Competent Person
3. Traffic Control/Flagger Training
4. SCBA/Confined Space Training
5. Driver Commentary Training
6. SSOBRP

WDR ITEM E:
PUBLIC SAFETY PROCEDURES

The crews make every effort to contain the spill, reduce any further damage, restore the flow, and document the event, including regulatory requirements. All Central San field staff are trained in traffic control. Crowd control is primarily used to prevent the public from encountering the overflow. Cones and signage are typically used. Central San will coordinate with regulatory agencies and the Department of Health Services to determine the need for warning signs, and then post them in appropriate locations. For a large overflow, a portion of the crowd control will be performed by local municipal employees, such as police and fire.

WDR ITEM F:
SSO CONTAINMENT & DISCHARGE PREVENTION

Central San's SSOBRP is designed to ensure all reasonable steps are taken to contain and prevent the discharge of untreated or partially treated wastewater to the Waters of the State; and to minimize or correct any adverse impact on the environment resulting from a SSO.

Central San takes appropriate action to secure the SSO-impacted area, relieve the cause of the overflow, and to ensure the affected area is cleaned as soon as possible to minimize health hazards to the public and to protect the environment.

Central San collects water quality samples for **ALL** Category 1 SSOs. The Superintendent or a Field Supervisor will collect, transport, and submit water quality samples for analysis to Central San's Laboratory, located at our Treatment Plant in Martinez, California. Samples are taken at or near where the SSO reaches the surface water (entry point), approximately 100 feet upstream, and downstream of the entry point. The samples are collected as soon as the blockage has been cleared or if additional staff is available the sampling activities will be completed in concurrence with clearing the blockage. The samples are analyzed for ammonia, total coliform, fecal coliform, enterococcus, and e-coli. Additional follow up samples are recommended to confirm the extent that the impact reverts to baseline levels. Follow up samples can be used to determine if posting of warning signs should be discontinued, if signs were posted. Collaboration with the Office of Emergency Services, Fish and Wildlife, and the County Health Department shall continue until closures have been removed.

CSO staff utilize mobile devices in the field. These devices are equipped with a geospatial CMMS software tool, which contains maps that identify the location of public sewers, waterbodies, and other features throughout Central San's service area. This informational tool provides CSO staff with a valuable resource when responding to SSOs. It also provides the ability for staff to accurately document the specific location of the SSO.

The SSOBRP provides staff with detailed procedures and guidelines for containing overflows and recovering untreated wastewater.

SSMP ELEMENT 7:
FOG CONTROL PROGRAM

WDR REQUISITES

D.13 (vii) Fats, Oils, and Grease (FOG) Control Program: *Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an enrollee determines that a FOG program is not needed, the enrollee must provide justification as to 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, best management practice (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.

CENTRAL SAN COMPLIANCE

GENERAL

Central San's FOG Control Program reduces the number of SSOs caused by FOG discharged to the sewer collection system while managing the operating and maintenance costs associated with FOG control.

The FOG Control Program includes two primary components: 1) cleaning and maintenance of the collection system; and 2) inspection, enforcement, and education for sources of FOG from food service establishments (FSE). *This element provides a summary of the plans, procedures, and processes of the program. The FOG Control Program uses District Code Title 10 (Source Control Ordinance), the Standard*

Specs, and customer outreach materials as reference documents. Relevant portions of the Code and the Standard Specs are discussed in detail in Element 3 (Legal Authority) of this SSMP.

WDR ITEM A:
PUBLIC EDUCATION

Environmental Compliance (EC) with assistance from Communication Services, has created FOG pamphlets, posters, and brochures. EC staff deliver these outreach items to FSE customers at the time of inspection and by mail. Outreach is key to FOG control because it promotes preventative measures to minimize grease in the collection system. The materials are designed to educate the public about improper grease disposal and to promote the use of BMPs.

Specific operation and maintenance documents are provided for grease traps and for grease interceptors. Other documents outline proper grease disposal techniques, describe the available pretreatment devices, and explain the inspection process. Copies of materials are located at the end of this element.

EC and Communication Services are continually updating and improving outreach materials that focus on specific issues of grease, grease traps, and grease interceptors.

In addition to EC outreach efforts, Communication Services does FOG outreach to residents via Central San's Pipeline newsletter, social media, and videos; and CSO leaves a door hanger for customers when they discover an overflow or blockage due to grease accumulation. The door hanger has tips on preventing grease from entering laterals and information about proper grease disposal.

WDR ITEM B:
FOG DISPOSAL

Central San provides disposal options for FOG wastes for FSEs under its waste hauler program that includes FOG waste haulers. In addition, Central San's Household Hazardous Waste Collection Facility accepts cooking oils from residential customers which is frequently used during the holiday season. As part of the waste hauler program, approved and permitted waste haulers are authorized to offload FOG at the headworks of the treatment plant. The waste haulers using Central San's treatment plant for disposal must use a Central San manifest for each load documenting the generator of the waste.

District Code Title 10 was modified in 2007 to require all waste haulers to identify the disposal facility of the hauled wastes on the documentation provided to the generator of the waste. This documentation standard provides some paperwork to verify proper disposal or facilitate the investigation of illegally dumped wastes when they are discovered.

EC maintains a list of FOG waste haulers active in the Central San service area to provide to FSEs during inspections to facilitate proper disposal of FOG wastes.

WDR ITEM C:
LEGAL AUTHORITY TO PROHIBIT DISCHARGES TO SEWER

Central San has the authority to adopt and implement grease control regulations on public and private property under the District Code, Title 10 as discussed in Element 3 (Legal Authority) of this SSMP. Under this ordinance and general permit conditions the requirements presented below are imposed. More details are available in Element 3.

Users who are currently connected or contribute to Central San's facilities, or who propose to connect or contribute to Central San's facilities, must obtain a Connection Permit. FSEs are currently a Class III Industrial User and are not required to obtain a wastewater discharge permit at present (District Code 1.08 and 10.12.020-030) but they must comply with Central San standards including compliance with Title 10 of the District Code.

Waste haulers that discharge to Central San facilities must obtain a Central San Waste Hauler Permit and meet performance standards (District Code Chapter 10.28).

Users must install and maintain a grease pretreatment device when Central San finds it is necessary for the proper handling of liquid waste containing grease (District Code 10.12.090 and 10.32.010). Specific standards for the maintenance of a grease pretreatment device (e.g., minimum cleaning frequency, minimum performance standard for cleaning, and prohibition for decanting wastes) are established in Title 10, Section 10.32.035.

WDR ITEM D:
GREASE REMOVAL DEVICES

EC and the Permits section perform a plan review to determine the necessity of a grease pretreatment device and specify the design requirement if a device is needed. EC staff uses the following criteria to determine the need for a pretreatment device:

- Type of facility
- Volume of business or operation
- Size and nature of facilities
- Type of service provided
- Type of high grease producing equipment/practices used
- Type of foods or other materials used in cooking, processing, or manufacturing operations
- Overall potential for grease-laden discharges
- Existence of devices, procedures, or processes which are designed to minimize the amount of grease entering the sewer system

Certain types of FSEs have been identified as either requiring a grease interceptor, grease trap(s), or not requiring a grease removal device (GRD). If during the plan review process, a FSE operator does not believe that their operation needs the designated GRD, they can request a variance from the standard. EC staff receives and processes the variance request to determine if it has merit. EC staff will accept, deny, or modify the variance request. The final determination of the variance request is communicated to the Permits section for processing.

Section 5 of Central San's Standard Specs was adopted using the Uniform Plumbing Code as reference and describes the requirements, design, and installation of a grease pretreatment device. The document is described in Element 7 of this SSMP and the entire text of Section 5 is available at the following link:

https://www.centralsan.org/sites/main/files/file-attachments/ec_section_5_standard_specs_2020_0.pdf?1599668718

Section 5 is periodically revised to ensure the standards are current and protective of Central San's operations. Under the Standard Specs Section 5-01A, conditions such as the following are imposed:

- The grease pretreatment device must be installed in a suitable location (outside for a grease interceptor and inside for a grease trap) that is readily accessible for periodic cleaning, inspection, and/or sampling.
- The grease pretreatment device shall be connected to specific plumbing fixtures or drains as required by Central San.
- The size of the grease pretreatment device is determined by Central San on a case-by-case basis using criteria such as the size and type of facility, volume of business or operation, square footage of the FSE, number and type of drainage fixtures units containing grease-laden wastewater, and estimated flow rate.

WDR ITEM E:
AUTHORITY TO INSPECT & ENFORCE FOG ORDINANCE

Central San has the right to inspect users to ensure all standards and requirements are being complied with (District Code 1.08 and 10.12.080). This inspection authority enables inspectors to evaluate both production areas and waste management areas of facilities (e.g., pretreatment equipment).

Central San may employ a variety of enforcement actions for violations of Title 10 of the District Code. The most common form of enforcement involves EC inspectors issuing written Warning Notices (WN) or Notice of Violations (NOV) to FSE operators prompting corrective actions within a specified timeframe. This enforcement process achieves a very high rate of compliance. More structured, formal enforcement processes are used to achieve compliance when the WN and NOV process does not achieve compliance. Formal enforcement processes range from assessment of civil administrative penalties to suspension or termination of services for any user who is found to be in violation of the ordinance.

Table 7.1 FOG Control Statistics

	2017	2018	2019	2020	2021
Number of SSOs caused by FOG	2	2	3	3	1
FOG Inspections for grease interceptor installation	14	9	12	5	9
FOG Inspections for discharge compliance	537	570	555	264	589
Total number of FOG Inspections completed	551	579	567	269	598

WDR ITEM F:
MANAGING SEWER SECTIONS SUBJECT TO FOG

CSO maintains a database that records all maintenance and inspection events in the collection system including repairs and cleaning. Pipe inspection is captured in video format with key details entered into the database as the inspection takes place. CSO notes lateral connection, debris, flow direction, size of pipe, and the qualitative condition of the pipe. CSO records job information as work takes place in the field using laptop computers and uploads the information to the main database at the CSO office.

CSO removes FOG from the sewer collection system. CSO also inspects pipe segments to identify problem areas and responds to service calls due to blockages and overflows. CSO has the most direct interaction with grease in the system and provides valuable information for FOG control from their on-site experiences. CSO sets cleaning priorities based on pipe inspections and SSO incidence. CSO communicates the location and status of problem areas with the EC workgroup to help set pretreatment device inspection priorities.

New and upgraded pipes are placed on a seven-year cleaning frequency. If inspections reveal problems with a pipe segment such as grease accumulation, cracks, leaks, or blockages (e.g., root), the cleaning frequency is increased as necessary. For FOG impacted pipes, the cleaning frequency is adjusted over time as field crews provide reports on current grease conditions in the pipe.

A hot spot evaluation program is implemented by Central San to understand the causes of FOG accumulation in pipe segments that have a very frequent cleaning cycle. The program relies on the use of CCTV to evaluate FSE sources, pipe cleaning effectiveness, and impacts due to structural problems (e.g., sags and off-set joints). The findings of this program are used to prioritize operational responses and capital project schedules to optimize the costs associated with managing the impacts of FOG on Central San's collection system.

Central San uses Geoportal for management of geographical data. Geoportal contains maps of pipelines and structures within the service area. Parcels and pipe segments can be selected to access supplementary information including information such as permit and maintenance history.

WDR ITEM G:
SOURCE CONTROL PROGRAM MEASURES

FSEs are inspected on a regular basis to determine if they are employing proper BMPs to control grease sources, if a grease pretreatment device is needed, and if they are properly maintaining a grease pretreatment device that is already in service.

Inspection sites are prioritized using the following criteria:

- Complaint investigations
- New facilities in need of an initial compliance inspection
- Facilities with recorded violations of Title 10
- Facilities within an area defined by CSO as problematic due to FOG accumulation
- Routine cycling of FSEs to assess compliance with standards

To determine the proper installation of a grease interceptor, Central San will perform a construction inspection. Construction inspections are done either by Central San's Construction Inspectors or the cities' building inspectors. Because Central San does not have jurisdiction over the plumbing inside a facility (Title 10 provides authority to require installation and maintenance of a grease removal device), cities' building departments are responsible for inspection of the installation of grease traps. EC staff follows up with the city, county building department, or the FSE to verify that a required grease trap was installed.

EC staff performs more than 1,200 sewer and/or storm water compliance inspections annually. These inspections include FSEs and other commercial facilities to ensure compliance with ordinances and proper operation to protect discharge quality. Compliance inspections at FSEs involve:

- Recording the number of fixtures in the facility
- Assessing the use of kitchen BMPs to control FOG discharges
- Assessing the need for grease trap or interceptor at FSEs that don't currently have a unit
- Checking the condition of the grease trap or interceptor
- Noting dates of grease interceptor/trap cleaning, means of grease disposal, and how oil is recycled when applicable

EC maintains a database of FSEs within the service area. The database contains records of inspection, warning notices, notices of violation, and service call data. In addition, files are maintained for each FSE inspected by the EC program. The files are maintained by the address of the FSE.

EC designates the number of compliance inspections needed in each city and inspectors choose specific facilities to inspect by referring to a database that contains records of previous inspections. The frequency of inspections depends on a facility's potential for problems and compliance history.

If a facility is found to be in compliance, then the next inspection will be in three to five years depending on the potential to generate FOG wastes. A facility that is out of compliance will be inspected more frequently until EC is satisfied with customer's return to compliance and ability to maintain compliance. Compliance inspections are conducted without notifying the customer in advance so that the inspectors may get an accurate view of normal operating conditions.

SSMP ELEMENT 8:
SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

WDR REQUISITES

D.13. (viii) System Evaluation and Capacity Assurance Plan: *The Enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design for storm or wet weather events. 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 a 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.

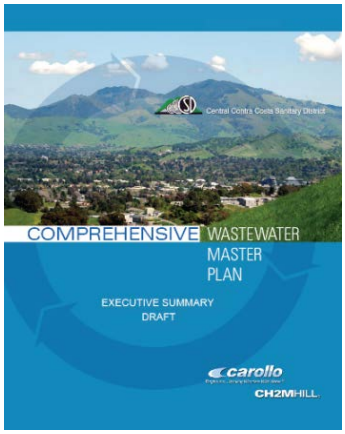
(b) Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria.

(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, inflow and infiltration (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.

CENTRAL SAN COMPLIANCE

Central San undertakes Master Planning every five to ten years to evaluate the present and future needs of the collection system. Collection system assets are evaluated in terms of hydraulics, condition, and performance. Hydraulic modeling is used extensively by Central San to evaluate capacity, for both dry weather flows and wet weather flows.



A GIS-integrated, risk-based asset management and capital planning software platform (InfoWorks®) is used to assist staff in identifying and prioritizing collection system improvement needs. Infrastructure data and CMMS data is inputted into the software platform. Using GIS, staff can analyze the data collectively as a system, or individually, as individual pipe segments. Refer to Element 4 for more information.

Sewer capacity can also be affected by the accumulation of roots, fats, grease, or other debris in pipes. CSO has a goal of cleaning all lines 18 inches and smaller at least once every 84 months. A CMMS program is utilized to track/schedule maintenance. Based on the results of the cleaning, the cleaning schedules/frequencies are adjusted to optimize collection system performance and labor utilization. CMMS data is also utilized in helping to identify possible segments that need replacement. Refer to Element 4 for further information on the Central San's collection system rehabilitation and replacement process.

Central San is commencing another Collection System Master Plan Update in 2022 to continue to optimize infrastructure planning and budgetary needs, and to further enhance the "line-of-sight" between strategic objectives and asset management objectives.

WDR ITEM A:
CAPACITY EVALUATION

HYDRAULIC MODELING & FLOW MONITORING

Central San has used hydraulic modelling for many years to simulate collection system flows for different scenarios. In 2016, Central San enhanced its modeling capabilities by creating a new dynamic model. Large-scale, multi-year flow monitoring and Gauge Adjusted Radar Rainfall (GARR) data was used to calibrate the model and provide insight into rainfall dependent inflow and infiltration (RDI/I) in Central San's service area.

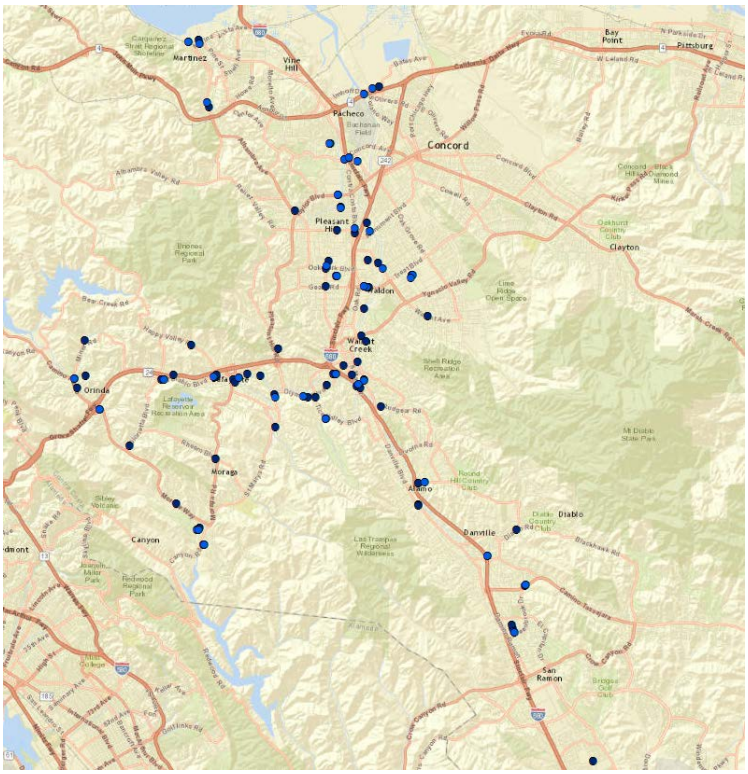


Figure 8.1 2015-2016 Flow Monitoring Locations

The model estimates diurnal dry weather and peak wet weather flows for the design storm event under current and projected growth scenarios. Growth scenarios incorporate projections from the Association of Bay Area Government (ABAG) regional planning agency for the nine-county San Francisco Bay Area.

