



city of san luis obispo

2019 Sewer System Management Plan Update



April 2019

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Preface – City Sewer History

In 1888, there were no sewers in San Luis Obispo. Minor, scanty trenches took human and other waste from town to San Luis Obispo Creek, carrying muck and disease through the waters where children played and dumping it into the ocean. During that year, many children became ill. According to an April 24 newspaper article, “Nearly every family residing in the west portion of the city near the San Luis Obispo Creek have two to three sick children to look after. The sewer (the creek) is suspect, yet the majority of residents still oppose construction of proper sewers.”

City leaders took a first step in February 1890 by installing the first sewer pipe along Chorro Street to the corner of Palm Street. The pipe, however, still emptied into San Luis Obispo Creek. “There is no doubt but that the creek is a natural sewer and should be used as such, but before being used for that purpose, a little work should be done as not to allow the filth of the upper end of the City to be deposited at the lower end,” according to newspaper reports.

The problem of disease continued in April 1890 when diphtheria ravaged the community. Open trenches were still used to rid households of waste. All household trenches connected to creeks or adjoining tributaries, providing “a fine arrangement for breeding microbes, bacteria and kindred horrors which eventually found entrance into houses through traps and sinks,” the newspaper reported. For that reason, rain became a sacred event by flushing the creeks clean.

City leaders and residents were torn; they knew the meager system needed improvement, but couldn’t agree on a plan. Ideas weren’t scarce, however. One group of citizens wanted to install three additional sewer lines through town that terminated outside of city limits at a “dumping ground.” Engineers had concluded one acre of land could handle waste from 1,000 people. San Luis Obispo, however, proposed to play it safe and utilize five acres.

A second proposal by Col. Waring of San Luis Obispo included detailed drawings showing a system of mains and conduits that led to a “sewage farm” to be located adjacent to the cemetery on South Higuera Street. This system would have included a 15-inch main pipe to a 1,000-gallon tank. That tank would then overflow into a 10,000-gallon tank, with the contents later used for crop fertilization.

A prominent San Francisco engineer proposed a third plan that would again use “dumping grounds” south of the City, but the cost of building the system was too expensive at the time.

By the end of the 1890, Col. Waring’s wastewater collection system design was approved and used to rid downtown San Luis Obispo of sewage. Again, all of the effluent from his project still flowed into San Luis Obispo Creek.

But in September 1895, a local resident sued the City, claiming the creek should only be used as the city sewer during the wet season, June 1 to Dec. 1. “The gravity of such a condition of affairs must at once be apparent to every citizen,” the newspaper reported. “To make provision for this conation of affairs... we immediately began to seek for a means of disposing of the sewage of the city.”

After contacting landowner after landowner, the City purchased 10 acres at “the Schow Place” along San Luis Obispo Creek for \$2,000 to be used as space for a sewer farm. It was used during the summer months when fertilized disposal fields were dry enough to absorb the sewage. Suitable shallow ditches that wound back and forth were dug long enough to receive all of the water flowing from the sewer in three days. The existing Water Reclamation Facility stands on the property today.

During the remainder of the year, however, San Luis Obispo Creek was still the City’s sewer. And the rain flushed it clean.

-Researched & Compiled in 2007 by Jim Autry, Water Reclamation Facility Manager (retired)

Sewer System Management Plan

Introduction

Sanitary sewer overflows are identified as a major threat to public health and water quality because of the pathogens, toxic pollutants and nutrients they contain and have become a focus of State water quality regulators over the past several years. On May 2, 2006, the State adopted *General Waste Discharge Requirements* for sanitary sewer systems to provide a consistent, statewide regulatory approach to address these overflows (State Water Resources Control Board, Order No. 2006-003). Public agencies, like the City of San Luis Obispo, that own or operate a sanitary sewer system comprised of one mile or more of pipeline to transport sewage to a treatment facility must file a Notice of Intent to comply with the State Order. The requirements include two major components:

- 1) Reporting all sanitary sewer overflows in the statewide spill reporting database, and
- 2) Developing a Sewer System Management Plan with the intent to reduce the potential for or eliminate sanitary sewer overflows.

In July 2006, the City submitted a Notice of Intent to the State Water Resources Control Board to comply with the State requirements related to reporting sanitary sewer overflows. The City began using the statewide spill-reporting database (California Integrated Water Quality System or CIWQS) in May 2007. In October 2007, the City Council approved the development plan and schedule for the preparation of the Sewer System Management Plan. The preparation, adoption and implementation of the City's Sewer System Management Plan (SSMP) in 2009 fulfilled the remaining requirement of the State Order.

SSMP Organization

The organization of this SSMP (section numbering and nomenclature) follows the General Waste Discharge Requirements (GWDR) for Wastewater Collection Agencies, State Water Resources Control Board Order Number 2006-0003 dated May 2, 2006. Each section includes the requirement as the introduction for reference. As an introduction to the SSMP, this section provides background on the City's wastewater collection system. Following this introduction, the SSMP includes eleven required sections including:

- Goals
- Organization
- Legal Authority
- Operation and Maintenance
- Design and Construction Standards
- Overflow and Emergency Response
- Fats, Oils and Grease Control
- System Evaluation and Capacity Management
- Monitoring, Measurement, Program Modification,
- Program Audits
- Communication

Wastewater Collection System Background

Located on State Highway 101, about mid-way between San Francisco and Los Angeles, the City of San Luis Obispo has a 2018 population of 46,548 and covers about 10.7 square miles. The first sanitary sewers were built in San Luis Obispo in the late 1800s. Today, the collection system includes 138 miles (733,044 feet) of gravity sewer line ranging from six-inch to 48-inch pipe. The system includes 2.4 miles of force main ranging from four- to 16-inch pipe. Approximately 3,080 manholes provide access to the collection system (see Table 1, *Collection System Components*). The sewer lines are made of a variety of materials, including high-density polyethylene (HDPE), terra cotta salt glazed pipe, vitrified clay pipe (VCP), polyvinyl chloride (PVC), and asbestos concrete. Portions of the sewer system are over 100 years old.

The City’s collection system serves residential, commercial, and industrial customers. Sewer service is provided only to properties within the city limits, with the exception of the San Luis Obispo campus of California Polytechnic State University (Cal Poly) and the County of San Luis Obispo Airport. The number of service connections, or laterals, is estimated to be approximately 12,000. In San Luis Obispo, the entire sewer lateral to the service connection in the street is owned by the property owner.

The collection system is divided into maintenance areas with eight lift stations as shown in Figure 1, *Lift Stations and Flow Basins*, and Figure 2, *Sewer Predictive Maintenance Frequency*. The lift stations are summarized in Table 2.

The City’s Utilities Department Wastewater Collection staff has developed a detailed database on the components of the collection system over the past 30 years. It includes detail on all gravity lines, force mains, flow basins, lift stations and their service areas. The database is utilized and updated daily by Wastewater Collection staff as part of their work (work order development/history, standardization of record keeping, organization, communication with the public, development/prioritization of future system upgrades). This database is connected to the City’s geographic information system. The condition of approximately 94 miles (66.4%) of the collection system has been documented by video inspection, as described in later in this SSMP.

Table 1: Collection System Components

GRAVITY SEWER LINES

Pipe Size	Length (in feet)	Length (in miles)	Pipe Type	Percent of System
6 inch	324,468	61.5	VCP/ PVC/HDPE	44.3%
8 inch	267,769	50.7	VCP/ PVC/HDPE	36.5%
10 inch	47,320	9.0	VCP/ PVC	6.5%
12 inch	24,341	4.6	VCP/ PVC/HDPE	3.3%
15 inch	21,859	4.1	VCP/ PVC	3.0%
16 inch	2,569	0.5	VCP/ PVC	0.4%
18 inch	20,339	3.9	VCP/ PVC/HDPE	2.8%
20 inch	267	0.1	HDPE	0.0%
21 inch	3,301	0.6	VCP/ PVC	0.5%
24 inch	6,244	1.2	VCP/ PVC	0.9%
27 inch	2,098	0.4	PVC	0.3%
30 inch	5,687	1.1	PVC	0.8%
36 inch	5,182	1.0	PVC	0.7%
48 inch	1,600	0.3	PVC	0.2%
Total	715,564	138		100%

SEWER FORCE MAINS

Pipe Size	Length (in feet)	Pipe Type	Lift Station
16 inch	2,232	PVC	Laguna
14 inch	3,772	Ductile Iron Pipe	Tank Farm
8 inch	3,656	PVC/HDPE	Calle Joaquin
8 inch	839	Ductile Iron Pipe	Airport
6 inch	764	Transite, Asbestos Concrete	Silver City
6 inch	231	HDPE	Margarita
4 inch	440	Cast Iron Pipe	Foothill
4 inch	595	Ductile Iron Pipe	Perfumo
Total	12,528		

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

Figure 1.

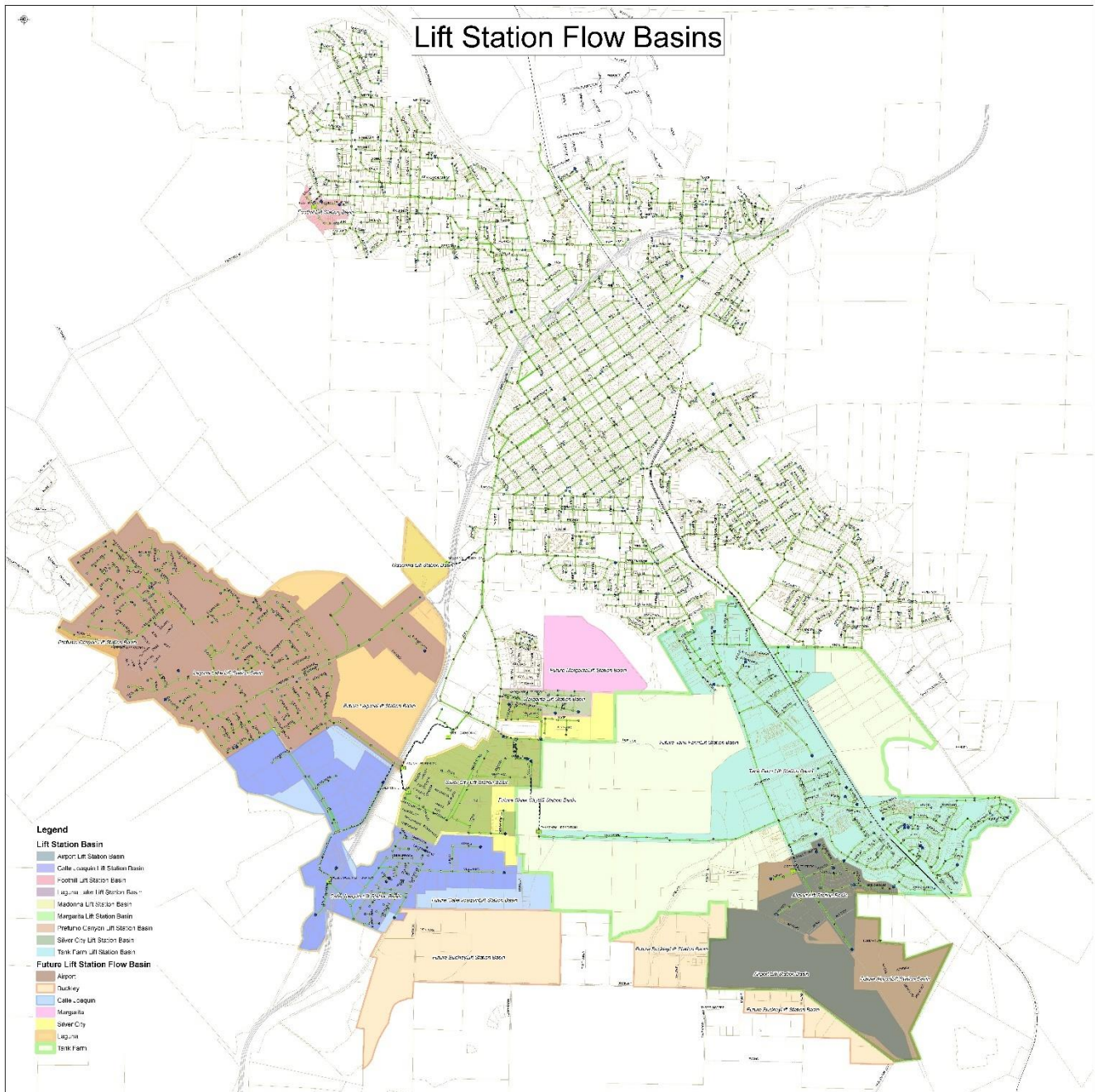


Figure 2.

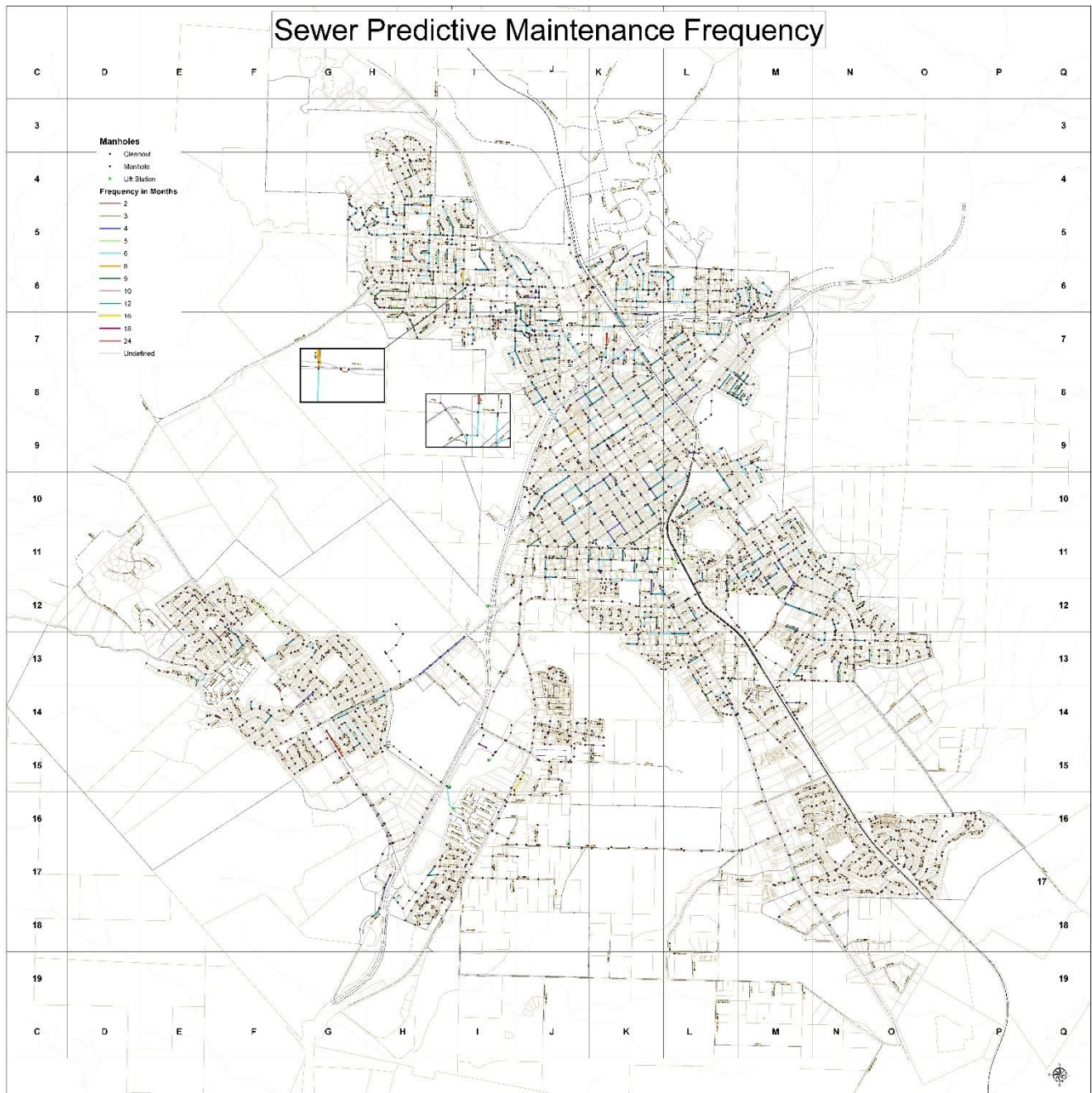


Table 2: Lift Station Summary

Lift Stations	# Pumps / Pump Capacity (gpm) / Total Dynamic Head (feet) / Horsepower (hp)	Notes
Foothill	2 pumps / 300 gpm / 65 feet / 15 hp	Installed in 1986. Planned for a future upgrade.
Calle Joaquin	2 pumps / 570 gpm / 53 feet / 15 hp	Installed in 1967; expellers were installed in 2007, new force main was installed in 2013. Lift station, freeway crossing, and siphon are planned for a future upgrade.
Laguna	3 pumps / 1500 gpm / 45 feet / 40 hp	The lift station was replaced in 2013 with a new wet well and Wemco Hidrostral pumps. It is the largest of the collection system's pumping stations. (Silver City, Calle Joaquin and Prefumo pump to it and it receives gravity flow from the City's Laguna Lake area)
Margarita	2 pumps / 400 gpm / 31 feet / 5 hp	Replaced in 2019 with a new wet well and Wemco Hidrostral pumps. Includes on-site backup generator.
Silver City	2 pumps / 450 gpm / 43 feet / 15/ 18.5 hp	Installed in 1971 within the adjacent trailer park. Station needs back up controllers or an auxiliary power system. It will serve future annexation areas. wPlanned for a future upgrade.
Tank Farm	4 pumps / 2,000 gpm / NA / 13/ 35 hp	Installed in 2009. The lift station is planned to serve development in the Airport, Orcutt, Margarita, and Avila Ranch Specific Plan Areas. Includes on-site backup generator.
Prefumo	2 pumps / 35 gpm / NA/ 3.9 hp	Serves limited population/area. No backup power available due to limited availability of service from PG&E.
Airport	2 pumps / 240 gpm / NA / 5 hp	The Airport Lift Station was constructed by the County. The City took over its maintenance and operation of the lift station in 2000. Serves the airport, adjacent development, and planned annexation areas. Planned for a future upgrade.

Source: City of San Luis Obispo Utilities Department, 2019.

Notes:

1. As of 2016, the City is no longer operating the Madonna Lift Station.
2. The Buckley Lift Station, which is planned to serve the Avila Ranch Specific Plan area, is currently being designed. The station is anticipated to be on-line in 2020.

