Wastewater Collections

SEWER SYSTEM MANAGEMENT PLAN

CITY OF PALO ALTO
UTILITIES
WGW OPERATIONS

City of Palo Alto

Sewer System Management Plan

Updated: July, 2009

CITY OF PALO ALTO
UTILITIES

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Definitions, Acronyms, and Abbreviation Definitions

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ASTM; American Society for Testing and Materials

AWWA; American Water Works Association

BAPPG; Bay Area Pollution Prevention Group

BMPs; Best Management Practices

CCTV; Closed Circuit Television

City; City of Palo Alto

CIP; Capital Improvement Plan

CIWQS; California Integrated Water Quality System

CWEA; California Water Environment Association

Dispatch; City Communication Center

ECD; Environmental Compliance Division

FOG; Fats, Oil and Grease

FSE; Food Service Establishment

FSR; Field Service Representative

FTE; Full-time Equivalent

FY; Fiscal Year

GCD; Grease Control Device

GIS; Geographical Information System

GPS; Global Positioning System

GWDR; General Waste Discharge Requirements No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006.

GWI; Ground Water Infiltration

ICOMMM; A Sewer Maintenance Database

I/I; Infiltration/Inflow

LRO; Legally Responsible Official

MGS; Million Gallons per Day (MGD)

MMPM; Monitoring, Measurement, and Plan Modifications

MSC; Municipal Service Center

MSDS; Material Safety Data Sheet

OERP; Overflow Emergency Response Plan

OES; Office of Emergency Services

O&M; Operations and Maintenance

PARWQCP; Palo Alto Regional Water Quality Control Plant

PE; Polyethylene Pipe

PM; Preventative Maintenance

PVC; Polyvinylchloride Pipe

PWD; Public Works Department

RWQCB; Regional Water Quality Control Board

RWQCP; Palo Alto Regional Water Quality Control Plant

SCADA; Supervisory Control and Data Acquisition

SECAP; System Evaluation and Capacity Assurance Plan

SDR; Standard Dimension Ratio

SSMP; Sewer System Management Plan

SSO; Sanitary Sewer Overflows

SSOERP; Sanitary Sewer Overflow Emergency Response Plan

SWRCB; State Water Resources Control Board

VCP; Vitrified Clay Pipe

WGW; Water, Gas and Wastewater

Introduction

This Sewer System Management Plan (SSMP) describes the City of Palo Alto's (City's) wastewater collection system management activities. The purpose of these activities is to:

1. Maintain and improve the condition of the collection system infrastructure,

2. Control infiltration/inflow (I/I) and provide appropriate sewer capacity, and to

3. Minimize the number and impact of sanitary sewer overflows (SSOs) that occur.

The State Water Resources Control Board (SWB) has issued statewide waste discharge requirements for sanitary sewer systems which include requirements for development of an SSMP. The State Water Board requirements are outlined in Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006 (SWB SSO WDR), and Order No. WQ-2008-0002-EXEC, dated February 20, 2008.

The SSMP is also required by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Requirements are outlined in the Sewer System Management Plan Development Guide dated July 2005, by the RWQCB in cooperation with the Bay Area Clean Water Agencies (BACWA).

This SSMP includes the elements required by both the SWB and RWB, and is organized following the SWB outline. Both SWB and RWB SSMP requirements are included and addressed in each element. Requirements language is shown verbatim from the SWB SSO WDR and the RWB SSMP Development Guide. The SWB SSO WDR uses the term "Enrollee" to mean each individual municipal wastewater agency that has completed and submitted the required application for coverage under the WDR (in this case, the Enrollee is the City of Palo Alto).

Regulatory Requirements and Compliance Dates

The City of Palo Alto's SSMP contains 11 elements and it is designed to meet both the RWQCB and the GWDR requirements. **Table 1** provides the list of the elements of each plan with respective compliance due dates:

Table 1 – Compliance Dates for SSMP Applicable to Palo Alto (10,000< Population<100,000)

SSMP Element		Compliance Dates	
		RWQCB	SWRCB
	• Plan and Schedule	NR	11/02/07
Element 1	• Goals	08/31/06	11/02/07
Element 2	• Organization	08/31/06	11/02/07
Element 3	• Emergency Response Plan	08/31/06	05/02/09
Element 4	• FOG Control Program	08/31/06	05/02/09
Element 5	• Legal Authority	08/31/07	05/02/09
Element 6	• Measures and Activities (O&M Plan)*	08/31/07	05/02/09
Element 7	• Design & Construction Standards (Design and Performance Standard)*	08/31/07	08/02/09
Element 8	• Capacity Management	8/31/08	08/02/09
Element 9	• Monitoring, Measurement, and Program Modifications	08/31/08	08/02/09
Element 10	• Program Audits	08/31/08	08/02/09
Element 11	• Communication Program	NR	08/02/09
	• Final SSMP Certification	NR	08/02/09

- * variations between the two requirements
- NR= not required

Plan and Schedule

In compliance with the GWDR, the Utilities Engineering and Operations staff developed a schedule with milestones for developing and certifying the SSMP. On October 22, 2007, the City Council passed a resolution approving the SSMP Development Plan and Schedule.

1. Element 1 – Goals

SWRCB Requirements:

The goal of the Sewer System Management Plan (SSMP) is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

RWQCB Requirements:
Each wastewater collection system agency shall, at a minimum, develop goals for the Sewer System Management Plan as follows:

- To properly manage, operate, and maintain all parts of the wastewater collection system
- To provide adequate capacity to convey peak flows
- To minimize the frequency of SSOs
- To mitigate the impact of SSOs

In August, 2006, the City of Palo Alto Developed the SSMP goals based on the RWQCB's order dated July 7, 2005. In May 2009, the City revised this section of the SSMP using the GWDR guidelines. The goal of the SSMP is to address both RWCQB and the GWDR requirements. The goals of the City of Palo Alto SSMP are to:

- Properly manage, operate and maintain the wastewater collection system in order to provide a reliable service now and into the future.
- Develop and maintain design construction standards and specifications for the installation and repair of the collection system and its associated infrastructure.
- Cost effectively minimize infiltration/inflow (I/I) and provide adequate system capacity to handle peak flows during a storm event.
- Maintain a comprehensive and up-to-date map of wastewater collection system.
- Coordinate with the City Public Works Operation to maintain Storm Water maps.
- Respond to sanitary sewer overflows quickly and mitigate the impact of the overflow.
- Implement a collection system maintenance program to minimize the frequency of sanitary sewer overflows.
- Provide training on a regular basis for WGW staff in collection system maintenance and operations.
- Encourage and support participation in the quarterly meetings with the neighboring collection system agencies and the partners to the City's wastewater treatment plant.
- Maintain a Fats, Oil, and Grease (FOG) program to limit fats, oils, grease, and other debris that may cause blockages in the sewage collection system.
- Develop a closed-circuit televising (CCTV) program for the sewer collection system.

2. Element 2 – Organization

SWRCB Requirements:

The Sewer System Management Plan (SSMP) must identify:

a. The name of the responsible or authorized representative as described in Section J of this Order.

b. The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and

c. The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

RWQCB Requirements:

Each wastewater collection system agency shall, at a minimum, provide information regarding organization:

- Identify agency staff responsible for implementing, managing, and updating the SSMP
- Identify chain of communication for responding to SSOs
- Identify chain of communication for reporting SSOs

2.1. Organizational Structure

An organization chart for the Water Gas and Wastewater operation is shown in **Figure 2-1** on the following page. This organization shows the lines of authority for administrative and field staff who respond to SSOs. Following **Figure 2-1**, a brief description of the the City staff responsible for implementing various aspects of the SSMP is provided.

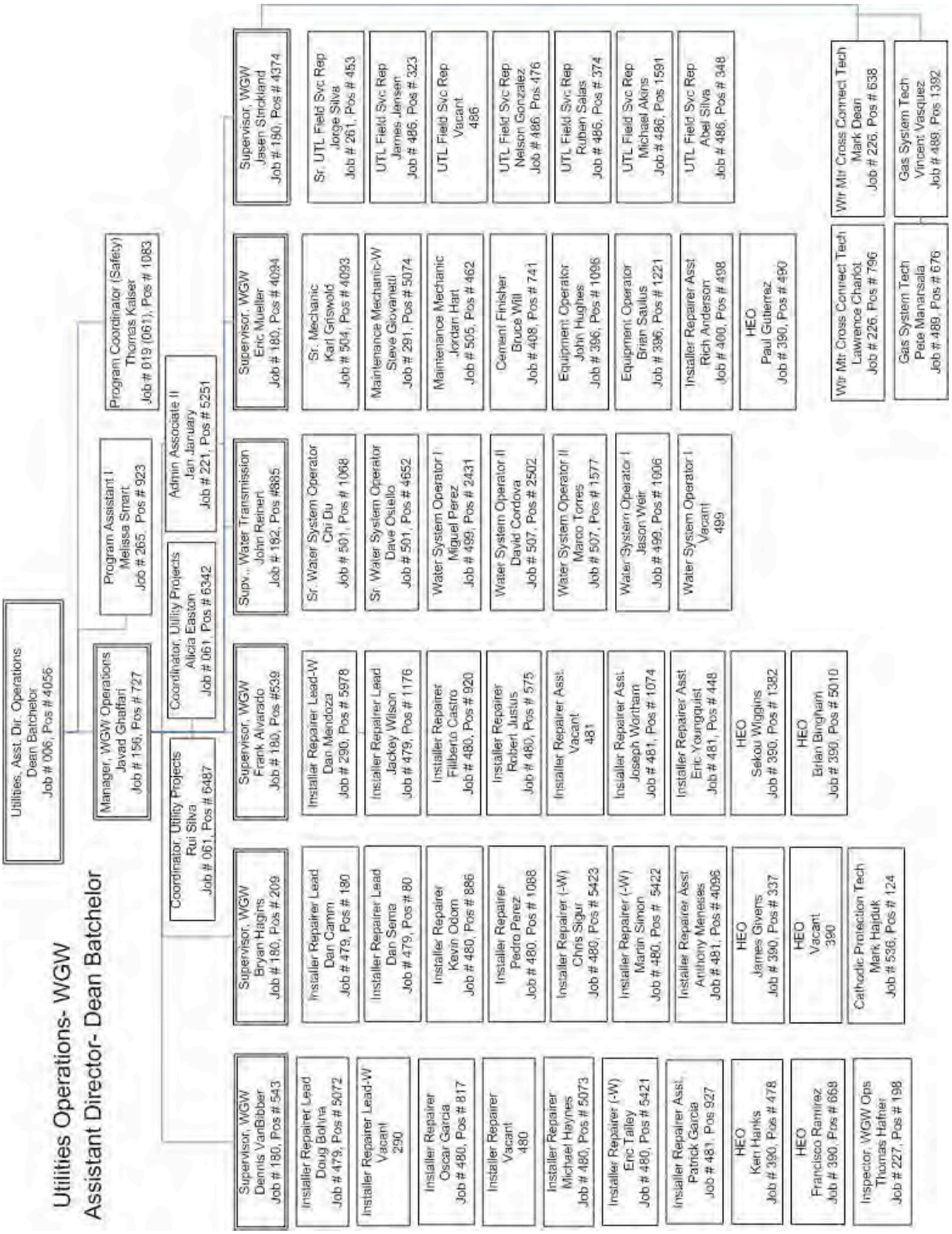


Figure 2-1. Organization Chart for City of Palo Alto Water, Gas and Wastewater

2.2. Responsible and Authorized Representatives

City staff responsible for implementing various aspects of the SSMP are as follows:

City of Palo Alto Utilities Director
Oversees the overall program, communicates with City Manager, provides reports to the City Council and designates Legally Responsible Official (LRO) to certify SSO reports.

Assistant Director of Utilities Operations
Oversees the program and communicates with the media.

Water Gas Wastewater Operations Manager
Manages the program and reviews reports and certifies SSO's.

Wastewater Collections Supervisor
Manages field operations and maintenance activities, provides relevant information to agency management, prepares and implements contingency plans, leads emergency response, investigates and reports SSO's, and trains field crews.

Water Gas Wastewater Supervisor
Responds to after hour sewer overflow incidents. Oversees field operation, compiles and submits the 2-hour report.

Water Gas Wastewater Engineering Manager
Establishes policy, plans strategy, reviews and certifies SSMP, leads engineering staff, allocates resources, delegates responsibility and authorizes outside contractors to perform services.

Senior Wastewater Project Engineer
Manages and administers the capital improvement program (CIP).

Inspector
Conducts inspections for CIP projects. Ensures that new and rehabilitated assets meet agency standards.

Field Operation Crews
Responds to SSOs. Performs preventive maintenance activities and mobilizes and responds to notification of stoppages and SSO's.

Manager, Environmental Compliance Division (ECD)
Manages the development, implementation and administration of various environmental compliance and water pollution prevention programs for the Regional Water Quality Control Plant. Maintains and updates the City's Sewer Use Ordinance.

Manager, Environmental Control Program
Administers the City's FOG, Industrial Waste, and Storm Water programs.

ECD Industrial Waste Investigator
Conducts inspections of industrial, commercial, and food service facilities.

ECD Industrial Waste Inspector, Storm Water
Investigates the illegal discharge of wastewater to the storm drains.

ECD Industrial Waste Inspector, Sampling
Collects samples and inspects discharge locations including creeks and grease removal devices.

ECD Engineering Tech III
Inspects food service facilities.

Manager, Communications (Utilities)
Disseminates urgent and pertinent information to the public in a timely manner.

2.3. Chain-of-Communication for Reporting and Responding to SSOs

In response to an SSO event, Water Gas Wastewater (WGW) immediately implements its Sanitary Sewer Overflow Response Plan (Response Plan), discussed in more detail in Element 6. The Response Plan provides direction for the immediate verbal and written notification of City staff and agencies. Important phone numbers for City staff involved in SSO response are shown on **Table 2-1**.

Table 2-1 – Phone Numbers for SSO Responders

Responsible Party	Name	Phone Number
Field Service Representative (FSR)	Refer to daily schedule	(650) 496-6780
WGW Crew	Refer to daily schedule	(650) 496-6780
Wastewater Supervisor	Frank Alvarado	(650) 496-6917
Legally Responsible Official (LRO)	Javad Ghaffari	(650) 496-6932
Utilities Director	Valerie Fong	(650) 329-2277

A list of radio call signs for WGW Operations personnel is included in the **Element 2 Appendix**. This list also includes several additional phone numbers.

List of Documents in the Element 2 Appendix (see separate tab):

1. WGW Radio Call Signs

3. Element 3 – Legal Authority

SWRCB Requirements:

Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

a. Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);
b. Require that sewers and connections be properly designed and constructed;
c. Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
d. Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
e. Enforce any violation of its sewer ordinances.

RWQCB Requirements:

Each wastewater collection system agency shall, at a minimum, describe its legal authority, through sewer use ordinances, services agreements, or other legally binding procedures to:

- Control infiltration/inflow (I/I) from satellite wastewater collection systems and laterals
- Require proper design and construction of new and rehabilitated sewers and connections
- Require proper installation, testing, and inspection of new and rehabilitated sewers

3.1. Legal Authority

The City of Palo Alto Council has the power to enact ordinances and other legally binding instruments to regulate usage and prevent discharges to protect and foster human health and the environment. The City has approved and adopted the Sewer Use Ordinance (Palo Alto Municipal Code, PAMC, Title 16, Chapter 16.09), the Utilities Rules and Regulations, and the Utility Standards to govern the collection, maintenance, and construction of the wastewater facilities within the City.

The specific purpose of the City's Sewer Use Ordinance is to prevent the discharge of any pollutant into the sewer system, the storm drain system, or surface waters, which would 1) obstruct or damage the collection system; 2) interfere with, inhibit or disrupt the Palo Alto Regional Water Quality Control Plant or it's treatment processes; 3) pass through the treatment system and contribute to violations of the regulatory requirements placed upon the plant; or 4) result in or threaten harm to or deterioration of human health or the environment.

The Utilities Rules and Regulations, approved and adopted by resolution of the City of Palo Alto City Council, govern the business operation of the City's utilities. The Utilities Rules and Regulations can be found online at: http://www.cityofpaloalto.org/depts/utl/forms_and_downloads.asp

The Utility Standards are the City's standard specifications for installation, rehabilitation and repair of facilities, and govern the requirements for proper design, construction, and maintenance of water, gas, and wastewater utility facilities and connections within the City of Palo Alto. The Utility Standards are also available online at: http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=998&TargetID=243

Enforcement is found in the Palo Alto Municipal Code (PAMC). Violations of the PAMC can be addressed through criminal, judicial, administrative, and/or injunctive action. For other lesser violations, the City may assess monetary fines as well.

Specific references to the GWDR legal authority requirements are shown in **Table 3-1**.

Table 3-1 – Summary of Legal Authorities

GWDR Requirement	Reference
Prevent illicit discharge into the sanitary sewer system	PAMC 16.09.075; PAMC 16.09.100 – 102; PAMC 16.09.105; PAMC 16.09.110; PAMC 16.09.117
Require that sewers and connections be properly designed and constructed	Utility Standards, Water, Gas and Wastewater, 2005
Ensure access for maintenance, inspection, or repairs for portions of lateral owned or maintained by the City	Utilities Rules and Regulations 8, Access to Premises, 7/1/98
Limit the discharge of fats, oils, and grease and other debris that may cause blockages	PAMC 16.09.102 – 103; PAMC 16.09.110
Enforce any violation of the sewer ordinances	PAMC 16.09.130; PAMC 16.09.140 – 145

3.2. Sewer Use Ordinance (Relevant to SSMP)

Reference:
http://www.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title16buildingregulations*/chapter1609seweruseordinance*?f=templates$fn=altmain-nf.htm$q=%5Band%3Asewer%20use%20ordinance%5D%20$x=server$3.0#LPHit1

3.2.1. 16.09.005 Purpose

The overall goal of this chapter and the city's water quality control program is to prevent and control pollution and protect and foster human health and the environment. The specific purpose of this chapter is to prevent the discharge of any pollutant into the sewer system, the storm drain system, or surface waters, which would: 1) obstruct or damage the collection system; 2) interfere with, inhibit or disrupt the Palo Alto Regional Water Quality Control Plant (the "plant"), or its treatment processes, or operations, or its sludge processes, use or disposal; 3) pass through the treatment system and contribute to violations of the regulatory requirements placed upon the plant; or 4) result in or threaten harm to or deterioration of human health or the environment. It is the intent of the City to update and modify this chapter as needed to continue to provide a program for pretreatment of industrial wastes which is approved by federal and state regulatory agencies. Therefore this chapter is designed to be no less stringent than the U.S. Environmental Protection Agency "General Pretreatment Regulations for Existing and New Sources of Pollution" published at Title 40 of the Code of Federal Regulations, Part 403, as applicable, and as such regulations may be amended from time to time (hereinafter the "Pretreatment Regulations"). (Ord. 4252 § 1, 1994: Ord. 3889 § 1 (part), 1989)

3.2.2. 16.09.075 Limitations on Point of Discharge.

No person shall discharge any substances directly into a manhole or other opening in a city sewer, other than through an approved building sewer or other location approved by the superintendent. (Ord. 3889 § 1 (part), 1989)

3.2.3. 16.09.100 Prohibitions.

Wastes discharged into the sewer system shall not have characteristics which by themselves or by interaction with other wastes may:

(a) Endanger the health and safety of the public or city personnel

(b) Cause damage to the sewer system

(c) Create nuisance such as odors or coloration

(d) Result in extra cost of collection, treatment, or disposal

(e) Interfere with, inhibit or disrupt any wastewater treatment process of the plant, its treatment processes, sludge processes, or operations in such manner to cause violations of the plant's NPDES permit, or any regulatory requirement, or result in the use of sludge in noncompliance with any applicable requirements. This shall include instances due to flow rate and/or pollutant concentration and applies to increases in magnitude or duration of violation by the plant

(f) Exit the plant into waters of the United States in quantities or concentrations which contribute to a violation of any regulatory requirement applicable to the plant. This shall include increases in magnitude or duration of any violation or period of noncompliance

(g) Cause the temperature of the influent flow to the plant to exceed 40ºC (104ºF)

(h) Prevent, hinder, delay, or impede compliance with effluent quality requirements established by regulatory agencies, or exceed the same

(i) Cause wastewater quality to fall outside reclamation feasibility limits. (Ord. 3889 § 1 (part), 1989)

3.2.4. 16.09.101 Root Control Chemicals.

No person shall discharge, dispose of or add to the sanitary sewer system any substance containing greater than five percent copper by weight, to control roots or for any other purpose. No person shall discharge, dispose or add to the storm drain system any substance to control roots (Ord. 4760 § 10, 2002: Ord. 4252 § 6, 1994: Ord. 4070 § 4, 1992).

3.2.5. 16.09.102 Grease Disposal Prohibited.

No person shall dispose of any grease, or cause any grease to be disposed, by discharge into any drainage piping, by discharge into any public or private sanitary sewer, by discharge into any storm drainage system, or by discharge to any land, street, public way, river, stream or other waterway (Ord. 4070 § 5, 1992).

3.2.6. 16.09.103 Grease Removal Device Required – Garbage Disposers Prohibited.

(a) The owner of every newly constructed, remodeled, or converted commercial or industrial facility with one or more grease generating activities, including food service facilities with new or replacement kitchens, for which a building permit is issued on or after January 1, 1992, shall install or cause to be installed a grease interceptor for each grease generating activity, of a size equal to or greater than the minimum size meeting the definition of "grease interceptor," as set forth in Section 209 of

the 1997 Uniform Plumbing Code or the equivalent section of a subsequently adopted edition of the California Plumbing Code.

(b) The owner of every commercial or industrial generator of grease, including food service facilities, serviced by a sewer collection line found to have a grease blockage, a history of grease blockage, or accelerated line maintenance resulting from grease disposal shall install or cause to be installed, upon notification by the superintendent, a grease removal device.

(c) The owner of every commercial or industrial generator of grease, including food service facilities, for which installation of grease removal devices is not required pursuant to subsection (a) or (b) of this section, shall install or cause to be installed a grease removal device for each grease generating activity, on or before January 1, 1997.

(d) All grease removal device(s) shall be installed on the premises where grease is used or generated and shall be sized in conformance with Chapter 10 of the 1997 Uniform Plumbing Code or the equivalent section of a subsequently adopted edition of the California Plumbing Code. The contents of all grease removal devices shall be removed periodically as necessary to prevent violations of this chapter. At a minimum, the contents shall be removed every six months. All grease removal devices shall be kept in good repair and shall be maintained in continuous operation. A log of all grease removal activities shall be maintained at the facility showing the date of removal, the amount removed, and the disposition of the removed contents. The log shall be retained for a period of three years and shall be available for inspection by city inspectors upon request.

(e) Effective January 1, 2003, the installation of any food waste disposer (grinder) at any food service facility with one or more grease generating activities is prohibited.

(f) Effective January 1, 2007, no food service facility with one or more grease generating activities shall utilize a food waste disposer (grinder) for the purpose of food waste disposal to the sanitary sewer (Ord. 4760 § 11, 2002: Ord. 4070 § 6, 1992).

3.2.7. 16.09.105 Unpolluted Water.

(a) Unpolluted water shall not be discharged through direct or indirect connection to the sanitary sewer system unless a permit is issued by the City. As used in this section, unpolluted water shall include stormwater from roofs, yards, foundation, or underdrainage, which meets all state and federal requirements for discharge to surface waters of the United States. The City may approve the discharge of such water to the sewer system only when no reasonable alternative method of disposal is available. If a permit is granted for the discharge of such water into the sewer system, the user shall pay the applicable charges and fees and shall meet such other conditions as required by the superintendent.

