



# **Waste Discharge Requirements Sewer System Management Plan Audit**

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Prepared for:

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## ES EXECUTIVE SUMMARY

The Orange County Sanitation District (OC San) retained EEC Environmental (EEC) to conduct an audit of OC San's sewer system management practices and effectiveness in implementing its Sewer System Management Plan (SSMP) pursuant to statewide sewer regulations.

The audit, completed in March 2021, consisted of a desktop review of OC San's SSMP and supporting documentation, staff interviews, and development of recommendations for corrective actions and program enhancements. In general, OC San's sewer system management operations are consistent with the SSMP and are effective in limiting sanitary sewer overflows (SSOs) in OC San's service area. However, some nonconformances and opportunities for program enhancements were identified.

The audit findings are described in terms of the level of conformance of OC San's SSMP to the State Water Resources Control Board's waste discharge regulations (Table ES-1, *Summary of 2021 Sewer System Management Program Audit Results and Recommendations*). Findings and recommendations are categorized as follows:

- *Major Nonconformance* – A deficiency that could result in a notice of violation, fine, or other enforcement action by the regulatory agency.
- *Minor Nonconformance* – A deficiency that would not normally result in a notice of violation, a fine, or other enforcement action by the regulatory agency.
- *Recommended Corrective Actions* – Recommended modifications to OC San's current operations and practices to correct areas of nonconformance with the SSMP.
- *Recommended Enhancements* – Opportunities for enhancing the efficiency or overall operations of the sewer system management program.

The results of the 2021 audit are summarized as follows:

- 0 major nonconformances
- 3 minor nonconformances
- 3 recommended corrective actions
- 12 recommended enhancements

It is anticipated that these minor nonconformances will be fully addressed with SSMP updates pursuant to the recommended corrective actions. Based on information gathered from interviews with District staff and a review of the current SSMP, as well as the consistently low number of SSO events that have occurred within OC San, the on-going implementation of SSMP policies and practices has been effective at reducing and preventing SSOs within OC San's service area.

**Table ES-1, Summary of the 2021 Sewer System Management Program Audit Results and Recommendations**

SSMP Performance Category	Target	Level of Conformance to SSMP	Corrective Action	Target Date for Correction	Recommended Enhancements
Goal	Create goals to system operations and SSO reduction.	In Conformance	N/A	N/A	Consider adding measurable goals to quantify the effectiveness of the SSMP
Organization	Identify lines of authority and responsibilities for implementing the SSMP.	In Conformance	N/A	N/A	None
Legal Authority	Possess the legal authority to implement and enforce the elements of the SSMP and Sewer System.	In Conformance	N/A	N/A	None
Operation and Maintenance Program	Maintain mapping of the storm drain conveyance systems. Provide a Capital Improvement Plan for rehabilitation and replacement projects.	Minor Nonconformance	Add a reference to the Capital Improvement Plan in Section 5.3 of the OC San SSMP Vol 1.	July 2021	Utilize cleaning results/observation and CCTV data to evaluate and optimize line cleaning frequencies. Conduct pro-active assessments of trouble spot locations to determine cause of the location and potential mitigation measures. Update the SSMP to reference Appendix H for the list of short and long-term projects.
		Minor Nonconformance	Add a storm drain systems layer to the GIS mapping system.	December 2021	Section 5.3 and 5.3.1 are duplicated. One of the 5.3 and 5.3.1 sections should be removed from the SSMP. Identify or provide additional training opportunities for District staff on key topics Create and implement standard operating procedures for key processes (Based on interviews scheduled for completion and end of fiscal year):
Design and Performance Provisions	Establish design and construction standards for all sewer assets.	In Conformance	N/A	N/A	Establish an official "Lessons Learned" procedure after projects to determine if the design guidelines need to be updated or modified to account for new technologies.
Overflow Emergency Response Plan	Establish a program to respond to, mitigate, and report SSOs.	In Conformance	N/A	N/A	Conduct emergency bypass training at selected "high risk" pump stations.
					Conduct training for field staff with a focus on sampling and lab support for the event of an SSO exceeding 50,000 gallons.
FOG Control Program	Create a FOG program to mitigate and limit the FOG discharge from FSEs into the sewer system.	In Conformance	N/A	N/A	When possible, re-inspect each FSE to determine if any changes have occurred and to re-educate them on the FOG Control Program Requirements.
					Incorporate self-monitoring reports such as training and pumping records for FSEs to monitor compliance when inspections can't be conducted.
System Evaluation and Capacity Assurance Plan	Create a system evaluation and capacity assurance plan which includes; evaluation, design criteria, capacity enhancement measures, and CIP schedule.	In Conformance	N/A	N/A	None.
Monitoring, Measurement, and Program Modifications	Maintain relevant information to prioritize SSMP activities. Monitor the implementation and effectiveness of the SSMP. Assess the success of the preventative maintenance program. Update program elements as necessary. Identify and illustrate SSO trends.	In Conformance	N/A	N/A	None.
SSMP Program Audit	Conduct biennial audits of the SSMP program, and implement corrective actions identified during the audits.	Minor Nonconformance	Address all nonconformances identified in the 2019 SSMP Audit.	December 2021	None.
Communication Program	Enrollees shall communicate with the public on the development, implementation, and performance of the SSMP.	In Conformance	N/A	N/A	None.

## 1.0 INTRODUCTION

The Orange County Sanitation District (OC San) is a public agency that provides wastewater collection, treatment, and disposal services to the central and northwest areas of Orange County. The OC San headquarters are located at 10844 Ellis Avenue in Fountain Valley, CA., and OC San has a second wastewater treatment facility located at 22212 Brookhurst Street in Huntington Beach, CA. OC San serves a population of approximately 2.6 million, as well as residential, commercial, and industrial sources. OC San's sewer system assets consist of 388 miles of mainline sewers, 32 miles of pressurized sewer lines (force mains), and 15 wastewater pumping stations.

In 2002, the State Water Resources Control Board adopted sewer regulations, termed waste discharge requirements (WDR) for Region 8, aimed at reducing the occurrence of sanitary sewer overflows (SSOs). In an effort to create uniformity in the way sewer systems are managed across the state, the SWRCB, through the WDR, requires any sewer agency with a sewer system of greater than 1 mile to implement a sewer system management plan (SSMP). To comply with the WDR, OC San developed an SSMP establishing policies and procedures to direct sewer system management in its service area and uphold California water quality standards.

The SSMP must be audited every two years to assess the effectiveness of the plan and identify improvements that could further increase the plan's effectiveness in limiting SSOs. OC San conducted an initial internal audit in 2019 that identified necessary revisions to the SSMP. OC San subsequently updated the SSMP based on the findings of the 2019 audit.

EEC Environmental (EEC) was retained to support OC San in developing and performing a follow-up audit of the SSMP following the results of the initial audit. The SSMP audit focused on the OC San activities for calendar years 2019 and 2020. This report documents the results of the internal audit conducted in November 2020 through March 2021.