Section I: Goals

The General Waste Discharge Requirements for the Goals section of the Sewer System Management Plan state that the City must develop goals to properly manage, operate, and maintain all parts of its wastewater collection system in order to reduce and prevent SSOs, as well as to mitigate any SSOs that occur.

Sewer System Management Plan Goals

In order to minimize sanitary sewer overflows (SSOs) and mitigate the effects of SSOs that may occur, the goals of the City of San Luis Obispo Sewer System Management Plan are to:

1. Maintain uninterrupted sewage flow without health hazard, effluent leakage, or water infiltration and inflow.
2. Operate a sanitary sewer system that meets all regulatory requirements.
3. Avoid sanitary sewer overflows and respond to sanitary sewer overflows quickly and mitigate any impact of the overflow.
4. Maintain standards and specifications for the installation of new wastewater systems.
5. Verify the wastewater collection system has adequate capacity to convey sewage during peak flows.
6. Provide training for Wastewater Collection staff.
7. Maintain the Fats, Oil, and Grease program (FOG program) to limit fats, oils, grease, and other debris that may cause blockages in the wastewater collection system.
8. Identify and prioritize structural deficiencies and implement short-term and long-term maintenance and rehabilitation actions to address each deficiency.
9. Meet all applicable regulatory notification and reporting requirements.
10. Provide excellent customer service through efficient system operation and effective communication strategies.



Margarita Lift Station, 2019.

Section II: Organization

The General Waste Discharge Requirements for the Organization section state that the City's Sewer System Management Plan must identify:

- (a) The name of the responsible or authorized representative;*
- (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the Sewer System Management Plan program. Include lines of authority as shown in an organization chart or similar document with a narrative explanation; and*
- (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, and/or State Office of Emergency Services (OES))*

Organization

Within the City of San Luis Obispo's Utilities Department, the Wastewater Collection Section oversees operation and maintenance of the system with a Wastewater Collection Supervisor and eight operators (two operators are dedicated to storm drain maintenance). The staff is organized into three main crews to conduct maintenance, inspection, and construction and repair operations. Wastewater Collection staff responds to all sewage spills seven days a week, 24-hours a day.

The authorized representative, or *legally responsible official* (LRO), for the implementation and administration of the City's SSMP is Jeremy Gearhart, Wastewater Collection Supervisor. Mr. Gearhart is responsible for the development and oversight of this program and ensuring that the City is in compliance with the GWDR. Figure 2, Organizational Chart, identifies the line of authority for the implementation of the SSMP.

Two additional City staff, Ben Marquart, Environmental Programs Manager, and David Hix, Deputy Director Utilities, Wastewater, are identified as alternative LROs for reporting on California Integrated Water Quality System (CIWQS) to ensure that a staff person is always available to meet the legal reporting requirements. Appendix C, *Sanitary Sewer Overflow Reporting Guidelines* includes "Spill Reporting Responsibilities," the chain of communication for responding and reporting SSOs. This flow chart is taken from the Utilities Department's *Sanitary Sewer Overflow Emergency Response Plan* described further in Section VI.

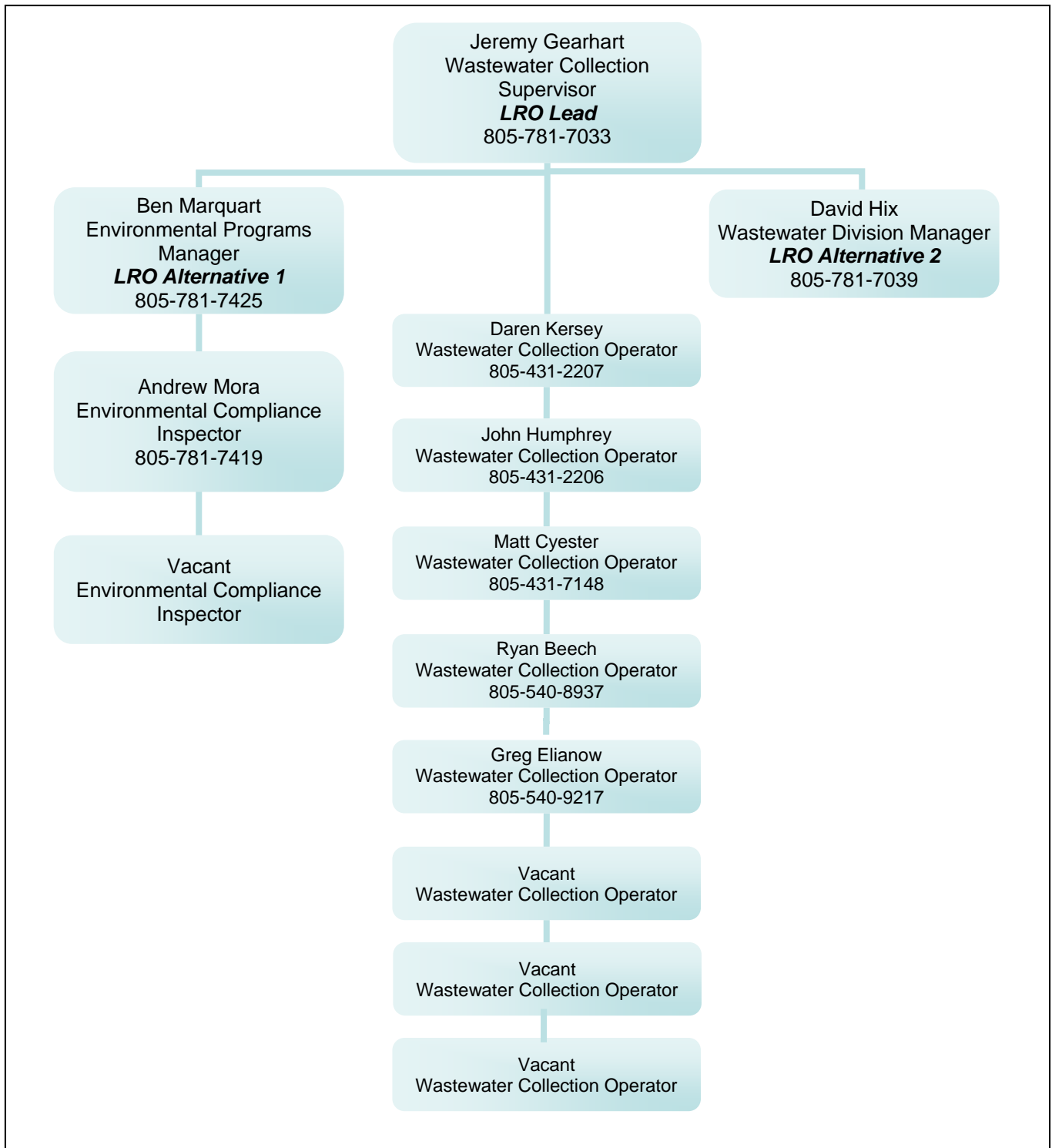
Table 3 includes one City staff member not included in the Organizational Chart, the City Engineer from the Public Works Department (805-781-7191), with responsibilities in the Design and Performance of the collection system.

Table 3: SSMP Implementation Responsibilities

SSMP Measure	Responsible Person	Role
Goals		
Implementation and management of the SSMP	Jeremy Gearhart	Provides oversight of the SSMP.
Ensure that the collection system is maintained and operated to reduce or eliminate SSOs		Oversight of all aspects of the collection system.
Organization		
Chain of Communication	Jeremy Gearhart	Determines the chain of command for responding to SSOs.
Organization Chart	Jeremy Gearhart	Keeps organization chart up to date.
SOP for SSO Reporting Guidelines	Jeremy Gearhart	Keeps reporting guidelines up to date to ensure compliance with the GWDR.
SSO Reporting (See Figure 2, <i>Organizational Chart</i>)	WWC Staff	Responds to sewage spills seven days a week, 24 hours a day
	Jeremy Gearhart	Ensures that reporting guidelines are followed and updated.
	Ben Marquart	Reports spills on CIWQS, LRO Lead
	David Hix	LRO Alternative 2 for reporting on CIWQS
Legal Authority		
Ensure the Municipal Code is updated and provides the authority to prevent illicit discharges, requires proper design and construction, and allows for inspection and maintenance and enforcement of infractions of the code.	Jeremy Gearhart	Review Municipal Code and update as needed.
Ensure the Municipal Code provides the authority to prevent the discharge of fats, oils and grease and other debris.	Ben Marquart	Reviews the Municipal Code and updates code as needed.
Enforcement of non-permitted discharges to the sewer.		Investigates illicit discharges to the collection system, Issues Notice of violations or takes legal action violators.
Operations & Maintenance Program		
Maintaining collection system maps	Jeremy Gearhart WWC staff	Works with WWC staff and GIS staff to maintain maps.
Preventative operation and maintenance	Jeremy Gearhart	Updates the description of the program as needed.
Development of a rehabilitation and replacement plan	Jeremy Gearhart	Continues the current program in place and improves as needed.
Provide training to WWC staff		
Provide equipment & replacement part inventories		
Design & Performance Provisions		
Design and construction standards for all aspects of the collection system	Jeremy Gearhart Matt Horn	Works together to update design and construction standards.
Inspection and testing standards	Jeremy Gearhart Matt Horn	Continues current inspection and testing practices and improves as needed.

SSMP Measure	Responsible Person	Role
Overflow and Emergency Response		
Procedures for notification, response, notification of appropriate agencies	Jeremy Gearhart	The City has spill reporting guidelines in place. These will be updated to include CIWQS reporting.
		The current procedures for responding to a spill, containment preventing the discharge will be put in written form.
Training of all staff involved in emergency response including response procedures, notification of agencies, and containing and preventing the discharge of wastewater to a waterway		Conduct annual refresher training.
Fats, Oils, & Grease Control		
Administration and implementation of the City's FOG program which includes public education, inspection of facilities which produce FOG and working with WWC to identify areas prone to FOG blockages	Ben Marquart	Continue current program and develop a written program of the current activities.
Legal authority to prohibit discharges and identify measures to prevent SSOs and blockages		Updates Municipal Code as needed.
System Evaluation & Capacity Assurance		
Evaluation of system to determine areas of deficiencies	Jeremy Gearhart David Hix	The City has a Wastewater Master Plan in place and will be completing a wastewater infrastructure strategy in early 2015.
Design criteria	Jeremy Gearhart	Design criterion is identified in the Wastewater Master Plan.
Capacity enhancement measures.	Jeremy Gearhart	Evaluation of hydraulic capacity is currently done & an evaluation plan is being developed.
Capital Improvement Program	Jeremy Gearhart David Hix	The City currently has a five-year CIP plan in place.
Monitoring, Measurement, & Program Modifications		
Maintenance of information, monitoring and assessing the effectiveness of the program	Jeremy Gearhart	The City currently has a computerized infrastructure asset management system which is used by the WWC staff and Supervisor.
Updating the program and Identifying trends		
SSMP Audits		
Conduct periodic internal audits to determine the effectiveness of the SSMP and compliance with the SSMP	Jeremy Gearhart	Develop an audit check list, conduct internal audit at least every two years, keep a report of the findings on file, and initiate any corrective actions needed.
Communication Program		
Communication with the public on the development, implementation, and performance of its SSMP	Jeremy Gearhart	Solicit public input through the City's website, newsletter, public meetings and public contact.
Develop a plan of communication with the two satellite agencies (Cal Poly State University and County of San Luis Obispo Airport)		Will work with Cal Poly and the County Airport to develop communication plans.

Figure 3: Organizational Chart



Section III: Legal Authority

The General Waste Discharge Requirements for the Legal Authority section of the Sewer System Management Plan include that the wastewater collection system agency must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- (a) Prevent illicit discharges into its wastewater collection 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 City;*
- (d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages;*
- (e) Enforce any violation of its sewer ordinances;*
- (f) Authority to inspect grease producing dischargers; and*
- (g) Authority to enforce sewer-related ordinances.*

San Luis Obispo Municipal Code & General Plan

As the purveyor of sanitary sewer service within the City, the Utilities Department is responsible for the preparation and implementation of the Sewer System Management Plan. The City possesses legal authority through its Municipal Code as described in Table 4, Legal Authority from San Luis Obispo Municipal Code.

Title 13, Public Services, Section 13.08, Sewers, of the City's Municipal Code includes requirements for sewer connections, discharges, charges and fees, disposal of septic tank cleanings, enforcement, abatement and penalties. The Municipal Code is available on the Internet at the following link:

<https://sanluisobispo.municipal.codes/>

Chapter 8 of the City's General Plan, the *Water and Wastewater Element*, includes policies and programs related to the provision of wastewater collection services.

<https://www.slocity.org/home/showdocument?id=19965>

Agreements with Satellite Agencies

The Cal Poly wastewater collection system discharges to the City's collection system off of Mustang Drive southwest of the campus' stadium via a 15-inch sewer line. The City does not maintain Cal Poly's collection system or provide input on the design of campus facilities. The City has a Pretreatment Agreement with the campus providing the legal authority to enforce Title 13, Public Services, Section 13.08, Sewers, of the City's Municipal Code within the campus dated January 6, 2009. The City has a service agreement with Cal Poly for water and sewer rates dated June 2012. The City and Cal Poly periodically meet and review these agreements and have committed to an open line of communication for wastewater collection and pretreatment issues.

The City also provides wastewater treatment services and has pretreatment authority to the San Luis Obispo County Airport located south of the City consistent with a 1977 Sewer and Water Agreement (amended in April 1988, July 1988, 1993 and 2000). The County Airport discharges to the City's collection system at the manhole located upstream of the Airport lift station on Broad Street (SMH M17-8).

Table 4: Legal Authority from San Luis Obispo Municipal Code & General Plan

Requirement	City Municipal Code Reference	City General Plan Reference ²	Meets General Waste Discharge Requirements?
General			
Prevent illicit discharges into the wastewater collection system	Municipal Code 13.08.030; 13.08.040; 13.08.430	General Plan Program B 4.3.7	Yes
Limit the discharge of fats, oils, and grease and other debris that may cause blockages	Municipal Code 13.08.040; 13.08.050; 13.08.080; 13.08.090	General Plan Program B 4.3.7	Yes
Require that sewers and connections be properly designed and constructed	Municipal Code 13.08.380		Yes
Require proper installation, testing, and inspection of new and rehabilitated sewers	Municipal Code 13.08.380		Yes
Laterals			
Clearly define City responsibility and policies	Municipal Code 13.08.010; 13.08.080		Yes
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the City	Does not apply; maintenance of service lateral is responsibility of property owner		Yes
Control infiltration and inflow (I/I) from private service laterals	Municipal Code 13.08.040; 13.08.390	General Plan Policy B4.2.2; Program B4.3.1 and B4.3.2	Yes
FOG Source Control			
Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements	Municipal Code 13.08.090		Yes
Authority to inspect grease producing facilities	Municipal Code 13.08.140		Yes
Enforcement			
Enforce any violation of its sewer ordinances	Municipal Code 13.08.140		Yes

Sources:

1. City of San Luis Obispo, Municipal Code, 2015.
2. *General Plan, Chapter 8, Water & Wastewater*, Adopted: February 24, 1987, Last Revised: May 15, 2018; Council Resolution No. 10893, 2018.

Section IV. Operation & Maintenance

The General Waste Discharge Requirements for the Operations and Maintenance component of the Sewer System Management Plan are:

- (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 a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;*
- (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and*
- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.*

This section of the SSMP describes the programs utilized to operate and maintain the City's wastewater collection system including sewer lines, manholes, force mains, and lift stations. This section also describes the on-going training required for the City's Utilities Department, Wastewater Division staff to comply with State Regulations in order to minimize and prevent sanitary sewer overflows.

Collection System Mapping & Database

Knowledge of the wastewater collection system facilities is essential to effective management. In 1990, Wastewater Collection staff developed a comprehensive operations and maintenance program that integrated a computerized maintenance management system (Hansen v7.7). This program was integrated with the City's geographic information system in 1997. In 2013, the City implemented a new Computerized Maintenance Management System (CMMS) called Cityworks, which includes an asset management system and is integrated with the City's geographic information system. This software enables maintenance crews to have mobile computers to organize predictive and preventative maintenance work orders. Mobile computers enable field staff to query historical system information, continually evaluate the system, update the data base and improve work efficiency to eliminate stoppages and sanitary sewer overflows.

Wastewater Collection staff has the ability to access and display multi-year inspection results to identify critical trends that may impact important design and construction considerations. Additionally, Wastewater Collection staff use the operations and maintenance program to evaluate and prioritize Closed Circuit Television (CCTV) inspections, assess capacity, establish capital project priority, evaluate program effectiveness, and store and retrieve historical data about the collection system. It has allowed the section to efficiently manage resources resulting in increased productivity and a decrease in sanitary sewer overflows, stoppages, overtime, and customer service interruptions.

Maps of all components of the City’s sewer system are maintained in the City’s geographic information system. In addition to these electronic files, the City also maintains a digital library of record drawings for public improvements.

Table 5: Collection System Database

Facility Type	Basic Map Information	Additional Map Information
Manholes	ID number Location, with reference to streets and property lines	Size Material type (brick or precast) Cover type Condition rating GPS coordinates (for buried manholes and those in easements) Rim and invert elevation
Pipes	Location, with reference to streets and property lines	Flow basin X, Y, Z coordinates Size of pipe and distance between manholes Structural material (HDPE, PVC, VCP, CPP liner, DIP) Mainline type (force main, siphon, surface cover, parallel pipe, trunk line/interceptor)
Lift Stations	Location, with reference to streets and property lines	Type of station Type, number, capacity, discharge size of pump Wet well and overflow elevation

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2012.

Computerized Control and Monitoring

All of the City’s eight lift stations are monitored by a telemetry system. Telemetry, meaning “measuring at a distance”, became part of the Utilities Department’s operations in 1988 when the Regional Water Quality Control Board required the installation of alarms on the City wastewater collection lift stations. Since that time the telemetry system has evolved into complex computer network of interconnected distributed process controllers and personal computers. In 2013, the Human Machine Interface (HMI) systems was upgraded from Fix32 to the latest generation of the software, iFix 5.1. The upgrade to iFix has greater capability to collect, store, aggregate and trend data than the existing Fix 32 system. This data will be used to generate daily, monthly and yearly reports, as well as historical analysis of pump run times and operational and maintenance optimization. In 2019, the City is using version 5.5 of the iFix software, with plans to upgrade to version 5.9.

