City of Sunnyvale, Environmental Services Department, Water and Sewer Systems Division (CIWQS WDID: 2SSO10200)

2020 Sewer System Management Plan

Prepared by HydroScience Engineers

Last Updated in May 2015

City Council Adoption: May 19, 2020

HydroScience
Strategic Water Solutions

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Note: Element numbers are based on SWRCB General Waste Discharge Requirements (GWDR), dated May 2, 2006

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INTRODUCTION

A. Sewer System Management Plan

This Sewer System Management Plan (SSMP) has been prepared by the City of Sunnyvale Environmental Services Department (ESD). The SSMP contains a compendium of the policies, procedures, and activities describing the planning, management, operation, and maintenance of the City's sanitary sewer system.

The State Water Resources Control Board (SWRCB) has issued Statewide Waste Discharge Requirements for sanitary sewer systems, which include requirements for development of an SSMP. This SSMP is intended to meet the requirements of the San Francisco Bay Regional Water Quality Control Board and the SWRCB. Specifically, the SSMP follows the General Waste Discharge Requirements for Wastewater Collection Agencies (GWDR), SWRCB Order Number 2006-0003, dated May 2, 2006, and amended by the revised Monitoring and Reporting Program (MRP) in Order WQ 2013-0058-EXEC, dated September 9, 2013.

The structure (element numbering and nomenclature) of this SSMP follows the requirements set forth in the GWDR. The City's waste discharger identification number (WDID) in the California Integrated Water Quality System (CIWQS) is 2SSO10200.

B. Sanitary Sewer System Facilities

City of Sunnyvale

The City operates a sanitary sewer system that serves a residential population of approximately 155,567 (daytime population approximately 230,000) in a 23 square mile service area. The sewer system consists of about 295 miles of gravity sewers (approximately 6,985 line segments), approximately 10,648 feet of force main, 7,133 manholes, and 5 pump stations. The sewers range in size from 4-inch to 48-inch diameter.

Sewer service laterals are owned by, and therefore the responsibility of, the property owner to maintain and assure serviceability. The City may provide maintenance services to laterals located within the public right-of-way as a courtesy service if a property line cleanout exists, and the cleanout and adjacent area are accessible to City staff and equipment. The City may provide maintenance, repair, rehabilitation, and/or replacement of the "lower" portion of private sanitary sewer laterals located within the public right-of-way on a discretionary basis.

Information regarding City of Sunnyvale sewer system piping by size and material of construction is presented in **Table I-1** and **Table I-2**, respectively. **Table I-3** includes information regarding laterals. Data regarding the exact age of the City's sewer system is inexact; however, the average age is estimated to be 51 years based on the town's incorporation in 1902, development records, historical population growth, and the City's GIS database.

Table I-1. Sewer System Size Distribution – Sunnyvale

Diameter (inches)	Total Number Line Segments	Total Linear Feet	Portion of Sewer System
Unknown	101	7,215	0.47%
4	19	1,084	0.07%
6	953	205,631	13.26%
8	3,884	873,897	56.36%
10	787	160,215	10.33%
12	497	111,405	7.19%
14	29	6,542	0.42%
15	217	52,565	3.39%
16	13	5,504	0.35%
18	166	43,050	2.78%
21	101	25,119	1.62%
22	2	387	0.02%
24	68	19,602	1.26%
27	84	23,661	1.53%
30	2	98	0.01%
33	24	4,223	0.27%
36	8	2,376	0.15%
42	12	4,711	0.30%
48	18	3,167	0.20%
Grand Total	**6,985**	**1,550,452**	**100.00%**

Source: City of Sunnyvale GIS, 2020.

Table I-2. Sewer System Materials of Construction – Sunnyvale

Material	Total Number Line Segments	Total Linear Feet	Portion of Sewer System
Acrylonitrile Butadiene Styrene	2	32	0.00%
Cast Iron Pipe	53	8,775	0.57%
Concrete Pipe	5	1,497	0.10%
Corrugated Metal Pipe	2	310	0.02%
Ductile Iron Pipe	5	450	0.03%
Polyethylene	75	18,458	1.19%
Polyvinyl Chloride	129	23,050	1.49%
Reinforced Concrete Pipe	44	15,187	0.98%
Asbestos Cement Pipe	2	420	0.03%
Vitrified Clay Pipe	6,492	1,469,292	94.77%
Unknown	176	12,983	0.84%
Grand Total	**6,985**	**1,550,454**	**100.00%**

Source: City of Sunnyvale GIS, 2020.

Table I-3. Privately Owned Laterals – Sunnyvale

	Number of Laterals
Within City of Sunnyvale	25,146

Rancho Rinconada

The City also owns and operates the wastewater collection mains in portions of the cities of Cupertino and San Jose known as the “Rancho Rinconada” area. The service area is comprised of approximately 81,350 feet of sewer mains ranging in size from 6” to 18” diameter.

Sewer service laterals in the Rancho Rinconada area are owned by and, therefore, are the responsibility of the property owner to maintain and assure serviceability. Maintenance, repair, rehabilitation, and replacement of private sanitary sewer laterals within the Rancho Rinconada area are the sole responsibility of the property owner. The City may provide maintenance services for laterals located within the public right-of-way as a courtesy service to Rancho Rinconada residents only if the property line cleanout and adjacent area are accessible to City staff and equipment. The City does not install any type of cleanout on private sewer laterals.

Information regarding Rancho Rinconada sewer system piping by size and material of construction is included in **Table I-4** and **Table I-5,** respectively, and information regarding private laterals is presented in **Table I-6**. Data regarding the exact age of the Rancho Rinconada sewer system is inexact; however, the average age is estimated to be 65 years based on the development records. The total sewer service area, including Sunnyvale and Rancho Rinconada, is about 310 miles of pipeline with 7,248 line segments.

Table I-4. Sewer System Size Distribution – Rancho Rinconada

Diameter (inches)	Total Number Line Segments	Total Linear Feet	Portion of Sewer System
Unknown	1	49	0.06%
6	130	41,206	50.65%
8	89	23,860	29.33%
10	20	5,239	6.44%
12	12	4,452	5.47%
15	5	2,318	2.85%
16	5	3,026	3.72%
18	1	1,202	1.48%
Grand Total	**263**	**81,352**	**100.00%**

Source: Sunnyvale GIS, 2020.

Table I-5. Sewer System Materials of Construction – Rancho Rinconada

Pipeline Material	Total Number Line Segments	Total Linear Feet	Portion of Sewer System
Cast Iron Pipe	3	753	0.93%
Reinforced Concrete Pipe	6	4,038	4.96%
Vitrified Clay Pipe	123	35,201	43.27%
Unknown	131	41,360	50.84%
Grand Total	**263**	**81,352**	**100%**

Source: Sunnyvale GIS, 2020.

Table I-6. Private Sewer Laterals – Rancho Rinconada

	Number of Laterals
Within Rancho Rinconada	1,871

C. Definitions, Acronyms, and Abbreviations

BACWA - Bay Area Clean Water Agencies

BMP - Best Management Practices

Refers to the procedures employed in commercial kitchens to minimize the quantity of grease that is discharged to the sanitary sewer system. Examples include scraping food scraps into a food scraps bin or garbage can and dry wiping dishes and utensils prior to washing.

Cal OES - California OES Office of Emergency Management

Refers to the California Office of Emergency Management. All Category 1 SSOs greater than or equal to 1,000 gallons must be reported to Cal OES.

CCTV - Closed Circuit Television

Refers to the process and equipment used to inspect the condition of gravity sewers.

CIP - Capital Improvement Plan

Refers to the document that identifies future capital improvements to the City's sanitary sewer system.

City

Refers to the City of Sunnyvale.

CIWQS - California Integrated Water Quality System

Refers to the SWRCB online electronic reporting system used to report SSOs, certify completion of the SSMP, and provide information on the sanitary sewer system.

CMMS - Computerized Maintenance Management System

Refers to a database application used manage and document maintenance activities of a collection system.

CMOM - Capacity, Management, Operations, and Maintenance

Refers to the federal (USEPA) program for regulating operation of sewer collection systems. CMOM requirements were incorporated into draft regulations that were subsequently withdrawn. The SSMP and its requirements closely resemble the CMOM program.

CSRMA - California Sanitation Risk Management Authority

CWEA - California Water Environment Association

Dispatch

Refers to Sunnyvale Answer Point or Dept. of Public Safety Communications.

DPS - Department of Public Safety

Refers to the Department of Public Safety, which provides safety services to the community including police, fire, and emergency medical services.

DPW - Department of Public Works

ESD - Environmental Services Department

Refers to City of Sunnyvale Environmental Services Department, which includes the City's Water and Sewer Systems, Water Pollution Control Plant, Solid Waste and Recycling, and Regulatory Programs Divisions.

FOG - Fats, Oils, and Grease

Refers to fats, oils, and grease typically associated with food preparation and cooking activities that can cause blockages in the sanitary sewer system.

FSE - Food Service Establishment

Refers to commercial or industrial facilities where food is handled/prepared/served that discharge to the sanitary sewer system.

FTE - Full-time Equivalent

Refers to the equivalent of 2,080 paid labor hours per year by a regular, temporary, or contract employee.

GIS - Geographical Information System

Refers to the City's system used to capture, store, analyze, and manage geospatial data associated with the City's sanitary sewer system assets.

GPS - Global Positioning System

Refers to the handheld unit used to determine the longitude and latitude of sanitary sewer overflows for use in meeting CIWQS reporting requirements.

GWDR - General Waste Discharge Requirements

Refers to the SWRCB Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006, and amended by the revised monitoring and reporting program (Order WQ 2013-0058-EXEC) dated September 9, 2013.

I/I - Infiltration/Inflow

Refers to water that enters the sanitary sewer system from storm water and groundwater and increases the quantity of flow. Infiltration enters through defects in the sanitary sewer system after flowing through soil. Inflow enters the sanitary sewer without flowing through the soil. Typical points of inflow are holes in manhole lids and direct connections to the sanitary sewer (e.g. storm drains, area drains, and roof leaders).

Lateral

Refers to the piping that conveys sewage from a building to the City sewer system. The distinction is sometimes made between the upper lateral (from building to public right-of-way) and the lower lateral (from public right-of-way to the sewer main).

LRO - Legally Responsible Official

Refers to the individual designated by the City to certify SSO reports on the CIWQS system. The LRO must be formally designated by the City and registered with the SWRCB.

MRP - Monitoring and Reporting Program

Refers to the revised monitoring and reporting requirements included in Order WQ 2013-0058-EXEC, dated September 9, 2013.

OERP - Overflow Emergency Response Plan

For the purpose of this SSMP, this plan will be referred to as the Sanitary Sewer Overflow Emergency Response Plan (SSOERP).

O&M - Operations and Maintenance

PACP - Pipeline Assessment and Certification Program

Refers to the National Association of Sewer Service Companies (NASSCO) widely used standard for pipeline defect identification and assessment, providing standardization and consistency to the methods in which pipeline conditions are identified, evaluated and managed.

PM - Preventive Maintenance

Refers to maintenance activities intended to prevent failures of the sanitary sewer system facilities (e.g. cleaning, CCTV, repair).

Property Damage Overflow

Refers to a sewer overflow or backup that damages a property owner's premises.

RWQCB - Regional Water Quality Control Board

Refers to the San Francisco Bay Regional Water Quality Control Board.

Sanitary Sewer System

Refers to the portion of the sanitary sewer facilities owned and operated by the City of Sunnyvale.

SCADA - Supervisory Control and Data Acquisition

Refers to the system employed by the City that monitors the performance of its pump stations and notifies the operating staff when an alarm condition requires attention.

SECAP - System Evaluation and Capacity Assurance Plan

A CIP designed to assure the hydraulic capacity of key sanitary sewer system elements for peak wet weather conditions.

SSMP - Sewer System Management Plan

Refers to this document, developed as a tool to facilitate management, operation, and maintenance of the sewer collection system in order to reduce and prevent SSOs and mitigate any that occur.

SSO - Sanitary Sewer Overflow

Refers to the overflow or discharge of any quantity of partially treated or untreated wastewater from the sanitary sewer system at any point upstream from the wastewater treatment plant. SSOs are typically caused by blockages, pipe failure, pump station failure, or capacity limitation.

SSO Report

Refers to sanitary sewer overflow report.

SSOERP - Sanitary Sewer Overflow Emergency Response Plan

Refers to the City's SSO Emergency Response Plan, which is a component of this SSMP that addresses the City's response to SSO events.

Sunnyvale Answer Point and DPS Communications

The City of Sunnyvale operates two communication centers. During normal business operations, calls are received by Sunnyvale Answer Point. During all other hours, calls are received by Sunnyvale DPS Communications, the City's 911 system that is staffed 24/7. For the purpose of this SSMP, both will be referred to as SV Communications.

SWRCB - State Water Resources Control Board

Refers to the California Environmental Protection Agency (EPA) State Water Resources Control Board and staff responsible for protecting the State's water resources.

USA - Underground Service Alert

Water of the State

Refers to any water, surface or underground, including saline waters, within the boundaries of California. In case of a sewage spill, storm drains are considered contiguous with Waters of the State unless the sewage is completely contained and returned to the sewer system. May also be referred to as surface water(s) or State waterway.

Wastewater on-call duty

Refers to the City of Sunnyvale Wastewater on-call worker.

WPCP - Water Pollution Control Plant

Wastewater Collections Program

Refers to the City of Sunnyvale, Environmental Services Department, Water and Sewer Division, Wastewater Collections Program.

D. References

Sewer System Management Plans:

New Requirements for Preparing Sewer System Management Plans, California Regional Water Quality Control Board San Francisco Bay Region letter to Sewer System Authorities, July 7, 2005

www.cwea.org/conferences/sso/Reg2Letter-SSMP0705.pdf

A Guide for Developing and Updating of Sewer System Management Plans (SSMPs), SWRCB, September 2015

https://www.waterboards.ca.gov/water_issues/programs/sso/docs/ssmp_guidance_091015.pdf

General Order:

State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, SWRCB, May 2, 2006, with Revised Monitoring and Reporting Program, Order WQ-2013-0058-EXEC

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

Revised Monitoring and Reporting Program:

State of California Water Resources Control Board Order No. WQ 2013-0058-EXEC, Amending Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, SWRCB, September 9, 2013.

www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf

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ELEMENT I. GOALS

A. Introduction

This section identifies goals the City has set for the management, operation, and maintenance of the sewer system and discusses the role of the SSMP in supporting these goals. These goals provide focus for City staff to continue the high-quality work to implement the improvements in the management and maintenance of the City's wastewater collection system.

B. Regulatory Requirements

The requirements for the Goals section of the SSMP, found in Provision D.13.(i) of the GWDR are:

State GWDR Requirement

The collection system agency must develop goals to properly manage, operate, and maintain all parts of its wastewater collection system in order to reduce and prevent sanitary sewer overflows (SSOs), as well as to mitigate any SSOs that occur.

C. Goals for the Wastewater Collection System

Providing safe, responsive, and reliable sewage conveyance is a key component of the goals and objectives of the City's Environmental Services Department, Wastewater Collections Program.

The City's Wastewater Collections Program has adopted the following goals. These goals outline responsibilities and provide direction and understanding for all sewer maintenance and cleaning activities.

- Provide for the reliable collection of sewage throughout the City to protect public health and the environment, to prevent sanitary sewer overflows, and to minimize odors.
- Ensure all sanitary sewage is collected and transported to the City's Water Pollution Control Plant (WPCP).
- Maintain and repair the City's Sanitary Sewer Collection System in a cost-effective, safe, reliable, and timely manner.
- Comply with all federal, state, and local laws and regulations pertaining to sanitary sewer collection operation and maintenance.
- Respond to emergency events and provide assistance for residents and businesses.
- Provide sewer collection services in the Rancho Rinconada area located in the cities of Cupertino and San Jose.
- Provide administrative and support services to promote customer satisfaction and confidence.
- Continue to professionally manage, operate, and maintain all parts of the sewer collection system.

- Provide adequate capacity to convey peak flows.
- Minimize the frequency of SSOs that can pose a threat to public health.
- Mitigate the impact of SSOs that may occur notwithstanding the preventative efforts of the City.

This SSMP supplements and supports the City's existing Maintenance and Operations Program and goals by providing high-level, consolidated guidelines and procedures for all aspects of the City's wastewater system management. The SSMP guides the proper management of the collections system and assists the City in minimizing the frequency and impacts of SSOs by providing direction for appropriate maintenance, capacity management, and emergency response.

D. Goals and Policies

The City's General Plan, which was consolidated in 2011, contains Goals and Policies applicable to the wastewater collection system. Refer to Chapter 7: Environmental Management of the City's General Plan web page at:

http://sunnyvale.ca.gov/government/codes/plan.htm

ELEMENT II. ORGANIZATION

A. Introduction

This section of the SSMP identifies City staff responsible for implementing this SSMP, responding to SSO events, and meeting the SSO notification and reporting requirements. This section also discusses the designation of the Legally Responsible Official (LRO), who is responsible for completing and certifying spill reports submitted to the SWRCB's on-line reporting system (CIWQS). This section fulfills the organization requirement of the SWRCB (Element 2) SSMP requirements.

B. Regulatory Requirements

The requirements for the Organization section of the SSMP, found in Provision D.13.(ii) of the GWDR are:

State GWDR Requirement

The collection system agency's SSMP must identify:

(a) The name of the responsible or authorized representative;

(b) The names and telephone numbers for management, administration, and maintenance positions responsible for implementing specific measures in the SSMP 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, Regional Water Board and/or the California Office of Emergency Services (Cal OES).

C. Organization and Staffing

The organization chart for the management, operation and maintenance of the City's wastewater collections system is shown on **Figure II-1**. General Responsibilities are described below.

Contact	Telephone Number
City Hall	408-730-7500
Answer Point / Dispatch	408-730-7400
Department of Public Safety	408-730-7100

Wastewater Operations Manager	408-730-7714
Wastewater Collections Supervisor	408-730-7566
Wastewater on-call staff	408-859-3559
Water and Sewer Systems Div. Manager	408-730-7578
Environmental Services Dept. Director	408-730-7785

Table II-1 is a listing of telephone numbers for key positions.

Figure II-1. Organization Chart for Wastewater Collections

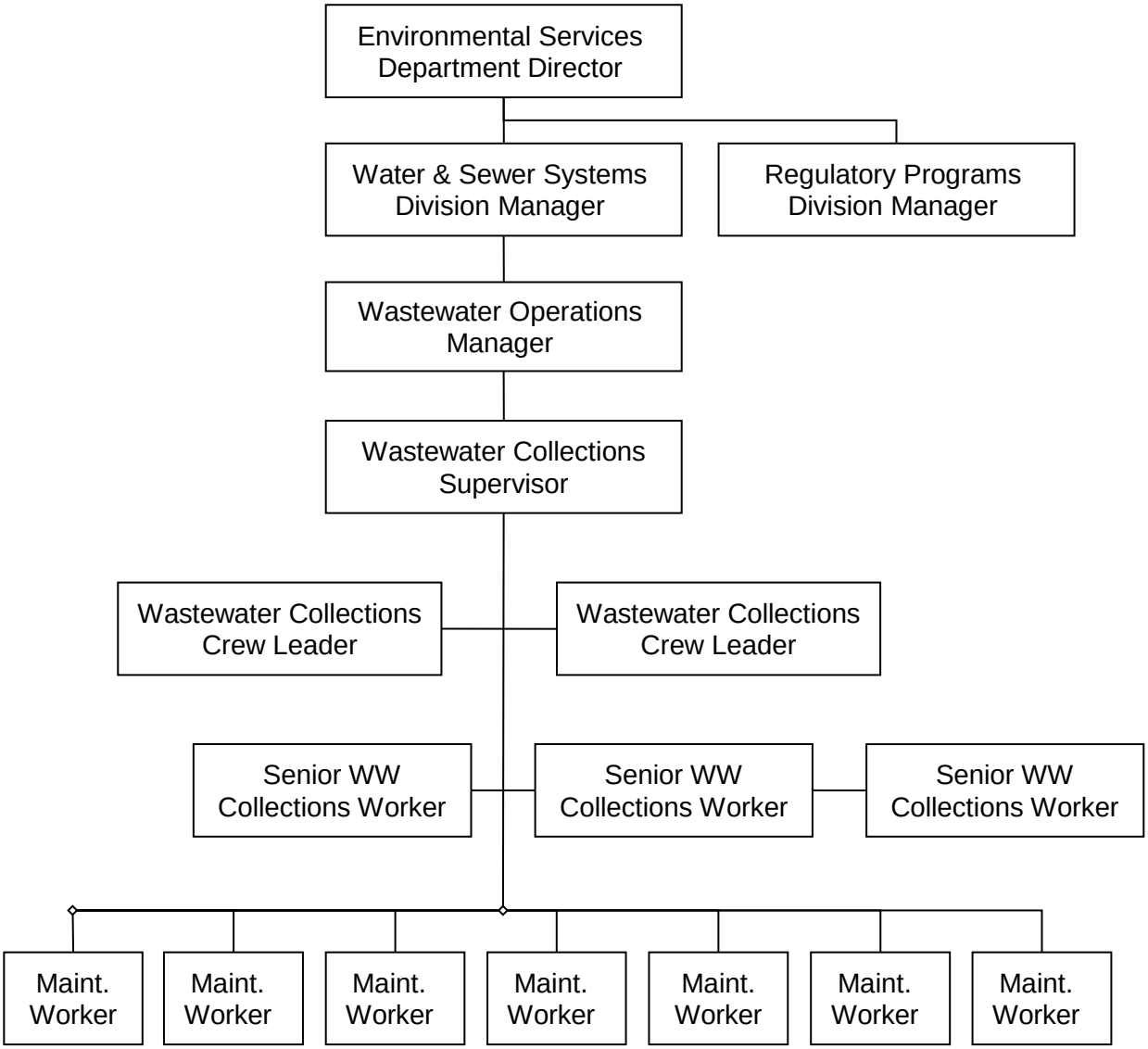

Table II-1. Contact Numbers for Key ESD Positions

Contact	Telephone Number
City Hall	408-730-7500
Answer Point / Dispatch	408-730-7400
Department of Public Safety	408-730-7100
Wastewater Operations Manager	408-730-7714
Wastewater Collections Supervisor	408-730-7566
Wastewater on-call staff	408-859-3559
Water and Sewer Systems Div. Manager	408-730-7578
Environmental Services Dept. Director	408-730-7785

Description of General Responsibilities

Environmental Services Department Director

Under administrative direction, the ESD Director provides overall management of the ESD, consisting of the WPCP, Water and Sewer Systems, Solid Waste Programs, and Regulatory Programs Divisions. Along with the City Manager, City Attorney, and other Department heads, serves as a member of the City's Executive Leadership Team.

Water and Sewer Systems Division Manager

Under administrative direction, the Water and Sewer Systems Division Manager provides general direction to the Water and Wastewater Operations Programs; may act as the ESD Director in the Director's absence or at the Director's discretion.

Wastewater Operations Manager

Under general direction from the Water and Sewer Systems Division Manager, the Wastewater Operations Manager manages operation of the City's wastewater and stormwater collection systems. This is a management level classification in which the incumbent plans, organizes, directs, and coordinates the activities of the wastewater and stormwater collection system programs.

Wastewater Collections Supervisor

Under direction, the Wastewater Collections Supervisor supervises the activities of lead personnel, field crews, and individuals in the maintenance and repair of public utilities operated by the ESD. Positions in this classification are characterized by an intermediate structure where work activities change considerably from day to day, or even hour to hour, but usually within some reasonable or expected bounds. Contacts are regularly made both inside and outside the organization at all organizational levels, and require considerable tact, discretion, and persuasion skills to obtain willing action and consent.

Wastewater Collections Crew Leader

Under direction, the Wastewater Collections Crew Leader works with and leads field crews and individuals in the maintenance and repair of public utilities including, but not restricted to, storm drains, sanitary sewers, and water systems; does other related work as required.

Incumbents in this classification will normally receive assignments from individuals in the higher-rated classification of Wastewater Collections Supervisor, and may receive direction from the managerial classification of Wastewater Operations Manager.

Senior Wastewater Collections Worker

Under general direction, Senior Wastewater Collections Workers perform skilled manual tasks in the construction, repair, and maintenance of sanitary sewers, storm drains, and supporting facilities; operates motorized equipment; occasionally leads small field crews; performs related work as required.

Maintenance Worker I and II

Under general supervision, Maintenance Workers perform a variety of semi-skilled and skilled manual tasks in the construction, repair, and maintenance of sanitary sewer and storm drain facilities; operates motorized equipment; performs related work as required.

Crew Assignments

The Wastewater Operations Manager oversees the entire Program. The Wastewater Collections Supervisor oversees the day-to-day operation. The Wastewater Collections Crew Leaders, Senior Wastewater Collections Workers generally rotate duties that include leading crews, operating hydro-flushers, operating CCTV equipment, performing underground utility locations (USA), and being on-call. Hydro-flushing, CCTV, locating, pump and lift station preventive maintenance, and general maintenance and construction duties are shared among Senior Utility Workers and Maintenance Workers.

The construction crew makes needed repairs of the City sanitary sewer system, including but not limited to: mains, laterals, pump/lift stations, manholes, and repairs to property line clean outs. The construction crew typically consists of three employees.

The hydro-flushing crews perform all cleaning of City sewer mains. Hydro-flushing uses high-pressure water to clean the sewer mains. A hydro-flushing crew consists of two employees on a hydro-flushing truck.