(b) After January 1, 2003, non-emergency discharges greater than 200 gallons per day from once-through cooling systems using potable water as a coolant shall not be discharged to the sanitary system; provided, that the superintendent may approve an exception in the following instances: (1) for once-through cooling water used for benchtop reflux or distillation or other similarly sized activity or (2) for short term use only, upon the determination that the use is for a research activity for which another source of cooling is not easily available.

(c) After January 1, 2006, non-emergency discharges of any amount from once-through cooling systems using potable water as a coolant shall not be discharged to the sanitary system; provided, that the superintendent may approve an exception in the following instances: (1) for once-through cooling water used for benchtop reflux or distillation or other similarly sized activity or (2) for short term use only, upon the determination that the use is for a research activity for which another source of cooling is not easily available (Ord. 4760 § 13, 2002: Ord. 4252 § 7, 1994: Ord. 3889 § 1 (part), 1989).

3.2.8. 16.09.106 Storm Drains – Prohibited Discharges.

(a) It shall be unlawful to discharge any domestic waste or industrial waste into storm drains, gutters, creeks, or the San Francisco Bay. Unlawful discharges to storm drains shall include, but not be limited to, discharges from toilets, sinks, industrial processes, cooling systems, boilers, fabric cleaning, equipment cleaning, vehicle cleaning, construction activities, including, but not limited to, painting, paving, concrete placement, sawcutting and grading, swimming pools, spas, and fountains, or substances added to the storm drain to control root growth, unless specifically permitted by a discharge permit or unless exempted pursuant to guidelines published by the superintendent.

(b) It shall be unlawful to cause hazardous materials, domestic waste or industrial waste to be deposited in such a manner or location as to constitute a threatened discharge into storm drains, gutters, creeks or the San Francisco Bay. A “threatened discharge” is a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce or mitigate damages to persons, property or natural resources. Domestic or industrial wastes that are no longer contained in a pipe, tank or other container are considered to be threatened discharges unless they are actively being cleaned up.

(c) Interior floor drains shall not be connected to storm drains.

(d) Exterior drains located in the following areas shall not be connected to storm drains:

a. Equipment or vehicle washing areas

b. Areas where equipment fluids are routinely changed

c. Areas where hazardous materials, chemicals or other uncontained materials that are easily transported by wind or water are stored and are not secondarily contained

d. Loading dock areas, except that loading dock drains to the storm drain system may be allowed if a valve or equivalent device is provided, which remains closed except when it is raining. Secondary containment shall be provided for any rooftop equipment, tanks or pipes containing other than potable water, cooling water, heating system hot water, steam, water condensate or equivalent substances, which the superintendent determines will otherwise cause a probable discharge to the storm drain system.

(e) After January 1, 2003, new buildings, except for single-family and duplex residences, shall provide a covered area for a dumpster. The area shall be designed to prevent water run-on to the area and run-off from the area.

(f) After January 1, 2003, new multi-family residential development projects with 25 or more units shall provide a covered area for occupants to wash their vehicles. A drain shall be installed to capture all vehicle washwaters and shall be connected to an oil/water separator prior to discharge to the sanitary sewer system. The oil/water separator shall be cleaned at a frequency of at least once every six months or more frequently if recommended by the manufacturer or the superintendent. Oil/water separators shall have a minimum capacity of 100 gallons.

(g) Storm drain inlets shall be clearly marked with the words “No dumping – Flows to Bay,” or equivalent (Ord. 4760 § Revised 4/2004 16 14, 2002: Ord. 4252 § 8, 1994: Ord. 3988 § 2, 1990).

3.2.9. 16.09.110 Standards.

The following standards shall apply to all discharges to the sewer at a designated sampling location determined by the superintendent to be consistent with the dilution prohibition contained in Section 16.09.121:

(a) The categorical standards set forth in 40 CFR Chapter I, Subchapter N, Parts 405-471 shall apply to all applicable sources. The definitions and procedures for establishing individual effluent limitations shall be as specified therein. Nothing in this chapter shall be construed as allowing less stringent limitations.

(b) Local limitations, in addition to those specified in this section, shall be developed by the superintendent based upon the prohibitions contained in Section 16.09.100 . These limitations will be imposed on appropriate dischargers via industrial waste discharge permits or modifications to existing permits.

(c) In addition to the requirements of (a) and (b) above, the following requirements shall apply where they are more stringent:

Parameter	Average Concentration	Instantaneous	
Oil & grease* (mg/l)	--	20	--
Oil & grease (total) (mg/l)	--	200	--
Suspended solids (mg/l)	3000	6000	--
Total dissolved solids (mg/l)	5000	10000	--
Temperature, (Degrees F) <30 gpm & ,30 minutes All other times	 150 F 120 F		
Fluoride (mg/l)	65	65	
pH**		11.0	5.0

*Gravity separation at a temperature of 20^{o}C and a pH of 4.5.

** Where the pH is monitored continuously, no individual deviation from the above range shall exceed twenty minutes in length for discharges less than ten thousand gallons per day nor ten minutes in length for dischargers greater than ten thousand gallons per day. The total time of deviations during any seven calendar day period shall not exceed a total of sixty minutes. Any pH reading less than or equal to 2.0 or greater than or equal to 12.5 is prohibited.

(d) Dyes. Wastes showing excessive coloration shall not be discharged into the sewer system. Excessive coloration shall be defined as any coloration in a waste which, for any wave length, displays less than sixty percent of the light transmissibility of distilled water under the following conditions:

a. After filtration through a 0.45 micron membrane filter.

b. In the pH range of 5.5 to 11.0.

c. Through a one centimeter light path.

d. A maximum spectrum band width of 10 nanometers.

e. Through the wave length range from four hundred to eight hundred nanometers.

(e) Explosives. No solids, liquids, or gases which by themselves or by interaction with other substances may create fire or explosion hazards, including wastestreams with a closed cup flashpoint of less than 140° F. (60° C.) shall be discharged. Flammable substances including, but not limited to, acetone, alcohols, benzene, gasoline, xylene, hexane and naphtha shall not be discharged into the sewer system except where present in contaminated groundwater discharges being discharged under an exceptional waste permit issued by the city. Where groundwater discharges contain such contaminants, the discharger shall monitor the sewer atmosphere for explosivity and flammability using a properly calibrated meter designed for the purpose. The frequency of such

monitoring shall be defined in the permit. Whenever ten percent of the lower explosive level is exceeded, the discharger shall immediately notify the superintendent of the potential hazard in the sewer within fifteen minutes of making the determination of threatened explosivity. The discharger shall follow verbal notification with a written explanation of the cause of the explosive hazard within five working days, with corrective actions taken to alleviate the situation and measures taken to prevent a reoccurrence. The discharger shall not recommence without prior written approval of the superintendent or his/her designated representative. Where flammable substances are used in processes, separate collection and disposal outside the sewer system shall be provided.

(f) Oil and Grease. Oil and/or grease shall not be discharged into the sewer system if the average concentration of floatable oil and/or grease (defined as that which is subject to gravity separation at a temperature of 20° C. and at a pH of 4.5) exceeds twenty mg/liter; nor shall the total oil and/or grease concentration exceed two hundred mg/liter. In addition, the discharge of petroleum oil, nonbiodegradable cutting oil, or products of mineral origin in amounts that cause interference or pass through, as defined by EPA regulations, shall be prohibited.

(g) Hazardous, Noxious or Malodorous Substances. No industrial waste shall be discharged which alone or in combination with other wastes may create a public nuisance or hazard, make human entry into the sewers unsafe, or which constitutes a discharge of hazardous waste.

Permitted dischargers shall be required to certify at least every six months in their Periodic Report of Continued Compliance (PRCC) that their waste does not constitute a hazardous waste, and that during the previous six months no discharge of hazardous waste has occurred. Dischargers shall be required (as a condition to permission to discharge) to file with the Palo Alto fire department a current Hazardous Materials Management Plan (HMMP) pursuant to Title 17 of this code and to have on site copies of material safety data sheets for all hazardous materials stored, generated, or used at the discharger's site. Should any discharge of a hazardous waste occur, the discharger shall verbally notify the EPA, the Regional Water Quality Control Board and the superintendent as soon as possible, but in no event later than twenty-four hours after such discharge.

Appropriate records of hazardous waste disposal manifests, inventories of stored virgin and used hazardous materials, and other documentation required by the HMMP shall be kept and made available for inspection and/or copying at the city's request.

Mercaptans and dissolved sulfides shall not be discharged in concentrations exceeding 0.1 mg/liter.

(h) Organic Solvents. Except as permitted by other sections of this chapter, the sewer shall not be used as a means of disposal for organic solvents. Wastewater discharged to the sewer shall not contain a sum total greater than one thousand milligrams per liter of acetone, ethanol, methanol, or isopropyl alcohol in any combination. Dischargers having organic solvents on site or using same shall provide and use a separate collection and disposal system outside the sewer system and shall provide safeguards against their accidental discharge to the sewer. An approved solvent management plan to prevent entry to the sanitary sewer and accidental spill prevention plans shall be filed by the discharger as a condition of permission to discharge to the sanitary sewer. Records of appropriate disposal and handling shall be maintained by the discharger and shall be available for inspection and copying by city personnel.

Organic solvents shall include, but shall not be limited to, those used in dry cleaning establishments, and shall also include separator water generated by dry cleaning equipment. Neither the organic solvent nor the separator water may lawfully be discharged to the sewer or storm drain system.

(i) Total Toxic Organics. The prohibition against disposal of organic solvents contained in 16.09.110(h) may be replaced by a specific limitation on total toxic organics (TTO). Any such limitation must be contained in an industrial waste permit and either based on the appropriate categorical standard of the pretreatment regulations or the following:

Total toxic organics (TTO) is the sum of all quantifiable values greater than 0.01 mg/l from the list of toxic organic pollutants contained in 40 CFR Part 433.11(e). The sum of the TTO shall be less than 1.0 mg/l as an instantaneous maximum. No individual toxic organic compound (except for phenol) shall exceed 0.75 mg/l as an instantaneous maximum. These limitations are subject to change in the future as the requirements placed on the plant become more stringent and as the process for establishing the industrial waste limitations is refined.

(j) Radioactivity. The discharge of radioactive wastes into the sewer system shall conform to the requirements of California Radiation Control Regulations, Title 17, California Code of Regulations, Chapter 5, Subchapter 4, and as subsequently amended.

(k) Solids. No material shall be discharged to the sanitary sewer that will obstruct or damage the collection system, treatment system, or appurtenances. Specific prohibitions are as follows:

a. Inert Solids. The discharge of inert solids including, but not limited to sand, glass, metal chips, bone, plastics, etc. into the sewer is prohibited. Settling chambers or treatment works shall be installed where necessary to prevent the entry of inert solids into the sewer system.

b. Solid Particles. Industrial wastes shall not contain particulate matter that will not pass through a one half-inch screen; this subsection shall not apply to domestic sewage from industrial establishments.

(l) Stored Liquid Wastes. Liquid aqueous-based wastes that have been collected and held in tanks or containers shall not be discharged into the sewer system except at locations authorized by the superintendent to collect such wastes. Wastes of this category include but are not limited to:

a. Chemical toilet wastes

b. Industrial wastes collected in containers or tanks

c. Pleasure boat wastes

d. Septic tank pumping

e. Trailer, camper, housecar, or other recreational vehicle wastes.

3.2.10. 16.09.117 Requirements for Construction Operations.

(a) A spill response plan for hazardous waste, hazardous materials and uncontained construction materials shall be prepared and available at the construction sites for all projects where the proposed construction site is equal to or greater than one acre of disturbed soil and for any other projects for which the city engineer determines that a plan is necessary to protect surface waters. Preparation of the plan shall be in accordance with guidelines published by the city engineer.

(b) A storm water pollution prevention plan shall be prepared and available at the construction sites for all projects equal to or greater than one acre of disturbed soil and for any other projects for which the city engineer determines that a storm water management plan is necessary to protect surface waters. Preparation of the plan shall be in accordance with Chapter 16.28 of this code and with guidelines published by the city engineer.

(c) Prior approval shall be obtained from the city engineer or designee to discharge water pumped from construction sites to the storm drain. The city engineer or designee may require gravity settling and filtration upon a determination that either or both would improve the water quality of the discharge. Contaminated ground water or water that exceeds state or federal requirements for discharge to navigable waters may not be discharged to the storm drain. Such water may be discharged to the sewer, provided that the requirements of Section 16.09.110 are met and the approval of the superintendent is obtained prior to discharge. The City shall be compensated for any costs it incurs in authorizing such discharge, at the rate set forth in the Municipal Fee Schedule.

(d) No cleanup of construction debris from the streets shall result in the discharge of water to the storm drain system, nor shall any construction

debris be deposited or allowed to be deposited in the storm drain system. (Ord. 4760 § 19, 2002: Ord. 4252 § 14, 1994)

3.2.11. 16.09.130 Damage to Facilities.

When a discharge causes an obstruction, damage, or any other impairment to city facilities, the City may assess a charge against the discharger to reimburse the city for costs incurred to clean or repair said facility (Ord. 3889 § 1 (part), 1989).

3.2.12. 16.09.140 Enforcement – Criminal Penalties.

As provided in 1.08 of Title 1 of this code, violations of the provisions of this title shall be subject to criminal penalties. The following designated employee positions may enforce the provisions of this chapter by the issuance of citations. Persons employed in such positions are authorized to exercise the authority provided in Penal Code Section 836.5 and are authorized to issue citations for violations of this chapter. The designated employee positions are: industrial waste inspector industrial waste investigator, associate engineer; manager, environmental control programs, supervisor, industrial waste, and manager, environmental compliance division. (Ord. 4252 § 16, 1994: Ord. 4070 § 9, 1992: Ord. 3889 § 1 (part), 1989)

3.2.13. 16.09.141 Enforcement – Judicial Civil Penalties.*

Any person who intentionally or negligently violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be civilly liable to the City in a sum of not to exceed twenty-five thousand dollars per day for each day in which such violation occurs. The city may petition the Superior Court pursuant to Government Code Section 54740 to impose, assess, and recover such sums. The remedy provided in this section is cumulative and not exclusive, and shall be in addition to the penalty provisions of Chapter 1.08 of this code and all other remedies available to the city under state and federal law (Ord. 4252 § 18, 1994).

**Editor's Note: Former Section 16.09.141, Public Notification of Violations, previously codified herein and containing portions of Ordinance No.3889 was repealed in its entirety by Ordinance No. 4252. See Section 16.09.144 for public notification of violations.*

3.2.14. 16.09.142 Enforcement – Administrative Civil Penalties.

(a) Complaint. The superintendent may serve an administrative complaint on any person who has violated any provision of this chapter. The complaint shall state:

   a. The act or failure that constitutes the violation

b. The provisions of law authorizing the civil liability to be imposed

c. The proposed civil penalty

The complaint shall be served by personal delivery or certified mail on the person subject to requirements that the superintendent alleges were violated, and shall inform the person served that a hearing on the complaint shall be conducted within sixty days after service, unless the person charged with the violation waives his or her right to a hearing.

(b) Hearing. Unless the person charged with the violation(s) waives his or her right to a hearing, the city manager or designee of the city manager shall conduct a hearing within sixty days. If the hearing officer finds that the person has caused a violation, he or she may assess administrative penalties against the person. In determining the amount of the civil penalty, the hearing officer may take into consideration all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the economic benefit derived through any noncompliance, the nature and persistence of the violation, the length of time over which the violation occurs, and corrective action, if any, attempted or taken by the discharger. Civil penalties that may be imposed are as follows:

a. An amount not to exceed two thousand dollars per day for failing or refusing to furnish technical or monitoring reports

b. An amount not to exceed three thousand dollars per day for failing or refusing to comply in a timely fashion with any compliance schedule established by the city

c. An amount not to exceed five thousand dollars per day of violation for discharges in violation of any waste discharge limitation, permit condition or requirement issued by the city

d. An amount not to exceed ten dollars per gallon for discharges in violation of any suspension, cease and desist order or other orders, or prohibition issued, reissued or adopted by the city

(c) Appeal. Any person against whom penalties are assessed by the hearing officer may appeal the decision of the hearing officer within thirty days of notice of the decision. The city council may hear the appeal or deny review of the case. If the city council decides to hear the appeal, it shall conduct the appeal in accordance with procedures established by the council. The decision of the city council shall be in writing and shall be final. All civil penalties imposed in accordance with this section shall be payable within thirty days of the decision of the hearing officer; provided, that if the decision is appealed, all penalties shall be payable within thirty days after the city council decision on the appeal.

(d) Lien. The amount of any civil penalties imposed under this section which have remained delinquent for a period of sixty days shall constitute a lien

against the real property of the discharger from which the violation occurred resulting in imposition of the penalty. The superintendent shall cause the amount of uncollected penalty to be recorded with the county recorder, in accordance with Section 54740.5 of the California Government Code, as the same from time to time may be amended (Ord. 4252 § 19, 1994).

3.2.15. 16.09.143 Enforcement – Administrative Citation.

Any person who violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be subject to the administrative citation provisions contained in Chapter 1.12 of this code (Ord. 4760 § 20, 2002: Ord. 4287 § 2, 1995: Ord. 4252 § 20, 1994).

3.2.16. 16.09.144 Enforcement – Administrative Compliance Order.

Any person who violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be subject to the administrative compliance order provisions contained in Chapter 1.16 of this code (Ord. 4760 § 21, 2002: Ord. 4252 § 21, 1994).

3.2.17. 16.09.145 Enforcement – Notice of Non-Compliance.

(a) Unless the superintendent finds that the severity of the violation warrants immediate action under Sections 16.09.140 , 16.09.141 or 16.09.142 or permit revocation or suspension, he or she shall issue a notice of noncompliance which:

a. Enumerates the violations found

b. Orders compliance by a certain date

If the violations are not abated in the time period identified further action may be taken by the superintendent, including, but not limited to, suspension, revocation or modification of the discharger's permit pursuant to Section 16.09.040 .

(b) Subject to the following limitations, and in addition to the provisions of subsection (a), the superintendent may require a discharger that has violated any discharge limits contained in this chapter to install a temporary system for the capture, testing and release of wastewater:

a. The requirement will apply to facilities that have produced multiple violations for the same parameter at the same sampling point, when the superintendent determines that appropriate corrective measures have proved difficult to identify or implement.

b. The requirement will apply only to those specific areas of a facility from which the superintendent determines that the discharge may

be originating, rather than to the entire flow from the facility, unless there is no reasonable way to determine where the discharge may be originating.

c. The requirement will not be applied in the case of very infrequent violations or when the superintendent determines that a capture system is impractical. If the superintendent determines that a capture system is impractical, the superintendent may require an alternative compliance measure of equivalent effectiveness.

d. The requirement will be terminated following a demonstration of compliance. Twenty-one consecutive, violation-free calendar days of sampling by the discharger followed by four days of violation-free sampling by the superintendent shall constitute a demonstration of compliance (Ord. 4760 § 22, 2002).

4. Element 4 – Operation and Maintenance Program

SWRCB Requirements:

The Sewer System Management Plan (SSMP) must include those elements listed below that are appropriate and applicable to the Enrollee's system:

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

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

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

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

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

RWQCB Requirements:

Collection System Map*: Each wastewater collection system agency shall maintain up-to-date maps of its wastewater collection system facilities.*

Resources and Budget*: Each wastewater collection system agency shall allocate adequate resources for the operation, maintenance, and repair of its collection system.*

Prioritized Preventive Maintenance*: Each wastewater collection system agency shall prioritize its preventive maintenance activities.*

Scheduled Inspections and Condition Assessment*: Each wastewater collection system agency shall identify and prioritize structural deficiencies and implement a program of prioritized short-term and long-term actions to address them.*

Contingency Equipment and Replacement Inventories*: Each wastewater collection system agency shall provide contingency equipment to handle emergencies, and spare/replacement parts intended to minimize equipment/ facility downtime.*

Training*: Each wastewater collection system agency shall provide training on a regular basis for its staff in collection system operations, maintenance, and monitoring.*

Outreach to Plumbers and Building Contractors*: Implement an outreach program to educate commercial entities involved in sewer construction or maintenance about the proper practices for preventing blockages in private laterals. This requirement can be met by participating in a region-wide outreach program.*

4.1. Collection System Maps

Since 1995, the Utilities Wastewater Engineering staff has been utilizing the City's Geographical Information System (GIS) to maintain the collection system map. The GIS map includes lateral, mains, manholes, easements and other infrastructure owned by the City. A copy of as-built drawings and associated work orders (Minor Order) are scanned for map updates, cataloged and stored in the City's database. Hardcopies of records are maintained in WGW operations. Any field discrepancy that is noted by the operation staff is documented on the Map Update Request Form and mailed to the WW engineering group for investigation. The engineering group updates the wastewater map after completion of the as-built for each CIP project.

In addition to the GIS map, the Wastewater Engineering team publishes hard copies of the 200-scale map book. The map books are 11"X17" and 24"x16" in size and are in the WGW operation center and service vehicles that are assigned to the wastewater operation. Hard copies of the map books are published every other year.

Storm sewers are also shown on a GIS-based map and viewable by wastewater operation staff. The City Public Works Engineering Division is responsible for maintaining the storm sewer map. The storm sewer GIS is equipped with a tool "FLO" that can electronically trace the location of any overflow from the source to the downstream pipe or the final destination on the map (pump stations or a creek). In addition to the GIS, a hard copy of the City's storm water collection map is maintained in the WGW operation center and service vehicles that are assigned to the wastewater operation.

4.2. Operation and Maintenance Program

The City's maintenance plan has four components:

- Routine maintenance
- Preventive maintenance
- Emergency maintenance
- Predictive maintenance

4.2.1. Routine Maintenance

The City's routine maintenance program includes scheduled and planned maintenance of the entire collection system on a regular basis. Currently, the main focus of the routine maintenance is to ensure that the primary collection lines (sewer mains) and their associated manholes are free of any obstacles. For scheduling purposes, the entire collection system is divided into two

regions known as north and south, and each region is divided into 14 basins. The City has dedicated one VacCon truck and two qualified operators to each region. Based on the pre-defined annual schedule for each basin, a work order for each segment of the collection system within a basin is printed out from the computer program. After each line cleaning, the operator uses the work order to document the respective field activities. Upon completion of the daily field work, the operators enter the information from the work orders into the database. The small diameter pipes and the sewer laterals are being cleaned with rods or the snake machine.

Prior to 2005, the primary sewer lines (sewer mains) were cleaned randomly within 2-3 years period. In 2005, the City hired a contractor to hydro flush and televise the entire collection system. The cleaning project lasted over 14 months and produced over 100 hours of video footage that are currently being reviewed by the City engineers and inspectors. Since the completion of the project, the City has established a schedule that includes cleaning of the entire system within a 30 month period.

To avoid interruption of the sewer crews from their daily maintenance activities, the City has an ongoing contract with a qualified plumbing company for responding to the customers' sewer calls. On average, the contractor responds to five sewer calls a day. The contract service is being used only during the weekdays and some holidays.

4.2.2. Preventative Maintenance

The City's preventive maintenance program focuses on areas such as downtown Palo Alto, which includes many food service facilities, or areas with solid materials or roots. While the preventive maintenance is also a scheduled maintenance, the frequency of the maintenance may vary depending on the condition of the sewers. For example, FOG hot spot areas of the collection system may be cleaned more frequently during the holiday seasons than in the summer. The Flushing Program for Hot Spots is included in the **Element 4 Appendix**.

As a part of the City's preventive maintenance program, the operation crew may coordinate their cleaning schedule taking into account food service facilities. This is to ensure that FOG residue that may have been dislodged to the collection system (during the facility's interceptor cleaning) is removed from the collection system before causing any blockage.

Areas with a large amount of roots, or areas that may not be easily accessible, such as parks or easements, may be chemically treated. While in the past the operation crew has applied "Root X", or grease emulsifying agents for removal of roots and grease, the City will soon contract this task to a qualified chemical applicator.