The telemetry system communicates via radios and sends information to a data concentrator at the Wastewater Collection shop within the City Corporation Yard located at 25 Prado Road. The system continually communicates and monitors lift station functions and operations providing Wastewater Collection staff the ability to remotely monitor pump run times, set pump level on and off points, and alarm high and low levels. In the event of a failure, the system notifies standby Wastewater Collection personnel through an alarm dialing system. The alarm system is activated in the event of a power failure, high or low levels in the wet well and extended communication failures. The system has resulted in advance notice of pending problems which has decreased overflows.

Preventive Maintenance and Area Maintenance Programs

The City’s wastewater collection system is aging and requires an aggressive maintenance schedule. To ensure uninterrupted wastewater flows and to reduce or eliminate stoppages or sanitary sewer overflows, preventive and area maintenance is scheduled and completed in each of the City’s 14 flow basins. Much review of the effectiveness of past maintenance practices have led to the area and preventive maintenance programs that are in place today. These maintenance programs are continually evaluated by Wastewater Collection staff to avoid sanitary sewer overflows.

The predictive and preventative maintenance activities are performed by two Wastewater Collection operators (See Table 6, *Annual Maintenance Summary*). As a target, the entire collection system is cleaned as part of the preventative maintenance program every three to five years. Preventative maintenance has been successful program in operation and maintenance of the wastewater collection system. Hydro-cleaning the entire collection system on a routine maintenance frequency is a major component in the reduction of sanitary sewer overflows.

As shown in Table 7, *Predictive Maintenance Frequency*, over 200,000 feet of the City’s collection system is on periodic predictive maintenance schedules with a frequency ranging from two months to 24 months. Approximately 182,000 feet (over 34.5 miles), or 25 percent, of the City’s collection system, is cleaned annually on the Predictive Maintenance program.

In addition to the maintenance schedules to eliminate blockages and sanitary sewer overflows, contractors are required to follow the latest City’s *Standard Specification and Engineering Standards*¹ to ensure no debris or construction material enters the collection system. These standards require contractors to install sand-traps in manholes where street adjustment grade rings are installed on paving operations and new public sewer mains to prevent debris from entering the collection system during construction. Sand traps are required to stay in place throughout construction and are removed only after non-sewage debris is removed from affected sewer lines.

Wastewater Collection staff routinely respond to mainline failures to conduct point repairs, schedule wye installations, complete manhole rehabilitation and manhole ring and cover replacements.

Table 6: Annual Maintenance Summary

Year	Preventative Maintenance (in feet)	Area Maintenance (in feet)	Total (in feet)
2008	244,109	194,336	453,604
2009	254,226	140,609	394,835
2010	297,802	103,230	401,032
2011	294,629	75,639	370,268
2012	307,635	92,582	400,217
2013	272,478	5,134	277,612
2014	330,216	65,271	395,487
2015	330,854	51,749	382,603
2016	338,827	135,048	473,875
2017	341,748	13,139	354,887
2018	343,578	88,915	432,493

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

Table 7: Predictive Maintenance Frequency

Frequency	Length of Pipe (in feet)
2 month *	9,924
3 month	3,969
4 month	10,884
6 month	79,477
8 month	2,746
9 month	6,585
10 month	362
12 month	66,292
18 month	643
24 month	1,575
Total:	182,457

* Includes 7,921 feet of sewer lines located in the City’s downtown that require hydro-cleaning every two months due to grease build up.

¹ The City’s 2018 *Standard Specifications and Engineering Standards*, effective on May 31, 2018, are available at the link below: <https://www.slocity.org/home/showdocument?id=19925>



Visual/CCTV Inspections

The City's collection system is inspected using closed-circuit television (CCTV) by two wastewater collection staff operators that are Pipeline Assessment and Certification Program (PACP) certified. Staff inspects and evaluates the system to manage several CCTV programs, these programs are:

- Sanitary sewer overflow inspections
- Predictive/ Preventative maintenance inspections
- I/I investigations
- Basin inspections
- CIP mainline replacement program
- New construction

In 2013, the City Utilities Department upgraded to a new closed-circuit television (CCTV) inspection program. IIPipes was selected and will interface with the new asset management program found in the Cityworks database. IIPipes is a (PACP) compliant CCTV inspection system. The system integrates the CCTV sewer inspection data, displays digital video recordings and generates a PACP condition rating from CCTV data. Data gathered during CCTV inspections is critical for scheduling predictive and preventative maintenance activities to avoid sanitary sewer overflows. Staff places the CCTV camera into a gravity sewer line, transmit video of the sewer line to a nearby service vehicle where the operators can inspect and evaluate the system. Problem coding (see Table 8) entered as part of the inspection includes:

- Structural Rating
- Condition Rating
- Joint Condition
- Root Intrusion

- Debris / Grease
- Inflow / Infiltration
- Alignment
- Leak Size
- Leak Description
- Crack Coding

Wastewater Collection operators enter CCTV data utilizing ITpipes software which interfaces with the Cityworks database and asset management system. A sample CCTV inspection report is provided in Appendix A. Based on the data recorded by Wastewater Collection staff; the PACP formula-based CCTV software evaluates and prioritizes problems areas. This information is utilized by staff to determine maintenance schedules, overall mainline condition, and inflow/infiltration (I/I) condition. The asset management program uses this information in optimizing future replacement capital improvement projects.

Lift Station Maintenance

The City maintains eight sewer lift stations and are maintained bi-monthly (See Table II). The stations are continuously monitored by a telemetry system. The telemetry system communicates via radios and it sends information to a data concentrator at the wastewater collection shop at 25 Prado Road. The data concentrator then sends alarm signals to the auto alarm dialer for staff to respond to pump station failures.

In the event of a power outages or pump failure, the stations telemetry system supplies continuous each of the City's pump stations for temporary restore power or by-pass pumping at the effected stations.

The telemetry system provides staff the ability to remotely monitor pump run times, set pump level on and off points, and alarm high and low levels. In the event of a pump station failure, the system notifies staff through the alarm dialing system. The alarm system is activated in the event of a power failure, high or low levels in the wet well and extended communication failures.

Collection staff assists in the maintenance of telemetry system and perform annual operation and alarm testing. The testing ensures reliability of the system and provides staff the technical experience to maintain the system. The telemetry system also provides staff with a reliable operational system to efficiently operate and maintain the wastewater collection lift station pumping system.

Five of the City's eight pump stations are equipped with connections for portable emergency auxiliary power. In the event of a power failure, Laguna is powered by the Water Resource Recovery Facility's (WRRF) auxiliary power generator. The Tank Farm and Margarita lift stations are also equipped with stationary generators. Five of the stations are also equipped with pump by-pass manifolds as an alternate solution if a pump station failure was to occur.

Wastewater Collection staff maintain the City's lift stations on a bi-monthly schedule. Maintenance activities include checking pump operation, changing filters, and clearing wet well debris.

Wastewater Collection staff assist in the maintenance of telemetry system and perform operation and alarm testing annually to ensure reliability of the system.

Table 8: Problem Coding for CCTV Inspections

NASSCO'S PIPELINE ASSESSMENT & CERTIFICATION PROGRAM (PACP)©

Section 4—Continuous Defect Coding

"TRULY" 4-1
"Truly" continuous defects run along the sewer without any interruption for more than three feet (1 meter).
Examples:
- Longitudinal Fractures
- Longitudinal Cracks

"REPEATED" 4-1
"Repeated" continuous defects occur at regular intervals along the sewer. These occur at pipe joints and include:
- Encrustation
- Open Joints
- Circumferential Fractures

Code Changes in Version 6.0.1
Added:
Buckling Wall (KW), Buckling Dimpling (KD), and Buckling Inverse Curvature (KI)

Section 5—Structural Defect Coding (Module 6A)

C CRACK 5-1 CL Longitudinal 5-2 CC Circumferential 5-2 CM Multiple 5-2 CS Spiral 5-2 CH Hinge 5-2	F FRACTURE 5-7 FL Longitudinal 5-7 FC Circumferential 5-7 FM Multiple 5-7 FS Spiral 5-7 FH Hinge 5-7	B BROKEN 5-15 BSV -Soil Visible 5-15 Beyond Defect BV V-Void Visible 5-15 Beyond Defect	H HOLE 5-17 HSV -Soil Visible 5-17 Beyond Defect HV V -Void Visible 5-17 Beyond Defect	D DEFORMED 5-19 DV Deformed 5-19 Vertically (brick) DH Deformed 5-19 Horizontally (brick)	X COLLAPSE 5-23 XP Pipe Collapse 5-23 XB Brick Collapse 5-23	J JOINT 5-26 JO Joint Offset 5-26 (Displaced) JS Joint Separated 5-26 (Open) JA Joint Angular 5-26
S SURFACE DAMAGE 5-31 SRI Roughness 5-31 Increased 5-31 SRI - M - Mechanical SRI - C - Chemical SRI - Z - Not Evident	S SURFACE DAMAGE 5-31 SAV Aggregate Visible 5-31 SAV - M - Mechanical SAV - C - Chemical SAV - Z - Not Evident	S SURFACE DAMAGE 5-31 SAP Aggregate Projecting 5-31 SAP - M - Mechanical SAP - C - Chemical SAP - Z - Not Evident	S SURFACE DAMAGE 5-31 SAM Aggregate Missing 5-31 SAM - M - Mechanical SAM - C - Chemical Attack SAM - Z - Not Evident	S SURFACE DAMAGE 5-31 SRV Reinforcement Visible 5-31 SRV - M - Mechanical SRV - C - Chemical Attack SRV - Z - Not Evident	S SURFACE DAMAGE 5-31 SRP Reinforcement Projecting 5-31 SRP - M - Mechanical SRP - C - Chemical Attack SRP - Z - Not Evident	S SURFACE DAMAGE 5-31 SRC Reinforcement Corroded 5-31 SRC - M - Mechanical SRC - C - Chemical Attack SRC - Z - Not Evident
S SURFACE DAMAGE 5-31 SMW Missing Wall 5-32 SMW - M - Mechanical SMW - C - Chemical Attack SMW - Z - Not Evident	S SURFACE DAMAGE 5-31 SSS Surface Spalling 5-32 SSS - M - Mechanical SSS - C - Chemical Attack SSS - Z - Not Evident	S SURFACE DAMAGE 5-31 SZ Other 5-32 SZ - M - Mechanical SZ - C - Chemical Attack SZ - Z - Not Evident	S SURFACE DAMAGE 5-31 SCP Corrosion 5-32 (metal pipe) *no modifiers used	K BUCKLING 5-45 KW Wall 5-45 KD Dimpling 5-45 KI Inverse Curvature 5-45	LF LINING FAILURE 5-49 LFD Detached Lining 5-49 LFDE Defective End 5-49 LFB Blistered Lining 5-49 LFCS Service Cut Shifted 5-49 LFAC Abandoned Connection 5-49	LF LINING FAILURE 5-49 (continued) LFOC Overcut Service 5-49 LFUC Undercut Service 5-49 LFBK Buckled Lining 5-49 LFW Wrinkled Lining 5-49 LFAS Annular Space 5-49
LF LINING FAILURE 5-50 LFBU Bulges 5-50 LFDC Discoloration 5-50 LFDL Delamination 5-50 LFRS Resin Slug 5-50 LFPH Pinholes 5-50 LFZ Other 5-50	WF WELD FAILURE 5-67 WFL Longitudinal 5-67 WFC Circumferential 5-67 WFM Multiple 5-67 WFS Spiral 5-67 WFZ Unidentified 5-67	RP POINT REPAIR 5-71 RPR Pipe Replaced 5-89 RPR-D Defective 5-89 RPP Patch Repair 5-89 RPP-D Defective 5-89	RP POINT REPAIR 5-71 RPL Localized Pipeliner 5-89 RPL-D Defective 5-89 RPZ Other 5-89 RPZ-D Defective 5-89			

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Table 8: Problem Coding for CCTV Inspections, Continued.

NASSCO'S PIPELINE ASSESSMENT & CERTIFICATION PROGRAM (PACP)©

Section 6—Operational and Maintenance (Module 6B)

D DEPOSITS 6-1 DA Attached 6-1 DAE -Encrustation 6-2 DAQS Grease 6-2 DAR Ripping 6-2 DAZ Other 6-2	D DEPOSITS 6-1 DS Settled 6-1 DSF Fins 6-2 DSGV Gravel 6-2 DSC Hard/Compacted 6-2 DSZ Other 6-2	D DEPOSITS 6-1 (continued) DN Ingress 6-1 DNF Fine 6-3 (fill & sand) DNCV Cravel 6-3 DNZ Other 6-3	R ROOTS 6-7 RF Fine 6-7 RFB -Barrel 6-7 RFL -Lateral 6-7 RFC -Connection 6-8	R ROOTS 6-7 RT Tap 6-7 RTB -Barrel 6-7 RTL -Lateral 6-7 RTC -Connection 6-8	R ROOTS 6-7 RM Medium 6-7 RMB -Barrel 6-7 RML -Lateral 6-7 RMC -Connection 6-8	R ROOTS 6-7 RB Ball 6-7 RBB -Barrel 6-7 REL -Lateral 6-7 RBC -Connection 6-8
I INFILTRATION 6-13 IS Stain 6-13 IW Weeper 6-13 ID Dripper 6-13 IR Runner 6-13 IG Gusher 6-13	OB OBSTACLES/ OBSTRUCTIONS 6-19 OBB Brick or Masonry 6-19 OBM Pipe Material in Invert 6-19 OBI Object protruding through wall 6-19	OB OBSTACLES/ OBSTRUCTIONS 6-19 OBJ Object wedged in joint 6-19 OBC Object through connection/junction 6-19 OBP External Pipe Cable 6-19	OB OBSTACLES/ OBSTRUCTIONS 6-19 OBS Built into structure 6-20 OBN Construction Debris 6-20 OBR Rocks 6-20 OBZ Other 6-20	V VERMIN 6-31 VR Rat 6-31 VC Cockroach 6-31 VZ Other 6-31	G GROUT TEST & SEAL 6-33 GTP Grout Test Passed 6-33 GTP -J -Joint 6-33 GTP -L -Lateral 6-33 GTF Grout Test Failed 6-33	G GROUT TEST & SEAL 6-33 GTU Grout Test Unable 6-33 GTU -J -Joint 6-33 GTU -L -Lateral 6-33 GRT Grout Test Location 6-33

Section 7—Construction Features Coding (Module 6C)

T TAP 7-1 TF Factory Made 7-1 TFI -Intruding 7-2 TFA -Active 7-2 TFC -Capped 7-2 TFB -Abandoned 7-2 TFD -Defective 7-2	T TAP 7-1 TB Break In/Hammer 7-2 TBI -Intruding 7-2 TBA -Active 7-2 TBC -Capped 7-2 TBB -Abandoned 7-2 TBD -Defective 7-2	T TAP 7-1 TS Saddle 7-2 TSI -Intruding 7-2 TSA -Active 7-2 TSC -Capped 7-2 TSB -Abandoned 7-2 TSD -Defective 7-2	T TAP 7-1 TR Rehabilitated 7-2 TRI -Intruding 7-2 TRA -Active 7-2 TRC -Capped 7-2 TRB -Abandoned 7-2 TRD -Defective 7-2	IS INTRUDING SEALING MATERIAL 7-9 ISSR Sealing Ring 7-9 ISSRH -Hanging 7-9 ISSRB -Broken 7-9 ISSRL -Loose 7-9	IS INTRUDING SEALING MATERIAL 7-9 ISGT Grout 7-9 ISZ Other 7-9
L LINE (of sewer) 7-11 LL Left 7-11 LLU Left Up 7-11 LLD Left Down 7-11 LR Right 7-11	L LINE (of sewer) 7-11 LRU Right Up 7-11 LRD Right Down 7-11 LU Up 7-11 LD Down 7-11	A ACCESS POINT 7-13 AMH Manhole 7-13 AWA Wastewater Access 7-13 ADP Discharge Point 7-13 ATC Tee Connection 7-13	A ACCESS POINT 7-13 AOC Other Special Chamber 7-13 AM Meter 7-13 AWW Wet Well 7-14 AJB Junction Box 7-14	A ACCESS POINT 7-13 ACO Clean Out 7-14 ACOM -Mairline 7-14 ACOP -Property 7-14 ACOH -House 7-14	A ACCESS POINT 7-13 ACB Catch Basin 7-14 AEP End of Pipe 7-14

Section 8—Miscellaneous Features Coding (Module 6D)

M MISCELLANEOUS FEATURES 8-1 MCU Camera Underwater 8-1 MGO General Observation 8-1 MGP General Photograph 8-1 MSC Shape/Size Change (Sewer Dimension/Vertical/ Horizontal) 8-1 MJL Joint Length Change 8-1	M MISCELLANEOUS FEATURES 8-1 MLC Lining Change 8-2 MMC Material Change 8-2 MSA Survey Abandoned 8-2 MWL Water Level 8-2 MWLS -Sag 8-2	M MISCELLANEOUS FEATURES 8-1 MWM Water Mark 8-2 MY Dye Test 8-2 MYV -Dye Visible 8-3 MYN -Not Visible 8-3
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Repairs

As part of Wastewater Collection’s Predictive and Preventative Maintenance programs and CCTV inspections, staff identifies, prioritize and construct a variety of necessary repairs on the collection system. These repairs include manhole repairs, channel repairs, raising clean-outs, and main line point repairs. Major sewer line repairs identified through maintenance or inspection activities are directed to Capital Improvement Program described further in Section VIII, System Evaluation and Capacity Assurance.

Staff Safety & Professional Development

The City’s Utilities Department maintains a budget for annual training consistent with the requirements placed on the City by the State Water Resources Control Board in the Statewide General Discharge Requirements for Sanitary Sewer Systems. This training ensures that the Wastewater Collection Section and Pretreatment staff maintain their California Water Environment Association (CWEA) certifications and also provides the opportunity to achieve advanced competency in the profession. In 2017, the City hired a Safety and Technical Training Engineer to implement the Utilities Department's safety programs and safety-related training programs in compliance with federal, state and local safety, health and environmental laws and regulations.

Each of the City’s Wastewater Collection and Environmental Compliance staff members has earned certification from the CWEA, as shown in Table 10. Job duties, knowledge, skills and abilities associated with each CWEA certification level are identified in Appendix B. Staff is required to participate in at least 12 hours of continuing education or training every two years to maintain their certifications. Staff also attends numerous safety training workshops at the frequency described in Table 11.