The new hydraulic model covers approximately 290 miles of pipe, which includes:

- All pipes included in the Master Plan model network
- All other pipes identified as 10 inches in diameter or larger
- Pipes smaller than 10 inches that are downstream of pipes 10 inches or larger

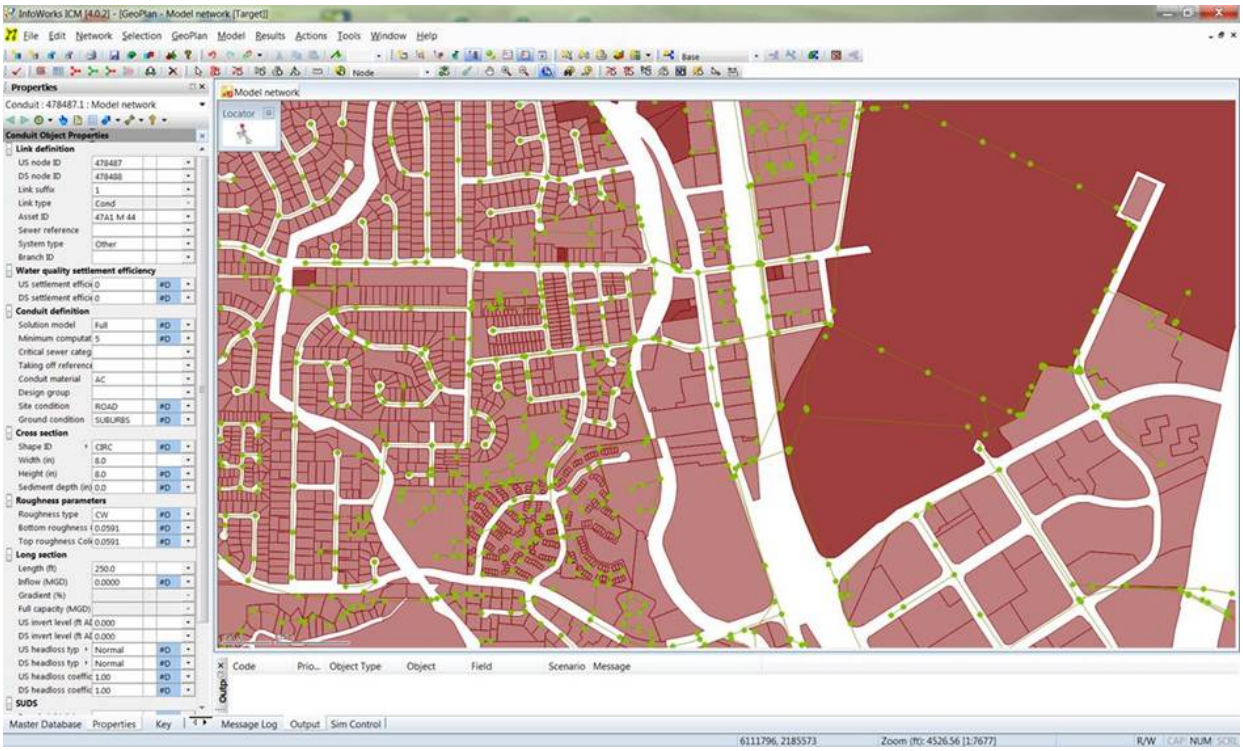


Figure 8.2 Hydraulic Model Screenshot

Central San's new model will continue to be updated on a regular basis, and further developed to include smaller diameter pipes and to account for changes in future growth projections and land use. Central San's small diameter pipe hydraulic evaluation toll is used for pipes less than 10 inches diameter.

WDR ITEM B:
DESIGN CRITERIA

Central San uses a 10–year recurrence frequency storm event as the basis for design flow estimates. Design storm rainfall pattern is based on a large historical storm that had a significant impact on the collection system: the December 30-31, 2005 rainfall event. The spatial variation across the service area for the design event is based on historical mean annual precipitation.

The December 30-31 storm was approximately 24 hours in duration, with rainfall increasing gradually up to a high peak-hour intensity, then receding in intensity toward the end of the storm.

Timing of peak RDI/I was adjusted to coincide with peak dry weather flows (PDWF) to ensure the model was conservative and ensure the design peak wet weather flows (PWWF) will always be greater than PDWF.

Central San generates base wastewater flow (BWF) on calibrated residential unit flow factors and non-residential flows taken from Central San's SunGard database.

Groundwater infiltration (GWI) response parameters and RDI/I response parameters are based on 2015-2016 flow monitoring data used for model calibration.

WDR ITEM C:
CAPACITY ENHANCEMENT MEASURES

OVERVIEW

Aside from the north Concord system, Central San's Collection System has sufficient capacity for existing and future dry weather flows, including peak daily flows. Capacity improvements are only required for correcting wet weather design event capacity deficiencies.

Central San Master Planning typically occurs on a five- to ten-year cycle, and identifies current and projected capacity needs across its service area. Most recently, as part of the CWMP, the capacity of the trunk sewer system (mostly pipes of 10-inch diameter and larger) was analyzed for a 10-year design PWWF event using the new hydraulic model.

Approximately seven miles of sewer pipes have been determined to be capacity deficient. Capacity deficiencies are triggered when the model indicates surcharging will occur in manholes within five feet of the ground surface. Replacement sewers to increase capacity are sized to accommodate the 10-year event and limit water depths in pipes to Central San's design standards. Refer to Element 5 for more information. In addition, a 20-year event was simulated in the model to confirm there would be no predicted overflows in the improved system after the addition of the larger replacement or relief sewers.

The model also confirmed that the capacity of the 10 largest pumping stations is adequate for a 10-year design event, with exception of one pumping station which may require expansion when projected future flows are realized.

PROJECT PRIORITIZATION

Pipes identified for upsizing or hydraulic relief are prioritized by model-estimated SSO volume under design storm event conditions, as well as the proximity to and relative elevation of the nearest water body or creek.

CAPITAL PLANNING

Central San's Capital Planning process uses Master Planning technical reports together with other planning documents and studies to support the generation of the CIP and the CIB. Central San staff then prioritizes the Capital Improvement needs while ensuring congruency to Central San's Strategic Plan.

Central San's 2017 CWMP recommended capacity improvement projects designed to provide sewer system capacity for existing and future development. The CIP includes 20 gravity sewer capacity project areas, totaling approximately 19,000 feet of collection system piping. The estimated capital cost of the capacity improvement projects is approximately $14 million.

Capacity improvements include either replacing existing trunk sewers or adding new trunk sewers to convey PWWF from the design storm event.

R&R improvements include improvements to existing sewers or pumping stations to extend their useful lives, repair structural deficiencies, and improve performance to provide adequate peak hydraulic capacity.

Planned improvements include sewer improvements, pumping station improvements, and projects to meet regulatory requirements Central San intends to complete within the planning period.

Annual improvements include estimated annual project costs Central San identified as annual projects that maintain the collection system throughout the planning period.

Refer to Element 4 – O&M Program, WDR Item C, for information on Central San's Capital Planning process and sources of funding for the CIP and CIB.

PROJECT DEVELOPMENT

Capacity related projects are developed during the Master Planning process. Preliminary upsizing and relief project corridors are determined by running alternative scenarios in the hydraulic model with upsized pipes and/or adding relief sewers. Projects are further refined during project pre-design to ensure constructability and long-term operation and maintenance needs are addressed. Any pipe size or alignment changes made during the design process are analyzed in the model to ensure hydraulic design criteria are satisfied.

DESIGN AND CONSTRUCTION

Central San projects, also known as Capital Projects, are construction or rehabilitation projects on Central San-owned facilities. These projects are managed by Central San staff and funded by Central San.

Figure 8.3 Sewer Construction

Figure 8.4 Capacity Enhancement Process

Refer to Element 5 – Design Performance Provisions, WDR Item A and B, for information on Central San's Design and Construction Process for Capital Projects.

WDR ITEM D:
CAPACITY ENHANCEMENT SCHEDULE

Capacity related projects are phased according to simulated SSO predictions using Central San design event criteria with future flow predictions. Refer to Table 8.1 for the current schedule and estimated budget allocation for the identified capacity improvement projects.

PROGRAM SCHEDULE AND FUNDING

Based on analysis of historical SSO data and InfoMaster® projections, Central San's current collection system priorities are focused towards replacing small diameter vitrified clay pipe (VCP). Criteria for selection of these pipes are presented in Element 4.

Timing and budget estimates for all collection system projects are subject to change, due to potential additional information becoming available that may influence the need and scope of each project, such as new condition assessment data and/or flow monitoring data, as well as potential changes to Collection

System infrastructure priorities. A schedule and budget estimate for Central San capacity improvement projects is provided below in Table 8.1.

Table 8.1 Capacity Project Schedule and Funding

Project ID	Scheduled	Estimated Allocation*
Gravity System		
LAF-3	2020-2022	$480,000
MOR-1	2020-2022	$670,000
MAR-2	2020-2022	$650,000
WCK-3	2020-2022	$2,100,000
LAF-4	2023-2025	$1,900,000
PLH-2	2023-2025	$1,300,000
WCK-1	2024-2026	$1,150,000
WCK-5	2024-2026	$760,000
MAR-1	2025-2027	$780,000
ORD-2	2025-2027	$520,000
LAF-2	2025-2027	$550,000
MOR-2	2028-2030	$240,000
ORD-1	2029-2031	$760,000
LAF-1	2030-2032	$170,000
LAF-5	2031-2033	$110,000
WCK-2	2032-2034	$190,000
WCK-4	2033-2035	$480,000
PLH-1	2034-2036	$10,000
PLH-3	2034-2036	$90,000
PLH-4	2035-2037	$1,200,000
*Costs are present value, developed in Central San's 2017 CWMP		

BASIS OF COST ESTIMATES

Cost estimates were prepared to guide project evaluation and implementation and establish CIP budgets. Cost estimates were developed from several sources with bid tabulations, cost curves, and unit costs obtained from previous studies. Actual project costs will depend on labor and material costs at the time of bidding, competitive market conditions, the final project scope, and detailed utility and topography surveys.

ADDITIONAL INFORMATION

Refer to Element 4 and centralsan.org for additional information on the CIP.

SSMP ELEMENT 9:
MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

WDR REQUISITES

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

(a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;

(b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;

(c) Assess the success of the preventative maintenance program;

(d) Update program elements, as appropriate, based on monitoring or performance evaluations; and

(e) Identify and illustrate SSO trends, including frequency, location, and volume.

CENTRAL SAN COMPLIANCE

GENERAL

The Planning and Applied Research workgroup, within the Engineering and Technical Services Department, is responsible for updating and reviewing the SSMP. Engineering staff have ongoing communications with CSO staff to review the SSMP effectiveness and identify areas of improvement and change.

Central San has an ongoing commitment to ensure staff are kept well-informed with changes in the regulatory environment and the latest developments in the wastewater industry. Central San staff are actively engaged in professional industry organizations, including CWEA, BACWA, CASA, and WEF. In addition to Central San's continuous improvement approach to maintaining the collection system, the performance of the collection system is presented annually to Central San's Board of Directors.

Central San's new Capital Planning software tool (InfoAsset Planner) is periodically updated with the latest CMMS, CCTV, and hydraulic data to support proactive decision making and objective prioritization of Capital Project needs.

Meetings and workshops with all pertinent staff are undertaken to revise the SSMP as necessary and to obtain consensus on those changes. External review by a consultant or another wastewater agency could occur if staff deems necessary or helpful.

WDR ITEM A:
MAINTAIN RELEVANT INFORMATION TO PRIORITIZE SSMP ACTIVITIES

APPROACH

CSO Supervisors meet bi-monthly to:

- Review operational performance of the collection system, including QA/QC results
- Plan ahead for coordination with construction projects or other anticipated field activities
- To debrief any SSO and/or stoppages, incidences, including causes and mitigation
- Prioritize work

Pertinent metrics associated with the performance of the collection system are collated and posted at CSO on a monthly basis to identify trends and overall performance of the collection system. These metrics are also presented and discussed during the crew's monthly meetings, which all CSO attend.

AVAILABLE DATA

Central San tracks the following metrics on a monthly and annual basis:

- Number of overflows
- Cause of overflows
- Volume of overflows by SWRCB category
- Location of overflows
- Amount of overflow liquid recovered
- Pipe size and pipe material
- Number of overflows per 100 miles
- Miles of pipe cleaned
- Miles of pipe CCTV'd
- Number of QA/QC checks completed on cleaned pipe
- QA/QC pass rate for cleaned pipe
- Number of spot repairs completed
- Number of work orders completed
- Number of Underground Service Alerts completed
- Number of customer satisfaction surveys completed for emergency calls
- Average customer service rating
- Average response time to overflows

In addition, Central San participates in the SWRCB's online self-monitoring and reporting system, commonly referred to as CIWQS. This online data platform tracks information about collection system performance for agencies within the state of California.

WDR ITEM B:
MONITOR IMPLEMENTATION AND MEASURE EFFECTIVENESS OF EACH ELEMENT OF THE SSMP

APPROACH

Central San has been monitoring the effectiveness of how it manages its collection system infrastructure for decades. Central San continually reviews and optimizes how it manages the infrastructure.

Table 9.1 below summarizes the performance indicators Central San uses for tracking the effectiveness of each of its SSMP Elements.

Table 9.1 Performance Indicator Summary

SSMP Element	Summary of Element Purpose	Performance Indicator for Tracking Effectiveness
Goals	Establish priorities of Enrollee and provide focus for Enrollee staff	Annual review of goals based upon results of performance evaluations
Organization	Document organization of Enrollee staff and chain of command/communication for SSO response	Review of Organization Chart and all contact information, making any changes identified
Legal Authority	Ensure the Enrollee has sufficient legal authority to properly maintain and protect the integrity of the system	Annual review of codes and/or ordinances for revisions, including schedule for identified updates
Operations and Maintenance Program	Minimize blockages and SSOs by properly operating and maintaining the system	• Total number and volume of SSOs • Number of repeat SSOs (from same location as any previous SSO) • Total volume spilled • Total amount recovered • Total amount estimated to reach surface waters • Percent reaching surface water • Number of pipe failures • Total length of pipe CCTV'd • Total length of pipe cleaned • Total number of spot repairs • Total length of pipe repaired or replaced
Design & Performance Provisions	Ensure new facilities are properly designed and constructed	Annual review of new technologies and materials for collection systems assets
Overflow Emergency Response Plan (OERP)	Provide timely and effective response to SSO emergencies and comply with regulatory reporting requirements	• Average response time from call to arrival • Percent of total SSO volume contained or returned to sewer
Fats, Oils & Grease (FOG) Control Program	Minimize blockages and overflows due to FOG	• Number of blockages due to FOG • Number of SSOs due to FOG • Number of FOG-producing facilities inspected

Table 9.1 continued

SSMP Element	Summary of Element Purpose	Performance Indicator for Tracking Effectiveness
System Evaluation & Capacity Assurance Plan	Evaluate portions of sewer system that are capacity deficient and implement measures to mitigate deficiencies	Periodic large-scale flow monitoring and system capacity analysis
Monitoring, Measurement & Program Modifications	Evaluate effectiveness of SSMP, keep SSMP up-to-date, and identify necessary changes to SSMP Elements	• Prepare and update performance results in Elements 4, 6 & 7 • Review and update callout forms as needed • Conduct annual review of CIWQS data
Program Audits	Formally identify SSMP effectiveness, limitations, and necessary changes on an annual basis	Date of completion of last annual audit
Communication Program	Communicate with the public and satellite agencies	Ongoing review of public outreach activities Ongoing review of communication and collaboration with satellite and neighboring agencies

WDR ITEM C:
ASSESS SUCCESS OF PREVENTATIVE MAINTENANCE PROGRAM

OVERVIEW

Central San's continued success in reducing SSOs is best captured in Figure 9.1 below, which illustrates the annual SSO rate for the past 18 years. The figure illustrates the significant success Central San achieved in reducing SSOs in the early years of the new millennium, due to substantial investment in sewer renovation projects. Following this success is a trend of diminishing returns, even though Central San has continued to improve the practice of how it manages the collection system infrastructure and continues to implement new tools and initiatives. This point of diminishing returns is characteristic of managing any engineered asset and is not unlike the diminishing returns on investment for Water Resource Recovery Facilities, in terms of water quality improvement per dollar invested. That aside, Central San is committed to significantly increasing its investment in sewer renovation projects in the coming years to ensure its SSO trends continue to diminish. Please refer to Element 4 for more information.

Table 9.2 Annual SSO Statistics

	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021
Number of Dry Weather SSO's (occurring May - Oct)	12	15	11	12	12
Number of Wet Weather SSO's (occurring Nov - April)	26	13	11	12	14
Total Number of SSO's	38	28	22	24	26
Number of SSO's per 100 miles of sewer	2.5	1.85	1.43	1.56	1.69
Number of SSO's <100 gallons	25	20	8	14	15
Number of SSO's 100 to 999 gallons	9	7	12	5	10
Number of SSO's 1,000 to 9,999 gallons	2	1	2	3	1
Number of SSO's > 10,000 gallons	2	0	0	2	0
Total Volume of SSO's (1,000 gallons)	330.3	5.87	12.95	49.09	6.81

Table 9.2 Continued

Total Volume Recovered (1,000 gallons)	1.6	2.94	2.06	23.65	2.33
Net Volume of SSO's (total minus recovered - 1,000 gallons)	328.7	2.93	10.89	25.44	4.48
% Volume not recovered	99.5%	49.9%	84.1%	51.8%	65.8%
SSO's caused by:					
Roots	26	14	14	18	23
Grease	2	3	3	3	1
Debris	0	0	0	0	0
Pipe Failure	0	1	1	0	0
Pumping Station Failure	0	0	0	0	1
Capacity - limited pipe segments, no debris	0	0	0	0	0
Other	10	4	4	3	1
Number of locations with more than one SSO in the past year	0	0	0	0	0
Average Response Time (minutes) - during business hours	36.5	32	29	32	28.5
Average Response Time (minutes) - after business hours	40.75	33	36	33	33

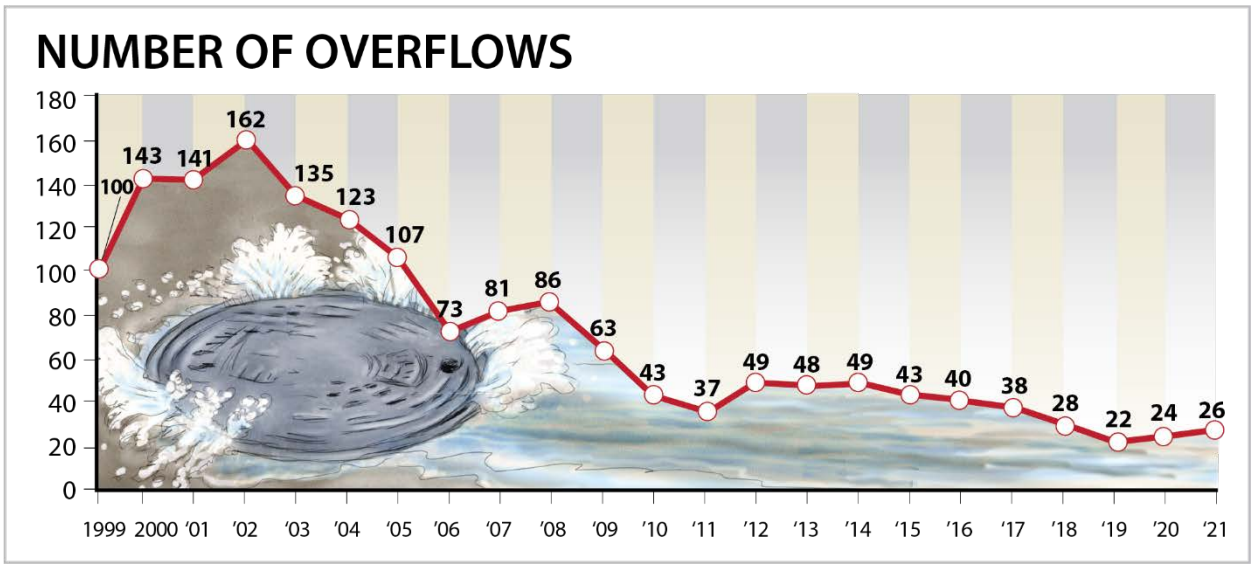


Figure 9.1 Central San's Annual SSO Trends

STATEWIDE AND REGIONAL COMPARISON

Central San's performance compares very favorably to the state and our region (Region 2), both in terms of SSOs per 100 miles of sewer owned, and the average volume spilt per SSO. Refer to Table 9.2 below for calendar year 2016.