## 2.0 AUDIT METHODS

EEC's framework for the SSMP audit consists of five key elements:

- 1) Audit Kick-Off Meeting – A kick-off meeting with OC San staff was conducted to describe the audit process, define the purpose of the audit, and set expectations for the audit.
- 2) SSMP Assessment – OC San's SSMP was reviewed to evaluate the level of conformance of the SSMP to the requirements of the WDR.
- 3) Documentation/Data Gathering and Review – All available data and previously prepared documents relevant to the SSMP were gathered and reviewed (Appendix A, *List of SSMP Documents and Data Reviewed*). Information from this review was used to plan staff interviews regarding OC San practices, policies, and procedures related to the SSMP.
- 4) Staff Interviews – Multiple interviews with OC San staff were conducted to assess the level of conformance of OC San practices with the policies and procedures identified in the SSMP (Table 2-1, *Orange County Sanitation District Personnel Interviewed*). Personnel were asked to provide their opinion on the performance of, and recommend improvements to, the sewer system management program.

**Table 2-1, Orange County Sanitation District Personnel Interviewed**

<b>Name</b>	<b>Title</b>	<b>Responsibility</b>
Mr. Dindo Carrillo	Regulatory Specialist	SSO Reporting & Outside Agency Notifications
Ms. Lan Wiborg	Director for Environmental Services	Environmental Compliance / Regulatory Affairs / Source Control Operations / Environmental Laboratory and Ocean Monitoring
Ms. Lisa Frigo	Supervisor for Environmental Compliance	Management of design and improvement
Mr. Don Stokes	Maintenance Manager (Collections)	Collections Maintenance / LRO
Mr. James Cabral	Maintenance Supervisor	Collections O&M / SSO Response / LRO
Mr. Steve Grande	Lead Mechanic	Collections O&M / SSO Response
Mr. Sam Choi	Supervisor	Environmental Laboratory and Ocean Monitoring
Ms. Lori McKinley	Pr. Environmental Specialist	FOG Program Management
Ms. Eros Yong	Engineering Manager	Planning
Mr. Brian Waite	Engineering Supervisor	Asset Management
Ms. Marianne Klein	Engineering Supervisor	Design & Performance Provisions
Mr. William Cassidy	Engineering Supervisor	Collections O&M / SSO Response
Mr. Mark Kawamoto	Engineering Supervisor	FOG Program Management
Mr. Charles Falzone	Senior Engineer	Collections
Ms. Wendy Smith	Engineer	System Evaluation & Capacity Assurance/ Pumpstation Asset Management/ Planning and Implementation
Mr. Troy Edwards	Engineer	System Evaluation & Capacity Assurance/ Pumpstation Asset Management/ Planning and Implementation
Mr. Adnan Rahman	Associate Engineer	Collections O&M / Asset Management / Team Utilities
Mr. Santiago Escobar	Associate Engineer	Pump Station Condition Assessment and Remediation
Mr. Ernie Savedra	Lead Mechanic	Pumpstation and Facility Maintenance
Mr. Mike Bolster	Maintenance Specialist	Pump Station Condition Assessment and Remediation
Mr. Robert Solis	Sr. Mechanic	Pumpstation and Facility Maintenance
Ms. Stephanie Ruiz	Administrative Assistant (Collections)	Collections Documentation
Ms. Jennifer Cabral	Administrative Manager	Communications
Ms. Cortney Light	Staff Analyst	SOP Updates

- 5) Report Preparation – A report was prepared documenting the audit findings and recommendations. The report was provided to OC San staff for review. The findings of the report were also presented to OC San’s Board of Representatives.

## 2.1 Performance Measures

EEC evaluated OC San's sewer system management operations against the established SSMP policies and procedures:

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

## 2.2 Results Reporting

To enable OC San to focus on improving its sewer system management program, EEC's findings for each performance area are described in terms of the degree of nonconformance with the SSMP:

- A *minor nonconformance* is a minor deficiency in OC San's sewer management program that would not normally warrant issuance of a notice of violation, fine, or other enforcement action by the regulatory oversight agency. This type of nonconformance usually occurs when an SSMP requirement is not being met and can occur when repeated deficiencies become a trend.
- A *major nonconformance* is a serious deficiency in OC San's sewer management program that may warrant a notice of violation, fine, or other enforcement action by the regulatory oversight agency. This type of nonconformance is normally the result of noncompliance with an applicable State regulation or permit.

For each identified nonconformance, EEC recommends specific actions to correct the nonconformance to the extent practicable. In some cases, EEC recommends enhancements to certain elements of OC San's sewer system management program.

- A *recommended corrective action* is a recommended change to OC San sewer system management operations where existing practices do not conform to the SSMP. Implementation of these actions is expected to improve the efficiency and effectiveness of the SSMP and should be implemented as soon as practicable.
- A *recommended enhancement* is a recommended action that would enhance the overall operations of OC San's sewer system management program. This action does not need to be implemented immediately, but once implemented, can improve the efficiency of operations and help prevent future nonconformances.



## 3.0 RESULTS

The following sections describe each SSMP performance category, outline performance criteria, and document OC San's conformance to each SSMP category. Corrective actions are recommended where OC San's practices do not conform to the policies of the SSMP.

### 3.1 Goals

Finding: OC San is fully conformant to the SSMP in this area; one enhancement is recommended.

OC San measures the effectiveness of its sewer system management program by the prevention and mitigation of SSOs. OC San utilizes internal metrics such as SSO rates, volumes of spills, and historical data to evaluate the effectiveness of its programs.

#### 3.1.1 *Protect Public Health and the Environment*

Based on the historically low number of SSOs that have occurred within OC San, OC San is meeting its goal to protect public health and the environment. Additionally, OC San has implemented emergency response procedures and resources to be able to respond to any issues or system related failures that could occur. Based on interviews with staff, OC San is transparent with issues and documents that could affect public health or the environment by posting all SSMP related documents on their website. OC San also encourages the public to provide insight or feedback on OC San practices.

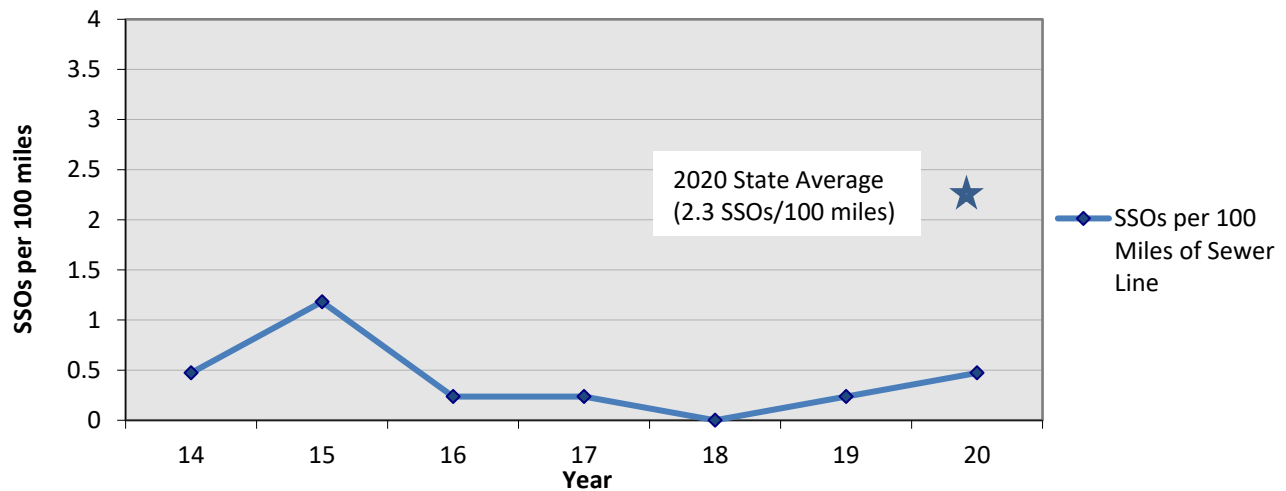
#### 3.1.2 *Plan and Schedule for Management, Operation, and Maintenance of Sewer System*

OC San has established maintenance schedules for sewer lines; pump stations; force mains; siphons; and hot spots, or areas of the sewer that are prone to SSOs and require more frequent cleaning. OC San monitors the status of these maintenance activities to ensure that designated schedules are being met. In addition, OC San has established and implemented a condition assessment plan, Capital Improvement Plan, Inflow and Infiltration (I/I) Reduction Program, and Hot Spot Abatement Program. The combination of these plans and programs with the established maintenance efforts allows OC San to keep SSO incidents consistently low. These plans and programs are discussed in detail in later sections of this audit.