Table 9: Wastewater Collection System Repairs

Completed Repairs								
Year	Raise Cleanout	Mainline Repair	Lining	Manhole repair	Replace Frame and Cover	Wye Abandonment	Wye Replacement	Wye Installation
2008	0	4	0	*	*	3	45	15
2009	0	7	0	*	*	0	39	11
2010	0	4	2	*	*	0	28	9
2011	0	2	1	*	*	0	36	11
2012	0	11	1	*	*	1	25	10
2013	0	0	7	*	*	0	20	9
2014	7	0	0	18	0	1	30	2
2015	7	41	0	2	0	7	61	12
2016	6	8	0	21	0	4	59	5
2017	0	3	2	4	4	4	55	9
2018	0	13	0	3	4	2	68	14
Total:	20	93	13	48	8	22	466	107

* No data.

Pending Repairs			
Manhole repair	Replace Frame and Cover	Raise Clean-Out	Main Line Point Repair
24	33	3	25

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

Table 10: Staff Certifications

Name	Title	Certification
Wastewater Collection Staff		
Jeremy Gearhart	Wastewater Collection Supervisor	CWEA - Collection System Technologist - Grade IV
Daren Kersey	Wastewater Collection System Operator	CWEA - Collection System Technologist - Grade III
John Humphrey	Wastewater Collection System Operator	CWEA - Collection System Technologist - Grade III
Matt Cyester	Wastewater Collection System Operator	CWEA - Collection System Technologist - Grade IV
Ryan Beech	Wastewater Collection System Operator	CWEA - Collection System Technologist - Grade III
Greg Elianow	Wastewater Collection System Operator	CWEA - Collection System Technologist - Grade I
Environmental Compliance Staff		
Ben Marquart	Environmental Programs Manager	CWEA - Collection System Technologist - Grade IV CWEA - Environmental Compliance Inspector – Grade 1
Andrew Mora	Environmental Compliance Inspector	CWEA - Environmental Compliance Inspector – Grade 1 CWEA - Collection System Technologist - Grade I CWEA - Laboratory Analyst - Grade I

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

Table 11: Wastewater Collection Safety Training

Training Workshop	Frequency
Environmental Safety	Required Annually
Hazardous Waste Operations and Emergency Response - Operations Level	Required Annually
Hazardous Materials Handling - Signing of Manifest	Required Annually
Bloodborne Pathogens	Required Annually
Fire Extinguisher Operation	Required Annually
Heat Stress	Required Annually
Hearing Conservation	Required Annually
Respirator Protection	Required Annually
Trench Safety Competent Person	Initial/As Needed
Aerial Lift Operator Training	Initial/As Needed
Hand and Portable Power Tool Safety	Initial/As Needed
Supervisor Safety Training	Initial/As Needed
Fall Protection Awareness	Initial/As Needed
Hazard Communication	Initial/As Needed
Lockout/Tagout	Initial/As Needed
Confined Space Entry	Initial/As Needed
Emergency Action Plan	Initial/As Needed
Ergonomics - Field and Transit Personnel	Initial/As Needed
Ergonomics - Office Personnel	Initial/As Needed
Basic Electrical Safety	Initial/As Needed
CPR	Required Every 2 Years
First Aid	Required Every 2 Years
Forklift Operator Training	Required Every 3 Years
NFPA 70 E - Live Exposed Electrical	Required Every 3 Years
Driver Awareness	Initial/Recommended Every 3 Years
Backhoe Operator Training	Initial/Recommended Every 3 Years
Crane Operator Training	Initial/Recommended Every 3 Years
Flagging Safety	Initial/Recommended Every 3 Years
Safety through Maintenance and Construction Zones	Initial/Recommended Every 3 Years
Preventing Substance Abuse in the Workplace	Recommended Every 2 Years
Safe Workplaces - When Being Nice Isn't Working	Recommended Every 2 Years
Technology - Managing Risks in Email, Internet, Blogs, and Cell Phones	Recommended Every 2 Years

Source: City of San Luis Obispo, Utilities Department, 2019.

Maintenance Equipment & Replacement Inventories

Contingency equipment (e.g. portable pumps and generators) support an effective response to emergency conditions. Spare/replacement parts are kept in inventory to minimize equipment/facility downtime in the event of a failure. Replacement parts for pumps, motors, and vehicles and appropriately maintained emergency response equipment and accessories allow field crews to effectively respond to incidents and efficiently perform routine maintenance. Maintaining an adequate inventory of replacement parts is key to minimizing high volume and or extended overflow events in the event of a breakdown or malfunction.

The equipment identified in Table 12 is utilized during response to emergency conditions, such as an SSO, as well as for conducting area and preventive maintenance activities, pump station maintenance and for CCTV inspections. Wastewater Collection staff also maintain an inventory of replacement parts as shown in Table 13. These materials are kept on hand to address unscheduled maintenance activities and overflows. Staff experience and knowledge of local availability of critical parts needed for system operation and maintenance contributes to the maintenance of this inventory. Although these specific numbers vary throughout the year, listed is an average that staff uses for inventory ordering. Approximately \$58,000 is budgeted annually for maintaining this inventory in 2018-19.

Table 12: Wastewater Collection Equipment

Manufacturer	Type	Year	Specifications	Use
Freightliner	Vac-Con	2014	3000 psi @ 30/50 gpm	Hydro-Cleaner / Combination Unit
	Hydro-cleaner/combination unit		5 yard debris tank	
Sterling	Vac-Con	2007	3000 psi @ 30/50 gpm	Hydro-Cleaner / Combination Unit
	Hydro-cleaner/combination unit		5 yard debris tank	
Ford	Transit	2016	CCTV	Mainline inspections
Ford / F-550	Service Truck	2018	1 ½ ton	Maintenance
Ford / F-550	Service Truck	2018	1 ½ ton	Maintenance
International	Dump truck	2008	5 yard	Construction/ Maintenance
Caterpillar	304CR	2006	Excavator	Construction/ Maintenance
Cummins	Generator	2016	200 KVA	Emergency Auxiliary Power
Whisperwatt	Generator	2016	100 KW	Emergency Auxiliary Power
Whisperwatt	Generator	2013	300 KVA	Emergency Auxiliary Power
Power Prime	Trash Pump	2008	6 inch, 2,750 gpm @ 195 TDH	Emergency By-Passing
Multiquip	Trash Pump	2017	4 Inch 400 gpm @95 TDH	Emergency By-Passing
Cart A Way	Concrete Mixer	2018	1 ½ yard	Emergency By-Passing

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

Table 13: Replacement Parts Inventory

Pipe Fittings				
Size	Manufacturer	Description	Location	Stock
4"	Mission	45° Socket to Spigot	Shop	4
4"	Mission	45° Socket to Socket	Shop	4
4"	Mission	22.5° Socket to Spigot	Shop	4
4"	Mission	22.5° Socket to Socket	Shop	4
4"	Mission	Coupling	Shop	4
6"	Mission	45° Socket to Spigot	Shop	4
6"	Mission	45° Socket to Socket	Shop	6
6"	Mission	22.5° Socket to Spigot	Shop	6
6"	Mission	22.5° Socket to Socket	Shop	6
6"	Mission	Coupling	Shop	4
6"x 4"	Mission	Concentric Reducer	Shop	6
6"x 4"	Mission	Eccentric Reducer	Shop	6
6"x 4"	Mission	Wye	Shop	24
6"x 6"	Mission	Wye	Shop	6
8"	Mission	45° Socket to Spigot	Shop	4
8"	Mission	45° Socket to Spigot	Shop	4
8"	Mission	22.5° Socket to Spigot	Shop	4
8"	Mission	22.5° Socket to Spigot	Shop	4
8"	Mission	Coupling	Shop	2
8"x 6"	Mission	Concentric Reducer	Shop	2
8"x 6"	Mission	Eccentric Reducer	Shop	2
8" x 4"	Mission	Wye	Shop	4
8" x 6"	Mission	Wye	Shop	4

Couplings				
Size	Manufacturer	Description	Location	Stock
4"	Mission	Clay to PVC	Shop	8
4"	Mission	PVC to PVC	Shop	8
6"	Mission	Clay to PVC	Shop	18
6"	Mission	PVC to PVC	Shop	8
8"	Mission	Clay to PVC	Shop	4
8"	Mission	PVC to PVC	Shop	4
10"	Mission	Clay to PVC	Shop	4
10"	Mission	PVC to PVC	Shop	4
12"	Mission	Clay to PVC	Shop	4
12"	Mission	PVC to PVC	Shop	4
6"	Mission	Concrete to PVC	Shop	18
4"	Mission	Saddles	Shop	12
6"	Mission	Saddles	Shop	12

Table 13: Replacement Parts Inventory (continued)

PVC Pipe				
Size	Manufacturer	Description	Location	Stock
4"	JM	SDR 35	Shop	20'
6"	JM	SDR 35	Shop	80'
8"	JM	SDR 35	Shop	40'
10"	JM	SDR 35	Shop	20'
12"	JM	SDR 35	Shop	10'

4" Inserta-Tee				
Size	Manufacturer	Description	Location	Stock
12"	Inserta-Tee	4P3512P35	Shop	2
15"	Inserta-Tee	4P3515P35	Shop	2
18"	Inserta-Tee	4P3518P35	Shop	2
21"	Inserta-Tee	4P3521P35	Shop	2
24"	Inserta-Tee	4P3524P35	Shop	2
27"	Inserta-Tee	4P3527P35	Shop	2
30"	Inserta-Tee	4P3530SL40	Shop	2
33"	Inserta-Tee	4P3533SL40	Shop	2
36"	Inserta-Tee	4P3536SL40	Shop	2
48"	Inserta-Tee	4P3548SL40	Shop	2

6" Inserta-Tee				
Size	Manufacturer	Description	Location	Stock
12"	Inserta-Tee	6P3512P35	Shop	2
15"	Inserta-Tee	6P3515P35	Shop	2
18"	Inserta-Tee	6P3518P35	Shop	2
21"	Inserta-Tee	6P3521P35	Shop	2
24"	Inserta-Tee	6P3524P35	Shop	2
27"	Inserta-Tee	6P3527P35	Shop	2
30"	Inserta-Tee	6P3530SL40	Shop	2
33"	Inserta-Tee	6P3533SL40	Shop	2
36"	Inserta-Tee	6P3536SL40	Shop	2

Filters:		
Type	Area	Quantity
30 micron	WWC shop	12

Table 13: Replacement Parts Inventory (continued)

Lift Station Equipment:				
Item	Area	Quantity	Output/size	Direction
Transducer head	Shop	2	4-20 MA	
Transducer cable	Shop	2	0.5-0.45 MA	
Support Cable	Shop	100	SS 1/4 cable	
Batteries	Shop	2	12v 12amp	
Batteries	Shop	2	24v 18amp	
Chargers	Shop	3		
3305 Controller	Shop	1		
Pump seal	Shop	1	1.375	
Pump seal	Shop	5	1 7/8	
Pump seal	Shop	2	2 1/8	
Impellers	Shop	1	9 1/8 x 1 7/8	Counter
Impellers	Shop	1	9 1/8 x 1 7/8	Clockwise
Impellers	Shop	1	8 1/2 x 1 7/8	Clockwise
Impellers	Shop	2	10 1/2 x 2 1/2	Counter
Impellers	Shop	1	10 1/2 x 2 1/2	Clockwise
Impellers	Shop	1	2 7/8 x 1 7/8	Clockwise
Impellers	Shop	1	2 7/8 x 1 7/8	Counter
Impellers	Shop	2	8.78 x 1 7/8	Counter
Impellers	Shop	1	8.78 x 1 7/8	Clockwise
Houghton pella	Shop	20gal	pump oil	

HDPE Electrofusion Fittings				
Size	Manufacturer	Description	Location	Stock
6"	Tega	Coupler	Shop	2
6" x 4"	Tega	Saddle	shop	2
8" x 4"	Tega	Saddle	Shop	2
8" x 6"	Tega	Saddle	Shop	1
10" x 4"	Tega	Saddle	Shop	1
10" x 6"	Tega	Saddle	Shop	1
4"	Tega	Coupler	shop	2
4"	Tega	Cap	Shop	2

HDPE PIPE DR17				
Size	Manufacturer	Description	Location	Stock
4"	BD	HDPE	Shop	20'
6"	BD	HDPE	Shop	20'

Table 13: Replacement Parts Inventory (continued)

Twist Tee				
Size	Manufacturer	Description	Location	Stock
4"	Mission	8" - 10"	Shop	6
4"	Mission	12" - 15"	Shop	4
4"	Mission	18" - 27"	Shop	2
4"	Mission	30" - Larger	Shop	2
6"	Mission	8" - 10"	Shop	4
6"	Mission	12" - 15"	Shop	2
6"	Mission	18" - 27"	Shop	2
6"	Mission	30" - Larger	Shop	2

Construction Materials				
Size	Manufacturer	Description	Location	Stock
24"	Mission Concrete	Cast iron MH	Shop	6
24"	Mission Concrete	Bolt down MH	Shop	4
24"	Mission Concrete	3" Riser ring	Shop	6
24"	Mission Concrete	6" Riser ring	Shop	4
24" x 32"	Mission Concrete	Reduction ring	Shop	2
8"	Mission Concrete	G5	Shop	6

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.



Section V: Design & Performance Provisions

The General Waste Discharge Requirements for the Design and Performance Provisions section of the Sewer System Management Plan are:

- (a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and*
- (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.*

Standards for Installation, Rehabilitation and Repair

Sanitary sewer overflows and operating problems are in some cases attributable to poor design and/or improper construction of newly constructed or rehabilitated sewer lines. An effective program that ensures that new sewers are properly designed and installed can minimize system deficiencies that could create or contribute to future overflows or operation and maintenance problems.

The City requires specific standards for new construction and for rehabilitation of existing sewer lines. Design criteria include specifications such as pipe materials, minimum sizes, minimum cover, strength, minimum slope, trench excavation and backfill, structure standards, and other factors. These are communicated through the City's *Standard Specifications & Engineering Standards*, updated in May 2018. Section 77 of the *Standard Specifications* includes design and construction requirements related to the City's wastewater collection system. *Engineering Standards* are provided for utilities location, trench details, utility covers, pipeline abandonment, sewer manholes, sewer lateral, sewer cleanouts, and separation criteria for water and sewer lines.

The City Utilities Department and Engineering and Inspection staff from the City's Public Works Department work cooperatively to develop and improve design standards and specifications for new construction to ensure the most up to date and effective construction plans and specifications possible. The City's *Standard Specifications & Engineering Standards* are updated bi-annually as needed, most recently in 2018, and are available through the City's Public Works Department website at the following link:

<https://www.slocity.org/home/showdocument?id=19925>

Standards for Inspection and Testing of New and Rehabilitated Facilities

Inspection and testing of new facilities are important to ensure that the City's established standards are implemented in the field. Using the legal authority described earlier in the SSMP, completed construction is not accepted by the City until inspection and testing have been completed. This approach helps ensure proper operation and maximum life expectancy. Acceptance testing for gravity sewers can include:

- Low pressure air test or water test to identify leakage
- Mandrel test to identify deflection in flexible pipe
- Water or vacuum test of manholes to identify leakage
- CCTV inspection to identify grade variations or other construction defects

Inspection and testing of new wastewater collection facilities may be conducted by Wastewater Collection staff or by the contractor while a Public Works inspector makes sure the installation and testing meets the City's standards. Inspections are performed during and at the completion of construction.



Section VI. Overflow Emergency Response Plan

The General Waste Discharge Requirements for this section state that the City shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, overflow emergency response plan must include the following:

- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;*
- (b) A program to ensure appropriate response to all overflows;*
- (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, regional water boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program (MRP). All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board Waste Discharge Requirements or National Pollutant Discharge Elimination System (NPDES) permit requirements. The Sewer System Management Plan 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 untreated wastewater and prevent discharge of untreated wastewater to Waters of the United States and 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.*

A stoppage may occur in the collection system when a buildup of debris (typically roots or grease) stops the flow of wastewater and backs up behind the stoppage, sometimes resulting in a sanitary sewer overflow. An overflow may reach the surface through manhole covers in the street or from clean-outs servicing commercial and residential properties. Sanitary sewer overflows are caused by flat grades, root intrusion, deteriorating pipes, poorly functioning grease interceptors, or debris in the line. Stoppages and overflows need immediate attention to restore flow and to minimize the effects of the overflow. Preventative maintenance on public and private systems can help minimize stoppages and overflows.

History of Stoppages and Overflow Events

The Utilities Department's Wastewater Collection and Environmental Programs staff record data on both stoppages and sanitary sewer overflows (SSOs) that occur in the City's collection system. The City has kept data on sanitary sewer stoppages since the late 1980s. Since 2003, the City has averaged 10 sanitary sewer overflows per year as shown in Table 14.

City Sanitary Sewer Overflow Emergency Response Plan

The City’s sanitary sewer overflow emergency response procedures provide a standardized course of action for Wastewater Collection and Environmental Programs staff to follow in the event of an SSO (see Appendix C). City SSO response and reporting requirements were revised to conform with the July 30, 2013 amendment to State Water Board’s GWDRs for sanitary sewer systems. As stated previously, City Wastewater Collection staff is available to respond to a reported sewage spill seven days a week, 24-hours a day. Overflows are stopped as soon as possible, and steps are taken as necessary to mitigate the impacts of the spill. Spills from the City’s wastewater collection system are investigated to determine the cause and corrective actions are taken or recommended to prevent additional spills at that location.

Dispatch to Site of Sewer Overflow

Failure of any element within the wastewater collection system that threatens to cause or causes a sanitary sewer overflow will trigger an immediate response to isolate and correct the problem. Crews and equipment are available to respond to any sanitary sewer overflow location within the City. Crews are dispatched to any site of a reported sanitary sewer overflow immediately. Additional Utilities personnel are “on call” should extra staff be needed.

Notification, Crew Instructions & Work Orders

- Dispatchers that receive notification of sewer overflows shall contact the appropriate Wastewater Collection staff member by phone as soon as possible regarding the sewer overflow locations
- Collection staff will receive instructions from the Wastewater Collection Supervisor (or designee) regarding appropriate crews, materials, supplies, and equipment needed.
- Dispatchers shall ensure that the entire message has been received and acknowledged by staff who were dispatched. Staff dispatched to the site of a sewer overflow shall proceed immediately to the site of the overflow.
- Response crews shall report their findings, including possible damage to private and public property, to the Wastewater Collection Supervisor (or designee) immediately upon completing their investigation.
- The Wastewater Collection Supervisor (or designee) will receive and convey to appropriate parties requests for additional personnel, material, supplies, and equipment from crews working at the site of a sewer overflow.
- The Wastewater Collection Supervisor (or designee) is responsible for confirming that the Overflow Report was provided to the Regional Water Quality Control Board and County Environmental Health within the specified time.