4.2.3. Emergency Maintenance

Emergency maintenance is conducted as a part of the daily response to the primary or secondary sewer blockages that are called in or observed by the field crew. In general, the secondary lines (laterals) are cleaned after report of a blockage, or if the video of a sewer main indicates grease or roots build up at the connections. After each emergency call, and depending on the severity of the blockage or the age of the pipe, a follow up video inspection of the line is scheduled. Based on the results of the inspection, if needed, further action such as line replacement, root control or spot repair will be taken.

While the wastewater operation teams maintain the sewer mains and install laterals and access holes, the majority of capital improvement projects are handled through contracts with major construction companies.

4.2.4. Predictive Maintenance / Inspection Program

The City's predictive maintenance program includes continuous monitoring of the collection system using advanced technologies such as closed-circuit television (CCTV), SCADA and in-line flow/level monitoring. Currently, after each pipe cleaning event, the City's crew uses CCTV to evaluate the condition of the lines. A CCTV van equipped with various size cameras, a hoist for lowering and lifting the camera, and an on-board computer is being used for video inspection. The computer uses PicAx program for storing and processing images. Each video footage is then downloaded into a GIS-based program for further analysis. In addition to the video van, the City owns three portable video systems that are being used for small diameter pipes and secondary sewer lines.

In addition to CCTV and SCADA, the operation staff relies on periodic visual inspection of the mains by opening and inspecting manholes in areas with potential for accumulation of FOG.

4.3. Rehabilitation and Replacement Program

Prioritizing long term sanitary sewer main projects involves analyzing data from CCTV inspections, the Sanitary Sewer Master Plan – Capacity Study (2004), maintenance frequency and severity, overflows, and risk for potential overflow.

In November 2006, a qualified contractor completed a CCTV project that videoed over 95% of the City's wastewater collection system. The Wastewater engineers utilized the ICOMM database, equipped with a rating system, to create a Damage Severity Index (DSI) for the entire video catalog. Lines can be sorted and prioritized by DSI, type of defect, location, or other attributes. Once a priority list is established, the engineering division adds the list to its CIP plan.

The wastewater engineers also utilize the operation's maintenance records as a key indicator to develop a priority list for the CIP plan. Structural deficiencies that

cause overflows are high priority items. Areas with a high risk of overflows move up on the project's priority list.

The City has an annual project for rehabilitation and replacement of its sanitary sewer system. The funds that support the Capital Improvement Program come from the City's Sewer Fund. The sewer fund is an enterprise fund and sewer fees are established to meet projected needs.

The City replaces non-plastic lower laterals and ABS laterals older than 10 years, while replacing mains in CIP projects.

Short-term sewer projects that involve minor main or lateral replacement are performed by the WGW operations' crew or by a contractor. The City Purchasing Department has a procedure in place that allows staff to expedite the process of hiring a contractor to perform small CIP projects.

4.4. Training Program

The City uses a combination of in-house classes, on the job training, and conferences, seminars, and other training opportunities to train its wastewater collection system staff. The City encourages collection system staff to obtain Technical Certification through the California Water Environment Association (CWEA). A copy of the 2009 Collection System Maintenance Certification Candidate Handbook is included in the **Element 4 Appendix** for reference. In addition, vendors provide in-house training on tools or equipment newly purchased for use in WGW operations. While the majority of the wastewater collection system operators have 10 or more years of service with the City, ongoing training on various aspects of the wastewater collection system is essential to a successful operation. A portion of bi-weekly tailgate meetings is dedicated to training on various wastewater topics.

Since 2007, the City of Palo Alto and its wastewater partner agencies have formed a collection system group that meets on a quarterly basis. The meeting is being used for information sharing and training of the collection system operators. Most recently, overflow volume assessment and wastewater rerouting procedures were demonstrated, and employees from local agencies had the opportunity to participate in hands-on training.

On an annual basis, the WGW operators receive training on the following topics: storm water pollution prevention, confined space entry, biological and chemical hazards, VacCon safety, underground construction, use of gas detectors, application of overflow control materials, back injury prevention, overflow reporting and field documentation. In addition, the City provides free training and seminars on various professional development topics including computer application, writing, and communication skills.

4.5. Resources & Budget

4.5.1. Budget

On an annual basis, the City of Palo Alto spends over 14 million dollars on design, construction, operation, maintenance and administration of the sanitary sewer collection system. A summary of the 2008-2009 budget is shown in **Table 4-1**.

Table 4-1 – Collection System Budget Summary for Fiscal Year 2008-09

Fund Element	FY 2008-09 Starting Budget	Comments
Operation & Engineering	10,050,000	Includes media resources and public education
CIP	4,000,000	CIP Projects
Environmental Compliance	110,000	FOG program
Total	**14,1100,000**	

4.5.2. Tools and Equipment Inventories

A summary of major tools and equipment that are being used by operation staff to maintain the City's collection system is shown in **Table 4-2** on the following page. The smaller tools are kept inside the service vehicles and are easily accessible to field personnel. However, the larger tools and equipment are housed inside the City's Municipal Service center (MSC). The MSC building is accessible to employees who have an access key card to enter the building.

Table 4-2 – Tools and Equipment Inventory List

Description	Number	Comments
Flush Truck (VacCon)	2	
Rodding Truck	1	
Service Vehicles	3	
Emergency Trailer	1	
Standby Van	1	
Shoring Trailer	1	Used for deep trenches
Dump Truck 5 yard	2	
Dump Truck 10 yard	1	
Backhoe	1	
Service Vehicles	3	
Video Van	1	Televising capability from 6" -24"
Video Camera	2	Used for laterals
6" Pump	1	MSC
2" Pump	2	MSC
11/2" Pump	1	MSC
Generators	3	MSC
Snake Machine	2	Standby vehicle
Smoke Machine	1	MSC
Spill Control Rubber Dam	10	Placed inside service vans and sewer vehicles
Spill Control Rubber Matt	10	Placed inside service vans and sewer vehicles
Gas Detector	4	

4.5.3. Contingency Equipment and Replacement Inventories

As shown in **Table 4-2**, the City uses various types of equipment to operate and maintain its 208 miles of wastewater collection system. To prevent any down time, tools and equipment are serviced by qualified mechanics in the General Shop, which is managed by Operations. In addition, the Fleet department is responsible for maintenance of heavy equipment and responding to regular or after-hour emergency repairs. Replacement parts costing less than $5,000 can be purchased immediately by the supervisors or the managers. The more expensive equipment such as pumps, trailers, or trucks are purchased through a procurement process. The City also operates a General Store that maintains spare parts and critical operational items for use by the crew. After hour and weekend access to the store is limited to managers and senior staff.

4.5.4. Record Keeping and Data Management

In 2005, the City purchased a new web-based application package for tracking and analyzing wastewater collection system data. The new

database, ICOM3, is capable of handling various operational tasks including scheduling daily activities, tracking inspection reports, storing video footage and compiling regulatory reports. The new program is being used by both engineering and operations personnel. In addition, historically, both engineering and operations have been storing hard copies and electronic copies of sewer-related activities including work orders, as-built drawings, reports, and the collection system maps.

Hard copies of SSO records are kept in the City's Municipal Service Center, building C- WGW operations, located at 3201 East Bayshore Road in Palo Alto. The records must be kept for a minimum of five calendar years.

List of Documents in the Element 4 Appendix (see separate tab):

1. Flushing Program for Hot Spots
2. 2009 Collection System Maintenance Certification Candidate Handbook

5. Element 5 – Design and Performance Provisions

SWRCB Requirements:

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.

RWQCB Requirements:

Each wastewater collection system agency shall identify procedures and standards for inspecting and testing the installation of new sewers, pump stations, and other appurtenances; and for rehabilitation and repair projects.

5.1. Standards for Installation, Rehabilitation and Repair

The City has standard specifications for installation, rehabilitation and repair of facilities. The Utility Standards: Water, Gas, and Wastewater include standard detail design criteria, products, installation procedures and testing for wastewater facilities. Utility Standards incorporate, by reference, other City department standards including Public Works and Traffic, technical association standards (i.e. ASTM, AASHTO, AWWA) and CALTRANS standards. Section 2730 of the Utility Standards, the Wastewater Design Standards, is included in the **Element 5 Appendix**.

5.2. Standards for Inspection and Repair

Inspection and repair standards are included in the Utility Standards as noted above. The City has five full time inspectors to monitor the construction of CIP projects and customer service installations to ensure compliance with the City's specifications.

List of Documents in the Element 5 Appendix (see separate tab):

1. Wastewater Design Standards

6. Element 6 – Sanitary Sewer Overflow Emergency Response Plan

SWRCB Requirements:

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

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

b. A program to ensure an appropriate response to all overflows;

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

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

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

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

RWQCB Requirements:

Each wastewater collection system agency shall develop an overflow emergency response plan with the following elements:

- Notification – Provide SSO notification procedures.
- Response – Develop and implement a plan to respond to SSOs.
- Reporting – Develop procedures to report and notify SSOs per SSO Monitoring and Reporting Program.
- Impact Mitigation – Develop steps to contain wastewater, to prevent overflows from reaching surface waters, and to minimize or correct any adverse impact from SSOs.

The components of Sanitary Sewer Overflow Emergency Response Plan are as shown in the paragraphs below.

6.1. Notification

The initial notification of a blockage or SSO from the public is through the City's 24-hour Dispatch Center. SSO-related calls are routed to the Dispatch Center for proper documentation and tracking. The Dispatch Center is responsible for

routing the calls to the appropriate response team. SSO's observed by City Utilities Staff in the course of their normal duties are also reported immediately to the Dispatch Center and the WGW Operations Office Staff if feasible.

During the response time, the dispatcher is in communication with the responding team to ensure each call is being routed to the appropriate supervisor or other supporting team. The Dispatch Center records communications between the callers, as well as the responders and any other supporting team that is being dispatched to the SSO scene. Direct SSO calls to WGW operations are also forwarded to the dispatch center for tracking and documentation.

6.2. Responsibility of Dispatch Center

Utilities customers can report overflows or sewer blockages by calling one of the following numbers: (650-329-2579), (650-329-2413) or the emergency 911 number. These phone numbers are well publicized via the monthly utility bills to customers. Upon a receipt of a sewer call, staff at the Dispatch Center collects the following information:

a. Time and date of call
b. Incident number
c. Specific location
d. Nature of call
e. In case of SSO, start time of overflow
f. Caller's name and phone number
g. Caller's observation (e.g., odor, duration, location on property, cleanouts or manholes)
h. Other relevant information
i. Responder call sign number

Depending on the time of the call, the dispatch center uses the schedule shown in **Table 6-1** to dispatch a response team.

Table 6-1 - Schedule for Dispatching a Response Team

Days	Time	1st Responding Team	2nd Responding Team
Weekdays*	0630-1600	FSR	Crew
	1600-2100	FSR	Standby Crew
	2100-0630		Standby Crew
Weekends & Holidays**	0800-1800	FSR	Standby Crew
	1800-0800		Standby Crew

* On Fridays, the standby team starts at 1500 hours.
** Holiday calls are covered by an on-call contractor for responding to Category 2 SSO's. Contractors are trained in City procedures for responding to and reporting SSOs.

Standby Crew procedure and responsibilities are described in the WGW Standby Policy, which is included in the **Element 6 Appendix**.

6.3. SSO Response

In Palo Alto, depending on the time of the day, two teams are assigned to respond to sewer related calls. The responsibility of each response team is described as follow:

6.3.1. Responsibilities of the 1st Response Team

It is the responsibility of the first responder who arrives at the site of a sewer overflow to protect the health and safety of the public by mitigating the impact of the overflow to the extent feasible. Should the overflow not be the responsibility of the City of Palo Alto but there is imminent danger to public health, public or private property, or to the quality of waters of the U.S., then emergency action, including traffic and crowd control, is taken until the responsible party arrives on the scene and assumes command and control of the incident. Upon arrival at an SSO, the response crew does the following:

- Determines the cause of the overflow, (e.g. sewer line blockage; pump station mechanical or electrical failure, sewer line break, etc).
- Identifies and requests, if necessary, assistance or additional resources to correct the overflow or to assist in determining the cause.
- Determines if private property is impacted. If yes, the dispatch center immediately notifies the wastewater supervisor or the standby supervisor.
- Takes immediate steps to stop the overflow (e.g. relieve pipeline blockage, block the storm drain to recover some or all of the overflow, manually operate pump station controls, repair pipe, etc). Additional steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way).
- Requests additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the overflow.

If the first response team is a Field Service Representative (FSR), the response is limited to initial field assessment and basic containment of the overflow. Based on the initial assessment, if needed, the 2nd response team with the appropriate equipment will be called in. Each FSR is trained to arrive to the scene as quickly as practicable, often within 20 minutes of receiving the call. In the event that an SSO has entered a storm drain, the FSR will document the amount of SSO that has entered the storm drain and notify the Wastewater Collection Supervisor or Standby Supervisor. The FSR remains at the site until the 2nd response team arrives.

6.3.2. Responsibility of the 2nd Response Team

The level of response to each overflow may vary depending on the location and the volume of SSO. As a guideline for the responding team, the SSO's are divided into the following categories:

- **Level I -** Discharge is contained and has not reached the storm drain.

Wastewater and debris will be collected for disposal to the collection system. The Field Crew Lead or Primary Standby person is responsible for collecting and documenting the field data on the City's Main/Lateral Overflow Report Form.

- **Level II -** Discharge enters a storm drain but the overflow has stopped.

When the overflow enters a storm water catch basin, the second responding team uses the storm drain collection system map to block the downstream storm drain to prevent wastewater flow from reaching a creek or the bay. If the crew determines that further work is needed to remove the blockage of the line, efforts must be given to eliminate the stoppage before initiating the clean up process. Clean up must include washing off the affected area and rinsing the storm drain with fresh water. Rinse water is vacuumed for recovery. The Field Crew Lead or Primary Standby person is responsible for collecting and documenting the field data on the City's Main/Lateral Overflow Report Form. The Supervisor-In-Charge must be immediately notified to receive SSO information for filing the 2-hour report.

- **Level III –** Overflow is on going and has reached the storm drain, pump station, creek or the bay.

After the initial assessment by the responding team, the crew lead must notify the Wastewater Collection System supervisor or the Standby supervisor. The crew must continue to remove the blockage, minimize flow to the storm drain and wait for further instruction.

It is the responsibility of the responding supervisor to determine the proper course of action. The supervisor will utilize the wastewater collection system map, storm drain collection system map and other documentation to minimize the impact of the overflow to the environment. If the stoppage is anticipated to result in a prolonged overflow, the supervisor requests additional crew and equipment to remedy the situation, and if necessary, initiates rerouting of the wastewater. If an SSO reaches the creek or the bay, the supervisor may request additional assistance from outside agencies that are the wastewater treatment plant partners (City of Mountain View, City of Los Altos, Town of Los Altos Hills, Stanford University and the East Palo Alto Sanitary District).

If wastewater reaches a flowing creek, the supervisor may direct the crew to collect water samples in the event sample analysis is expected. Sampling must be in accordance to the sampling procedures.

The Field Crew Lead or Primary Standby person is responsible for collecting and documenting the field data on the City's Main/Lateral Overflow Report Form. It is the supervisor's responsibility to immediately file the two-hour notification with the regulatory agencies.

In the event that a major SSO occurs, or when wastewater reaches the creek or the bay, the Wastewater Supervisor/Supervisor-In-Charge must notify the Utilities WGW Operations manager, Public Work's Operation Manager and the Environmental Control Program Manager.

6.3.3. SSO's That Reach Surface Water

If an SSO is confirmed to have entered a creek or waterway, the wastewater supervisor and the operation manager must be immediately notified. The crew will do the following:

- Determine the extent of the SSO.
- Determine if the creek is safe to enter. During the winter storm season, cleaning the creek may not be feasible due to high water flows.
- Supervisor must call in for additional help and equipment.
- If feasible, block the creek downstream of the affected area. Block the creek in an area that is safe to enter and is accessible to set up a pump or utilize VacCons.
- To extent feasible, remove the contaminated water.
- May collect samples from upstream and downstream of the location of overflow.
- If a beach is contaminated, the supervisor must direct the crew to post warning signs at the beach and other affected nearby locations with public access.

6.3.4. Water Quality Sampling and Testing

Water quality sampling and testing is expected to occur when wastewater enters a body of water. Samples may be collected by trained personnel or the Supervisor-In-Charge. The water quality sampling procedures are listed below:

- Use an ammonia test strip. If positive, then conduct sampling.

- Samples should be collected as soon as feasible after the discovery of the SSO event.
- Only take samples when it is safe to do so. Do not enter a confined space area.
- The water quality samples should be collected from upstream and downstream of the overflow (e.g. creeks). The water quality samples should be collected near the overflow point of entry to the waterbody and every 100 feet along the shore on impoundments (e.g. ponds).
- If the presence of ammonia is confirmed, additional samples must be collected for total coliform, fecal coliform, biochemical oxygen demand (BOD), and dissolved oxygen tests.
- If the beaches are contaminated, collect a sample every 100 feet from the point of SSO entry to the beach.
- Follow-up sampling will be performed to determine when posted signs can be removed. The Wastewater Supervisor will make follow-up calls to affected agencies until posting has been discontinued.

6.3.5. SSO Resulting from Pump Station Failure

The City of Palo Alto operates only one wastewater lift station that is located in Foothill Park and serves a small community of less than 30 customers. The station houses two pumps that lift wastewater and discharges through 900 feet of force main into a 10-inch gravity sewer line. The pump station is controlled by SCADA and maintained by the wastewater crew and the Maintenance Mechanics on a regular basis. In case of any pump failure, the high level sensor activates the SCADA alarm system and the standby crew will be dispatched to the stations. To prevent overflow, wastewater from the wet well can be pumped into a vacuum truck for disposal to a nearby sanitary sewer manhole.

6.4. Sanitary Sewer Overflow Cleanup

Sewer overflow sites are cleaned after an overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) will remain on site.

Where practical, contaminated areas including storm drain lines are to be thoroughly flushed and cleaned of any wastewater or wash-down water. Solids and debris are to be flushed, swept, raked, picked-up and placed in the sewer or transported for proper disposal.

The overflow site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. Posting, if required, should be undertaken pursuant to the Section titled Public Advisory Procedure.

Where appropriate, the overflow site is to be disinfected and deodorized. Where wastewater has resulted in ponding, the pond should be pumped dry and the residue returned to a sewer line or off-site. If a pond area contains wastewater which cannot be pumped dry, it may be treated with bleach. If wastewater has reached a body of water that may contain fish or other aquatic life, bleach or other appropriate disinfectant should not be applied, and the California State Fish and Game Department should be contacted for specific instructions.

Use of portable aerators may be required where complete recovery of wastewater is not practical and where severe oxygen depletion in existing surface water is expected.

6.5. Documentation

The Wastewater Collection System supervisor is responsible for reviewing the field documentation and reporting SSO's to the appropriate agencies. Hard copies of SSO records are maintained in the City of Palo Alto Municipal Service Center (MSC) for a minimum of 5 years from the date of the SSO. This period may be extended when requested by the Regional Water Board Executive Officer.

Depending on the nature of the issue (blockage or SSO), the field crew will use appropriate forms to document field activities. A Field Service Report is filled out to document the call. If the blockage does not result in an overflow, the crew fills out the Sewer Main/lateral Overflow Stoppage Report. If the blockage causes an overflow, the crew fills out the Sewer Main/Lateral Overflow Report (SSO compliance). For the Category 1 SSO (see next section for definitions), the Supervisor-In-Charge must fill out the 2nd page of the Sewer Main/Lateral Overflow Report (SSO compliance). These Report forms are included for reference in the **Element 6 Appendix**.

6.6. Reporting

6.6.1. SSO Categories

Two categories of SSO's are defined by the State Water Board as follows:

Category 1 SSO:

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

- Equal or exceed 1,000 gallons, or

- Result in a discharge to a drainage channel[1] and/or surface water, or
- Discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system

Category 2 SSO:

All other discharges that originate from the City-owned collection system and do not meet the criteria as listed for a Category 1 SSO.

The City has further defined a Category 3 SSO as follows:

This category includes any discharge that originates from pipes, clean-outs or manholes that are not owned and operated by the City. Reporting of these SSO's is optional.

6.6.2. Initial SSO reporting for Category 1 SSOs

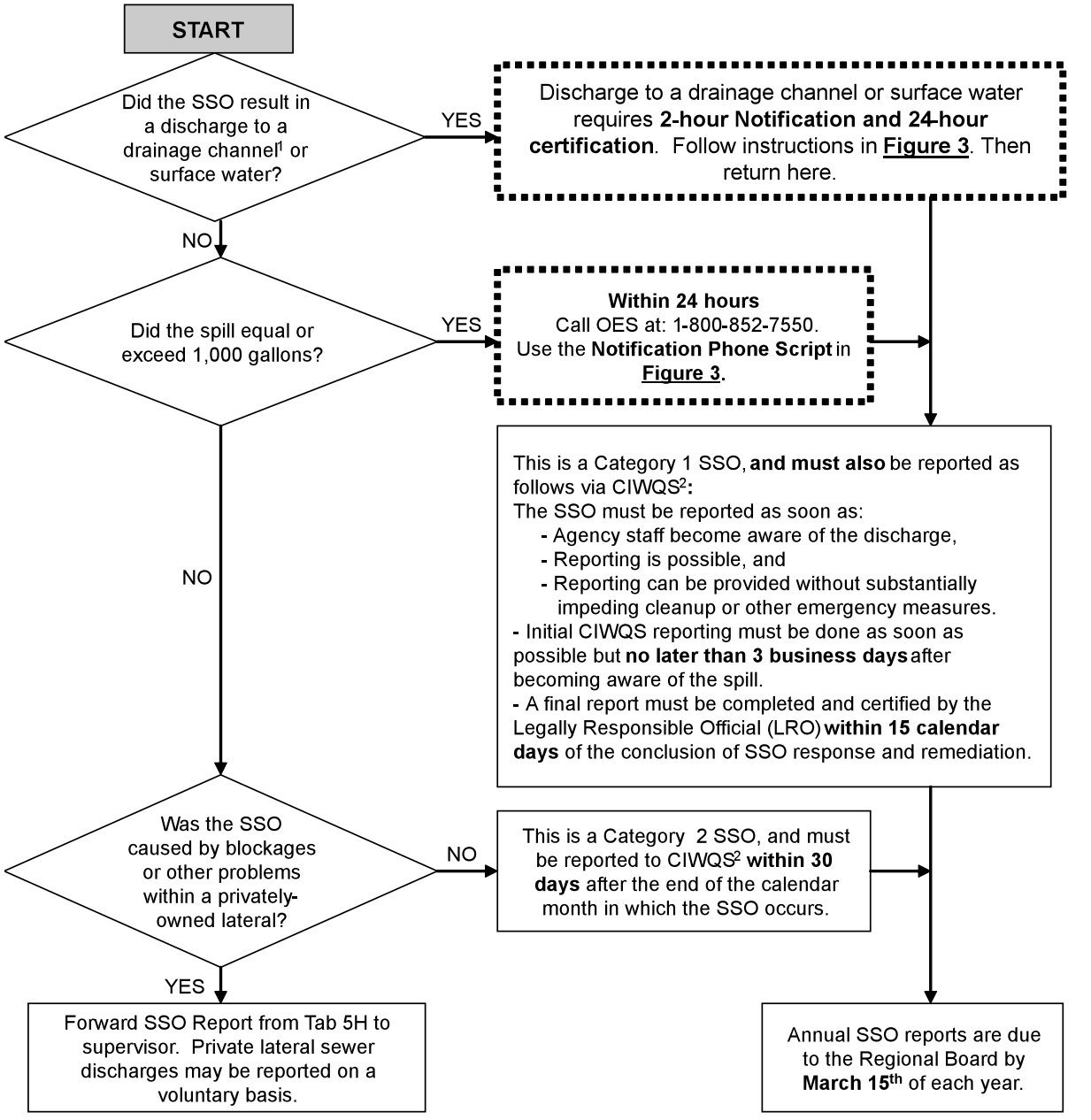
- The Field Person will immediately notify the Supervisor-In-Charge.
- The Wastewater Collections Supervisor will notify the Water-Gas-Wastewater Operation Manager. If the wastewater reaches the creek and assistance from outside agencies is needed, the Assistant Director of Utilities Operation will be notified.
- The Supervisor-In-Charge will review the field data for reporting to regulatory agencies. A guide to reporting to regulatory agencies is shown in **Figures 6-1 and 6-2** on the following pages.