Table 9.3 Comparative Data from CIWQS - Calendar Years 2019-2021

Comparative Data from CIWQS - Calendar Year 2019

	Statewide	Region 2	Central San
Number of Overflows	2,989	883	22
Total Volume - Gallons	16,610,619	7,897,488	12,947
Overflows per 100 miles	3.87	5.69	1.43
Average Volume per SSO - Gallons	5,557	8,943	588

Comparative Data from CIWQS - Calendar Year 2020

	Statewide	Region 2	Central San
Number of Overflows	2,513	716	24
Total Volume - Gallons	20,773,865	1,217,746	49,089
Overflows per 100 miles	3.09	3.51	1.56
Average Volume per SSO - Gallons	8,267	1,701	2,045

Comparative Data from CIWQS - Calendar Year 2021

	Statewide	Region 2	Central San
Number of Overflows	2,847	838	26
Total Volume - Gallons	30,237,266	15,891,067	6,811
Overflows per 100 miles	3.90	5.29	1.69
Average Volume per SSO - Gallons	10,621	18,963	262

WDR ITEM D:
UPDATE PROGRAM ELEMENTS BASED ON MONITORING OR PERFORMANCE EVALUATIONS

APPROACH

In recent years, Central San has made significant investments to further optimize how it manages its infrastructure, identify and plan for future needs to support its Strategic Plan goals, and further reduce the occurrence of SSOs (Table 9.3). Refer to Element 4 for further information on the above initiatives.

Table 9.4 Central San Program Element Updates

Initiative	Element Updated
Comprehensive Wastewater Master Plan	4 – Operations & Maintenance Program 8 – System Evaluation & Capacity Assurance Plan
Tablets for Field Crews	4 – Operations & Maintenance Program
Acoustic Rapid Sewer Inspection Equipment	4 – Operations & Maintenance Program
New Enterprise GIS System	4 – Operations & Maintenance Program
New CMMS Software System	4 – Operations & Maintenance Program
New CCTV Software System	4 – Operations & Maintenance Program
New Analytical Capital Planning Software System	4 – Operations & Maintenance Program
Standard Specifications Amendment	5 – Design & Performance Provisions
Sanitary Sewer Overflow and Backup Response Plan Update	6 – Overflow Emergency Response Plan
Large-scale Sewer Flow Monitoring	8 – System Evaluation & Capacity Assurance Plan
New Hydraulically Dynamic Sewer Model	8 – System Evaluation & Capacity Assurance Plan

WDR ITEM E:
IDENTIFY AND ILLUSTRATE SSO TRENDS, INCLUDING FREQUENCY, LOCATION AND VOLUME

APPROACH

To reduce the likelihood of future SSOs, Central San analyses data to identify trends, which are then leveraged to revise cleaning frequencies and strategically plan for Capital Projects. The following charts illustrate trends for various data associated with SSOs.

DATA TRENDS 2017 – 2021

SSOs BY SYSTEM

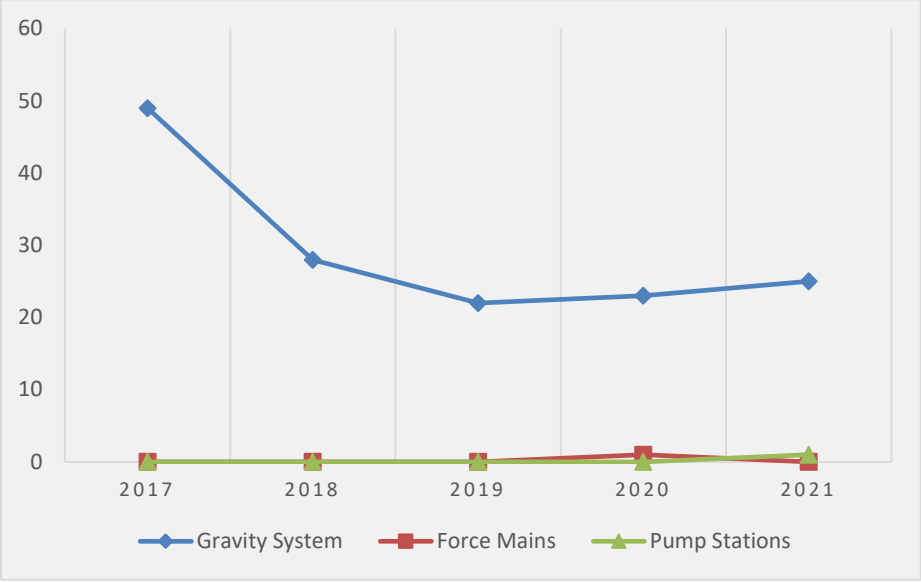


Figure 9.2 SSOs Per Year by System

SSOs BY CAUSE

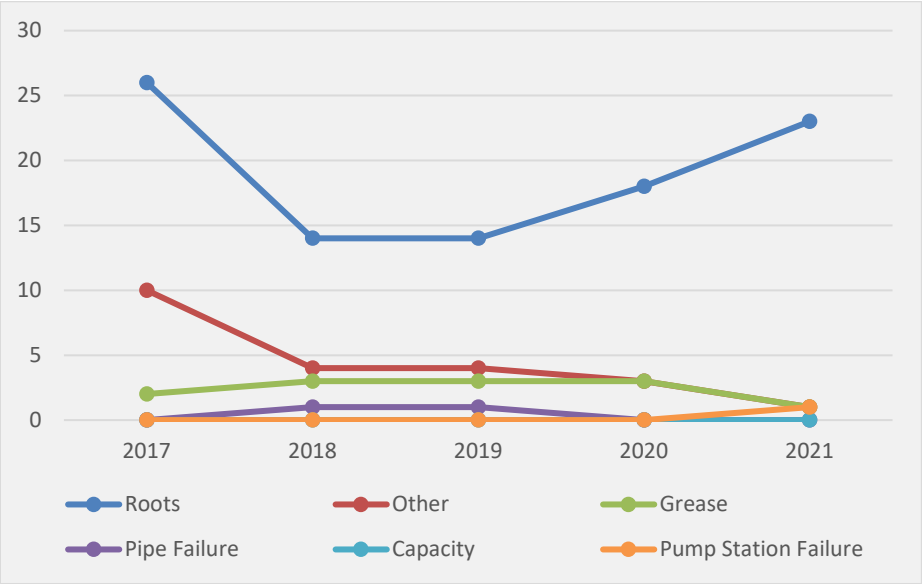


Figure 9.3 SSOs Per Year by Cause

SSOs BY VOLUME

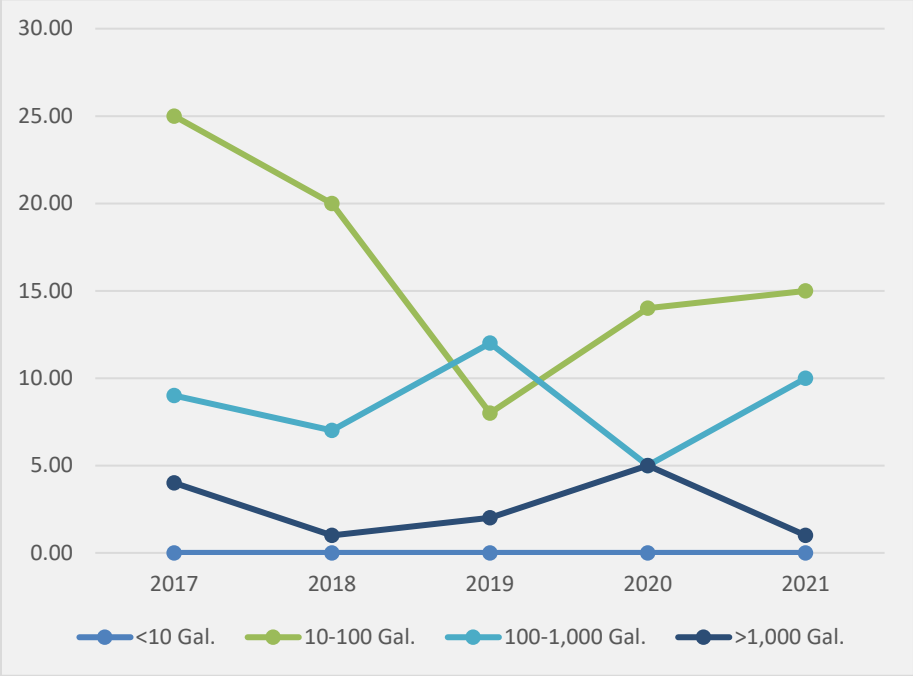


Figure 9.4 SSOs by Volume

SSOs BY LOCATION

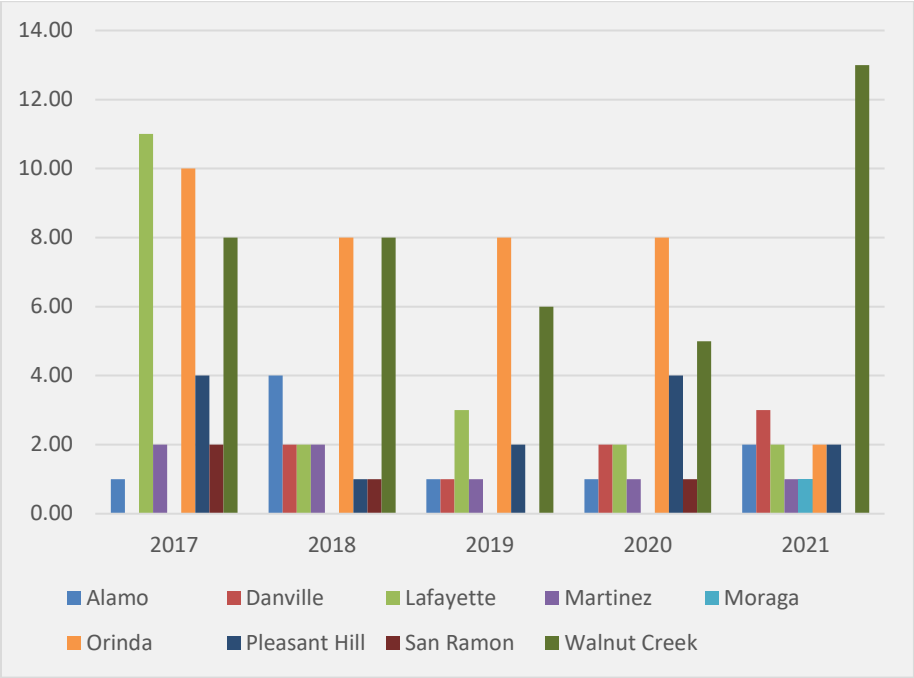


Figure 9.5 SSOs by Location

SSOs BY PIPE MATERIAL

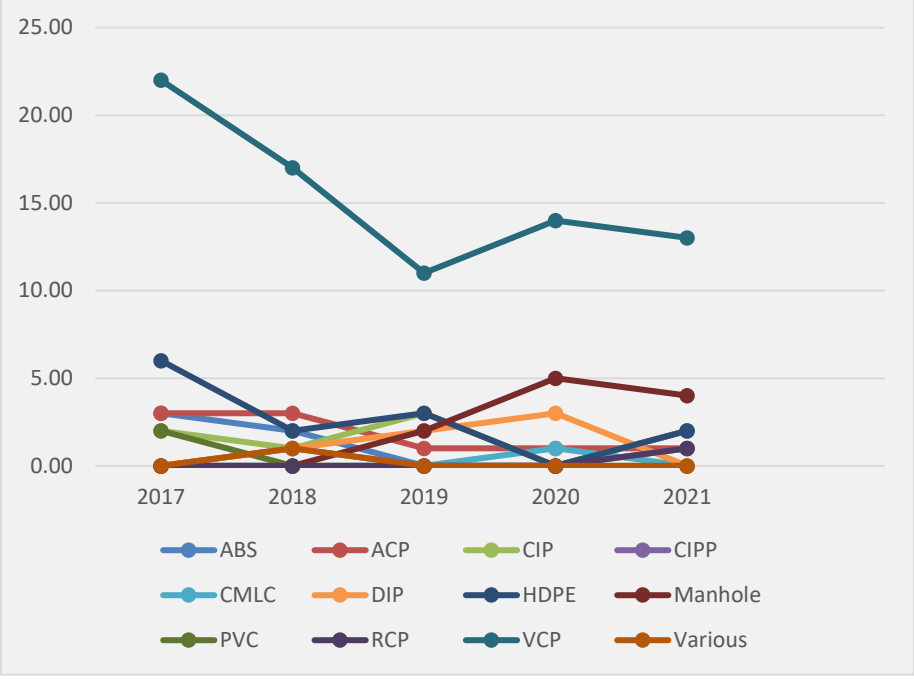


Figure 9.6 SSOs by Pipe Material

SSOs BY PIPE DIAMETER

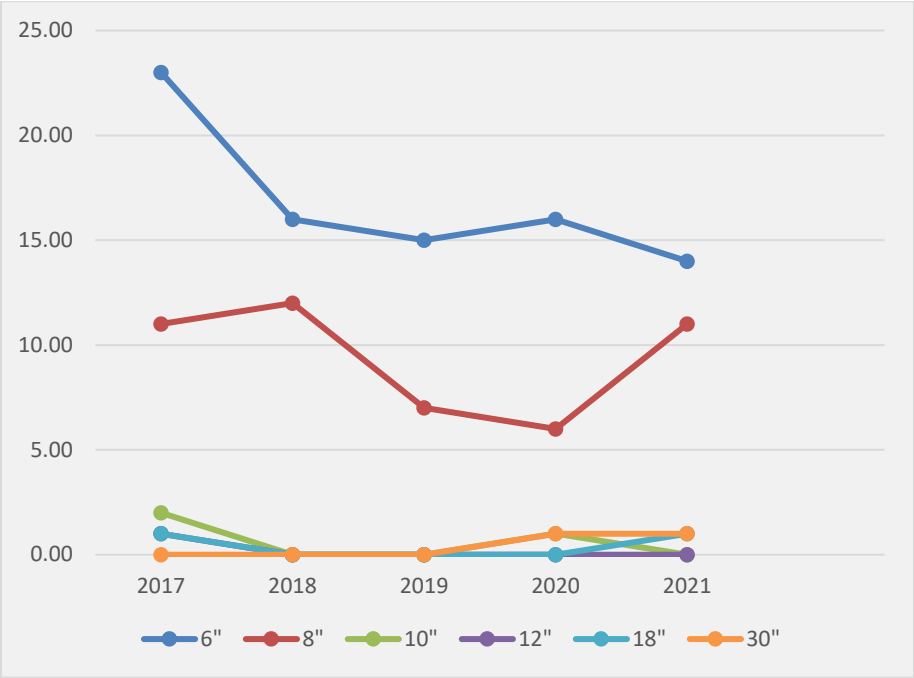


Figure 9.7 SSOs by Pipe Diameter

DATA COMMENTARY

GENERAL

Overall, Central San continues to consistently reduce the number of SSOs that occur within its service area. During the last five years, SSOs have typically been caused by roots. Moreover, most SSOs occur on six- and eight-inch diameter VCP, within the communities of Lafayette, Orinda, and Walnut Creek.

In alignment with the trends identified in the Central San data above, the pipe renovation work completed within the last five years was primarily focused on six- and eight-inch diameter VCPs, and within communities that have the highest SSO rates. In total, over 35 miles of sewer pipe was renovated in the last five years.

Central San specifications no longer permit the installation of six-inch gravity pipes. This is largely due to the maintenance issues associated with small diameter pipes and their susceptibility to blockage. For new public sewers, Central San engineers carefully specify pipe materials and construction techniques to optimize the long-term performance of the sewers. Moreover, Central San engineers carefully design alignments to minimize future maintenance challenges wherever possible. Capital Projects are developed as a team effort between Engineering and CSO staff.

Central San's robust FOG Inspection program continues to ensure that FOG-related SSOs are kept to a minimum.

STRATEGIC SSO REDUCTION APPROACH

STRATEGY TO FURTHER REDUCE SSOs

Central San uses a multi-faceted approach to reduce SSOs continuously. This approach leverages teamwork and technology.

Teamwork

O&M staff debriefs after every SSO stoppage to review causes and, if appropriate, revise cleaning frequencies. When pipe repair or replacement is needed, it is either undertaken by CSO staff or undertaken with a Central San contractor, depending on the scope and urgency of the work. Central San engineers design and manage the construction of collection system renovation projects. This expertise is leveraged to ensure the best engineering solution is provided for each situation.

Technology

Central San has been an early implementer of numerous collection system technologies over the years, including:

- Sonar Rapid Assessment Tools
- Remote Manhole Surcharge Monitoring
- H_2S Monitoring and Controls
- CCTV Tools, Software, and Scoring Methodology
- Tablets and Smart Phones
- Trenchless Construction Techniques
- Innovative Cleaning Methods for Easements
- Analytical Capital Planning Software

WAY FORWARD

Appreciating the primary cause of SSOs for Central San is roots in six- and eight-inch VCP, Central San is undertaking the following initiatives in the coming years:

- Continue rapid assessment tools to reduce set up times for pipe inspections, thus optimizing staff time in the field;
- Accelerating near-term renovation schedules for six- and eight-inch VCP;
- Using analytical Capital Planning software to objectively identify candidate pipes using a risk-based assessment; and
- Piloting root foaming technology.

SSMP ELEMENT 10:
SSMP PROGRAM AUDITS

WDR REQUISITES

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

CENTRAL SAN COMPLIANCE

GENERAL

The purpose of the audit is to evaluate the effectiveness of Central San's SSMP. The audit consists of an audit worksheet, provided in the next section of this document. Data trends are reviewed to determine the effectiveness of the SSMP and collection system programs. Additions or improvements to collection system operations are documented, as well as any planned additions or improvements.