Preliminary Damage Assessment

- Wastewater Collection staff shall use discretion in assisting the property owner/occupant as reasonably as they can. In the event that damage to private property occurs, staff should seek approval of the property owner and contact the City’s insurance adjuster to assess any damages.

Table 14: Annual Sanitary Sewer Overflows, 2008-2018

Year	# of SSOs	# SSOs to Reach Surface Water
2008	10	3
2009	11	7
2010	8	3
2011	5	3
2012	8	5
2013	4	4
2014	16	4
2015	12	2
2016	7	3
2017	10	8
2018	5	2
Average:	10	5

Source: City of San Luis Obispo Utilities Department, Wastewater Collection, 2019.

- Appropriate still photographs and video footage, if possible, should be taken of the outdoor area of the sewer overflow and impacted area in order to thoroughly document the nature and extent of impacts. Applicable photographs are to be forwarded for filing with the Overflow Report.

Coordination with Hazardous Material Response

- Upon arrival at the scene of a sanitary sewer overflow, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface, or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, Wastewater Collection staff should immediately alert the City's Fire Department. If safe to do so, staff shall stay at the site to await the arrival of the City's Fire Department to take over the scene.
- Upon arrival of the City's Fire Department, Wastewater Collection staff will take direction from the person with the lead authority of that team. Only when that authority determines it is safe and appropriate for the Wastewater Collection staff to proceed can they then proceed with the containment, clean-up activities and correction under the Sewer Overflow Response Plan.

Overflow Correction, Containment, and Clean-Up

Sanitary sewer overflows of various volumes occur from time to time despite concerted prevention efforts. This section describes specific actions performed by Wastewater Collection staff during a sanitary sewer overflow. The objectives of these actions are to:

- Protect public health, environment and property from sewage overflows and restore surrounding area back to normal as soon as possible;
- Establish perimeters and control zones with appropriate traffic cones and barricades, vehicles or use of natural topography;
- Promptly notify the regulatory agency's communication center of preliminary overflow information and potential impacts;
- Contain the sanitary sewer overflow, including preventing discharge of sewage into surface waters; and
- Minimize the City's exposure to any regulatory agency penalties and fines.



Sanitary sewer overflow at manhole, 2018.

Under most circumstances, the City's Wastewater Collection staff will handle all response actions with its own maintenance forces as they have the skills and experience to respond rapidly and in the most appropriate manner. An important issue with respect to an emergency response is to ensure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system. For example, repair of a force main could require the temporary shutdown of the lift station and diversion of the flow at an upstream location. If the closure is not handled properly, collection system back-ups may create other overflows.

Circumstances may arise when the City's Wastewater Collection staff could benefit from the support of private-sector construction assistance. This may be true in the case of large diameter pipes buried to depths requiring sheet piling and dewatering should excavation be required. The City may also choose to use private contractors for open excavation operations that might exceed one day to complete.

Staff Responsibilities Upon Arrival

It is the responsibility of the first personnel who arrive at the site of a sanitary sewer overflow to protect the health and safety of the public by mitigating the impact of the overflow to the extent possible. Should the overflow not be the responsibility of the City but there is imminent danger to public health, public or private property, or to the quality of surface waters, then emergency action should be taken until the responsible party assumes responsibility and takes action. Upon arrival at a sanitary sewer overflow, the Wastewater Collection staff will:

- Determine the cause of the overflow, e.g. sewer line blockage, sewer line break, pump station mechanical or electrical failure, etc.;
- Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in the determine of its cause;
- Determine if private property is impacted. If yes, staff will advise County Environmental Health;
- Take immediate steps to stop the overflow, e.g. relieve pipeline blockage, manually operate lift station controls, repair pipe, etc. Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way); and
- Request additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the overflow.

Initial Measures for Containment

Following their preliminary assessment, Wastewater Collection staff will:

- Initiate measures to contain the overflow and, where possible, recover sewage which has already been discharged, minimizing impact to public health or the environment
- Determine the immediate destination of the overflow, e.g. storm drain, street curb gutter, creek, water body, etc.
- Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available
- Take immediate steps to contain the overflow, e.g., block or bag storm drains, recover through vacuum truck, divert into downstream manhole, etc.

Additional Measures Under Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or sewer line collapse, Wastewater Collection staff will determine whether to set up a portable by-pass pumping operation around the obstruction.

- Appropriate measures shall be taken to determine the proper size and number of pumps required to effectively handle the sewage flow
- Continuous or periodic monitoring of the by-pass pumping operation shall be implemented as required
- Regulatory agency issues shall be addressed in conjunction with emergency repairs

Cleanup

Wastewater Collection staff will thoroughly clean the site after a sanitary sewer overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) will remain. Clean up may include the following steps:

- Where practical, the area is to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be flushed, swept, raked, picked-up, and transported for proper disposal.

- The overflow site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. Posting if required should be undertaken pursuant to the City's public advisory procedure.
- Where appropriate, the overflow site is to be disinfected and deodorized.
- Where sewage has resulted in ponding, the pond should be pumped dry and the residue disposed in accordance with applicable regulations and policies.
- If a ponded area contains sewage which cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a creek or other water body that may contain fish or other aquatic life, bleach or other appropriate disinfectant should not be applied, and the California Department of Fish & Wildlife should be contacted for specific instructions.
- Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

Regulatory Agency Notification

The City is required to report wastewater overflows and discharges consistent with the California Water Code and the Health and Safety Code. Agency notification requirements vary depending on the quantity of sewage spilled and the location the spill reaches. Spills are categorized as follows:

CATEGORY 1 SSO:

Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that:

- a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
- b. Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond)
- c. Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSO that exceed 50,000 gallons or greater to a surface water. (See Appendix E)

Notification: Within two hours of becoming aware of any Category 1 SSO **greater than or equal to 1,000 gallons discharged to a 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 number.

Reporting: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of the SSO and date.

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.

CATEGORY 2 SSO:

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Reporting: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of the SSO and date.

CATEGORY 3 SSO:

All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.

Reporting: Submit certified report within 30 calendar days of the end of the month in which SSO occurred.

PRIVATE LATERAL SEWAGE DISCHARGE (PLSD):

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately-owned sewer lateral connected to the enrollee’s sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the SSO Database.

NO SPILL CERTIFICATION:

Certify that no SSO’s occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSO’s occurred.

The City’s Environmental Compliance staff has reported sewage spills to the Regional Water Quality Control Board and other agencies since 1988 and CIWQS since 2007, as mentioned previously. The Utilities Department has developed a Sewage Spill Report form and Spill Reporting Guidelines for spills occurring during work hours and those that occur after hours to mitigate the impacts associated with any sanitary sewer overflow that occurs. A sample Sewage Spill Report is provided in Appendix D and the City’s Spill Reporting Guidelines are summarized in Table 15.

Table 15: Regulatory Agency Contacts

<p>California Office of Emergency Services (Cal OES): If the sewage spill is over 1,000 gallons or reaches waterway, call (800-852-7550) or (916-845-8911). Record case number for reference and report.</p>
<p>Regional Water Quality Control Board (RWQCB): If spill is over 1,000 gallons, reaches waterway, or occurred in area with likely public contact, call (805-549-3147 or 805-542-4638) as soon as possible. (Must be reported within two (2) hours of the time you have knowledge of the spill). Give the required spill information. If you leave a message, leave your name and call back number. A follow-up call within 24 hours of the spill must be made confirming that all required agencies have been notified within the two-hour timeframe. Written report must be submitted within five (5) days. Spills that meet CIWQS criteria shall be appropriately reported by the City’s Wastewater Collection Supervisor.</p>
<p>SLO County Environmental Health: If spill is over 50 gallons, call (805-781-5544). Give the spill information and let them know that the written report will be sent via fax (Fax: 805-781-4211).</p>
<p>California Department of Fish and Wildlife: If spill reaches waterway, call state office (916-445-0045) or Business Phone at (916-358-1300). Leave message with same information as above. Speak fast, or the machine will cut you off.</p>
<p>Proposition 65/County Board of Supervisors: If spill is a threat to the environment or human health, call the County’s Public Works Department at (805-781-5450). Provide the spill information and let them know that the written Sewage Spill Report will be sent via fax (Fax: 805-781-1229).</p>

Source: City of San Luis Obispo Utilities Department, Sewage Spill Reporting Guidelines, 2019.

Public Advisory Procedures

In consultation with County Environmental Health, Wastewater Collection staff will post signs and place barricades, cones, traffic arrow board, and caution tape as needed to keep vehicles and pedestrians away from contact with spilled sewage. Creeks or drainage channels that have been contaminated as a result of an SSO should be posted at visible access locations until the risk of contamination has subsided to acceptable background levels. The warning signs, once posted, should be checked every day to ensure that they are still in place. Signs shall not be removed until directed by the Wastewater Collection Supervisor. Major spills may warrant broader public notice such as placing door tag in the surrounding neighborhood. The approval of the Utilities Director is required prior to contacting local media when significant areas may have been contaminated by sewage.



The City continues to work with County Environmental Health on public notification procedures following sanitary sewer overflows and will revise these procedures as necessary in the future to ensure public health and safety.

Failure Investigation

Following an SSO event, a failure investigation will be conducted to determine the cause of the SSO and identify corrective actions needed to reduce or eliminate the potential for the SSO to recur. The investigation will include reviewing all relevant data to determine appropriate corrective actions for the sewer line segment or lift station. The investigation will be conducted by the Wastewater Collection Supervisor. The investigation will include:

- Reviewing past maintenance records;
- Reviewing original construction plans and regulatory reports;
- Reviewing available photographs;
- Conducting a CCTV inspection to determine the condition of the line segment immediately following the SSO and reviewing the video and logs; and;
- Interviewing staff who responded to the spill, as well as interviewing customers and residents.

The product of this investigation should be the determination of the cause of the SSO and identification of corrective actions.

SSO Response Training

City personnel who may have a role in responding to, reporting, and/or mitigating a sanitary sewer overflow will receive training on the contents of the City's *Overflow Emergency Response Plan (Plan)*. New employees receive training before they are placed in a position where they may have to respond. Current employees receive annual refresher training on the City's *Plan* and the overflow emergency response procedures.

Contractor personnel who may have a role in responding to, reporting to the City, and/or mitigating a wastewater collection system overflow receive training on the contents of the *Plan*.

Records are kept of all training that is provided in support of the City's *Plan*. The records for all scheduled training courses and for each overflow emergency response training event will include date, time, place, content, name of trainer, and names of attendees.

Section VII. Fats, Oils, & Grease Control Program

Applicable General Waste Discharge Requirements for the Fats, Oil and Grease Control Program section of the Sewer System Management Plan state that the City shall evaluate its service area to determine whether a FOG control program is needed. The FOG source control program shall include the following as appropriate:

- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;*
- (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;*
- (c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;*
- (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, best management practices (BMP) requirements, record keeping and reporting requirements;*
- (e) Authority to inspect grease producing facilities, enforcement authorities, and determination of whether the collection system agency has sufficient staff to inspect and enforce the FOG ordinance;*
- (f) An identification of sewer system sections subject to FOG blockages and the 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 sewer system, for each sewer system section identified in (f) above.*

Program Background

The City's Environmental Programs section of the Wastewater Division permits and inspects grease and oil generating facilities to ensure control of discharges that may cause blockages. A Fats, Oil and Grease Control Program (FOG program) has been in place in the San Luis Obispo since 1989. It includes discharger education on the control of fats, oil and grease, and specific guidelines facilities must follow. The program is implemented by the Environmental Programs Manager and the Environmental Compliance Inspector. Over 167 food establishments are issued Class II Industrial Discharge permits and inspected annually as a part of this program as food establishments are the largest non-domestic contributors of fats, oil and grease to the City's wastewater collection system.

The City of San Luis Obispo Municipal Code Section 13.08.160 requires that a grease trap/interceptor be installed in all commercial kitchens, restaurants, bakeries, and other food processing facilities to remove liquid wastes containing fats, oils, and grease. The grease trap must meet the Plumbing Code and be approved by the City's Building Division. Improperly maintained grease removal equipment allows FOG to pass through to the collection system where it can result in blockages and potential sewer overflows. Wastewater Collection staff frequently clean the sewer lines resulting in additional man hours applied to removing FOG that could have been removed at the point of generation. The City's Water Resource Recovery Facility is also impacted by accumulated FOG which can interfere with routine treatment processes and subsequent compliance with the City's permit to discharge to San Luis Creek.

Environmental Programs staff conducts annual grease trap inspections at facilities under the Class II Discharge Permit and the City Municipal Code to document that each grease trap/interceptor is maintained to prevent FOG from entering the City's wastewater collection system. The permit allows facilities to discharge process wastewater to the sewer when permit limits are being met. Inspections are conducted using an inspection form which addresses best management practices for the prevention of FOG discharges to the sewer. Permit holders must maintain records on gallons of FOG disposed including receipts from grease haulers when an outside service is utilized. Restaurant protocols that eliminate FOG from entering inside drains are considered including employee training and documentation of grease trap/interceptor cleaning. Inspections are conducted more frequently in areas where excessive grease accumulation has been documented during preventive and area maintenance of the City's collection system. Additionally, less preventive maintenance and fewer sanitary sewer overflows caused by fats, oil and grease allow the Utilities Department to perform other required infrastructure work.



City Wastewater Collection staff cleaning a sewer main using the Vac-con.

Guidelines for the Control of Fats, Oil & Grease

As part of the City's *Fats, Oil and Grease Control Program*, food establishments are provided the following guidelines as part of the annual inspection and issuance of a Class II Industrial Discharge permit.

General Measures

- Train all staff on best management practices related to fat, oil and grease. Staff will be more willing to support an effort if they understand its basis. Trained staff will be more likely to implement best management practices and work to reduce grease discharges to the sewer.
- Post "No Grease" signs above sinks. Signs serve as a constant reminder to staff of proper grease disposal practices. Reduction of grease entering the drain reduces the cleaning frequency of the grease removal device.
- "Dry wipe" pot, pans and kitchen equipment before cleaning. "Dry wiping" will reduce the amount of grease going into the grease removal devices and the sewer. This will reduce the cleaning frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
- Use absorbents such as paper towels to pick up oil and grease spills prior to mopping. Decreases the amount of grease that will be put down the drain. This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
- Dispose of food waste as solid waste. Dispose of food waste to the trash. Solid waste disposal of food waste will reduce the frequency and cost of grease removal device cleaning.
- Use screens in sinks and floor drains to capture food waste and dispose of properly into the trash. Food waste can cause sewer lateral blockages. Proper disposal of food waste will protect laterals and sewer mains from blockages and overflows.



- Collect and recycle waste cooking oil. Excess oil is prevented from entering the grease removal device and the sewer. Reduction in the cleaning frequency of the grease removal device and less grease being passed to the sewer.

Grease Trap/Interceptor Maintenance

- Complete grease trap or interceptor maintenance log to document cleaning intervals. Maintenance log can help your facility determine if cleaning frequency of the grease removal device is sufficient. A proper cleaning frequency will result in less grease accumulating in the lateral, fewer blockages and less pass through to the sewer lines.
- Clean grease traps at a frequency that will prevent the accumulation of grease or pass through to the sewer. Routine cleaning of the grease removal device ensures efficient operations. Routine cleaning will prevent grease from passing through to the sewer lateral and from accumulating in the sewer mains.
- Use water temperatures less than 140° F in all sinks, especially in the pre-rinse sink. Temperatures above 140° F will dissolve grease, which will re-solidify in the sewer lines. Reduces costs for the energy to heat the water. Sewer lateral remains free of grease.
- Have a manager present during grease trap/interceptor cleaning to ensure the unit is properly serviced. The manager can ensure that the grease removal device is properly cleaned and no shortcuts are taken. Proper cleaning ensures that the grease removal device will function properly and efficiently.
- Do not store anything on or around the grease removal device that will block access. Proper maintenance is easier to complete if access to the grease removal device is not blocked. Routine maintenance is more likely to be performed if the grease removal device is easily accessible.

Outdoor Housekeeping/Storm Water Best Management Practices

- Clean floor mats and exhaust filters and other equipment inside. Cleaning greasy equipment outside is one of the most common sources of fat, oil and grease in our storm drains. Grease and food waste will be properly disposed of and will not enter the storm drain where it will de-grade creek water quality.
- Sweep or mop outdoor surfaces. Sweeping and mopping outdoor surfaces will reduce non-storm water runoff and will save water. Elimination of non-storm water discharges that degrade water quality.
- Any water used to clean outside surfaces by contractors must be vacuumed up and properly disposed of to the sewer. The City Municipal Code prohibits discharging or dumping any sewage, garbage, rubbish or otherwise polluted water to any storm drain or natural outlet. Improved water quality in our creeks and compliance with the City code.
- Keep the area around the dumpster/trash storage clear of trash, debris, and grease. Debris, trash, and grease can be washed into the storm drain during the rainy season. Loose debris and trash will not enter the storm drain causing blockages and will not enter the waterways.

FOG Program Education

Information on proper disposal of FOG and other SSO prevention measures, including house lateral maintenance, etc. is disseminated through brochures and articles in the City's newsletter. The City also utilizes personal contacts with business owners by the City's Environmental Compliance Inspector. These methods have proven to be very effective in relaying information on proper disposal of FOG and SSO prevention methods to stakeholders.

Section VIII: System Evaluation & Capacity Assurance Plan

The General Waste Discharge Requirements for the System Evaluation and Capacity Assurance Plan section of the Sewer System Management Plan are:

The City shall prepare and implement a Capital Improvement Plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

(a) Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events.

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

(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. CIP shall include an implementation schedule and shall identify sources of funding.

(d) Schedule: The City shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14 [of the GWDR].

Capacity Assessment & Enhancement

A critical function of a wastewater collection system is to provide adequate capacity to handle peak wet weather flows. The purpose of a capacity assessment is to ensure that adequate capacity exists in all portions of the collection system and that downstream portions that will receive wastewater from new connections can handle the additional flow.

The City is completed the *Wastewater Collection Infrastructure Renewal Strategy* in 2016 including a hydraulic model the City's wastewater collection system, and prioritization of system improvements and replacements. The model is updated annually and is used in capital planning for the City's Financial Plan.

Wastewater staff continues to identify locations in the collection system that experience or contribute to SSOs caused by hydraulic deficiencies based on historical maintenance data. Problem areas are prioritized for capital replacement. Table 16 includes data on improvements to the collection system, including both capital project and from new development, from 1999 to 2018. For that twenty-year period, 122,493 feet (over 23 miles) of new sewer lines were installed.