The CCTV crew performs televising and condition assessment of the sanitary sewer collection system piping using a robotic pipe inspection camera system and software. A CCTV crew consists of two employees.

The on-call service tech receives and responds to sanitary and storm sewer calls and emergency response requests for wastewater and other issues as required.

One employee is assigned to underground utility locating duties and marks all city underground utilities prior to excavation as required by regulations. Utilities owned and maintained by the City include sewer, storm and water mains, street light conduit, as well as other City owned subsurface infrastructure. This employee typically shares the televising of wastewater laterals duties.

Legally Responsible Official

The City's authorized representative in all wastewater collection system matters is the ESD Director. The Water and Sewer Systems Division Manager is authorized to act in Director's absence.

Three individuals are designated as a Legally Responsible Official (LRO) for purposes of CIWQS reporting and certification: the Wastewater Operations Manager (primary), the Water and Sewer Systems Division Manager (backup), and the ESD Director. The Water and Sewer Division also has two additional employees designated as CIWQS data submitters.

Responsibility for SSMP Implementation

The ESD Director is responsible for implementing all elements of this SSMP. The ESD Director coordinates with the Department of Public Works Director regarding construction of new City-owned sewer facilities. **Table II-2** below indicates the City staff responsibilities for SSMP elements. Vacancies in these positions occur from time to time. Current staff lists can be found on the City web site (https://sunnyvale.ca.gov/services/departments/esd.htm).

SSO Response and Reporting Chain of Communication

The SSO reporting process is described in **Element VI. SSO Emergency Response Plan**. **Figure VI-1** depicts the chain of communication for responding to and reporting SSOs from the time of observation of an SSO to reporting the SSO to the appropriate agencies.

Contact	Telephone Number
City Hall	408-730-7500
Answer Point / Dispatch	408-730-7400
Department of Public Safety	408-730-7100
Wastewater Operations Manager	408-730-7714
Wastewater Collections Supervisor	408-730-7566
Wastewater on-call staff	408-859-3559
Water and Sewer Systems Div. Manager	408-730-7578
Environmental Services Dept. Director	408-730-7785

Table II-1 above lists the contact phone numbers for the parties involved in the chain of communication.

Table II-2. City Staff Responsibility for SSMP Elements

SSMP Element	Responsible Official	Name	Phone Number	Email Address
I – Goals	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
II – Organization	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov
III – Legal Authority	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov
IV – Operations and Maintenance Program	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
V – Design and Performance Provisions	Water and Sewer Systems Div. Manager	Mansour Nasser	408-730-7578	mnasser@ sunnyvale.ca.gov
VI – SSO Emergency Response Plan	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
VII – FOG Control Program	Regulatory Programs Division Manager	Melody Tovar	408-730-7808	mtovar@ sunnyvale.ca.gov
VIII – System Evaluation and Capacity Assurance Program	Water and Sewer Systems Div. Manager	Mansour Nasser	408-730-7578	mnasser@ sunnyvale.ca.gov
IX – Monitoring, Measurement, and Program Modifications	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
X – SSMP Program Audits	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
XI – Communication Program	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov

ELEMENT III. LEGAL AUTHORITY

A. Introduction

This section of the SSMP discusses the City's Legal Authority, including the Municipal Code and agreements with other agencies.

B. Regulatory Requirements

The requirements for the Legal Authority section of the SSMP, found in Provision D.13.(iii) of the GWDR are:

State GWDR Requirement

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 [from GWDR FOG provisions], and

(g) Authority to enforce sewer-related ordinances.

C. Sunnyvale Municipal Code

The Sunnyvale Municipal Code, Chapter 12, contains the City's current legal authorities. The legal authorities provided by the Municipal Code and other sources that address the regulatory requirements are summarized in **Table III-1**.

Table III-1. Summary of Legal Authorities in Municipal Code and Other Sources

Requirement	Municipal Code Reference	Meets GWDR Requirements
General		
Prevent illicit discharges into the wastewater collection system	Section 12.12.020	Yes
Limit the discharge of fats, oils, and grease and other debris that may cause blockages	Sections 12.12.020, 12.12.025, and 12.12.026	Yes
Require that sewers and connections be properly designed and constructed	Section 12.08.010 and Chapter 16.24	Yes
Require proper installation, testing, and inspection of new and rehabilitated sewers	Chapter 16.24, Section 18-12-150, and City Std. Specs.	Yes
Maintenance and Inspection, Including Laterals		
Clearly define City responsibility and policies	City Council Policy No. 3.3D.6	Yes
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the City	Sections 18.08.040 (f), 18.12.150 (a) and 18.12.080(a)	Yes
FOG Source Control		
Requirements to install grease removal devices, design standards for the grease removal devices, maintenance, BMP, record keeping and reporting requirements	Section 12.12.026	Yes
Authority to inspect grease producing facilities	Sections 12.12.026 and 12.12.260	Yes
Enforcement		
Enforce any violation of sewer ordinances	Section 12.18.090	Yes

The City's legal authority does not require the control of infiltration and inflow (I/I) from private service laterals (the GWDR has no equivalent requirement). However, I/I is not currently a significant issue for the City. Average daily flows during rain events are typically only 10-30% above dry weather flows, and the sewer system has not historically experienced capacity-related SSOs. In addition, with its large area of oxidation ponds providing flow equalization, the WPCP readily manages peak wet weather flows without the need for "blending." The Wastewater Collection System Master Plan (WWMP), which was completed in December 2015, includes a task to evaluate sewer system I/I and to make cost-effective improvements to reduce I/I. The City's sanitary sewer hydraulic model is being updated and calibrated to verify the WWMP findings. This work is scheduled for completion in late 2020.

D. Agreements with Satellite Agencies

The City has informal mutual aid agreements with the neighboring cities of Santa Clara, Los Altos, and Mountain View. The City will continue to assist any surrounding cities when requested if able.

ELEMENT IV. OPERATIONS AND MAINTENANCE PROGRAM

A. Introduction

This section is intended to provide an overview of the City's sewer system operations and maintenance (O&M) program.

B. Regulatory Requirements

The requirements for the Operation and Maintenance Program section of the SSMP, found in Provision D.13.(iv) of the GWDR are:

State GWDR Requirement

(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.

C. Operations and Maintenance Program

RWQCB guidance and GWDR requirements for the O&M Program generally conform to each other. The following descriptions respond first to the SWRCB requirements. RWQCB guidance not addressed by the GWDR requirements follows at the end of this section.

Collection System Maps

The City has a Geographical Information System (GIS) that includes information for wastewater collection system assets including: gravity line segments, manholes, pumping facilities, and pressure pipes (force mains). The City also has GIS information for the storm drainage system. The GIS information is available to internal City staff.

The field crews use hard copy "block maps" that are available in all maintenance vehicles as well as in the office. Field crews note corrections to the maps, which are transmitted to a GIS consultant, and the consultant makes corrections in the GIS maps, which are then reviewed by City staff before being put into the production database.

Preventive Operations and Maintenance

The elements of the City's sewer system O&M program include:

- Proactive, preventive and corrective maintenance of gravity sewers;
- CCTV inspection;
- Rehabilitation and replacement of sewers that are in poor condition; and
- Periodic inspection and preventive maintenance for the pump stations.

Currently, the City has two combination unit crews, one construction crew, one CCTV crew, one on-call crew, and one locating crew.

Gravity Sewers

With current funding and staffing levels, the City proactively cleans the sewer system every three to five years, and preventively cleans sewers with a history of issues on an enhanced frequency cleaning interval as necessary. The City has three combination (hydro/vacuum) units used for the cleaning or maintenance of its sewer mains. Enhanced frequencies are scheduled at two-, three- and six-month intervals for main lines that require more frequent cleaning, and lines are placed into the appropriate frequency depending upon the specific conditions in individual main lines segments. Approximately 90,000 feet or about 6% of the system are currently in the enhanced frequencies. The combination units are generally used for the enhanced frequency cleanings. The City also contracts for the treatment of some lines that have a history of issues with roots; currently about 35,000 feet are treated annually.

Gravity sewer maintenance is currently scheduled using maps and lists of enhanced frequency cleaning line segments. Completed sewer maintenance is recorded in field crew daily reports. Since the implementation of the computerized maintenance management system (CMMS), the CMMS is used to generate work orders and track history for most sewer line maintenance issues, and provides other O&M related functions. The City's Standard Operating Procedure (SOP) for sewer cleaning is included as **Appendix IV-A**.

In 2011, the City committed to an aggressive schedule of manhole inspections to identify potential cross-connections between the sewer system and the storm drain system. (Such connections were historically incorporated into the design of certain manholes as a means of preventing

uncontrolled SSOs in the event of a backup, but are no longer considered acceptable). The City inspected all 7,133 manholes by the end of 2013. As part of this process, the City documented the condition of the manholes and identified any other issues (e.g., deterioration, excessive I/I). Manhole inspections are now routinely performed during routine cleaning of lines and manhole rehabilitations are part of the City's CIP program.

CCTV Inspection

The City historically used an outside contractor for CCTV inspection services for both periodic condition assessment and for follow-up after SSO events. In April 2012, the City took delivery on its own CCTV equipment truck, so that ESD staff could conduct inspections, with the contractor providing backup assistance when needed. ESD staff have been trained in the use of the CCTV equipment, and an SOP for CCTV inspections has been created and is included as **Appendix IV-B**. City staff that operates the CCTV equipment have been trained and certified in the PACP coding system that is used internationally to assess and grade the condition of lines.

Average total miles of CCTV inspection vary from year to year; however, the mileage trend is generally upward. The City is evaluating a realistic target for inspection cycles based on need and progress. In early 2018, the City installed new hardware and software (GraniteNet) in the CCTV truck and incorporated the latest improvements to the GIS system. This new equipment reduces the time required to complete each CCTV inspection. As a result, the City anticipates that the miles of pipeline inspected by CCTV and assessed annually will increase.

Rehabilitation and Replacement

City crews, or contractors, correct problems identified by CCTV and/or sewer cleaning crews. Repairs are completed in priority order. Repairs and replacement projects are coordinated with the City's street resurfacing program and annual water main replacement projects.

Wastewater Pump/Lift Stations Inspections and Maintenance

City crews inspect the operation of the Arques, Lawrence Station, Sunken Gardens, Baylands and Kifer Sewage Lift Stations weekly. Maintenance activities include inspecting the site, verifying pump operation, and vacuuming out grease and debris or applying de-greasers as warranted. The pump stations have gravity bypass capability and can be powered by trailer-mounted generators during power outages. In 2015, the City reconstructed each of the five lift stations. Reconstruction of the lift stations included mechanical upgrades as well as upgrades to the electrical and SCADA systems to improve the efficiency of operation.

Rehabilitation and Replacement Program

The current budget allows the City to inspect the condition of its gravity sewers on an approximately seven-year cycle. The information gathered during condition assessment is used to prioritize individual gravity sewers for repair, rehabilitation, or replacement.

Funding for the Capital Improvement Program is derived from the City's Sewer Fund. The sewer fund is an enterprise fund. Sewer fees are established based on projected needs and are updated periodically. The budget and project description currently included in the City's Capital

Improvement Program are listed in **Appendix VII-A**. Additional funding for special projects may be approved by the City Council on a case-by-case basis.

Training

The City uses a combination of in-house classes, on the job training, CSRMA site visits and webinars, CWEA conferences, seminars, and other training opportunities to train its Wastewater Collections staff. The City strongly encourages staff to advance their CWEA certification grade, provides financial support for certifications and attending CWEA training, and provides other training and advancement opportunities. Senior staff are actively involved in leadership roles in CWEA and Bay Area Clean Water Agencies (BACWA).

Annual training on the City's SSMP and SSOERP is conducted for all wastewater collection employees. The City also maintains an ongoing safety training program that addresses both general and task-specific safety issues. The Tailgate Schedule for Corp Yard lists safety training activities for the Water and Sewer Systems Division. This schedule is updated annually.

The City's contract language requires contractors working in the wastewater collection system to provide training for their employees in the activities that may cause SSOs and in responding to contractor-caused SSOs.

Replacement Parts

No critical replacement parts are currently warranted. The pump stations have gravity bypasses and the City has informal agreements with neighboring agencies for equipment support in the event the sewer maintenance equipment fails. However, the Division maintains an inventory of routine parts for repair of sewer lines.

Operation and Maintenance Resources

City staff positions dedicated to the maintenance of the collection system facilities are listed in **Table IV-1**. These positions also receive administrative and clerical support provided by the ESD. Major pieces of equipment used to support maintenance activities are listed in **Appendix IV-C**. Staffing and resources are constrained under current budgets, but are sufficient to maintain services at an acceptable level and, with careful prioritization, to address long-term needs.

Table IV-1. Collection System Staff Maintenance Resources

Position/Activity	FTEs
Wastewater Operations Manager	1
Wastewater Collections Supervisor	1
Wastewater Collections Crew Leader	2
Senior Wastewater Collections Worker	3
Maintenance Worker I, II	7
Total	**14**

Outreach to Sewer Service Contractors

The City participates in the BACWA region-wide outreach program and has sent out notifications to local plumbing contractors. The City plans to repeat the mailing approximately every two years. The City also conducts general outreach to the public on proper disposal of FOG and other items that can cause SSOs. City outreach activities are described in detail in the WPCP's Annual Pollution Prevention Reports.

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ELEMENT V. DESIGN AND PERFORMANCE PROVISIONS

A. Introduction

The City's design and construction standards are used by City Staff and are communicated to consulting engineers and/or developers at the start of a design process or proposed development.

B. Regulatory Requirements

The requirements for the Design and Performance Provisions section of the SSMP, found in Provision D.13.(v) of the GWDR are:

State GWDR Requirement

(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.

C. Design and Construction Standards

The City's design standards for residential drainage systems are specified in City of Sunnyvale – Single-Family Construction Standards, January 2019, at:

https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=22852

Design requirements for replacement of sewer lines are specified in Residential Water/Sewer Pipes, February 2020, at:

https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=23573

Requirements for grease removal devices for food service establishments are specified in Grease Removal Devices at:

https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=26939

A copy of the full document in included as **Appendix V-A**. These requirements are consistent with the 2016 California Plumbing Code, which the City has adopted. The City's Building Division issues permits, conducts plan checks, and conducts inspections for all residential and commercial construction.

Design, installation and testing requirements for sewer mains and related appurtenances constructed in the public right-of-way are specified in the City of Sunnyvale Standard Specifications for Public Works Construction 2006 Edition, Revised June 2019, at:

https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=23805

City of Sunnyvale Standard Details for Public Works Construction 2006 Edition, Revised July 2019, at:

https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=23987

Projects in the public right-of-way are coordinated through the DPW's Engineering Division, which approves construction plans and specifications and conductions inspections.

ELEMENT VI. SSO EMERGENCY RESPONSE PLAN

A. Introduction

The City's ESD, Water and Sewer Systems Division is responsible for the O&M of the sanitary sewer system. The system consists primarily of gravity flow lines that lead to the City's WPCP.

Purpose

The Sanitary Sewer Overflow Emergency Response Plan (SSOERP) is designed to ensure that every report of a confirmed SSO is immediately dispatched to the appropriate crews. This plan provides a procedure that, when enacted in response to the sewer overflow/spill, will reduce or eliminate public health hazards, prevent unnecessary property damage, and minimize the inconvenience of service interruptions. This plan provides procedures for City staff to follow when responding to, cleaning up, and reporting SSOs.

Objectives

The primary objectives of the SSOERP are to:

- Protect public health and the environment;
- Protect collection system personnel;
- Protect private and public property;
- Respond quickly to minimize the volume of the SSO;
- Satisfy regulatory agencies and waste discharge permit requirements;
- Minimize enforcement actions against the City; and
- Safeguard the infrastructure of the collection system.

Safety

Whenever qualified City personnel respond to a report of an overflow/spill, they may encounter an emergency situation that requires immediate action. The most critical aspect of resolving an incident of this nature is to safely and competently perform the actions necessary to return the system or facility to normal operations as soon as possible.

The most important item to remember during this type of incident is that safe operations always take precedence over expediency or shortcuts. Worker and public safety also takes precedence over regulatory notifications and reporting.

Upon arrival at a SSO, the Wastewater duty person will conduct a hazard assessment to determine potential safety hazards, including the possibility that an SSO may contain unknown hazardous waste or chemicals. On rare occasions, gasoline and industrial solvents have been

found in the sewer system. If a hazard is suspected, the responding field crew should notify DPS Communications immediately and request the DPS Hazardous Materials Response Team.

The Wastewater Operations Manager should also be notified of an SSO as soon as possible. Personnel shall stay clear of any hazards and secure the area from the public.

Depending on the nature or cause of the SSO, personnel may be required to remove a mainline blockage with a hydro-flusher, repair a damaged section of pipeline, or wash/clean a City street. At this point, it is essential that all standard safety procedures and/or duties be followed as deemed appropriate.

Typical responses may require personnel to implement the following types of safety procedures:

- Standard personal protective equipment (PPE);
- Confined space entry procedures;
- Traffic control;
- Heavy equipment operation; and/or
- Adequate communication via two-way radio and/or cellular telephone.

B. Regulatory Requirements

The requirements for the SSO Emergency Response Plan section of the SSMP, found in Provision D.13.(vi) of the GWDR are:

State GWDR Requirement

The collection system agency shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

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

(b) A program to ensure 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.

C. Sanitary Sewer Overflow Response

City employees are required to report all wastewater spills to their supervisor and/or manager, secure the wastewater spill area, follow SSOERP protocol to control or halt the cause of the wastewater spill, and clean the wastewater spill as soon as possible to minimize health hazards to the public and to protect the environment.

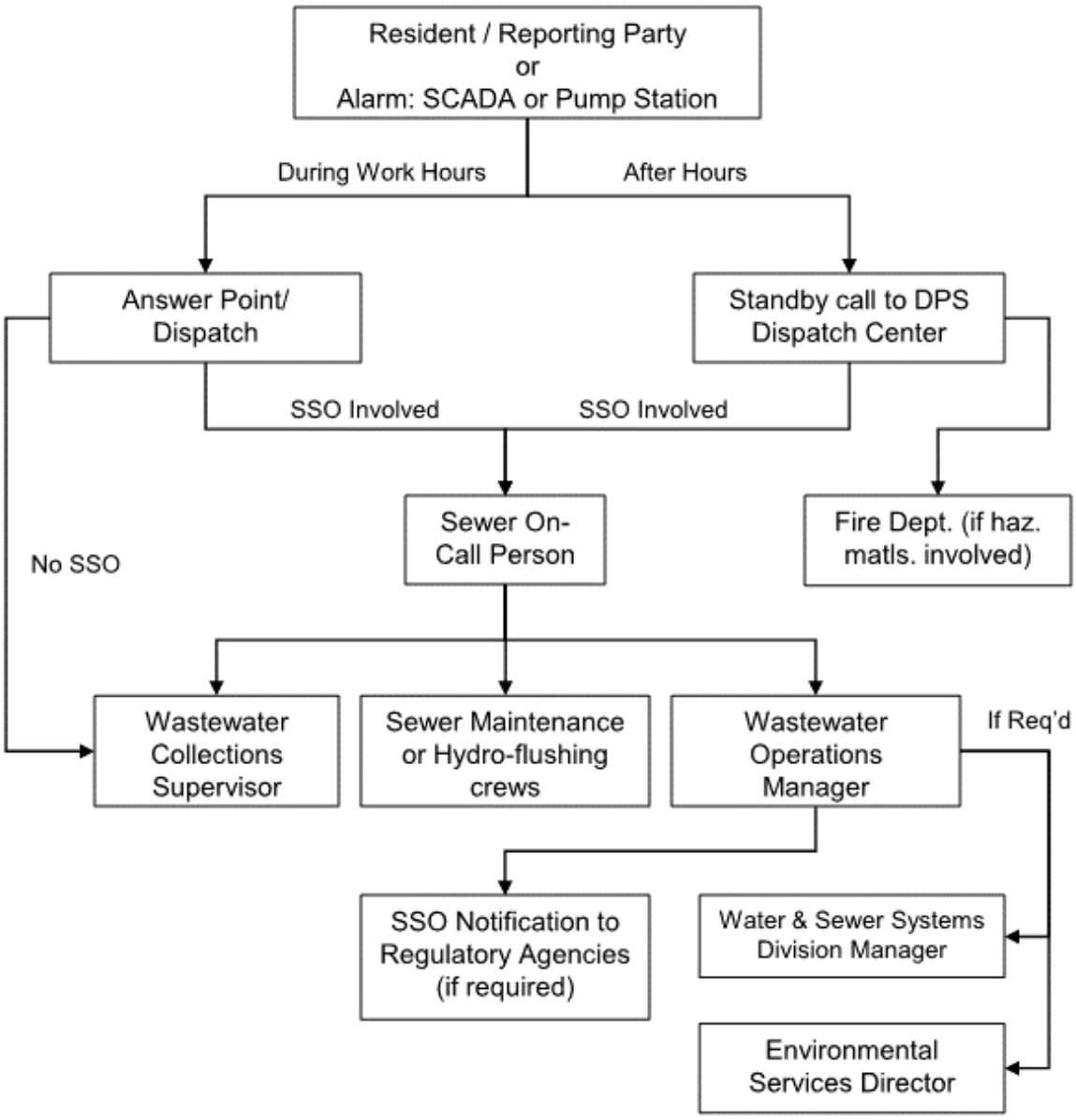
- NOTE: Stringent regulatory notification and reporting requirements for SSOs apply, which vary depending on the category of spill. See **Section D. SSO Notification and Reporting** below.
- If industrial toxic substances are involved, any volume must be immediately reported to the DPS Hazardous Materials Response Team and then reported, as soon as possible, to the State Office of Emergency Services and the Regional Water Quality Control Board.

Internal SSO Communications

- The Wastewater duty person (or Responder) should complete a Wastewater SSO Response Field Documentation Form (**Appendix VI-C**) and notify the Wastewater Operations Manager and/or the Wastewater Collections Supervisor.
- The Wastewater Operations Manager will notify the Water and Sewer Systems Division Manager and ESD Director, as needed.
- The Wastewater Collections Supervisor will meet with field crew(s) at the site of the SSO event to assess the situation, document the conditions with field logs and photos, and direct recovery and cleanup activities.
- The Wastewater Operations Manager will generally notify regulatory agencies as described in **Section D. SSO Notification and Reporting**. In the Wastewater Operations Manager's absence, the Water and Sewer Systems Division Manager will assume this responsibility.

Figure VI-1 depicts the chain of communication for responding to an SSO. **Appendix VI-A** contains a complete listing of ESD employees and contact information.

Figure VI-1. SSO Internal Communications



Duties and Procedures:

The City's emergency response procedure shall be followed for all minor or major sewage spills or overflows, and spills involving discharge from industries into City's sewer or storm systems.

The City utilizes the SSOERP document as a field manual for responding to SSOs and sewer backups. An abbreviated version of that document is kept in City vehicles. A copy of the full document is included as **Appendix VI-B** of this SSMP.

Reporting Procedures

Mandatory notification and reporting requirements are described under **Section D. SSO Notification and Reporting**. In addition, under some circumstances, it may be appropriate to notify the following City Departments:

- Department of Public Safety Communications: (408) 730-7180
- Water Pollution Control Plant: (408) 730-7260
- Compliance Inspection Group: (408) 730-7808

Control the Cause of the Wastewater Spill

(a) Set out absorbent materials to contain the sewage overflow and prevent sewage runoff from entering into the storm system.

(b) Do whatever is necessary to correct the origin of the wastewater spill, or, if the overflow is caused by a stoppage in the sewer collection main, call for assistance and use the hydro-flushing truck to relieve the stoppage immediately.

Main Line Stoppage and Overflow

(a) Check downstream manholes to determine between which two manholes the stoppage exists.

(b) Flush or rod from first clear downstream manhole towards stoppage.

(c) Capture and remove all debris if possible. If this cannot be done, check the downstream manholes for any sign of restrictions or the possibility of a second mainline stoppage. Where possible, drag or push the debris down to a larger main for better access.

(d) Immediately flush the area and wash down manholes and street, contain and remove any solid debris. Wash water is contained and disposed of using the Vac truck or washed down the sewer.

(e) Collect as much of the SSO as possible and dispose back into the sanitary sewer system, estimating how much was captured and placed back into the sanitary sewer system.

(f) Sanitize affected area if necessary.

Lateral Stoppage

(a) Check main line - if clear, stoppage must be in private sewer lateral or building plumbing.

(b) Check lower lateral from right-of-way cleanout to main line. If this line is clear, the property owner should be advised that the lower lines are clear and the problem exists in the upper section of the private sewer lateral or building plumbing and it is the responsibility of the property owner to correct the problem.

(c) When the cleanout is buried, inaccessible, non-conforming, or non-existent, the resident should be advised that the main line is clear and it is the responsibility of the property owner to clear the blockage in the private lateral. This may require the owner providing or installing appropriate access to the private sewer lateral for servicing.

(d) If a right-of-way cleanout exists and is accessible, the City may attempt to rod the lateral to the main and clear any stoppage that may exist as a courtesy service. If City staff cannot clear the stoppage, the property owner should be advised that the City lines are clear and it is the responsibility of the property owner to correct the problem in the private plumbing.

(e) If the stoppage or structural defect is in the portion of the lateral in the public right-of-way, the City may repair the line on a discretionary basis.

If City staff cannot resolve a lateral stoppage or structural defect, the City will turn the project over to the property owner and the property owner will have to complete the project at their expense.

Clean-up and Mitigation

(a) To minimize health hazards to the public and to protect the environment, start cleaning the wastewater spill area as soon as possible.