WDR ITEM:
ANNUAL AUDIT TEMPLATE

Table 10.1 Central San SSMP Annual Audit Report

Central Contra Costa Sanitary District
Sewer System Management Plan Annual Audit Report
Date:

The purpose of the SSMP Audit is to evaluate the effectiveness of the Central San's (District's) SSMP and to identify any needed improvements to assure the effective operation of the sanitary sewer collection system to achieve the goals of the SSMP

Audit Team: *Paul Seitz, P.E. – Collection System Operations Division Manager*
Jason De Groot, P.E. – Collection System Operations Senior Engineer
Steve Sauter – Superintendent Operations and Maintenance

Directions**: Please check** YES **or** NO **for each question. If** NO **is answered for any question, describe the updates/changes needed and the timeline to complete those changes.**

		YES	NO
ELEMENT 1 - GOALS			
A.	Have there been any changes to the system that require updates to the System Overview summary in the Introduction?	☐	☐
B.	Is Figure 1.1, Service Area and Geographic Features up-to-date?	☐	☐
C.	Have the boundaries of the District's service area changed since the last Audit? If so, describe the changes.	☐	☐
D.	Have there been any changes in the regulations that should be identified and described in the Introduction?	☐	☐
E.	Are the goals stated in Element 1 still appropriate and accurate?	☐	☐
Discussion:			
ELEMENT 2 - ORGANIZATION			
A.	Is the List of District Staff Responsible for SSMP, Table 2.2 current?	☐	☐
B.	Is the Sanitary Sewer Overflow Responder List current?	☐	☐
C.	Is Figure 2.1 of the SSMP, the District Organization Chart, current?	☐	☐
D.	Are the position descriptions an accurate definition of staff responsibilities?	☐	☐
E.	Is the Table for the Chain of Command for Reporting and Responding to SSO's section accurate and up-to-date?	☐	☐

F.	Is the list of LRO officials and data submitters in the CWIQS System current? Are all legally responsible officials and data submitters identified in the SSMP? Have all terminated officials been removed from the CIWQS System on the required timeline as required by the GWDR?	☐	☐
Discussion:			
ELEMENT 3 - LEGAL AUTHORITY			
Does the SSMP contain current references to the District Code and the City of Concord Municipal Code documenting the Districts' legal authority to:			
A.	Prevent illicit discharges?	☐	☐
B.	Require proper design and construction of sewers and connections?	☐	☐
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the District?	☐	☐
D.	Limit discharges of fats, oils, and grease?	☐	☐
E.	Enforce any violation of its sewer ordinances?	☐	☐
F.	Were any changes or modifications made in the past year to District Sewer Ordinances, Regulations, or Standards? If so, please state below.	☐	☐
G.	Are the sewer service charge provisions current and provide the authority for full funding of the sanitary sewer operations?	☐	☐
H.	Has there been documented and regular communications with other agencies such as City of Concord and other cities in the District's service area in the past year? If so, are these meetings and communications documented appropriately?	☐	☐

I.	Are all report forms used during sanitary sewer system cleaning and CCTV inspection current or require changes to mirror current operations?	☐	☐
J.	Have the Annual Pumping Station Inspections been conducted and are necessary improvements scheduled and being implemented?	☐	☐
Discussion:			
ELEMENT 4 - OPERATIONS AND MAINTENANCE PROGRAM			
Collection System Maps			
A.	Does the SSMP reference the current process and procedures for maintaining the District's wastewater collection system maps?	☐	☐
B.	Are the District's collection system maps complete, current, and sufficiently detailed?	☐	☐
C.	Are storm drainage facilities identified on the collection system maps? If not, are SSO responders able to determine locations of storm drainage inlets and pipes for possible discharge to waters of the state?	☐	☐
Prioritized Preventive Maintenance			
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewers?	☐	☐
E.	Based upon information in the Annual SSO Report, are the District's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	☐	☐
Scheduled Inspections and Condition Assessments			
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	☐	☐

G.	Does the SSMP contain a prioritized capital improvement plan for future rehabilitation and replacement of the sanitary sewer system for the next five years? Is it current?	☐	☐
Contingency Equipment and Replacement Inventory			
H.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and documents the procedures for inventory management?	☐	☐
I.	Are contingency and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	☐	☐
Training			
J.	Has all annual training been conducted as required?	☐	☐
Outreach to Plumbers and Building Contractors			
K.	Does the SSMP document current outreach efforts to plumbers and building contractors?	☐	☐
Discussion:			
ELEMENT 5 - DESIGN AND PERFORMANCE PROVISIONS			
A.	Does the SSMP reference current design and construction standards for the installation for new sanitary sewer systems, pumping stations, and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	☐	☐
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines? Have any changes to the standards been implemented since the last audit?	☐	☐
Discussion:			

ELEMENT 6 - OVERFLOW EMERGENCY RESPONSE PLAN			
A.	Does the District's Sanitary Sewer Overflow and Backup Response Plan establish procedures for the emergency response, notification, and reporting of SSOs? Have any changes in past practices been implemented since the last audit? If so, please explain.	☐	☐
B.	Are District staff and contractor personnel appropriately trained and verified on the procedures of the Sanitary Sewer Overflow and Backup Response Plan?	☐	☐
C.	Considering SSO performance data, is the Sanitary Sewer Overflow and Backup Response Plan effective in handling SSOs to safeguard public health and the environment?	☐	☐
D.	Are all SSO and claims reporting forms current or do they require revisions or additions?	☐	☐
E.	Does all SSO event recordkeeping meet the GWDR requirements? Are all SSO event files complete and have they been certified in the CIWQS system?	☐	☐
F.	Is all information in the CIWQS system current and correct? Have periodic reviews of the data been made during the year to assure compliance with GWDR? Have all Technical Report and Water Quality Sampling requirements of the GWDR been uploaded to the CIWQS data management system?	☐	☐
G.	Are all SSO Response Procedure Flow Charts current and have all contact information been checked and certified correct?	☐	☐
H.	Were all large SSOs evaluated for "root cause" and did they identify corrective actions required to assure reductions or elimination of future SSOs? Were post SSO debriefing events held with appropriate staff and all responders?	☐	☐

I.	Were all Technical Reports and Water Quality Monitoring results of SSOs greater than 50,000 gallons submitted to the CIWQS System according to the required timeline?	☐	☐
J.	Were all No Spill Certifications provided as required by the WDR regulations completed and certified in CIWQS? Was the Annual Collection System Questionnaire completed?	☐	☐
K.	Are all SSO records complete and maintained for five-years from the date of the SSO? Have all files older than five years been disposed of according to District records management system and Regional Board requirements or directions?	☐	☐
L.	Is staff properly trained on appropriate methods for spill volume estimation and start time requirements for all SSOs? Has this training been documented appropriately?	☐	☐
Discussion:			
ELEMENT 7 - FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM			
A.	Does the FOG Control Program include efforts to educate the residential customers on proper handling and disposal of FOG?	☐	☐
B.	Does the FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule, and address source control measures to minimize these blockages?	☐	☐
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping, and reporting established in the District's FOG Control Program?	☐	☐
D.	Does the District have sufficient legal authority to implement and enforce the FOG Control Program? Are all enforcements effective and resulting in appropriate compliance with requirements?	☐	☐

E.	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	☐	☐
Discussion:			
ELEMENT 8 - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN			
A.	Does the District's Sanitary Sewer Master Plan evaluate hydraulic deficiencies in the system, establish sufficient design criteria, and recommend both short and long-term capacity enhancement, improvement projects, and schedules?	☐	☐
B.	Does the District's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements, and is the schedule reviewed and updated to reflect current budgetary capabilities and accomplishments?	☐	☐
Discussion:			
ELEMENT 9 - MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?	☐	☐
B.	Is the District able to sufficiently evaluate the effectiveness of the SSMP elements based on relevant information?	☐	☐
Discussion:			
ELEMENT 10 - SSMP PROGRAM AUDITS			
A.	Was the SSMP Audit completed, reviewed, and filed in the Appendix?	☐	☐

B.	Have the collection system performance results been provided to the Board of Directors and the public annually? Are the results available on the District website?	☐	☐
C.	Have the performance results been evaluated for specific changes to meet targeted goals for SSO reduction? Have changes in procedures been implemented to enhance the District sanitary sewer operations?	☐	☐
D.	Has the Change Log been updated with all changes made to the SSMP during the past year?	☐	☐
E.	Do District SSO performance results agree with all CIWQS information?	☐	☐
Discussion:			

ELEMENT 11 - COMMUNICATION PROGRAM			
A.	Does the District effectively communicate with the public and other agencies about the implementation and performance results of the SSMP and continue to address any feedback?	☐	☐
B.	Did the District receive and review the Annual Sewer System Report? Was the annual report uploaded to the District Sewer Section website and added to Appendix B?	☐	☐
C.	Did District staff conduct and document meetings with the City of Concord? Are all agreements current or are changes necessary to these agreements?	☐	☐
Change Log			
A.	Is the SSMP Change Log current and up to date?	☐	☐
Discussion:			

Paul Seitz, P.E. Collection System Operations Division Manager Legally Responsible Official	Date
Jason De Groot, P.E. Senior Engineer	Date
Steve Sauter Superintendent - Operations and Maintenance Legally Responsible Official	Date

SSMP ELEMENT 11:
COMMUNICATION PROGRAM

WDR REQUISITES

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

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

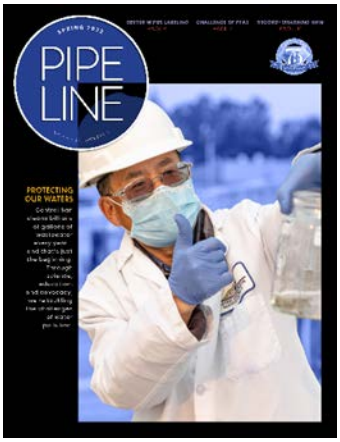
CENTRAL SAN COMPLIANCE

The SSMP is presented to the Central San Board of Directors for approval at a regularly scheduled Board Meeting. The draft SSMP will be available to the public as a part of the agenda on Central San's website (centralsan.org). While the Board considers approval of the SSMP, there will be an opportunity for the public to comment on the document.

Central San is an active member of the communities it serves and has a comprehensive community outreach program. Staff employ a variety of methods to communicate with and provide information to the public. The goal of the program is to increase public awareness, understanding, and support of the vision, mission, goals, and values of Central San. Keeping the public informed, promoting pollution prevention, and encouraging feedback about our activities helps us to more efficiently and effectively manage our wastewater and environmental responsibilities. Elements of our communication program in all departments of Central San include:

PIPELINE CUSTOMER NEWSLETTER

The *Pipeline* is a newsletter published twice a year and mailed to approximately 157,000 households and businesses in our service area. The newsletter describes how Central San protects public health and the environment, how readers can help prevent pollution, and how their sewer service charge fees are spent. Topics regularly include FOG; "flushable" wipes; overflow protection devices; our Household Hazardous Waste Collection Facility; the Pharmaceutical Disposal Program; and infrastructure improvements. The work done by CSO is often highlighted as well as publishing Central San's emergency number to help expedite reporting of an overflow. Along with disseminating information, the newsletter builds support in our communities and maintains open communication with the people Central San serves.

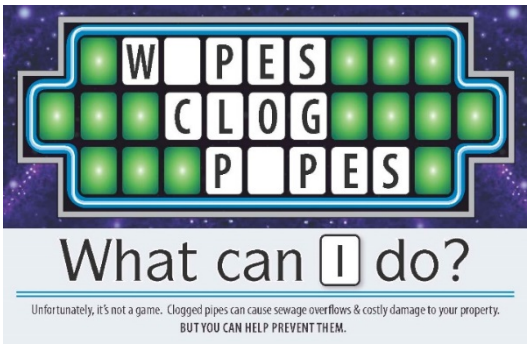


PERMIT COUNTER

The Permit staff are available to answer questions regarding how to connect to Central San's sewer system. The staff help issue permits and educate homeowners, builders, and plumbers on design standards for our collection system and private laterals. Plumbers registered with our permit counter receive updated information after every fee increase or change in design standards. Customers can also find information for ongoing or future projects or make inquiries about their sewer lateral or nearby main at the permit counter.

NON-DISPERSIBLES (FLUSHABLE WIPES)

With the growing problem of sewer line blockages and possible overflows caused by so-called "flushable" wipes, diapers, and cleaners, Central San's Communication Services group has expanded its outreach to the public with activities similar to the FOG program, including *Pipeline* newsletter articles, social media messaging, exhibits at environmental fairs, community events, mailers, brochures, postings at municipal permit counters, and public service announcement (PSA) campaigns on local television channels.



DOOR HANGERS

Door hangers are used to inform residents and businesses when an infrastructure replacement project will be coming to their neighborhood. They include basic information and a phone number to call if they have questions. Door hangers may also be placed where high amounts of grease have been found in the adjacent sewers. These provide information on proper grease handling and disposal.

In addition, CSO staff may use a door hanger to provide information when they have responded to a service call, so the customer knows how Central San responded to their request. Door hangers are also used when crews notice that a home may not have an overflow protection device, instructing the homeowner on the importance of the device and where they can be purchased.

FOG MAILERS

FOG blockages are a leading cause of sewer spills in the United States. Communication staff distribute FOG brochures to large apartment complexes, Chambers of Commerce and municipal permit counters throughout the services area, and areas where grease is known to accumulate. Central San also runs a PSA on proper grease disposal on local television stations leading up to the holiday season.

CONSTRUCTION LIAISON OUTREACH

Outreach begins with a mailed notice of anticipated work anywhere from nine to twelve months in advance of the project. These notices are followed by letters, phone calls, public meetings, and face-to-face meetings in the months prior to the start of the project. Site visits by a Community Affairs Representative and the Project Engineer occur prior to construction to discuss the potential impacts of a project with affected home and business owners. These methods also provide an opportunity for educating customers about Central San's overall activities and mission.

ENVIRONMENTAL COMPLIANCE INSPECTIONS

The Environmental Compliance workgroup also conducts site visits and inspections of businesses for proper grease disposal or required industrial pre-treatment. In addition, they provide plan review for new food service businesses to ensure grease traps and grease interceptors are installed per Central San requirements. Refer to Element 7 for more information.

BOARD MEETINGS AND PUBLIC HEARINGS

We encourage the public to attend all Board meetings and public hearings to provide input on issues important to them.

SOCIAL MEDIA AND WEBSITE

Our website (centralsan.org) provides current, detailed information on a wide variety of topics such as Central San's structure, description of the wastewater treatment process, education programs for children and adults, pollution prevention activities, Green and Integrated Pest Management (IPM) recommendations, current construction projects, employment opportunities, and public notices. Website viewers are encouraged to provide feedback, and a phone number for reporting a sewer spill is posted at the top of the homepage.

Central San also uses social media (Facebook, Twitter, YouTube, and a blog) to share similar information, as well as pollution prevention tips and timely announcements of interest to the community and customers.

MEDIA RELEASES

Media releases about Central San activities are sent to local media outlets in our service area to help keep the public informed about major projects, water quality issues, awards, or other items of interest.

STUDENT EDUCATION PROGRAMS

Central San maintains the most active student programming of any wastewater district in the San Francisco East Bay.

Central San's Pipe Protectors program is presented each year to thousands of elementary school students in grades K-5 throughout Central San's service area. The program includes several 60-minute classroom lessons with various activities that teach how our complex system transports, cleans, and tests our wastewater. The goal of all of our Pipe Protectors lessons is to help students consider what happens to our dirty water after it goes down the drain. The program is designed to leave students with a better understanding that the stuff we put in our water (and down our drains) does not disappear.

Central San also partners with our local water district, Contra Costa Water District, to bring the "Go with the Flow" assembly into elementary schools. This interactive show tells the story of where water comes from and where it goes after usage. Thousands of students each year learn about the sources of their fresh water, how their water is treated before entering their homes, different strategies for conserving water usage, what happens to their dirty water after it goes down the drain, and why flushing wipes and other pollutants are harmful to the sewer system. This focus on a "One Water" message has been a wonderful opportunity to collaborate with the neighboring water agency on local education programming.

The Sewer Science program is presented each year to hundreds of high school students in Central San's service area. It consists of a five-day laboratory experience that integrates biology, chemistry, physics, and math with water quality and pollution prevention concepts. Wrap-up sessions link the lessons from the lab to what Central San does for the community, and how students can take actionable steps to help protect the environment. Water sector career opportunities are also discussed.

Central San is also a major sponsor of the Marine Science Institute's Discovery Voyage Program. This science program targets 5th grade students and takes them aboard a research vessel, the RV Brownlee, which was custom built to provide a safe floating laboratory for students. On this three-and-a-half-hour excursion on the Sacramento-San Joaquin Delta, an annual average of 4,000 students learn about the water in the Delta, its aquatic life, water conservation, the effects of pollution, and the work of wastewater agencies to prevent that pollution. In FY 2020-21, Central San reached over 21,500 students through our various education programs.

CENTRAL SAN ACADEMY

Participants in the Central San Academy learn about almost everything Central San does, including how engineering, chemistry, and technology is used to turn waste into worth by cleaning their community's water and returning it to their customers as recycled water. The curriculum is interactive and informative and includes a tour of the treatment plant, laboratory, recycled water fill station, and household hazardous waste collection facility.

This award-winning program (California Special Districts Association honored Central San with the 2016 Exceptional Public Outreach and Advocacy Award) is offered free of charge to all customers. It is a rare glimpse into how used water gains new life.

ENVIRONMENTAL AND COMMUNITY FAIRS

The Communication Services staff take part in several community fairs and special celebrations such as Earth Day events. A staffed booth helps promote public awareness of wastewater issues, pollution prevention tips, and other topics important to Central San's wastewater conveyance and treatment.

TREATMENT PLANT TOURS

Central San's treatment plant tour program shows employees, students, and members of the public the critical role their wastewater treatment plant provides in the community, particularly as it relates to protecting waterways. Each year, hundreds of people tour the treatment plant.

To maintain our ability to educate customers on how we collect and treat wastewater during the pandemic, we developed a virtual experience. Central San's 75th Anniversary Experience features an interactive 360-degree tour of the wastewater treatment plant, videos, photo galleries, fun facts, and a learning hub with hands-on science activities for kids. You will also find information on how to protect your pipes, safely dispose of household hazardous waste, and get free recycled water for your garden. Additionally, we schedule live events with a guided tour and interactive Q&A session.

SPEAKERS BUREAU

Central San's Speakers Bureau provides speakers at no cost to local organizations. Topics covered range from how the wastewater system works to pollution prevention. The Speakers Bureau is promoted on Central San's website, Pipeline newsletter, press releases, and social media. In FY 2020-21, Central San presented to over 700 attendees.

HOUSEHOLD HAZARDOUS WASTE COLLECTION

Central San's household hazardous waste facility collects over two million pounds of products annually, that may otherwise find their way into the sewer and harm the environment. Residents within Central San's service area can drop off potentially harmful substances for free, such as paints and pesticides, pool chemicals, and cleaning products. Refer to centralsan.org for more information.

TRIBUTARY SYSTEMS

The collection systems for the Cities of Concord and Clayton are tributaries to Central San's collection system. There are regular communications between Central San and each city's management and staff on joint projects and other topics of importance. Central San provides environmental compliance inspections for permitted businesses in Concord and Clayton. Residents from these communities also participate in the Central San's pollution prevention, student education, household hazardous waste, pharmaceutical collection, and FOG programs. Refer to Element 3 – Legal Authority for additional information.

Appendix A – Completed SSMP Audit

SSMP INTERNAL AUDIT REPORT

CENTRAL CONTRA COSTA SANITARY DISTRICT

WDID#: 2SS010105

September 11, 2024

Central Contra Costa Sanitary District (Central San)

Sewer System Management Plan Audit Report

Date: September 9th, 2024

The purpose of the SSMP Audit is to evaluate the effectiveness of the Central San's (District's) SSMP and to identify any needed improvements to assure the effective operation of the sanitary sewer collection system to achieve the goals of the SSMP

Audit Team: *Paul Seitz, P.E. – Collection System Operations Division Manager*
Jason De Groot, P.E. – Collection System Operations Senior Engineer
Steve Sauter – Field Operations Superintendent

Directions: **Please check** YES **or** NO **for each question. If** NO **is answered for any question, describe the updates/changes needed and the timeline to complete those changes.**

		YES	NO
ELEMENT 1 - GOALS			
A.	Have there been any changes to the system that require updates to the System Overview summary in the Introduction? • There have not been any significant changes to the System Overview Summary. • The System Overview Summary is on pages 1-1 thru 1-5 and is up to date. • *The four tables listed below are included in the SSMP. These tables are up to date.* o *Table 1.1 Service Area Infrastructure Estimates* o *Table 1.2 Inventory of Sewer Lines by Size* o *Table 1.3 Inventory of Sewer Lines by Material Type* o *Table 1.4 Inventory of Sewer Line by Pipe Age*	☐	☒
B.	Is Figure 1.1, Service Area and Geographic Features up to date? • Yes, shown on page 1-2 – Service Area map is up to date	☒	☐
C.	Have the boundaries of the District's service area changed since the last Audit? If so, describe the changes. • No, shown on page 1-2 – The service area has not changed	☐	☒
D.	Have there been any changes in the regulations that should be identified and described in the Introduction? o No, the State has adopted new Statewide Waste Discharge Requirements (WDR). The WDR does not require any changes to the current Sewer System Management Plan but will require an updated SSMP in May 2025.	☐	☒

E.	Are the goals stated in Element 1 still appropriate and accurate? • Yes, shown on page 1-6 –The goals shown are still appropriate and accurate	☒	☐

Discussion:

Element 1 – Goals, provides accurate and up to date information for the District and its collection system. The goals for the District are to provide adequate capacity to convey peak flows, minimize the frequency of sanitary sewer spills, and mitigate the impact of sanitary sewer spills. The System Overview Summary accurately shows that the District, as well as the Collections System Operations Department, are committed to properly managing, operating, and maintaining the collection system to prevent and mitigate SSS's

In addition, as mentioned above, the SWQCB has adopted new Waste Discharge Requirements that will require a revised Sewer System Management Plan in May 2025. In the updated SSMP, it will include the schedules for governing board adoption, auditing requirements, and incorporation of activities for the prevention of sewer spills.