Table 16: Sewer Line Installations, 1999-2018

Year	Sewer Lines Installed Capital Improvement Program (in feet)	Sewer Lines Installed New Development (in feet)
1999	416	2,450
2000	269	822
2001	4,322	16,387
2002	158	6,870
2003	2,254	619
2004	1,313	0
2005	3,677	1,759
2006	3,614	502
2007	1,646	1,201
2008	1,613	2,920
2009	5,673	0
2010	923	0
2011	6,379	0
2012	6,851	0
2013	1,303	2,503
2014	4,231	3,045
2015	7,307	4,023
2016	2,055	4,309
2017	1,588	7,808
2018	0	11,683
Total:	55,592 feet	66,901 feet
Average:	2,780 feet/year	3,345 feet/year

Source: City of San Luis Obispo Utilities Department, 2019.

Over the past 25 years the City has made significant progress in reducing sanitary sewer overflows, and service interruptions with comprehensive maintenance activities and capital improvement projects in the wastewater collection system. Continued evidence of significant infiltration/inflow indicates that this work alone has not been effective.

Capital Improvement Program

Corresponding to the City’s two-year budget cycle, the Utilities Department staff spends significant time updating and developing the corresponding capital improvement program for the wastewater collection system. Identified objectives related to Wastewater Collection System Improvements include:

- Replace aging, deteriorated deficient or otherwise troublesome sewer infrastructure;
- Reduce periodic maintenance requirements;
- Reduce infiltration and inflow of storm water; and
- Provide uninterrupted sewage flow without health hazard or effluent leakage.



Some of the City’s sewer lines are over 100 years old and are undersized. Maintenance requirements increase dramatically as a pipeline approaches the end of its useful life. With an expected service life of fifty years, approximately two percent of the wastewater collection system must be replaced each year. In some cases, pipelines can be rehabilitated without digging them up. Trenchless methods of sewer rehabilitation are utilized whenever it is economically feasible or necessitated by environmental conditions.

Wastewater collection system capital improvement projects included in the City’s Financial Plan, Capital Improvement Plan, for 2017-19 through 2021-22 are provided in Appendix F. Estimated cost to construct improvements to the collection system for those fiscal years are as follows:

	2017-18	2018-19	2019-20	2020-21	2021-22
Pipeline Replacement projects	\$1,250,000	\$1,474,000	\$1,570,000	\$1,630,000	\$1,870,000
Telemetry Upgrades	\$100,000	\$38,000			
Lift Station Replacement projects	1,085,000				1,980,000

As shown in Table 7, much of the City’s wastewater collection system is on a preventive maintenance schedule. Proposed projects involve the replacement of sewer mains and related facilities that are approaching capacity. Modern materials and better pipe joints result in a significant reduction in root intrusion and inflow and infiltration (I/I). When these older sewer lines are replaced, the lines will be placed on routine area maintenance.

Private Sewer Laterals

A study conducted in the early 1990s found that private sewer laterals connected to the City’s wastewater collection system contributed to significant infiltration/inflow problems. The study’s findings indicated that failures were mostly due to pipe construction materials (such as use of Orangeburg pipe) or joint failure in clay pipe. Due to infiltration/inflow problems and the availability of PVC, the City’s standard changed during the 1980s to no longer allow the use of Orangeburg pipe for private sewer laterals.

The City’s Voluntary Sewer Lateral Rehabilitation Program was originally adopted and implemented in July 1997. The City accepted the first applications for video inspections of private laterals in September 1997. After a hiatus from 2004 and 2007 due to limited funding, the program was reinstated in July 2007. When the program resumed in July 2007, 211 residential service laterals were replaced between 2007 and 2011, as shown in Table 17. The program was designed to be mutually beneficial to both the City and the homeowner. The homeowner benefits by receiving construction permits, technical advice and a rebate of one-half the cost of replacement or repair up to a maximum of \$1,000 per property from the City. The rehabilitated sewer lateral is a benefit to the City as inflow and infiltration into the City’s collection system is reduced thereby reducing wastewater treatment and plant expansion costs related to the need for additional capacity.

Table 17: Service Lateral Reimbursements

Year	Service Lateral Reimbursements
2007	22
2008	102
2009	58
2010	29
2011	106
Total:	297

Source: City of San Luis Obispo Utilities Department, 2012.

The Voluntary Service Lateral Rehabilitation Program was discontinued in at the end of the 2010-11 fiscal year. Utilities Department staff is developing an updated Private Sewer Lateral Program, including a rebate program, for City Council consideration in 2019.

Section IX. Monitoring, Measurement & Program Modifications

The General Waste Discharge Requirements for the Monitoring, Measurement, and Program Modifications section of the Sewer System Management Plan state that the City 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.*

Performance Measures

The indicators that the City will use to measure the performance of its wastewater collection system and the effectiveness of its SSMP are:

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

Historical and Baseline Performance

The City maintains information relevant to the performance of the collection system in its database. The data that is available is shown in Table 18. The City has reported SSOs using CIWQS since 2007. CIWQS data will be used as the City's historical performance data. Geospatial and trend analysis will be conducted in future years as additional data becomes available.

Performance Monitoring and Program Changes

The City evaluates the performance of its wastewater collection system annually using the performance measures identified above. The City will update the data and analysis in this section at the time of the evaluation. The City may use other performance measures in its evaluation. The City will prioritize its actions and initiate changes to this SSMP and the related programs based on the results of the evaluation.

SSMP Updates

The City first adopted its SSMP in 2009, updated it in 2014, and now in 2019 to reflect standard operating procedures, data, and inventory. The City will update its SSMP at least every five years. The City will determine the need to update its SSMP more frequently based on the results of the semi-annual audits and the performance of its sanitary sewer system. In the event that the City decides that an update is warranted, the

Table 18: Historic Data on Sanitary Sewer Overflows 2008-2018

Year	# of SSOs	SSO Cause	Average Volume Spilled	Volume Spilled Discharged to Surface Water	Future Prevention
2008	10	6 Roots 1 Grease 2 Debris 1 Structural Failure	4,905	520	Changed preventive maintenance frequency and completed point repair.
2009	10	7 Roots 0 Grease 1 Debris 2 Structural Failure	40,405	27,675	Changed preventive maintenance frequency and completed point repairs.
2010	7	1 Roots 0 Grease 3 Debris 1 Structural Failure 1 Construction 1 Jumper Surcharge	10,575	8,400	Changed preventive maintenance frequency, completed point repair and revised construction specifications.
2011	5	4 Roots 1 Electrical/Pump	2,150	1,600	Changed preventive maintenance frequency
2012	8	5 Roots 0 Grease 1 Debris 2 Structural Failure	5,726	1,230	Changed preventive maintenance frequency and completed point repair.
2013	4	4 Roots 0 Grease 0-Debris 0 Structural Failure	70	0	Changed preventive maintenance frequency
2014	16	8 Roots 6 Debris 2 Structural Failure	405	4,250	Changed preventive maintenance frequency, and completed point repairs
2015	12	6 Roots 4 Debris 2 Structural Failure	568	1,650	Changed preventive maintenance frequency, and completed point repairs
2016	7	5 Roots 1 Debris 1 Capacity Exceeded Design	2,069	13,950	Changed preventive maintenance frequency
2017	9	2 Roots 1 Grease 3 Structural Failure 3 Capacity Exceeded Design	8,471	84,710	Changed preventive maintenance frequency Exploring Lateral Program to reduce I/I
2018	5	3 Roots 1 Grease 1 Debris	568	1,650	Changed preventive maintenance frequency

Source: California Integrated Water Quality System (CIWQS), 2019.

process to complete the update will be identified at that time. The City will complete the update within one year following identification of the need for the update.

The City staff will seek approval from the City Council for any significant changes to the SSMP. The authority for approval of minor changes such as employee names, contact information, or minor procedural changes is delegated to the Utilities Director.

The City will certify that it has completed the annual audit using CIWQS. Copies of the current SSMP document will be available to all interested parties at the City of San Luis Obispo, Utilities Department (Administration Office), 879 Morro Street, during normal business hours.

Section X: Program Audits

The GWDR requirements for Program Audits section of the Sewer System Management Plan state that the City 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 City's compliance with the SSMP requirements identified in this subsection (D.13 [of the GWDR]), including identification of any deficiencies in the SSMP and steps to correct them.

This section outlines the auditing method that the City will follow to evaluate the effectiveness of the SSMP to identify updates that may be needed for a more effective program.

The City will audit its implementation and compliance with the provisions of this SSMP no less than every two years. The audit will be conducted by staff from the Utilities Department. The audit team may include members from other areas of the City, as needed. The scope of the audit will cover each of the major sections of the SSMP. An Audit Checklist, based on the requirements in the GWDR, is included in Table 19.

The results of the audit, including the identification of any deficiencies and the steps taken or planned to correct them, will be included in the SSMP Audit Report. The SSMP Audit Report will focus on the effectiveness of the SSMP program, compliance with the WDR requirements, and identification of any deficiencies in the SSMP. The SSMP Audit Report will identify revisions that may be needed for a more effective program. Information collected as part of Section 9 – Monitoring, Measurement, and Program Modifications will be used in preparing the audit. Tables and figures or charts will be used to summarize information about performance indicators. Completed audits are kept on file for periodic review and assessment.

Table 19: SSMP Audit Checklist

Audit Date:

Audit Team Members:

Section/Title	SSMP Requirement	Audit	Yes	No
1. Goals	Reduce, prevent, and mitigate SSOs	Are the goals stated in the SSMP still appropriate and accurate?		
2. Organization	<ul style="list-style-type: none"> - Names of City staff responsible for development, implementation, and maintenance of SSMP - Names and phone numbers for key City staff - Chain of communication for reporting SSOs - Designate LRO(s) -Chain of communication for reporting SSOs 	<ul style="list-style-type: none"> A. Is the City Staff telephone list current? B. Is the SSO Chain of Communication telephone list current? C. Is Figure 2-1 of the SSMP, entitled "Organization of City Staff Responsible for Sewer System," current? D. Are the position descriptions accurate portrayals of staff responsibilities? E. Is Figure 2-2 of the SSMP, entitled "SSO Reporting Chain of Communication" accurate and up-to-date? 		
3. Legal Authority	<ul style="list-style-type: none"> -Ability to require sewers and connections be properly designed and constructed -Ability to ensure access for inspection, maintenance, and repairs (includes public portion of lateral) -Ability to limit discharge of FOG and debris that may cause blockages -Ability to require the installation of grease removal devices -Ability to inspect FOG producing facilities -Ability to enforce violations of the City's sewer ordinances 	<p>Does the SSMP contain references to the current City Ordinance(s) documenting the City's legal authority to:</p> <ul style="list-style-type: none"> 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 laterals owned or maintained by the district? D. Limit discharges of fats, oils and grease? E. Enforce any violation of its sewer ordinance? 		
4. Operation & Maintenance	<ul style="list-style-type: none"> -Describe routine preventive maintenance program -Document completed preventive maintenance using work order system -Rehabilitation and replacement plan that identifies and prioritizes sanitary sewer system facilities -CIP showing the schedule for rehabilitation and replacement projects -Provide regular technical training for City sanitary sewer system staff -Require contractors to provide training for their employees who work in the Agency's sanitary sewer system facilities -Maintain equipment inventory -Maintain critical spare part inventory 	<p><i>Collection System Maps</i></p> <ul style="list-style-type: none"> A. Does the SSMP reference the current process and procedures for maintaining the City's sewer collection system maps? B. Are the City's sewer collection system maps complete, current and sufficiently detailed? <p><i>Resources and Budget</i></p> <ul style="list-style-type: none"> C. Does the City allocate sufficient funds for the effective operation, maintenance and repair of the sewer collection system and is the current budget structure documented in the SSMP? <p><i>Prioritized Preventative Maintenance</i></p> <ul style="list-style-type: none"> D. Does the SSMP describe current preventative maintenance activities? E. Are the City's preventative maintenance activities sufficient and effective in minimizing SSOs and blockages? <p><i>Scheduled Inspections and Condition Assessments</i></p> <ul style="list-style-type: none"> 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 current components of this program documented in the SSMP? 		

Section/Title	SSMP Requirement	Audit	Yes	No
		<p><i>Contingency Equipment and Replacement Inventory</i> G. Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management? H. Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?</p> <p><i>Training</i> I. Are the training records current? J. Does the SSMP document current training expectations and programs within the district's Wastewater department? Outreach to Plumbers and Building Contractors K. Does the SSMP document contain current outreach efforts to plumbers and building contractors?</p>		
5. Design & Performance Provisions	<ul style="list-style-type: none"> -Design and construction standards for new sanitary sewer system facilities -Design and construction standards for repair / rehabilitation of existing sanitary sewer system facilities -Procedures for the inspection and acceptance of sanitary sewer system facilities 	<p>A. Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems and for the rehabilitation and repair of existing sanitary sewer systems?</p> <p>B. Does the SSMP document contain 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?</p>		
6. Overflow Emergency Response Plan	<ul style="list-style-type: none"> -Procedures for the notification of primary responders -Procedures for the notification of regulatory agencies -Program to ensure appropriate response to all SSOs -Proper reporting of all SSOs -Procedure to ensure staff are aware of, are trained, and follow Plan -Procedure to ensure contractor personnel are aware of, are trained, and follow Plan -Procedures to address emergency operations such as traffic and crowd control -Program to prevent the discharge of sewage to surface waters -Program to minimize or correct the impacts of any SSOs that occur -Program of accelerated monitoring to determine the impacts of any SSOs that occur 	<p>A. Does the City's SSO Overflow and Emergency Response Plan establish procedures for the emergency response, notification and reporting of SSOs? B. Is wastewater staff appropriately trained on the procedures of the SSO Overflow and Emergency Response Plan? C. Is the SSO Overflow and Emergency Response Plan effective in handling SSOs in order to safeguard public health and the environment?</p>		
7. FOG Control Program	<ul style="list-style-type: none"> -Public outreach program that promotes the proper disposal of FOG -Plan for the disposal of FOG generated within the Agency's service area -Demonstrate that the Agency has allocated adequate resources for FOG control program 	<p>A. Does the FOG Control Program include efforts to educate the public on the 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?</p>		

Section/Title	SSMP Requirement	Audit	Yes	No
	<ul style="list-style-type: none"> -Identification of sanitary sewer system facilities that have FOG-related problems -Program of preventive maintenance for sanitary sewer system facilities that have FOG-related problems 	<p>C. Are requirements for grease removal devices, best management practices (“BMP”), record-keeping and reporting established in the district’s FOG Control Program?</p> <p>D. Does the City have sufficient legal authority to implement and enforce the FOG Control Program?</p> <p>E. Is the current FOG Control Program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?</p>		
<p>8. System Evaluation & Capacity Assurance Plan</p>	<ul style="list-style-type: none"> -Identification of elements of the sanitary sewer system that experience or contribute to SSOs caused by hydraulic deficiencies -Established design criteria that provide adequate capacity -Short and long term CIP that includes schedules for projects to addresses known hydraulic deficiencies -Procedures that provide for the analysis, evaluation, and prioritization of hydraulic deficiencies 	<p>A. Does the City’s SSMP evaluate hydraulic deficiencies in the system and, if needed, establish sufficient design criteria and short/long term capacity enhancement and improvement projects?</p> <p>B. If needed, does the City’s SSMP 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 activity accomplishment?</p>		
<p>9. Monitoring, Measurement & Program Modifications</p>	<ul style="list-style-type: none"> -Maintain relevant information to establish, evaluate, and prioritize SSMP activities -Monitor implementation of the SSMP Measure, where appropriate, the performance of the elements of the SSMP - Assess success of the preventive maintenance program -Update SSMP program elements based on monitoring or performance -Identify and illustrate SSO trends 	<p>A. Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?</p> <p>B. Is the City able to sufficiently evaluate the effectiveness of SSMP elements based on relevant information?</p>		
<p>10. SSMP Program Audits</p>	<ul style="list-style-type: none"> - Conduct audits at least every 2 years - Record the results of the audit in a report - Record the changes made and/or corrective actions taken 	<p>A. Will the SSMP Audit be conducted every two years as required by SWRCB 2006-0003-DWQ?</p>		
<p>11. Communication Program</p>	<ul style="list-style-type: none"> - Communicate with the public regarding the preparation of the SSMP - Communicate with the public regarding the performance of the SSMP - Communicate with tributary or satellite sewer systems 	<p>A. Does the City effectively communicate with the public about the development and implementation of its SSMP and continue to address any feedback?</p>		

Section XI. Communication Program

The GWDR requirements for the Communication Program section of the Sewer System Management Plan state that the City shall:

- (a) 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 Agency as the program is developed and implemented.*
- (b) Create a plan of communication with systems that are tributary and/or satellite to the Agency's sanitary sewer system.*

Communication with the Public

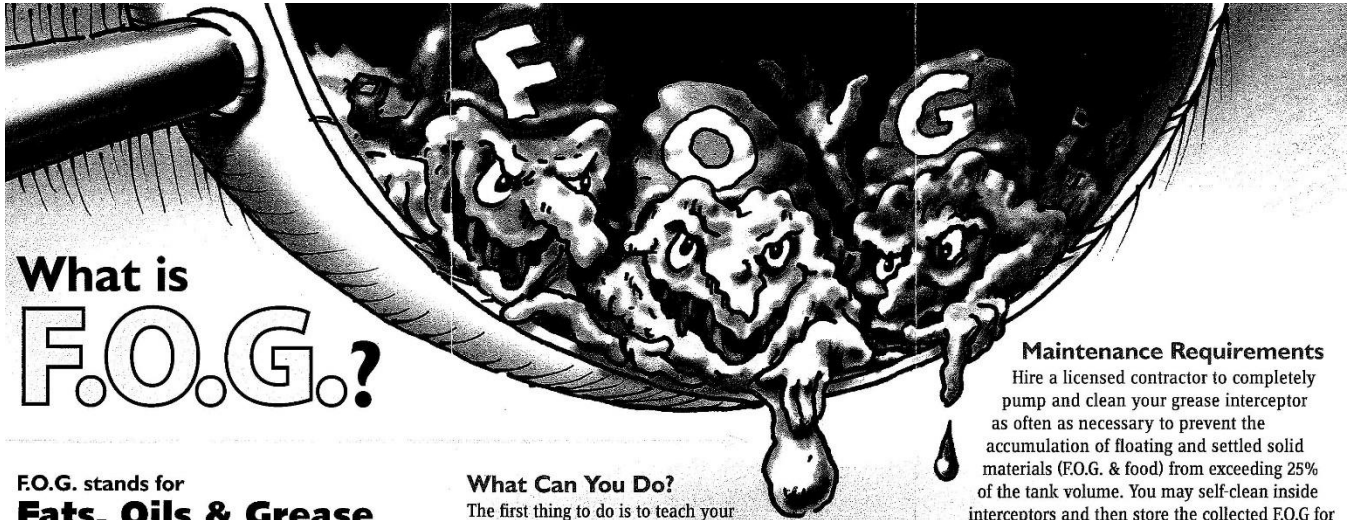
The Utilities Department website contains information and contact numbers for the Wastewater Collection and Environmental Program sections.