(b) Inspect the storm drain catch basins to determine whether wastewater has entered the storm system, and to what extent.

(c) Install air plugs or sandbags in storm lines to contain the discharge and/or wash water. Flush the area with water and vacuum up the excess or pump it back into the sanitary sewer collection system.

(d) Remove all debris found in the wastewater spill area by vacuuming the surface area and disposing of the material as appropriate.

(e) Thoroughly inspect the spill area before leaving.

Sampling and Lab Tests

For those SSOs that reach surface waters or drainage channels, that City staff believes may have a significant impact on water quality, and if feasible and safe, water quality samples should be collected. Samples must be taken if the SSO volume to surface waters is estimated to be greater than 50,000 gallons. Whenever possible, samples should be collected by the Regulatory Programs Division’s Laboratory or Compliance Inspection Group staff, who are trained in field sampling procedures rather than by Wastewater Collections Division staff.

Ideally, samples should be collected at the point of discharge and at upstream and downstream locations. The upstream location should be far enough from the spill to be unaffected by the spill.

The appropriate number and location of downstream samples will depend on various factors including spill volume, volume or flow rate of receiving water, sample access, etc. Ideally, a "near field" downstream sample (e.g., 100-ft downstream) and one or more "far field" samples (e.g., 500-ft, 1000-ft) should be collected. If tidal conditions are such that it is unclear as to what is "upstream" and "downstream" from the discharge location, analysis for conductivity may be useful.

Samples should be analyzed for ammonia, dissolved oxygen, and a bacterial indicator, preferably *Enterococcus* (the Laboratory is set up to perform both *Enterococcus* and total coliform analyses. The enterococcus analysis is preferred to characterize SSO impacts). Field observations should also be made at each sampling location, including any visual evidence of the spill, presence of odor, or evidence of fish kills. Follow-up sampling should be conducted on successive day(s) (or at other appropriate time intervals). Such sampling is used to document when conditions return to normal, or to establish that downstream levels of ammonia and the bacterial indicator are approximately equal or less than upstream levels, or less than the applicable limits for the appropriate beneficial use. Limits for ammonia are identified in the May 2017 Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin Plan. Applicable bacteriological limits, which supersede the Basin Plan, are identified in the February 2019 Bacteria Provisions for the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. The limits are summarized as follows:

- Un-ionized ammonia: 0.4 mg/l as N, south of the Bay Bridge.
- Escherichia coli (E. coli): The bacteria water quality objective for all waters where the salinity is equal to or less than 1 part per thousand (ppth) 95 percent or more of the time during the calendar year is: a six-week rolling geometric mean of E. coli not to exceed 100 colony forming units (cfu) per 100 milliliters (mL), calculated weekly, and a statistical threshold value (STV) of 320 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.
- *Enterococci*: The bacteria water quality objective for all waters where the salinity is greater than 1 ppth more than 5 percent of the time during the calendar year is: a six-week rolling geometric mean of *Enterococci* not to exceed 30 cfu/100 mL, calculated weekly, with a STV of 110 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner

Field crews should exercise their best judgment in deciding whether to conduct sampling, and consult with the Wastewater Operations Manager or Wastewater Collections Supervisor. Water quality sampling should not be given precedence over stopping the SSO, worker safety, or protection of public health. However, if sufficient personnel are available, sampling can be conducted in parallel with the clean-up effort.

Sign Posting and Barricading

(a) To limit public interference with clean-up activities or exposure to spills, secure the area with barricades and/or yellow caution tape.

(b) If the spill has entered an open creek, post warning signs and secure the area with barricades and/or yellow caution tape. Do not remove the signs or barricades until the results of the lab tests show the area to have returned to background levels. **Appendix VI-H** shows an example warning signed used by the City.

Recordkeeping and Follow-up Work

(a) A City of Sunnyvale SSO Field Response Document (yellow form) shall be filled out for all system blockages that result in SSOs. A City of Sunnyvale Flushing Report shall accompany the mainline stoppage report. Copies of these reports are included in **Appendix VI-C**. The information is placed into binders and is maintained for five (5) years as part of the collection system maintenance history. A summary file is kept by the Wastewater Operations Manager for tracking purposes.

(b) A City of Sunnyvale Surcharge Report (green form) shall be filled out for all blockages that do not result in SSOs. These reports should be submitted to the Wastewater Collections Supervisor to determine appropriate follow up. A Flushing Report should accompany the mainline Surcharge Report. These reports will be kept at the Corporation Yard.

(c) The affected pipe segment will generally be scheduled for televising, which will aid in determining appropriate follow-up work needed to maintain the segment in a clear condition. The recommended follow-up work will then be scheduled or the line segment will be added to one of the enhanced frequency cleaning lists (60-day, 90-day, or semi-annual), if needed.

(d) Any mainline blockage that caused property damage shall be evaluated and placed on an enhanced cleaning list as appropriate.

(e) Spot repairs, structural pipe repairs, root sawing, and root foaming are other possible follow up results of CCTV work or televising of pipe segments.

D. SSO Notification and Reporting

All confirmed SSOs must be reported to the Wastewater Operations Manager or designee, who will be responsible for notification and reporting to regulatory agencies. Notification and reporting requirements depend on the type of spill, as described below.

External SSO Notification and Reporting Procedures

The City must report all SSOs to the SWRCB using the CIWQS. SSOs greater than or equal to 1,000 gallons that reach a drainage channel or surface water, or that occur in a location resulting in discharges to surface water, must also be reported by phone to the California Office of Emergency Services (Cal OES) within two hours as described below.

Category 1 SSOs

Definition:

All discharges of sewage resulting from a failure in the City's sanitary sewer system that:

- Reach a drainage channel and/or surface water; or
- Reach storm drain pipe and are not fully captured and returned to the sanitary sewer system.

Notification & Reporting Requirements:

2-hr Notification:

For any Category 1 SSO greater than or equal to 1,000 gallons, contact Cal OES within two (2) hours of becoming aware of the SSO, at the number(s) indicated below. The Cal OES operator will provide a Control Number and will notify other State agencies of the spill. This is the "Notification" requirement.

California Office of Emergency Services

Telephone: (800) 852-7550 or (916) 262-1621

3-day / 15-day / 45-day Reporting

As soon as possible, but no more than three (3) days after the City has knowledge of the SSO, file a draft report of the SSO using the SWRCB's online reporting database (CIWQS) at http://ciwqs.waterboards.ca.gov/.

A final certification must be submitted via CIWQS within fifteen (15) days of the conclusion of SSO response activities. This is the "Reporting" requirement for Category 1 SSOs.

For any Category 1 SSO in which 50,000 gallons or greater is spilled to surface waters, submit a SSO Technical Report within 45 calendar days after the end date of the SSO.

NOTE: A "Data Submitter" may enter data and create an SSO report in CIWQS. However, only a "Legally Responsible Official" (LRO) can certify SSO reports.

Category 2 SSOs

Definition:

All discharges of sewage resulting from a failure in the City's sanitary sewer system that:

- Is 1,000 gallons or greater that does not reach a drainage channel, surface water or storm drain pipe; or
- Discharge to the storm drain system that was fully captured and returned to the sanitary sewer system.

Reporting Requirements:

3-day / 15-day Reporting

As soon as possible, but no more than three (3) days after the City has knowledge of the SSO, file a draft report of the SSO using the SWRCB's online reporting database (CIWQS) at http://ciwqs.waterboards.ca.gov/.

A final certification must be submitted via CIWQS within fifteen (15) days of the conclusion of SSO response activities. This is the "Reporting" requirement for Category 2 SSOs.

NOTE: A "Data Submitter" may enter data and create an SSO report in CIWQS. However, only a LRO can certify SSO reports.

Category 3 SSOs

Definition:

All other discharges of sewage resulting from a failure in the City's sanitary sewer system.

Reporting Requirements:

No initial notification is required. A final certified report must be filed using CIWQS within thirty (30) days after the end of the calendar month in which the SSO occurs.

Private Lateral SSOs

Definition:

Sewage discharges caused by blockages or other problems in privately owned sewer laterals.

Reporting Requirements:

Reporting of SSOs from private laterals is **voluntary**. However, private lateral SSOs may be reported at the City's discretion through CIWQS.

No Spill Certification

Even when no SSOs occur during the calendar month, the City must certify through CIWQS that there were no SSOs for the designated month. This "No Spill Certification" must be submitted within thirty (30) days after the end of each calendar month.

CIWQS Questionnaire Annual Update

The City must annually update the CIWQS Collection System Questionnaire, even if there are no changes from the previous year.

Table VI-1 and **Table VI-2** summarize the monitoring, notification, and reporting requirements for SSOs.

Table VI-1. Summary of SSO Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for SSO definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that: • Reach surface water and/or reach a drainage channel tributary to a surface water; or • Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table VI-2. Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	• Within two (2) hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number.	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	• **Category 1 SSO:** Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • **Category 2 SSO:** Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • **Category 3 SSO:** Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • **SSO Technical Report:** Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • **"No Spill" Certification:** Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • **Collection System Questionnaire:** Update and certify every 12 months.	Enter data into the CIWQS Online SSO Database: (http://ciwqs.waterboards.ca.gov/), certified by enrollee's Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	• Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	• SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume.	Self-maintained records shall be available during inspections or upon request.

E. Equipment

A listing of equipment used by the Wastewater Collections Program is included as **Appendix IV-C**.

F. Training

SSO Response Training

All employees who may have a role in responding to, reporting, and/or mitigating a SSO should receive training on at least an annual basis. All new employees should receive training before being placed in a position where they may have to respond in an independent manner, i.e. without the benefit of accompanying an experienced employee.

Employees are encouraged to participate in SSO response training and exercises offered by CWEA or other sanitation agencies, to the extent these opportunities can be accommodated within the Division's workload schedule.

Recordkeeping

Records shall be kept of all training provided in support of this Plan. The records for all scheduled training courses and for each overflow emergency response training event or exercise should include date, time, place, content, name of trainer(s), and names of attendees.

G. List of Plumbing and Emergency Response Contractors:

A list of plumbing contractors that the City uses for contract work on sewer mains or laterals is included in **Appendix VI-D**. A list of contractors who may be called out to assist with emergency response is included as **Appendix VI-E**.

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ELEMENT VII. FOG CONTROL PROGRAM

A. Introduction

This section of the SSMP evaluates the extent and nature of SSOs related to Fats, Oils, and Grease (FOG), the need for a FOG Control Program, and outlines the elements of the City's FOG Control Program.

B. Regulatory Requirements

The requirements for the FOG Control Program section of the SSMP, found in Provision D.13.(vii) of the GWDR are:

State GWDR Requirement

The collection system agency shall evaluate its service area to determine whether a FOG control program is needed. If the collection system agency determines that a FOG program is not needed, the collection system agency must provide justification for why it is not needed. If FOG is found to be a problem, the collection system agency must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. The FOG source control program shall include the following as appropriate:

(a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;

(b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;

(c) The legal authority to prohibit discharges to the system and identify measures to prevent 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.

C. Nature and Extent of FOG Problem

The City has approximately 456 potential commercial and industrial sources of FOG discharging to the wastewater collection system. Currently, one Senior Environmental Compliance Inspector and six Environmental Compliance Inspectors conduct FOG Program inspections. The largest concentration of commercial FOG sources are Food Service Establishments (FSEs) located in the vicinity of Murphy Ave and along portions of El Camino Real. Some FSEs are located in older buildings and have undersized grease traps. FSEs include eating and drinking establishments, cafeterias, bakeries, delis, meat preparation, mobile facilities, and one sausage manufacturer.

The majority of the SSOs in the City are caused by a combination of FOG and roots in the sewer line. Four percent (4%) of the SSOs during the period 2014-2019 were caused solely by FOG. The City includes line segments that have had FOG-related SSOs or surcharging on the Enhanced Frequency Cleaning listings (60-day, 90-day, semi-annual, and bi-annual), which are used by the Wastewater Collections Program to schedule sewer line preventive maintenance. The Enhanced Cleaning Frequency listings reside on the City network, are accessible by ESD staff, and are periodically updated based on information collected during maintenance activities (and particularly the results of CCTV inspections). Such periodic updating allows the City to adjust cleaning frequencies to the needs of the particular line segment and more effectively utilize maintenance resources.

D. FOG Control Program

ESD FOG Control Program Elements

Sewer Line Cleaning

1. FOG blockage information is shared between the Wastewater Collections Program (WW Collections) and the Regulatory Programs Division / Compliance Inspection Group.
2. WW Collections will contact the Compliance Inspection Group for enforcement or outreach support when an SSO event is in progress or has occurred.
3. WW Collections provides line blockage information to the Compliance Inspection Group for review and any follow up.
4. WW Collections will advise the Compliance Inspection Group of any possible grease discharge identified during mainline stoppage, follow up or general maintenance flushing, or scheduled televising wastewater segments.
5. The Compliance Inspection Group will advise WW Collections of all findings, all outreach program participants, and their findings of any investigation initiated by WW Collections or caused by concerns identified during the follow up or annual maintenance flushing of wastewater main segments.

Legal Authority – Ordinance

The Sunnyvale Municipal Code (SMC) identifies FOG-related prohibitions and requirements. The Regulatory Programs Division incorporated additional SMC requirements in 2000.

1. Prohibitions on discharges (SMC Section 12.12.020)
2. Fats, Oils and Grease disposal prohibited (SMC Section 12.12.025)
3. Grease removal device required (SMC Section 12.12.026)
4. Discharge and threatened discharge into storm drain prohibited (SMC Section 12.60.070)
5. Administrative civil penalties (SMC Section 12.18.090)

FSE Permits/Registration

The Compliance Inspection Group has identified all FSEs in the City and performs sampling, inspection, and enforcement to verify compliance with SMC and Best Management Practices (BMPs). New or remodeled FSEs are identified through a review of the Business License list in conjunction with the City's Finance and Building Departments.

FSE Inspections/Enforcement

1. Since 2011, the Compliance Inspection Group inspects most FSEs on an annual basis. FSEs that are considered low FOG are inspected at least once every three years. Low FOG facilities include businesses that do not cook and use disposal food ware with no dishwashing. During FSE inspections, the emphasis is on:
   a. Grease removal device (GRD) installation and maintenance;
   b. Process information;
   c. Grease management; and
   d. BMPs.

Although unrelated to GWDR compliance, the Compliance Inspection Group also inspects FSEs for compliance with stormwater BMPs concurrent with FOG inspections.

2. Enforcement actions are clearly outlined in the Enforcement Response Plan. Elements include:
   a. Identifying and investigating instances of noncompliance;
   b. Enforcement procedures; and
   c. Enforcement response guide.

A summary of inspections and enforcement actions in the period of 2015 through 2019 is included in the following table.

Table VII-1. FSE Inspection and Enforcement

Year	Total FSEs	Total Inspections	Enforcement Actions
2019	419	537	75
2018	423	574	59
2017	405	559	72
2016	444	531	32
2015	509	608	66
Grand Total	**2,200**	**2,809**	**304**

Grease Interceptor and Trap Installation Requirements

All GRDs installed or caused to be installed are sized in conformance with the currently adopted edition of the Uniform Plumbing Code (SMC 12.12.026). The Compliance Inspection Group coordinates with the Building Division in the permit review of FSEs.

Grease Interceptor and Trap Maintenance Requirements

All GRDs installed or caused to be installed shall be kept in good repair and shall be maintained in continuous operation. The GRD contents shall be removed every six months at a minimum, and documentation of all grease removal activities shall be maintained (SMC 12.12.026). The Environmental Compliance Inspectors inspect FSEs for these criteria. Inspectors review cleaning records for GRDs and if records or other observations indicate insufficient cleaning, inspectors may conduct FOG accumulation measurements of the GRD. The City requires compliance with the 25% rule BMP, that is, FSEs are required to maintain their GRDs below 25% total capacity of measured solids and FOG. Any measurement above 25% indicates that the cleaning frequency of the GRD is not adequate and requires an immediate pump out and, potentially, an increased maintenance frequency.

Grease Hauling and Disposal Requirements

It is unlawful for any person to dispose of any grease by discharge into any sanitary sewer or storm drainage system (SMC 12.12.025).

1. Environmental Compliance Inspectors review the contracted grease hauling and disposal company documents when conducting an FSE inspection.
2. FSEs that conduct self-cleaning of GRDs are provided guidance regarding proper disposal of the FOG.

Grease Hauling and Disposal Facilities

The nearest disposal site for FOG is Silicon Valley Clean Water (SVCW) in Redwood City. Other local facilities that accept FOG from outside their service areas include the East Bay Municipal Utility District (EBMUD) in Oakland and the City of Watsonville Wastewater Treatment Facility.

Kitchen BMP Requirements

Kitchen BMP activities are observed and related questions are asked during inspections of FSEs. All FSEs receive BMP documents regarding FOG reduction, and the BMPs are published in multiple languages.

Residential Program

The Compliance Inspection Group previously conducted surveys and inspections of residential complexes located in FOG "hot spots," as identified by the Wastewater Collections Program. These facilities receive information on BMPs, and their effectiveness will be monitored.

Education and Outreach

The Environmental Programs Specialist works with the Compliance Inspection Group in selecting and distributing both FSE and residential complex BMPs related to FOG reduction. In addition, FOG outreach regularly occurs as articles in city newsletters, social media, newspapers, and utility bill inserts.

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ELEMENT VIII. SYSTEM EVALUATION AND CAPACITY ASSURANCE PROGRAM

A. Introduction

This section outlines the City's programs and activities to provide adequate capacity.

B. Regulatory Requirements

The requirements for the System Evaluation and Capacity Assurance Plan section of the SSMP, found in Provision D.13.(viii) of the GWDR are:

State GWDR Requirement

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

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

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

(c) Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, inflow and infiltration (I/I) reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.

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

C. System Evaluation and Capacity Assurance Plan (SECAP)

System Mapping

The City maintains system maps in GIS. GIS info was updated in 2018 and 2019, and another update is in progress for 2020. The City has developed and implemented an ongoing system for updating sewer asset maps.

Evaluation – Wastewater Collection System Master Plan (WWMP)

The City completed a Sewer System Master Plan in 1992. The master planning effort evaluated the capacity of the existing sanitary sewer system assets and provided capacity design criteria for future assets.

At the time the 1992 Master Plan was prepared, the City was at or near build-out. Projects within the City's service area are primarily redevelopment projects. The City requires that redevelopment project proponents evaluate the offsite capacity impacts of their project through an engineering study.

A Wastewater Master Plan Update (WWMP) was completed in December 2015. Tasks completed as part of this project included:

- Updating the Citywide Vertical Control/Benchmark system;
- A report on the sewer and storm systems, their conditions and capabilities;
- Flow monitoring and a report and recommendations regarding inflow and infiltration to the sanitary sewer;
- A dynamic hydraulic systems models and flow projections;
- A report on Operations and Maintenance, including fee assessment and fee schedules;
- Up-to-date wastewater system maps in GIS format and drawings in CAD format;
- A recommended comprehensive long-term Capital Improvement Program;
- A review and recommendations for revisions to the City's design standards and standard detail for wastewater systems; and
- Development of an intranet web browser for technical and engineering documents.

Since the completion of the 2015 WWMP, the City has developed a 20-year CIP budget projection for sewer rehabilitation and repair projects. Specific projects are identified, prioritized, and scheduled within the limitations of the budget. Annual funding is also programmed in the budget to address emergency repairs on an as-needed basis. The 20-year CIP projection is reviewed and adjusted on a two-year cycle.

The 2015 WWMP identified a number of system improvements, which are currently being reviewed and updated as necessary. Feasibility studies are planned and progressing for capacity improvement projects on both the Lawrence Interceptor and Lockheed Interceptors. The City recently retained the services of a consultant to update the hydraulic model and review the improvement recommendations detailed in the 2015 WWMP. Upon completion, the projects identified will be prioritized and funding will be programmed in the upcoming CIP budget cycle(s). Completion dates are contingent on project prioritization and available funding.

Evaluation - Hydraulic Model

As part of the 2015 WWMP effort, the City conducted flow monitoring in the sanitary sewer system in 2013 to identify potential capacity deficiencies and to monitor the quantity of I/I. At that time, the flow monitoring did not capture significant wet weather flow events. The City's sanitary sewer hydraulic model is currently being updated and calibrated to verify the 2015 WWMP findings to ensure that future projects are designed to provide sufficient wet-weather capacity. The hydraulic model update and review of the improvement project recommendations contained in the 2015 WWMP, is scheduled for completion in late 2020.

Design Criteria

The capacity-related design criteria are included in **Element V. Design and Performance Provisions**.

Capacity Enhancement Measures - Capital Improvement Program

The City's WWMP effort identified capacity deficiencies at several locations in the collection system. The City is currently evaluating, verifying, and updating the hydraulic model to reflect existing and future flows, up to and including 2035 "build-out" flows based on population and land use projections contained in City planning documents. This work will result in recommendations for addressing existing and future capacity deficiencies. The resulting projects will be incorporated into the City's Capital Improvement Program.

Schedule

The current schedule for the City's capacity enhancement projects is included in the City's Capital Improvement Program. A listing of the annual budgets and project description for Sewer System CIP projects is included as **Appendix VIII-A**.

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ELEMENT IX. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

A. Introduction

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

B. Regulatory Requirements

The requirements for the Monitoring, Measurement, and Program Modifications section of the SSMP, found in Provision D.13.(x) of the GWDR are:

State GWDR Requirement

The Enrollee shall:

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

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

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

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

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

C. 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:

- Total number of SSOs;
- Number of SSOs by cause (roots, FOG, debris, pipe failure, capacity, pump station failures, and other);
- Locations with multiple SSOs;
- Volume of sewage spilled, recovered, and reaching waters of the state;
- Volume spilled as a fraction of volume conveyed through system; and
- Emergency response times.

For the ten-year period between 2009 and 2019, the City averaged nine SSOs per year. The highest year was 16 SSOs in 2010, and the lowest was three (3) SSOs in 2015 and again in 2016. In the last five years, the City averaged 4.8 SSOs per year, which is a significant reduction from

the longer-term average. The City experienced seven (7) SSOs in 2019, which is higher than the previous two years, but lower than the long-term ten-year average.

The City implemented some programmatic changes to reduce SSOs and comply with State regulatory measures. The most significant change has been adhering to an aggressive preventive maintenance program. Staff continues to remove significant quantities of debris, roots, and grease from the sewer system. The cause of all SSOs from 2009 to 2019 is summarized in **Table IX-1** and **Figure IX-1**. Pipe obstruction by roots is the most common cause of SSOs for all years. The City implements regular maintenance of the collection system and deploys both chemical and mechanical methods for addressing root intrusion, as needed.

Figure IX-2 summarizes SSOs by volumes recovered and unrecovered. No SSOs have been discharged to surface waters since 2012.