6.6.3. Follow up SSO reporting for Category 1

- The Supervisor-In-Charge is responsible for filing an electronic report to RWQCB within 24 hours of becoming aware of the SSO by logging into: http://www.wbers.net/
- Within 3 business days of the SSO incident, the Supervisor-In-Charge must submit the initial report to the SWRCB's by logging into CWIQS data base @ http://ciwqs.waterboards.ca.gov/ciwqs
- Within 15 calendar days of the completion of response activities for an SSO incident, Operation Manager must review and certify the report by logging into CWIQS data base @ http://ciwqs.waterboards.ca.gov/ciwqs

[1] A "drainage channel" is now defined on the State Water Board website as "…(1) a man-made canal used to transport storm water as part of a municipal separate storm sewer system, or (2) an intermittent or perennial stream bed."

Reports will be filed in accordance to the City of Palo Alto's SSO Reporting Procedure. See **Figures 6-1 and 6-2** on the following pages for regulatory requirements associated with reporting to regulatory agencies.

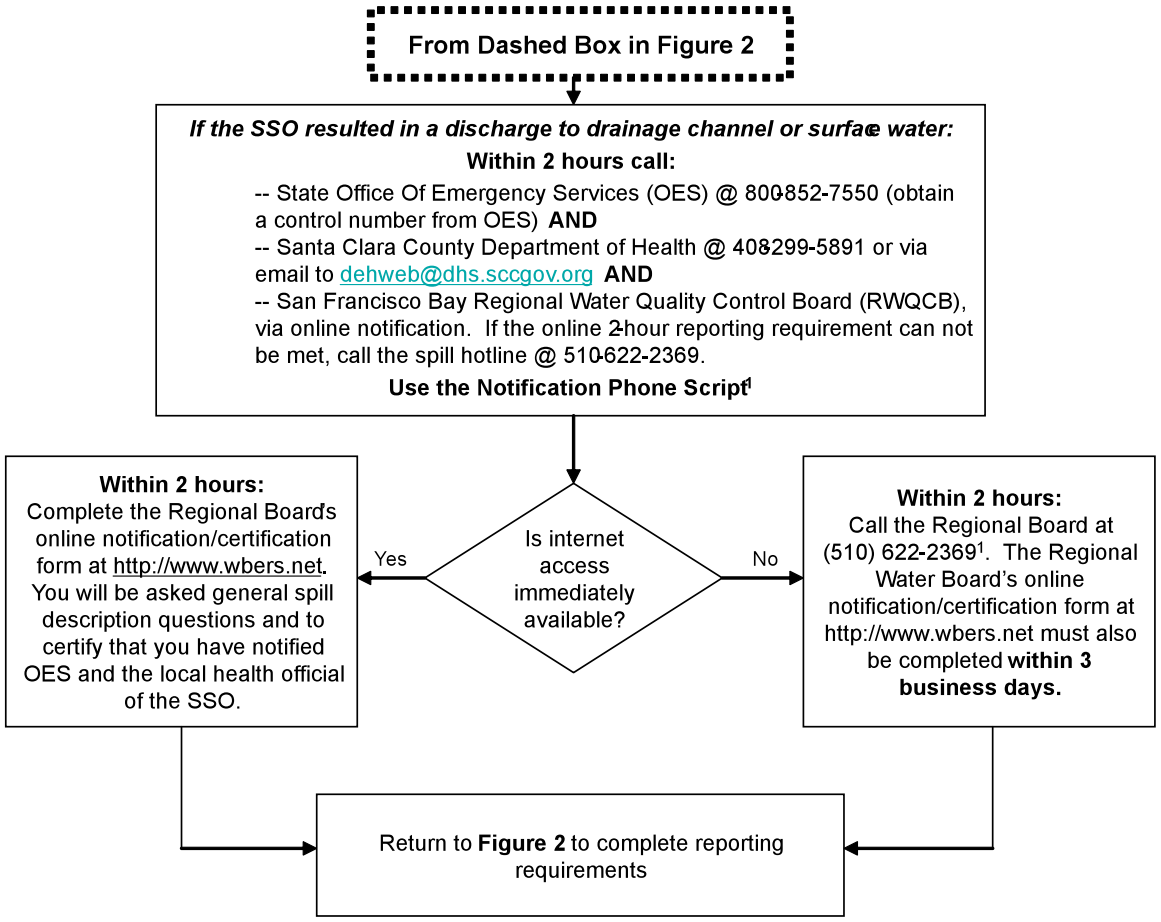


1. A "drainage channel" is defined on the State Water Board website as "…(1) a man-made canal used to transport storm water as part of a municipal separate storm sewer system, or (2) an intermittent or perennial stream bed."

2. Report the SSO To CIWQS as Follows:
   - Go to http://ciwqs.waterboards.ca.gov/ and Enter District User Name & Password
   - Click on **"SSO menu"**
   - Enter the requested information for this SSO.

Please Note: If there are no SSOs during the calendar month, City staff must provide a statement to CIWQS certifying that there were no SSOs **within 30 days** after the end of the month.

Figure 6-1 – Guide For Reporting SSOs to Regulatory Authorities – Part 1



1. Notification Phone Script:
"This is ___(name)___ from the City of Palo Alto. I have a sewage spill report to make The City of Palo Alto has experienced a an overflow of raw sewage. The overflow occurred at(time, date, and exact location). The quantity spilled was approximately(# of gallons). A City of Palo Alto crew was dispatched to the site at(time) to clean up the overflow. Cleanup operations were/are estimated to be completed by(time and date)."
NOTE: When leaving a message, please provide:
- Your name
- Name of City (Palo Alto)
- Your return phone number
- The following information about your overflow:
    1. Date and time of occurrence;
    2. Location (street address, or nearest address and cross streets,or other location identifier);
    3. Volume;
    4. Rate of flow;
    5. Duration;
    6. Surface water bodies impacted, if applicable;
    7. Responding agencies, if known;
    8. Cause of overflow;
    9. Cleanup actions and repairs taken or in process.

Figure 6-2 – Guide For Reporting SSOs to Regulatory Authorities – Part 2

6.6.4. Initial SSO reporting for Category 2

- If the wastewater enters the storm drain and is fully recovered, the field crew will immediately notify the Supervisor-In-Charge.
- The Supervisor-In-Charge will review the field data for reporting to the regulatory agencies. See **Figures 6-1 and 6-2** for more information.

6.6.5. Follow-up SSO reporting for Category 2

Within 30 calendar days after the end of the calendar month in which the SSO occurs, the Operations Manager must review and certify the report by logging into CWIQS data base @ http://ciwqs.waterboards.ca.gov/ciwqs .

6.6.6. Private Lateral Discharges

The Wastewater Collections Supervisor may report private lateral SSO's using CIWQS at his discretion, specifying that the sewage discharge occurred and was caused by a private line and identifying the responsible party, if known.

6.6.7. No Spill Certification (Monthly)

Within 30 calendar days after the end of each calendar month, if there are no SSO's during the calendar month, the Wastewater Collections Supervisor will submit an electronic report that the City did not have any SSO's. The Utilities Operations Manager will certify the report.

6.6.8. CIWQS Not Available

In the event that CIWQS is not available, the Wastewater Collection Supervisor will fax all required information to the RWQCB office at (510) 622-2460 in accordance with the time schedules identified above. In such an event, the city will submit the appropriate reports using CIWQS as soon as practical.

It is very important to NOT use the RWQCB fax number for 2-hour reporting or 24-hour certification (such as shown in **Figure 6-2**). The RWQCB does not accept those reports by fax due to their urgent nature.

6.6.9. Reporting to the City's FOG Program

If an SSO is determined to be caused by grease from one or more food service facilities, the City's FOG program manager, located at the Regional Water Quality Control Plant (RWQCP) will be notified. The wastewater supervisor is responsible to report the following information to the FOG program:

- Location of all affected laterals and the sewer main

- Date, time, address, and cause of the SSO
- Severity of the FOG
- If available, a copy of the CCTV

6.6.10. Public Advisory Procedure

In the event wastewater reaches surface water, marsh lands or a local beach, the Supervisor-In-Charge will initiate a public notification process by posting signage at the affected area. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to wastewater contamination.

6.6.11. Media Notification Procedure

When an overflow has been confirmed and is a threat to public health, the following actions should be taken, if necessary, to notify the media:

1. Field crew verifies the overflow and reports back to the Supervisor.
2. The Supervisor or the Operation manager will contact the City's Public Communication Manager (PCM). The City's PCM is responsible for updating the Media.
3. The status report must include; time, location, volume of SSO, health and safety concerns, road closures and other relevant information.
4. Any calls from the media should be routed to the PCM or the Assistant Director of the Utilities Operations.
5. The following personnel are authorized to be interviewed by the media and are the designated spokespersons:

Contact Name	**Phone Number**
Clerkson, Linda	650-329-2656
Batchelor, Dean	650-496-6981

6.6.12. SSO Investigation and Mitigation

It is the responsibility of the Wastewater Supervisor to investigate an SSO and determine the cause of the overflow. The supervisor must determine if additional maintenance is needed or a repair/replacement is required. The procedures for investigating the SSO are:

- Review the incident/overflow report
- Interview responding crew members
- Review past maintenance records
- Review past CCTV records
- Conduct new CCTV inspection if necessary
- If the SSO is caused by FOG, report to Environmental Compliance Division for further investigation

- If the SSO is located within the designated hot spot areas, consider increasing the maintenance frequency
- If the SSO is due to pipe failure, schedule repair or replacement as soon as feasible
- If the SSO is due to an under-sized pipe, infiltration/inflow or other engineering defects, contact the Utilities Engineering Division for inclusion in the CIP work

6.6.13. Post-SSO Debriefing

As soon as feasible after *major* SSO events, the participants – from the person who received the call to the last person to leave the site – should meet to review the procedures used and to discuss what worked and where improvements could be made in responding to and mitigating future SSO events. The results of the debriefing should be recorded and tracked to ensure the action items are completed. These records will be attached to the Wastewater Service Call Report.

6.6.14. Reporting Back to the Customer

In the event the initial overflow calls are from a citizen in Palo Alto, the Supervisor-In-Charge should follow up in person or by telephone to thank the caller for their efforts. The cause of the overflow and its resolution should also be provided to the customer upon request.

6.7. Training

Training of wastewater collection system staff, including overflow emergency response, is covered in Section 4.4 of this SSMP.

List of Documents in the Element 6 Appendix (see separate tab):

1. WGW Standby Policy
2. Field Service Report Form
3. Sewer Main / Lateral Stoppage Report Form
4. Sewer Main / Lateral Overflow Report Form

7. Element 7 – Fats, Oils, and Grease (FOG) Control Program

SWRCB Requirements:

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

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

RWQCB Requirements:

Each wastewater collection system agency shall evaluate its service area to determine whether a FOG control program is needed. If so, a FOG control program shall be developed as part of the Sewer System Management Plan (SSMP). If an agency determines that a FOG program is not needed, the agency must provide justification for why it is not needed.

Fats, oils, and grease, abbreviated as FOG, are an issue due to their ability to cause sanitary sewer blockages that may result in discharges of untreated wastewater in Food Service Establishments (FSE's) and to storm drains, creeks and the San Francisco Bay. FOG discharges result from improper management of food waste in residences and commercial FSE's. The RWQCP adopted ordinance language in 1992 requiring FSE's with grease generating activities to install grease removal devices. Additional ordinance requirements addressing FOG from FSE's were adopted in 2002, including a prohibition on installation of food waste disposers (garbage disposals), and a requirement that existing food waste disposers be removed by January 1, 2007. The Sewer Use Ordinance was revised in 2008 to include more requirements for FSE's to help reduce the number of FOG-related SSOs, for purposes of FOG discharge prevention to the sanitary sewer and pollution prevention to storm drain systems.

7.1. Goals for the FOG Program

The City of Palo Alto has implemented a FOG Control Program due to the significant number of FOG-generating FSE's in the City. The benefits of a FOG Control Program include FOG discharge prevention to the sanitary sewer and storm drain systems, storm drain pollution prevention from SSO's and FSE practices, reducing the number of FOG-related SSO's, improving public health and safety, avoiding of overflow-related fines, minimizing property damage claims, minimizing the risk of lawsuits, improving sewer maintenance and improving the FSE business environment. The primary goal of the FOG program is to reduce the number, severity and frequency of SSO's linked to FOG and to reduce the environmental impact, liability and exposure to the City, and the costs associated with SSO clean up.

Since 1996, Palo Alto has maintained a food service program that included developing and implementing Sewer Use Ordinance (SUO) provisions, site inspection procedures, enforcement action procedures, Best Management Practices (BMPs) and distribution of literature. The FOG Program began during the second half of 2006 with the addition of a full time FOG Program Investigator. In 2008, the program added a FOG database system running on a tablet PC which is used for inspections, data formatting, generation of follow-up letters and storm drain program inspections as they relate to FSE's. Also during 2008, criteria for a Grease Hauler Service Contract Work Plan was developed under the FOG program. The Work Plan includes Program Objectives, Ordinance Revisions, Request for Proposal (RFP), draft Agreement, draft Council Meeting Review (CMR) and other documents related to this project.

7.2. Source Control

The City has several high density and high volume restaurant areas including Downtown, Midtown, and the California Avenue Business District, which are known hot spots of FOG discharge. There are also several smaller clusters of FSE's and other individual restaurants. These areas and specific FSE's have been the primary targets for increased inspection, enforcement, and preventive cleaning.

The Partner Cities remain responsible for their collection systems and are developing independent SSMP and FOG Control Programs. The City of Palo Alto will continue to support the satellite systems as needed with creation of outreach materials, training, and assistance with FSE inspections.

The City's FOG Program staff manages plan check and specifications for newly constructed and remodeled FSE's to ensure items required by the Palo Alto Municipal Code are completed prior to approval of building permits. The Water Quality Plan Check Requirements for Newly Constructed, Tenant Improvement and Remodeled FSE Projects are included in the **Element 7 Appendix**. Grease-generating drainage fixtures must be connected to a GCD. Non-grease

generating drainage fixtures including hot discharge equipment can be connected directly to the sanitary sewer system. When drainage fixtures are properly plumbed and the GCDs are properly maintained, there should be very little to no FOG discharging to the sanitary sewer system. Improperly plumbed pipes and drainage fixtures are generally associated with FOG buildup downstream, and occurrences of sewer backups or SSO's.

New buildings constructed to house food service facilities are required to include a covered area for a dumpster. The area is designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins (used oil containers) serving food service facilities are optional. Any such drains installed must be connected to a GCD and the sanitary sewer. If tallow is to be stored outside, then an adequately sized, segregated space for a tallow bin must be included in the covered area.

7.3. Food Service Establishment Inspections

There are over 300 FSE's in the City of Palo Alto. The FOG program includes comprehensive inspections and enforcement. Inspections of FSE's occur on a routine basis, and the City conducts more frequent inspections and enforcement where necessary.

The FSE's are categorized by their potential to contribute FOG to the wastewater collection system or storm drains. Facilities located in hot spots or that have otherwise been problematic are addressed first and receive more frequent inspections. FSE's are prioritized in one of the following categories:

- Problem FSE's in hot spots
- Problem FSE's not in hot spots
- FSE's in hot spots
- FSE's that have only had minor issues in the past
- FSE's with potential to generate FOG
- FSE's without significant potential to generate FOG (juice bars, coffee shops, etc.)

A list of FOG hot spots is included in the **Element 7 Appendix**.

Past experience has shown that some facilities will frequently not meet all requirements and will need ongoing attention. These facilities will be re-visited as necessary. Facilities that demonstrate compliance will receive less attention. During the inspections, the FSE is ranked on a scale of 1 (worst) to 5 (best) on their compliance with BMPs and ordinance requirements. FSE's that cause problems in the sanitary sewer, storm drain systems or have violations of their BMPs are rated 1 or 2 depending on their location. The problematic facilities that rank 1 or 2 have one of more of the following issues:

- Experienced back-ups or overflows

- Contributed to FOG build up in the sanitary sewer (identified by CCTV or cleaning records)
- Unresolved compliance issues
- Failed to follow the proper BMPs
- Failed to keep records
- Had storm drain violations
- Failed to comply with verbal or written directives

A Food Service Facility Inspection Survey form is included for reference in the **Element 7 Appendix**.

In July of 2008, the ECD received updated lists of FSE's from the County of Santa Clara, Department of Environmental Health and the Consumer Protection Division. Not all of the 393 facilities on the list require an inspection by the City of Palo Alto, as many are farmer's markets, gas stations and general food vendors. Some of the facilities required more than one follow-up inspection.

In 2008, there were 374 FSE storm drain system inspections, which included initial and follow-up FOG inspections. Thirty-three full FOG inspections were conducted including 13 Green Business Compliance inspections, approving 9 to be in compliance for the certification. Only 4 of the 33 FSE's inspected were in compliance at the time of full inspection. Efforts were concentrated in areas of known problems and facilities with historical issues or known potential to discharge grease. Two residential inspections were conducted at apartments buildings in 2008, which were triggered by SSOs. We also conducted 5 FOG Program inspections with our Partners: the Cities of East Palo Alto and Los Altos Hills, and Stanford. Enforcement actions included 36 Compliance Directives, 58 Follow-up Letters, 1 Warning Letter, and 24 Notices of Non-compliance, 1 Compliance Agreement, and 4 Administrative Citations. There were 25 more Compliance Directive type enforcement actions as they were replaced with an automatically generating follow-up Letter with the new FOG Program Database. Many of the FOG Program compliance issues were storm water related.

During the inspection, posters on BMPs for handling FOG are distributed. The Bay Area Pollution Prevention Group (BAPPG) funded CalFOG to create a poster that is available in English, Spanish, Korean, Chinese, and Vietnamese. In 2008, 49 posters were distributed (33 English, 13 Chinese and 3 Korean).

In addition to the Posters, BAPPG created food scrapers with the RWQCP's insignia and local disposal contact info from www.cleanbay.org and a phone number. These food scrapers are BMP tools to help scrape off any remaining food and FOG waste into the trash prior to rinsing kitchen items. The City distributed at least 2 food scrapers to each FSE during inspections and during many follow-up inspections. A total of 250 food scrapers were distributed to the City of Los Altos for their FOG outreach projects.

Compliance with storm drain regulations is also assessed during the inspections. Outdoor cleaning of kitchen equipment, dumping of mop water, and poor

housekeeping around trash compactors, trash bins and tallow bins is addressed. Packages provided by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) have been distributed to 40 FSE's in 2008 during inspections and with follow-up Letters. This package includes a letter from this group; top ten BMPs for FSE's and a poster addressing stormwater issues. The package is designed for training staff in the proper procedures for cleaning FSE's inside and outside.

City staff educates the FSE management and staff on ordinance requirements and BMPs to the extent practical during inspections. If a violation is observed, the inspector issues a Compliance Directive as addressed in Follow-up Letters. Follow-up Letters have taken more emphasis over Compliance Directives as they can be generated with the new FOG Program database. Follow-up Letters are sent or issued at the time of inspection as a "thank you" to the contact person for their time and as a summary of the goals and observations during the inspection. The Follow-up Letter reminds the FSE's to complete tasks to achieve compliance for outstanding violations. For FSE's that do not achieve compliance, enforcement will be escalated according to the RWQCP Pretreatment Program's Enforcement Response Plan.

7.4. 2008 Inspection Highlights of Food Service Establishments

The City of Palo Alto highlights for the FOG inspection program are listed below:

- 33 full FOG inspections
- 374 FSE storm drain system inspections
- 36 Compliance Directives were issued
- 58 Follow-up Letters were issued
- 1 Warning Letters were issued
- 24 Notices of Noncompliance were issued
- 1 Compliance Agreements was issued
- 4 Administrative Citations including monetary penalties were issued

Enforceable actions included:

- Excessive FOG on and around tallow bins which are a threatened discharge.
- Storm drain discharges or threatened storm drain discharges such as washing kitchen equipment outside allowing wastewater to flow to the storm drain system, and also dumping mop wastewater.
- Failure to keep a maintenance log that depicts GCD clean out activities.
- Failure to maintain a GCD by not cleaning the contents out frequent enough not to allow excess FOG to pass down the line.
- Failure to have an adequate or properly functioning GCD.
- Contributing to at least one sanitary sewer overflow (SSO).
- The presence of food waste grinders that were to be removed by January 1, 2007.

- For large cafeterias and markets to have their floor finish MSDS submitted by a given due date to ensure they use a Zinc-Free Floor Finish or the can contain its waste and treat it as hazardous waste.

7.5. Outreach

7.6.1. Residential

Outreach for residents is an important component of the FOG program. The Clean Bay Campaign highlighted FOG as a pollutant of concern. In addition to the ads that were part of the campaign, residents received FOG BMP information in their utility bills. An example FOG ad is included in the **Element 7 Appendix**. There were also ads in movie theater previews and in local newspapers. In 2008, the City of Palo Alto continued the collection of tallow (yellow grease or used cooking oil) at the City's recycling center.

7.6.2. California Water Environment Association Presentation

In April of 2008, RWQCP staff presented the City of Palo Alto's FOG Program highlights at the California Water Environment Association's (CWEA) Annual Conference in Sacramento, CA. In 2009, RWQCP staff also presented an Overview of the City's FOG Program and its Results at the CWEA Annual Pretreatment, Pollution Prevention and Stormwater Conference in Monterey, CA.

7.6. Regional FOG Groups

7.7.1. California Fats, Oils, and Grease Workgroup

In 2008, RWQCP staff continued participating in the statewide California Fats, Oils and Grease (CalFOG) workgroup, a collaboration of wastewater agencies addressing management practices for fats, oils and grease. RWQCP staff funded the startup of CalFOG, and created and designed the CalFOG website (located at www.calfog.org) in 2004 and continues to maintain the site. In 2009, RWQCP staff will continue to support the efforts of CalFOG.

7.7.2. Bay Area Pollution Prevention Group

In 2008, RWQCP participated in Bay Area Pollution Prevention Group's (BAPPG) FOG Hauler Outreach Project. The goal of this project was to create outreach material on the proper FOG disposal and grease pumping requirements of AB 1333 for FOG haulers in the Bay Area. In 2008-2009, City staff served as chair of BAPPG.

7.7. Inspections and Compliance

The 2008 Clean Bay Pollution Prevention Plan includes a long-standing goal of inspecting at least one-third of the FSE's each year. The expanded FOG program will include more rigorous inspections and enforcement but will maintain the same goal for the number of inspections (**Table 7-1**).

Table 7-1 – Summary of FOG FSE Inspections for 2005-2008 & 2009 Goals

Year	2005	2006	2007	2008	Goal for 2009
Yearly Initial Inspections	10	117	88	33	110 (33%)
Yearly Total Inspections	n/a	n/a	286	374	200
FSE's in Compliance at Initial Inspection	n/a		37 (32%)	20 (23%)	40 (36%)
Compliance Directive	0	44	95	36	0*
Follow-up Letter	0	29	110	58	110
Notices of Noncompliance	2	30	32	24	20
Warning Letter	0	7	3	1	2
Compliance Agreement	0	0	4	1	0

*Compliance Directives will be classified as Notices of Noncompliance Letters in 2009

City staff has continued to prioritize FSE's in problem areas where, according to the City's Water-Gas-Wastewater Division, major FOG build-up has been identified. These areas have been targeted first due to the need for accelerated line maintenance. When this round of inspections began in 2006, the intent was to complete the initial inspections without too much follow-up and to create a priority list for the next round. Due to the severity of the situations, the procedure changed to do more follow-up and correct problems as they were discovered.