ELEMENT 2 – ORGANIZATION			
A.	Is the List of District Staff Responsible for SSMP, Table 2.2 current? • No, shown on page 2-2 – Maintenance Supervisor Tifton Gantt has retired and Justin Covington has been promoted to the Position. This change will be made as part of this audit.	☐	☒
B.	Is the Sanitary Sewer Spill flow Responder List current? • No, Maintenance Supervisor Tifton Gantt has retired and Justin Covington has been promoted to the Position.. The list is shown on page 2-5, Table 2.3 This change will be made as part of this audit.	☐	☒
C.	Is Figure 2.1 of the SSMP, the District Organization Chart, current? • No, The Director of Operations has been changed to Deputy General Manager-Operations and Pump Stations has been moved under CSO Division Manager. This change will be made as part of this audit. • Names of employees are not shown on organizational chart, only number of employees in each section. Due to training purposes staff regularly rotates through the different sections.	☐	☒
D.	Are the position descriptions an accurate definition of staff responsibilities? • Yes, shown on page 2-3 – Position descriptions are accurate, however, the title of Director of Operations has been changed to Deputy General Manager-Operations. Pumping Stations is no longer under Plant Maintenance Division Manager. This change will be made as part of this audit.	☒	☐
E.	Is the Table for the Chain of Command for Reporting SSS's section accurate and up to date? • No, Tifton Gantt has retired and Justin Covington has been promoted. It is shown on page 2-5, Table 2.4 This change will be made as part of this audit.	☐	☒

F.	Is the list of LRO officials and data submitters in the CWIQS System current? Are all legally responsible officials and data submitters identified in the SSMP? Have all terminated officials been removed from the CIWQS System on the required timeline as required by the GWDR. • Yes, the LRO's and data submitters in CIWQS are accurate and up to date. • No, the list of LRO's and data submitters identified in the SSMP have changed. This change will be made as part of this audit. • Yes, the LRO's that are no longer employed with the District have a "Relationship End Date" in CIWQS.	☐	☒

Discussion:

Element 2 – Organization, accurately reflects the current information for the District. The locations for key tables and figures are:

- Legally Responsible Officials – page 2-1, Table 2.1
- Staff Contacts Responsible for SSMP – page 2-2, Table 2.2
- Sewer Spill Responder List – page 2-5, Table 2.3
- Chain of Command for Reporting – page 2-5, Table 2.4
- CSO Organizational Chart – page 2-6, Figure 2.1

With the adoption of the new Waste Discharge Requirements, the LRO's and data submitters have changed. This change will be made as part of this audit.

ELEMENT 3 – LEGAL AUTHORITY

Does the SSMP contain current references to the District Code documenting the Districts' legal authority to:

A.	Prevent illicit discharges? • Yes, shown on pages 3-3 thru 3-5	☒	☐
B.	Require proper design and construction of sewers and connections • Yes, shown on page 3-5	☒	☐
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the District? • Yes, shown on page 3-6. The District does not own or maintain any portion of the private lateral including the connection to the main. • Access to the public main and appurtenances are shown in the District code, Section 10.12.080 – Right of Entry	☒	☐
D.	Limit discharges of fats, oils and grease? • Yes, shown on pages 3-6 and 3-7	☒	☐
E.	Enforce any violation of its sewer ordinances? • Yes, shown on page 3-7	☒	☐

F.	Were any changes or modifications made in the past year to District Sewer Ordinances, Regulations or standards? If so, please state below. • No, there were no changes to sewer ordinances, regulations or standards in the past year	☐	☒
G.	Are the sewer service charge provisions current and provide the authority for full funding of the sanitary sewer operations? • Yes, sewer service charge does provide full funding for the sanitary sewer operations. • In June 2014, Central San hired Raftelis Financial Consultants, Inc. to asses and evaluate the District's existing wastewater rates. The study can be found at www.centralsan.org. • The current residential rate for FY 2023-24 is $697 per year for a single-family residence and $622 per year for a multi-family residential unit. For FY 2024-25, the residential rate will be $725 and the multi-family residential rate will be $647.	☒	☐
H.	Has there been documented and regular communications with other agencies and other cities in the District's service area in the past year? If so, are these meetings and communications documented appropriately? • Yes, the Field Operations Superintendent and Construction Supervisor have constant communication with the cities, counties and towns within our service area. • Coordination consists of acquiring encroachment permits for sewer construction, attending pre-construction meetings, mutual inspection of facilities and planning for future paving projects that will impact the District's facilities.	☒	☐
I.	Are all report forms used during sanitary sewer system cleaning and CCTV inspection current or require changes to mirror current operations? • Yes, all forms used for cleaning and televising are current. They were updated when Cityworks Computerized Maintenance Management System (CMMS) was installed in January 2017	☒	☐

J.	Have the Annual Pump Station Inspections been conducted and are necessary improvements scheduled and being implemented? 1. Annual inspections a. Generator and transfer switch inspections/servicing - complete b. Annual UST inspection and testing - complete c. PM PS Telemetry/UPS battery – complete d. PS Emergency Lights - complete e. Safety inspections – scheduled to be completed by the end of September f. MCC/IR inspections – partially complete, remaining stations scheduled for October 2. PS CIP work over the next few years is based on the condition assessment that were part of the master plan and current operational and maintenance needs. See the following TM's: a. TM 14A Pump Station Condition assessment b. TM 14B Pump Station Force Main Condition assessment c. TM 14C Large diameter pipe management d. TM 14 CS Asset management plan e. TM CS 18 Optimization f. TM CS 22 CIP draft 3. Several major PS upgrades are included in the current CIP: a. Orinda Crossroads and Moraga Pumping Stations upgrades were completed in 2022. b. Martinez, Fairview, and Maltby Pumping Station upgrades are currently in construction. 4. Other O&M needs are covered by Pump Stations and Treatment Plant maintenance staff as part of routine preventative maintenance and corrective work throughout the year.	☒	☐

Discussion:

Element 3 - Legal Authority is effective in outlining the ordinances and regulations that provide the District legal authority to prevent illicit discharges, to provide proper design and construction standards, to ensure access to facilities, to limit the discharges of FOG and to enforce the violations of sewer ordinances.

ELEMENT 4 – OPERATIONS AND MAINTENANCE			
Collection System Maps			
A.	Does the SSMP reference the current process and procedures for maintaining the District's wastewater collection system maps? Yes, shown on pages 4-2 thru 4-5 – The SSMP references The District's current practice for updating maps	☒	☐
B.	Are the District's collection system maps complete, current and sufficiently detailed? • Yes, shown on pages 4-2 thru 4-5 the collection system maps are complete, current and sufficiently detailed	☒	☐

C.	Are storm drainage facilities identified on the collection system maps? If not, are SSS responders able to determine locations of storm drainage inlets and pipes for possible discharge to waters of the state? • Yes, the available data is shown on page 4-3. The utility information includes potable and recycled water, storm water, and power	☒	☐
Prioritized Preventive Maintenance			
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewers? • Yes, pages 4-6 thru 4-16 detail The District's Collection System Preventative Maintenance Program as well as provide a description of The District's CMMS.	☒	☐
E.	Based upon information in the Annual SSS Report, are the District's preventive maintenance activities sufficient and effective in minimizing SSSs and blockages? • Yes, the District's preventative maintenance activities are sufficient and effective in reducing SSS's and blockages • The District continues to be below the state and regional averages for SSS's and the average volume per SSS • The spill rate for the last three calendar years (2021 – 2023) were 1.69, 1.49 and 0.84 spills per hundred miles of sanitary sewer. • *Table 9.2 – Annual SSS Statistics is included in Element 9 of the SSMP on pages 9-4 and 9-5.*	☒	☐
Scheduled Inspections and Condition Assessments			
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP? • Yes, there is an ongoing CCTV Condition Assessment Program that is performed by District staff as well as augmented with a CCTV contractor. • This Condition Assessment Program has been in place since 2002 • Yes, shown on pages 4-12 and 4-13	☒	☐

G.	Does the SSMP contain a prioritized capital improvement plan for future rehabilitation and replacement of the sanitary sewer system for the next five years? Is it current? • Yes, shown on pages 4-17 thru 4-19. This includes a 10-year Estimated Expenditure and a Draft 100-year Sewer Renovation Forecast • Figures 4.9 and 4.10 in the SSMP were provided as part of the Comprehensive Wastewater Master Plan (CWMP) completed in June 2017 by Carollo Engineers • The CWMP can be viewed in its entirety at www.centralsan.org	☒	☐
Contingency Equipment and Replacement Inventory			
H.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and documents the procedures for inventory management? • Yes, shown on pages 4-28 thru 4-32 • *Appendix B—Available Equipment Inventory is included in the SSMP.*	☒	☐
I.	Are contingency and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance? • Yes, shown on pages 4-27 thru 4-32 • *Appendix C—Available Parts Inventory is included in the SSMP*	☒	☐
Training			
J.	Has all annual training been conducted as required? • Yes, annual training has been conducted. • The District's Safety Officer provides monthly safety training. • Additionally, The Field Operations Superintendent provides training on SSMP, WDR, SERP AND MRP as well as volume estimation annually to all field staff as a best management practice.	☒	☐
Outreach to Plumbers and Building Contractors			
K.	Does the SSMP document current outreach efforts to plumbers and building contractors? • Yes, shown on pages 4-27 and 4-28	☒	☐

Discussion:

Element 4 – Operations and Maintenance section of the SSMP discusses the various aspects with regards to operating and maintaining the District's collection system. This section is effective in outlining the District's compliance with the WDR requisites for: mapping, preventative maintenance, rehabilitation and replacement, training, and equipment and replacement parts.

ELEMENT 5- DESIGN AND PERFORMANCE STADARDS			
A.	Does the SSMP reference current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems? • Yes, shown on pages 5-1 thru 5-3 • The District's Standard Specification can also be found at www.centralsan.org	☒	☐
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines? Have any changes to the standards been implemented since the last audit? • Yes, shown on pages 5-3 and 5-4 • No, there have not been any changes to the Standard Specifications since the last audit	☒	☐
Discussion: Element 5 – Design and Performance Standards is effective in providing standards for the installation of sanitary sewer facilities. The District's standard specifications are located at www.centralsan.org. Chapters 11 and 12 of the standard specifications are titled, "Control of the Work" and "Control of the Materials" and provide the necessary means for all needed inspection and testing for sewer facilities.			
ELEMENT 6 – SANITARY SEWER SPILL AND BACKUP RESPONSE PLAN			
A.	Does the District's Sanitary Sewer Spill and Backup Response Plan establish procedures for the emergency response, notification, and reporting of SSSs? Have any changes in past practices been implemented since the last audit? If so, please explain. • Yes, procedures are established for emergency response, notification, and reporting SSS's. • No. The initial plan was completed in February 2007 and the plan was revised in May 2023 due to the addition of a 4th category of spills, and the new requirements of WQ 2022-0103-DWQ.	☒	☐
B.	Are District staff and contractor personnel appropriately trained and verified on the procedures of the Sanitary Sewer Spill and Backup Response Plan? • Yes, annual training is provided by the Field Operations Superintendent to all collection system field staff. • Yes, shown on pages 6-9 and 6-10. Emergency contact information is provided to all contractors who will be working in the collections system. Contractors are instructed to immediately report any spills to CSO staff. CSO will provide response, notification and clean-up activities.	☒	☐

C.	Considering SSS performance data, is the Sanitary Sewer Spill and Backup Response Plan effective in handling SSSs to safeguard public health and the environment? • Yes, from the District's experience, the plan is effective in providing safeguards to the public when an SSS has occurred. • Shown on pages 6-10 and 6-11 of the SSMP • Shown on pages 9 thru 19 of the SERP	☒	☐
D.	Are all SSS and claims reporting forms current or do they require revisions or additions? • Yes, all claim forms and customer handouts are current and shown in Section 4 – Claims Handling. Shown on pages 57 thru 74 of the SERP • The claim forms were updated in April 2017 when the SERP was revised.	☒	☐
E.	Does all SSS event recordkeeping meet the GWDR requirements? Are all SSS event files complete and have they been certified in the CIWQS system? • Yes, shown on pages 6-8 and 6-9 – Record Keeping Requirements. The Spill / Stoppage Response Form is shown on pages 55 and 56 of the Sanitary Sewer Spill Backup and Response Plan • Yes, all SSS event files are complete and they have been certified in CIWQS. As part of this audit, the Field Operations Superintendent verified that all events in CIWQS were certified. • This verification is also performed every January for the prior calendar year	☒	☐
F.	Is all information in the CIWQS system current and correct? Have periodic reviews of the data been made during the year to assure compliance with GWDR? Have all Technical Report and Water Quality Sampling requirements of the GWDR been uploaded to the CIWQS data management system? • Yes, as part of this audit the Field Operations Superintendent verified that all information in CIWQS was current and correct. This check was completed in June 2024 • Yes, reviews are made every January and prior to the Annual Sanitary Sewer Spill Report that is presented to the Board of Director's in the first quarter of each calendar year • Yes, all Technical Reports and Water Quality Sampling requirements have been uploaded to CIWQS. Again, this information is reviewed by the Field Operations Superintendent every January for the prior calendar year.	☒	☐

G.	Are all SSS Response Procedure Flow Charts current and have all contact information been checked and certified correct? • Yes, shown on pages 6-3 thru 6-6 in the SSMP. These flow charts are taken from the Sanitary Sewer Spill and Backup Response Plan • Yes, shown on page 6-3— The correct phone numbers are listed to report an SSS. This phone number is also listed at www.centralsan.org under the tab, "Report a Problem"	☒	☐
H.	Were all large SSSs evaluated for "root cause" and did they identify corrective actions required to assure reductions or elimination of future SSSs? Were post SSS debriefing events held with appropriate staff and all responders? • Yes, every SSS, backup and stoppage regardless of size are evaluated for root cause analysis. A post occurrence follow-up CCTV child work order is created, and the video is reviewed at the bi-weekly Operations Meeting. Preventative actions are also agreed upon and any changes are made to the CMMS system. • Yes, Post SSS's details such as notification, response and clean up are reviewed at the bi-weekly Operations Meetings with CSO staff.	☒	☐
I.	Were all Technical Reports and Water Quality Monitoring results of SSSs greater than 50,000 gallons submitted to the CIWQS System according to the required timeline? • Yes, this is verified at the beginning of each calendar year and prior to the Annual Sanitary Sewer Spill Report that is presented to the Board of Director's in the first quarter of each calendar year. This activity was also performed in July 2024 as part of this audit process.	☒	☐
J.	Were all No Spill Certifications provided as required by the WDR regulations completed and certified in CIWQS? Was the Annual Collection System Questionnaire completed? • Yes, this is verified at the beginning of each calendar year and prior to the Annual Sanitary Sewer Spill Report that is presented to the Board of Director's in the first quarter of each calendar year. This activity was also performed in July 2024 as part of this audit process. • Yes, the Annual Questionnaire has been completed and submitted to CIWQS. The questionnaire is completed in January every year.	☒	☐

K.	Are all SSS records complete and maintained for five-years from the date of the SSS? Have all files older than five years been disposed of according to District records management system and Regional Board requirements or directions? • Yes, all records are complete, and they are kept on file for five years. • Yes, the files are disposed of per the District Record Retention Schedule. The District Records retention schedule meets the Regional Board requirements for retention of SSS records.	☒	☐
L.	Is staff properly trained on appropriate methods for spill volume estimation and start time requirements for all SSSs? Has this training been documented appropriately? • Yes, Volume estimation training for field staff is performed on an annual basis. Start time requirements are reviewed in this class. In addition, Collection System Supervisors and field staff regularly attend industry wide training that includes volume and start time estimation. • Yes, sign in sheets are available for in house training. Training certificates are available for training that was performed outside of the District.	☒	☐
Discussion: Element 6 – The Sanitary Sewer Spill and Backup Response Plan was first drafted in February 2007. There was a major revision in August 2014 that brought the plan current to how the District responds to sanitary sewer spills. In 2017, the District was in the process of updating the SSMP, while performing the update, the Sanitary Sewer and Backup Response Plan was revised to match the changes that were being made to the SSMP. In addition, another revision was made in May 2023 to include the new requirements for the revised WDR. Based on the District's experience in responding to SSS's and backups, this plan is effective in responding to spill events. This plan meets the regulatory requirements that is set forth in the revised WDR and MRP.			
ELEMENT 7 – FATS, OILS AND GREASE (FOG) CONTROL PROGRAM			
A.	Does the FOG Control Program include efforts to educate the residential customers on proper handling and disposal of FOG? • Yes, shown on page 7-2	☒	☐
B.	Does the FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages? • Yes, shown on pages 7-4 thru 7-6	☒	☐
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping, and reporting established in the District's FOG Control Program? • Yes, shown on pages 7-3 and 7-4 – Requirements for grease removal devices • Yes, shown on pages 7-5 and 7-6 – Requirements for BMP's • Yes, shown on pages 7-4 thru 7-6 – Requirements for Record Keeping and Reporting	☒	☐

D.	Does the District have sufficient legal authority to implement and enforce the FOG Control Program? Are all enforcements effective and resulting in appropriate compliance with requirements? • Yes, shown on page 7-4 – The District has the right to enforce the FOG Control Program • Yes, shown on page 7-4 – The enforcements are effective and have resulted in compliance	☒	☐
E.	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system? • Yes, the FOG Program is effective in preventing SSS's o In 2019 there were 3 SSS's caused by FOG o In 2020 there were 3 SSS's caused by FOG o In 2021 there was 1 SSS caused by FOG o In 2022 there was 1 SSS caused by FOG o In 2023 there were 2 SSS's caused by FOG o *Table 7.1, Fog Control Statistics is included in the SSMP and will updated in the May 2025 SSMP Update.*	☒	☐
Discussion: Element 7 – FOG Control Program provides information on The District's FOG Control Program which has been in place for over 25 years. Based on the numbers stated above in Item E., it has been determined that the FOG Control Program is effective in reducing SSS's in the District's collection system.			
ELEMENT 8- SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN			
A.	Does the District's Sanitary Sewer Master Plan evaluate hydraulic deficiencies in the system, establish sufficient design criteria and recommend both short and long-term capacity enhancement and improvement projects and schedules? • Carollo Engineers completed a CWMP for the District in June 2017. Information regarding System Evaluation and Capacity Assurance can be found there. This document can be located at www.centralsan.org • Yes, shown on pages 8-1 thru 8-6 – Discusses hydraulic deficiencies, design criteria and provides recommendation for short and long-term projects. While not split into categories, Table 8.1 covers both short and long-term projects.	☒	☐
B.	Does the District's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and accomplishments? • Yes, shown on pages 8-6 and 8-7 • The costs in Table 8.1 of the SSMP were updated as part of the CWMP. The CWMP was completed in June 2017 and the costs were calculated based on present value at that time. • Additionally, the District is currently working with Woodward and Curran on another Collection System Master Plan that is scheduled for completion in 2025.	☒	☐

Discussion:

Element 8— System Evaluation and Capacity Assurance Plan, is addressed in the SSMP using The District's completed CWMP from June 2017. The CWMP was completed by Carollo Engineers and addressed System Evaluation and Capacity Assurance. The information from the CWMP was incorporated into the SSMP update completed in November 2017. This element of the SSMP, as well as the information from the CWMP, provides The District valuable information to effectively evaluate and provide the needed capacity for the collection system.