Table IX-1. SSOs by Cause, 2009-2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Roots	9	8	6	3	10	6	3	2	4	4	5
Debris	0	1	5	0	0	0	0	1	0	0	0
FOG	4	7	3	5	3	2	0	0	2	1	1
Pipe Structural Issue	0	0	1	1	1	0	0	0	0	0	1
Total SSOs	13	16	15	9	14	8	3	3	6	5	7

Figure IX-1. SSOs by Cause, 2009-2019

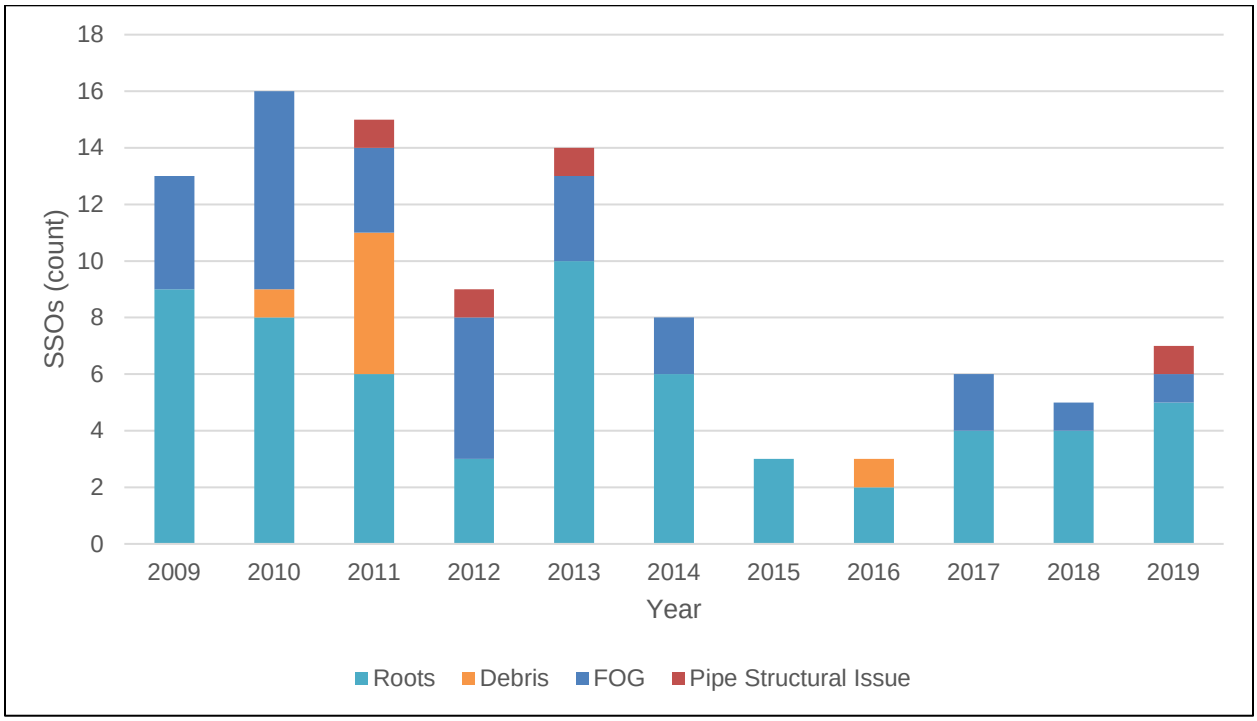
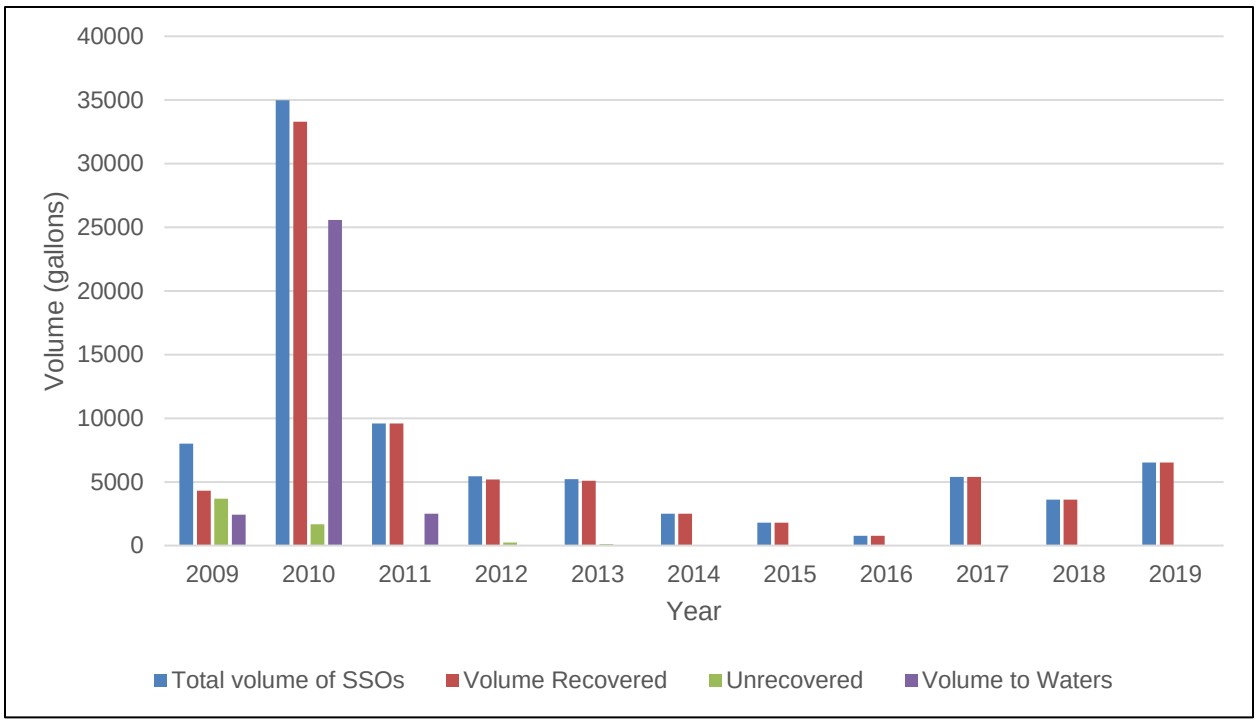


Figure IX-2. SSO Volumes, 2009-2019



Note: Volume Recovered may include wash water used in cleanup activities.

D. Performance Monitoring and Program Changes

The City will evaluate the performance of its wastewater collection system and SSMP effectiveness annually using the performance measures described above. Results of the evaluation will be recorded on the Biennial SSMP Audit Form. The City will also evaluate the effectiveness of individual SSMP Elements. The primary tool for documenting the evaluation will be the SSMP audit. The City will prioritize its actions and initiate changes to this SSMP and the related programs based on the results of the evaluation. Examples of changes that could result from ongoing evaluation include:

- Revisions to frequency of cleaning cycles and/or FSE inspections based on field observations and CCTV inspections;
- Reprioritization of rehabilitation and replacement projects based on the results of CCTV inspection, manhole inspections, and capacity analysis;
- Implementation of new methods and procedures based on experience developed in-house and from other agencies; and/or
- Increased use of information technology (GIS, GPS, and CMMS) for administrative and field operations.

ELEMENT X. SSMP PROGRAM AUDITS

A. Introduction

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

B. Regulatory Requirements

The requirements for the SSMP Program Audits section of the SSMP, found in Provision D.13.(xi) of the GWDR are:

State GWDR Requirement

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

C. Audits

The City conducted annual audits of the SSMP from Calendar Year 2008 through 2011, and started biennial audits in 2012. Audits are conducted every two years in the first quarter of the year by the Wastewater Operations Manager and/or an outside consultant. Other parties may be added to the future audit teams. The Wastewater Operations Manager retains the audit. A copy of the most recent SSMP Program Audit is included as **Appendix X-A**.

The audit covers each of the major sections of the SSMP. An Audit Checklist, adapted from a document developed by BACWA and based on the requirements of the GWDR is used. In addition to the "Yes/No" response to questions, the checklist provides space for each group of related questions to document any deficiencies and steps taken or planned to correct them. The comment spaces will also be used to document qualitative evaluations related to the particular element or sub-element. In this way, the audit serves as the primary tool for documenting SSMP effectiveness as described in **Element IX. Monitoring, Measurement, and Program Modifications**.

D. SSMP Updates

The City will determine the need to update the SSMP based on the results of the Monitoring and Measuring Program and the SSMP audit. As part of the 2012 SSMP revision, information expected to require regular routine updating (contact lists, performance statistics, Enhanced Frequency Cleaning lists, etc.) was moved to the SSMP Appendices or replaced by reference to the appropriate external documents. This will facilitate the update process, and will reduce the

frequency at which the main body of the SSMP will require updating. The Wastewater Operations Manager is responsible for maintenance and updating of the SSMP.

As part of the audit process, City staff will update critical information in the SSMP, such as contact information, names of the key staff in the response chain of communication, or other similar data as needed. A comprehensive SSMP update occurs every five years, as required by the GWDR.

Changes made to the SSMP will be documented in the Change Log located in **Appendix X-B**. The Change Log is effective as of adoption of this Revised SSMP.

ELEMENT XI. COMMUNICATION PROGRAM

A. Introduction

This section of the SSMP outlines the process involved in communicating with interested members of the public regarding the development, implementation, and performance of this plan.

B. Regulatory Requirements

The requirements for the Communication Program section of the SSMP, found in Provision D.13.(xi) of the GWDR are:

State GWDR Requirement

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

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

C. Communication during SSMP Development and Implementation

Communication of SSMP Development and Updates

The City Council approved the schedule for completion of the SSMP at its August 27, 2007 Council meeting. In advance of such approval, Public Works staff prepared a Report to Council that provided background information including regulatory drivers for SSMP development, SSMP purpose and content, relationship to existing City policy as described in the Wastewater Management Sub-element of the City's General Plan, and the SSMP implement schedule. The Council report was available to the public through posting of the Council agenda on the City's official notice bulletin board, posting of the agenda and report on the City Council web page, and through the City Library and the City Clerk's Office. The August 27 Council meeting was open to the public and included a period for public comment.

In May 2009, the City amended the sewer use ordinance to implement additional FOG Program elements as required by the SSMP. The proposed ordinance revisions were also publicly noticed and made available to the public through the channels listed above.

In 2012, the City Council approved a revised version of the SSMP at the September 11 meeting. A Report to Council was prepared to advise of the changes to the existing SSMP. The Council report was available to the public through posting of the agenda on the City's official notice bulletin board, on the City Council webpage, and through the City Library and the City Clerk's Office. The Council meeting was open to the public and included a period for public comment.

In 2015, an update to the SSMP was conducted in order to comply with the Revised Monitoring and Reporting Program (Order No. WQ 2013-0058-EXEC). City Council approved a revised version of the SSMP at the May 12, 2015 City Council meeting. As in 2012, a Report to Council was prepared to advise of the changes including content and format updates. The Council report was available to the public through posting of the Council agenda on the City's official notice bulletin board, posting of the agenda and report on the City Council web page, and through the City Library and the City Clerk's Office. The May 12 Council meeting was open to the public and included a period for public comment.

Ongoing Communication

Posting of SSMP on City Web Site

The City plans to post the proposed 2020 SSMP on the City's website during the Council approval process, and the final SSMP after adoption of this revision. The link to the document will be on the ESD, Water and Sewer Services page. That page currently includes contact information for reporting sewer backups (SSOs).

SSO Reporting

The Wastewater Operations Manager is the primary person responsible for reporting SSOs to Cal OES. Information on individual SSOs is available to the public through a GIS-based application on the State Board's web site at:

https://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml

FOG Program

The City operates a FOG Program that regulates the discharge of FOG from commercial food service establishments (FSEs) by requiring the installation and maintenance of GRDs and through distribution of BMP information (see **Element VII. FOG Control Program**). FSE inspections and enforcement are administered through the Pretreatment Program. Control of FOG from residential sources is achieved primarily through education and outreach efforts that communicate a consistent and ongoing message regarding the impacts of FOG on the collections system, provides information for proper disposal, distributes FOG scrapers, etc. The FOG outreach activities are conducted at the community events such as the Health and Safety Fairs, during school presentations, and other venues. The Program also uses the City's newsletters, utility bill inserts, electronic billboards, print newspapers, and social media to communicate a variety of pollution prevention messages, including FOG-related messages.

General Outreach

As previously stated, the City communicates a variety of pollution prevention messages to the public through newsletters, utility bill inserts, electronic billboards, and social media. In addition, the City also participates in regional outreach activities through the BACWA/Association of Bay Area Governments (ABAG)/ Bay Area Stormwater Agencies Association (BASMAA) Regional Media Relations Campaign.

APPENDIX IV-A
City of Sunnyvale
Sewer System Management Plan
SOP for Sewer Cleaning

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(2) Hydro-Jet Cleaning Sanitary Sewer (Main)

1. Background:

The City of Sunnyvale will hydro-flush clean city mains on the city owned sewer.

2. Scope:

This document presents the materials, the procedures to follow, and the safety items to hydro-flush clean sewer mains for the City of Sunnyvale.

3. Materials:

3.1 Hydro-flush Truck
3.2 Manhole hook
3.3 GIS or map data
3.4 Atmosphere Tester (4 Gas Analyzer)
3.5 Debris spoon (clam) and/or forks

4. Procedure:

4.1 Ensure that all personnel are using prescribed personal safety/protective equipment (i.e.; ear protections, safety glasses, safety vest, appropriate foot wear, etc.) prior to beginning any work.
4.2 Ensure that all safety signage and warning devices and traffic control are in place prior to beginning any work.
4.3 Check GIS and/or Sewer Maps for ID numbers, location, and orientation of sewer assets.
4.4 Use atmosphere tester to assure safe gas levels in manhole prior to opening lid.
4.5 Pull manhole lids upstream and downstream.
4.6 Insert jetter hose into tiger tail and into the run of the main.
4.7 Turn on water to jetter and turn up trucks rpm to get proper PSI.
4.8 Run out hose up the main until it gets to next manhole.
4.9 Pull hose back slowly to remove debris.
4.10 Vacuum out all heavy debris out of the base of manhole or use “clam” bucket to remove debris.
4.11 Set lids back on manholes.
4.12 Fill out all associated paperwork making note of work performed and findings.

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APPENDIX IV-B
City of Sunnyvale
Sewer System Management Plan
SOP for CCTV Inspections

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(14) CCTV Inspection Video Sanitary or Storm Sewer Inspection (Main)

1. Background:

The City of Sunnyvale will Video sewer mains on the city owned sewer.

2. Scope:

This document presents the materials, the procedures to follow, and the safety items to video sewer mains.

3. Materials:

3.1 Video truck
3.2 Cable rollers
3.3 Manhole hook
3.4 Atmosphere Tester (4 Gas Analyzer)

4. Procedure:

4.1 Ensure that all personnel are using prescribed personal safety/protective equipment (i.e.; ear protections, safety glasses, safety vest, appropriate foot wear, etc.) prior to beginning any work.
4.2 Ensure that all safety signage and warning devices and traffic control are in place prior to beginning any work.
4.3 Check GIS and/or Sewer Maps for ID numbers, location, and orientation of sewer assets.
4.4 Use atmosphere tester to assure safe gas levels in manhole prior to opening lid.
4.5 Clean main or root cut main prior to video operations if necessary.
4.6 Insert camera into main set and up manhole data in computer.
4.7 Televise from manhole to manhole noting all defects and laterals.
4.8 Replace manhole lids.
4.9 Fill out all associated paperwork making note of work performed and findings.

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APPENDIX IV-C
City of Sunnyvale
Sewer System Management Plan
Major Equipment Items to Support Maintenance

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MAJOR VEHICLES AND EQUIPMENT

Equipment #	Type	Description	Year	Make	Model
768-4	Vehicle	Dump Truck	2015	Ford	F-650
655-1	Vehicle	Supervisor Truck	2014	Ford	F-150
631-1	Vehicle	Flushing Truck	2014	Ford	F-450
641-9	Vehicle	On-Call Truck	2011	Ford	F-350
646-6	Vehicle	Construction Truck	2011	Ford	F-350
691-3	Vehicle	Locates Van	2016	Ford	Transit
503-3	Vehicle	VacCon	2011	Freightliner	M2106V
500-3	Vehicle	VacCon	2014	Freightliner	M2106V
518-0	Vehicle	VacCon	2019	Freightliner	114SD
598-4	Vehicle	Backhoe	2010	John Deere	310J
514-0	Vehicle	CCTV Truck	2012	Ford	E-450
590-3	Equipment	Compressor	2011	Ingersoll Rand	P185
301-2	Saw	Concrete Saw	2015	Stihl	TS800
309-2	Generator - Portable	3 KW on Truck 646	2008	Honda	EU3000
368-0	Trailer	Flatbed	2014	Jacobsen	DTB-B-187
552-0	Equipment	Mr. Manhole	2012	Case	TR270
396-0	Trailer	Emergency Response	2013	Pace American	Journey
967-0	Equipment	Skid Flusher on Truck 631	2013	US Jetting	4018-375
341	Generator	3KW on Truck 641		Honda	E-3000
361-0	Pump	Trash Pump	2013	Wacker Neuson	PT6LT

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APPENDIX V-A
City of Sunnyvale
Sewer System Management Plan
Grease Removal Device Requirements

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GREASE REMOVAL DEVICES

Sunnyvale **THESE REQUIREMENTS APPLY TO BUILDING PERMITS SUBMITTED ON OR AFTER JANUARY 1, 2020**

BUILDING DIVISION REQUIREMENTS

All eating and drinking establishments listed in Standard Industrial Classification Major Group 58 and North American Industry Classification System Sector 72, are required to install and maintain appropriate grease interceptor (hydro-mechanical or gravity). (CPC 1014.0)

Following are the definitions of the two types of grease removal devices and general requirements for permit applications and sizing criteria based on the 2019 California Plumbing Code. This brochure is intended to provide general information, contact the Building Safety Division for any questions or additional information.

DEFINITIONS (CPC Chapter 2)

Hydro-mechanical Grease Interceptor is a plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept non-petroleum fats, oil, and grease (FOG) from a wastewater discharge and is identified by flow rate, and separation and retention efficiency. The design incorporates air entrainment, hydro-mechanical separation, interior baffling, and/or barriers in combination or separately, and one of the following:

A - External flow control, with air intake (vent): directly connected
B - External flow control, without air intake (vent): directly connected
C - Without external flow control, directly connected
D - Without external flow control, indirectly connected

[These interceptors comply with the requirements of Table 1014.2.1] Hydromechanical grease interceptors are generally installed inside.

Gravity Grease Interceptor is a plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum fats, oils, and greases (FOG) from a wastewater discharge and is identified by volume, thirty (30) minute retention time, baffle(s), not less than two (2) compartments, a total volume of not less than three-hundred (300) gallons, and gravity separation. [These interceptors comply with the requirements of Chapter 10 or are designed by a registered professional engineer.] Gravity grease interceptors are generally installed outside.

GENERAL REQUIREMENTS FOR PERMIT APPLICATIONS AND SIZING CRITERIA

- A complete plumbing plan showing food preparation and cleaning areas (including sinks, dishwashers, janitorial sinks and mat cleaning areas). Also, show which fixtures are plumbed to the grease removal device and which fixtures discharge directly to the sanitary sewer.

- The plans should also include proper sizing of the hyrdo-mechanical grease interceptor or gravity grease interceptor, including:

  - Sizing calculations that determine the size of the gravity grease interceptor. (CPC 1014)
  - The gravity grease interceptor must be designed and sized to comply with Sunnyvale Municipal Code 12.12.120 “Local Limits for Wastewater” of 300 mg/L, by weight, of fat, oil, or grease of animal or vegetable origin.
  - Gravity grease interceptors shall provide a sample point after treatment. The sample point

must be located after the interceptor and before discharge to the sanitary sewer system. A sample of the wastewater discharge may be collected by the City's Pretreatment Program staff.

- Following are examples of the types of fixtures that must be plumbed to a hyrdo-mechanical grease interceptor:

  - Tri-well sinks
  - Pot and mop sinks used in food preparation
  - In some cases, floor sinks and floor drains
  - A dishwasher may not be plumbed to a grease removal device unless specifically designed to receive wastewater from a dishwasher. Approval by the Building Division is required for any dishwasher to be plumbed to a grease removal device.

PERMIT PROCESS

1. Prior to submittal for a building permit, contact the Planning Division to determine if a separate permit is required.

Building Permit Review

2. Building permit review and issuance is available at the One-Stop Permit Center between the hours of 8 a.m. to 12:30 p.m.

Inspections

3. A minimum of two inspections are required, a rough plumbing and a final inspection. Depending on the scope of work, additional inspections may be required. The inspections requirement will be determined when the building permit is issued.

Building Permit Application Requirements

- ☐ A completed Building Permit Worksheet application (available at the One-Stop Permit Center or on-line at Sunnyvale.ca.gov) – *only one copy of this item needed*
- ☐ Complete set of plans including the information described in this handout. (Three complete sets of plans.)
- ☐ If additional improvements/remodeling is made to the tenant space, additional plan and permit requirements will be required.
- ☐ Fee _____

APPENDIX VI-A
City of Sunnyvale
Sewer System Management Plan
List of ESD Employees and Contact Information

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City Staff Responsibility for SSMP Elements

SSMP Element	Responsible Official	Name	Phone Number	Email Address
I – Goals	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
II – Organization	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov
III – Legal Authority	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov
IV – Operations and Maintenance Program	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
V – Design and Performance Provisions	Water and Sewer Systems Div. Manager	Mansour Nasser	408-730-7578	mnasser@ sunnyvale.ca.gov
VI – SSO Emergency Response Plan	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
VII – FOG Control Program	Regulatory Programs Division Manager	Melody Tovar	408-730-7808	mtovar@ sunnyvale.ca.gov
VIII – System Evaluation and Capacity Assurance Program	Water and Sewer Systems Div. Manager	Mansour Nasser	408-730-7578	mnasser@ sunnyvale.ca.gov
IX – Monitoring, Measurement, and Program Modifications	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
X – SSMP Program Audits	Wastewater Operations Manager (Interim)	Robert Wilson	408-730-7714	rwilson@ sunnyvale.ca.gov
XI – Communication Program	ESD Director	Ramana Chinnakotla	408-730-7785	rchinnakotla@ sunnyvale.ca.gov

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APPENDIX VI-B
City of Sunnyvale
Sewer System Management Plan
SSO Backup Response Plan

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(17) Sanitary Sewer Overflow (SSO) Response

1. Background:

The City of Sunnyvale will clear blockages and mitigate sewage overflows from city owned sanitary sewer.

2. Scope:

This document presents the materials, the procedures to follow, and the safety items to restore flow and recover spill contents emanating from city owned sewer structures.

3. Materials:

- 3.1 Combination truck
- 3.2 GIS and/or block map book
- 3.3 Manhole hook
- 3.4 Absorbent
- 3.5 Camera (portable or cell phone)
- 3.6 Atmosphere Tester (4 Gas Analyzer)

4. Procedure:

- 4.1 Ensure that all personnel are using prescribed personal safety/protective equipment (i.e.; ear protections, safety glasses, safety vest, appropriate foot wear, etc.) prior to beginning any work.
- 4.2 Ensure that all safety signage and warning devices and traffic control are in place prior to beginning any work.
- 4.3 Check GIS and/or Sewer Maps for ID numbers, location, and orientation of sewer assets.
- 4.4 Use atmosphere tester to assure safe gas levels in manhole prior to opening lid.
- 4.5 Locate upstream and downstream manholes in suspected area.
- 4.6 Pull manhole lid on downstream manhole check for flow. Hydro-flush upstream if no flow and upstream manhole is holding sewer to restore flow.
- 4.7 Remove manhole lid on upstream manhole and monitor flow conditions.
- 4.8 Follow procedures in Sunnyvale Sanitary Sewer Overflow and Backup Response Plan.
- 4.9 Notify supervisor as soon as possible.
- 4.10 Contain spill contents and protect storm drain inlets.
- 4.11 Vacuum spill contents at furthest point of containment. Wash spill contents with fresh water toward vacuum unit (“wash and walk”).
- 4.12 Hydro-flush and vacuum affected storm system if applicable.
- 4.13 Take pictures when arriving. Also photograph various points of spill mitigation at various locations.
- 4.14 Fill out all associated paperwork making note of work performed and findings.

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APPENDIX VI-C
City of Sunnyvale
Sewer System Management Plan
SSO Response Field Documentation Form

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CITY OF SUNNYVALE
SEWER FLUSHING REPORT

Date:_____ Operators:_____

	Downstream M/H (BM# - M/H#)	Upstream M/H (BM# - M/H#)	Location	Length between M/Hs	Debris / Severity (see codes)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Water Meter Reading:

Start_____ End_____

Total footage of segments flushed

Debris Type:		
	0=none	4=roots
	1=grease	5=mud
	2=paper	6=foreign objects
	3= grit	7= other

Debris Severity:	
	1=clear
	2=mild
	3=medium
	4=severe
	5=stoppage

11/3/2011

City of Sunnyvale
Environmental Services Department
SURCHARGE REPORT

D

Time Call Received:

Dispatched to:

Weather Condition: Clear Rain

Location:

Cross Street:

Time arrived at site:

Time normal flow restored:

First Responder:

Crew Members:

Downstream Manhole:

Upstream Manhole:

Mainline size:

Distance between M/Hs:

Describe cause and location of blockage (include pictures if taken):

Additional comments:

Attach a copy of the service report, flushing report, site map & all pictures to this report

Televise Date:

Recommendation:

(6 Page Document)

SSO RESPONSE - FIELD DOCUMENTATION

REPORTED BY

Call Address:
On Service Request: _____ (SR #_____)

Caller Name: _____ **Phone:** _____ _____

Receipt of Call: Date: ____/____/____ **Time:** _____:_____ ☐ AM ☐ PM **Call Received By:** _____

Call Dispatch: _____/_____/_____ **Time:** _____:_____ ☐ AM ☐ PM **Assigned To:** _____

Sewer Staff Arrival: Date: _____/_____/_____ **Time:** _____:_____ ☐ AM ☐ PM

SSO End Time: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

SPILL START TIME NOTES

CALLER INTERVIEW: Contacted: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Telephone ☐ In Person ☐ Left Message ☐ : _____:_____

Where did you see sewage spill from? From: Manhole ☐ Inside Building ☐ C/O ☐

☐ Wet well/Lift station ☐ Other _____

Time Caller noticed spill: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Comments:

_____

_____

Last time Caller observed NO Spill occurring: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Comments:

_____

_____

_____

Other Comments regarding spill start time:

_____

_____

_____

SPILL LOCATION

Observed: Spill from: ☐ Manhole ID_____ ☐ Lift Station ID _____

☐ Clean Out Address _____

Comments: _____

☐ Building Address _____

Comments: _____

Spill Destination: ☐Building ☐ Paved Surface ☐ Storm Sys ☐ Curb/Gutter ☐ Unpaved ☐ Surface Water

Answer these questions:

#1 - Was there a discharge to a drainage channel and/or surface water? _____ Yes _____No
#2 - Was there a discharge to storm drain pipe that was "NOT" fully captured & returned to the sanitary sewer system? _____ Yes _____No

If the answer is "yes" to any of the questions above, the SSO is a Category 1. (Notification within 2-hours is required)

SPILL VOLUME WORKSHEET

The purpose of this worksheet is to capture the data and method(s) used in estimating the volume of an SSO. Since there are many variables and often unknown values involved, this calculation is just an *estimate*. Additionally, it is useful to use more than one method, if possible, to validate your estimate.

The following methods and tools are the approved methods in the SSMP and ERP. Check all methods and tools that you used:

- ☐ Eyeball Estimate Method
- ☐ Measured Volume Method
- ☐ Duration and Flow Rate Method (Account for diurnal flow pattern for long duration)
- ☐ Other (explain) i.e.; estimated daily use per capita upstream or meter @ Pump Station.

_____
_____
_____
_____
_____
_____

Eyeball Estimate Method: Imagine the following container(s) of water tipped over to match the quantity observed.