#### 3.1.3 *Reduction and Prevention of Sewer System Overflows*

In 2020, OC San had 2 public SSOs and only 1 public SSO in 2019. In 2018, OC San did not have a public SSO in its service area and since 2014 has not averaged more than 2.0 SSOs per 100 miles of sewer. The SSO rate over the four-year period remained below the State average of 2.3 SSOs for every 100 miles of sewer for similarly sized sewer systems between 300 and 500 miles (Figure 3-1, *Public Sanitary Sewer Overflows per 100 Miles of Sewer Line in OC San Service Area, 2014–2020*).

**Figure 3-1, Public Sanitary Sewer Overflows per 100 Miles of Sewer Line in OC San Service Area, 2014–2020**



OC San uses closed-circuit television (CCTV) to inspect locations where SSOs previously occurred to determine causes of the SSOs. OC San determines the need for repairs, enhances maintenance and source-control efforts, or implements other applicable corrective actions for SSO-prone locations to preclude repeated SSOs.

#### 3.1.4 Areas of Nonconformance to the Sewer System Management Plan

No nonconformances related to SSMP goals were identified.

No corrective actions are recommended at this time.

##### 3.1.4.1 Recommended Enhancements

EEC recommends one enhancement to the goals of the SSMP:

1. OC San should consider using measurable goals to quantify the effectiveness of the SSMP. The following are examples of measurable goals:
  - Maintain an SSO rate below the state average for similarly sized sewer systems (2.3 per 100 miles of sewer line).
  - Maintain an SSO recovery rate above the state average.
  - Maintain an SSO response time of less than 30 minutes.
  - Reduce the number of hot spot locations from year to year.
  - Reduce the inflow/infiltration within the sewer system.
  - Complete a specific number of classroom and training hours for staff.

The SSMP should be updated to include any identified program goals.

## 3.2 Organization

Finding: OC San is fully conformant to the SSMP in this area.

The WDR requires sewer agencies to appoint Legally Responsible Officials (LRO) to oversee the implementation of the SSMP. The SSMP must include the names and telephone numbers of staff responsible for implementing the elements the SSMP program and must outline the chain of communication for reporting SSOs.

OC San has adequately defined an organizational structure for sewer system management:

- Responsible officials
- Lines of authority and responsibilities for OC San SSMP program
- Chain of Communication for Reporting SSOs

OC San updated the Appendix C of the SSMP in 2020 to reflect the current organizational structure, including the names and telephone numbers of persons responsible for managing the sewer system. The organization structure of positions responsible for implementing the SSMP includes:

- General Manager – CIWQS Legally Responsible Official (LRO)
- Administration Manager, Communication – Ensures OCSD’s SSMP is available to the public and the public has input.
- Maintenance Manager, Collection Facilities Division – Legally Responsible Official (LRO) Designee, certify SSOs.
- Engineering Supervisor, Collection Facilities Division – Collection Facilities Operations and Maintenance, Emergency Response, CIWQS LRO Designee to certify SSOs.
- Maintenance Supervisor, Collection Facilities Division – Collection Facilities Operations and Maintenance, Emergency Response, CIWQS LRO Designee to certify SSOs.
- Operations Manager, Operations Division – Designate resources for Plants 1 & 2 operations.
- Control Center Clerks, Operations Division – SCADA Response, Public interface.
- Engineering Manager, Maintenance & Instrumentation and Electrical Division – Designate resources for maintenance, and repairs of electrical systems throughout the OCSD Collection System
- Maintenance Supervisor, Maintenance Division – Designate resources for maintenance reliability and PM optimization activities
- Maintenance Supervisor, Maintenance Division – Electrical/Instrumentation/Mechanical
- Maintenance Supervisor, Maintenance Division – Designate resources for maintenance planning activities
- Manager, Resource Protection Division (RPD) – Overall responsibility for the FOG Program
- Engineering Supervisor, Non-Industrial Source Control (NISC) – FOG Program
- Pr. Environmental Specialist, Resource Protection Division – FOG Program
- Director of Environmental Services – Overall responsibility for the SSMP; SSMP budgeting and staffing to comply with the Order, Audit Closure.
- Supervisor, Environmental Compliance – SSS WDR Order and audits, Lead OCSD stakeholder meetings.
- Pr. Environmental Specialist – Laboratory, Monitoring, and Compliance Division Responsible for updating the status of the SSMP audit in ECAP, Approves third-party invoices for audits.

- Regulatory Specialist – Laboratory, Monitoring, and Compliance Division SSO reporting and outside agency notification, Legislative tracking.
- Executive Assistant, Environmental Services Department – Program support, Update SSMP documents and implement document control, SSMP web posting.
- Director of Administrative Services – Sewer Fees and Finance
- I.T. Manager – I.T. Systems & Operations
- I.T. Supervisor – OCSD Mapping Tools to support the SSMP; Maximo.
- Controller – Financial Management
- Principal Staff Analyst – Finance Liability Claims
- Engineering Manager, Engineering Department, Planning Division – Overall responsibility for Planning
- Engineering Supervisor, Engineering Department, Planning Div. – CIP Planning
- Engineering Supervisor, Engineering Department, Planning Div. – Asset Management
- Engineer, Engineering Department, Planning Division – System Evaluation & Capacity Assessment / Collections System Asset Management, Planning, Implementation
- Engineer, Engineering Department, Planning Division – System Evaluation & Capacity Assessment / Pump Stations Asset Management, Planning, Implementation
- Engineering Manager – Engineering Department., Design Division Overall responsibility for Design & Perf; Construction Oversight; and Construction QA
- Engineering Supervisor, Engineering Department – Design Division Design & Perf Provisions
- Engineering Supervisor, Engineering Department, Design Division Construction Oversight (Pump Stations)
- Engineering Supervisor – Engineering Department, Design Division – Construction Oversight (Pipelines) Construction
- Inspection Supervisor, Engineering. Department – Design Division Construction Quality Assurance (Pump Stations) Construction.
- Inspection Supervisor, Engineering Department – Design Division Construction Quality Assurance (Pipelines).

OC San has also created the chain of communication for reporting an SSO. The chain of communication is part of Appendix P1 and Q1 of the SSMP. Based on the update history and interviews with OC San staff, both the Organization Chart and the chain of communication for reporting SSOs is updated regularly to remain accurate.

### *3.2.1 Areas of Nonconformance to the Sewer System Management Plan*

No non-conformances related to the Legal Authority were identified.