As described in this Plan, the City reports SSOs electronically to the California Integrated Water Quality System (CIWQS). The electronic SSO data, as well as information regarding regulatory actions, is available at:

http://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.shtml.

The Utilities Department's quarterly newsletter, *Resource*, serves to communicate to Utilities customers about the collection system, FOG program, reporting sanitary sewer overflows, etc. An article from a past publication is included on the next page.

The adopted SSMP document is available to the public at the City of San Luis Obispo, Utilities Department (Administration Office) at 879 Morro Street during normal business hours or on the internet at <https://www.slocity.org/home/showdocument?id=6347>. Interested parties can contact the Utilities Department for additional information at 805-781-7215.



What is F.O.G.?

F.O.G. stands for **Fats, Oils & Grease** and are found in common food and food ingredients such as: meat, fish, butter, cooking oil, mayonnaise, gravies, sauces and food scraps.

F.O.G. Means Trouble!

If not handled properly, F.O.G. can solidify and stick to the sides of your kitchen drain and sewer pipe. The most common accumulation comes from your daily dish washing process. Over time, buildup of F.O.G. can plug your pipes and cause a sewage back-up right into your business! Left on its own, it can also cause blockages and sanitary sewer overflows in the public sewer system, potentially impacting local creeks.

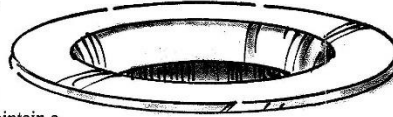
F.O.G. Can Cost You Money!

Business owners may be held liable for ALL clean-up costs related to a sewer back-up, including damage to adjoining personal property, parking lots, streets, and sewer system repair.

What Can You Do?

The first thing to do is to teach your employees the importance of controlling F.O.G. (see Best Practices to Fight Fats, Oils & Grease on inside flap). However, even with the best practices, F.O.G. finds ways to accumulate in your private lateral and cause major problems!

Your best line of defense from accumulation is to install and maintain a grease interceptor.



What is a Grease Interceptor?

Grease interceptors are designed to catch F.O.G. before they enter your sewer system. Grease Interceptors are located underground outside your business or inside near sinks in your cooking area (shown at right). Make sure your staff is familiar with the location of the interceptor. More than 25% accumulation, by volume, of food and F.O.G. indicates that your system is not working properly or is not being properly maintained.

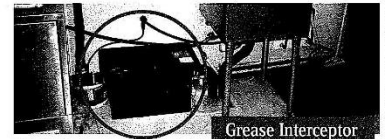
Maintenance Requirements

Hire a licensed contractor to completely pump and clean your grease interceptor as often as necessary to prevent the accumulation of floating and settled solid materials (F.O.G. & food) from exceeding 25% of the tank volume. You may self-clean inside interceptors and then store the collected F.O.G. for proper disposal by a licensed contractor. Place collected grease in your grease collection bin.

Do not place grease in the garbage because it may leak and can cause odors. Document interceptor cleanings on the maintenance log. Retain copies of the maintenance log and grease interceptor pumping records for a minimum of 3 years. Make those records available to City of San Luis Obispo inspectors upon request.

Cleanup F.O.G. Drips & Spills

F.O.G. spills inside and outside of your business should be cleaned up immediately. It is your responsibility to maintain a spill kit and use an outdoor spill prevention & clean-up plan.



Grease Interceptor

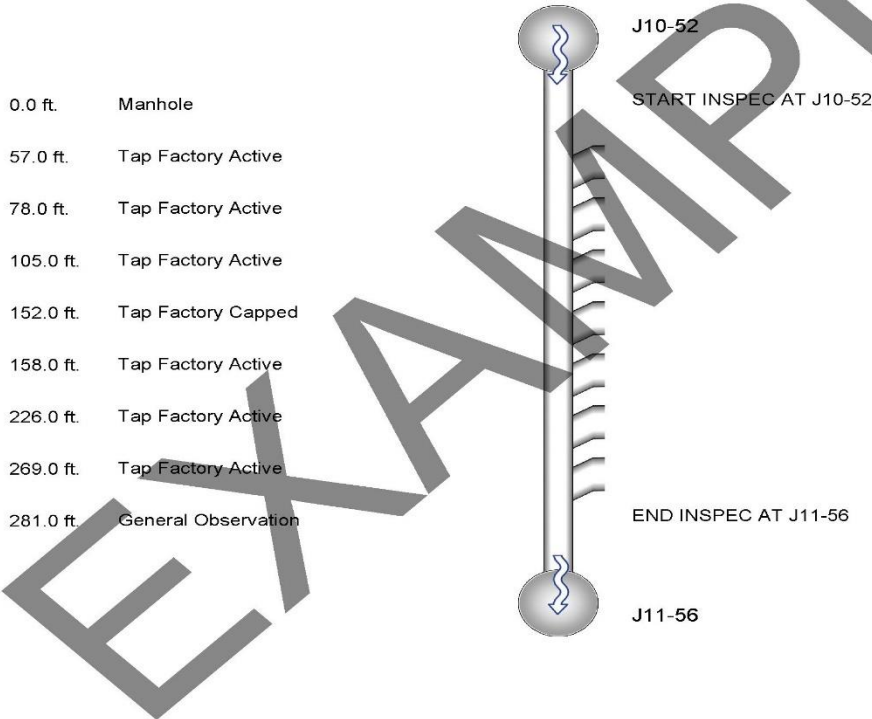
Appendix A: Sample CCTV Inspection Report



InspectIT
4921 Alexander Blvd
Albuquerque, NM
505-341-0109

Defect Listing Plot

Pipe Segment Refere... J10-52-J11-56		City SAN LUIS OBISPO	Street 430 PISMO	Material HDPE	Location C... S	Sewer Use S
Upstream MH J10-52		Total Length 281	Year Laid	Shape Circular	Location Details CARMEL ST.	
DS Manhole J11-56		Length surveyed 281	Year Renewed	Height N/A	Width 12	Pipe Joint... N/A
SPR N/A	N/A	MPR N/A	N/A	PO Number		Customer
SPRI N/A	N/A	MPRI N/A	N/A	Work Order H_150685		Purpose CIP
QSR N/A	N/A	QMR N/A	N/A	Direction DOWNSTREAM	Date 20120802	Media label DISC_221_TRACK_2
OPR N/A	N/A	Surveyed By JH	Pre-Cleaning Not Known	Time	Weather CLEAR	Additional Info CIP INSPECTION FOR ...
OPRI N/A	N/A	Certificate Number Legacy Data	Date Cleaned	End Time		



Appendix B: California Water Environment Association (CWEA) Certification Requirements

The California Water Environment Association's (CWEA's) certification requirements are available on the CWEA website at the link below:

http://www.cwea.org/cert_whatcert.shtml

Appendix C: Sanitary Sewer Overflow (SSO) Reporting Guidelines

Standard Operating Procedure (WWC) Sanitary Sewer Overflow (SSO) Reporting Guidelines

Always have the following information ready to give any agency: Location (include lane court, way, etc.), date, time and size of spill, whether it reached a creek or storm drain, name of creek, property owner, type of cleanup performed, and description of cause.

Category 1: GREATER THAN 1,000 GALLONS OR REACHES WATERWAY/STORM DRAIN OR TRIBUTARY TO A SURFACE WATER

Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSO's that exceed 50,000 gallons to a surface water. (See Water Quality Monitoring Requirements, SSMP, Appendix E)

Category 2: GREATER THAN OR EQUAL TO 1,000 GALLONS THAT DOES NOT REACH A SURFACE WATER, A DRAINAGE CHANNEL OR THE MS4 THAT IS NOT FULLY RECOVERED.

1. **During Normal Business Hours:** Contact Jeremy Gearhart, or designee, from Wastewater Collection staff. Wastewater Collection staff will contact the proper agencies.
2. **After Hours or on Weekend:** contact the following agencies:
 - a. California Office of Emergency Services (Cal OES): (800-852-7550) or (916- 845-8911). Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. **Be sure to get the name of the person you talked to and Cal OES control #.** If you leave a message, give all the above information about the spill, your name, and call back number.
 - b. San Luis Obispo County Sheriff Department: (781-4550). Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. Tell them that there has been a SSO and request they contact the on-call person from the County Environmental Health Department.
 - c. Regional Water Quality Control Board (RWQCB): (805-542-4638) Katie DiSimone kdisimone@waterboards.ca.gov. Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. Leave detailed message with spill information and contact number. **Backup Contact for a Significant Spill - NPDES Program Manager Sheila Soderberg,** 805-549-3592, ssoderberg@waterboards.ca.gov
 - d. Department of Fish and Wildlife: (831-649-2817) 24-hour dispatch. Regardless of the size, if any amount of wastewater reaches a creek. Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. **Be sure to get the name of the person you talked to at dispatch.**
 - e. San Miguelito Mutual Water Company (SM): (805-595-2348). Regardless of the size, if any amount of wastewater reaches a creek. Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. Select #4 (pound 4) "To be connected to our emergency

call service” and leave detailed message with spill information and contact number. E-mail spill report to Dan Migliazzo dmigliazzo@smmwc.com and cc: Rick Koon rkoon@smmwc.com within 24 hours after the spill or by the end of the first normal workday if the spill occurred during a weekend or holiday hours.

Complete City’s spill report form and give to Environmental Programs staff ASAP. If no one is present when the report is dropped off, be sure to contact somebody in Environmental Programs and let them know you dropped off the report.

Category 3: ALL OTHER DISCHARGES OF UNTREATED OR PARTIALLY TREATED WASTEWATER RESULTING OF A SANITARY SEWER SYSTEM FAILURE.

1. **During normal business hours:** Contact Jeremy Gearhart, or designee, from Wastewater Collection staff. Wastewater Collection staff will contact the proper agencies.
2. **After hours or on a weekend:** Contact the San Luis Obispo County Sheriff Department: (805-781-4550) tell them that there has been a discharge of wastewater and request they contact the on-call person from the County Environmental Health Department. *Complete the City’s spill report and give to Environmental Programs staff ASAP.*

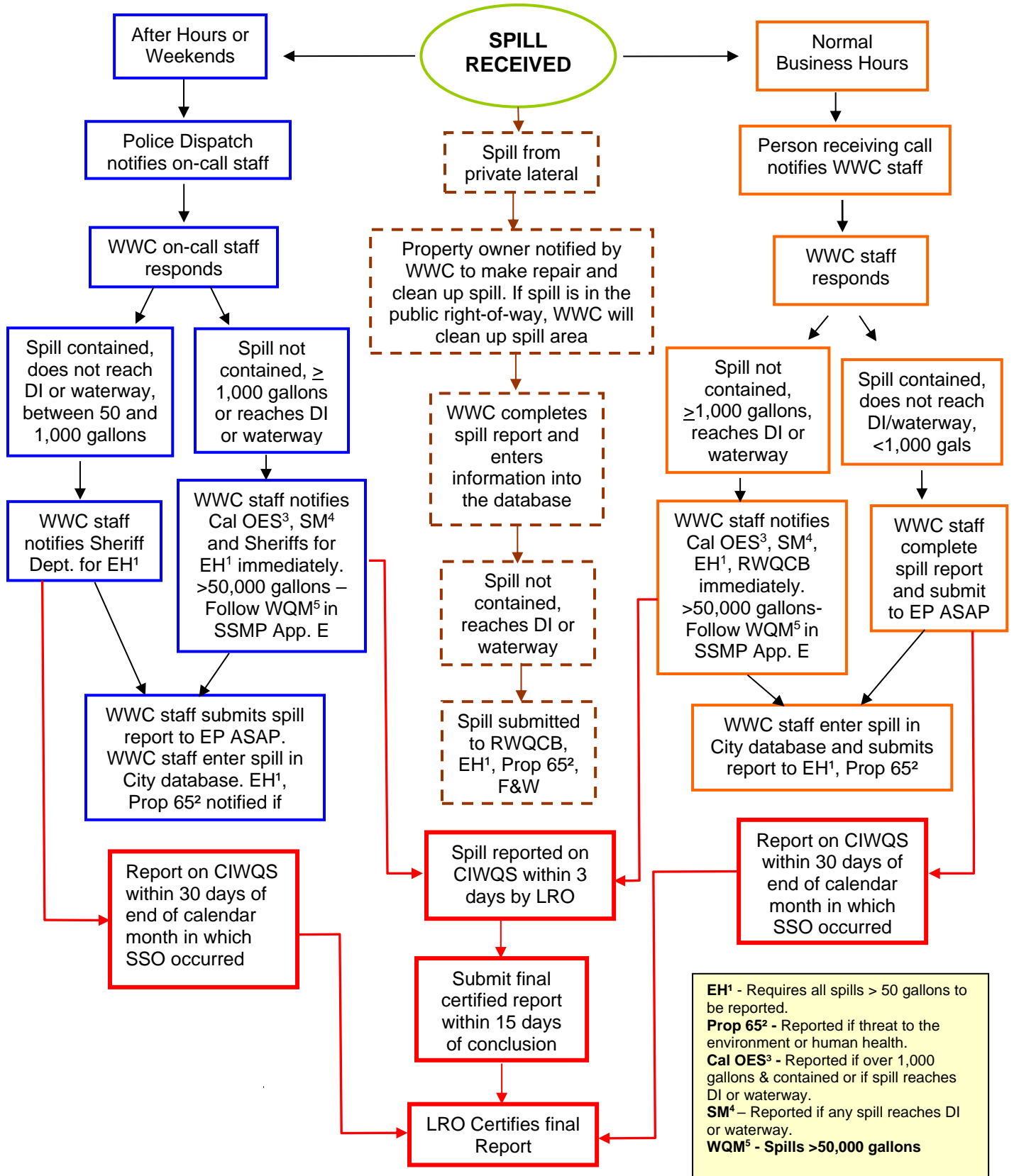
SSO LESS THAN 50 GALLONS:

Complete the City’s spill report and give to Environmental Programs ASAP.

WRITTEN AND ORAL REPORTING REQUIREMENTS

Contact the following agencies:

- a. **Cal OES:** *If spill is over 1000 gallons or reaches waterway, call (800-852-7550) or (916-845-8911). Record case number for reference and report.*
- b. **RWQCB:** *If spill is over 1000 gallons, reaches waterway, or occurred in area with likely public contact, call (805-542-4638) Katie DiSimone, as soon as possible (Must be reported within two (2) hours of the time you have knowledge of the spill). Provide the required spill information. If you leave a message, leave your name and call back number. Written report must be submitted within five (5) days. Spills that meet CIWQS criteria shall be reported by Jeremy Gearhart within three days.*
- c. **SLO County Environmental Health:** *If spill is over 50 gallons, call (805-781-5544). Give the spill information and let them know that the written report will be sent via fax (Fax: 805-781-4211).*
- d. **California Department of Fish and Wildlife :** (831-649-2817) 24 hour dispatch. Regardless of the size, if any amount of wastewater reaches a creek. Call as soon as possible, but no later than two (2) hours after becoming aware of the discharge. ***Be sure to get the name of the person you talked to at dispatch.***
- e. **Proposition 65/County Board of Supervisors:** *If spill is a threat to the environment or human health, call the Public Works Dept. at (805-781-5252). Give the spill information and let them know that the written report will be sent via fax (Fax: 805-781-1229).*



EH¹ - Requires all spills > 50 gallons to be reported.
Prop 65² - Reported if threat to the environment or human health.
Cal OES³ - Reported if over 1,000 gallons & contained or if spill reaches DI or waterway.
SM⁴ - Reported if any spill reaches DI or waterway.
WQM⁵ - Spills >50,000 gallons

Appendix D: Sample Sewer Spill Report

Reporting Party:		Phone:
Caller Name:		Phone:
Date of Call:	Time:	
Spill Location ID:	Spill Location Address:	

1. Spill Start Time Information

Caller Interview

Is sewage actively spilling?	Yes	No
If yes, from:	Manhole/Street Private Property/Cleanout	Wet Well Inside Building Other
When did caller first notice spill?	Date:	Time:
Comments:		

Additional Witness/If Any

Name:	Address:	Phone:
Description of spill:		
Time spill observed:		

2. Spill Responder

Include all available details (use attachments if needed) – submit follow-up written reports as necessary.



Stop! Take Pictures of Overflow at This Time

Names of Responders and arrival time (List All):
--

3. Spill Estimation



Estimated spill volume that reached a separate storm drain that flows to a surface water body:
Estimated spill volume recovered from the separate storm drain that flows to a surface water body: (Do not include water used for clean-up)
Estimated spill volume that directly reached a drainage channel that flows to a surface water body:
Estimated spill volume recovered from a drainage channel that flows to a surface water body:
Estimated spill volume discharged directly to a surface water body:
Estimated spill volume recovered from surface water body:
Estimated spill volume discharged to land: (Includes backups to building structures):
Estimated spill volume recovered from the discharge to land: (Do not include water used for clean-up)
Estimated spill start time/date:

4. Spill Location



Spill Observed From:	Manhole ID:	Lift Station ID:
Cleanout Address:		
Comments:		
Building Address:		
Comments:		
Spill Destination: (Check all that apply)	Building Storm System Unpaved Surface	Paved Surface Street Curb Other
Did Spill Reach:	Creek/Channel	Storm Drain
If yes, Creek Name or Storm Drain Location:		
Does spill appear to be over 1,000 Gallons?	Yes	No
Time discovered spill entered waterway:		

**IF SPILL REACHED A CREEK, CHANNEL, OR STORM DRAIN
THIS IS A CATEGORY 1 SPILL UNLESS FULLY CAPTURED/RETURNED.**

Spill Category determined to be:

(See back of this form for category descriptions if necessary)

Category 1

Category 2

Category 3

Private Lateral

5. Downstream Manhole



No Flow in Channel

Trickle Flow in Channel

Depth of Flow in Channel _____ Inches

6. Spill Containment



Containment Implemented:	Yes	No
Containment Measures:		

7. Cleanup



Time Clean Up Began:	Completed:
Gallons Retrieved:	
Describe Clean Up Operations:	
Were Public Health Warnings Posted?	Yes No
If Yes, Location(s) Posted:	

8. Cause of Spill

Failure At:	Mainline Upper Lateral Lift Station Wet Well	Lower Lateral Force Main Other _____
Spill Cause:	Roots Debris Capacity Lift Station Failure	Grease Vandalism Design Other _____
Was Spill Cause determined by CCTV inspection?	Yes No	(If Yes, Attach TV Report to this form)
Any overflows in the last 3 years in the same location?	Yes No	If yes, how many?
Measures taken to prevent future overflows in this location:		

APPENDIX E: Spill Reporting Guidelines (>50,000 gal)

WATER QUALITY MONITORING REQUIREMENTS (from SSS WDR):

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

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

Sewer System Overflow Sampling Plan:

The City of San Luis Obispo Wastewater Collection Staff will first determine whether or not the SSO has reached a receiving water, by calculating travel paths, flow rates, and containment measures. If the spill is 50,000 gallons or greater and has come in contact with a receiving water, the SSO Sampling Plan will be followed. The receiving water will be monitored at three locations:

- 1) At the SSO discharge point to the receiving water.
- 2) Upstream from the point of the SSO.
- 3) Downstream from the point of the SSO.