Size of container(s)	How many of this Size?	Multiplier	Total Volume Estimated
1 gal. bucket		X 1	
5 gal. bucket		X 5	
32 gal. trash can		X 32	
55 gal trash can		X 55	
Total Volume Estimated Using Eyeball Method			

Measured Volume Method: (this may take several calculations and may have to break down the odd shaped spill to rectangles, circles, and polygons). It is important when guessing depth to measure in several locations and use an average depth if possible. Use a separate sheet, if necessary, to sketch the shapes and show your work.

1. Draw a sketch of the spill and/or use a photo copy of block map to draw on and attach it
2. Draw shapes and dimensions used on your sketch
3. Use correct formula for various shapes

Rectangle	L x W x D
Circle	3.14 x R^2 x D
Polygons see reference chart	Show formula used

Duration and Flow Rate Method worksheet:

Start Date and Time	1.
End Date and time	2.
Total time elapsed of SSO event (subtract line 1 from line 2. Show time in minutes)	3.
Average flow rate GPM (account for diurnal pattern)	4.
Total volume estimate using duration and flow rate method (Line 3 x Line 4)	5.

CAUSE OF SPILL

Spill Cause: ☐ Roots ☐ Grease ☐ Debris ☐ Vandalism ☐ Lift Sta. Fail ☐ Other _____

☐ Spill cause to be determined by CCTV inspection (Attach TV Report to this form)

Final Cause Determination:

_____

_____

_____

Follow-up or Corrective Action Taken:

_____

_____

_____

_____

SPILL CONTAINMENT

Containment Implemented: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Containment Measures: ☐ Plugged Storm Drain ☐ Washed Down ☐ Vacuum Up Water/Sewage

☐ Other Measures: _____

_____

_____

_____

_____

Estimated Total spill volume to Reach Surface Water	Estimated Total spill volume to Reach Land	Estimated Total spill volume Recovered	Estimated Total spill volume

SSO RESPONSE - FIELD DOCUMENTATION

CLEAN UP

Clean Up Begin: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Clean Up Complete: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Describe Clean Up Operations: _____

_____

_____

_____: **Gallons** – Estimate Volume of Spill Recovered (**do not** count wash down water)

OTHER IMPORTANT MILESTONES

Contacted Supervisor: ____:____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip: ____:____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip: ____:____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip: ____:____ ☐ AM ☐ PM Date: _____/_____/_____

Departure Time: ____:____ ☐ AM ☐ PM Date: _____/_____/_____

_____ ____:____ ☐ AM ☐ PM Date: _____/_____/_____

_____ ____:____ ☐ AM ☐ PM Date: _____/_____/_____

_____ ____:____ ☐ AM ☐ PM Date: _____/_____/_____

Were signs posted? _____ Yes _____No

Were samples taken? _____ Yes _____No

REPORTING

Report to Cal-OES: Date:_____ _____:_____ ☐ AM ☐ PM (Cat.1 Only) **(800) 852-7550** By: _____

→ Control Number provided by Cal-OES: _____

→ Name of Person Contacted: _____ or Left Message: ☐

SSO RESPONSE - FIELD DOCUMENTATION

Notes: _____

_____

_____

_____

_____

_____

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_____

Response Crew: _____, _____, _____, _____

_____, _____, _____, _____

APPENDIX VI-D
City of Sunnyvale
Sewer System Management Plan
List of Plumbing Contractors - Work on Sewer Mains or Laterals

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List of Plumbing Contractors – Work on Sewer Mains or Laterals

Able Septic Tank Service, (408) 377-9990

Bay Area Trenchless, (408) 981-5730

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APPENDIX VI-E
City of Sunnyvale
Sewer System Management Plan
List of Contractors - Emergency Response

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List of Contractors – Emergency Response

Able Septic Tank Service, (408) 377-9990

Bay Area Trenchless, (408) 981-5730

Rain For Rent, (925) 679-2803

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APPENDIX VII-A
City of Sunnyvale
Sewer System Management Plan
City CIP Summary

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Wastewater

Sunnyvale provides wastewater management services as a municipal utility. Wastewater collection and treatment is one of the core services the City provides to Sunnyvale residents and businesses. The City's Wastewater Fund Long-Term Financial Plan includes sewage collection and treatment, environmental protection, regulatory compliance, and maintenance of the City's aging collection and treatment systems.

Major Wastewater Projects

Wastewater Collection Systems. In general, the collection system projects related to wastewater management address critical and immediate needs. Projects address manholes, sewer pipes, and rebuilding sewer lift stations. The largest of these efforts is the replacement of sewer mains with funding totaling $22.8 million over the next twenty years. The largest expenditure reflects the annual programmed sewer pipe replacement/rehabilitation. Newly proposed budget for FY 2019/20 includes capacity increase projects to accommodate increasing sewage flow from new development; ongoing rehab and replacement of existing sewers; and emergency repair and replacement work that requires assistance from outside contractors.

Lawrence Expressway Sanitary Sewer Rehabilitation. A condition assessment was completed in 2016 that identified several defects, access or cleaning issues, and degraded portions of the pipeline. This project will initially address severe defects in the line, and is expected to be completed in 2020. A feasibility study is also going to be done to evaluate a full rehabilitation project for the sewer line, and the project will be expanded in the future based on the outcome of the study.

Sanitary Sewer System Hydraulic Model Update. In support of the collection system rehabilitation projects, an update to the hydraulic model is being completed. The model helps address the need for both site specific studies from new developments, as well as identify areas where capacity might become an issue in the future.

"SmartCover" Monitors. This project provides for the installation of water level monitors inside ten sewer manholes. These devices will measure flow to assist in identifying pipes that need to be upsized. The devices can also provide advance warning of possible sewer backups, enabling staff to proactively address the concern.

Recycled Water. The Wastewater Fund also includes funding for the expansion of the recycled water system, sharing costs with the Water Fund. Additional recycled water improvements will also be included as part of the treatment plant renovation project including rehabilitation and replacement of water pumps, piping and electrical work for recycled water pump station facilities

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CITY OF SUNNYVALE
FUNDED / UNFUNDED PROJECTS
BUDGETED PROJECT COSTS SUMMARY

Wastewater Funded Projects

Project	Prior Actual	Current 2018-19	Plan 2019-20	Plan 2020-21	Plan 2021-22	Plan 2022-23	Plan 2023-24	Plan 2024-25	Plan 2025-26	Plan 2026-27	Plan 2027-28	Plan 2028-29	Y11-Y20 Total	Project Life Total
805253 - Sewer Emergency Repair and Replacement	358,331	378,856	519,670	531,905	110,336	113,646	117,056	120,567	124,184	127,910	131,747	135,700	1,602,313	4,372,222
822752 - Storm Pump Station Number 1 Rehabilitation	1,032,586	2,531,735	-	-	-	-	-	-	-	-	-	-	-	3,564,321
822762 - Storm Pump Station Number 2 Rehabilitation	4,336,765	595,970	11,385	11,783	12,137	12,501	12,876	-	-	-	-	-	-	4,993,418
824341 - Wastewater Cost of Service Study	84,333	5,000	-	-	-	56,823	-	-	-	-	65,874	-	164,894	376,924
825331 - Replacement/Repair/Rehabilitation of Sanitary Sewer System	9,864,484	2,963,958	2,473,450	216,486	1,324,897	225,232	1,378,423	234,332	1,434,111	246,189	1,521,448	261,182	10,603,251	32,747,443
825362 - Replacement/Repair/Rehabilitation of Storm Drain	-	578,462	-	764,855	-	-	-	184,468	886,676	-	-	-	2,681,278	5,095,740
825521 - WPCP Biosolids Processing	9,596,585	3,380,800	2,070,000	2,142,450	2,206,724	2,272,925	2,692,280	3,255,318	3,352,977	-	-	-	-	30,970,058
825962 - SCVURPPP Contracting and Fiscal Agent - General Fund	-	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	1,050,000
827040 - WPCP Asset Condition Assessment	-	-	-	-	-	-	-	-	-	-	-	-	367,107	367,107
828210 - Inspection Data Mgmt and Handheld Data Entry Device Project	-	250,000	-	-	-	-	-	-	-	-	-	-	-	250,000
829070 - Lawrence Expressway Sanitary Sewer Rehabilitation	565,545	3,910,341	-	-	-	-	-	-	-	-	-	-	-	4,475,886
829081 - Storm System Trash Control Devices - General Fund	-	712,674	-	491,692	607,732	-	-	-	-	-	-	-	-	1,812,098
829100 - Sanitary Sewer Siphon Cleaning and Assessment	-	245,328	724,500	-	-	-	-	-	-	-	-	-	1,537,476	2,507,304
830190 - Repairs to the Primary Process	507,441	55,000	-	-	-	-	-	-	-	-	-	-	-	562,441

CITY OF SUNNYVALE
FUNDED / UNFUNDED PROJECTS
BUDGETED PROJECT COSTS SUMMARY

Wastewater Funded Projects

Project	Prior Actual	Current 2018-19	Plan 2019-20	Plan 2020-21	Plan 2021-22	Plan 2022-23	Plan 2023-24	Plan 2024-25	Plan 2025-26	Plan 2026-27	Plan 2027-28	Plan 2028-29	Y11-Y20 Total	Project Life Total
830200 - Repairs to the Secondary Process	504,809	240,000	-	-	-	-	-	-	-	-	-	-	-	744,809
830210 - Repairs to the Power Generation Facility	855,380	94,620	100,000	500,000	100,000	100,000	500,000	100,000	100,000	-	-	-	-	2,450,000
830220 - Repairs to the Tertiary Process	880,707	640,150	298,478	271,020	168,814	-	-	-	-	-	-	-	-	2,259,169
830260 - Sanitary Sewer Salinity Reduction Study	466	-	-	-	-	113,646	-	-	-	-	-	-	-	114,112
831390 - CFD No.3 - Ten Year Infrastructure Improvements Plan	-	-	-	-	-	44,941	-	-	-	-	-	-	59,811	104,752
831511 - Green Stormwater Infrastructure Implementation - General Fund	-	500,000	-	-	-	-	-	-	-	-	-	-	-	500,000
831620 - Repairs to the WPCP Support Facilities	160,372	275,000	200,000	130,000	100,000	100,000	100,000	250,000	-	-	-	-	-	1,315,372
831630 - Repairs to Solids/Dewatering Facilities	87,200	12,800	75,000	-	-	-	-	-	-	-	-	-	-	175,000
831670 - Asset Management Program	443,971	6,029	-	-	-	-	-	-	-	-	-	-	-	450,000
831680 - Adjust Sewer Utilities In Support of Paving Projects	125,160	135,672	84,897	87,412	90,034	92,735	95,518	98,383	101,334	104,375	107,506	110,731	1,307,486	2,541,243
831691 - Storm System Trash Reduction Programs - General Fund	-	312,120	163,638	168,429	173,481	-	-	-	-	-	-	-	-	817,668
831730 - WPCP Oxidation Pond Levee Rehabilitation	185,490	738,690	1,552,500	2,249,573	2,249,573	451,207	401,153	415,287	31,667	117,421	33,596	34,604	859,169	9,319,929
832430 - Recycled and Potable Water Plan Development	-	250,000	-	-	-	-	-	-	-	-	-	-	-	250,000
833050 - Wastewater Master Plan Update	-	-	-	-	-	-	-	-	-	-	-	-	1,710,792	1,710,792

CITY OF SUNNYVALE
FUNDED / UNFUNDED PROJECTS
BUDGETED PROJECT COSTS SUMMARY

Wastewater Funded Projects

Project	Prior Actual	Current 2018-19	Plan 2019-20	Plan 2020-21	Plan 2021-22	Plan 2022-23	Plan 2023-24	Plan 2024-25	Plan 2025-26	Plan 2026-27	Plan 2027-28	Plan 2028-29	Y11-Y20 Total	Project Life Total
833060 - Annual Digester Cleaning	-	341,188	181,125	187,464	193,088	198,881	204,847	-	217,323	223,842	230,558	237,474	1,956,747	4,172,538
833070 - WPCP Electronic Operations and Maintenance Manual	-	514,080	-	-	-	-	-	-	-	-	-	-	-	514,080
833090 - Sanitary System Hydraulic Model Update	7,228	757,772	-	-	-	-	-	-	-	-	-	-	-	765,000
833091 - Storm System Hydraulic Model Update - General Fund	-	-	-	-	-	-	-	-	-	-	-	-	279,541	279,541
833820 - Large Sanitary Sewer Mains Assessment	-	150,000	-	-	-	-	-	-	-	-	-	-	-	150,000
834460 - Sewer Capacity Enhancement Projects	-	-	-	300,000	1,200,000	-	-	-	-	-	-	-	8,500,000	10,000,000
834620 - Water Level Monitors for Sewer Manholes	-	-	70,000	-	-	-	-	-	-	-	-	-	-	70,000
834630 - Water Level Monitors for Storm Drain Manholes	-	-	27,000	-	-	-	-	-	-	-	-	-	-	27,000
834720 - Laboratory Certification Update	-	-	50,000	50,000	-	-	-	-	-	-	-	-	-	100,000
834750 - Peery Park Specific Plan Wastewater Capacity Improvements	-	-	-	-	1,020,146	4,420,689	4,464,029	-	-	-	-	-	-	9,904,864
Total Wastewater Funded Projects	**29,596,854**	**20,626,245**	**8,651,643**	**8,153,071**	**9,606,963**	**8,253,227**	**10,016,182**	**4,708,355**	**6,298,272**	**869,737**	**2,140,728**	**829,691**	**32,129,866**	**141,880,832**

CITY OF SUNNYVALE
FUNDED / UNFUNDED PROJECTS
BUDGETED PROJECT COSTS SUMMARY

Wastewater Unfunded Projects

Project	Prior Actual	Current 2018-19	Plan 2019-20	Plan 2020-21	Plan 2021-22	Plan 2022-23	Plan 2023-24	Plan 2024-25	Plan 2025-26	Plan 2026-27	Plan 2027-28	Plan 2028-29	Y11-Y20 Total	Project Life Total
901094 - Green Infrastructure Planning for Stormwater	-	-	260,100	214,245	-	-	-	-	-	-	-	-	-	474,345
Total Wastewater Unfunded Projects	**-**	**-**	**260,100**	**214,245**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**474,345**

APPENDIX VIII-A
City of Sunnyvale
Sewer System Management Plan
Sewer System CIP Projects - Budgets and Descriptions

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Project: 805253 - Sewer Emergency Repair and Replacement

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2000	**Project Phase:**	Underway	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project funds emergency repairs to the sanitary sewer system and associated appurtenances and equipment to assure consistent operation and serviceability. Examples of work completed under this project include repairs to manholes, small spot or main line segment repairs, repairs or replacement of failed sewer laterals, pump replacement, and CCTV camera repairs.

This project is differentiated from other sewer main replacement projects by its intent to respond to unplanned or emergency needs that may come up during a year, whereas other replacement projects will be planned, designed, and involve sizeable contracts. This project will fund unanticipated issues that require a rapid response for continued sewer system reliability.

Project Evaluation and Analysis:

The alternative is not to fund this project and delay the needed repairs until funds are requested and approved by Council on a case by case basis. These repairs are of an urgent nature most of the time, and delay could result in adverse effects for public health and the environment should overflows occur. The City could also be subject to penalties and fines from regulatory agencies should sewage discharges occur as result of deferring an emergency repair. Delaying can also result in higher repair costs.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

EM - Environmental Management - EM-5: Minimal Pollution and Quantity of Wastewater

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	358,331	-	-	-
2018 - 19	378,856	-	-	
2019 - 20	519,670	-	-	-
2020 - 21	531,905	-	-	-
2021 - 22	110,336	-	-	-
2022 - 23	113,646	-	-	-
2023 - 24	117,056	-	-	-
2024 - 25	120,567	-	-	-
2025 - 26	124,184	-	-	-
2026 - 27	127,910	-	-	-
2027 - 28	131,747	-	-	-
2028 - 29	135,700	-	-	-
2029 - 30	139,771	-	-	-
2030 - 31	143,964	-	-	-
2031 - 32	148,283	-	-	-
2032 - 33	152,731	-	-	-
2033 - 34	157,313	-	-	-
2034 - 35	162,032	-	-	-
2035 - 36	166,893	-	-	-
2036 - 37	171,900	-	-	-
2037 - 38	177,057	-	-	-
2038 - 39	182,369	-	-	-
20 Year Total	3,635,035	-	-	-
Grand Total	4,372,222	-	-	-

Project: 824341 - Wastewater Cost of Service Study

Category:	Special	**Project Type:**	Wastewater	**Project Manager:**	Janice Broussard
Year Identified:	2003	**Project Phase:**	Underway	**Project Coordinator:**	Stephen Napier
Est. Completion Year:	Ongoing	**Department:**	C30 - Finance	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

Every five years, the Utilities Division in the Department of Finance performs a cost of service study of the wastewater system to update and align the City's wastewater rates with the costs associated with providing service. Staff works with a consultant to develop a cost of service model and populate the model with current data. The study generates a cost of service for each customer class and recommends adjustments to the City's rates and rate structure to ensure costs are recovered on an equitable basis from the different customer classes.

The most recent analysis was done in FY 2017/18. This project provides funding to hire a consultant that will support staff's effort to refresh the analysis every five years.

Project Evaluation and Analysis:

State law requires that utility rates reflect the cost of providing service. Additionally, this study confirms that the revenues generated through rates are sufficient to cover the cost of providing service.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	84,333	-	12,500	-
2018 - 19	5,000	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	56,823	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	65,874	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	76,366	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	88,529	-	-	-
2038 - 39	-	-	-	-
20 Year Total	287,591	-	-	-
Grand Total	376,924	-	12,500	-

Project: 825331 - Replacement/Repair/Rehabilitation of Sanitary Sewer System

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Marlon Quiambao Jr.
Year Identified:	2006	**Project Phase:**	Underway	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project is for repair, replacement, and rehabilitation of sewer pipes and associated appurtenances, including but not limited to, manholes, lateral piping, and surface restoration. The goal of this project is to reduce sanitary sewer overflows as well as reduce inflow and infiltration which results in higher treatment costs. Alternative technologies are evaluated to select the best, most cost effective rehabilitation method for each location. These methods include traditional open-trench replacement as well as "trenchless" methods including pipe-bursting/replacement, or Cured-in-Place pipe lining.

The City has over 300 miles of sewer lines, ranging from 6 inches to 48 inches in diameter, and valued at over $330 million. Many of the sewer lines are over 50 years old and have reached the end of their useful life. Pipe failures have been increasing. Recent video inspection has revealed significant deficiencies at multiple locations that require rehabilitation to prevent failure.

Specific projects will be identified based on need and as identified in the Wastewater Master Plan. The projects will be constructed in a two-year cycle, with the first year for design and the second year for construction. Projects will be built to fall within allocated budget, therefore linear footage of pipelines to be replaced/repaired/rehabilitated will vary.

Project Evaluation and Analysis:

This project is necessary to comply with regulatory standards which require agencies to rehabilitate and/or replace sanitary sewer system piping and associated components. The alternative to replacement of sewer pipes in poor condition would be to repair them segment by segment on an emergency basis. Public health and the environment could be threatened and fines could be levied against the City should overflows occur as a result of a structural failure. Further, repairing or replacing segments of pipeline on an emergency basis would be significantly costlier than scheduled replacements.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	9,864,484	-	-	-
2018 - 19	2,963,958	-	-	
2019 - 20	2,473,450	-	-	-
2020 - 21	216,486	-	-	-
2021 - 22	1,324,897	-	-	-
2022 - 23	225,232	-	-	-
2023 - 24	1,378,423	-	-	-
2024 - 25	234,332	-	-	-
2025 - 26	1,434,111	-	-	-
2026 - 27	246,189	-	-	-
2027 - 28	1,521,448	-	-	-
2028 - 29	261,182	-	-	-
2029 - 30	1,614,105	-	-	-
2030 - 31	277,088	-	-	-
2031 - 32	1,712,404	-	-	-
2032 - 33	293,963	-	-	-
2033 - 34	1,816,689	-	-	-
2034 - 35	311,865	-	-	-
2035 - 36	1,890,083	-	-	-
2036 - 37	330,858	-	-	-
2037 - 38	2,005,189	-	-	-
2038 - 39	351,007	-	-	-
20 Year Total	19,919,001	-	-	-
Grand Total	32,747,443	-	-	-

Project: 825521 - WPCP Biosolids Processing

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Bryan Berdeen
Year Identified:	2006	**Project Phase:**	Underway	**Project Coordinator:**	Bryan Berdeen
Est. Completion Year:	2025/26	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project provides funding for accumulated sediment removal from the Oxidation Ponds, the Secondary treatment process at the Water Pollution Control Plant (WPCP). The WPCP Biosolids Processing project also provides funding for processing and the beneficial reuse of anaerobically digested biosolids until new solids dewatering facilities are designed and constructed as part of the Sunnyvale Cleawater Program (SCWP) reconstruction project.

The Secondary Oxidation Ponds provide wastewater treatment using the sun to facilitate the growth of algae. Algae provide oxygen and take up contaminants (primarily BOD and ammonia) from wastewater. Solids deposited on the bottom of the ponds have not been removed since inception of secondary pond treatment process in the late 1960s. A 2006 estimate calculates the accumulation of pond solids to be at 35% to 45% of pond volume.

This project was initiated in 2009 to address the accumulation of pond solids through dredging and pumping the removed solids to a centrifuge to separate water (thicken solids) before hauling those concentrated solids off-site for reuse. This project will fund the removal of solids to preserve/improve treatment levels within the ponds until loading is significantly reduced and the ponds are no longer needed for treatment. This project will ensure consistent, reliable treatment and beneficial reuse of WPCP generated biosolids, including a period of pre-thickening the new secondary treatment process generated sludge.

Project Evaluation and Analysis:

The WPCP is a heavily regulated wastewater treatment facility with strict effluent discharge requirements, one of the plant effluent limits is the concentration of ammonia in the WPCP final effluent. Reduced capacity of the ponds due to solids accumulation can directly affect the ammonia removal ability of the ponds and, if not addressed, may increase the concentration of ammonia in the effluent.

The rate of dredging of the solids needs to be carefully monitored such that the disturbance caused by the dredging does not stir up the accumulated solids to an extent that causes further deterioration of the water quality in the ponds. As the solids on the bottom are dredged, the WPCP produces solids from everyday wastewater processing which accumulate in the ponds. Due to the balanced, steady dredging and continual accumulation from everyday operations, the rate of capacity restoration of the ponds is slow and needs to be spread over several years.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues and has been extended by one additional year due to the Sunnyvale Cleanwater Program schedule slipping by a year.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	9,596,585	-	-	-
2018 - 19	3,380,800	-	-	
2019 - 20	2,070,000	-	-	-
2020 - 21	2,142,450	-	-	-
2021 - 22	2,206,724	-	-	-
2022 - 23	2,272,925	-	-	-
2023 - 24	2,692,280	-	-	-
2024 - 25	3,255,318	-	-	-
2025 - 26	3,352,977	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	17,992,673	-	-	-
Grand Total	30,970,058	-	-	-

Project: 827040 - WPCP Asset Condition Assessment

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2008	**Project Phase:**	Planning	**Project Coordinator:**	Xi Jiang
Est. Completion Year:	2031/32	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project will provide for the multi-disciplinary (structural, civil, electrical, corrosion) engineering review of the Water Pollution Control Plant (WPCP) on a periodic basis. As part of long-range infrastructure planning for the WPCP, a periodic condition assessment of plant facilities is needed in order to prioritize repair/replacement projects and provide for a systematic approach to capital budget planning. The next assessment is scheduled for FY 2030/31, which is five years after the anticipated completion of the first phase of the new Water Pollution Control Plant.

The information will be used to define existing conditions and priorities as part of the ongoing predictive maintenance efforts. Funds should be allocated at five year intervals to maintain this level of evaluation. An assessment should be completed periodically to track the condition and deterioration of assets so that repair/replacement projects can be timed appropriately and the various needs can be prioritized. This data will then be input into the plant's asset database for evaluation and comparison to be used in managing the WPCP infrastructure. The schedule and cost for these assessments will be reevaluated at the completion of the Master Plan.

Project Evaluation and Analysis:

Periodic assessment and comparison of actual condition of WPCP assets with agreed-upon service levels and predicted useful lives facilitates determination of least life-cycle costs for these assets. This information can then be used to provide for capital planning, to minimize the effect on sewer rates.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	367,107	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	367,107	-	-	-
Grand Total	367,107	-	-	-

Project: 828210 - Inspection Data Mgmt and Handheld Data Entry Device Project

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Melody Tovar
Year Identified:	2010	**Project Phase:**	Planning	**Project Coordinator:**	Melody Tovar
Est. Completion Year:	2019/20	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

This project is to update the data system used by, and to provide handheld data entry devices to, the Environmental Service Department's Environmental Compliance Inspectors and Lab/Field Technicians in the Regulatory Programs Division. This project will aim to integrate (or replace) the various databases currently used to manage inspection data, and enable inspection and sampling activities by inspectors to be recorded on a hand-held data entry device and uploaded to a database for further tracking, trend analysis, regulatory reporting, work scheduling, and enforcement actions. It will achieve greater efficiencies by making inspection data more readily available, reducing the possibility of human error in transcribing paper inspection reports to a database, minimizing the possibility of lost or misplaced paper files, and reducing the time needed to gather and store inspection data. Current methods are error-prone, slow, and consume staff time that could be better used for other critical tasks.