No corrective actions are recommended at this time.

#### 3.2.1.1 Recommended Enhancements

No program enhancements are recommended at this time.

### 3.3 Legal Authority

Finding: No instances of non-conformance identified.

OC San is in conformance with the Legal Authority section of the SSMP. The WDR requires that sewer agencies have appropriate legal authority to implement and enforce certain elements of the SSMP. On July 1, 2019, OC San adopted Ordinance No. OCSD-53 which replaced the previous 2016 ordinance.

- Prevent illicit discharges into the sanitary sewer (OCSD-53, Article 2, Section 201)
- Require that sewers and connections be properly designed and constructed (OCSD-53, Article 4)
- Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by OC San; not applicable, as OC San does not own or maintain laterals (California Civil Code 831)
- Limit the discharge of fats, oils, and grease (FOG) and other debris that may cause SSOs (OCSD-25)
- Enforce any violation of its sewer ordinances (OCSD-53, Article 6)

OC San reviews plumbing plans, inspects sewer system repairs and new construction, and enforces established policies. OC San has applied the necessary enforcement actions to promptly mitigate illicit discharges. While enforcement actions are rarely required, OC San has been able to effectively mitigate fats, oils, and grease discharge issues by requiring installation of grease interceptors for several existing facilities that are considered significant contributors to SSOs.

In addition to OC San's adopted ordinances, OC San utilizes the Engineering Design Guidelines and Sewer Connection Application and Permit for Construction as legal authority.

#### *3.3.1 Areas of Nonconformance to the Sewer System Management Plan*

No non-conformances related to the Legal Authority were identified.

No corrective actions are recommended at this time.

##### 3.3.1.1 Recommended Enhancements

No program enhancements are recommended at this time.

### 3.4 Operation and Maintenance Program

Finding: Three minor nonconformances identified; Three corrective actions are recommended and six program enhancements are recommended.

The SSMP outlines five key elements of OC San's sewer system operation and maintenance program:

- OC San sanitary sewer system mapping
- Preventative maintenance program
- Rehabilitation and replacement plan
- Training program
- Equipment and replacement parts inventory (not described in the SSMP)

#### 3.4.1 OCSD Sanitary Sewer System Map

OC San utilizes a geographic information system (GIS) based sewer atlas. The GIS-based atlas shows the location of gravity sewer lines and manholes, pumping facilities, and force main pipelines. A separate map showing the location of all storm water conveyance facilities is also available to field staff. OC San has also deployed field tablets to wastewater staff to allow access to the GIS in the field. The tablets allow field staff to have access to historical notes and sewer system structural issues and limits the amount of paperwork and field binders needed for staff. If field staff identify a discrepancy with the maps, the field staff takes a picture of the asset they are seeing to compare with the discrepancy in the map. Field staff then flags the map, and the discrepancy is sent to Engineering for correction. The mapping system does not currently have a layer with the stormwater conveyance system. Staff currently work with the OC San member agencies to determine the stormwater conveyance when needed.

Field staff can also use the maps to compare traffic patterns with assets on the street to plan work and traffic control. Staff also use the maps to plan diversions that facilitate siphon cleaning.

#### 3.4.2 Preventative Maintenance Plan

##### 3.4.2.1 System-Wide Cleaning

OC San has created and established a Preventative Maintenance Program which is included as Appendix L1 of the SSMP. The Preventative Maintenance Program discusses the cleaning frequencies of the different sizes of lines. 6"-12" lines are cleaned more frequently than larger diameter trunk sewer lines as they are more prone to blockages. Additionally, areas identified as being a higher-risk area is cleaned more frequently. Table 3-2, OC San Gravity Sewer Cleaning Frequencies, summarizes the cleaning frequency for each size of sewer lines.

**Table 3-2, OC San Gravity Sewer Cleaning Frequencies**

Gravity Pipe Diameter	Cleaning Frequency (Months)
6"-12" (High-risk)	12
6"-12" (Low-risk)	18
12"-42"	60
42" and Greater	As Needed

Work orders are created by the Planner using OC San's enterprise computerized maintenance management system (CMMS), Maximo. All work is pre-planned and scheduled for recurrence by calendar year. Prior to cleaning, supervisors and field staff will review previous cleaning reports and notes to determine if there are any potential obstacles or issues they may encounter. OC San currently utilizes three crews to conduct the cleaning. One crew focuses on large diameter lines, one crew for siphons, and the third crew cleans the small diameter sewer lines. Based on collections work order reports reviewed and interviews with staff, OC San does not have any issues with meeting the established cleaning frequencies, but occasionally has a backlog list of locations due to the need to clean those location at night.

When the work orders are created, Maximo provides the set number of days that is needed to clean the line segments. These days are compared to what is happening in the field by the supervisors. This review also allows the supervisors to communicate with field staff about the risk associated with each line (high flow, etc.). According to interviews with the supervisors, if the cleaning is on-schedule they are considered "in compliance" with the maintenance schedule. This internal compliance analysis is used to better estimate the cleaning schedules. The cleaning crews complete the work orders in the field and update accordingly in Maximo. The crews include their observations and provide descriptions of the condition of the line and any issues identified while cleaning.

### 3.4.2.2 Trouble Spot Locations and Lift Station Maintenance

OC San identifies the "trouble spots" within their collections system that require more frequent cleaning than other sewer segments. Trouble spots are cleaned weekly, monthly, quarterly or semi-annually depending on the amount of accumulation at the time of cleaning. OC San evaluates the trouble spot locations to determine the proper cleaning frequency. The lines are evaluated with CCTV, crew observations, and OC San recently purchased a cleaning nozzle with a camera to be able to evaluate the level of accumulation at the time of cleaning. OC San currently has 18 trouble spots on the cleaning list. Table 3-3, Trouble Spot Cleaning Frequencies, shows the number of trouble spots cleaned at each frequency.

**Table 3-3, Trouble Spot Cleaning Frequencies**

Frequency	Number of Locations
Weekly	0
Monthly	0
Quarterly	12
Semi-Annual	3
Annual	3

In addition to the trouble spot locations, OC San also has 66 siphon locations and two additional locations that were added to the preventative maintenance list. As a follow-up to an SSO or observed blockage, the crews can add a location to the preventative maintenance list until it can be shown that the segment is no longer required to be on the list.

OC San's 15 lift stations are inspected and maintained on a monthly basis. The inspections and maintenance activities include visual inspections, exercising of lift station equipment, vibration measurements, thermal imaging of electrical systems, and pressure readings. OC San installed single vane impellers that have helped to reduce ragging issues in the lift stations, but OC San still has some ragging

issues associated with the check valves. The inspections and maintenance activities are tracked in the work order created in Maximo. If an issue with the lift stations is identified, the corrective action is documented in Maximo and Maximo prioritizes the repairs based on the severity of the issue. Based on staff interviews, the older lift stations tend to have more issues than newer ones. For new lift station construction, OC San is incorporating online vibration systems, onsite generators, and dual force mains.