Three parameters will be monitored per Standard Methods or EPA protocol:

- 1) Ammonia
- 2) Fecal Coliform
- 3) Enterococci

Notify City's State certified, #1498, laboratory personnel of field sampling requirement related to spill over 50,000 gallons in waterway. In the event that the SSO occurs after hours, contact aforementioned laboratory at start of business hours the following morning.

Use Personal Protective Equipment (PPE) while performing sampling. Proceed with testing and/or sampling only when it is determined to be feasible and safe.

1.1 Point of Discharge Sampling/Testing

- Step 1: Move to the point where the SSO entered receiving water.
- Step 2: Photograph, map and mark the location for future reference.
- Step 3: Label the field samples with the date, time, location, and sampler's initials Record the testing results.
- Step 4: Collect 2 bacteriological samples (Fecal Coliform and Enterococci) using the supplied containers labeled "micro".
- Step 5: Collect a 500 ml sample for ammonia using a plastic 16 oz container that contains H₂SO₄ (gold colored) preservative.
- Step 6: Keep the samples under ice or refrigeration until transferred to the laboratory's process refrigerator (for example, use a cooler).

1.2 Upstream Sampling/ Testing

- Step 1: Move 10' upstream from the point where SSO enters the receiving water (to obtain a non-contaminated baseline sample).
- Step 2: Follow the procedure mentioned in "1.1 Point of Discharge Sampling/Testing" (Steps 2 – 6).

1.3 Downstream Sampling

- Step 1: Determine how far the SSO has traveled downstream
- Estimate rate of flow of stream using established City of SLO SOP.
 - Use a floating item on the water to determine how far it travels in one minute x estimated number of minutes since SSO first reached the water. Then measure and record width of stream and in the same location measure the depth of stream in five locations from left to right.
- Step 2: Move to three locations downstream.
- 50' and 200' downstream from the point where the SSO enters the receiving water, and
 - A point nearest the extent of how far the SSO traveled following calculation in Step 1.
- Step 3: Follow the directions mentioned in "1.1 Point of Discharge Sampling / Testing" (Steps 2 - 6)

NOTES:

- 1) Do not touch micro sample container's opening rim or bottom of the lid once the lid is removed.
- 2) Do not overfill sample containers because they contain preservatives including concentrated acids and caustics that are dangerous and harmful if contacted with skin, eyes etc.
- 3) All samples should be labeled with location, date, time, preservation and other pertinent. Follow-up sampling and testing will be performed if determined to be necessary.
- 4) A technical report summarizing spill event and associated analytical results will be prepared and submitted within the required 45 days.

City of San Luis Obispo Water Quality Laboratory service hours are: Monday through Sunday, 6AM to 4:30PM.

Samples will be collected and preserved by the City's state certified laboratory using established SOP protocol and using per the Environmental Laboratory Accreditation Program (ELAP) certificate number #1498.

Laboratory materials, reagents, and equipment are all maintained as a part of the laboratory's quality assurance program to produce legally defensible data as required by ELAP.



Appendix F: Capital Improvement Plan

FY 2017-19 through 2022-23

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS -FY 2017-18 THROUGH FY 2021-22

Project Description	Community Priority
<input checked="" type="checkbox"/> Rehabilitation or Replacement	<input type="checkbox"/> Major City Goal & Other Important Objectives
	<input type="checkbox"/> Measure G Priority

Purpose and Need

Replacement of the wastewater collection system’s manholes, sewer pipes, and related appurtenances is a program required to improve reliability and to reduce inflow and infiltration (I/I). The program’s replacement schedule will address existing structural deficiencies, and the potential for near-term failure according to priority.

Addressing I/I into the wastewater collection system is a long-term effort involving investigation and correction. Flow studies and field investigations have been successful in identifying sources of I/I in both City and privately-owned sewer infrastructure. Funding will be required to monitor, correct and reduce I/I sources.

The City’s wastewater collection system includes approximately 138 miles of sewer lines and related operational equipment. Some pipes are over 100 years old and are undersized. Maintenance requirements increase dramatically as pipeline and equipment approach the end of their useful life. Pipeline and operational equipment requires ongoing maintenance and condition assessment to prioritize periodic replacement, ensure proper function, and prolong service life. With an expected service life of 60 years, approximately two percent of the wastewater collection system is targeted for replacement or rehabilitation per year.



Status

This is an existing project shown in the 2015-17 Financial Plan Specification No. 90239.

Project Team

Utilities Department

Operating Program Number & Title: 55310 – Wastewater Collection

Assignment	Program/Work Group	Estimated Hours
Project Management	Public Works, Engineering	700 hours/year
Project Support	Utilities, Wastewater, Public Works, Administration, Wastewater Collection Supervisor and Staff	50 hours/year
Construction Management	Public Works, Inspection	500 hours/year
Environmental Review	Community Development	8 hours/year
Project Proponent	Utilities, Wastewater, Wastewater Division Manager	40 hours/year

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

Site List – For multi-year projects

2017-2018 Project List:

Location	Pavement Area	Length (feet)	Cost
Sewerline Replacement (Trench and Pipe Bursting)			
Design (contract services)			\$60,000
Santa Barbara - Morro / Osos	4	656	\$780,000
Osos - at 1819 Osos / Buchon	4	1,194	
Church - at 1054 Church / Osos	4	341	
Leff - Santa Rosa / Osos	4	380	
		Total: 2,571	
Construction Management (contract services)			\$70,000
Inflow/Infiltration Reduction	N/A	N/A	\$200,000
Trench Repairs	N/A	N/A	\$25,000
Raise manholes after paving	N/A	N/A	\$25,000
Easement – East of Chorro at Meinecke to Murray Study	N/A	N/A	\$30,000
Infrastructure Renewal Strategy – Foothill at Chorro to Lincoln Study	N/A	N/A	\$60,000
		Total	\$1,250,000

2018-2019 Project List:

Location	Pavement Area	Length (feet)	Cost
Sewerline Replacement (Cured In Place Pipe)			
Design (contract services)			\$17,000
Walnut - HWY 1 / Morro	4	717	\$170,000
Morro - Mill / Peach	4	246	
Morro - Palm / Mill	4	361	
		Total: 1324	
Construction Management (contract services)			\$17,000
Sewerline Replacement (Cured In Place Pipe)			
Design (contract services)			\$38,000
(Easement) Albert- Longview / McCollum	4	1340	\$380,000
Mill - Toro / Morro	4,1	1368	
Santa Rosa - Palm / Monterey	9	288	
		Total: 2996	
Construction Management (contract services)			\$38,000

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

Sewerline Replacement (Pipe Bursting)			\$10,000
Design (contract services)			
(Easement) - Foothill / Rougeot	7	335	
			\$100,000
Construction Management (contract services)		Total: 335	\$10,000
Sewerline Replacement (Open Trench)			
Design (contract services)			\$37,000
(Easement) - Chorro- Meinecke / Murray	7	303	
(Easement) - Murray- Chorro / HWY 1	7	669	
(Easement) - Murray / Murray	7	150	
		Total: 1122	\$370,000
Construction Management (contract services)			\$37,000
Inflow/Infiltration Reduction	N/A	N/A	\$200,000
Trench Repairs	N/A	N/A	\$25,000
Raise manholes after paving	N/A	N/A	\$25,000
		Total	\$1,474,000

2019-2020 Project List:

Location	Pavement Area	Length (feet)	Cost
Sewerline Replacement (Trench and Pipe Bursting)			
Design (contract services)			\$110,000
(Easement) Off Westmont at 260 Westmont	8	165	
Westmont – at 260 Westmont / Jeffrey	8	308	
Jeffrey - Westmont / Cerro Romauldo	7,8	2265	
Cerro Romauldo - Jeffrey / Tassajara	7	833	
		Total: 3571	\$1,100,000
Construction Management (contract services)			\$110,000
Inflow/Infiltration Reduction	N/A	N/A	\$200,000
Trench Repairs	N/A	N/A	\$25,000
Raise manholes after paving	N/A	N/A	\$25,000
		Total	\$1,570,000

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

2020-2021 Project List:

Location	Pavement Area	Length (feet)	Cost
Sewerline Replacement (Trench and Pipe Bursting)			
Design (contract services)			\$110,000
Luneta – Tassajara / Verde	7	350	\$1,160,000
Verde – Luneta / Ramona	7	572	
Easement – Luneta / Verde	7	175	
Serrano – at 180 Serrano / Broad	7	1851	
Penman – Penman / Serrano	7	476	
Easement – at 121 Penman / Penman	7	159	
Bressi – sewer main into Bressi	7	166	
Palomar – at 95 Palomar / Serrano	7	89	
		Total: 3838	
Construction Management (contract services)			\$110,000
Inflow/Infiltration Reduction	N/A	N/A	\$200,000
Trench Repairs	N/A	N/A	\$25,000
Raise manholes after paving	N/A	N/A	\$25,000
Total			\$1,630,000

2021-2022 Project List:

Location	Pavement Area	Length (feet)	Cost
Sewerline Replacement (Trench and Pipe Bursting)			
Design (contract services)			\$135,000
Johnson - San Luis Drive / Buchon	1	444	\$1,350,000
Buchon - Johnson / Morro	1,4	1911	
Santa Rosa - Islay / Buchon	4	290	
Santa Rosa - Pismo / Buchon	4	294	
Morro - Buchon / Pacific	4	728	
Pacific - Morro / Chorro	9	423	
Chorro - Pacific / Marsh	9	326	
		Total: 4,416	
Construction Management (contract services)			
Inflow/Infiltration Reduction	N/A	N/A	\$200,000
Trench Repairs	N/A	N/A	\$25,000
Raise manholes after paving	N/A	N/A	\$25,000
Total			\$1,870,000

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

Anticipated Facility Life Span: 60 years

Initial Projects Costs by Phase							
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Land Acquisition (950)		\$30,000					\$30,000
Study (951)		\$60,000					\$60,000
Design (952)		\$60,000	\$102,000	\$110,000	\$110,000	\$135,000	\$517,000
Construction (953)		\$780,000	\$1,020,000	\$1,100,000	\$1,160,000	\$1,350,000	\$5,410,000
Const. Management (954)		\$70,000	\$102,000	\$110,000	\$110,000	\$135,000	\$527,000
Total	\$0	\$1,000,000	\$1,224,000	\$1,320,000	\$1,380,000	\$1,620,000	\$6,544,000

Ongoing Costs by Type							
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Maintenance Materials		\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000
Total	\$0	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000

Project Funding by Source							
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Sewer Fund		\$1,250,000	\$1,474,000	\$1,570,000	\$1,630,000	\$1,870,000	\$7,794,000
Total	\$0	\$1,250,000	\$1,474,000	\$1,570,000	\$1,630,000	\$1,870,000	\$7,794,000

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

WASTEWATER COLLECTION TELEMETRY SYSTEM IMPROVEMENTS - FY 2017-18, FY 2018-2019

Project Description		Community Priority	
<input checked="" type="checkbox"/> Annual Maintenance		<input type="checkbox"/> Major City Goal & Other Important Objectives	
		<input type="checkbox"/> Measure G Priority	

Purpose and Need

The wastewater collection system's telemetry controllers and radios are unreliable and becoming obsolete. Proactively maintaining hardware and equipment is critical task of the wastewater operations to ensure year round functionality for the operations of sewer lift stations during normal operations, and emergency conditions. The upgrades to the telemetry system will provide new hardware, and software system that are easier to program and maintain.

Status

This is an existing project shown in the 2015-17 Financial Plan Specification No. 91370.

Project Team

Lead Department: *Utilities Department*

Operating Program Number & Title: 55310 – Wastewater Collections



Assignment	Program/Work Group	Estimated Hours
Project Management	IT Department, Control Systems Staff	80 hours/year
Project Support	Utilities, Wastewater, Wastewater Collection Supervisor and Staff	50 hours/year
Project Proponent	Utilities, Wastewater Division Manager	30 hours/year

Site List – For multi-year projects

Location	Estimated Year of Construction	Pavement Area (for projects in right-of-way)
Margarita Lift Station	2017-2018	N/A
Calle Joaquin Lift Station	2017-2018	N/A
Foothill Lift Station	2017-2018	N/A

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

Anticipated Facility Life Span: 50 years

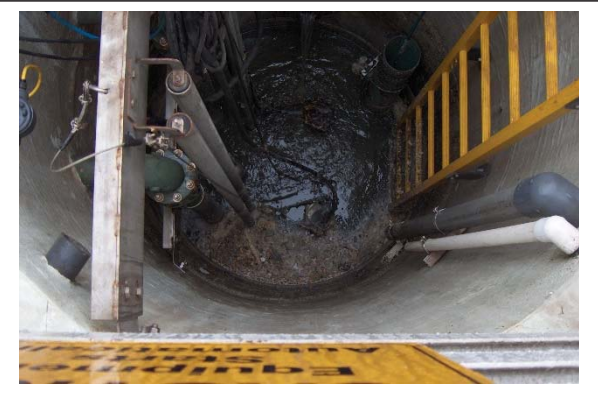
	Ongoing Costs by Type						
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Utilities							\$0
Maintenance Materials		\$100,000	\$38,000				\$138,000
Staff							\$0
Contract Services							\$0
Total	\$0	\$100,000	\$38,000	\$0	\$0	\$0	\$138,000

	Project Funding by Source						
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Sewer Fund		\$100,000	\$38,000				\$138,000
Total	\$0	\$100,000	\$38,000	\$0	\$0	\$0	\$138,000

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

WASTEWATER LIFT STATION REPLACEMENT – FY 2017-18, FY 2021-22

Project Description	Community Priority
<input checked="" type="checkbox"/> Rehabilitation or Replacement	<input type="checkbox"/> Major City Goal & Other Important Objectives
	<input type="checkbox"/> Measure G Priority



Purpose and Need

Laguna. The interior of the Laguna Lift station wet well, constructed in 2014, is becoming discolored and blistered. The discoloration is an initial symptom of corrosive liquids and gases present within the lift station’s wet well, but the small blistering appears to suggest that the coatings may have been damaged. A study is required to evaluate the level of the damage to the protective coatings in order to perform the appropriate re-sealing of the wet well’s coating to prevent damage to structure’s concrete and steel reinforcement.

Margarita. The Margarita Lift Station was put into service in 1971. In 1995, the floor of the sump pump was leaking and repairs were made. Cathodic protection was added in 1996 to extend the life of the lift station structure. In 2010, leaks were repaired on the floor and walls. An inspection report of the coatings confirmed signs of accelerated deterioration causing the dry well to be structurally unsound.

The inspection report noted a high risk of failure at the station as both the wet and dry well walls were deteriorating, causing leaks and structural issues. Because of its age and condition, replacement of the lift station has been prioritized with the other necessary system components that include the wet well and force main. The force main is approximately 225 feet in length and is cast iron pipe. Based on a pipe condition assessment, the pipeline is operating beyond its useful life expectancy. These replacements will ensure that all components function effectively as a system. The replacement lift station will accommodate a portion of the future development anticipated in the Margarita Area Specific Plan.

Foothill. The Foothill Lift Station is the oldest in the City’s wastewater collection system and is in a location with minimal access. This station is over 50 years old and is operating beyond its life expectancy. The equipment was originally installed in 1962 to serve the Broad Street and Orcutt area, but was removed and warehoused, then reconfigured and installed in its present location in 1986. Due to external corrosion the sump pump floor was repaired in 1995. Although cathodic protection was installed in 1996 to extend the life of the station, it is experiencing exterior corrosion and leaking ground water through internal welds in the structure. The existing force main is approximately 325 feet in length and is cast iron pipe. In 2013 the force main failed due to corrosion and pipe age. A pipeline condition assessment has shown it should be replaced.

Because of its age and condition, replacement of the lift station has been prioritized with the other necessary system components. It is recommended that the station be relocated approximately 500 feet west of its current location to serve future development. Relocating the station would require an addition of 500 feet of gravity and force main and property and easement acquisition

Status

This is an existing project shown in the 2015-17 Financial Plan Specification No. 91214.

CAPITAL IMPROVEMENT PLAN – INFRASTRUCTURE & TRANSPORTATION

Project Team

Lead Department: *Utilities Department*

Operating Program Number & Title: 55310 Wastewater Collection

Assignment	Program/Work Group	Estimated Hours
Project Management	Public Works, Engineering	400 hours/year
Project Support	Utilities, Wastewater, Public Works, Administration, Wastewater Collection Supervisor and Staff	300 hours/year
Construction Management	Public Works, Inspection	200 hours/year
Environmental Review	Community Development	8 hours/year
Project Proponent	Utilities, Wastewater Division Manager	75 hours/year

Site List – For multi-year projects

Location	Estimated Year of Construction	Pavement Area (for projects in right-of-way)
Laguna Lift Station Wet Well Coating	2017	N/A
Margarita Lift Station	2017	5
Foothill Lift Station	2021	7

Anticipated Facility Life Span: 50 years

	Initial Projects Costs by Phase						
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Design (952)		\$25,000					\$25,000
Construction (953)		\$900,000				\$1,800,000	\$2,700,000
Const. Management (954)		\$160,000				\$180,000	\$340,000
Total	\$0	\$1,085,000	\$0	\$0	\$0	\$1,980,000	\$3,065,000

	Project Funding by Source						
	Budget to Date	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Sewer Fund		\$1,085,000				\$1,980,000	\$3,065,000
Total	\$0	\$1,085,000	\$0	\$0	\$0	\$1,980,000	\$3,065,000