Project Evaluation and Analysis:

Other pretreatment programs in Bay Area cities already use such equipment and databases to handle their work. New requirements and increased inspections and sampling pertaining to the Stormwater Permit for activities related to new and redevelopment, commercial, and significant industrial user programs, as well as newer requirements relating to mercury reduction for dental facilities and grease management and food service establishments, mean an increased workload for the program. This project will help the program keep pace with the increased needs.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues. Operating costs are for software licensing and equipment replacement. These costs were derived from expenditures for a different hand-held data device project for Maintenance and Operations staff. Replacement is estimated at five-year intervals, but will be evaluated and budgeted when appropriate hardware/software platforms have been identified.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-8: Protection of Creeks and Bay

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	250,000	-	-	-
2019 - 20	-	-	-	15,000
2020 - 21	-	-	-	15,000
2021 - 22	-	-	-	15,000
2022 - 23	-	-	-	15,000
2023 - 24	-	-	-	15,000
2024 - 25	-	-	-	15,000
2025 - 26	-	-	-	15,000
2026 - 27	-	-	-	15,000
2027 - 28	-	-	-	15,000
2028 - 29	-	-	-	15,000
2029 - 30	-	-	-	15,000
2030 - 31	-	-	-	15,000
2031 - 32	-	-	-	15,000
2032 - 33	-	-	-	15,000
2033 - 34	-	-	-	15,000
2034 - 35	-	-	-	15,000
2035 - 36	-	-	-	15,000
2036 - 37	-	-	-	15,000
2037 - 38	-	-	-	15,000
2038 - 39	-	-	-	15,000
20 Year Total	-	-	-	300,000
Grand Total	250,000	-	-	300,000

Project: 829070 - Lawrence Expressway Sanitary Sewer Rehabilitation

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Ashraf Shah
Year Identified:	2012	**Project Phase:**	Design	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	2020/21	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

The Lawrence Expressway Sanitary Sewer trunk main is a critical pipe for carrying sewage from the southern and eastern portions of the City and the Rancho Rinconada area of Cupertino to the Water Pollution Control Plant (WPCP). The line was originally installed in 1963 and has reached the end of its useful life expectancy of 50 years. The Lawrence trunk line has been impacted by corrosive sewer gases over the years. A condition assessment and preliminary design report for the line was completed in 2016 which identified several defects, access issues, areas requiring heavy cleaning, and degraded portions of the sewer trunk main pipeline. The report indicated that a structural liner would be necessary to correct the condition issues and a review of the Wastewater Master Plan indicates that capacity upgrades are necessary as well.

An initial construction project to correct severe defects in the line will be designed in FY 2018/19 and constructed in FY 2019/20. A feasibility study to determine the best alternative to increase the capacity is identified for FY 2018/19. Possible alternatives include: upsizing of the existing Lawrence Expressway trunk main, redirection of flow to Wolfe Road and upsizing of the Wolfe Road trunk main, or other. Based on the results of the feasibility study, a full rehabilitation project will be conducted including approximately two years of design and three years of construction. The overall project budget will be adjusted to reflect the results of the feasibility study.

Project Evaluation and Analysis:

Not funding this project could result in a complete failure of the Lawrence Sanitary Sewer Trunk Main piping system. Due to the high volume of sewage that the line conveys, a failure of this magnitude could be an environmental disaster and the Lawrence Expressway roadway could potentially develop a sinkhole if the City takes no action.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

EM - Environmental Management - EM-5: Minimal Pollution and Quantity of Wastewater

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	565,545	-	-	-
2018 - 19	3,910,341	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	4,475,886	-	-	-

Project: 829100 - Sanitary Sewer Siphon Cleaning and Assessment

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2012	**Project Phase:**	Ongoing	**Project Coordinator:**	Robert Wilson
Est. Completion Year:	2029/30	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project provides for the complete cleaning, sediment removal, and inspection of 15 out of 19 sanitary sewer siphons.

The City's sanitary sewer system contains 19 siphons (18 in the City and 1 at Rancho Rinconada) of varying sizes, most of which are located at and carry flow under Central Expressway. Siphons pose a unique challenge in sewer systems operation because they have low spots which collect debris. Conventional sewer cleaning methods do not adequately remove debris from siphons. As a result, the siphons require specialized cleaning at regular intervals. Ten-year cycles for complete debris removal are industry standard to ensure proper system function.

Project Evaluation and Analysis:

The only alternative is not to remove the sediment buildup in the siphons. Public health and the environment could be threatened and fines could be levied against the City should overflows occur as a result of a sewer stoppage in a sewer siphon.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	245,328	-	-	
2019 - 20	724,500	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	1,537,476	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	2,261,976	-	-	-
Grand Total	2,507,304	-	-	-

Project: 830190 - Repairs to the Primary Process

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2008	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	2020/21	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project funds the maintenance of the current primary treatment system at the Water Polluction Control Plant (WPCP). Currently, a project is underway to rebuild the WPCP. One of the main components of that reconstruction are the primary treatment facilities, which remove large debris and solids from the wastewater. The reconstruction of this area of the WPCP and transition to using these new facilities is anticipated to be complete in 2019. Meanwhile, until that transition is complete, this facility will need to continue to operate reliably to provide primary treatment.

A 2005 condition assessment report identified the primary process to be the most at risk process area of the WPCP. Staff has implemented several immediate rehabilitation measures identified in that report. However, in the past six years, further spalling of concrete, rusting rebar and concrete erosion has caused significant deterioration of the tanks. The deterioration is to such an extent that staff had to restrict maintenance vehicle access on the structure, and as it continues to deteriorate it poses a potential safety concern for staff and the public.

Project Evaluation and Analysis:

The implementation of this project is phased over three years to allow time for investigation, evaluation and development of the repair methods and also to allow for continued operations of the WPCP. The oldest and most risky elements of the primary tanks were addressed in FY 2014/15 with more complicated elements, such as channel gate modifications, heat exchanger replacements completed in FY 2015/16 and FY 2016/17. More detailed structural enhancements, corrosion repairs and equipment replacements for the primary process treatment facilities may also be needed as well, pending further investigations and to maintain the facilities until the new primary facilities are commissioned.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	507,441	-	-	-
2018 - 19	55,000	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	562,441	-	-	-

Project: 830200 - Repairs to the Secondary Process

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2008	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	2023/24	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project funds the maintenance and rehabilitation of the current secondary treatment process at the Water Pollution Control Plant (WPCP) pending the construction of new secondary treatment facilities in ten to twelve years.

Rehabilitation may include: incorporation of chemical treatment facilities for predator (snail) control to ensure effective performance; upgrades to the polymer feed system and radio pump controllers. Cost estimates for these elements are based on vendor quotes, benchmark with other agencies, and preliminary estimates from engineering consultants. Specification development and implementation planning will require additional engineering efforts which will form the first phase of this project.

Project Evaluation and Analysis:

Project implementation is phased over several years to allow for continued operation of the WPCP and sequencing of the processes and equipment to ensure adequate processing capacity for the incoming wastewater. Polymer system upgrades are scheduled for FY 2019/20, chemical treatment facilities are scheduled for FY 2020/21, This schedule may change due to WPCP conditions and evaluation results.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	504,809	-	-	-
2018 - 19	240,000	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	744,809	-	-	-

Project: 830210 - Repairs to the Power Generation Facility

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2008	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	2025/26	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

The Power Generation Facility (PGF) at the Water Pollution Control Plant (WPCP) was built in 1997 with the gas management/controls system to generate power using three fuel sources: landfill gas, digester gas, and natural gas. Stricter emission requirements imposed by the California Air Resources Board and the Bay Area Air Quality Management District combined with the declining quality of landfill gas continue to raise the cost of operating the engines, requiring frequent tune-ups and additional gas pre-treatment.

Over the last few years there were several instances when the engines "dropped" off the power distribution grid, resulting in immediate demand on PG&E, which provides back-up power. The instantaneous load results in significant cost increases in the WPCP utility bill, estimated at $80,000 to $100,000 per year in demand charges and peak day pricing. Of much more significant concern is the loss of redundancy and increased risk of operating the WPCP with only PG&E as its power source. Additionally, legislation and regulation are currently being considered to further reduce emissions associated with combustion power generation for the WPCP engine types.

The scope of this project includes a comprehensive engineering assessment repairs and upgrades of all components of the gas management and emission control systems, control and power generation systems such as the gas meters, gas blend units, pressure regulation systems, digester waste gas flare operation, gas treatment system, and to implement ongoing rebuilds/preventative measures to ensure reliable engine operations. A new PGF is being contemplated as part of the WPCP rebuild and is anticipated to be on-line by 2026.

Project Evaluation and Analysis:

PGF is currently scheduled to be replaced in the last phase of reconstruction, likely 8-10 years away. This project is proposed to evaluate and implement measures to ensure reliable and compliant operations of the PGF in the interim. Previous engineering assessments of the PGF have made recommendations to improve the reliability of the engines and provide for stable emergency operations. Engineering assessments also recommended more rigorous re-builds of the engines and replacement of the associated components to ensure compliance with the air regulations as well as reliable operations. Support for the current engine control systems are being phased out by the engine manufacture and will no longer be available. Future years of this project are to fund those extensive rebuilds and control upgrades needed to keep the PGF operational.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues. Project costs are for major rebuilds approximately every four years, and minor maintenance annually in all other fiscal years.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	855,380	-	-	-
2018 - 19	94,620	-	-	
2019 - 20	100,000	-	-	-
2020 - 21	500,000	-	-	-
2021 - 22	100,000	-	-	-
2022 - 23	100,000	-	-	-
2023 - 24	500,000	-	-	-
2024 - 25	100,000	-	-	-
2025 - 26	100,000	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	1,500,000	-	-	-
Grand Total	2,450,000	-	-	-

Project: 830220 - Repairs to the Tertiary Process

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2008	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	2021/22	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project funds the rehabilitation of the tertiary treatment process at the Water Pollution Control Plant (WPCP). Master Planning for the WPCP rebuild has identified that the tertiary process at the facility will most likely not change in technology or need a new rebuild. Only some upgrades will be needed in the future to integrate with the new treatment plant.

In the interim, some extensive rehabilitation is necessary to maintain operations of the WPCP and compliance with the City's NPDES permit. The tertiary process of the WPCP consists of four Dual Media Filters (DMF), which are large tanks filled with sand and anthracite coal that provide filtration, and disinfection facilities consisting of chlorine contact tanks.

WPCP experienced failure on one battery (each filter has two batteries) of one of the filters in 2011 and minimal repairs were made which included media replacement and replacement of over a thousand nozzles in the system. The rest of the filters and systems were inspected and found to need similar rehabilitation and more comprehensive structural enhancement to ensure reliable operations for the next decade. Two of the DMF filters have been assessed and equipped with new nozzles and media. The scope of the work will include corrosion protection, equipment upgrades, control upgrades and further media and nozzle replacement.

The project also may include improvements to the disinfection structures, such as coating three of the chlorine contact channels to address corrosion of the concrete structures. Aging and outdated control systems and mechanical elements on this side of the facility have resulted in violations of the NPDES permit. A comprehensive evaluation is being undertaken by staff as a result of those violations to develop a plan for upgrading and addressing those deficiencies.

Project Evaluation and Analysis:

Bench scale studies were performed to help evaluate the best options for the media and also instrumentation needed for the control of the process. Master Planning recommendations as well as past rehabilitation costs is used to develop the cost estimates for future upgrades of the mechanical and control systems of this side of the facility. Project implementation is phased over a five year period to allow for continued operation of the WPCP and sequencing of the processes and equipment to ensure adequate processing capacity for the incoming wastewater. Mechanical and control system evaluations were conducted in FY 2014/15 and continued into FY 2015/16, with implementation in that year and following years.

Fiscal Impact:

The project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	880,707	-	-	-
2018 - 19	640,150	-	-	
2019 - 20	298,478	-	-	-
2020 - 21	271,020	-	-	-
2021 - 22	168,814	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	738,312	-	-	-
Grand Total	2,259,169	-	-	-

Project: 830260 - Sanitary Sewer Salinity Reduction Study

Category:	Special	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2014	**Project Phase:**	Planning	**Project Coordinator:**	Melody Tovar
Est. Completion Year:	2022/23	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project funds a study that will identify sources of direct Inflow and Infiltration (I&I) of ground water into the sanitary sewer collection system. I&I contributes to additional hydraulic loading in the collection system which increases treatment costs as well as reduces design collection system conveyance capacity. I&I causes poor recycled water quality. The City is currently producing recycled water with a higher than average salinity content, which is affecting the overall quality and usability of recycled water for certain applications. The current sewage treatment process used by the City is not effective at removing salinity.

Several neighboring cities have been successful at reducing salinity and treatment costs by identifying and correcting sources of groundwater I&I. The first phase of this project will conduct a feasibility study to identify sanitary sewer pipe segments where I&I is occurring. Conductivity monitors are deployed at strategic locations in the collection system where I&I is suspected. The information collected by conductivity meters identifies pipe segments where high salinity is occurring, which is generally indicative of an I&I source. Pipe segments are typically recommended to be rehabilitated to eliminate the I&I source. The most common method of pipe rehabilitation to correct I&I sources is cured-in-place pipe lining (CIPP), but replacement and/or spot repairs may be necessary as well. At that time, additional funding may be requested.

Project Evaluation and Analysis:

This project will identify sources of groundwater I&I, which may be affecting the quality of recycled water produced by the WPCP. The sanitary sewer collection system and the WPCP stand to benefit from this project by improving recycled water quality and reducing treatment costs associated with additional hydraulic loading. The reliability of the collection should also be improved as capacity in the system will be increased with the reduction of the additional hydraulic loading.

Failing to undertake this project would result in increased treatment costs to improve recycled water quality. It could also result in illicit sewage discharges from the sanitary sewer collection system due to hydraulic overloading which would have adverse public health and environmental impacts, as well as result in regulatory penalties and fines.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	466	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	113,646	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	113,646	-	-	-
Grand Total	114,112	-	-	-

Project: 831390 - CFD No.3 - Ten Year Infrastructure Improvements Plan

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2016	**Project Phase:**	Planning	**Project Coordinator:**	Anna Lewis
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	255-000 - CFD No. 3 Estates at Sunnyvale

Project Description/Scope/Purpose:

The Estates of Sunnyvale, under Community Facilities District (CFD) No. 3, collects revenue to fund certain utilities and maintenance services. The financial plan includes a ten-year interval Infrastructure Improvements costs, to allow for upgrades and maintenance of existing infrastructure elements.

Project Evaluation and Analysis:

The next planned improvement interval is FY 2022/23. No specific improvements have been identified yet.

Fiscal Impact:

This project is funded by the Community Facilities District No. 3 (Estates at Sunnyvale) Fund.

Funding Sources:

Community Facilities District No. 3 (Estates at Sunnyvale) Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	44,941	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	59,811	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	104,752	-	-	-
Grand Total	104,752	-	-	-

Project: 831620 - Repairs to the WPCP Support Facilities

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Richard Chen
Year Identified:	2016	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

The WPCP has several buildings, and facilities that are in varying state of decay as the buildings are over 40+ years old and are in need of replacement. As the Master Plan is completed and the facilities are reconstructed over the next 10 to 15 years, existing buildings and supporting structures need major rehabilitation to make them last until the new structures are built. A few of these needs include replacement of the chemical building roof, plant-wide heating, ventilating, and air conditioning (HVAC) related equipment upgrades, Plant service air compressor replacements, power generation building roof fan replacements, sodium bisulfite pump station canopy and painting of various structures. The schedule for the new administration building is pending.

Project Evaluation and Analysis:

The funds in FY 2018/19 and the proposed budget in FY 2019/20 are to be used for the following repair work: chemical building roof replacement; the Atlas Copco plant air compressor replacement; and plant HVAC relate equipment replacement.

FY 2020/21, proposed budget, includes funding for plant-wide corrosion repair and replacement and replacement of the roof fans in the Power Generation Facility (PGF) building roof.

FY 2021/22 through FY 2023/24, proposed budget, includes funding for plant-wide corrosion repair and replacement and additional miscellaneous facility repairs.

FY 2024/25, proposed budget, includes funding for plant-wide corrosion repair and replacement and a canopy at the Sodium Bisulfite pump station. The sodium bisulfite pump station is subject to the elements, water intrusion into the pump controls and the electrical system has caused pump failures. Temporary corrective measures are in place until a permanent structure can be installed. Due to the pump station location the installation of the new canopy will follow the completion of the planned flood wall which is anticipated to be completed by 2025. The Public Works Department will assist the WPCP staff to develop and manage the Chemical Building roof repair project and sodium bisulfite pump station canopy.

Fiscal Impact:

This project will be funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	160,372	-	-	-
2018 - 19	275,000	-	-	
2019 - 20	200,000	-	-	-
2020 - 21	130,000	-	-	-
2021 - 22	100,000	-	-	-
2022 - 23	100,000	-	-	-
2023 - 24	100,000	-	-	-
2024 - 25	250,000	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	880,000	-	-	-
Grand Total	1,315,372	-	-	-

Project: 831630 - Repairs to Solids/Dewatering Facilities

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2016	**Project Phase:**	Underway	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	2020/21	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

Solids processing facilities at the Water Pollution Control Plant (WPCP) consist of four digesters and associated piping and pumping systems along with the gas collection systems. The digested solids were processed further on tile beds for further drying and hauled off site for disposal. The solids drying operation has been transferred to a contracted operation to allow for the area of the tile beds to be prepared for the construction of the new headworks and primary treatment facilities. This project allows for modifications to the solids conveyance systems, supernatant drainage system and the pumping station improvements needed to allow for the transition of the drying operation to a contracted operation. Further, additional control and electrical modifications may be necessary to allow for the operational integration of the new drying operation with the digester feed and monitoring system.

Project Evaluation and Analysis:

It is anticipated that the Plant staff will perform these modifications with the help of on-call mechanical contracts in place to perform the piping modifications and the improvements needed for the contract dewatering operations. Future long term needs over the timeline of the Plant rebuild is being developed by the Master Planning consultants and will be incorporated in the Plant rebuild program.

Fiscal Impact:

This project will be funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	87,200	-	-	-
2018 - 19	12,800	-	-	
2019 - 20	75,000	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	75,000	-	-	-
Grand Total	175,000	-	-	-

Project: 831670 - Asset Management Program

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Tanner McGinnis
Year Identified:	2016	**Project Phase:**	Ongoing	**Project Coordinator:**	Tanner McGinnis
Est. Completion Year:	2019/20	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

The WPCP is a critical part of the City infrastructure that delivers wastewater treatment services for the businesses and residents of Sunnyvale. This infrastructure consists of approximately 5,000 assets that each have life expectancy and maintenance needs. Asset Management is a strategic, organization-wide program that achieves an appropriate balance of risk, cost, performance and longevity to maximize asset value. It contributes to the economic health of the WPCP by keeping its facilities and infrastructure functioning effectively at the lowest life cycle cost. An asset management program is supported by an asset information system which is the main business process tool for tracking asset maintenance needs, costs of repairs and life cycle costs to analyze replace versus repair decisions. This scope of work is aimed at updating the Asset Management program at the WPCP to upgrade the existing asset information system and develop and implement a new program and system that would match up with the needs of the new WPCP being built as part of the Plant rebuild.

Project Evaluation and Analysis:

The plant used Maximo 4.1.1; the current version of IBM's Maximo software is 7.5. Maximo received its last major upgrade at WPCP in 1999. This system is more than 15 years old and has not been supported by IBM since 30 September 2008. In addition, the system relied on an unsupported version of an Oracle database running on an unsupported version Microsoft server software. IT staff assessed the system as unstable and prone to frequent failures causing significant disruption to work flow and availability of assists in a critical operation. The project has taken three years to develop the requirements and implementation of the software, and transition to the new system and work practices. This project will be competed by the end of FY 2019/20.

Fiscal Impact:

This project will be funded by Wastewater revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	443,971	-	-	-
2018 - 19	6,029	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	450,000	-	-	-

Project: 831680 - Adjust Sewer Utilities In Support of Paving Projects

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Elizabeth Racca-Johnson
Year Identified:	2016	**Project Phase:**	Underway	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project provides for wastewater utility surface access adjustments in order to preserve consistent height with surfaces and roadways. Wastewater utility surface access features include manholes, clean out and inspection covers, drainage inlets, and other wastewater infrastructure surface access points. Wastewater utility surface access points can be impacted by street rehabilitation activities and other excavation projects.

Paving rehabilitation projects generally have an effect on the elevation of the surfaces of existing utility access assets. This project provides funding for the adjustment of utility access infrastructure with paving rehabilitation with both contracted and in-house projects. Additionally, the City performs utility access surface restoration as a result of public inquiry, unsafe condition, other misalignment, or in conjunction with other operational activities. This project will also provide for funding for the purchase of new wastewater utility surface access covers that are worn out, damaged, structurally compromised, or those that are not able to be reinstalled.

Project Evaluation and Analysis:

This project will ensure that wastewater utility surface access assets are maintained and restored in a manner that is consistent with City standards. The project will also ensure that wastewater utility surface access assets are able to be restored to a condition that allows for the smooth travel of vehicles and bicycles in roadways and other surfaces where utility access covers are not uniform.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	125,160	-	-	-
2018 - 19	135,672	-	-	
2019 - 20	84,897	-	-	-
2020 - 21	87,412	-	-	-
2021 - 22	90,034	-	-	-
2022 - 23	92,735	-	-	-
2023 - 24	95,518	-	-	-
2024 - 25	98,383	-	-	-
2025 - 26	101,334	-	-	-
2026 - 27	104,375	-	-	-
2027 - 28	107,506	-	-	-
2028 - 29	110,731	-	-	-
2029 - 30	114,053	-	-	-
2030 - 31	117,474	-	-	-
2031 - 32	120,998	-	-	-
2032 - 33	124,629	-	-	-
2033 - 34	128,368	-	-	-
2034 - 35	132,218	-	-	-
2035 - 36	136,185	-	-	-
2036 - 37	140,271	-	-	-
2037 - 38	144,478	-	-	-
2038 - 39	148,812	-	-	-
20 Year Total	2,280,411	-	-	-
Grand Total	2,541,243	-	-	-

Project: 831730 - WPCP Oxidation Pond Levee Rehabilitation

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Leonard Espinoza
Year Identified:	2016	**Project Phase:**	Implementation	**Project Coordinator:**	Leonard Espinoza
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

The WPCP Oxidation Pond Levee Rehabilitation project provides funding for site assessments, weed abatement, levee repairs, levee maintenance, levee road maintenance, and other levee related work to keep this critical asset sound for the next 20 years. These levees form the containment, flow paths, and pumping structures that make-up the WPCP Secondary Treatment Process. These levees and the associated roads allow WPCP Operations and Maintenance staff access to critical wastewater treatment equipment. Additionally, these levee roads allow the public to enjoy access to the lower south bay slough systems. Lastly, these Levees keep the Bay and Storm water from entering the WPCP Secondary Treatment process, it is imperative that regular maintenance and levee related projects are conducted in manner that keeps the WPCP Secondary Treatment system viable for the next two decades.

The oxidation ponds are contained by approximately eight miles of earthen levees formed by clamshell dredging and compaction. The WPCP levee system has not had any significant rehabilitation since the ponds were commissioned in the late 1960s. These eight miles of levees contain approximately 440 acres of Ponds used in the WPCP Secondary Treatment Process and have been subject to significant erosion, subsidence, footing loss, inundation of vegetation, blockage of conveyance systems, severe potholing, and rodent derived failures.

The network of levees have become significantly overgrown with emergent and established vegetation, placing increased risk of damaging pumping equipment when mats dislodge. The proposed weed abatement will remove all vegetation (estimated at approximately eight acres) from the levees and manage regrowth overtime. Removal of the vegetation is required to expose areas of significant erosion along the levees to aid levee maintenance repair efforts.

Project Evaluation and Analysis:

A City-wide condition assessment study was conducted of City structures. WPCP oxidation pond levees were included in this study. Areas along the levees were identified for repair in this condition assessment study. The information in the condition assessment was used to create the WPCP Pond Levee Operations and Maintenance manual. Rehabilitation projects may include, but is not limited to, structurally reinforcing the levees, repairing rodent breaches, cracks, removing weeds and raising subsided sections of the levees. Public Works resources are not anticipated to be needed. On-call engineering firms will provide construction management support and outside contractors will perform the repair work. Segments with the highest likelihood of impact will be given priority.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

EM - Environmental Management - EM-8: Protection of Creeks and Bay

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	185,490	-	-	-
2018 - 19	738,690	-	-	
2019 - 20	1,552,500	-	-	-
2020 - 21	2,249,573	-	-	-
2021 - 22	2,249,573	-	-	-
2022 - 23	451,207	-	-	-
2023 - 24	401,153	-	-	-
2024 - 25	415,287	-	-	-
2025 - 26	31,667	-	-	-
2026 - 27	117,421	-	-	-
2027 - 28	33,596	-	-	-
2028 - 29	34,604	-	-	-
2029 - 30	35,641	-	-	-
2030 - 31	36,711	-	-	-
2031 - 32	136,123	-	-	-
2032 - 33	38,946	-	-	-
2033 - 34	40,115	-	-	-
2034 - 35	41,318	-	-	-
2035 - 36	42,558	-	-	-
2036 - 37	157,804	-	-	-
2037 - 38	162,538	-	-	-
2038 - 39	167,414	-	-	-
20 Year Total	8,395,749	-	-	-
Grand Total	9,319,929	-	-	-

Project: 833050 - Wastewater Master Plan Update

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2018	**Project Phase:**	Planning	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

This project provides funding for an update to the master plan for the sanitary sewer system and storm drain system. The project will assess the hydraulics, system models, physical condition, and separation and maintenance of the collection systems, and will recommend improvements to provide adequate hydraulic capacity and improve the reliability of the collection system. It will include an analysis of the financial impacts of the recommendations and scheduling, and may inform revisions to Project 825331 - Replacement, Rehabilitation, and Repair of Sewer Pipes.