ELEMENT 9- MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators? • Yes, shown on pages 9-1 thru 9-4 • Shown on pages 9-2 thru 9-10, there are metrics to identify trends and performance of the collection system	☒	☐
B.	Is the District able to sufficiently evaluate the effectiveness of the SSMP elements based on relevant information? • Yes, methods used to track effectiveness of the SSMP are shown in Table 9.1 • Figure 9.1 shows the District's Annual SSS trends and Table 9.3 compares the District to State and Regional performance.	☒	☐

Discussion:

Element 9— discusses the various methods that the District uses to evaluate the collection system and the SSMP. Monthly reports are prepared and submitted to the Deputy General Manager-Operations, General Manager and various other staff. The reports include the available data shown on page 9-2. Annual reports are presented to the Board of Directors in the first quarter of the calendar year which reviews and compares the performance of the collections to other agencies in the region and state of California. The Strategic SSS Reduction Approach section on page 9-11 will be reviewed and revisions to this section will be made as they are incorporated into operations of the collection system. All Figures and Tables will be updated in the May 2025 SSMP Update.

ELEMENT 10 – SSMP AUDITS			
A.	Was the SSMP Audit completed, reviewed and filed in the Appendix • Yes, Previous audits were completed in 2016, 2018, 2020 and 2022. • Previous Audit from 2022 is included in Appendix A and will be replaced by this audit. • The District is using a revised audit form included in *the SSMP on page 10-1 – Annual Audit Template* • The SSMP was updated in 2017 and revised in 2018, 2019, 2020, 2021, and 2022.	☒	☐

B.	Have the collection system performance results been provided to the Board of Directors and the public annually? Are the results available on the District website? • Yes, the Annual Sewer Spill Presentation is given to the Board of Directors in the first quarter of each calendar year • Yes, each Board Meeting is videotaped and can be viewed by the public at www.centralsan.org	☒	☐
C.	Have the performance results been evaluated for specific changes to meet targeted goals for SSS reduction? Have changes in procedures been implemented to enhance the District sanitary sewer operations? • Yes, performance goals and metrics are reviewed by CSO staff monthly, quarterly and annually. • The SSMP was revised in 2018, 2019, 2020, 2021, and 2022. There have been no new changes to sanitary sewer operations since the last update in 2022.	☒	☐
D.	Has the Change Log been updated with all changes made to the SSMP during the past year? • Yes, the change log is up to date. • The change log will be updated to include this audit	☒	☐
E.	Do District SSS performance results agree with all CIWQS information? • Yes, our information agrees with what is found in CIWQS • The Field Operations Superintendent at CSO reviews the CIWQS information in January to make sure the information in CIWQS is correct	☒	☐

Discussion:

Element 10 – Audits, Previous audits of the SSMP were completed in 2016, 2018, 2020, and 2022. The SSMP was updated in 2017 and revised in 2018, 2019, 2020, 2021, and 2022. The completed 2022 SSMP Audit has been included in Appendix A of the SSMP and will be replaced by this audit.

ELEMENT 11 – COMMUNICATION PROGRAM

A.	Does the District effectively communicate with the public and other agencies about the implementation and performance results of the SSMP and continue to address any feedback? • Yes, Section 11 of the SSMP discusses the outreach to the public. A yearly presentation is given to the Board of Directors which the Public can attend and provide comment.	☒	☐

B.	Did the District receive and review the Annual Sewer System Report? Was the annual report uploaded to the District Sewer Section website and added to Appendix B? • Yes, the Sewer System Spill Annual Report is presented at a board meeting in the first quarter of every calendar year. • Yes, each Board Meeting is videotaped and can be viewed at www.centralsan.org • The Annual Sanitary Sewer Spill Report has been added to the District's Sewer System section of the website. The Annual Report has not been added as an appendix.	☒	☐
C.	Did District staff conduct and document meetings with the City of Concord? Are all agreements current or are changes necessary to these agreements? • Yes, the District Staff meets with the City of Concord • Yes, the agreement with the City of Concord is current	☒	☐
Change Log			
A.	Is the SSMP Change Log, current and up to date? • Yes, the change log was updated for the January 23, 2024 revised Capital Projects repair list and will be revised to include this audit.	☒	☐
Discussion: Element 11— Communication Program, the District communicates regularly with the public and outside agencies. Any comments or issues that arise for the collection system are addressed as needed. The SSMP change log will be updated to include this audit.			

Paul Seitz 9/9/24

Paul Seitz, P.E. Date
CSO Division Manager
Legally Responsible Official
CWEA Grade IV – Collection System Maintenance

Jason De Groot 9/9/24

Jason De Groot, P.E. Date
CSO Senior Engineer
CWEA Grade IV – Collection System Maintenance

9.09.24

Steve Sauter Date
CSO Field Operations Superintendent
Data Submitter
CWEA Grade IV – Collection System Maintenance

Appendix B – Available Equipment Inventory

Equipment

Asset ID	Name	Type	Make	Model	Year	Fuel Type
5158	Air Compressor M156 (on #119)	Air Compressor	Ingersoll Rand	P175WJDU	1996	Diesel
5152	Air Compressor M152	Air Compressor	Ingersoll Rand	T30	1995	Electric
194	Auger/ Hole Diger M223	Auger	General	330	0	Gasoline
169	Sand Blaster M197	Blaster	Snap On		0	
5118	Blower M128 (gasoline, on #56)	Blower	Ripcordl	RIPCORDL	1992	Gasoline
173	Breaker M202	Breaker	BTI Breaker	BT750	2007	
5208	Portable CCTV Unit M205	CCTV Unit	Envirosight	Outpost	2008	Gasoline
5229	Rammer/Soil Compactor M213	Compactor	Wacker	BS70-2I	2012	Gasoline
5230	Rammer/Soil Compactor M214	Compactor	Wacker	BS70-2I	2012	Gasoline
5231	Tamping Rammer M215 (esmt)	Compactor	Milasa	MTR-40SF	2012	Gasoline
171	Viberplate M200 (backhoe)	Compactor	Allied	14087	0	
5185	Tamper M177	Compactor	Wacker	BS700	2000	
5151	Viberplate M150	Compactor	Wacker	VPA1350W	1994	Gasoline
195	Weed Eater M224	Garden Tools	Shindaiwa	S350/CARB	0	Gasoline
5232	Generator M216	Generator	Honda	EU2000I	2012	Gasoline
5233	Generator M217	Generator	Honda	EU2000I	2012	Gasoline
5186	Generator M180	Generator	Honda	EU1000	2002	Gasoline
5187	Generator M184	Generator	Honda		2002	Gasoline
5188	Generator M185	Generator	Honda		2002	Gasoline
168	Generator M196	Generator	Honda	EU1000	0	Gasoline
5176	Generator M169	Generator	Honda	EX1000	1997	Gasoline
5177	Generator M170	Generator	Honda	EM2500X	1997	Gasoline
5147	Generator M140	Generator	Onan	PRO 4000E	1994	Gasoline
63	Power Hand Rod M084	Hand Rod	Sereco	RTM1	1984	Gasoline
5235	Power Hand Rod M085	Hand Rod	Sereco	RTM1	1984	Gasoline
170	Hydraulic Impact Hammer M199	Pnuematic Tools	Allied	725	0	
5234	Pressure Washer M218	Pres. Washer	Alkota	A-311X4	2012	Diesel
5228	Pressure Washer M210	Pres. Washer	Alkota	3255X4	0	
167	Pressure Washer M195	Pres. Washer	Honda	GX200	0	Gasoline
208	Trash Pump M226	Pump	Multi-Quip	QP-2H	2014	Gasoline
209	Trash Pump M227	Pump	Multi-Quip	QP-2H	2014	Gasoline
5183	Trash Pump M173	Pump	Honda	WT40X	1998	Gasoline
5182	Trash Pump M174	Pump	Honda	WT30X	1998	Gasoline
5146	Trash Pump M139	Pump	Gorman Rupp	T6A3-F4L-SPA	1991	Diesel
5159	Trash Pump M158	Pump	Wacker	CE 96	1996	Gasoline
5184	Pump M176	Pump	Gorman Rupp	T6A3-F4L-SPA	0	
5148	Trash Pump M143	Pump	Wacker	CE 96	1994	Gasoline
5119	Trash Pump M132	Pump	Honda	WB 15	1992	Gasoline
50	Trash Pump M066	Pump	Multi-Quip	401	1979	Gasoline
5149	Pavement/Concrete Saw M145	Saw	Target	PRO35IIM18	1994	Gasoline
5150	Concrete Chain Saw M147	Saw	Stanley	COMPACT	1994	Gasoline
41	Pavement/Concrete Saw M044	Saw	Target		1969	Gasoline
99630	Generator, Stand by, CSO M211	Generator	Cummins	DFEH-A034W86	2011	Diesel
99631	Trash Pump M194	Pump	Honda	WT40X	2006	Gasoline

Mobile Equipment

Asset ID	Name	Type	Make	Model	Year	Fuel Type
5274	Trailer M115	CSO	Trailer	Trail King	1989	
5275	Mixer, Concrete M123	CSO	Mixer	Stone	1992	Gasoline
5276	Krapper M124 (portable toilet)	CSO	Toilet	Ed Head	1992	
c	Trailer M125	CSO	Trailer	Trail King	1992	
5153	Backhoe Loader M151	CSO	Heavy Equipment	John Deere	1995	Diesel
5157	Mini-Excavator M154	CSO	Heavy Equipment	Bobcat	2001	Diesel
399	Trailer M157	CSO	Trailer		1996	
5167	Mini-Excavator M163	CSO	Heavy Equipment	Takeuchi	1997	Diesel
5168	Tilt Trailer M164	CSO	Trailer	Zieman	1997	
5169	Pipe Trailer M167	CSO	Trailer	Big Tex	1997	
5170	Loader M175	CSO	Heavy Equipment	John Deere	1999	Diesel
5171	Trailer M179	CSO	Trailer		2000	
5237	Pump M183	CSO	Pump	Cornell	2000	
158	Pump M186	CSO	Pump	Cornell	2000	
163	Off-Road Utility Vehicle M191	CSO	Forklift	Coot	2005	Gasoline
164	Fork Lift M192	CSO	Forklift	Toyota	2005	Propane
172	Loader-Backhoe M201	CSO	Heavy Equipment	John Deere	2007	Diesel
174	Pump M203	CSO	Pump	Gorman Rupp	2007	Diesel
175	Pump M204	CSO	Pump	Gorman Rupp	2007	Diesel
5209	Trailer M206	CSO	Trailer		2008	
5210	Trailer M207	CSO	Trailer	Carry-On	2008	
5212	Generator M209	CSO	Generator	Generac	2007	Diesel
5213	Scissor Lift M212	CSO	Man Lift	Genie	2007	Electric
190	Equipment Trailer M219	CSO	Trailer	Trail King	2012	
192	Bypass Pump M221	CSO	Pump	Pioneer	2012	Diesel
193	Trailer M222	CSO	Trailer	Trail King	2013	
206	Mixer M225	CSO	Mixer	Cart-Away	2014	Gasoline
210	Safety Trailer M228	CSO	Trailer	Diamond C	2016	
5211	Generator M208	CSO	Generator	Ingersoll Rand	2007	Diesel
191	Generator M220	CSO	Generator	Ingersoll Rand	1989	Diesel
5194	Easement Hydrojet Reel M178	CSO	Hydrojet	Vactor	2000	Gasoline
5178	Light Tower M172	CSO	Light Tower	Coleman	1997	Diesel
159	Arrow Board M187	CSO	Traffic Control	Solar	2003	
99627	Golf Cart M189	CSO		Pathway	2002	Electric
99628	Golf Cart M190	CSO		Pathway	2002	Electric
99802	Bypass Pump M229	CSO	Pump	Gorman Rupp	2016	Diesel
6265	Trailer M230	CSO	Trailer	Big Tex	2017	

Inv#	Item Description	U/M	Location	MFG #	Qty Now	Cost	Value O/H
007 001 00001	ALL CRETE, 5 GAL BUCKET, (20 MIN. SET) CEMENT-ALL	EA	31 01 04	SP/RSCA55P	0	$40.75	$0.00
007 007 00001	RIP RAP, QUICK CRETE	EA	30 00 00		20	$6.46	$129.10
013 001 00001	BACKWATER OVERFLOW DEVICE 3" SCREW ON	EA	30 03 03		0	$21.46	$0.00
013 001 00002	BACKWATER OVERFLOW DEVICE 4" CLAMP ON	EA	30 03 04	00	2	$26.58	$53.15
013 002 00001	BACKWATER OVERFLOW DEVICE 4" SCREW ON	EA	30 03 05		1	$19.89	$19.89
027 001 00001	BEND, 1/8TH, 4" CLAY BAND SEAL W/O COUPLING	EA	32 00 00		1	$7.44	$7.44
027 001 00002	BEND, 1/16TH, 4" CLAY BAND SEAL W/O COUPLING	EA	32 00 00		0	$6.48	$0.00
027 001 00003	BEND, 1/8TH, 6" CLAY BAND SEAL W/O COUPLING	EA	32 00 00	LONG SWEEP ONLY	4	$20.70	$82.82
027 001 00004	BEND, 1/16TH, 6" CLAY BAND SEAL W/O COUPLING	EA	32 00 00		0	$22.85	$0.00
027 001 00005	BEND, 1/8TH, 8" CLAY BAND SEAL W/O COUPLING	EA	32 00 00		4	$43.27	$173.08
027 001 00006	BEND, 1/16TH, 8" CLAY BAND SEAL W/O COUPLING	EA	32 00 00		5	$19.42	$97.10
027 002 00001	BEND, 1/8TH, 4" CAST IRON NO HUB 45 DEGREE	EA	31 01 09		0	$9.97	$0.00
027 002 00002	BEND 1/16TH 4"-CAST IRON NO HUB 22 DEGREE	EA	31 01 10		10	$8.84	$88.45
027 002 00003	BEND, 1/8TH, 8" CAST IRON NO HUB	EA	31 01 08		4	$64.76	$259.03
027 002 00004	BEND, 1/8TH, 6" CAST IRON NO HUB	EA	31 01 11		9	$22.65	$203.84
027 002 00005	BEND 1/16TH, 6",CAST IRON NO HUB	EA	31 01 12	1/16 BEND	4	$26.84	$107.37
039 001 00023	BUSHING, ROLLER	EA		55785-HO1	0	$0.00	$0.00
039 003 00001	BUSHING 4"CLASS 150 -CLAY	EA	30 09 02 07		20	$4.51	$90.21
039 003 00002	BUSHING 6"CLAY TO BALD CI JOI-130	EA	30 09 03 03	6CPECIBVCB	47	$12.57	$591.00
039 003 00003	BUSHING, 6"CLAY-RBAC/150	EA	30 09 03 04		30	$8.50	$254.99
039 003 00004	BUSHING, 8"CLAY RBAC OR CLASS 150	EA	30 09 04 05		21	$16.36	$343.49
039 004 00001	BUSHING 4"CLAY TO BALD CI	EA	30 09 02 04		27	$6.30	$170.02
039 004 00002	BUSHING 8"CLAY TO BALD CI [CALDER]	EA	30 09 02 06		17	$19.17	$325.94
039 004 00003	BUSHING 10"CLAY - BALD CI	EA	30 09 00 01		14	$25.37	$355.22
039 010 00001	COUPLING, 8" CLAY TO C.I. MR0288	EA	30 10 04 04	MR0288	8	$63.23	$505.86
039 010 00002	COUPLING, 6" CLAY TO C.I. MR0266 MISSION ONLY	EA	30 10 02 05	MISSION MR0266	20	$20.79	$415.78
039 010 00003	BUSHING, 8" P.E./C.I. B70	EA	30 09 04 03	0508-416 MISSION	4	$14.90	$59.60
039 010 00004	BUSHING, 4", P.E.	EA	30 09 02 05		17	$2.23	$37.96
039 010 00005	COUPLING, 8" TYPE 1 CLAY	EA	30 09 04 02		16	$12.02	$192.30
039 011 00002	BUSHING 4"AC JOI-113	EA		JOI-113	30	$4.56	$136.71
039 011 00003	BUSHING 6"AC JOI-128	EA		JOI-128	30	$4.75	$142.57
049 005 00001	CLAMP, REPAIR, 6", FULL CIRCLE	EA	30 09 00 04	MISSION 0406751	3	$56.69	$170.06
049 005 00002	CLAMP, REPAIR, 8", FULL CIRCLE	EA	30 09 00 03	MISSION MR0188	3	$15.36	$46.08
049 005 00003	CLAMP, REPAIR, 10", FULL CIRCLE	EA	30 09 00 02		3	$195.07	$585.22
057 003 00001	COUPLING, CLAY CALDER 4"	EA	30 09 02 03	JOINTS INC	25	$10.18	$254.57
057 003 00003	COUPLING, CLAY CALDER 6" C-102	EA	30 09 03 02	JOINTS INC	35	$19.77	$691.95
057 003 00004	COUPLING, RED. 6"X4" CLAY CALDER	EA	30 10 01 02	JOINTS INC	1	$9.62	$9.62
057 003 00005	COUPLING, CLAY CALDER 8"	EA	30 09 04 02	JOINTS INC	22	$27.18	$597.87

Inv#	Item Description	U/M	Location	MFG #	Qty Now	Cost	Value O/H
057 003 00007	COUPLING, CLAY CALDER 10"	EA	30 09 00 05	JOINTS INC	19	$92.76	$1,762.51
057 005 00001	COUPLING, C.I.T.CALDER 6"	EA	30 09 03 01	JOINTS INC	18	$10.34	$186.11
057 005 00002	COUPLING, C.I. 6" X 4" REDUCER, CALDER	EA	30 10 01 03	JOINTS INC	43	$6.74	$289.83
057 005 00003	COUPLING, C.I. 4" X 3" REDUCER MR56-43	EA	30 10 01 06	MISSION MR56-43	0	$3.33	$0.00
057 005 00004	COUPLING, C.I.T.CALDER 3"	EA	30 09 02 02	JOINTS INC	68	$3.49	$237.05
057 005 00005	COUPLING, C.I.T.CALDER 4"	EA	30 09 02 01	JOINTS INC	19	$8.98	$170.70
057 005 00006	COUPLING, C.I.T.CALDER 8"	EA	30 09 04 01	JOINTS INC	7	$11.19	$78.36
057 005 00007	COUPLING, CLAY 6"X 4" REDUCER	EA	30 10 02	MR-02 64	15	$21.72	$325.73
057 010 00004	COUPLING, NO HUB, 4"	EA	30 10 02 01		39	$3.32	$129.51
057 010 00005	COUPLING, NO HUB, 6"	EA	30 10 02 02		43	$8.09	$347.78
057 010 00006	COUPLING, NO HUB, 8"	EA	30 10 02 03		11	$13.60	$149.60
057 026 00002	COUPLING 6"AC	EA		C-103	30	$20.35	$610.64
057 026 00004	COUPLING 4"AC C-105	EA		C-105	30	$15.65	$469.37
059 004 00001	COVER, RODDING INLET MARKED "CCCSD"	EA	31 03 02	H-8026-12	54	$67.09	$3,622.69
093 001 00135	GASKET, 4" SADDLE	EA	30 01 04 01		0	$4.83	$0.00
093 001 00136	GASKET, 6" SADDLE	EA	30 01 04 02		0	$5.47	$0.00
093 027 00001	GASKET, 6", TYLER TYPE	EA	30 09 01 02	TYSEAL GASKET 6"	8	$4.80	$38.40
093 027 00002	GASKET, 8", TYLER TYPE	EA	30 09 01 03	TYSEAL GASKET 8"	19	$9.52	$180.96
093 027 00003	GASKET, 4", TYLER TYPE	EA	30 09 01 01	TYSEAL 4" TY4GA	21	$2.43	$51.09
103 001 00001	GRADE, 3", RING, CEMENT	EA	31 01 02		21	$42.31	$888.42
103 001 00002	GRADE, 6", RING, CEMENT	EA	31 01 01		15	$66.68	$1,000.19
103 001 00003	GRADE RING, CEMENT 2" 24"I.D. 5"WALL	EA	31 01 02	PDG-502	0	$52.84	$0.00
103 001 00005	MORTAR MIX RAPID SET PAIL 5 GALLON	GAL		SP/RSMM550	42	$45.61	$1,915.79
141 001 00005	FLUID, SHORING, HYDRAULIC	QT	30 07 02 03		7	$12.45	$87.15
141 004 00001	LUBE, PIPE [CSO]	QT	30 07 04 05		1	$4.62	$4.62
143 001 00001	BARREL, 1'X 4', MANHOLE 1'H X 48" DIAMETER	EA	31 04 00		0	$69.15	$0.00
143 001 00002	BARREL, 2'X 4' MANHOLE 2'H X 48" DIAMETER	EA	31 04 00	229	9	$125.07	$1,125.59
143 001 00003	BARREL, 3'X 4' MANHOLE 3'H X 48" DIAMETER	EA	31 04 00	233	2	$208.45	$416.89
143 002 00001	CONE, 3'X 2'X 4'ECCENTRIC NO STEPS	EA	31 04 00		2	$278.44	$556.88
143 002 00002	CONE, 2'X 4'X 2'CONCENTRC	EA	31 04 00	2' X 4' X 2'	4	$186.50	$745.99
143 003 00002	COVER, MANHOLE & FRAME, BOLT DOWN MARKED "CCCSD"	EA	32 00 00	MH COVER	3	$398.83	$1,196.50
143 003 00003	COVER, MANHOLE,25"MARKED "CCCSD" A-1024	EA	31 01 05	A-1024-09	156	$132.89	$20,730.43
143 003 00004	MANHOLE COVER 28" A-1018- A-1018-S21	EA		A-1018-S21	20	$221.17	$4,423.32
143 004 00001	FRAME, MANHOLE A-1024R-4 O-RING IN FRAME	EA	31 01 06	A-1024R-4	129	$139.37	$17,979.09
143 004 00002	FRAME, RODDING INLET FLUSH INLET 15" CO	EA	31 03 01	H-8026-R1	52	$119.00	$6,188.17
171 002 00001	PIPE, 4"X 10'C.I. NO HUB	FT	31 02 07		90	$6.32	$568.98
171 002 00002	PIPE, 6"X 10' CIT, NO HUB	FT	31 02 06		210	$12.73	$2,672.36
171 002 00003	PIPE, 6"X 10'C.I.T. HUB TYLER TYPE	FT	31 02 05		0	$7.98	$0.00