Once all of the facilities have received an initial visit, time demands are determined and priorities are refined. Setting reasonable goals for inspection frequency for each category and percentage of facilities in compliance will then be possible, and a reduction of the number of 1- and 2-rated FSE's in the system should be achieved. The City will only know the percentage of 1- and 2-rated FSE's when all FSE's have been inspected and ranked.

The City's main goals for FSE's are to have GCDs maintained frequently enough to prevent FOG from escaping from GCDs and entering the sanitary sewer system, ensuring drainage fixtures are correctly plumbed, keeping a maintenance log for GCDs, not to wash kitchen equipment or discharge wastewater to the storm drain system, and to maintain the tallow bin and trash areas free of FOG and debris.

The FOG investigator continued to inspect FSE's that applied for the County of Santa Clara's Green Business Certification Program and will continue in 2009.

The initial goal of inspecting at least one-third of the total FSE's each calendar year was adjusted due to elevated levels of follow-up and enforcement actions, in addition to program development tasks. The City plans to continue thorough inspections of FSE's in 2009.

7.8. FOG Acceptance at RWQCP and Maximizing Energy Recovery

At the present time, the RWQCP can accept up to approximately 6,000 gallons of grease waste hauler loads per day. The grease waste hauler loads are currently processed by combining the GCD waste loads with the floatables from the plant's primary sedimentation tanks. This mixture is pumped to the scum concentrator allowing the combined floatables to be bled into the incinerator where it is used as a fuel source to incinerate the biosolids from the plant. The excess water and bottom solid waste from the GCD waste loads are returned to the plant's head-works to be treated with the service area's sanitary sewer waste. The ultimate outcome of the FOG is an ash which is disposed at another location.

In 2008, City staff investigated FOG acceptance procedures at the RWQCP in order to evaluate the possibility of accepting additional grease waste hauler loads in the future.

City staff has met with several FOG to biodiesel companies to discuss the option of converting the grease hauler loads combined or separately with floatables from the sediment tanks to biodiesel. The City will continue to investigate this process in 2009.

List of Documents in the Element 7 Appendix (see separate tab):

1. Water Quality Plan Check Requirements: Newly Constructed, Tenant Improvement and Remodeled FSE Projects
2. List of FOG Hot Spots
3. Food Service Facility Inspection Survey Form
4. Example FOG Ad

8. Element 8 – System Evaluation and Capacity Assurance Plan

SWRCB Requirements:

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

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

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

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

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

RWQCB Requirements:

Capacity Assessment: Each wastewater collection system agency shall establish a process to assess the current and future capacity requirements for the collection system facilities.

System Evaluation and Capacity Assurance Plan: Each wastewater collection system agency shall prepare and implement a capital improvement plan to provide hydraulic capacity of key sewer system elements under peak flow conditions.

The Brown & Caldwell (B&C) and CH2MHILL Inflow/Infiltration (I/I) studies as well as the Camp, Dresser and McKee (CDM) master plan study in the 1980's provided the basis for the City of Palo Alto's 20-year CIP Rehabilitation/Augmentation Wastewater Program adopted in 1990 by City Council. The rehabilitation projects recommended by B&C are classified as priorities 1 through 4, but only priority 1 work was included in the 20-year CIP Wastewater Program. The early years of the 20-year program included only cost-effective infrastructure projects, (i.e., diversion structures and rehabilitation projects). By definition, excessive I/I occurs when the cost to treat the I/I exceeds the cost to repair the sewer. Therefore, the rehabilitation projects were on a schedule that was faster than the augmentation (capacity) projects.

Design for the CIP projects for sewer rehabilitation has been performed by City staff. Most of the design of augmentation work was designed in-house with certain project designs supplemented by consultants on an as-needed basis.

In 2004, an update of the Master Plan was completed by MWH Americas for the City of Palo Alto to ascertain the effectiveness of the 20-year rehabilitation/augmentation wastewater program. This document is titled, "Wastewater Collection System Master Plan –Capacity Assessment", March 2004 (Master Plan). The Executive Summary of this report and a CD containing the Master Plan are included in the **Element 8 Appendix**. The Master Plan included a model of the collection system and an evaluation of the ability for the system to handle peak flows from a 5-year design storm. Collection system improvements were designed for a 20-year design storm however. Projects in the Master Plan were broken into three groups, phases 'A', 'B', or 'C'. The 'A' group consists of high priority projects. The 'B' group corrects relatively minor deficiencies. The 'C' group identifies potential future deficiencies.

The 2004 study, due to more refined modeling, concluded that the City's 20-year CIP program was so effective that new CIP implementation recommendations included the elimination of $21 million (2003 dollars) of capacity improvements originally identified in the 1988 Wastewater Collection (WWC) System Master Plan. With over half of Palo Alto's land area designated as parks or open space, a relatively small portion (less than one percent) of the City consists of vacant, developable land with most projects being in the form of redevelopments. The current 5-year WWC CIP projects are being refocused to concentrate on the remaining capacity deficiencies noted in the updated Master Plan priority A and selected B projects and ongoing system rehabilitation projects.

List of Documents in the Element 8 Appendix (see separate tab):

1. Wastewater Collection System Master Plan – Capacity Assessment: Executive Summary
2. Wastewater Collection System Master Plan – Capacity Assessment (on CD)

9. Element 9 – Monitoring, Measurement and Program Modifications

SWRCB Requirements:

The Enrollee shall:

a. Maintain relevant information that can be used to establish and prioritize appropriate Sewer System Management Plan (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.

RWQCB Requirements:

Each wastewater collection system agency shall monitor the effectiveness of each SSMP element and update and modify SSMP elements to keep them current, accurate, and available for audit as appropriate.

9.1. Monitoring, Measurement

The City of Palo Alto Wastewater Operation tracks several performance measures through tracking logs, computer database, and annual reports. The field data for each event (pipe cleaning, SSO, lateral replacement and repairs) is compiled in a database (ICOMM) and tracked via the GIS system. On a monthly basis, the Operations Supervisor generates monthly reports to monitor and evaluate the effectiveness of the City's collection system operation. The monthly report is also discussed with engineering staff at the Division's regular monthly meetings. In addition, since January 2005 and on annual basis, the report of collection system activities has been submitted to the San Francisco Regional Water Quality Control Board. The report includes the number, cause, location, volume of SSOs and length of pipe cleaned and type of debris found. An Annual SSO Report template is included in the **Element 9 Appendix**. The City plans to continue tracking performance measures that are currently tracked.

In order to monitor the effectiveness of the SSMP, the City has selected certain, specific parameters that can be documented and compared on an annual basis. These parameters were selected because they are straightforward, quantitative, and focused on results. Changes in these parameters over time will indicate the overall success of the SSMP or, conversely, underlying conditions that can then be investigated further. The actions or measures of program effectiveness are shown in **Table 9-1** on the following page.

Table 9-1 – SSMP Monitoring Parameters, by SSMP Element

SSMP Element	Summary of Element Purpose	Actions or Measures for Tracking Effectiveness
Goals	Reduce overflows	Not needed
Organization	Establish the hierarchy and assign responsibility within the organization	Review , update and adjust based on organizational changes
Legal Authority	Ensure the City has sufficient legal authority to properly maintain the system	Modify as needed
Operation and Maintenance Program	Minimize blockages and reduce SSOs by properly maintaining the system and keeping the system in good condition	• Total number and volume of SSOs • Number of repeat SSOs (same location as any previous SSO) • Total number of mainline blockages • Total number of lateral blockages • Length of pipe cleaned • Length of pipe CCTV'd and inspected • Number of laterals replaced • Length of mains replaced • Number of clean outs installed • Length of pipe treated for roots
Design & Construction Standards	Ensure new facilities are properly designed and constructed	Modify as needed
Overflow Emergency Response	Provide timely and effective response to SSO emergencies and comply with regulatory reporting requirements	• Response time • Overtime hours • Monthly trend analysis
Fats, Oils, & Grease Control	Minimize blockages and overflows due to FOG	• Number of blockages due to FOG • Number of overflows due to FOG • Number of Facility inspections
Capacity Management	Minimize SSO's due to insufficient capacity by evaluating system capacity and implementing necessary projects	• Number of SSO's due to capacity limitations • Number of SSO's due to wet weather
Monitoring, Measurement, & Program Modifications	Evaluate effectiveness of SSMP, keep SSMP up-to-date, and identify necessary changes	As needed
Program Audits	Review the program effectiveness and make necessary changes to comply with the requirements	Formally audit the program every year
Communication Program	Evaluate effectiveness of communication program and identify necessary changes	As needed

9.2. Program Modifications

The Palo Alto's SSMP will be modified to include operational changes that affect the SSMP elements. The City will review the successes and needed improvements of the SSMP as part of the SSMP annual audit (see Element 10).

City staff will update critical information, such as radio call signs, contact information, name of the Designated Authorized Representative (DOAR) and the SSO response chain of communication, as needed. A comprehensive SSMP update will occur every 5 years, as required by the SWRCB.

List of Documents in the Element 9 Appendix (see separate tab):

1. Annual SSO Report Template

10. Element 10 – Program Audits

SWRCB Requirements:

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

RWQCB Requirements:

Each wastewater collection system agency shall conduct an annual audit of their SSMP which includes any deficiencies and steps to correct them (if applicable), appropriate to the size of the system and the number of overflows, and submit a report of such audit.

The City audits and updates its SSMP on an annual basis. The audit process is documented in the Annual SSMP Audit Form, a copy of which is included in the **Element 10 Appendix**. The audit form provides structure for a systematic review of each SSMP element in order to ensure the SSMP contains current information, regulatory requirements are satisfied, and programs are effective. If updates or changes are required, the content and timeline to complete those change are described in the audit form. The Annual SSMP Audit Form, intended as an attachment to the Annual SSO Report, is submitted to the RWQCB by March 15th following the end of the calendar year being audited.

The first annual audit was completed for the 2008 calendar year. This audit was conducted by a team that consisted of the WGW Operations Manager and Supervisor, as well as various operations personnel.

List of Documents in the Element 10 Appendix (see separate tab):

1. Annual SSMP Audit Report Form

11. Element 11 – Communication Program

SWRCB Requirements:

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its Sewer System Management Plan (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.

Outreach and public education are an important part of the City of Palo Alto's operations. On an annual basis, the City utilizes various medium (newspaper, utility insert and website) to inform its utilities customers of various topics including sanitary sewer collection system issues. Most recently, public outreach material on "how to keep your sanitary sewer working properly" was published on the web and sent to the customers. The outreach material provided instruction for reporting sewer blockage and overflows to the City's dispatch center. In addition, the Environmental Compliance Division (ECD) distributes public education materials on proper disposal and handling of the household grease.

A copy of the City of Palo Alto SSMP will be made available in the City library and on the city's web site. A section of the website entitled "Sewer System Management Plan" is currently under development and will be in place by Summer 2009. The website will include a link to the SSMP, as well as a link to the California Integrated Water Quality System's (CIWQS) public reports. This website provides public access to reported SSO data and information about regulatory developments.

A communication plan with the collection systems tributary to the RWQCP (Partner agencies) is already in place and meetings are held periodically on various topics of interest.

On October 22, 2007, the City Council passed a resolution approving the SSMP Development Plan and Schedule. Also, in accordance with section D.14 of the GWDR, the SSMP will be resubmitted for approval by the City Council if future updates result in significant changes.

Element 2 Appendix

1. WGW Radio Call Signs

WATER-GAS-WASTEWATER RADIO CALL SIGNS

NEW CONSTRUCTION	
220 – D. VanBibber (Supervisor)	650) 644-5975
221 – D. Bohna (Lead)	650) 380-4735
222 – Vacant (Lead)	650) 387-4669
223 – E. Talley	
224 – M. Haynes	
225 – Vacant	
226 – K. Hanks	
227 – F. Ramirez	
228 – P. Garcia	
229 – O. Garcia	
294 – S. Wirth	
296 – T. Hafner (Inspector)	650) 444-4941
W/G MAINTENANCE	
230 – B. Hagins (Supervisor)	650) 438-2991
231 – D. Serna (Lead)	650) 444-6188
232 – D. Camm (Lead)	
233 – A. Meneses	
234 – K. Odom	
235 – C. Sigur	
236 – J. Givens	
237 – M. Hajduk	650) 380-5394
238 – M. Simon	
239 – P. Perez	
286 – Vacant	
WASTEWATER MAINTENANCE	
240 – F. Alvarado (Supervisor)	650) 444-1268
241 – J. Wilson (Lead)	650) 444-6201
242 – D. Mendoza (Lead)	650) 444-5071
243 – Vacant	
244 – R. Justus	650) 444-4002
245 – F. Castro	
246 – E. Youngquist	
247 – J. Wortham	
248 – S. Wiggins	
249 – B. Bingham	
293 – J. Gonzalez	
GENERAL SHOP	
250 – E. Mueller (Supervisor)	650) 387-4281
251 – K. Griswold (Sr. Mechanic)	650) 444-4769
252 – S. Giovannetti	
253 – J. Hart	
254 – Vacant	
255 – P. Gutierrez	
256 – J. Hughes	
257 – R. Anderson	
258 – B. Saulus	650) 444-4664
259 – B. Will	
INSPECTORS	
295 – A. Rodriguez	650) 740-2451
297 – L. Krug	650) 387-4278
298 – R. Knox	650) 740-2494
299 – C. Crary	650) 740-2496

WATER TRANSMISSION	
260 – J. Reinert (Supervisor)	650) 444-6256
261 – D. Ostello (Lead)	650) 380-5262
262 – C. Du (Lead)	650) 444-8025
263 – M. Torres	650) 444-6308
264 – M. Perez	650) 444-5121
265 – D. Cordova	650) 444-9068
266 – J. Weir	650) 444-5693
267 – Vacant	650) 444-6716
METER SHOPS/BACKFLOW	
270 - J. Strickland (Supervisor)	650) 444-6123
271 – E. Frazier	
272 – L. Charlot	
273 – P. Manansala	650) 444-5349
274 – V. Vasquez	650) 380-4765
275 – Vacant	
276 – M. Dean	650) 444-4395
FIELD SERVICE	
270 – J. Strickland (Supervisor)	650) 444-6123
Service 1 – J. Silva (Lead)	650) 444-8911
Service 2 – J. Jensen	650) 444-6121
Service 3 – M. Akins	650) 444-5475
Service 4 – A. Silva	650) 740-8173
Service 5 – A. Gonzalez	650) 444-6122
Service 6 – Vacant	
Service 7 – R. Salas	650) 444-4668
SUPPORT STAFF	
280 – Office	
281 – M. Smart	510) 432-8595
282 – J. January	
283 – Equipment Maintenance	650) 496-6935
284 – Tow Truck	
290 – Javad Ghaffari	650) 444-6348
291 – A. Easton-Mena	
292 – R. Silva	650) 444-6124
505 – D. Batchelor	650) 444-6204
522 – T. Kaiser	650) 444-4890
WGW ENGINEERING	
201 – R. Antonio	650) 740-2498
202 – A. Pishchik	650) 566-4521
203 – J. Nguy	650) 566-4523
204 – C. Woolf	
205 – Vacant	
206 – B. Chan	
207 – L. Sorin	
208 – J. Flanigan	
209 – R. Item	
210 – Vacant	
211 – R. Long	
212 – S. Santos	650) 566-4520
213 – J. Jovel	
214 – E. Wu	650) 740-2496
215 – G. Scoby (Manager)	650) 387-5202
216 – M. Ezrina	
217 – K. Nguyen	650) 566-4522
218 – R. Ekstrand	650) 566-4511
219 – A. Le	650) 566-4528

Revised: 06/03/09_2

Element 4 Appendix

1. Flushing Program for Hot Spots
2. 2009 Collection System Maintenance Certification Candidate Handbook

Flushing Program for "Hot Spots"

The Flushing Program for the "Hot Spots" has been developed to prevent and minimize sewer overflows. There are fifteen "Hot Spot" routes, these routes were entered into our ICOMMM database and Line Cleaning /Inspection Work Orders are scheduled on a regular basis.

Our Downtown "Hot Spots" are listed below with their Flushing and Inspection dates.

Route 1 Downtown – ECR
Route 2 Downtown – Lytton
Route 3 Downtown – University
Route 4 Downtown – Hamilton
Route 5 Downtown – Emerson
Route 6 California Business District
Route 7 Sheridan
Route 8 Sherman

ROUTE	LOCATION	FLUSHING DATE	INSPECTION DATE
1	Downtown	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
2	Downtown	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
3	Downtown	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
4	Downtown	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
5	Downtown	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
6	California	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
7	Sheridan	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December
8	Sherman	3rd week in January, March, May, July, September and November	3rd week in February, April, June, August, October and December

Flushing Program for "Hot Spots"

The Flushing Program for the "Hot Spots" has been developed to prevent and minimize sewer overflows. There are fifteen "Hot Spot" routes, these routes were entered into our ICOMMM database and Line Cleaning /Inspection Work Orders are scheduled on a regular basis.

Our Midtown, College Terrace and South Palo Alto "Hot Spots" are listed below with their Flushing and Inspection dates.

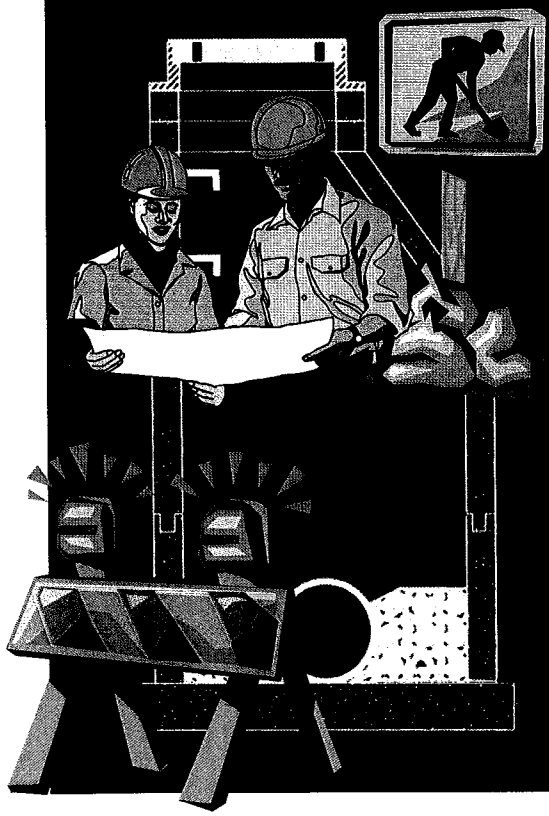
Route 9 Midtown - Bryson
Route 10 College – ECR to Park
Route 11 Leland – ECR to Park
Route 12 Park Ave. - (Ventura – Wilton)
Route 13 Ventura – ECR - Park
Route 14 Wilton – ECR – (w) Matadero - Barron
Route 15 Portage – ECR to Park

ROUTE	LOCATION	FLUSHING DATE	INSPECTION DATE
9	Midtown	3rd week in February, June and October	3rd week in April, August and December
10	College	3rd week in February, June and October	3rd week in April, August and December
11	Leland	3rd week in February, June and October	3rd week in April, August and December
12	Park	3rd week in February, June and October	3rd week in April, August and December
13	Ventura	3rd week in February, June and October	3rd week in April, August and December
14	Wilton	3rd week in February, June and October	3rd week in April, August and December
15	Portage	3rd week in February, June and October	3rd week in April, August and December

Collection System Maintenance Certification

2009

Candidate Handbook

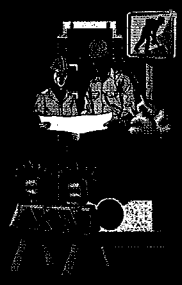


This booklet contains...

- Subject matter for the Collection System Maintenance tests
- Education and experience requirements
- Selected study references
- Certification policies

Collection System Maintenance

2009
Candidate Handbook



This handbook contains information about the Collection System Maintenance certification program. Please read this entire handbook to become familiar with certification procedures and policies. As a certificate applicant, you are responsible for knowing the contents of this handbook. If you have any questions please contact your Local Section Chair (listed in the TCP Application) or the CWEA office at 510-382-7800.

Statement of Non-Discrimination Policy

CWEA does not discriminate among applicants on the basis of age, gender, race, religion, national origin, disability, sexual orientation or marital status.

California Water Environment Association
Technical Certification Program
7677 Oakport Street, Suite 600
Oakland, CA 94621

phone: 510-382-7800
fax: 510-382-7810
web: www.cwea.org

Contents

Introduction

The California Water Environment Association
CWEA's mission is to enhance the education and effectiveness of California wastewater professionals through training, certification, dissemination of technical information, and promotion of sound policies to benefit society through protection and enhancement of the water environment.

CWEA is a California Nonprofit Corporation and is a Member Association of the Water Environment Federation and a member of the National Organization for Competency Assurance.

The Technical Certification Program
The Technical Certification Program (TCP) was created to offer multilevel technical certification for individuals employed in the water quality field. Tests are written by vocational specialists and administered throughout the year in six different disciplines: Biosolids, Collection System Maintenance, Environmental Compliance Inspection, Laboratory Analyst, Plant Maintenance (Electrical/ Instrumentation and Mechanical Technologist), and Industrial Waste Treatment Plant Operator.

CWEA first offered a certification program for operators of wastewater treatment plants in 1937. The program was administered by CWEA until 1973 when the State of California assumed responsibility for the program. During those 36 years, CWEA awarded 3915 operator certificates.

In 1975 the first committees were formed to establish a new voluntary certification program for water quality professionals specializing in disciplines other than plant operation. Eventually, the Voluntary Certification Program (VCP) emerged with specialized certificate programs for Biosolids Land Application Management, Collection System Maintenance, Plant Maintenance, Environmental Compliance Inspection, and Laboratory Analyst. The first of the new certifications were given in April of 1976. In the 1980s two more disciplines were added: Electrical/Instrumentation, and Industrial Waste Treatment Plant Operator.

Today CWEA offers certification in six different vocational programs with a total of 23 different certifications. About 2,000 certification applications are processed every year and over 5,500 certificates are currently held by individuals in California, Michigan, Hawaii, and Missouri.

The Certification Process
To become certified, ***all applicants*** must complete the Application For Technical Certification, pay the application fee, have appropriate experience/ education, and pass the computer-based test. Application instructions and fee schedules are listed on the application.

Important Information

After applications are received at the CWEA office, applicant information is compiled in the certification database. Acceptance letters are then mailed to all applicants. The experience and education given on the application is then reviewed by CWEA staff. If the application is approved, then the applicant will receive an acceptance letter. If the application is rejected, the applicant will be notified and may be asked to supply more information if warranted. After completing the test, applicants are sent official test-results. Those who pass the exam will then be mailed certificates and blue wallet cards.

Code of Ethics
The Code of Ethics is intended to reflect the standards and behavior that California Water Environment Association certificate holders and applicants expect of each other as they perform their work protecting public health and the environment and that reaffirm the value of holding a CWEA certificate. The purpose of the Code of Ethics is to ensure public confidence in the integrity and service of professional water quality workers while performing their duties.
All California Water Environment Association certificate holders and applicants are expected to meet the following standards of professional conduct and ethics:

1. To protect public health, themselves, their co-workers, property, and the environment by performing the Essential Duties of the CWEA certified vocation safely and effectively, and complying with all applicable federal, state and local regulations.
2. To represent themselves truthfully and honestly throughout the entire certification process.
3. To adhere to all test site rules and make no attempt to complete the test dishonestly or to assist any other person in doing so.
4. To refrain from activities that may jeopardize the integrity of the Technical Certification Program.