### *3.4.3 Rehabilitation and Replacement Plan*

#### 3.4.3.1 Asset Management

OC San has a proactive rehabilitation and replacement program that includes regular CCTV inspections of manholes and sewer lines and short-term and long-term repair and replacement projects. As of this audit, OC San was in year 4 of a 5-year CCTV program. The majority of the CCTV work is being completed by a contractor, Houston Harris. OC-San is also using Performance Pipeline to conduct the PACP ratings, and OC-San is using Pro-Pipe for the manhole MACP ratings. OC-San is using the PACP and MACP standards to rank the manholes and sewer lines for repairs. Based on staff interviews, OC San is currently developing a system to prioritize CCTV based on historic conditions. This will allow for sewer lines with a high PACP structural rating to be re-inspected more frequently than those with a lower rating.

OC San has established The Asset Management Plan, which was most recently updated in December of 2020. The plan identifies the short-term and long-term projects that OC San plans to complete. Short-term projects typically include repairing damaged manholes, CIPP lining smaller diameter sewers, and smaller replacement projects. Long-term projects typically include the rehabilitation or replacement of the larger trunk-sewer lines. Since the larger trunk-sewers are typically located on busy streets, planning, design and construction for these large trunk-lines can take multiple years to complete.

In the OC San SSMP, Section 5.3 and 5.3.1 are duplicated. One of the 5.3 and 5.3.1 sections should be removed from the SSMP.

#### 3.4.3.2 Capital Improvement Program

OC San has reviewed and established Capital Improvement Plan (CIP) expenditures over a 20-year period. The CIP identified the initially proposed projects and budgets for each year, and also allows for a budget for projects not yet identified. The CIP is also reviewed annually to determine if there are any projects or budgets that need to be added to the CIP.

The OC San SSMP does not mention the CIP as part of the Rehabilitation and Replacement Plan. The SSMP does reference the Rehabilitation and Replacement Plan as Appendix J to the SSMP. However, Appendix J does not include the list of short-term and long-term projects. The short-term and long-term projects are part of the Asset Management Plan which is Appendix H of the SSMP.

### *3.4.4 Staff Training*

In accordance with SSMP requirements, OC San staff responsible for operation and maintenance of the sewer system actively participate in education and training activities. OC San staff receive the necessary technical certifications to perform their tasks and OCSD conducts regular safety training for employees as well. Examples of training that staff undergo include:



**Safety Training:**

- Confined space and rescue
- Traffic control
- Dig alert
- General tailgate safety meetings

**Technical Training**

- Lift station maintenance
- Spill response
- Operations equipment use
- CWEA certifications
- Equipment cross-training

Based on discussions with staff, OC San also provides internal employee training related to SSO response and SSMP elements. COVID-19 has prevented OC San staff from attending in-person seminars or conferences. Training activities are documented in OC San's Cornerstone database.

### *3.4.5 Equipment and Replacement Parts Inventory*

Appendix I2 of the OC San SSMP lists the vehicles and additional equipment necessary for OC San to perform day-to-day functions and respond to SSOs. Additionally, if needed staff can order small parts and equipment to replace aging ones. Based on interviews with OC San staff, there are no issues with having or acquiring spare parts or equipment.

### *3.4.6 Areas of Nonconformance to the Sewer System Management Plan*

Two minor nonconformances related to the OC San sewer system operations and maintenance program were identified:

- a. The Capital Improvement Plan is not referenced in the OC San SSMP Vol 1.
- b. Staff do not have mapping access to storm drain conveyance systems in the service area.

Two corrective actions are recommended to remedy the identified nonconformance:

- a. Add a reference to the Capital Improvement Plan in Section 5.3 of the OC San SSMP Vol 1.
- b. Add a storm drain systems layer to the GIS mapping system.

#### 3.4.6.1 Recommended Enhancements

EEC recommends six enhancements for the sewer system operation and maintenance program:

1. Utilize cleaning results/observation and CCTV data to further evaluate and optimize line cleaning frequencies.
2. Conduct pro-active assessments of trouble spot locations to determine cause of the location and potential mitigation measures.
3. Update the SSMP to reference Appendix H for the list of short and long-term projects.
4. Section 5.3 and 5.3.1 are duplicated. One of the 5.3 and 5.3.1 sections should be removed from the SSMP.

5. Identify or provide additional training opportunities for District staff on key SSMP related topics:
  - Cleaning procedures, including vector truck operations and use of CMMS
  - Lift station emergency response
  - SSMP program elements
  - SSO volume estimation
6. Create and implement standard operating procedures for key processes (Based on interviews, this task is scheduled for completion at end of fiscal year):
  - Sewer line cleaning
  - Lift station maintenance
  - Force main maintenance/condition assessment
  - Vacuum/jetting truck maintenance

### 3.5 Design and Performance Provisions

Finding: OC San is fully conformant to the SSMP in this area; one program enhancement recommended.

OC San has established design and performance provisions for the installation, rehabilitation and repair of sewer system assets; the provisions are established in five documents:

- OC San Master Specifications, Design Guidelines, and other OC San Design Standards;
- Standard Specifications for Public Works Construction (Greenbook);
- Codes and Standards of trade organizations (NFPA, ASTM, IEEE, etc.);
- Applicable federal, state and local laws and regulations, e.g.: CA Code of Regulations, Title 8 (Cal/OSHA), Title 24 (California Building Codes);
- Inspection reports, test reports, and contractor certifications

All new construction and rehabilitation activities must adhere to the established design standards adopted by OC San. OC San tracks each project and logs the construction plans that have been created for each project. OC San's written standards are made readily available and accessible to staff members, who refer to these standards when performing repairs or inspections. OC San has established a process for updating each chapter of the design guidelines by assigning an engineer who is responsible for each portion of the guidelines. The recommended edits to the guidelines are submitted to the Engineering Department Advisory Council (EDAC) which is committee that meets monthly to review any proposed edits. Once EDAC approves the proposed edits, the new design guidelines are published.

#### 3.5.1 Areas of Nonconformance to the Sewer System Management Plan

No nonconformances with SSMP design and performance provisions were identified.

No corrective actions are recommended at this time.

##### 3.5.1.1 Recommended Enhancements

EEC recommends one program enhancement for sewer system design and performance:

1. Establish an official "Lessons Learned" procedure after projects to determine if the design guidelines need to be updated or modified to account for new technologies.

### 3.6 Overflow Emergency Response Plan

Finding: OC San is fully conformant to the SSMP in this area; two program enhancements recommended.