Inv#	Item Description	U/M	Location	MFG #	Qty Now	Cost	Value O/H
171 002 00004	PIPE, 8"X 10' C.I. NO HUB	FT	31 02 03		70	$20.03	$1,401.84
171 002 00005	PIPE, 8"X 10' C.I.T., HUB TYLER-TYPE	FT	31 02 02		90	$12.71	$1,144.25
171 002 00006	PIPE, 3"X 10' C.I. NO HUB	FT	31 02 09		10	$2.24	$22.42
171 002 00007	PIPE, 10"X 10'C.I. NO HUB	FT	31 02 08		40	$34.34	$1,373.40
171 002 00008	PIPE, 6"X 5' C.I. BELL & SPIGOT	FT	31 02 04		35	$12.08	$422.71
171 002 00009	PIPE, 8"X 5' C.I. BELL & SPIGOT	FT	31 02 01		65	$16.85	$1,094.93
171 003 00001	PIPE, 4" X 6' CLAY NO HUB BAND SEAL W/O COUPLING	FT	32 00 00		20	$1.89	$37.73
171 003 00002	PIPE, 6" X 5' CLAY-NO HUB BAND SEAL W/O COUPLING	FT	32 00 00		5	$4.94	$24.70
171 003 00003	PIPE, 8" X 6' CLAY NO HUB BAND SEAL W/O COUPLING	FT	32 00 00		90	$3.71	$333.54
171 003 00004	PIPE, 10" X 6'CLAY-NO HUB BAND SEAL W/O COUPLING	FT	32 00 00		72	$11.36	$817.60
171 009 00003	PIPE, PLASTIC 6"X 13' SDR26613	FT	31 01 05	SDR26613	0	$3.91	$0.00
171 009 00004	PIPE,PLASTIC 8"X13' SDR26813	FT	31 01 05	SDR26813	0	$5.11	$0.00
197 014 00002	GRADE RING 28-1/8 X 1-1/2 STEEL G2111	EA	31 03 11	G-2111-R1	65	$96.57	$6,276.73
197 014 00003	RING, GRADE 28-1/8"X 2" STEEL G2112	EA	31 03 12	G-2112-R1	50	$116.49	$5,824.56
197 014 00004	RING, GRADE 28-1/8"X 2.5" STEEL G2113	EA	31 03 13	G-2113-R1	83	$117.17	$9,725.52
197 014 00005	RING, GRADE 25-3/8"X 2" STEEL G2122R1	EA	31 03 08	G-2122-R1	35	$114.35	$4,002.26
197 014 00006	RING, GRADE 25-3/8"X 2.5 STEEL G2122-R2	EA	31 03 09	G-2122-R2	76	$115.92	$8,809.56
197 014 00007	RING, GRADE 16-5/8 X 1.5" STEEL G2160	EA	31 03 03	G-2160-R1	66	$57.04	$3,764.51
197 014 00008	RING, GRADE 16-5/8"X 2" STEEL G2161 (1257)	EA	31 03 04	G-2161-R1	36	$64.15	$2,309.29
197 014 00009	RING, GRADE 16-5/8"X 2.5" STEEL G2162 (1257)	EA	31 03 05	G-2162-R1	20	$79.76	$1,595.17
197 014 00010	GRADE RING 25-3/8"X 1-5/8 STEEL G2121R1	EA	31 03 07	G-2121-R1	61	$98.19	$5,989.50
197 014 00011	RING, GRADE 28-1/8 X 1.25 STEEL G2110	EA	31 03 10	G-2110	69	$71.54	$4,936.11
197 014 00012	RING, GRADE 28-3/8 X 3" STEEL G2114	EA	31 03 14	G-2114-R1	3	$114.76	$344.28
207 001 00001	TEE, SADDLE, 6"X4", ABS	EA	30 02 01 03		72	$5.96	$429.33
207 001 00002	TEE, SADDLE, 8"X4", ABS	EA	30 02 01 03		75	$17.29	$1,296.98
207 001 00003	TEE, SADDLE, 4"X10", ABS	EA	30 02 02 02		29	$29.33	$850.48
207 001 00004	TEE, SADDLE, 4"X12", ABS	EA	30 02 02 00		0	$22.40	$0.00
207 001 00005	TEE, SADDLE, 8"X6", ABS	EA	30 02 01 01		25	$13.74	$343.58
207 001 00006	TEE, SADDLE, 10"X6", ABS	EA	30 02 02 03		18	$24.69	$444.33
207 001 00007	TEE, SADDLE, 6"X12", ABS	EA	30 02 03 01		13	$30.00	$390.00
207 002 00003	SADDLE, PIPE 4"X6", #430 FOWLER	EA	30 02 04 03	FOWLER 430	5	$47.10	$235.48
207 002 00004	PIPE, SADDLE, 6"X8", #440	EA	30 02 04	FOWLER 440	17	$47.69	$810.71
207 002 00005	PIPE, SADDLE, 4"X8", #640	EA	30 02 04 02	FOWLER 640	19	$75.13	$1,427.41
207 003 00002	SADDLE, 8" X 4" PVC	EA	30 02 02 01		28	$5.73	$160.31
207 003 00003	SADDLE, 8" X 6" PVC	EA	30 02 03 02		25	$5.87	$146.83
207 003 00004	SADDLE, 10" X 6" PVC	EA	30 02 03 03		28	$29.70	$831.72
207 003 00005	SADDLE, 12" X 6" PVC	EA	30 02 04 04		0	$62.67	$0.00
217 001 00005	SEALER JOINT, RAM NECK, 1-1/2" X 36", 20 EA/BX	BX	30 12 02		1	$73.23	$73.23

Inv#	Item Description	U/M	Location	MFG #	Qty Now	Cost	Value O/H
257 001 00004	SAN TEE, 4" C/I NO HUB	EA	31 01 10		5	$24.92	$124.58
257 001 00005	TEE, 6" X 4", CI, REDUCER NO HUB	EA	31 01 12		6	$37.52	$225.11
257 001 00006	TEE, 6", CI, NO HUB	EA	31 01 12		9	$55.13	$496.13
257 003 00001	TEE, CLAY, 4" X 4" SHORT BAND SEAL W/O COUPLING	EA	32 00 00		0	$13.88	$0.00
257 003 00002	TEE, CLAY REDUCER 6"X4" LONG W/O COUPLING	EA	32 00 00		6	$19.34	$116.05
257 003 00003	TEE, 6" CLAY, SHORT W/O COUPLING	EA	32 00 00		0	$32.30	$0.00
257 003 00004	TEE, CLAY REDUCER 8"X6" BAND SEAL W/O COUPLING	EA	32 00 00		0	$44.31	$0.00
257 003 00005	TEE, CLAY REDUCER 8"X4" SHORT W/O COUPLING	EA	32 00 00		0	$41.93	$0.00
257 003 00006	TEE, CLAY RED.8"X 4" LONG BAND SEAL NO COUPLING	EA	32 00 00		0	$42.39	$0.00
257 003 00007	TEE, 8" CLAY, BAND SEAL W/O COUPLING	EA	32 00 00		0	$32.00	$0.00
261 024 00004	WEDGE, WOOD, 2" X 4" X 8"	EA	30 10 03 04		200	$0.62	$124.84
269 001 00045	VALVE, SEWER POPPER 3X4	EA	30 12 FL OO R	JS62304	43	$22.52	$968.21
269 005 00018	VALVE, CHECK 4" CAST IRON NO HUB	EA	30 12 01	4NHBWVT	0	$164.79	$0.00
269 008 00010	VALVE, SEWER RELIEF ABS 4" SRVA	EA	30 03 01 03		10	$29.14	$291.40
273 001 00001	WYE, KELLY 3" X 3" X 4" 2 WAY CLEANOUT	EA	31 01 17	8442 ANACO	0	$41.76	$0.00
273 001 00002	WYE, KELLY 4" X 4" X 4" 2-WAY CLEAN OUT	EA	31 01 14	8446 ANACO	2	$81.19	$162.38
273 002 00001	WYE, C.I.,NO HUB 4"	EA	31 01 13		2	$21.42	$42.84
273 002 00002	WYE, C.I.,NO HUB 6" X 4" REDUCER	EA	31 01 15		4	$44.09	$176.35
273 002 00003	WYE, C.I.,NO HUB 6"	EA	31 01 12 01		8	$51.62	$412.97
273 002 00004	WYE, COMBO. C.I. 6"X 4" 16 DEGREE.	EA	31 01 10	NH6X4C	4	$54.82	$219.26
273 003 00001	WYE, CLAY BAND SEAL 4" W/O COUPLING	EA	32 00 00		4	$15.58	$62.31
273 003 00002	WYE, CLAY, RED. 6"X4" BAND SEAL W/O COUPLING	EA	32 00 00		0	$20.18	$0.00
273 003 00003	WYE, CLAY BAND SEAL 6" W/O COUPLING	EA	32 00 00		0	$51.01	$0.00
273 003 00004	WYE, CLAY RED. 6" X 8" BAND SEAL W/O COUPLING	EA	32 00 00		1	$47.88	$47.88
273 003 00005	WYE, CLAY RED. 8" X 4" BAND SEAL W/O COUPLING	EA	32 00 00		1	$25.68	$25.68
273 003 00006	WYE, CLAY LONG 8"X 4"RED. BAND SEAL/NO COUPLING	EA	32 00 00		1	$34.13	$34.13
273 003 00007	WYE, CLAY RED. 8" X 6" BAND SEAL W/O COUPLING	EA	32 00 00		1	$42.89	$42.89
273 003 00008	WYE, CLAY BAND SEAL 8" W/O COUPLING	EA	32 00 00		2	$41.01	$82.02

Appendix D – Water Quality Monitoring Program

WDR REQUISITES

This Water Quality Monitoring Program provides the District's response activities and standard operating procedures to be utilized in the Overflow Emergency Response Plan (OERP), in the event a sanitary sewer overflow (SSO) exceeds 50,000 gallons. This program is reviewed periodically and may be updated as necessary.

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 (Effective September 9, 2013), requires the following:

SSO WDR Section D. Water Quality Monitoring Requirements

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement a 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, and
   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.

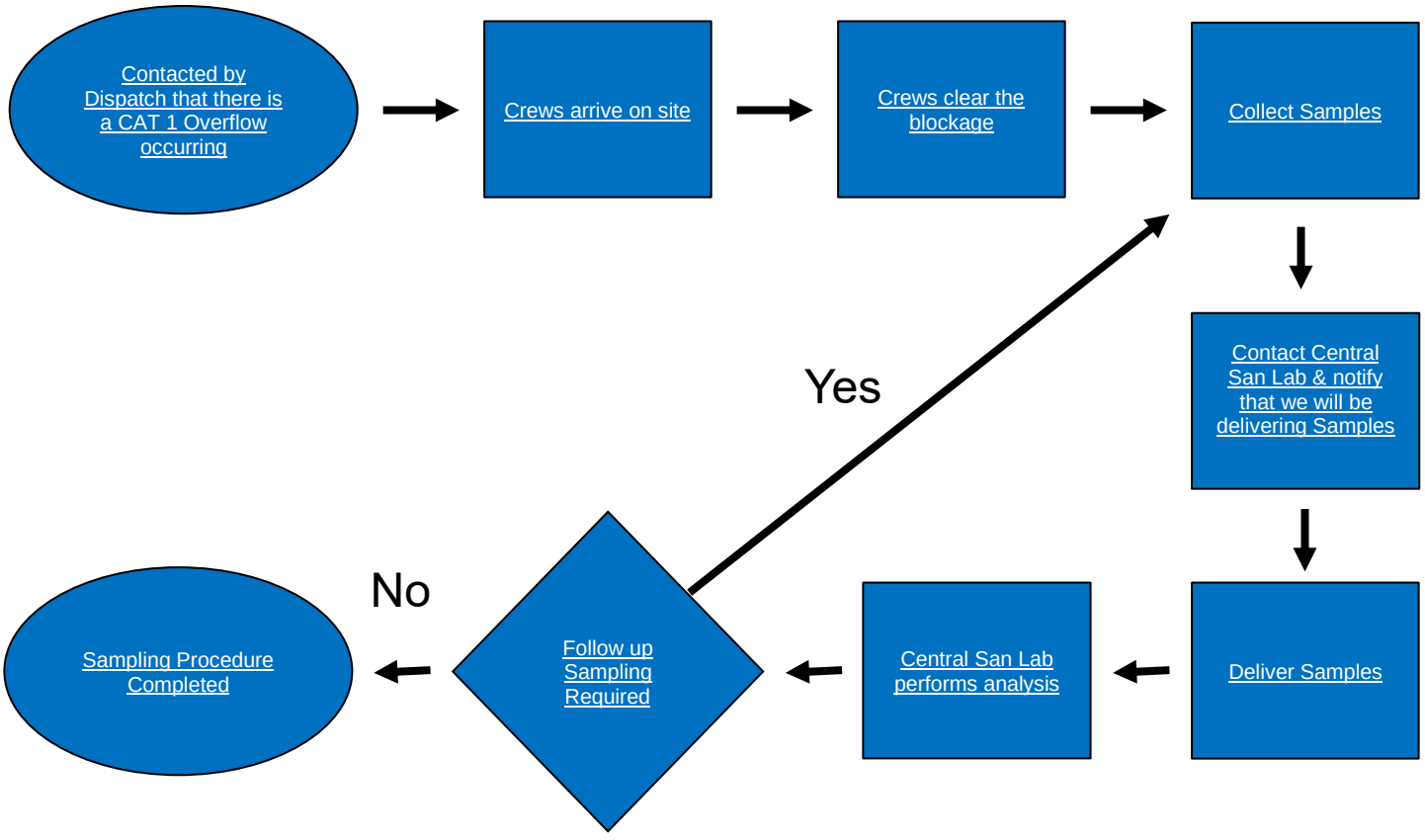
Additionally, for spills greater than 50,000 gallons, a SSO Technical Report is required and must be submitted within 45 calendar days from the SSO end date. The SSO Technical Report requirements are described in Element VI of the OERP.

CENTRAL SAN COMPLIANCE

1.0 CONTAIN PROTOCOLS FOR WATER QUALITY MONITORING

Central San collects water quality samples for **ALL** Category 1 SSOs. The Field Superintendent or a Field Supervisor will collect, transport, and submit water quality samples for analysis to Central San's Laboratory, located at our Treatment Plant in Martinez, California. Samples are taken at or near where the SSO reaches the surface water (entry point), approximately 100 feet upstream and downstream of the entry point. The samples are collected as soon as the blockage has been cleared or if additional staff is available the sampling activities will be completed in concurrence with clearing the blockage. The samples are analyzed for ammonia, total coliform, fecal coliform, enterococcus, and e-coli. Additional follow up samples are recommended to confirm the extent that the impact reverts to baseline levels. Follow up samples can be used to determine if posting of warning signs should be discontinued, if signs were posted. Collaboration with the Office of Emergency Services, Fish and Wildlife, and the County Health Department shall continue until closures have been removed.

In addition, Central San has contracted with Environmental Science Associate to provide a certified Biologist to review and provide recommendations for **ALL** Category 1 SSOs. Central San staff performs the creek cleanup and the biologist is required, within 48-hours, to inspect the site for any additional cleanup activities. The Biologist then submits a report to Central San outlining the findings. The Biologist reports are attached to the SSO backup documentation and kept at the Collection System Operations location in Walnut Creek.



2.0 ACCOUNT FOR SPILL TRAVEL TIME IN THE SURFACE WATER AND SCENARIOS WHERE MONITORING MAY NOT BE POSSIBLE

The following methods are recommended to estimate spill travel time and direction:

Method 1: Use a velocity probe (such as a Global Water FP111-S Flow Probe) to determine the rate of flow in the surface water, or

Method 2: **Visual feet per second measurement.** This may be done by observing or dropping floatable debris in the surface water and timing how long it takes to travel over a measured distance (e.g., 100 feet). Include sections in the surface water where there are bends, bottlenecks, or other characteristics that may slow down the flow. If the first measurement is uncertain, this estimate may be performed three to five times, and the values averaged to determine an estimated travel time.

Either method will provide a means to estimate the distance traveled and identify where the SSO may be headed within the waterway.

The following are scenarios where monitoring may not be possible:

Be aware of safety issues and do not subject personnel to unsafe conditions in order to comply with this Water Quality Monitoring Plan. Sampling will not be conducted if there are any concerns regarding field crew safety. These concerns may include:

- Heavy rain events that compromise access points through flooding and swift currents
- Rain events that include lightning
- Steep creekbanks that limit access
- Large flows in creek that are not conducive to sampling

3.0 REQUIRE WATER QUALITY ANALYSIS FOR AMMONIA AND BACTERIAL INDICATORS TO BE PERFORMED BY AN ACCREDITED OR CERTIFIED LABORATORY

Central San is required to meet dozens of stringent water quality regulations. We operate a laboratory that is located at our wastewater treatment plant, located at 5019 Imhoff Place in Martinez, CA. Central San's laboratory is certified by the California State Environmental Laboratory Accreditation Program. The lab uses equipment capable of detecting some pollutants to the parts per quadrillion.

Approximately 35,000 tests are conducted on an annual basis to identify a variety of wastewater constituents, including ammonia, bacteria, metals, toxic organic compounds, and pathogens.