The City provides sanitary sewer services to residents and businesses within the City as well as a portion of Cupertino known as Rancho Rinconada. This study is needed to define the capital projects that will be necessary to replace aging infrastructure and to identify any capacity-increasing projects that may be needed as a result of in-fill development. This type of plan is considered to be a best management practice for ensuring that the wastewater collection system can continue to provide reliable service.

A sewer master plan including hydraulic models for the storm and sanitary systems was completed in FY 2014/15. This project will update the models and analyze and develop alternatives for future wastewater capital projects and funding.

Project Evaluation and Analysis:

This project is necessary to maintain existing essential infrastructure of the Wastewater Utility. The information developed as a result of this study can allow the City to require
developers to pay for capacity increases or for rehabilitation of existing sewers. This project will also fulfill several regulatory requirements for wastewater asset management.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	1,710,792	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	1,710,792	-	-	-
Grand Total	1,710,792	-	-	-

Project: 833060 - Annual Digester Cleaning

Category:	Special	**Project Type:**	Wastewater	**Project Manager:**	Bryan Berdeen
Year Identified:	2017	**Project Phase:**	Planning	**Project Coordinator:**	Bryan Berdeen
Est. Completion Year:	Ongoing	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-100 - Wastewater Management - Wastewater Operating Subfund

Project Description/Scope/Purpose:

The City of Sunnyvale Water Pollution Control Plant (WPCP) provides wastewater treatment for the residents and business within the city. As part of the overall treatment process solids in the influent flow stream are separated in the Primary Treatment process. Those separated solids are collected and sent to the WPCP anaerobic digestion treatment process converting a significant portion (>50% reduction in digester solids) of those separated solids into methane (digester gas). That methane is used as fuel supply to run large engines that turn generators to produce electricity for plant treatment processes. The reduction in volume of those solids also saves money by significantly reducing the amount of post digestion processing and hauling of residual biosolids. This interconnected relationship is one of several within the WPCP wastewater treatment process that provide significant operational savings.

Over time, the WPCP Digesters accumulate debris that interfere with gas production, the operation of digester equipment, and decrease the solids reduction efficiency. Digester Cleaning is required to ensure that digesters have sufficient treatment capacity for proper anaerobic digestion and to protect digester equipment. During the cleaning process, Digesters are taken out of service and a contractor is hired to breakup and remove the debris trapped in the digester. The contractor also dewaters the accumulated biosolids that remain trapped in all the fixed debris and hauls them off site. Up to 1/3 of the digesters volume could be lost due to accumulated debris and trapped solids, thereby significantly reducing the operating volume.

Project Evaluation and Analysis:

The WPCP has embarked on a major reconstruction project that has eliminated the North Lagoon storage area where digester-cleaning material was stored until it could be processed and hauled away. The Digester Cleaning Process now requires significantly more work each time one or more of the WPCP digesters is cleaned. More contractor equipment and additional staff is required to handle this project safely and efficiently. Over the last few years, the need to clean the anaerobic digesters has increased due to recent upgrades and rehabilitation of all the anaerobic digesters. This allows for better mixing, better solids reduction, and increased digester gas production. However, a trade-off with the better mixing systems is that in a short amount of time, roughly three years, rags accumulate in the digesters that can cause internal piping to fail. To prevent debris related failure those rags and other debris needs to be removed at 3-year intervals. Two digesters will be cleaned one year followed by one for the next two years. This interval will be extended post completion of the new Headworks Project, part of the Sunnyvale Cleanwater Program (SCWP)and all the digester have been cleaned at least once. The mechanical systems part of the new Headworks will be removing a great deal of this material potentially allowing the WPCP to decrease the cleaning frequency.

Fiscal Impact:

This project will be funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	341,188	-	-	
2019 - 20	181,125	-	-	-
2020 - 21	187,464	-	-	-
2021 - 22	193,088	-	-	-
2022 - 23	198,881	-	-	-
2023 - 24	204,847	-	-	-
2024 - 25	-	-	-	-
2025 - 26	217,323	-	-	-
2026 - 27	223,842	-	-	-
2027 - 28	230,558	-	-	-
2028 - 29	237,474	-	-	-
2029 - 30	-	-	-	-
2030 - 31	251,936	-	-	-
2031 - 32	259,495	-	-	-
2032 - 33	267,279	-	-	-
2033 - 34	275,298	-	-	-
2034 - 35	-	-	-	-
2035 - 36	292,063	-	-	-
2036 - 37	300,825	-	-	-
2037 - 38	309,850	-	-	-
2038 - 39	-	-	-	-
20 Year Total	3,831,350	-	-	-
Grand Total	4,172,538	-	-	-

Project: 833070 - WPCP Electronic Operations and Maintenance Manual

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Bryan Berdeen
Year Identified:	2018	**Project Phase:**	Planning	**Project Coordinator:**	Tanner McGinnis
Est. Completion Year:	2019/20	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

This project funds the implementation of a comprehensive electronic operations and maintenance (O&M) manual for the Water Pollution Control Plant (WPCP) to replace the current limited, narrative-based, paper O&M manual. The goal of the electronic O&M manual is to develop a living document repository and interface where information pertinent to operations and maintenance is located and that leverages information in the City's other enterprise applications. Quick access to facility documentation is imperative to effective process operations and troubleshooting by reducing the amount of time spent searching through endless folders of partially obsolete information. This project also facilitates the transition of institutional knowledge from departing employees. This project will include the installation and implementation of an electronic logbook as well, to further increase operational efficiency and simplify historical review and troubleshooting.

Project Evaluation and Analysis:

With the reconstruction of the WPCP already underway, an intuitive method of storing and retrieving all of the facility documentation is needed. With significant changes in nearly every future process, operations and maintenance staff will need a centralized, user friendly, interface that allows access to standard operating procedures (SOPs), record drawings, equipment information, process control descriptions, operating manuals, regulatory information and historical data from the Laboratory Information Management System (LIMS), Enterprise Asset Management System/Computerized Maintenance Management System (EAMS/CMMS) and Supervisory Control and Data Acquisition (SCADA). An electronic O&M manual would facilitate training new employees, refreshing the knowledge of existing staff and function as an up-to-date reference for a wide variety of information. The City's NPDES permit requires facilities to maintain accurate O&M manuals, SOPs and record drawings necessary for operations and troubleshooting of the facilities in an accessible format and ongoing training and annual updates of these documents to keep them current.

Fiscal Impact:

This project is funded by Wastewater Management Fund revenues.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-7: Effective Wastewater Treatment

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	514,080	-	-	-
2019 - 20	-	-	-	5,412
2020 - 21	-	-	-	5,520
2021 - 22	-	-	-	5,631
2022 - 23	-	-	-	5,743
2023 - 24	-	-	-	5,858
2024 - 25	-	-	-	5,975
2025 - 26	-	-	-	6,155
2026 - 27	-	-	-	6,339
2027 - 28	-	-	-	6,530
2028 - 29	-	-	-	6,725
2029 - 30	-	-	-	6,927
2030 - 31	-	-	-	7,135
2031 - 32	-	-	-	7,349
2032 - 33	-	-	-	7,570
2033 - 34	-	-	-	7,797
2034 - 35	-	-	-	8,031
2035 - 36	-	-	-	8,271
2036 - 37	-	-	-	8,520
2037 - 38	-	-	-	8,775
2038 - 39	-	-	-	9,040
20 Year Total	-	-	-	139,303
Grand Total	514,080	-	-	139,303

Project: 833090 - Sanitary System Hydraulic Model Update

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2018	**Project Phase:**	Planning	**Project Coordinator:**	Mansour Nasser
Est. Completion Year:	2020/21	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

With the rise in high density development, the need has arisen to complete hydraulic models that facilitate the site specific studies necessary to analyze the new development impacts on existing sewer and storm drain infrastructure as well as facilitate the construction of needed improvements in a timely manner to serve the new demand.

In 2015 a model was prepared for approximately 30% of the sanitary sewer system pipelines in Sunnyvale. It mainly focused on sewer mains larger than 15-inch and did also include some mains that are over 10-inch in size. The consultant recommended that additional site specific studies be performed to determine if additional capacity exists in these smaller pipelines prior to connecting additional services. The storm drain model was similarly limited to all pipelines 36-inches and larger plus smaller pipes as required to make connections, resulting in similar on-going issues.

The City is currently evaluating proposals to complete the hydraulic model by FY 2020/21.

Project Evaluation and Analysis:

The timing and approach to replace and upgrade existing sewer and storm infrastructure is reevaluated bi-annually. The goal is to pursue the most cost-effective path in providing needed capacity and rehabilitation projects in a timely manner to meet the needs of both existing residents and new developments. System modeling information is critical to ensure that the necessary information is available to make the appropriate project planning decisions.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	7,228	-	-	-
2018 - 19	757,772	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	765,000	-	-	-

Project: 833820 - Large Sanitary Sewer Mains Assessment

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Mansour Nasser
Year Identified:	2019	**Project Phase:**	Planning	**Project Coordinator:**	Eric Evans
Est. Completion Year:	2019/20	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

The City's current Sanitary Sewer Management Plan on file with the SWRCB includes a target for all sanitary sewers to be cleaned on a three to five year cycle. Staff has capability and equipment necessary to clean pipelines ranging in size up to 18-inch in diameter and is meeting this performance measure. Approximately 6% of the system (19 miles) are pipes larger ranging from 21- to 48-inch in diameter. Larger diameter sewers require specialized training and equipment to maintain. Approximately 3.6 miles of large diameter sewers were cleaned and inspected in 2016 (part of a separate Lawrence Expressway Sewer Project). This project will conduct a study to evaluate the condition of the remaining 15.4 miles in the City.

Project Evaluation and Analysis:

The assessment involves visual examination of the sewer trunk lines, digital camera documentation of the trunk line condition immediately upstream and downstream from selected manholes, measuring atmospheric hydrogen sulfide concentration, measuring dissolved sulfide concentration in a wastewater sample, noting and recording the depth of any sediment in the trunk line.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	150,000	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	-	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	-	-	-	-
Grand Total	150,000	-	-	-

Project: 834460 - Sewer Capacity Enhancement Projects

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Nathan Scribner
Year Identified:	2019	**Project Phase:**	Planning	**Project Coordinator:**	Eric Evans
Est. Completion Year:	2035/36	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

In 2015, the City completed a Wastewater Collection System Master Plan (2015 MP) that identified several projects deemed necessary to provide sewer conveyance capacity.

These projects were recommended based upon peak wet weather flow (10 year design storm) exceeding 90% available pipe capacity.

CIP-2: Hollenbeck Ave from Remington Dr. to Harvard Ave. 2,100 feet of new 12-inch pipe to replace existing 10-inch pipe.
CIP-3: Fremont Ave from Hollenbeck Ave. to Sunnyvale-Saratoga Rd. 2,700 feet of new 18-inch pipe to replace existing 15-inch pipe.
CIP-4: Hollenbeck Ave. from The Dalles Ave. to Cheyane Dr. 650 feet of new 10-inch pipe to replace existing 8-inch pipe.
CIP-5: Fremont Ave. from Bobwhite Ave. to Arlene Ave. 2,500 feet of new 21-inch pipe to replace existing 18-inch pipe.
CIP-6: Lawrence Expwy from Reed Ave. to Arques Ave. 5,000 feet of new 30-inch pipe to replace existing 27-inch pipe.
CIP-8: S. Mathilda Ave. from El Camino Real to Washington 3,000 feet of new 12-inch pipe to replace existing 6- and 8-inch pipe.

Only CIP-8 is scheduled for design in FY 2020/21 and the remaining projects are scheduled for later years. The project scope may be refined further based on the results of the sewer modeling study that will be completed in FY 2019/20.

Project Evaluation and Analysis:

Many existing sewer lines are not large enough to carry existing peak wet weather flows. Upsizing of sewer lines is necessary to reliably convey the wastewater to the Water Pollution Control Plant, prevent sewer overflows and accommodate future growth.

Fiscal Impact:

This project is funded by the Wastewater Management Fund.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	300,000	-	-	-
2021 - 22	1,200,000	-	-	-
2022 - 23	-	-	-	-
2023 - 24	-	-	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	400,000	-	-	-
2030 - 31	2,000,000	-	-	-
2031 - 32	600,000	-	-	-
2032 - 33	3,000,000	-	-	-
2033 - 34	400,000	-	-	-
2034 - 35	2,100,000	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	10,000,000	-	-	-
Grand Total	10,000,000	-	-	-

Project: 834620 - Water Level Monitors for Sewer Manholes

Category:	Capital	**Project Type:**	Wastewater	**Project Manager:**	Eric Evans
Year Identified:	2019	**Project Phase:**	Planning	**Project Coordinator:**	Eric Evans
Est. Completion Year:	2019/20	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-200 - Wastewater Management - Wastewater Capital Subfund

Project Description/Scope/Purpose:

This project is to purchase and install 10 water level monitors covers at various sewer manholes throughout the City. The proposed budget includes the cost to install 10 SmartCovers and five Pamrex hinged manhole lids that are ideal for the permanent installation of the SmartCovers.

Project Evaluation and Analysis:

SmartCovers monitor the water level, which in turn helps staff to determine the flow of sewage and assist in identifying pipes that need to be up-sized. These devices also help to provide advance warning of sewage backups, allowing action to be taken before an overflow occurs.

The City recently conducted a pilot program in the winter of FY 2018/19 with the installation of six SmartCovers, which provided crucial feedback to the City. Sewer flows are monitored in real time, enabling staff to observe which locations are significantly affected by rain storms.

These devices can be periodically relocated to different sewer manholes around the City to gather data at different locations or can be permanently installed in critical locations. This information helps staff decide where to spend money for maintenance and where to up-size to larger capacity.

Without these devices, staff is unable to accurately determine how much water is flowing or whether a sewer may be backing up. Regulatory fines for sewer overflows can be substantial. These devices can aide in calling attention to a possible overflow before it happens.

Fiscal Impact:

This projected is funded by the Wastewater Management Fund. The cost to install each SmartCover is approximately $5,000. Each new Pamrex hinged manhole lid is approximately $1,000. The ongoing subscription cost for each device is approximately $400 per year. Battery replacement is $400 per cover and is expected to be replaced once every 2 years.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	70,000	-	-	-
2020 - 21	-	-	-	8,000
2021 - 22	-	-	-	4,000
2022 - 23	-	-	-	8,000
2023 - 24	-	-	-	4,000
2024 - 25	-	-	-	8,000
2025 - 26	-	-	-	4,000
2026 - 27	-	-	-	8,000
2027 - 28	-	-	-	4,000
2028 - 29	-	-	-	8,000
2029 - 30	-	-	-	4,000
2030 - 31	-	-	-	8,000
2031 - 32	-	-	-	4,000
2032 - 33	-	-	-	8,000
2033 - 34	-	-	-	4,000
2034 - 35	-	-	-	8,000
2035 - 36	-	-	-	4,000
2036 - 37	-	-	-	8,000
2037 - 38	-	-	-	4,000
2038 - 39	-	-	-	8,000
20 Year Total	70,000	-	-	116,000
Grand Total	70,000	-	-	116,000

Project: 834750 - Peery Park Specific Plan Wastewater Capacity Improvements

Category:	Infrastructure	**Project Type:**	Wastewater	**Project Manager:**	Marlon Quiambao Jr.
Year Identified:	2018	**Project Phase:**	Planning	**Project Coordinator:**	Jennifer Ng
Est. Completion Year:	2023/24	**Department:**	C95 - Environmental Services	**Fund - Sub-Fund:**	465-300 - Wastewater Management - Wastewater Infrastructure Subfund

Project Description/Scope/Purpose:

On September 20, 2016 Council approved the Peery Park Specific Plan. The plan calls for developers to pay $3.12/net new square foot of development to be put towards wastewater infrastructure improvements to accommodate increased development in the Peery Park area.

Project Evaluation and Analysis:

Based upon the wastewater study performed, a number of larger diameter sewer pipes need to be upsized to serve the increased development anticipated in the Peery Park area. The Peery Park wastewater capacity improvement fees will cover design and construction costs associated with increasing size of the larger (10" and larger) sanitary sewer pipelines, per the study. Each development project will be responsible for performing a sanitary sewer analysis to determine if the sewer mains fronting their project need to be upsized; costs for the analysis and subsequent upsizing will be the developer's responsibility.

Fiscal Impact:

Funding for this project is provided by fees assessed to developers within the Peery Park Specific Plan area. It is anticipated that some wastewater capacity improvements may be performed by the developer. However, should a development project not do the construction, the fees would be collected for the City to perform a capital project. Funding shown is the maximum amount anticipated should all developers pay instead of construct the wastewater infrastructure.

Funding Sources:

Wastewater Management Fund

Plans and Goals:

EM - Environmental Management - EM-6: Effective Wastewater Collection System

Project Financial Summary

	Project Costs	Revenues	Transfers In	Operating Costs
Prior Actual	-	-	-	-
2018 - 19	-	-	-	
2019 - 20	-	-	-	-
2020 - 21	-	-	-	-
2021 - 22	1,020,146	1,020,146	-	-
2022 - 23	4,420,689	4,420,689	-	-
2023 - 24	4,464,029	4,464,029	-	-
2024 - 25	-	-	-	-
2025 - 26	-	-	-	-
2026 - 27	-	-	-	-
2027 - 28	-	-	-	-
2028 - 29	-	-	-	-
2029 - 30	-	-	-	-
2030 - 31	-	-	-	-
2031 - 32	-	-	-	-
2032 - 33	-	-	-	-
2033 - 34	-	-	-	-
2034 - 35	-	-	-	-
2035 - 36	-	-	-	-
2036 - 37	-	-	-	-
2037 - 38	-	-	-	-
2038 - 39	-	-	-	-
20 Year Total	9,904,864	9,904,864	-	-
Grand Total	9,904,864	9,904,864	-	-

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APPENDIX X-A
City of Sunnyvale
Sewer System Management Plan
SSMP Program Audit

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City of Sunnyvale, Environmental Services Department, Water and Sewer Division

2020 Sanitary Sewer Management Plan Biennial Audit

Prepared by HydroScience Engineers

1622913v1 March 2020

HydroScience
Strategic Water Solutions

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SECTION 1 – SSMP AUDIT

Introduction	Yes	No
Is the current system description complete and up to date? Are all infrastructure statistics current and complete?	x	
Discussion: Information was obtained from the City's GIS system, where pertinent system information is maintained. As the existing sewer system is modified and/or staff identifies discrepancies in the GIS system records, the discrepancies are documented, and periodically forwarded to City Consultants for record correction.		

Element I – Goals	Yes	No
Are the goals stated in the SSMP still appropriate and accurate?	x	
Discussion: Goals are still appropriate.		

Element II – Organization	Yes	No
Is the Contact Information current?	x	
Is the Sanitary Sewer Overflow responder List current?	x	
Is the Organization Chart in the SSMP current?	x	
Are the position descriptions an accurate portrayal of staff responsibilities?	x	
Is the chain of communication for reporting and responding to SSOs accurate and up-to-date?	x	
Discussion: SSMP reflects current responsibilities, information, and procedures for response and reporting.		

Element III – Legal Authority	Yes	No
Does the SSMP contain current references to the Sunnyvale's Code documenting the City's legal authority to:		
Prevent illicit discharges?	x	
Require proper design and construction of sewers and connections?	x	
Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	N/A	N/A
Limit discharges of fats, oil and grease?	x	

Element III – Legal Authority	Yes	No
Enforce any violation of its sewer ordinances?	x	
Were any changes or modifications made in the past year or since the last SSMP audit to City Ordinances, Regulations, or standards?		x

Discussion:
The City does not own sewer laterals. Council Policy 3.3D.6 states "Continue to make landowners responsible for maintenance of sewer laterals, with the exception that the City will make repairs to laterals between the property line and sewer mains caused by broken pipes and street tree roots."

Element IV – Operations and Maintenance	Yes	No
Collection System Maps		
Does the SSMP reference the current process and procedures for maintaining the City's sanitary sewer system maps?	x	
Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	x	
Prioritized Preventive Maintenance		
Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system?	x	
Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	x	
Training		
Are the training records current?	x	
Does the SSMP document current training expectations and programs?	x	

Discussion:
The preventive maintenance program is good & comprehensive. The SSMP will be revised in April 2020 to fully reflect all current preventive maintenance activities, including CCTV work. CCTV program now uses the NASSCO PACP rating system. The City is developing a system to prioritize the rehabilitation or replacement of lines, based partially upon the assessed condition rating of its televised lines. A schedule for inclusion in the CIP is currently under development.

The full implementation of the City's CMMS and asset management programs are being pursued to help minimize SSOs and improve maintenance practices.

Sanitary Sewer staff recently attended a formal "SSO 360 Drill and OERP Review" in February 2020.

Currently four (4) sanitary sewer workers are PACP certified.

A revision to the Wastewater Collection System Master Plan (WWMP) was completed in December 2015. The WWMP identified a number of system improvements, which are currently being reviewed and updated as necessary. Feasibility studies are funded and progressing for capacity improvement projects on both the Lawrence Interceptor and Lockheed Interceptors. As a first phase, the City's sanitary sewer hydraulic model is being updated and calibrated to verify the WWMP findings. This work is scheduled for completion in late 2020.

GIS info was updated in 2018 and 2019, and another update is in progress for 2020. The City has developed and implemented an ongoing system for updating sewer asset maps.

Element V – Design and Performance Standards	Yes	No
Does the SSMP reference current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	x	
Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	x	
Discussion: The City revised its Sanitary Sewer Design Guidelines in June 2015, its Standard Specifications in June 2019, and its Standard Details in July 2019.		

Element VI – Overflow and Emergency Response Plan	Yes	No
Does the City's Overflow Emergency Response Plan (OERP) contain proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs as required by the WDR and MRP?	x	
Does the OERP have a program to ensure an appropriate response to all overflows?	x	
Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSOs that potentially affect public health or reach waters of the State in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSOs?	x	
Are staff and contractor personnel aware of the procedures of the OERP?	x	
Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?	x	
Does the OERP ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	x	
Considering SSO performance data, is the OERP effective in handling SSOs in order to safeguard public health and the environment?	x	
Is the Water Quality Monitoring Plan current?	x	
Have staff been trained and practiced on response to an SSO of large volume?	x	
Was sampling conducted within 48 hours for all SSOs greater than 50,000 gallons and were results entered for these SSOs through the CIWQS website?	N/A	N/A
Has the City prepared a Technical Report for all SSOs larger than 50,000 gallons? Have all Technical Reports been filed on the CIWQS website as required?	N/A	N/A

Element VI – Overflow and Emergency Response Plan	Yes	No

Discussion:
The City's OERP was revised in 2015 to comply with the new requirements for reporting, monitoring, and sampling of SSOs contained in Order No. WQ 2013-0053-EXEC. This includes the requirements related to the new SSO categories as well as the requirements for SSOs that exceed 50,000 gallons. The SSMP will be revised in April 2020. The OERP does not require an update at this time. The City has had no SSOs greater than 50,000 gallons requiring a Technical Report since the last questionnaire was completed in 2019.

Wastewater staff ensures contractors receive information on SSO reporting/response.

Element VII – Fats, Oils, and Grease (FOG) Control Program	Yes	No
Does the Fats, Oils, and Grease (FOG) Control Program include a description of public education outreach efforts that promote proper handling and disposal of FOG?	x	
Does the FOG program include a plan for the disposal of FOG generated within the sewer system service area?	x	
Does the City have sufficient legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG?	x	
Are there requirements to install grease removal devices (such as traps or interceptors), best management practices (BMP) requirements, record keeping, maintenance requirements and reporting requirements established in the City's FOG Control Program?	x	
Does the City have authority to inspect grease-producing facilities and have sufficient staff to inspect and enforce the FOG ordinance?	x	
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?	x	
Does the FOG control program implement source control measures for all sources of FOG discharged to the collection system?	x	
Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	x	

Discussion:
From 2015 to 2019, City inspections related to Fats, Oils, and Grease (FOG) averaged 562 per year. The inspection count includes both annual facility inspections and follow-up inspections. The increase in inspections can be attributed to conducting increased grease removal device (GRD) measurements in addition to reviewing GRD maintenance manifests. Since mid-2015, the frequency of these GRD measurements and inspections has increased from once every three years to once per year to enhance protection of the collection system from FOG-related issues. The objective of these inspections is to assure that the type and frequency of GRD maintenance is appropriate and that GRD maintenance records are up-to-date.

In the five-year period from 2009 to 2013, SSOs related to FOG averaged 4.4 per year. In the last five years, from 2015 to 2019, SSOs related to FOG have averaged 0.8 per year. This significant drop reflects the success of the City's preventative maintenance program. The City FOG program will continue expanding its compliance and outreach activities to reduce FOG-related SSOs.

Element VIII – System Evaluation and Capacity Assurance Plan	Yes	No
Does the System Evaluation and Capacity Assurance Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with conditions similar to those causing overflow events, if applicable?	x	
Does the City's capital improvement program (CIP) establish a schedule of approximate completion dates for both short-term and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?		x
Does the City take steps needed to establish a short and long-term CIP to address hydraulic deficiencies, including prioritization, alternatives analysis, and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	x	

Discussion:
The 2015 Wastewater Collection System Master Plan involved significant modeling work and has identified areas where capacity and flows could be improved. The City recently retained the services of a consultant to update the hydraulic model and review the improvement recommendations detailed in the 2015 Master Plan. Upon completion, the projects identified will be prioritized and funding will be programmed in the upcoming CIP budget cycle(s). Completion dates are contingent on project prioritization and available funding.