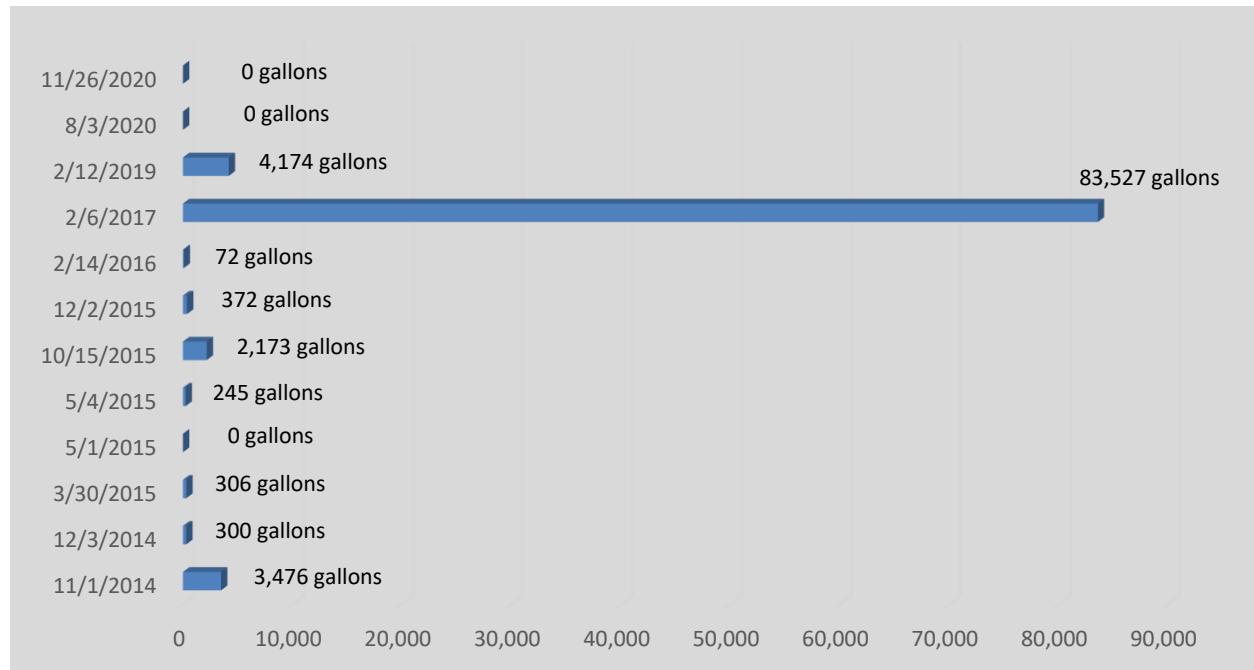
The SSMP requires six key elements for the OC San Overflow Emergency Response Plan:

- SSO notification procedures
- Appropriate response to all overflows
- Regulatory notification procedures
  - Oral notification
  - Written notification
- Training procedures
- Emergency response operations
- Program to contain and prevent sewage discharges to surface waters

OC San's criteria for determining the category (level of severity) of SSOs, as well as procedures for response and reporting of each SSO, are consistent with the SSMP. OC San is in the process of developing site-specific emergency response procedures for each of the 15 lift stations. Based on staff interviews, the site-specific emergency response plans for the lift stations will be completed by the end of the fiscal year.

Based on the documentation review, OC San's internal SSO records are consistent with the California Integrated Water Quality Control Board's data. For each SSO occurrence, OC San notified the proper authorities and submitted all reports pursuant to the documented procedure. With the exception of a single SSO event in 2017, OC San has been increasingly effective at mitigating the volume of SSOs that have reached surface waters (Figure 3-2, *Volume of Sanitary Sewer Overflow Volume That Reached Surface Waters in OC San Service Area, 2014–2020*).

**Figure 3-2, Volume of Sanitary Sewer Overflow Volume That Reached Surface Waters in OC San Service Area, 2014–2020**



Based on interviews with OC San staff, staff members keep a copy of the SSO Emergency Response Plan in each service vehicle and receive annual training on the plan.

### 3.6.1 Areas of Nonconformance to the Sewer System Management Plan

No nonconformances related to the FOG Control Program were identified.

No corrective actions are recommended at this time.

#### 3.6.1.1 Recommended Enhancements

EEC recommends two enhancements to OC San's overflow emergency response plan:

1. Conduct emergency bypass training at selected "high risk" lift stations.
2. Conduct training for field staff with a focus on sampling and lab support for the event of an SSO exceeding 50,000 gallons. According to Lab Staff, an SOP exists for the sampling protocol, and sample bottles and equipment can be provided to collections staff.

### 3.7 FOG Control Program

Finding: OC San is fully conformant to the SSMP in this area; two program enhancements recommended.

The SSMP requires seven key elements for the OC San FOG Control Program:

- Public education outreach program
- FOG disposal plan
- Legal authority to prohibit discharges to the system
- Grease removal device requirements
- Inspection of grease-producing facilities
- Cleaning schedule for sewer system sections subject to FOG blockages
- Source control measures for enhanced maintenance areas

Based on the historically low number of FOG-related SSOs in the OC San service area, OC San's FOG Control Program is effective at preventing FOG accumulation in the sewer system and FOG-related SSOs. OC San currently manages an unincorporated area in the City of Orange and currently only manages 37 FOG permits. 15 of the FSEs have grease interceptors and the remaining FSEs have been issued conditional waivers. Based on interviews with staff, at time of this audit, OC San is in the process of restructuring and reissuing the permits so they all expire at the same time. In 2020, OC San did not conduct any inspections of the FSEs due to COVID-19 restrictions, but OC San utilizes the Orange County Health Care Agency (OCHCA) to conduct best management practices inspections. OC San receives quarterly reports for the results of the OCHCA inspections.

#### 3.7.1 Public Education and Outreach Program

At the beginning of the FOG Control Program, OC San began providing all identified food service establishments (FSEs) in its service area with educational and outreach materials, including the FOG Program Rules and Regulations, regarding the proper disposal of FOG generated in their facilities. These materials are still provided to each FSE as needed during routine FOG inspections. The educational materials are also available on OC San's website (<http://www.ocsd.com>).

In addition to the FSE educational materials, OC San Public Affairs Office have developed public outreach programs. One program that was developed is called "What to Flush". The program is trying to educate the public on what can and cannot be flushed down a toilet. OC San also creates a General Manager board letter to board members. These are messages that member agencies can send off to their members.

#### 3.7.2 Legal Authority to Prohibit Discharges to the System

Where additional enforcement of the FOG Control Program is required, Ordinance No. OCSD-25 provides OC San with the legal authority to enforce the FOG Program Rules and Regulations. Additionally, OCSD-53 provides additional legal authority for OC San.

#### 3.7.3 Grease-Removal Device Requirements

OC San requires all new FSEs to install a grease interceptor, which must first be approved by OC San. In addition, existing FSEs that have been identified as the cause or a contributor to sewer system blockages are required to install a grease interceptor. OC San is receptive to alternative grease-control technologies,

particularly for facilities with physical constraints (i.e., space, slope) that make installation of traditional interceptors impracticable.

### *3.7.4 Cleaning Schedule for Sewer System Sections Subject to FOG Blockages and Source-Control Measures for Enhanced Maintenance Areas*

OC San has not experienced a grease related SSO in the previous 8 years and currently has not identified any areas of its sewer system to be prone to FOG blockages. According to interviews with staff, FOG Control Program Staff communicate regularly with collections system staff and investigate sources of FOG if collections identify excessive FOG accumulation.

### *3.7.5 FOG Disposal Plan*

Once a grease interceptor is pumped, pumping companies can take grease waste to the Orange County Sanitation District's FOG waste receiving facility. In addition, some of the larger pumping companies have their own treatment facilities on-site that receive FOG waste.

### *3.7.6 Areas of Nonconformance to the Sewer System Management Plan*

No nonconformances related to the FOG Control Program were identified.

No corrective actions are recommended at this time.

#### **3.7.6.1 Recommended Enhancements**

EEC recommends two program enhancements for the FOG Control Program:

1. When possible, re-inspect each FSE to determine if any changes have occurred and to re-educate them on the FOG Control Program Requirements
2. Incorporate self-monitoring reports such as training and pumping records for FSEs to monitor compliance when inspections can't be conducted.

## **3.8 System Evaluation and Capacity Assurance Plan**

Finding: OC San is fully conformant to the SSMP in this area.