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

Central Contra Costa Sanitary District, Dr. Mario M. Menesini Environmental Laboratory

5015 Imhoff Place

Martinez, CA 94553

Scope of the certificate is limited to the "Fields of Testing" which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection, proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1397**

Expiration Date: **12/31/2020**

Effective Date: **1/1/2019**

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program

CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing

Central Contra Costa Sanitary District, Dr. Mario M. Menesini Environmental Laboratory
Plant Operations Division
5015 Imhoff Place
Martinez, CA 94553
Phone: 9253357751

Certificate No. 1397
Expiration Date 12/31/2020

Field of Testing:	107 - Microbiology of Wastewater		
107.020	002	Total Coliform (Enumeration)	SM 9221 B-2006
107.030	002	Total Coliform with Chlorine Present	SM 9221 B,C-2006
107.040	002	Fecal Coliform (Enumeration)	SM 9221 C,E-2006
107.050	002	Fecal Coliform with Chlorine Present	SM 9221 C,E-2006
107.242	001	Enterococci	Enterolert
Field of Testing:	108 - Inorganic Chemistry of Wastewater		
108.110	001	Turbidity	EPA 180.1
108.381	001	Oil and Grease	EPA 1664 A
108.410	001	Alkalinity	SM 2320 B-1997
108.421	001	Hardness	SM 2340 C-1997
108.430	001	Specific Conductance	SM 2510 B-1997
108.440	001	Residue, Total	SM 2540 B-1997
108.441	001	Residue, Filterable TDS	SM 2540 C-1997
108.442	001	Residue, Non-filterable TSS	SM 2540 D-1997
108.443	001	Residue, Settleable	SM 2540 F-1997
108.461	001	Chlorine, Total Residual	SM 4500-Cl C-2000
108.470	001	Cyanide, Total	SM 4500-CN B or C-1999
108.472	001	Cyanide, Total	SM 4500-CN E-1999
108.490	001	Hydrogen Ion (pH)	SM 4500-H+ B-2000
108.500	002	Ammonia (as N)	SM 4500-NH3 B,C-1997
108.501	002	Kjeldahl Nitrogen,Total (as N)	SM 4500-NH3 C-1997
108.504	002	Ammonia (as N)	SM 4500-NH3 F-1997
108.508	002	Ammonia (as N)	SM 4500-NH3 H-1997
108.511	001	Kjeldahl Nitrogen,Total (as N)	SM 4500-Norg B- 1997
108.514	001	Nitrate (as N)	SM 4500-NO2 B-2000
108.529	001	Nitrate-Nitrite (as N)	SM 4500-NO3 F-2000
108.529	002	Nitrate (as N)	SM 4500-NO3 F-2000
108.529	003	Nitrate (as N)	SM 4500-NO3 F-2000
108.532	001	Oxygen, Dissolved	SM 4500-O C-2001
108.540	001	Phosphate,Ortho (as P)	SM 4500-P E-1999
108.541	001	Phosphorus,Total	SM 4500-P E-1999
108.544	001	Phosphate,Ortho (as P)	SM 4500-P G-1999
108.545	001	Phosphorus,Total	SM 4500-P H-1999

As of 5/15/2019 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

108.584	001	Sulfide (as S)	SM 4500-S D-2000
108.592	002	Carbonaceous BOD	SM 5210 B -2001
108.660	001	Chemical Oxygen Demand	Hach 8000
108.999	002	Nitrate	SM 4180
108.999	003	Cyanide, Manual Distillation	SM 4500-CN I-1999
108.999	004	Oxygen, Dissolved	ASTM D888-09C
108.999	005	Cyanide, Total	Kelada-01 Revision 1.2
Field of Testing:	109 - Toxic Chemical Elements of Wastewater		
109.020	001	Aluminum	EPA 200.8
109.020	002	Antimony	EPA 200.8
109.020	003	Arsenic	EPA 200.8
109.020	004	Barium	EPA 200.8
109.020	005	Beryllium	EPA 200.8
109.020	006	Cadmium	EPA 200.8
109.020	007	Chromium	EPA 200.8
109.020	008	Cobalt	EPA 200.8
109.020	009	Copper	EPA 200.8
109.020	010	Lead	EPA 200.8
109.020	011	Manganese	EPA 200.8
109.020	012	Molybdenum	EPA 200.8
109.020	013	Nickel	EPA 200.8
109.020	014	Selenium	EPA 200.8
109.020	015	Silver	EPA 200.8
109.020	016	Thallium	EPA 200.8
109.020	017	Vanadium	EPA 200.8
109.020	018	Zinc	EPA 200.8
109.361	001	Mercury	EPA 1631 E
Field of Testing:	110 - Volatile Organic Chemistry of Wastewater		
110.040	000	Purgeable Organic Compounds	EPA 624
Field of Testing:	111 - Semi-volatile Organic Chemistry of Wastewater		
111.100	000	Base/Neutral & Acid Organics	EPA 625
111.103	000	Nitrosamines	EPA 625
Field of Testing:	113 - Whole Effluent Toxicity of Wastewater		
113.021	001A	Fathead Minnow (P. promelas)	EPA 2000 (EPA-821-R-02-012), Static
113.021	001B	Fathead Minnow (P. promelas)	EPA 2000 (EPA-821-R-02-012), Static Renewal
113.021	001C	Fathead Minnow (P. promelas)	EPA 2000 (EPA-821-R-02-012), Continuous Flow
Field of Testing:	114 - Inorganic Chemistry of Hazardous Waste		
114.020	001	Antimony	EPA 6020
114.020	002	Arsenic	EPA 6020
114.020	003	Barium	EPA 6020
114.020	004	Beryllium	EPA 6020

As of 5/15/2019 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

114.020	005	Cadmium	EPA 6020
114.020	006	Chromium	EPA 6020
114.020	007	Cobalt	EPA 6020
114.020	008	Copper	EPA 6020
114.020	009	Lead	EPA 6020
114.020	010	Molybdenum	EPA 6020
114.020	011	Nickel	EPA 6020
114.020	012	Selenium	EPA 6020
114.020	013	Silver	EPA 6020
114.020	014	Thallium	EPA 6020
114.020	015	Vanadium	EPA 6020
114.020	016	Zinc	EPA 6020
114.141	001	Mercury	EPA 7471 A
114.221	001	Cyanide, Total	EPA 9012 A
114.241	001	Corrosivity - pH Determination	EPA 9045 C
Field of Testing:	115 - Extraction Test of Hazardous Waste		
115.030	001	Waste Extraction Test (WET)	CCR Chapter11, Article 5, Appendix II
Field of Testing:	116 - Volatile Organic Chemistry of Hazardous Waste		
116.080	000	Volatile Organic Compounds	EPA 8260 B
116.080	120	Oxygenates	EPA 8260 B
Field of Testing:	117 - Semi-volatile Organic Chemistry of Hazardous Waste		
117.110	000	Extractable Organics	EPA 8270 C
Field of Testing:	126 - Microbiology of Recreational Water		
126.080	001	Enterococci	Enterolert

As of 5/15/2019 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

4.0 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

The below list references documents where persons reviewing SSO data would look to answer questions about calibration and maintenance of equipment used to measure parameters for a SSO sample. The three documents listed below are kept at the District's Laboratory, located in Martinez, California. Records pertaining to maintenance and calibration of equipment used to analyze SSO samples are available by request.

1. Central Contra Costa Sanitary District Dr. Mario M. Menesini Environmental Laboratory Quality Assurance Manual (covers general maintenance and calibration procedures).

2. Standard Operating Procedures for methods used to analyze sanitary sewer overflow samples (These will have calibration procedures/frequency along with quality control frequencies and acceptance limits).

3. Instrument logbooks where preventative or reactive maintenance along with software updates are described.

5.0 WITHIN 48 HOURS OF THE ENROLLEE BECOMING AWARE OF THE SSO, REQUIRE WATER QUALITY SAMPLING FOR, AT A MINIMUM, THE FOLLOWING CONSTITUENTS:

- Ammonia
- 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

SSO Sampling Contact Information

Company	Contact Person	Phone #
Central San Lab Administrator	Mary Lou Esparza	925-335-7751 925-260-1470 cell
Central San Supervising Chemist	Blake Brown	925-229-7237
Central San Collection System Superintendent	Steve Sauter	925-229-7150 925-260-2046 cell
Central San Collection System Supervisor	Alex Benavidez	925-229-7175 925-383-0795 cell
Central San Collection System Division Manager	Paul Seitz	925-335-7743 925-383-0033 cell
Environmental Science Associates Biologist	Garrett Leidy	510-463-6738
Environmental Science Associates Vice President	Erich Fischer	916-564-4500

FIELD EQUIPMENT SUPPLIES NEEDED FOR SAMPLING

The following list describes equipment that should be stocked and readily available for each water quality sampling event.

1. Personnel protective equipment including latex/nitrile gloves and eye protection
2. 3 Coolers for samples – entry point sample, upstream sample and downstream sample
3. Ice for coolers to keep samples cold
4. 3 – 100 ml Sterile plastic containers (containing a tablet of sodium thiosulfate preservative) for Bacteria sample collection – entry point sample, upstream sample and downstream sample
5. 6 – 1 L sterile plastic containers
6. 1 – Sampling apparatus with 10' extension handle
7. 1 Gallon plastic bags used for any trash
8. Chain of Custody and Analysis Forms

Ensure that there are adequate quantities of sample containers-kits if there are more than three sample locations.

SAMPLE COLLECTION BEST PRACTICE

1. Collect all grab samples approximately 3 – 6" below the surface (or if shallower, as close as possible to this depth) to avoid sampling debris or scum from the surface.
2. Collect the sample in a safe manner in the middle of the flow, against the direction of water flow.
3. Leave approximately one inch of head space in individual sample bottles. Do not overfill.
4. Once the lid is opened for the individual sample bottle, do not touch the inside surface of the bottle or lid.
5. For the sample bottles that contain a preservative, take care to keep the preservation material in the container.
6. Once samples have been gathered, immediately place all sample bottles on ice.
7. Deliver samples to Central San's Laboratory.

SAMPLING TIME CONSTRAINTS

Bacteria samples have a 6-hour (preserved and cooled) regulatory holding time. Samples will not be analyzed if the holding time has been exceeded. Central San's Laboratory needs about 30 minutes to set up the tests.

Ammonia samples have a 28-day regulatory holding time. Samples must be maintained at 6°C / 43°F (on ice or refrigerated) from the time of collection until receipt by Central San's Laboratory.

SAMPLING PROCEDURE

1. Remove three (3) ice chests from Overflow Response Cabinet located in the CSO Warehouse.

2. Verify all 3 ice chests each have 1 – 100 ml bottle (with dichlorination tablet already inside) and 2 – 1 L bottles.

3. Fill ice chests approximately half-full of ice.

4. Site sample should be taken at the entry point of spill, approximately 100’ upstream of entry point and 100’ downstream of entry point location.

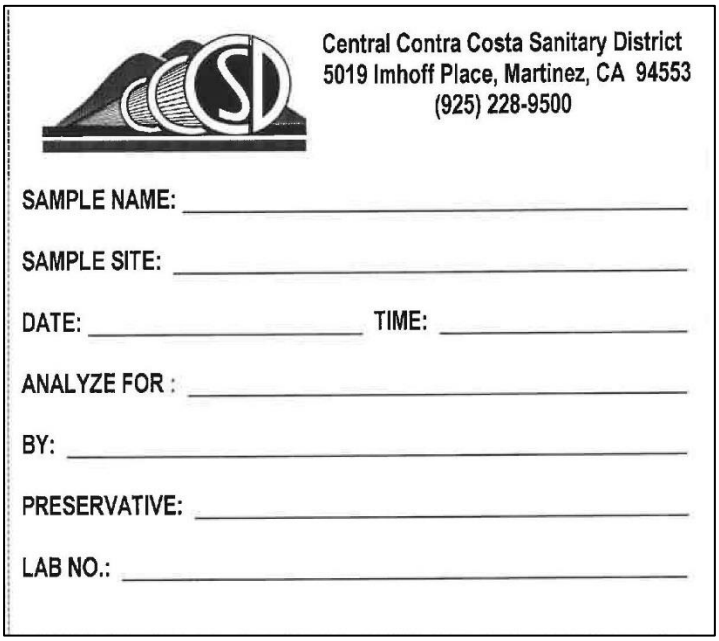
5. Use 1 L bottle to fill 100 ml bottle to fill line taking caution not to lose the sodium thiosulfate preservative. Secure the lid and lock tab.

6. Repeat Step 5 three times for the three sample locations.

7. Fill both 1 L bottles with sample leaving 1-inch of headspace in the sample bottle.

8. Repeat Step 7 three times for the three sample locations.

9. Fill out labels (2 sizes for different bottles) with appropriate information (see below) and apply to bottles. Use Sharpie ultra-fine point or similar, to avoid smearing.



10. Put all samples bottles in their corresponding ice chests and deliver to lab within 6 hours.

11. Fill out Chain of Custody and Analysis Form for each location where samples were taken.

CHAIN OF CUSTODY AND ANALYSIS FORM

CSOD SEWER OVERFLOW
ANALYSIS REQUEST/CUSTODY RESULTS

Sample:	Location:	LAB NUMBER
25 TAPPAN LN OR.	DOWNSTREAM 10 ICHABOD LN	Comp:
Sampled by: SAUTER	Date: 2.04.19	Grab: AA 69141
Sample type: GRAB	Time: 3:20 P.M.	
Project:	Report to:	

SOLIDS		WET CHEMISTRY		METALS		ORGANICS	
Γ Settleability, mg/L		: AMMONIA, mg/L	X	Units:		Check when report is attached	
Γ pH units		Γ Organic nitrogen, mg/L		Γ Aluminum		Γ EPA 624/8260	
Γ TSS, mg/L		: COD, mg/L	X	Γ Antimony		Γ EPA 625/8270	
Γ Volatile SS, mg/L		Γ Nitrite, mg/L		Γ Arsenic		Γ EPA 610 (PAH)	
Γ SVI, ML/g-30 min.		Γ Nitrate, mg/L		Γ Barium		Γ EPA 614	
Γ Temperature, C		Γ OrthoPhosphate, mg/L		Γ Beryllium		Γ EPA632	
Γ TS, %		Γ Turbidity, NTU		Γ Cadmium		Γ EPA 608/8080	
Γ Volatile TS, mg/L		Γ Hardness, mg/L		Γ Chromium		Γ EPA 1613	
Γ TDS, mg/L		Γ Sulfate, mg/L		Γ Chromium 6+		Γ Tributyltin	
Γ Alkalinity, mg/L		Γ Chloride, mg/L		Γ Cobalt		Γ TPH (Gas)	
Γ Sulfide, mg/L		Γ Cyanide total, ug/L		Γ Copper		Γ TPG (Diesel)	
		Γ Cyanide WAD, ug/L		Γ Lead		Γ Organic lead	
BIOASSAY		Γ Total phosphorus, mg/L		Γ Manganese		Γ Kepone/Mirex	
Γ LC_{50}				Γ Mercury 245.2		Γ EPA 8151	
Γ Stickleback				Γ Mercury 1631		Γ TCDD equivalents (EPA 1613A)	
Γ Fathead minnow		BACTI		Γ Molybdenum			
Γ AquaScience toxicity		: TOTAL COLIFORM, MPN//100ml	X	Γ Nickel			
2/4/19 16:19 pm		: FECAL COLIFORM, MPN//100ml	X	Γ Selenium		OIL AND GREASE	
		: ENTEROCOCCUS, CFU/ml	X	Γ Silver		Γ Oil and grease, mg/L	
BOD		Γ Salinity		Γ Thallium			
: DO PROBE, mg/L	10.23	Γ Conductivity		Γ Vanadium		HAZARDOUS WASTE	
: CBOD, mg/L	X	: CHLORINE, mg/L	10.09 started 0.00	Γ Zinc		Check when report is attached	
		2/4/19 16:12 finished				Γ TCLP extraction	
Additional Tests:						Γ DI TCLP extraction	
						Γ Asbestos, %	
						Γ STLC extraction	
						Γ DISTLC extraction	
						Γ Fluoride, mg/L	

CUSTODY	Signature	Date and Time	Number/Type of Containers and Preservatives
Relinquished by:		2:04:19 4:05	
Received by:		2/4/19 4:05	
Relinquished by:			
Received by:			

Reviewed and Approved by: M.Esparza Date: 2-5-19

CSO/C:\DOCUME~1\DIGIUS~1.CCC\LOCALS~1\Temp\lab analysis request.doc

Facility Identifier	Install Date	Material	Diameter	Recorded Length	Address of Asset	Latest CCTV Inspection Date	Latest Total CCTV Score	Notes/Comments
47B7-RI1/47A7-M38	1/1/51	Vitrified Clay	6"	565	2056 ELINORA DR, PLEASANT HILL	5/21/14	22750	Abandonment Scheduled
72A5-M16/72A5-M15	1/1/48	Vitrified Clay	6"	465	817 MORAGA RD, LAFAYETTE	7/18/17	15370	Will be repaired in a future project.
72D7-M18/72D7-M4	1/1/48	Vitrified Clay	15"	323	638 GLENSIDE DR, LAFAYETTE	8/17/17	15210	Will be repaired in a future project.
46E3-M51/46E3-M50	1/1/48	Vitrified Clay	6"	328	1890 VICKI LN, PLEASANT HILL	6/9/17	14320	Will be repaired in a future project.
71E2-M19/71E3-M24	1/1/48	Vitrified Clay	6"	477	1036 DOLORES DR, LAFAYETTE	8/19/22	13840	Will be repaired in a future project.
72B3-M22/72B3-M20	1/1/13	Vitrified Clay	6"	408	3455 MORAGA BLVD, LAFAYETTE	9/1/17	13440	Will be repaired in a future project.
72C3-RI19/72C3-M18	1/1/48	Vitrified Clay	6"	701	3332 VICTORIA AVE, LAFAYETTE	8/17/17	13270	Will be repaired in a future project.
75D5-M47/75D5-M46	1/1/50	Vitrified Clay	8"	424	2550 SAN MIGUEL DR, WALNUT CREEK	10/31/17	13140	Repaired by Pipe Burst
72B4-M52.5/72B4-M52	1/1/48	Vitrified Clay	6"	388	872 MORAGA RD, LAFAYETTE	8/7/17	12090	Will be repaired in a future project.
78A1-M49/78A1-M48	1/1/64	Vitrified Clay	8"	556	2748 FALCON VIEW CT, ALAMO	10/14/16	11450	Will be repaired in a future project.
71C2-RI33/71C2-M31.3	1/1/49	Vitrified Clay	6"	259	4125 LOS ARABIS DR, LAFAYETTE	11/9/11	11330	Will be repaired in a future project.
46E3-RI62/46E3-M61	1/1/51	Vitrified Clay	6"	436	181 LUCINDA LN, PLEASANT HILL	8/16/23	11720	Will be repaired in a future project.
47A2-M44/47A1-M105	1/1/50	Vitrified Clay	6"	376	160 CHRISTEN DR, PLEASANT HILL	5/18/23	10100	Will be repaired in a future project.
47A6-M19/47A6-M18	1/1/51	Vitrified Clay	12"	445	319 KATHLEEN DR, PLEASANT HILL	4/26/23	15840	Will be repaired in a future project.
75B4-M15/75B4-M14.1	1/1/49	Vitrified Clay	6"	250	1560 ORCHARD LN, WALNUT CREEK	11/10/23	18070	Will be repaired in a future project.
75B5-M6/75B5-M5	1/1/49	Vitrified Clay	8"	222	154 GLEN CT, WALNUT CREEK	11/14/23	13920	Will be repaired in a future project.
* Lines within 200ft of surface water with significant defects								