In addition, the City has developed a 20-year CIP budget projection for sewer rehabilitation and repair projects. Specific projects are identified, prioritized, and scheduled within the limitations of the budget. Annual funding is also programmed in the budget to address emergency repairs on an as-needed basis. The 20-year CIP projection is reviewed and adjusted on a two-year cycle.

Element IX – Monitoring, Measurement, and Program Modifications	Yes	No
Does the City maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?	x	
Does the City monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP?	x	
Does the City assess the success of the preventive maintenance program?	x	
Does the City update program elements, as appropriate, based upon monitoring or performance evaluations?	x	
Does the SSMP identify and illustrate SSO trends, including frequency, location and volume of SSOs?	x	

Element IX – Monitoring, Measurement, and Program Modifications	Yes	No

Discussion:
The City measures the effectiveness of its SSMP chiefly through the bottom line results of SSOs, volumes of SSOs, and recovered volumes. While this does not directly assess each individual element, these measures provide an indication of the effectiveness of the overall SSMP program and the related elements.

SSOs have generally decreased over the last several years. During the five-year period from 2009 to 2013, SSOs occurred at an average annual rate of 4.3/100 miles/year. For the six-year period from 2014 to 2019, the rate dropped to an average of 1.7/100 miles/year.

Another improvement is the percentage of "recovered" SSO volume. During the five-year period from 2009 to 2013, the percentage of SSO volume recovered averaged 88%. For the six-year period from 2014 to 2019, the average volume recovered increased to 99%.

In addition, total spill volume has declined the past few years. During the five-year period from 2009 to 2013, the spill volume averaged 12,624 gal/year. For the six-year period from 2014 to 2019, the average spill volume decreased substantially to 3,428 gal/year.

Finally and importantly, the volume of SSOs reaching waters has been 0 gallons since 2012.

Element X – SSMP Audits	Yes	No
Does the audit focus on the effectiveness of the SSMP? If not, what needs to be changed to increase the effectiveness of the overall collection system program?	x	
Were the audit results shared with the City Council? And the public, via the City website?	x	
Will the SSMP Audit be completed, reviewed, and filed as an Appendix to the SSMP on a biennial basis?	x	
Do any proposed changes to the SSMP require Council approval if they have a substantial change in the policies and procedures for collection system operations and maintenance?	x	

Discussion:
The SSMP will be updated in April 2020 and submitted to City Council in May 2020. Day-to-day administration of the SSMP is the responsibility of the City Administration with relevant updates provided to Council via the City Manager's update reports to Council. Significant policy and cost issues are, and will continue to be, referred to Council for approval.

The biennial audits will be maintained by the Wastewater Operations Manager consistent with the WDR Requirements and Element X, D of the City's SSMP. The 2020 SSMP biennial audit is planned to be filed as an appendix to the 2020 revision of the SSMP. City will investigate the feasibility of posting all biennial audits on the City's web site on a biennial basis.

Element XI – Communication Program	Yes	No
Does the City communicate on a regular basis with the public and other agencies about the development and implementation of the SSMP?	x	
Does the communication system provide the public the opportunity to provide input as the program is developed and implemented?	x	
Were biennial progress reports and metrics of implementation of the SSMP provided to the City Council?	x	

Discussion:
The City communicates with the public and other agencies on an as-needed basis. City Administration provides relevant updates to Council via the City Manager's update reports to Council.

The SSMP adoption process includes a publicly noticed Council hearing. This allows the public the opportunity to provide input directly to Council prior to adoption.

The most recent biennial progress reports are provided to Council as part of the SSMP update process.

Change Log	Yes	No
Is the SSMP Change Log current and up to date?	x*	

Discussion:
*The SSMP and the SSMP Change Log will be updated in April 2020.

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SECTION 2 – ANNUAL STATISTICS FOR SSOS

For the ten-year period between 2009 and 2019, the City averaged nine Sanitary Sewer Overflows (SSOs) per year. The highest year was 16 SSOs in 2010, and the lowest was three SSOs in 2015 and again in 2016. In the last five years, the City averaged 4.8 SSOs per year, which is a significant reduction from the longer-term average. The City experienced four SSOs in 2019, which is lower than the previous two years and lower than both the long-term ten-year average and the average over the last five years.

The City implemented some programmatic changes to reduce SSOs and comply with State regulatory measures. The most significant change has been adhering to an aggressive preventive maintenance program. Staff continues to remove significant quantities of debris, roots, and grease from the sewer system. **Table 1** summarizes the annual statistics for SSOs from 2009 to 2019. **Figure 1** summarizes SSOs by volumes recovered and unrecovered. No SSOs have been discharged to surface waters since 2012.

Table 1: Annual SSO Statistics

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of dry weather SSOs	13	16	15	9	14	8	3	3	6	5	7
Number of wet weather SSOs (capacity-related)	0	0	0	0	0	0	0	0	0	0	0
Total number of SSOs	13	16	15	9	14	8	3	3	6	5	7
Number of SSOs per 100 miles of sewer per year	4.2	5.2	4.8	2.9	4.5	2.6	1	1	1.9	1.6	2.3
Number of SSOs < 100 gallons	4	7	6	3	6	3	1	2	2	2	2
Number of SSOs 100 to 999 gallons	7	5	6	4	6	4	2	1	1	1	2
Number of SSOs 1,000 to 9,999 gallons	2	3	3	2	2	1	0	0	3	2	3
Number of SSOs >10,000 gallons	0	1	0	0	0	0	0	0	0	0	0
Total volume of SSOs (gallons)	8,001	34,964	9,595	5,450	5,207	2,490	1,795	765	5,390	3,600	6,530
Total volume recovered and returned to collection system (gallons)	4,316	33,300	9,595	5,200	5,087	2,490	1,795	765	5,390	3,600	6,530
Net volume of SSOs (total minus recovered, gallons)	3,685	1,664	0	250	120	0	0	0	0	0	0
Percent volume recovered (100 x Total volume recovered / Total volume of SSOs)	53	95	100	95	97	100	100	100	100	100	100
Number of locations with more than one SSO	0	2	0	0	0	0	1	0	0	0	0

The annual preventative maintenance activities are summarized in **Table 2**. Staff cleaned 151 and 119 miles of sewer pipe in FY 2017/18 and FY 2018/19, respectively. This quantity is consistent with the SSMP target of cleaning the entire system every three to five years.

Average total miles of CCTV inspection vary from year to year, however the trend is generally upward. The City is evaluating a realistic target for inspection cycles based on need and progress. In early 2018, the City installed new hardware and software (GraniteNet) in the CCTV truck and incorporated the latest improvements to the GIS system. This new equipment is reducing the time required to complete each CCTV inspection. As a result, it is anticipated that the miles of pipes inspected by CCTV annually will increase.

Table 2: Annual Preventive Maintenance Activities

Gravity Sewer Mains	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Total miles	283	283	300	310	310	310	310	310
Total miles cleaned	181	178	197	173	227	149	151	119
Total miles inspected by CCTV	3.1	29.1	22.6	30.3	38.9	34.0	31	35

Since 2011, the Compliance Inspection Group inspects most Food Service Establishments (FSEs) on an annual basis. FSEs considered low FOG facilities are inspected at least once every three years. Low FOG facilities include businesses that do not cook and use primarily disposal food ware requiring little-to-no dish washing. During FSE inspections, the emphasis is on:

a. Grease removal device (GRD) installation and maintenance.

b. Process information

c. Grease management

d. Best Management Practices (BMPs)

e. Stormwater pollution prevention

Enforcement actions are clearly outlined in the Enforcement Response Plan. Elements include:

a. Identifying and investigating instances of noncompliance

b. Enforcement procedures

c. Enforcement response guide

Table 3 includes a summary of the number of SSOs caused by FOG, FSE inspections and enforcement in the period of 2009 through 2019. The cause of all SSOs during the same timeframe is summarized in **Table 4** and **Figure 2**. Pipe obstruction by roots is the most common cause of SSOs for all years. The City implements regular maintenance of the collection system and deploys both chemical and mechanical methods for addressing root intrusion, as needed.

Table 3: FOG Control Statistics, 2009-2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of SSOs caused by FOG	4	7	3	5	3	2	0	0	2	1	1
Number of FOG inspections completed[1]	245	209	349	572	530	543	608	531	559	574	537
Number of enforcement actions taken	43	61	57	113	76	57	66	32	72	59	75

Notes:
1. Includes both routine inspections and follow-ups

Table 4: SSOs by Cause, 2009-2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Roots	9	8	6	3	10	6	3	2	4	4	5
Debris	0	1	5	0	0	0	0	1	0	0	0
FOG	4	7	3	5	3	2	0	0	2	1	1
Pipe Structural Issue	0	0	1	1	1	0	0	0	0	0	1
Total SSOs	**13**	**16**	**15**	**9**	**14**	**8**	**3**	**3**	**6**	**5**	**7**

Figure 1: SSOs by Volume

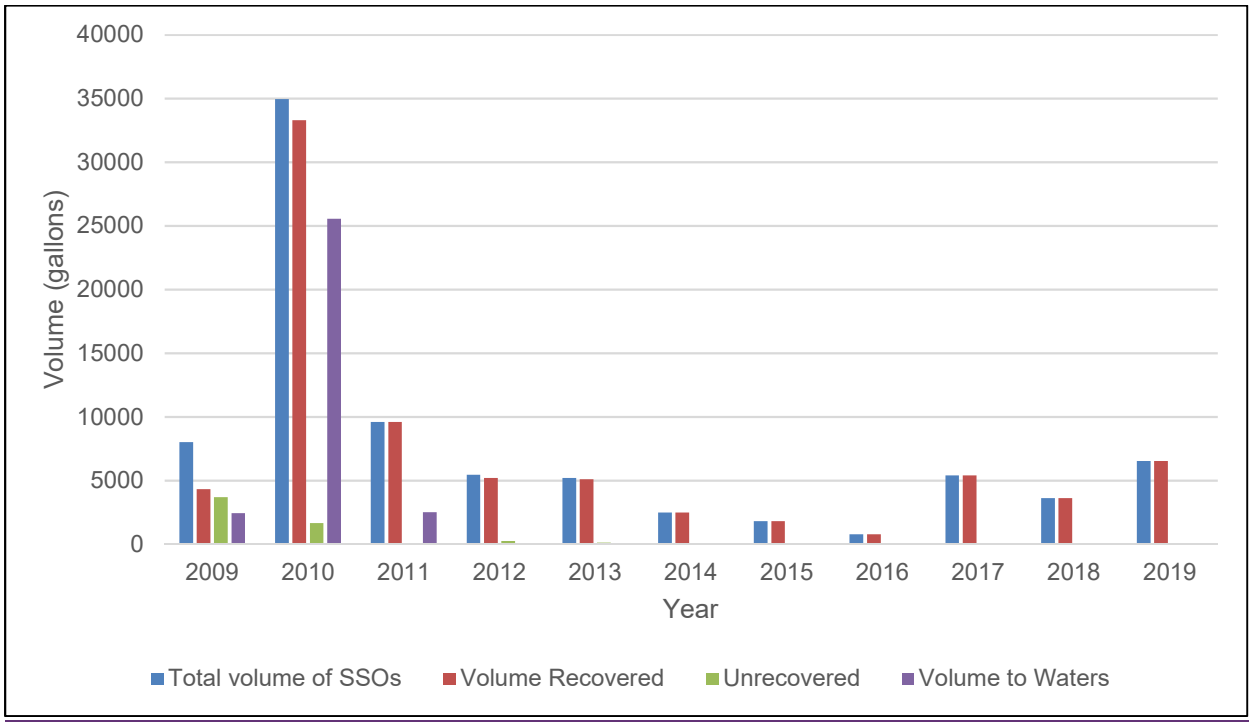
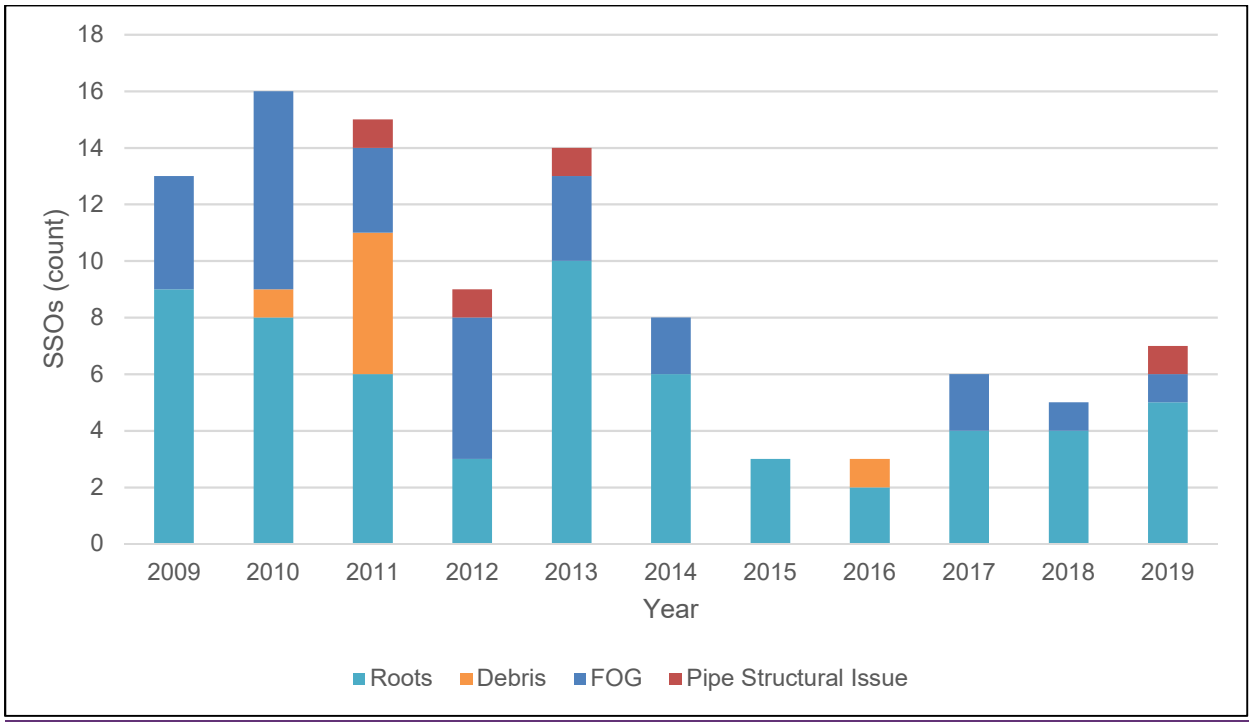


Figure 2: SSOs by Cause



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APPENDIX X-B

City of Sunnyvale
Sewer System Management Plan
SSMP Change Log

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SSMP Section #	Description of Change/Revision Made
Title Page	Updated to standard HydroScience format.
All sections	General formatting update.
All sections	Minor clarifying text updates throughout.
Introduction Subsection B	Population updated to reflect current data.
Introduction Subsection B	Sewer system data updated in text and tables to reflect current GIS data for both Sunnyvale and Rancho Rinconada.
Introduction Subsection B	Title of Table I-3 updated from **Laterals – Sunnyvale** to **Privately Owned Laterals – Sunnyvale** to make it clear that the laterals are not owned by the City.
Introduction Subsection B	Title of Table I-6 updated from **Laterals – Rancho Rinconada** to **Privately Owned Laterals – Rancho Rinconada** to make it clear that the laterals are not owned by the City.
Introduction Subsection C	Some abbreviation definitions removed because they are not used throughout the body of the SSMP.
Introduction Subsection C	Description of PACP added for clarification.
Introduction Subsection C	Description of SECAP added for clarification.
Introduction Subsection D	SSMP update guide updated from 2005 version to 2015 version to reflect the most current version.
Introduction Subsection D	Removed reference to ***Regional Water Board Letter dated October 3, 2012 Discontinuation of Requirements for Annual Reports of SSOs and Annual SSMP Audits***.
Element I Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element I Subsection C	Updated “Environmental Services Division” to “Environmental Services Department” to reflect the proper structure of the City’s Wastewater Collections Program.
Element I Subsection D	Added chapter number to reference within the City’s General Plan to find Goals and Policies applicable to the wastewater collections system.
Element I Subsection D	Updated link for the City’s General Plan web page to reflect the most current site.
Element II Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element II Subsection C Figure II-1	Added a third Senior WW Collections Worker to reflect the current structure of the City’s Wastewater Collections Program.
Element II Subsection C Table II-1	Removed Wastewater Collections Crew Leader from table and updated the phone number for Environmental Services Dept. Director to reflect current information.
Element II Subsection C	Added link for the City’s website for additional convenience in accessing the City’s current staff lists.
Element II Subsection C Table II-2	Updated contact name and information for Environmental Services Director to reflect current positions held.

SSMP Section #	Description of Change/Revision Made
Element III Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element III Subsection C Table III-1	Municipal Code Reference sections updated to reflect the most current and accurate information.
Element III Subsection C	"The Wastewater Collection System Master Plan effort, which began development in early 2012 and is expected to be completed in Winter 2015, includes a task to evaluate sewer system I/I and to make cost-effective improvements to reduce I/I." sentence updated to "The Wastewater Collection System Master Plan (WWMP), which was completed in December 2015, includes a task to evaluate sewer system I/I and to make cost-effective improvements to reduce I/I. The City's sanitary sewer hydraulic model is being updated and calibrated to verify the WWMP findings. This work is scheduled for completion in late 2020." to reflect current status of WWMP efforts.
Element IV Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element IV Subsection B	Changed sub-subheading title from "State GWDR Requirement (Operations and Maintenance)" to "State GWDR Requirement:" for consistency with the rest of the document.
Element IV Subsection C	Updated the number of combination (hydro/vacuum) units from two to three in the **Gravity Sewers** section to reflect current information.
Element IV Subsection C	The word "chemical" was removed from the following sentence in the **Gravity Sewers** section: "The City also contracts for the chemical treatment of some lines with a history of issues with roots, currently about 35,000 feet are treated annually." for clarity since some treatment is mechanical and some is chemical.
Element IV Subsection C	"…and the City plans to have more wastewater collections employees certified in the future. The City plans to initially use a seven year cycle and then develop a plan for setting future frequencies of CCTV inspections similar to that done for cleaning, one that is condition-based and can use PACP ratings to set the period until the next CCTV inspection" removed from the **CCTV Inspection** section to reflect the City's most current activities.
Element IV Subsection C	Paragraph added to the **CCTV Inspection** section to describe, in more detail, the City's most current CCTV inspection activities.
Element IV Subsection C	Replaced "The City recently replaced four of eight air relief valves on its force mains." with "In 2015, the City reconstructed each of the five lift stations. Reconstruction of the lift stations included mechanical upgrades as well as upgrades to the electrical and SCADA systems to improve the efficiency of operation." In the **Wastewater Pump/Lift Stations Inspections and Maintenance** section.
Element IV Subsection C	Removed the sentence "This listing will be revised upon completion of the Wastewater Collection System Master Plan, expected in Spring 2015." from the **Rehabilitation and Replacement Program** section to reflect current information.
Element IV Subsection C Table IV-1	Number of FTEs for Senior Wastewater Collections Worker updated from 2 to 3 and Total number of FTEs updated from 13 to 14 to reflect current organization of wastewater collections.
Element V Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element V Subsection B	Changed sub-subheading title from **State GWDR Requirement (Design and Performance Provisions)** to **State GWDR Requirement** for consistency with the rest of the document.
Element V Subsection C	Link for City of Sunnyvale – Single-Family Construction Standards updated from 2013 version to 2019 version to reflect the most current version.

SSMP Section #	Description of Change/Revision Made
Element V Subsection C	Link for Plumbing (sewer and water line) Replacement updated to link for Residential Waste/Sewer Pipes and publication date, February 2020, added to reflect the most current information for design requirements for replacement of sewer lines.
Element V Subsection C	Link for Grease Removal Devices updated to reflect the most current online version. Full version of the document attached as Appendix V-A for reference to the most current complete information.
Element V Subsection C	Reference to the 2013 California Plumbing Code updated to the 2016 California Plumbing Code to reflect the most current information.
Element V Subsection C	Link for City of Sunnyvale Standard Details and Specifications updated to links for City of Sunnyvale Standard Specifications For Public works Construction 2006 Edition, Revised June 2019 and City of Sunnyvale Standard Details for Public Works Construction 2006 Edition, Revised July 2019 to reflect the most current information.
Element V Subsection C	Removed the paragraph "The Wastewater Collection System Master Plan project, initiated in early 2012, includes a task for review of the City's design standards and standard details for wastewater systems, along with recommendations for revisions where needed. This work is on-going and it is anticipated revisions won't be made until 2015 or later." because it is redundant.
Element VI Subsection A	"If a hazard is suspected, the responding field crew should notify DPS Communications immediately and request the Fire Department's Hazardous Materials Response Team." sentence updated to "If a hazard is suspected, the responding field crew should notify DPS Communications immediately and request the **DPS** Hazardous Materials Response Team." to reflect the most accurate current protocol because the City does not have a fire department.
Element VI Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element VI Subsection C	"If industrial toxic substances are involved, any volume must be immediately reported to the Fire Department and then reported, as soon as possible, to the State Office of Emergency Services and the Regional Water Quality Control Board." sentence updated to "If industrial toxic substances are involved, any volume must be immediately reported to the **DPS Hazardous Materials Response Team** and then reported, as soon as possible, to the State Office of Emergency Services and the Regional Water Quality Control Board." to reflect the most accurate current protocol.
Element VI Subsection C	Compliance Inspection Group and corresponding phone number added to **Reporting Procedures** section to reflect most accurate current notification procedures.
Element VI Subsection C	Details added and updates made to the applicable limits for sample analysis under **Sampling and Lab Tests** section.
Element VI Subsection D	Heading of **3-day / 15-day Reporting** for Category 1 SSOs updated to **3-day / 15-day / 45-day Reporting** to reflect that there are additional reporting requirements for Category 1 SSOs.
Element VI Subsection D	Details added to **3-day/15-day /45-day Reporting** procedure for Category 1 SSOs.
Element VI Subsection D	Details added to **3-day/15-day Reporting** procedure for Category 2 SSOs.
Element VI Subsection D Table VI-2	Title of table added to reflect that it is a different table than Table IV-1.
Element VI Subsection E	"Wastewater Collections section" updated to "Wastewater Collections Program" to reflect the proper structure of the City's Wastewater Collections Program.
Element VII Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.

SSMP Section #	Description of Change/Revision Made
Element VII Subsection B	Changed sub-subheading title from **State GWDR Requirement for FOG Control Section** to **State GWDR Requirement** for consistency with the rest of the document.
Element VII Subsection C	Number of potential commercial and industrial sources of FOG updated from 410 to 456.
Element VII Subsection C	Number of Environmental Compliance Inspectors conducting FOG program inspections updated from four to six.
Element VII Subsection C	Percentage of SSOs caused by FOG updated from 33% during the period of 2009-2013 to 4% during the period of 2014-2019.
Element VII Subsection D	"Wastewater Collections Section" updated to "Wastewater Collections Program" to reflect the proper structure of the City's Wastewater Collections Program.
Element VII Subsection D	Section in SMC updated from "12.12.050" to "12.60.070" in **Legal Authority – Ordinance** section.
Element VII Subsection D	Details added to **FSE Inspections/Enforcement** section for clarity.
Element VII Subsection D Table VII-1	Data updated from the 2009-2013 period to the 2015-2019 period to reflect the most current information.
Element VIII Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element VIII Subsection B	Changed sub-subheading title from **State GWDR Requirement (SECAP)** to **State GWDR Requirement** for consistency with the rest of the document.
Element VIII Subsection C	Updated information regarding the City's Wastewater Master Plan to reflect the most current information.
Element VIII Subsection C	Details added throughout this section to reflect most current activities and information.
Element IX Subsection B	Changed subheading from ***Regulatory Requirements for the Monitoring, Measurement, and Program Modifications Section*** to ***Regulatory Requirements*** for consistency with the rest of the document.
Element IX Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element IX Subsection C	Removed "Planned to actual performance for preventative maintenance. (Future metric to be developed upon implementation of the CMMS)" removed as a performance indicator.
Element IX Subsection C	Additional information added detailing most recent SSO statistics.
Element IX Subsection C Table IX-1	Data for SSOs by cause, 2014-2019 added to the table to reflect the most current data.
Element IX Subsection C Figure IX-1	Figure moved from subsection D to subsection C. Updated to display SSOs by cause for 2009-2019.
Element IX Subsection C Figure IX-2	Figure moved from subsection D to subsection C. Updated to display SSOs volumes for 2009-2019.

SSMP Section #	Description of Change/Revision Made
Element X Subsection B	Added reference to the provision within the GWDR to refer to in order to find to the regulatory requirements for this element.
Element XI Subsection B	Changed subheading from ***Regulatory Requirements for the Communication Program Section*** to ***Regulatory Requirements*** for consistency with the rest of the document.
Element XI Subsection C	Information about the City Council meeting in the **Communication of SSMP Development and Updates** section updated to reflect the most current information.
Element XI Subsection C	Link for individual SSO information in the **Ongoing Communication** section updated to reflect the correct current link.

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APPENDIX X-C
City of Sunnyvale
Sewer System Management Plan
SSMP Formal Adoption Documents

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