SSMP outlines four key elements of OC San's System Evaluation and Capacity Assurance Plan:

- Evaluation
- Design criteria
- Capacity enhancement measures
- Capital Improvement Program schedule

### *3.8.1 Evaluation*

OC San's Sewer Master Plan was last updated in 2019. OC San reviewed the previous model and updated flow characteristics (gathered a year and half of flow monitoring). Next, they performed a diversion analysis to determine how the diversions in the collection system should be set to minimize capacity

deficiencies. Next, OC San identified future projects to address any capacity deficiencies. In addition, OC San routinely analyzes pump station data to identify trends in sewer flow changes that have the potential to become hydraulic capacity issues, including indicators of I/I.

### *3.8.2 Design Criteria*

OC San's design criteria is based on a  $d/D$  factor for sewer pipes where "D" is the diameter of the pipe and "d" is the depth of the flow in the pipe. OC San uses a maximum allowable  $d/D = 0.5$  for pipes with a diameter 8" to 18" and  $d/D = 0.75$  for pipes with a diameter greater than 21"; pipes with  $d/D$  ratios greater than these values are identified as needing improvement. For the most recent Master Plan update, OC San considered a pipe to be deficient if the surcharge was more than 2 feet for sewers larger than 12 inches.

### *3.8.3 Capacity Enhancement Measures*

OC San has identified a list of 11 capacity enhancement projects that will be completed over a 20-year period. The projects are constantly evaluated and prioritized based on the greatest capacity needs. OC San monitors the flow in these high-risk capacity areas during storm events to determine if inflow and infiltration is causing a capacity deficiency. If a significant deficiency is identified, then the priority for capacity enhancement is increased.

### *3.8.4 Capital Improvement Plan Schedule*

The 2017 Facilities Master Plan identified CIP projects to be completed over 20 years. Based on discussions with OC San Engineer, OC San does not plan to replace existing pipes based on age of the pipe alone. Structural defects and capacity issues will drive the schedule for repair or replacement in the new Sewer System Master Plan.

### *3.8.5 Areas of Nonconformance to the Sewer System Management Plan*

No nonconformances related to system evaluation and capacity assurance were identified.

No corrective actions are recommended at this time.

#### 3.8.5.1 Recommended Enhancements

No program enhancements are recommended at this time.

## **3.9 Monitoring, Measurement, and Program Modifications**

Finding: OC San is fully conformant to the SSMP in this area.

OC San regularly reviews performance metrics for each element of the SSMP. The primary metrics OC San uses to measure the effectiveness of their program includes:

- Have less than 2.1 SSOs per 100 miles per year
- Contain SSOs within 5 hours.
- Respond to all SSOs within 1 hour of notification

Each of the performance metrics tracked is communicated to the OC San managers and OC San Directors on a monthly basis.

Environmental Compliance staff utilize the Environmental Compliance Awareness Program (ECAP) to notify each owner assigned to review and maintenance of the various elements of the SSMP. ECAP provides a dashboard with start dates and deadlines dates for completion. The Director of Environmental Services is then assigned to the "living" SSMP document and ensuring all sections are updated in a timely manner.

### *3.9.1 Areas of Nonconformance to the Sewer System Management Plan*

No nonconformances related to the program monitoring, measurement, and modifications were identified.

No corrective actions are recommended at this time.

#### **3.9.1.1 Recommended Enhancements**

No program enhancements are recommended at this time.

## **3.10 SSMP Program Audit**

Finding: One minor nonconformance identified; One corrective action recommended.

OC San has conducted the required SSMP audits. The previous audit was conducted in 2019 and covered all sections of the SSMP. The audit identified zero major nonconformances and 9 minor nonconformances. One of the minor nonconformances recommended for OC San to "Develop a programmatic force main inspection and condition assessment plan that evaluates current force main access and materials, identifies potential improvements to improve access, and documents the best approach currently available to assess condition given the current state of maintenance accessibility and material specific to each force main." As of the 2021 SSMP Audit, OC San has not developed the programmatic force main inspection and condition assessment plan.

### *3.10.1 Areas of Nonconformance to the Sewer System Management Plan*

One minor nonconformance related to the SSMP Program Audit section was identified:

- a. All nonconformances identified in the 2019 SSMP Audit were not addressed.

One corrective action is recommended to remedy the identified nonconformance:

- a. Address all nonconformances identified in the 2019 SSMP Audit.

#### **3.10.1.1 Recommended Enhancements**

No program enhancements are recommended at this time.



### 3.11 Communications Program

Finding: OC San is fully conformant to the SSMP in this area.

OC San posted the updated SSMP on its website (<http://ocsd.com>) and has certified the SSMP on the State's California Integrated Water Quality System website. The SSMP is always available to any interested party; OC San will consider any comments or recommendations made by outside organizations.

OC San also participates in quarterly WDR meetings and conducts regular meetings with outside stakeholders. In addition to these meetings, OC San staff provides monthly reports to the OC San Board members. Based on interviews with staff, OC San plans to grow online communication with the public through social media outlets and quarterly outreach that is called "plug and play".

#### 3.11.1 Areas of Nonconformance to the Sewer System Management Plan

No nonconformances related to OC San's communications program were identified.

##### 3.11.1.1 Recommended Corrective Actions

No corrective actions are recommended at this time.

##### 3.11.1.2 Recommended Enhancements

No program enhancements are recommended at this time.

## 4.0 SUMMARY

OC San developed a comprehensive SSMP in compliance with the State WDR. Based on personnel interviews, documentation review, and consistently low number of SSO events, OC San continues to effectively implement the SSMP to reduce and prevent SSOs within OC San's service area. OC San continually evaluates the condition of its sewer system assets and conducts routine preventive maintenance to ensure the system is functioning efficiently. Table 4-1, *Summary of Strengths and Accomplishments*, summarizes the strength and accomplishments of OC San that has allowed them to implement a successful SSMP program.

**Table 4-1, Summary of Strengths and Accomplishments**

No.	Strength / Accomplishment
1	The public SSO rate for OC San over the previous 2 years has been 0.47 SSOs per 100 miles or less.
2	Given the high flow volumes and number of lift stations in the OC San collection system, the potential for a large volume SSO is high compared to other sewer agencies. However, OC San has experienced only one large volume SSO since 2014 (SSOs exceeding 10,000 gallons).
2	Even with COVID-19 restrictions, OC San is still conducting necessary training for staff and documenting the training in Cornerstone.
3	OC San keeps all elements of the SSMP up-to-date using ECAP to track the progress of each sections.

4	OC San is conducting pro-active CCTV of the entire sewer system and is identifying structural deficiencies using the PACP and MACP scoring criteria.
5	OC San is updating all SOPs withing the program so existing and new employees can have documents for reference.
6	OC San consistently meets all cleaning and maintenance frequencies for the collections system.
7	OC San has installed smart manhole covers at selected high-risk locations and trouble spot locations.
8	OC San has already begun evaluating lift station wet wells for capacity issues that may be associated with climate change and sea water rise.
9	In 2019 OC San completed the Sewer Master Plan and has conducted in-depth hydraulic capacity studies of the collection system to identify capacity deficiencies and has a CIP in place to address identified deficiencies.
10	OC San communicates will with its member agencies and works with them to limit and respond quickly to SSOs.

This audit did identify areas in which OC San's sewer system management practices are not fully consistent with the SSMP (Table 4-2, *Summary of Sewer System Management Plan Audit Results*). No major nonconformances were identified; however, 3 minor nonconformances, with 3 recommended corrective actions, were identified.