Test Administration And Admission
Testing Dates and Sites: Tests are given throughout the year. Applicants eligible for the test will receive an acceptance letter and instructions on how to schedule their exam.

Testing Window	Test Dates	Application Deadline
Spring	April 1 - June 30, 2009	February 27
Summer	July 1 - September 30, 2009	May 29
Fall	October 1 - December 31, 2009	August 31
Winter	January 1 - March 31, 2010	November 30

CWEA also provides reasonable accommodations for those with physical or learning disabilities (See following page: "Accommodations For Those With Physical or Learning Disabilities").

Test Site Admission: Certificate candidates are required to show at least one valid government issued photo identification (State driver's license or ID, or passport). Only after positive identification has been made by the testing proctor may a candidate begin the exam. Candidates do not require to show their acceptance letters to enter the test site.

Test Security: Beginning January 2009, all exams will be computer-based format. No reference material, laptop computers, or cameras are allowed in the test site. Candidates will have access to an onscreen calculator, however, examinees are welcome to bring pre-approved calculator (visit www.cwea.org/cbt). Candidates are not allowed to take any notes from the test site. Candidates who violate test site rules may be asked to leave the site and may be disqualified from the test. All violations of test security will be investigated by CWEA and appropriate action will be taken. There are no exceptions to this policy.

Test Design And Format

Test Design: All certification tests are designed to test knowledge and abilities required to perform *Essential Duties* with minimal acceptable competence.The *Essential Duties* and *Test Content Areas* for each certification were determined by a job analysis and *meta-analysis* of job specifications by two independent psychometric consulting firms.
The studies gathered data from onsite visits of over 31 water and wastewater agencies, interviews with 110 water and wastewater professionals, and analysis of more than 300 job specifications. All research was conducted under the guidance of the Technical Certification Program Committee, vocational sub-committees, and CWEA staff. All test questions are designed to measure at least one area of knowledge or ability that is required to perform an essential duty.

Test Delivery Mechanism: All tests are computer-based format and are written in the English language only.

Test Format: All Collection System Maintenance tests are given completely in the multiple choice format (see *Sample Test Questions* in this booklet for examples). The multiple choice format is considered the most effective for use in standardized tests. This objective format allows a greater coverage in content for a given amount of testing time and improves competency measurement reliability. Multiple choice questions range in complexity from simple recall of knowledge to the synthesis and evaluation of the subject matter.

Test Scoring

Scoring Method: All tests are electronically scored by CWEA. The overall test score will determine if you pass or fail the test. Generally, the minimum score required to pass the test is 75% (this passing score may be adjusted downward depending on the difficulty level of each particular test). The minimum passing score is determined by the modified Angoff Method. When taking your test it is recommended that you try your best to score as high as possible. Do not try to target the minimum passing score.

How Passing Scores Are Set: Each time a certification test is given the questions are changed resulting in a different test form. Since each form has different questions the difficulty level of the test may not be the same from form to form. The passing score is developed as an overall estimate of minimal acceptable competence in the Test Content Areas by subject matter and testing experts. Passing scores are determined by an overall passing score, not by performance on individual Test Subject Areas, and are independent of other candidate's scores. Partial credit will not be awarded for any test item answered incorrectly.

Test Rescheduling and Cancellation Instructions

Reschedule your Testing Window

To reschedule your application you must submit a written request (a letter stating that you wish to reschedule) to the adjacent (next) window once without a fee. A $40 administrative fee is required to reschedule your application again to the third window. There are no exceptions to this policy.

Reschedule your Test Appointment

If you already have a scheduled exam with our testing administrator, Pearson VUE (PV) , and wish to reschedule your appointment, you must contact (PV) one (1) business day in advance to avoid losing your exam fee.

Cancel your Application

To cancel your application you must submit a written request (a letter stating you wish to cancel your application) to CWEA. The written request must be received at the CWEA office before the testing window begins. Full refunds, less a $40 administrative fee, will be made within 4 weeks after the scheduled date.

Item Appeals

Candidates who wish to appeal a specific test item must do so during the test by completing *Candidate Comment Review Screen* during the exam. Candidate comments will be evaluated and appropriate adjustments will be made to the test content. Candidates submitting comments will not be contacted in regards to the appeal.

Test Result Notification

Exam results are routinely mailed to certificate candidates approximately 4 weeks after the exam date. No results are given over the phone, via fax or email. All results are confidential and are only released to the certificate candidate. There are no exceptions to this policy.

Issue of Certificate/Blue Wallet Card
Certificates and blue wallet cards will be issued to all candidates who pass the exam. Certificates and blue wallet cards are mailed about two to three weeks after result notifications have been mailed.

Renewal of Certification
All certificates must be renewed annually. The first renewal is due one year from the last day of the month in which the certification exam was held. Certificate renewals less than one year past due are subject to the renewal fee plus a penalty fee of 100 percent of the renewal fee. Certificates more than one year past due will need to retest to regain certification. Renewal notices are mailed to certificate holders two months before the due date. It is the responsibility of the certificate holder to ensure that his or her certificate(s) remains valid.

Re-Certification:
CWEA Certificate holders shall be required to renew certificates annually, and shall be required to provide evidence of completion of 12 contact hours of continuing education requirements every two years. For more information, visit CWEA's website: www.cwea.org.

Accommodations For Those With Physical or Learning Disabilities
In compliance with the Americans with Disabilities Act, special accommodations will be provided for those individuals who provide CWEA with a physician's certificate, or its equivalent, documenting a physical or psychological disability that may affect the individual's ability to successfully complete the certification examination. Written requests for special accommodations must be made no later than 3 weeks before the examination date.

Grade I Collection System Maintenance

Collection System Maintenance Grade I Certification is designed to demonstrate competency at the entry and basic working level. More specifically, Grade I certification implies competence in the knowledge, skills and abilities required to perform the *Essential Duties* of an entry Collection System Maintenance Technologist.

Eligibility Criteria For Taking The Test

There are no experience or education requirements for Grade I certification. Completing the Application for Technical Certification, paying the appropriate application fee, and passing the examination are the only requirements. It is, however, *recommended* that Grade I candidates have at least one year of experience working as an Collection System Maintenance Technologist performing the *Essential Duties* listed below. Many candidates without the recommended experience have difficulty successfully completing the computer-based test.

Essential Duties Of The Grade I Collection System Maintenance Technologist

Individuals certified as Grade I Collection System Maintenance Technologists are expected to possess acceptable competency when performing the tasks that are necessary for entry level Collection System Maintenance Technologists. These necessary tasks are known as the *Essential Duties*. The certification test measures knowledge, skills and abilities required to perform the *Essential Duties*.

Essential Duties for Grade I

1. Participates in inspecting, cleaning, maintaining, constructing and repairing of wastewater collection systems, utilizing a variety of mechanical or specialized equipment
2. Assists with pump station inspections, records instrument readings and makes minor adjustments to keep flow steady
3. Performs a variety of manual tasks including the lifting, carrying and removal of heavy loads including materials, equipment and debris
4. Inspects and maintains easements, some of which may be remote or difficult to access
5. Participates in excavating, shoring and re pairing the collection system, including damaged pipe, manholes and casting adjustments
6. Breaks, cuts and restores concrete and paved surfaces using jackhammers, concrete saws, etc.
7. Prepares, inspects, and maintains vehicles for use; ensures vehicles are in proper operating condition and arranges for maintenance when required
8. Ensures that tools and equipment are in proper operating condition for daily use and arranges for maintenance when required
9. Participates in the maintenance and repair of wastewater collection system lift stations and components
10. Completes accurate, legible and timely records/data of work performed
11. Participates in maintaining proper traffic safety controls at work sites to move traffic safely and efficiently around work site
12. Responds to public inquiries in a courteous manner and provides information appropriate to the area of assignment
13. Adheres to safe work practices and abides by all applicable regulations, policies and procedures
14. Reads and interprets collection system maps to determine basic flow characteristics and construction details
15. Participates in the containment and cleanup of wastewater spills
16. Stays abreast of new trends and innovations in the field of wastewater collection system operation and maintenance
17. Participates in confined space entries

Complexity Of Test Questions

At the Grade I level, certificate candidates are expected to have basic knowledge of the job and the ability to safely perform the *Essential Duties* listed above. Examinees will have to answer multiple choice questions that test knowledge, comprehension, and application of the subject matter. The complexity of the questions will range from basic recall of previously learned material and the ability to understand the meaning of the subject matter, to being able to apply knowledge to new situations.

Test Content Areas

The following list is an outline of *Test Content Areas.* Each content area is a Knowledge, Skill, or Ability that is required to perform the *Essential Duties* listed above. Since all of the Knowledge, Skills, or Abilities are required to perform the *Essential Duties* they are all equally important in the demonstration of acceptable competency. Thus, all of the content areas listed below are equally weighted on the test.

Test Content Areas for Grade I

Knowledge of:

101. Operations, services, and activities of a wastewater collection system operations and maintenance program

102. Methods and techniques of recording instrument readings and related measuring devices

103. Methods and techniques of traffic control

104. Operation and proper application of collection system maintenance equipment and tools

105. Occupational hazards and standard safety practices

106. Applicable codes, regulations, policies, and procedures

107. Underground Service Alert (USA) markings

Skill to:

108. Establish and maintain cooperative relationships with those contacted in the course of work

109. Communicate accurately, clearly, and concisely: in writing, orally, and electronically, in the English language

110. Read and interpret essential technical information including maps and drawings

111. Perform basic mathematical calculations

Ability to:

112. Perform operation, maintenance, and repair of the wastewater collection system

113. Operate a variety of specialized equipment including vehicles and collection system maintenance devices, hand and power tools, air compressors and jackhammers

114. Perform basic facilities and grounds maintenance

115. Understand and follow oral and written instructions

116. Learn more difficult collection systems construction, maintenance, and repair techniques

117. Properly lift and carry heavy loads in a variety of difficult conditions

118. Obtain appropriate licenses and certifications

119. Work in hazardous, difficult, and disagreeable conditions

Grade II Collection System Maintenance

Collection System Maintenance Grade II Certification is designed to demonstrate competency at the skilled or journey level. More specifically, Grade II certification implies competence in the knowledge, skills, and abilities required to perform the *Essential Duties* of a skilled Collection System Maintenance Technologist.

Eligibility Criteria For Taking The Test

The basic requirement is four years of full-time work in Collection System Maintenance. You may also qualify by having two years of experience and holding a Collection System Maintenance Grade I Certificate for one year, **OR** having two years of full-time experience and holding an Associate's degree in a related field, **OR** having one year of full-time experience and holding a Bachelor's, or higher, degree in a related field.

Eligibility criteria are summarized in the table below. You may qualify by meeting either Education/ Experience Combination **A**, **B**, **C**, or **D**. If you do not meet any of the combinations of experience and education, then you do not qualify for Grade II:

Combination	EDUCATION & CERTIFICATIONS +	EXPERIENCE
A	None	4 full-time years in Collection System Maintenance
B	Hold Grade I CSM Certificate for 1 yr.	2 full-time years in Collection System Maintenance
C	AA/AS degree in a related field	2 full-time years in Collection System Maintenance
D	Hold a BA/BS, or higher, degree in a related field	1 full-time year in Collection System Maintenance

Qualifying With Your Education

Holding a college degree, or its equivalent, in a field related to your vocation will reduce the number of years required for your test (see the table above). Your degree must be in a field that is related to the certificate for which you are applying. If you are uncertain if your degree is related to your vocation you should still include your degree information in your application. The Technical Certification Program Committee will determine if your degree qualifies. If it does not, you will be accepted for the next highest grade level for which you qualify. Associate's and Bachelor's degrees in technical fields are usually accepted. Degrees are evaluated on a case-by-case basis upon receipt of the application. College credit without a degree is not accepted unless it can be demonstrated that the credit is equivalent to a degree.

Essential Duties Of The Grade II Collection System Maintenance Technologist

Individuals certified as Grade II Collection System Maintenance Technologists are expected to possess acceptable competency when performing the tasks that are necessary for skilled or journey level Collection System Maintenance Technologists. These necessary tasks are known as the *Essential Duties*. The certification test measures knowledge, skills and abilities required to perform the *Essential Duties*.

Essential Duties for Grade II

1. Performs, trains and directs the duties listed for Collection System Maintenance Grade I
2. Inspects, troubleshoots and maintains proper collection system operation using advanced techniques and instruments
3. Conducts confined space entries
4. Performs maintenance and repair of waste-water collection system
5. Provides information and reports on activities as required
6. Provides assistance to individuals, agencies and private organizations with underground service alert (USA) markings, utilities and manholes
7. Plans routine traffic safety at worksites and performs non-routine traffic control under general supervision
8. Resolves routine complaints in an efficient and timely manner
9. Monitors crew performance to ensure adherence to safe work practices and compliance with all applicable regulations, policies and procedures
10. Participates in the development and promotion of safe work practices and procedures

Complexity Of Test Questions

At the Grade II level, certificate candidates are expected to have the knowledge, skill and ability to safely and effectively accomplish most of the *Essential Duties* listed above. Grade II candidates are also expected to be familiar with the Grade I Test Content Areas. Examinees will have to answer

multiple choice questions that test comprehension, application and analysis of the subject matter. The complexity of the questions will cover the ability to basically understand the subject matter; to recall and apply principles, ideas, and theories; and to break down ideas and theories into their constituent parts.

Test Content Areas

The following list is an outline of Test Content Areas. Each content area is a knowledge, skill, or ability that is required to perform the *Essential Duties* listed above. Since all of the knowledge, skills, or abilities are required to perform the *Essential Duties* they are all equally important in the demonstration of acceptable competency. Thus, all of the content areas listed below are equally weighted on the test. Candidates should also be thoroughly familiar with the Grade I Collection System Maintenance Technologist *Test Content Areas.*

Knowledge of:

Test Content Areas for Grade II

200. Knowledge, skill and ability identified on the Test Content Specifications for Collection Systems Grade I

201. Operations, services and activities of a wastewater collection system operations and maintenance program

202. Methods and techniques of wastewater collection system inspection, maintenance and repair

203. Operation and characteristics of collection system maintenance equipment and tools including heavy equipment, CCTV inspection, and monitoring devices

204. Methods and techniques, tools and materials used in the maintenance and repair of wastewater collection systems and lift stations

205. Safe working practices pertinent to wastewater collection system maintenance, repair, and construction

206. Occupational hazards and standard safety practices

207. Applicable codes, regulations, policies, and procedures

Skill to:

208. Establish and maintain effective relationships with those contacted in the course of work

209. Communicate accurately, clearly, and concisely: in writing, orally, and electronically, in the English language

210. Perform simple algebra and geometrical calculations

Ability to:

211. Perform maintenance and repair of the wastewater collection system

212. Operate a variety of collection system maintenance construction equipment such as air compressors, compactors, vibrators, jackhammers, tampers, cutters and CCTV inspection and monitoring devices

213. Work independently in the absence of direct supervision

214. Understand and follow oral and written instructions

215. Learn new and advanced collection systems construction, maintenance, and repair techniques

216. Effectively assess and interpret situations and conditions and apply independent judgement

217. Operate a variety of heavy construction equipment, such as backhoes, loaders, dozers, and dump trucks

Grade III Collection System Maintenance

Collection System Maintenance Grade III Certification is designed to demonstrate competency at the lead or advanced technical level. More specifically, Grade III certification implies competence in the knowledge, skills and abilities required to perform the *Essential Duties* of a lead or advanced Collection System Maintenance Technologist.

Eligibility Criteria For Taking The Test

The basic requirement is six years of full-time work in Collection System Maintenance. You may also qualify by having four years of experience and holding a Collection System Maintenance Grade II Certificate for two years, **OR** having four years of full-time experience and holding an Associate's degree in a related field, **OR** having three years of full-time experience and holding a Bachelor's, or higher, degree in a related field.

Eligibility criteria are summarized in the table below. You may qualify by meeting either Education/ Experience Combination **A**, **B**, **C**, or **D**. If you do not meet any of the combinations of experience and education, then you do not qualify for Grade III:

Combination	EDUCATION & CERTIFICATIONS +	EXPERIENCE
A	None	6 full-time years in Collection System Maintenance
B	Hold Grade II CSM Certificate for 2 years.	4 full-time years in Collection System Maintenance
C	Hold an Associate's degree in a related field	4 full-time years in Collection System Maintenance
D	Hold a BA/BS, or higher, degree in a related field	3 full-time years in Collection System Maintenance

Using Your Education To Help Qualify For The Test

Holding a college degree, or its equivalent, in a field related to your vocation will reduce the number of years required for your test (see the table above). Your degree must be in a field that is related to the certificate for which you are applying. If you are uncertain if your degree is related to your vocation you should still include your degree information in your application. The Technical Certification Program Committee will determine if your degree qualifies. If it does not, you will be accepted for the next highest grade level for which you qualify. Associate's and Bachelor's degrees in technical fields are usually accepted. Degrees are evaluated on a case-by-case basis upon receipt of the application. College credit without a degree is not accepted unless it can be demonstrated that the credit is equivalent to a degree.

Essential Duties Of The Grade III Collection System Maintenance Technologist.

Individuals certified as Grade III Collection System Maintenance Technologists are expected to possess acceptable competency when performing the tasks that are necessary for lead or advanced level Collection System Maintenance Technologists. These necessary tasks are known as the *Essential Duties*. The certification test measures knowledge, skills and abilities required to perform the *Essential Duties*.

Essential Duties for Grade III

1. Plans, coordinates and reviews the performance of the duties of Collection System Maintenance Grade I and Grade II
2. Coordinates with other utilities, the public, agencies and private organizations to address complex or non-routine issues
3. Participates in the evaluation of the performance of the wastewater collection system such as energy efficiency, material costs and preventive/predictive maintenance programs
4. Participates in the development and implementation of training of assigned employees in their areas of work in wastewater collection system inspection and repair methods, techniques, equipment and safety
5. Verifies the work of assigned employees for accuracy, proper work methods, techniques and compliance with applicable standards and specifications
6. Monitors and inspects the work of contractors for a variety of construction or maintenance projects
7. Analyzes and reviews system data to recommend priorities, schedules and workload performance measures
8. Develops and directs the execution of complex or non-routine traffic safety plans
9. Responds to exceptional and/or non-routine public inquiries in a courteous manner and participates in the development of formal reports and responses to the media
10. Participates in, ensures the development of, and adherence to the safety program
11. Participates in fact-gathering to respond to liability claims

12. Participates in investigations into potential wrongdoing or policy violations

13. Attends and participates in professional group meetings; stays abreast of new trends and innovations in the field of wastewater collection system operation & maintenance.

Complexity Of Test Questions

At the Grade III level, certificate candidates are expected to have the knowledge, skill and ability to safely and effectively accomplish and coordinate complex tasks as listed in the *Essential Duties* above. Grade III candidates are also expected to be familiar with the Grade I and II Collection System Maintenance Technologist knowledge, skills and abilities. Examinees will have to answer multiple choice questions that test application, analysis, and synthesis of the subject matter. The complexity of the questions will cover the ability: to abstract in particular and concrete situations; to clarify and organize theories and ideas; and to put facts together to form a new solution.

Test Content Areas

The following list is an outline of Test Content Areas. Each content area is a Knowledge, Skill, or Ability that is required to perform the *Essential Duties* listed above. Since all of the Knowledge, Skills, or Abilities are required to perform the *Essential Duties* they are all equally important in the demonstration of acceptable competency. Thus, all of the content areas listed below are equally weighted on the test. Candidates should also be thoroughly familiar with the Grade I and II Collection System Maintenance *Test Content Areas.*

Test Content Areas for Grade III

Knowledge of:

300. Knowledge, skill and ability identified on the Test Content Specifications for Collection Systems Grades I and II

301. Operations, services, and activities of a wastewater collection system operations and maintenance program

302. Principles of leadership, supervision, and training

303. Methods and techniques of wastewater collection system inspection, predictive/preventive maintenance and repair

304. Operation and characteristics of collection system maintenance equipment and tools.

305. Methods and techniques, tools and materials used in the maintenance and repair of wastewater collection systems

306. Procedures, methods, tools, and equipment used in the operation of motors, pumps, controls, and instrumentation

307. Safe working practices applicable to wastewater collection system maintenance, repair and construction

308. Pipeline and manhole design and construction

309. Occupational hazards and safety practices including the management of exceptional circumstances

310. Office equipment including computers and supporting word processing, spreadsheets, and databases

311. Applicable codes, regulations, policies and procedures

Skill to:

312. Establish and maintain cooperative working relationships with those contacted in the course of work

313. Communicate accurately, clearly, and concisely: in writing, orally, and electronically, in the English language

314. Perform advanced algebra, geometry, statistical analysis, including cut sheet problems

Ability to:

315. Lead and train maintenance and repair staff. Includes scheduling and assigning personnel and the use of materials and equipment to assure desired quality and quantity of work

316. Work cooperatively with co-workers; identify and minimize conflict

317. Compute time requirements, labor, materials, and equipment needed for various jobs

318. Plan, organize, and schedule training

319. Inspect and diagnose operating problems on pumps, electrical motors, and automatic control systems

320. Supervise and direct the most difficult collection system maintenance and repair tasks

321. Work independently under general supervision

322. Competently inspect the work of contractors and staff

323. Operate a variety of collection system maintenance equipment and tools

324. Understand, follow and provide oral and written instructions

325. Effectively assess and interpret situations and conditions and apply independent judgment

Grade IV Collection System Maintenance

Collection System Maintenance Grade IV Certification is designed to demonstrate competency at the program manager level. More specifically, Grade IV certification implies competence in the knowledge, skills and abilities required to perform the *Essential Duties* of a management level Collection System Maintenance Technologist.

Eligibility Criteria For Taking The Test

The basic requirement is eight years of full-time work in Collection System Maintenance. You may also qualify by having six years of experience and holding a Collection System Maintenance Grade III Certificate for two years, **OR** having six years of full-time experience and holding an Associate's degree in a related field, **OR** having five years of full-time experience and holding a Bachelor's, or higher, degree in a related field. All Grade IV candidates must also demonstrate at least one year of experience supervising the work of others.

Eligibility criteria are summarized in the table below. You may qualify by meeting either Education/ Experience Combination **A**, **B**, **C**, or **D**. If you do not meet any of the combinations of experience and education, then you do not qualify for Grade IV:

Combination	EDUCATION & CERTIFICATIONS +	EXPERIENCE
A	None	8 years in Collection System Maintenance with one of those years supervising
B	Hold Grade III CSM certificate for 2 years.	6 years in Collection System Maintenance with one of those years supervising
C	Hold an AA/AS, or higher, degree in a related field	6 years in Collection System Maintenance with one of those years supervising
D	Hold an Bachelor's, or higher, degree in a related field	5 years in Collection System Maintenance with one of those years supervising

Qualifying With Your Education

Holding a college degree, or its equivalent, in a field related to your vocation will reduce the number of years required for your test (see the table above). Your degree must be in a field that is related to the certificate for which you are applying. If you are uncertain if your degree is related to your vocation, you should still include your degree information in your application. The Technical Certification Program Committee will determine if your degree qualifies. If it does not, you will be accepted for the next highest grade level for which you qualify. Associate's and Bachelor's degrees in technical fields are usually accepted. Degrees are evaluated on a case-by-case basis upon receipt of the application. College credit without a degree is not accepted unless it can be demonstrated that the credit is equivalent to a degree.

Essential Duties Of The Grade IV Collection System Maintenance Technologist

Individuals certified as Grade IV Collection System Maintenance Technologists are expected to possess acceptable competency when performing the tasks that are necessary for management level Collection System Maintenance. These necessary tasks are known as the *Essential Duties*. The certification test measures knowledge, skills and abilities required to perform the *Essential Duties*.

Essential Duties for Grade IV

1. Administers and manages the performance of the duties of Collection System Maintenance Grade I, Grade II and Grade III
2. Responsible for all services and activities associated with the operation, maintenance and repair of the wastewater collection system
3. Manages the development and implementation of goals, objectives and policies for the wastewater collection program
4. Directs and supports supervisors and staff to ensure high performance in a customer service-oriented work environment that supports achieving desired goals and objectives
5. Evaluates the performance of the wastewater collection system such as staffing levels, predictive/preventive maintenance programs, energy efficiency and material costs
6. Plans, directs, coordinates, prioritizes and reviews the work plan for the collection system
7. Selects, motivates and evaluates personnel; works with employees to achieve performance goals and objectives; implements disciplinary procedures; conducts general labor relations activities
8. Develops, implements and oversees a comprehensive equipment selection and maintenance program
9. Coordinates wastewater collection system activities with other divisions, outside agencies

and organizations. Negotiates and resolves sensitive and controversial issues

10. Provides responsible and complex technical support to upper management and prepares and presents staff reports, including organizational studies

11. Originates and administers the work of contractors/consultants/engineers for a variety of construction or maintenance projects

12. Responsible for the development and administration of safety training programs for wastewater collection system staff and ensures compliance with safe working practices, rules and regulations

13. Responsible for the development and administration of assigned employees in wastewater collection system inspection, repair methods, techniques and equipment

14. Oversees and participates in the development and administration of the wastewater collection system annual budget; tracks and forecasts resources needed for staffing, equipment, materials, and supplies; monitors and approves expenditures and implements adjustments

15. Initiates, develops and administers programs, policies, and procedures to ensure the safe and efficient operation of the wastewater collection system

16. Attends and participates in professional group meetings; stays abreast of new trends and innovations in the field of wastewater collection system operation and maintenance; ensures the availability of opportunities for all staff to participate in professional development

17. Responds to difficult and sensitive public inquiries in a courteous manner and develops formal reports and responses to the media

18. Reviews and responds to liability claims
19. Investigates potential wrongdoing or policy violations

Complexity Of Test Questions

At the Grade IV level, certificate candidates are expected to have the knowledge, skill and ability to administer, coordinate and manage complex programs described in the *Essential Duties* above. Grade IV candidates are also expected to be familiar with the Grade I, II, and III Collection System Maintenance Technologist knowledge, skills and abilities. Examinees will have to answer multiple choice questions that test analysis, synthesis and evaluation of the subject matter. The complexity of the questions will cover the ability: to clarify and organize theories and ideas; to put together facts to form new solutions; to make managerial level judgements

Test Content Areas

The following list is an outline of *Test Content Areas*. Each content area is a Knowledge, Skill, or Ability that is required to perform the *Essential Duties* listed above. Since all of the Knowledge, Skills, or Abilities are required to perform the *Essential Duties* they are all equally important in the demonstration of acceptable competency. Thus, all of the content areas listed below are equally weighted on the test. Candidates should also be thoroughly familiar with the Grade I, II, and III Collection System Maintenance *Test Content Areas*.

Test Content Areas for Grade IV

Knowledge of:

400. Knowledge, skill and ability identified on the Test Content Specifications for Collection Systems Grades I, II, and III
401. Operational characteristics, services and activities of a wastewater collection system maintenance program
402. Operation and characteristics of collection systems maintenance equipment and tools
403. Methods and techniques, tools and materials used in the maintenance and repair of wastewater collection systems
404. Wastewater collection system inspection methods and techniques
405. Principles and practices of program development and administration
406. Principles and practices of budget preparation and administration.
407. Principles of leadership, supervision, training and performance evaluation
408. Principles of labor relations administration
409. Recent developments, current literature and sources of information related to wastewater collection
410. Office equipment including computers and supporting word processing, spreadsheets, databases and specialized computer software programs
411. Occupational hazards and general safety practices
412. Applicable codes, regulations, policies, and procedures

Skill to:

413. Establish and maintain cooperative relationships with those contacted in the course of work
414. Communicate accurately, clearly, and concisely: in writing, orally, and electronically, in the English language

415. Perform budget development, expenditure forecasting, statistical evaluation, and cost analysis

Ability to:

416. Manage, direct and coordinate the work of staff

417. Select, supervise, train, and evaluate staff

418. Oversee and direct the operations, services and activities of a wastewater collection system

419. Manage and administer inspection services on wastewater collection system projects

420. Read and interpret blueprints, construction drawings and specifications

421. Develop and administer goals, objectives and procedures

422. Interpret, explain, and enforce division policies and procedures

423. Develop and implement safety training programs

424. Prepare and administer program budget

425. Prepare clear and concise administrative and financial reports

426. Research, analyze, and evaluate new methods and techniques

427. Interpret and apply appropriate codes, regulations, policies, and procedures

428. Understand, follow and provide oral and written instructions

429. Effectively assess and interpret situations and conditions and apply independent judgment

Sample Test Questions

The following sample test questions are provided to help you become familiar with the multiple choice format. These questions reflect only a sample of the subject matter covered at each grade level.

For each question, choose the single most correct answer. An answer key is provided on page 14.

Grade I Collection System Maintenance

1. Operation and maintenance of a Wastewater Collection System means keeping the:

   a. power supply available.
   b. system in good operating condition.
   c. water flowing from the spigot.
   d. electrical equipment dry.

2. Upon arrival to a service request for a building lateral stoppage, you notice a constant flow coming up from the clean-out. The first thing you should do is:

   a. cap the clean-out and see if any sewage comes into the building.
   b. set up the hydro-cleaner at the downstream manhole.
   c. open the upstream manhole to see if it is full.
   d. make sure that water is not being used in the building.

3. In order to complete a sewer repair, the crew had to cut out a section of sidewalk 4 feet wide, 8 feet long and 4 inches thick. How many cubic yards of concrete are needed to restore the sidewalk?

   a. 3.5 cubic yards
   b. 0.39 cubic yards
   c. 9.6 cubic yards
   d. 0.96 cubic yards

Grade II Collection System Maintenance

1. A report of a clean-out cover missing in the side walk is routed to you. Which of the following would be the best response?

   a. Make a note and take care of it when you are in the area.
   b. Respond immediately and put a cone over it.
   c. Take care of it after lunch.
   d. Respond immediately and repair or replace the clean-out cover.

2. While conducting a video inspection, the camera becomes stuck. Which of the following would be the first step in solving this problem?

   a. Call for a backhoe and dig up the area where the camera is stuck.
   b. Disconnect the wires and close the manhole; return the following morning to see if it has freed itself.
   c. Attempt to dislodge the camera by using the tag line.

d. Attach pulling cable to a truck hitch and pull through the bad spot, then continue your inspection.

3. A new sewer line is installed using a bubble level. For every foot of pipe installed, the level measures a quarter (1/4) inch of fall. A quarter (1/4) inch of fall for every foot is equal to what percent?

   a. 4%
   b. 1.4%
   c. 2%
   d. 0.002%

Grade III Collection System Maintenance

1. The main advantage of using variable speed pumping equipment is that the pumping rate can be adjusted to meet:

   a. head loss rate.
   b. discharge rate.
   c. inflow rate.
   d. friction loss.

2. When preparing a lift station maintenance program, which of the following factors should be considered first?

   a. Computer activity codes
   b. Station I.D. codes
   c. Equipment specifications
   d. History of stoppages

3. A wet well is 115 feet long by 85 feet wide and has a water level of 18 feet. The flow is 22 million gallons a day. What is the detention time?

   a. 76 minutes
   b. 1 hour 26 minutes
   c. 1 hour 43 minutes
   d. 2 hours 26 seconds

4. Which characteristic is typical of workers who are high achievers in performing their jobs?

   a. Seeking out problems rather than avoid them
   b. Developing faster methods without seeking supervisorial advice
   c. Resolving routine problems
   d. Achieving mediocre results with abundant resources

Grade IV Collection System Maintenance

1. You receive an anonymous complaint that one of your maintenance vehicles is parked in a neighborhood and two employees are inside of the vehicle drinking alcohol. What steps, if any, should you take?

   a. Call in all maintenance personnel and have everyone tested for drugs and alcohol.
   b. Go out to the site and send the suspected employees home.
   c. Suspend the employees until fact finding is complete.
   d. Take another supervisor out to the site, observe employees, ask questions and investigate the circumstances.

2. One of your maintenance crews reports to you that a contractor working within your jurisdiction is pumping raw sewage into a nearby creek. Which of the following should you do first?

   a. Tell your crew to ask the contractor to keep a record of how many gallons are pumped into the creek.
   b. Take a police officer to the site, have the contractor arrested, and call the health department.
   c. Have your crews contain the sewage in the creek, pump it back into a nearby sanitary sewer, and have the contractor let them know if any more sewage is to be pumped.
   d. Go to the site, confirm the illegal discharge, advise the contractor to stop, take photos, take down names, and notify the health department.

3. Which of the following would be a detrimental effect of excessive infiltration and inflow?

   a. Contamination of the ground water supply
   b. Higher power costs for pump stations
   c. Reducing storm water runoff
   d. Reducing root intrusion into sanitary sewer lines

4. Which of the following would be a typical item in the Operating Budget?

   a. Purchase of a new backhoe
   b. A large sewer main replacement project
   c. Purchase of daily materials and supplies
   d. Reserve funding for future projects

Answer Key To Sample Test Questions

Question #	Grade I	Grade II	Grade III	Grade IV
1	b	d	c	d
2	d	c	c	d
3	b	c	b	b
4	——	——	a	c

Selected References

The following table lists references that may be useful when studying for the certification test. The table lists primary and supplementary study references. Primary study references are recommended as the best sources for studying for the certification test. Supplementary study references are recommended as sources that will help to further your understanding of the subject matter beyond the primary references.

For each reference a "P" indicates Primary reference and an "S" indicates a Supplementary reference. Check the Grade column that corresponds to the grade level you will be taking to determine if a reference is Primary or Supplementary. Blank boxes indicate that the reference is not appropriate for that grade level.

For information about obtaining these publications, use the contact information listed in the reference. If no phone number or website is listed, contact the publishing agency directly or contact your local library or bookstore.

This reference list is intended to assist certificate candidates in their preparation for the Collection System Maintenance Technologist certification test. Use of these references does not guarantee successful completion of the test. There may be other publications that may be helpful to candidates preparing for the test. CWEA encourages you to identify and utilize other resources in preparing for your test.

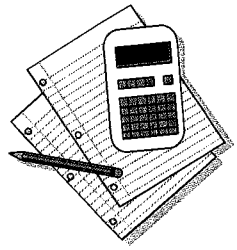
	GRADE			
Reference	**I**	**II**	**III**	**I**
"Operation and Maintenance of Wastewater Collection Systems", Volume I, Kenneth Kerri, Office of Water Programs, California State University Sacramento, 6000 J Street, Sacramento, CA. 95819-6025, (916) 278-6142. www.owp.csus.edu	P	P	P	P
"Collection System Maintenance Study Guide", Grades 1-4 (2001) CWEA (510) 382-7800 www.cwea.org	P	P	P	P
"Confined Space Entry", WEF Publication, Water Environment Federation, 601 Wythe Street, Alexandria, VA. 22314-1994, Phone: 1-800-666-0206. www.wef.org ISBN: 1-57278-122-X	P	P	P	P
"Wastewater Collection System Maintenance", Michael J. Parcher CRC Press. ISBN: 1566765692 www.crcpress.com Phone: 800/272-7737 Fax: 800/374-3401 email: orders@crcpress.com	P	P	P	P
"The Math Text for Water and Wastewater Technology" Second Edition, Wrights Training, P.O. Box 515, Elmira, CA. 95625-0515. (707) 448-3659 www.wrights-trainingsite.com (download form to order)	P	S	S	
"Operation and Maintenance of Wastewater Collection Systems" Volume II, Kenneth Kerri, Office of Water Programs, California State University Sacramento, 6000 J Street, Sacramento, CA. 95819-6025, Phone: (916) 278-6142.			P	P
"Wastewater Collection Systems Management", (Manual of Practice No.7), 5th Edition, ISBN: 1-57278-152-1 Water Environment Federation, 601 Wythe Street, Alexandra, VA. 22314-1994, 1-800-356-5705. www.wef.org			P	P
"Manage for Success: Effective Utility Leadership Practices", Office of Water Programs, California State University Sacramento, 6000 J Street, Sacramento, CA. 95819-6025, (916) 278-6142. www.owp.csus.edu				S
"Supervisor's Guide to Safety and Health Programs", Water Environment Federation, 601 Wythe Street, Alexandria, VA. 22314-1994, 1-800-666-0206.				S
"Applied Math for Wastewater Operators", Joan Kirkpatrick Price, CRC Press, 1-800-374-3401 www.crcpress.com ISBN: 0877620892				S
"Utility Management" Office of Water Programs California State University Sacramento 6000 J Street Sacramento, CA 95819-6025 916/278-6142 www.owp.csus.edu/	S	S	P	P
"Manual of Traffic Controls for Construction and Maintenance Work Zones-1996 State of California Department of Transportation 1900 Royal Oaks Drive Sacramento, CA 95815 www.dot.ca.gov Download from www.cwea.org/book_brcsg_csm3.shtml or www.dot.ca.gov/manuals.htm	P	P	P	P
"Safety and Health in Wastewater Systems" , WEF Manual of Practice SM-1 Water Environment Federation 601 Wythe St. Alexandria, VA 22314-1994 800/666-0206 www.wef.org ISBN: 1-881369-87 -0	P	P	P	P

	GRADE			
Reference	**I**	**II**	**III**	**IV**
"Manual of Traffic Controls for Construction & Maintenance Work Zones—1990 State of California Department of Transportation 1900 Royal Oaks Dr. Sacramento , CA 95815 (916)445-3520; http://svhqsgi4.dot.ca.gov/hq/traffops/signtech/signdel/pdffiles.htm	P	P	P	P
"Mathematics for Collection System Operators, a Workshop Manual OCT, Inc. P.O. Box 332 Gladstone , OR 97027 ; www.octinc.com	S	S	S	S
"Sewer Rehabilitation Handbook NASSCO" 140 Circle Dr. , Suite 103 Maitland, Fl 32751 www.nassco.org	S	S	S	S
"Trench Safety Shoring Manual, Red Cass Cruise Publications 1430 Tully Road, suite 416 San Jose, CA 95122	S	S	S	
"Operation and Maintenance of Wastewater Collection Systems, WEF Manual of Practice No.7-1985" Water Environment Federation 601 Wythe Street Alexandria, VA 22314-1994 ; (800)666-0206 ; www.wef.org	S	S	S	S

Conversions and Formulas Given in the Certification test

Conversions
12 inches = 1 foot
36 inches = 3 feet = 1 yard
5,280 feet = 1 mile
1,440 minutes = 1 day = 24 hours
144 square inches = 1 square foot
9 square feet = 1 square yard
43,560 square feet = 1 acre
1,728 cubic inches = 1 cubic foot
27 cubic feet = 1 cubic yard
1 cubic foot of water contains 7.48 gallons
1 cubic foot of water weighs 62.4 pounds
1 gallon of water = 8.34 pounds
1 million gallons per day (mgd) = 694 gallons per minute (gpm)
1 million gallons per day (mgd) = 1.55 cubic feet per second (cfs)
1 kilowatt = 1,ooo watts

Formulas
Flow = Area×Velocity



Area:
Rectangle = Length×Width
Circle = $0.785\times(\text{Diameter})^2$

Circumference of a Circle = 3.14×Diameter

Volume:
Rectangular Solid = Length×Width×Depth
Right Rectangular Cylinder = $0.785\times(\text{Diameter})^2$
$= B\times(\text{Radius})^2\times\text{Length}$

$$Slope = \frac{Rise}{Run}$$

Preparing For Your Test

This section addresses a few possible methods for preparing for the certification test. Since you are most familiar with your own abilities you are responsible for determining the best method for preparing for your certification test. Following the suggestions in this section does not guarantee you will pass the certification test.

Determining Your Preparedness: An individual's preparedness for the certification test depends on a number of things including amount of practical experience in the vocation and years of education. If you are unsure how prepared you are for the test review the *Essential Duties* and *Test Content Areas* for the test that you are considering. If you are not familiar with most of the *Essential Duties* and *Test Content Areas* you should consider reviewing some of the material in the references listed for that grade level. You may also want to consider applying for a lower grade level if appropriate.

Using The Selected References: After evaluating how well prepared you are for the test you may want to review some of the Selected References. The references in this list may be used to review those Test Content Areas that you are not familiar with or those for which you have little background. Well prepared candidates may only have to brush-up on a few topics while those less prepared may have to study extensively.

Study Sessions: CWEA Local Sections host at least two study sessions in various parts of California. All applicants will be mailed the date and location of the nearest preparation classes if provided by Local Section to CWEA staff. Usually these classes are given about one month before the test date and last a full day with Grades I and II material covered in the morning and Grades III and IV. covered in the afternoon.

Using the Essential Duties and Test Content Areas as a Guide to Your Study: The Essential Duties (EDs) are a basic outline of the test subject matter. You can use the EDs as your study guide by referring to the EDs in the primary Selected References. For example, if you are preparing for the Grade II test, and you are not very familiar with ED #7 (Routine traffic safety planning), you can look up "Traffic control zones" in the index of *Operation and Maintenance of Wastewater Collection Systems Volume 1*. There you can read about safe procedures for traffic control on pages 141-145. Similarly, you could read about Test Content Area (TCA) #6 (Occupational hazards and standard safety), in the same reference. As you study you will find that the TCAs are related to the EDs (TCA #6 is clearly related to ED #7). Each test question is written to address at least one TCA and its related

FAQs

Frequently Asked Questions

Question: Is it required that I begin at the Grade I level then work my way up from there to higher levels?
Answer: No, you may take any test that you qualify for with your education and experience. However, if you are just starting out you can see by the education and experience requirements that you can work your way up the grade levels faster if you become certified at Grade I, then achieve each successive certification as soon as you get the required education and experience.

Question: If I take a Grade II, III, or IV test will I have to know the Test Content Areas for the lower level tests?
Answer: Yes, the subject matter for each test builds on the subject matter for those tests below its grade level. A thorough knowledge of the Test Content Areas for the grade level that you are taking is most important to your preparation, but you should expect questions from any of the lower grade levels.

Question: If I am re-taking a test that I had previously failed do I need to re-submit a full application and the entire application fee?
Answer: No, you must complete the Re-Test application with appropriate fees.

Question: Is continuing education required to renew my certification?
Answer: Yes. For any certificate earned on or after July 2001, you need to obtain 12 hours of continuing education every two years. For more information, visit www.cwea.org, or feel free to call the CWEA office.

Question: How long is the test?
Answer: All tests have about 75-100 questions and 3 hours are given for completion.

Question: Can I take more than one certification test at a same time?
Answer: Yes, but you can only take up to two at a same time (under a different vocation). You will be given a total of three hours to complete both tests.

Question: How do I get a receipt showing I paid for the test?
Answer: A receipt is sent to all applicants upon request. Hold on to this receipt until the certification process is over in case you have to submit it to your employer for reimbursement.

Question: If I am applying for the Grade IV test do I need to be a Supervisor?
Answer: No, you just need to have about one year of supervision experience, verified by your manager. You do not have to hold the title of "Supervisor."

Testing Window	Test Dates	Application Deadline
Spring	April 1 - June 30, 2009	February 27
Summer	July 1 - September 30, 2009	May 29
Fall	October 1 - December 31, 2009	August 31
Winter	January 1 - March 31, 2010	November 30

Other CWEA Certificate Programs

- Biosolids Land Application Management
- Environmental Compliance Inspector
- Laboratory Analyst
- Plant Maintenance
  - Electrical Instrumentation
  - Mechanical Technologist
- Industrial Waste Treatment Plant Operator

California Water Environment Association
7677 Oakport Street, Suite 600
Oakland, CA 94621

Have a question?
Give us a call at (510) 382-7800.

Element 5 Appendix

1. Wastewater Design Standards

WASTEWATER DESIGN STANDARDS

1.01 DESIGN WASTEWATER FLOW

General:

A capacity study report shall be submitted by the Project Engineer when plans are submitted for preliminary review. The report shall provide the following information for the study area:

A. Pipe information for each new sewer reach, including:

Pipe diameter
Slope
Invert elevations
Length
Roughness coefficient for Manning's equation
Design capacity
Full pipe capacity
Design flow
Percentage of full pipe capacity utilized[1]
Pump station operation parameters (if applicable)

B. Land use information for conditions prior to commencement of project, immediately after completion of project, and at build-out, including:

Residential users
Square footage for Commercial/Industrial users
Square footage for "High Tech" Industries[2]
Sewered acreage

C. Map showing:

Location of new sewer reaches and pump stations
Proposed connection point(s) to existing City sewers
Location of residential/commercial/industrial users

[1] Calculated by dividing the design flow by the full pipe capacity and multiplying by 100.

[2] "High tech" industries are defined as those with unusually high water requirements

Design:

Sewers shall be designed for a design flow 20 years from the current year. The design flow is composed of up to three components: peak base wastewater flow (PBWF), groundwater infiltration (GWI), and rainfall-dependent infiltration/inflow (RDI/I). The design flow shall be based on the greater of the following two formulas:

(PBWF X .75) + GWI + RDI/I
PBWF + GWI

Exception: If the wastewater flow is pumped, design flows downstream of the pump station shall be based on the maximum capacity of the pump(s).

1.01.01 Peak Base Wastewater Flow (PBWF)

Average base wastewater flow (ABWF) is the average daily dry weather flow contributed from residential, commercial, industrial, and "high tech" users. ABWF is calculated by applying the unit flow rates shown in Table 1-1 and then multiplying those rates by the number of units for the appropriate category. If supporting data indicates the need, a higher unit flow rate should be applied for commercial/ industrial users. The ABWF values must be multiplied by a peaking factor to account for the variations that occur hour-to-hour and day-to-day.

A peaking factor is determined by the equation:

$$Peaking\ Factor = 3.15 * ABWF^{-0.104}$$

where ABWF is in million gallons per day (mgd). The peaking factor has a maximum of 4.0 and a minimum of 1.0.

$$PBWF = ABWF * Peaking\ Factor$$

1.01.02 Groundwater Infiltration (GWI)

Groundwater infiltration is groundwater that enters the collection system from defects in the pipes, pipe joints, and sewer structures. The amount of GWI entering the collection system depends on the structural condition of the system, the depth of the pipes, and the elevation of the groundwater table relative to the elevation of the sewer pipes. GWI tends to decrease during the dry summer and fall months and gradually increases as the wet-weather season progresses.GWI is calculated by applying the GWI unit flow rate that corresponds to the project's basin to the sewered area. GWI unit flow rates are shown in Table 1-1.

1.01.03 Rainfall-Dependent I/I (RDI/I)

Rainfall-Dependent I/I is storm water that enters the collection system in direct response to the intensity and duration of individual rainfall events. In addition to being dependent on rainfall events, RDI/I is sensitive to soil moisture, increasing throughout the wet weather season as the soil moisture increases. A 20-year storm event shall be used to determine estimated RDI/I for new sewers.

RDI/I is calculated by applying the RDI/I unit flow rate that corresponds to the project's basin to the sewered area. RDI/I unit flow rates are shown in Table 1-1.

Table 1-1 Unit Flow Rates for ABWF, GWI, and RDI/I*

A. Average Base Wastewater Flow (ABWF)

Land Use Category	Land Use Designation	Unit (gpd/unit)	Unit Flow Rate (gpd)
Residential			
Single Family	SF	Dwelling Unit	220
Multi-Family	MF	Dwelling Unit	160
Transit-Oriented	CC	Dwelling Unit	160
Commercial	CS, CN, CH	Building Sq. Ft.	0.15
Research/Office Park	RO	Building Sq. Ft.	0.10
Light Industrial	LI	Building Sq. Ft.	0.10
Major Institutional	MISP	Building Sq. Ft.	0.15
School	S	Student	15

B. Groundwater Infiltration (GWI) = 500 gpd/acre

C. Rainfall-Dependent I/I (RDI/I) = 1,900 gpd/acre

* All rates are based on the 2004 Wastewater Collection system Master Plan.