EEC has recommended corrective actions to address nonconformance areas and anticipates that OC San's sewer system management operations will satisfy the WDR once the recommended corrective actions are fully implemented (Appendix B, *Summary of Findings and Recommended Enhancements*).

**Table 4-2, Summary of Sewer System Management Plan Audit Results**

Sewer System Management Plan Section	Finding	Enhancements Recommended
Section 1, Goals	In Conformance	Yes
Section II, Organization	In Conformance	No
Section III, Legal Authority	In Conformance	No
Section IV, Operations and Maintenance	Minor Nonconformances	Yes
Section V, Design and Performance Provisions	In Conformance	Yes
Section VI, Overflow Emergency Response Plan	In Conformance	Yes
Section VII, FOG Control Program	In Conformance	Yes
Section VIII, System Evaluation and Capacity Assurance Plan	In Conformance	No
Section IX, Monitoring, Measurement, and Program Modifications	In Conformance	No
Section X, SSMP Program Audits	Minor Nonconformances	No
Section XI, Communications Program	In Conformance	No

**APPENDIX A**  
**LIST OF SSMP DOCUMENTS AND DATA REVIEWED**

## **SSMP AUDIT PROGRAM DOCUMENTS REVIEWED**

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- OC San Website
- CIWQS SSO Reports and History
- SSMP Final WDR Audit Report 20190502
- SSMP Vol I 2016 Updated Final 11-18-20
- OC San SSMP Organization
- OC San Ordinance No. OCSD-25
- OC San Ordinance No. OCSD-53
- OC San Ordinance No. OCSD-05-04
- FOG Source Control Program Enforcement Management System
- FOG Control Program – Basis for Program Development, Program Components, and Policies
- FOG Agreement
- OC FOG Program Survey & Contract List
- 2019 Asset Management Plan
- Preventative Maintenance Program
- Updated Trouble Spot List
- 820 Training Report 2018-2020
- Collections Work Orders 2018 – Oct 2020
- Collections Vehicle & Equipment Master List Sep 2019
- Rehabilitation and Replacement Plan
- Facility Model Maintenance Management Plan 2016
- Volume III Sewer Atlas Maintenance
- Field Discrepancy Form & Data Collection Sheet
- System Evaluation and Capacity Assurance Plan
- SSO Response Flow Chart
- SSO Emergency Response Plan
- SSO Notification Procedures
- SSO Response SOP
- Sewer Spill Estimation Guide and Simulation Training
- Risk Management Program
- CIP Budget Process Information
- SOP Procedure for Environmental Audit Program

**APPENDIX B**  
**SUMMARY OF FINDINGS**

## Summary of Corrective Actions

### Orange County Sanitation District Sewer System Management Plan 2021 Audit

Report Section	Section Title	Waste Discharge Requirement	SSMP Section	Minor Nonconformance	Follow-Up Action	Target Date for Correction	Date Corrected
3.1	Goal	Create goals specific to system operations and SSO reduction.	I	N/A	N/A	N/A	N/A
3.2	Organization	Identify LROs, management personnel, and chain of communication for reporting SSOs.	II	N/A	N/A	N/A	N/A
3.3	Legal Authority	Legal Authority to prevent illicit discharges to the sewer system. Sewer connections are properly designed and constructed. Ensure access to laterals/mains. Limit the discharge of FOG. Enforce violations of its sewer ordinances.	III	N/A	N/A	N/A	N/A
3.4	Operation and Maintenance Program	Maintain an up-to-date map, develop a preventative maintenance plan, develop a rehabilitation and replacement plan. Provide education and training. Provide equipment and spare parts inventory.	IV	The Capital Improvement Plan is not referenced in the OC San SSMP Vol 1.	Add a reference to the Capital Improvement Plan in OC San SSMP Vol 1.	July 2021	
				Staff do not have mapping access to storm drain conveyance system in the service area.	Add a storm drain systems layer to the GIS mapping system	December 2021	
3.5	Design and Performance Provisions	Create standards for installation, rehabilitation and repair; and for the inspection and testing of new and rehabilitated facilities.	V	N/A	N/A	N/A	N/A
3.6	Overflow Emergency Response Plan	Provide SSO notification procedures, appropriate response to all overflows, regulatory notification procedures, training procedures, emergency response operations, program to contain and prevent sewage discharge to surface waters.	VI	N/A	N/A	N/A	N/A
3.7	FOG Control Program	Enrollees must implement a FOG source control program in order to reduce the accumulation of FOG in the sewer system and FOG related SSOs.	VII	N/A	N/A	N/A	N/A
3.8	System Evaluation and Capacity Assurance Plan	Create a system evaluation and capacity assurance plan which includes; evaluation, design criteria, capacity enhancement measures, and CIP schedule	VIII	N/A	N/A	N/A	N/A
3.9	Monitoring, Measurement, and Program Modifications	Maintain relevant information to prioritize SSMP activities. Monitor the implementation and effectiveness of the SSMP. Assess the success of the preventative maintenance program. Update program elements as necessary. Identify and illustrate SSO trends.	IX	N/A	N/A	N/A	N/A
3.10	SSMP Program Audit	Conduct periodic audits at a minimum of once every two years.	X	The District has not addressed all the nonconformances identified in the 2019 SSMP Audit.	Address all nonconformances identified in the 2019 SSMP Audit.	December 2021	
3.11	Communication Program	Enrollees shall communicate with the public on the development, implementation, and performance of the SSMP.	XI	N/A	N/A	N/A	N/A

## Summary of Recommended Enhancements

### Orange County Sanitation District Sewer System Management Plan 2021 Audit

Report Section	Section Title	Recommended Enhancements
3.1	Goal	Consider using measurable goals to quantify the effectiveness of the SSMP
3.2	Organization	None.
3.3	Legal Authority	None.
3.4	Operation and Maintenance Program	Utilize cleaning results/observation and CCTV data to further evaluate and optimize line cleaning frequencies.
		Conduct pro-active assessments of trouble spot locations to determine cause of the location and potential mitigation measures.
		Update the SSMP to reference Appendix H for the list of short and long-term projects.
		Section 5.3 and 5.3.1 are duplicated. One of the 5.3 and 5.3.1 sections should be removed from the SSMP.
		Identify or provide additional training opportunities for District staff on key SSMP related topics
		Create and implement standard operating procedures for key processes (Based on interviews, this task is scheduled for completion and end of fiscal year)
3.5	Design and Performance Provisions	Establish an official "Lessons Learned" procedure after projects to determine if the design guidelines need to be updated or modified to account for new technologies.
3.6	Overflow Emergency Response Plan	Conduct emergency bypass trainign at selected "high risk" lift stations
		Conduct training for field staff with a focus on sampling and lab support for the event of an SSO exceeding 50,000 gallons.
3.7	FOG Control Program	When possilbe, re-inspect each FSE to determine if any changes have occurred and to re-educate them on the FOG Control Program Requirements.
		Incorporate self-monitoring reports such as training and pumping records for FSEs to monitor compliance when inspections can't be conducted.
3.8	System Evaluation and Capacity Assurance Plan	None.
3.9	Monitoring, Measurement, and Program Modifications	None.
3.10	SSMP Program Audits	None.
3.11	Communication Program	None.