1.02 PIPE CAPACITY

The theoretical capacity of new pipes shall be calculated using Manning's equation. The "n" value (Manning's roughness coefficient) shall be equal to 0.014 for pipes less than 48 inches in diameter and 0.013 for pipes greater than or equal to 48 inches in diameter.

Manning's Equation

$$Q\ (cfs) = 1.49 / n * A * R_h^{2/3} * S^{½}$$

Q = Flow (cfs)
n = Manning's roughness coefficient
A = Area in flow (ft2)
R_h = Hydraulic Radius (ft)
S = Slope (ft/ft)

1.03 PIPE SIZE, SLOPE, DEPTH, AND ALIGNMENT

1.03.01 Size

Pipes less than or equal to 10 inches in diameter shall be sized to handle peak flows at 75% of full pipe capacity. Pipes greater than 10 inches in diameter shall be sized to handle peak flows at 90% of full pipe capacity.

No gravity sewer mains shall be less than 8 inches in diameter and no sewer laterals less than 4 inches in diameter.

As a rule, when a smaller sewer joins a large one, the top of both pipes (crowns) should be at the same elevation.

1.03.02 Slope

All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second. The following are the minimum slopes that should be provided:

Sewer Size	Minimum Slope (Feet Per 100 Feet)
8 inch	0.34
10 inch	0.25
12 inch	0.19
15 inch	0.14
18 inch	0.11
21 inch	0.09
24 inch	0.08
27 inch	0.07
30 inch	0.06
36 inch	0.04

Where velocities greater than fifteen (15) feet per second are attained, special provision shall be made to protect against displacement by erosion, shock, and hydraulic jumps at changes in velocity. Sewers on 20 percent slopes or greater shall be anchored securely with concrete anchors, spaced as follows:

a. Not over 36 feet on center for grades of 20 to 35 percent;

b. Not over 24 feet on center for grades of 35 to 50 percent;

c. Not over 16 feet on center for grades of 50 percent and over.

1.03.03 Depth

In general, sewers should be below pressure utilities and be sufficiently deep to receive sewage from basements.

Crown (top inside surface of the pipe) of any inlet pipe shall not be lower than the elevation of the outlet main crown in the manhole, unless otherwise approved by the Engineer.

1.03.04 Alignment

The horizontal and vertical alignment of sewers shall be maintained by the use of laser survey equipment. Unless otherwise approved by the Project Engineer, all sewers shall be constructed straight and at uniform grade between manholes.

1.04 MANHOLES

Manholes shall be installed: at the end of each lines; at all changes in grade, size or alignment; at all intersections; and at distances not greater than 400 feet. Greater spacing may be permitted in large sewers greater than 30 inches in diameter.

1.04.01 Drop Manholes

A drop pipe should be provided for a sewer entering a manhole at an elevation of 30 inches or

more above the top of the manhole outlet pipe. Where the difference in elevation between the incoming sewer and the top of the outlet pipe is less than 30 inches, the invert should be channeled to prevent solids deposition.

Drop manholes should be constructed with an outside drop connection. Inside drop connections, allowed only in special cases approved by the Engineer, shall be secured to the interior wall of the manholes and provide access for cleaning.

Due to the unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in concrete.

The minimum diameter of manholes shall be 48 inches. A minimum access diameter of 24 inches shall be provided.

The flow channel through a manhole should be made to conform in shape and slope to that of the sewers.

Manholes shall be of the pre-cast concrete type with a poured-in-place base.

All pipes entering the manhole shall be provided with a flexible joint within 12 inches of the edge of the concrete base.

1.05 SEWERS CROSSING STREAMS

Sewers crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line and shall be installed in a steel casing. If open cut excavation method is used, casing shall be encased in concrete. In general the following cover requirements must be met:

a. One foot of cover is required where the sewer is located in rock;

b. Three feet of cover is required in other material. In major streams, more than three feet of cover may be required, and

c. In paved stream channels, the top of the sewer line should be placed a minimum of one foot below the bottom of the channel pavement.

Less cover will be approved only if the proposed sewer crossing will not interfere with the future improvements to the stream channel. Reasons for requesting less cover should be given in the Bid.

Sewers located along streams shall be located outside of the stream bed and sufficiently removed therefrom to provide for future possible stream widening and to prevent pollution by siltation during construction.

1.05.01 Alignment

Sewers crossing streams should be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be free from change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

1.05.02 Materials

Sewers entering or crossing streams shall be constructed of Class 52 Ductile Iron Pipe with concrete encasement. Sewers shall be constructed so they will remain watertight and free from

changes in alignment or grade. Material used to backfill the trench shall be stone, coarse aggregate, washed gravel, or other materials which will not cause siltation.

1.05.03 Siltation and Erosion

Construction methods that will minimize siltation and erosion shall be employed. The design engineer shall include in the Project Specifications the methods(s) to be employed in the construction of sewers in or near streams to provide adequate control of siltation and erosion. Project Specifications shall require that cleanup, grading, seeding, and planting or restoration of all work areas shall begin immediately. Exposed areas shall not remain unprotected for more than seven days.

1.06 AERIAL CROSSINGS

Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent overturning and settlement.

Expansion jointing shall be provided between above-ground and below-ground sewers.

For aerial stream crossings the impact of flood waters and debris shall be considered.

1.07 PROTECTION OF WATER SUPPLIES

1.07.01 Water Supply Interconnections

There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.

1.07.02 Relations to Water Works Structures

In general, sewers shall meet the requirements of the California Department of Health Services "Criteria for the Separation of Water Mains and Sanitary Sewers" - Basic Separation Standards.

a. Parallel Construction: The horizontal distance between pressure water mains and sewer lines shall be at least 10 feet.

b. Perpendicular Construction (Crossing): Pressure water mains shall be at least one foot above sanitary sewer lines where these lines must cross.

These separation distances shall be measured from the nearest edges of the facilities.

Exceptions to the basic separation standards shall comply with the "Criteria for the Separation of Water Mains and Sanitary Sewers" and will be reviewed by the City on a case by case basis. (See Utility Standard Detail #WGW-08)

Water mains and sewer lines must not be installed in the same trench.

*** **END OF SECTION** ***

Element 6 Appendix

1. Water Gas Wastewater Standby Policy
2. Field Service Report Form
3. Sewer Main / Lateral Stoppage Report Form
4. Sewer Main / Lateral Overflow Report Form

Water-Gas-Wastewater Standby

This policy supersedes all previous Utilities policies on this topic and is intended to be used as a reference tool in conjunction with the SEIU Memorandum of Agreement, the City of Palo Alto Merit Rules and Regulations, California Labor Law, and the City of Palo Alto Policies and Procedures.

The objective of maintaining a Standby program is to ensure that personnel are available to immediately respond and take corrective action to WGW emergencies after regular business hours.

The primary responsibility of the Standby person is to eliminate any hazard to the public and protect against property damage. After the immediate hazard has been eliminated the Standby person shall, if at all possible, restore service to any customers affected by the emergency on a temporary or permanent basis. Each employee must understand how critical their decision making can be when faced with an emergency situation. Standby employees must be able to respond to any call and be on the jobsite within one hour, troubleshoot the problem, and proceed with a safe and effective resolution of the issue. All Standby personnel and crew working after hours must wear the proper city issued uniform and PPE while performing their tasks. Water-Gas-Wastewater Operations will maintain a three person standby team that will work in conjunction with the WGW Standby Coordinator, WGW Standby Supervisor, the On-Call Field Service Representative (FSR), the On-Call Water Transmission and other City designated standby personnel. The WGW standby schedule will begin at 4:00pm on Monday of each week and proceed through to the following Monday at 6:30am, at which time the standby commitment has been met. If a City holiday falls on a Monday, the standby personnel will remain on call until Tuesday morning at 6:30am. At the beginning of each week, a list of the current week's standby personnel will be forwarded to the Utility Dispatch Center (hereafter referred to as "Dispatch") with copies to the WGW management team, the field service representatives and the Electric System Operators' (SCADA) office.

Standby is a commitment. If a person continually fails to uphold this commitment or regularly gives up their call, management has the right to review the person's standby eligibility. If a person chooses to stop participating in the standby program, or is removed by management, a new person will be selected from the list of qualified employees wishing to participate in the standby program. Any employee wishing to re-join the standby program must re-submit his name to the standby program waiting list. The list will give priority to Installer/Repairers but will otherwise move in the order in which names are added. The standby list will

be maintained by the WGW Manager along with the Division SEIU Union Representative.

- If either of the designated Primary or Secondary personnel, or the Standby Heavy Equipment Operator, need to have someone cover their call, The WGW Standby Coordinator or in his absence the Standby Supervisor must be notified. Only a Primary, Secondary or a qualified person, or another designated HEO can be used to fill the commitment. When a person is scheduled for his standby rotation and cannot cover his shift for one – two day(s), the Standby Coordinator ,or in his absence the Standby Supervisor, will use the Standby Coverage List and have the next person on the 1 -2 day rotation list to fill in for the one - two day(s).

- When a person is scheduled for his standby rotation and cannot cover his shift for more than two days, The WGW Standby Coordinator, or in his absence the Standby Supervisor, will use the Standby Coverage List and have the next person on the 1 week rotation list to fill for the entire week.

All changes in the standby assignment must go through the WGW Standby Coordinator, or in his absence, the Standby Supervisor. Once the change is approved, the standby person must log the change in the standby binder and it is the responsibility of the person assuming the call to notify Dispatch of all changes. When the standby person gives up his call, the standby pay will be given to the person who is being assigned to fill in. Spitting shifts on the same day is not permitted. If no other Primary, Secondary, HEO or other qualified personnel can be found to cover a shift, the originally scheduled person must meet their original obligation.

- When a Standby person is on light duty and cannot cover his standby rotation, his shift will be covered by the next standby person on the Standby Coverage List. (This will be done only when the light duty standby person is out for no more that two rotations).

- During the light duty coverage that goes beyond the second rotation and up to the sixth rotation, the coverage will be rotated by qualified personnel on the waiting list.

- When a Standby person is on light duty and cannot cover his standby rotation, for more than six rotations, he will loose his spot on the standby team and be replaced by another qualified person on the waiting list.

In accordance with City's Policy and Procedures 2-06, Section IV, A, 6, "SEIU employees shall not be compensated for standby while on vacation, floater, personal, sick or bereavement leaves." If an employee is absent for the entire day that they are scheduled to work standby, another standby person must cover the days of absence. An employee may take partial time off (four hours or less) during the weekdays that they are scheduled for standby as long as the employee still able to respond to calls after normal scheduled working hours.

In the event that a third person is needed for any standby call, the additional staffing for a crew will come from the weekly sign up sheet. The "3rd person" sign up sheet for those interested in working overtime for the upcoming week will be put out on Monday and will be available until the end of day on Friday. The order in which employees sign up on the list will be the order in which the employees are called, on a rotational basis. Employees wishing to sign up must meet the minimum qualifications listed below. The third man and the HEO can only be deployed by the Standby Supervisor and through Dispatch.

Every effort will be made to coincide standby duty with the employees' scheduled 9/80 Friday off. If an employee is scheduled for standby on the 9/80 Friday off, he will need to be available to respond to calls by 3:00pm. If a standby person is not at work on their regularly scheduled Friday they must contact the WGW Standby Coordinator or in his absence the Standby Supervisor before 12:00noon on that Friday if they are able to maintain their standby responsibilities for Saturday and Sunday. If the WGW Standby Coordinator or the Standby Supervisor does not hear from the scheduled standby person by noon on Friday then the Saturday and Sunday standby shifts will be assigned to the next person on the standby rotation list.

- When overtime opportunities arise prior to the end of a regular work day, The Secondary Standby Person will be able to the work extended day and keep his standby only when the extended work day is not expected to go over 3 hours. Every effort will be made by the supervisor of the extended day assignment to compile a qualified crew without using the standby
- staff. This will allow the assigned standby personnel to remain free to

- respond immediately to emergencies. If there are no volunteers among the non standby staff, then the standby personnel will be contacted by the Standby Supervisor and instructed to remain at work to respond to the overtime needs.
- The Secondary Standby Person will be able to work scheduled overtime only when every effort has been made by the supervisor to compile a qualified crew without using the Secondary Standby Person.

Qualifications:

The standby team consists of a Primary, Secondary, a Heavy Equipment Operator, a Field Service Representative, and the Water Transmission Standby person.

Primary personnel must:

- be an Installer/Repairer or Installer/Repairer - Lead,
- be Operator Qualified (OQ'd)
- have wastewater experience
- and have a commercial driver's license with a tanker endorsement.

Secondary personnel must:

- be Operator Qualified (OQ'd)
- have wastewater experience
- and posses a commercial drivers license with a tanker endorsement.

3rd man:

- Must posses a commercial driver's license with a tanker endorsement.
- May be called out based on job classification/need.

Heavy Equipment Operator

- Must be a designated HEO
- Possess a Class A license

Responding to a Call:

The Field Service Representative (FSR) group will act as first responders to investigate the nature of all calls that come in after regular WGW office hours. If the FSR person is responding to emergencies they can notify Dispatch to contact the Primary person to respond. After checking the situation, the FSR representative will advise Dispatch if further response is required. As soon as the FSR verifies the status of a call, and determines that additional help is needed; Dispatch will notify the Primary and/or Secondary personnel of that status. Safety requirements for some calls recommend that a two person crew be on site before commencing work, the first person to respond may begin making an area safe or assessing the needs of the job.

For standard wastewater calls, only one person needs to respond to run the lateral. The Primary and Secondary persons may split this duty over the course of the week but the call out plan must be provided to Dispatch on Monday before 3:00 pm. The responding party will need to notify Dispatch to call out the second man if required.

Supervisor Notification:

When ANY of the following situations occur, the Standby Supervisor must be notified:

- a category 1 SSO (Equal or exceeds 1000 gallons, or Results in a discharge to a drainage channel and/or surface water, or discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system).
- a wastewater overflow entering a storm drain (2 hour Notification)
- a Grade 1 gas leak is found
- a water main or fire hydrant break is found
- more than two people are needed to complete the work
- the work on a given job lasts more than two hours
- the work will require digging
- any accident or other emergency occurs
- working on a live gas situation
- Any injury occurs
- Any property damage is noted (either City or customer)

Types of Call:

1-Wastewater Calls

Calls that come in after WGW Operations business hours but during normal FSR working hours shall be dispatched to the FSR on duty. If needed, the WGW Primary and/or Secondary will be called out at the FSR's recommendation through Dispatch. After regular FSR hours, the initial call will be dispatched to must know and observe all safety regulations regarding confined space entry requirements.

2-Gas Calls

All gas calls will be initially dispatched to the on-duty or standby FSR. Upon receiving the call from Dispatch that additional help is needed, the WGW standby personnel should go directly to the MSC and pick up the appropriate service vehicles, respond to the call, and must remain on-site until the condition has been made safe per DOT regulations. In the case of a Grade 1 leak, or any work that may require digging, the Standby Supervisor must be notified immediately.

3-Water Calls

Calls that come in after Operations business hours but during normal FSR working hours shall be dispatched to the FSR on duty. After regular FSR hours, WGW Primary or Secondary personnel can respond to a water call to restore a service. When the job requires more than two persons to complete, or any work that may require digging, the Standby Supervisor must be notified immediately. When water sampling is required, the On-call Water Transmission person shall be called in (with an hour of lead time before the anticipated completed repair) to take the sample and handle any needed laboratory processing. Should the Water Transmission Primary be unavailable for some reason, the Primary is responsible for collecting the sample and delivering the sample to the Regional Water Quality Control Plant with all of the necessary chain of custody paperwork.

Standby Vehicles:

City vehicles may only be used for travel to and from the job site. Employees must live within 30 miles of the Palo Alto City limits to be eligible to take a Standby vehicle home. Only City employees are allowed to ride in City vehicles, no family members and/or friends are allowed to ride in the standby vehicle. The City's Risk Management team has reviewed the issue of other employees riding in the vehicle and has given their approval that it is acceptable provided that both employees are City personnel. It should be noted that the person not on call shall know in advance that if the on-call person has to respond to an emergency at the end of the day he/she is not entitled to a guaranteed ride home.

An employee who is on standby is considered to be "on duty". His/her conduct during such Standby period must not vary from that which would be considered

acceptable during regular working hours. As a representative of the City, any conduct that brings discredit to the organization will not be tolerated.

Currently, a CNG van is assigned to the Primary for responding to a call. Since the majority of the standby calls are wastewater related calls, the van is equipped with a snake machine and sewer cleaning tools. It is the responsibility of the Primary on-call person to ensure all vehicles used are filled up with fuel before leaving MSC, that the Vehicle Inspection Report and Tool/Equipment List for any vehicle used are filled out daily (including start and ending miles).

Documentation:

All calls shall be documented by the standby person completing the task. The Primary will be responsible for completed service orders where a crew was involved to affect a repair. The documentation for a two-person crew to work on a Wastewater call will be completed by the Primary. All documentation shall be complete and thorough. The completed documentation shall be reviewed and approved by the standby supervisor.

Communication:

Standby staff shall not make any commitments while on standby that could interfere with the ability to be contacted by Communications dispatchers. Standby employees will be provided with a cell phone that can be used to receive calls from Dispatch, and to contact Dispatch or to make other Operations related calls for assistance. It is each person's responsibility to make sure they can be reached by communications at all times while on standby. Each person is responsible for the security of the cell phone while it is in his/her possession. The cell phones are to be used to conduct official City business only, no personal phone calls are allowed. The only allowable calls in addition to conducting City business are brief calls to employee's homes to advise family of work status.

Currently, a City cell phone and a two-way radio are being used to communicate between Dispatch and the standby personnel. It is the responsibility of the primary and secondary personnel to carry the communication devices at all time while on call. All cell phones must be returned to the designated location at the end of each on-call commitment.

For proper documentation, all calls must go through Dispatch. At the beginning of each shift; the Primary and Secondary are responsible for calling Dispatch and reporting for duty (10-8). Upon arrival at the job site, the standby personnel must

report the arrival time to Dispatch "10-7 at (address)". While on the job site, the initial communication with the standby supervisor and any request for additional help must be handled through Dispatch. After the completion of the job, the standby personnel must call Dispatch to close the call, "10-8 from (address)". If another call is pending you would then announce "en route to (address)". If Standby/Overtime personnel are taking a meal break they should call "10-7 out of service at (name of restaurant or "yard, for meal)" and 10-8 back in service upon completion of the meal. Finally, Dispatch should be notified when leaving the job and returning home (10-8 en route to home, then 10-10 in service at home).

Reporting call-outs to WGW Standby Coordinator: The Primary is responsible for telephone reporting of all standby calls once they are completed to 650-496-6917 (WGW Standby Coordinator's office). The report must include:

- the date
- location
- nature of the call
- staff involved
- arrival and departure time.

By agreeing to be on standby you are assuming the responsibility for being the "first responder" for the Utilities Department. This is a responsibility that must be taken seriously. It means that you must make accurate and timely decisions when responding to call outs under sometimes difficult or stressful conditions. What you do, and say, can either be a great benefit to our Department or result in severe consequences. If you have any questions or doubts about expectations (and your responsibilities) please feel free to discuss them with your Supervisor or the WGW Manager at any time.

CITY OF PALO ALTO UTILITIES — FIELD SERVICE REPORT

	STREET NO	STREET NAME	APT NO	QD	SERVICE ORDER NUMBER	CALL CODE
UO 2 / UO 3						

UTILITY - WATER ☐ GAS ☐ ELECT ☐ SEWER ☐ CITY ☐

EQUIPMENT		ACTION	
F.A. FURNACE	☐	LIGHT PILOT	☐
FLR. FURNACE	☐	CHECK/ADJUST	☐
GRAVITY FURNACE	☐	CLEAN PILOT	☐
WALL HEATER	☐	ISSUED C114/TURN OFF APPL	☐
WATER HEATER	☐	CK. PRESSURE	☐
RADIANT HEATER	☐	CK. CONTROLS	☐
SUS. UNIT HTR	☐	CHECK AUTO IGNITION	☐
POOL HEATER	☐	CLOCK TEST	☐
SPACE HEATER	☐	RESET CIR. BRKR.	☐
RANGE	☐	REPLACE FUSE	☐
DRYER	☐	CHECK VOLTAGE	☐
FIREPLACE	☐	INSTALL	☐
BAR-B-QUE	☐	EXCHANGE	☐
BOILER	☐	CHECK VENT	☐
FUSE BOX	☐	TURNED OFF	☐
THERMOSTAT	☐	RESTORE SERVICE	☐
BARRICADE	☐	REMOVE DEBRIS	☐
METER	☐	FLOW CHECKED	☐
REGULATOR	☐	ADVISED RP	☐

105A ☐ 24HR ☐ R.S. ☐

DUE _____ AMOUNT _____

READ ONLY ☐ LEFT CS 100 ☐ FOUND ON ☐ FOUND OFF ☐

E# _____ Rd. _____

G# _____ Rd. _____

W # _____ Rd. _____

REMARKS

NOTIFIED:

DATE: TIME:

FLOW: _____ "wc

LOCK UP: _____ "wc

RECEIVED	DISPATCH	ARRIVE	DEPART	DATE	DAY	SHIFT	MAN

101-44 rev 4/03

Incident # _____

Sewer Main / Lateral Stoppage Report

Date _____ Street _____ House # _____ Block # _____

Stoppage on: ☐ City Main ☐ City Lateral ☐ Private Main ☐ Private Lateral ☐ Nothing Found

CLEAN OUT INFORMATION:

City C/O Was: ☐ Holding ☐ N/A **Action:** ☐ Rodded ☐ Hydroflushed ☐ Vacuumed ☐ No Action

Cleanout Location: Distance From LPL _____ ft. Distance From RPL _____ ft.

_____ ft. ○ LWM ○ RWM ○ BOM _____ ft. ○ BSW ○ BOC ○ EOP

Contact made with Home Owner: ○ Yes ○ No **Name & Phone:** _____

_____

Cleanout Accessable? ○ Y ○ N **Cleanout Access Notification:** ☐ Given To Customer ☐ Left On Door

MAIN INFORMATION:

Manhole # _____ **Downstream Manhole:** _____ **Distance from stoppage** _____ ft.

Main Was: ☐ Holding ☐ N/A **Action:** ☐ Rodded ☐ Hydro-flushed ☐ No Action

STOPPAGE INFORMATION: Condition: check all that apply

☐ Debris	☐ Grease/FOG	☐ Flow Exceeded Capacity	☐ Other...
☐ Paper	☐ Root Intrusion	☐ Rainfall Exceeded Design	
☐ Rocks	☐ Vandalism	☐ Operator Error	
☐ Mud/Sludge	☐ Pipe Structure Faliure	☐ Unknown	

TIME LINE:

Call Received by Dispatch:	Call Received from Dispatch:	Arrived at Jobsite:	Stoppage Cleared:	Call Cleared:
_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM

Follow Up ☐ Locate ☐ CCTV ☐ Rodding ☐ Hydro Flush ☐ Root X ☐ Inspect ☐ Repair ☐ Replace

Notes: _____

_____

_____

Responder's Name: _____ Sup Review: _____ Revised 5/21/07

Incident # _____

Sewer Main / Lateral Overflow Report
SSO Compliance

○ Category 1
○ Category 2
○ Category 3

Date _____ Street _____ House # _____ Block # _____

Overflow on: ☐ City Manhole ☐ City Cleanout ☐ Private Manhole ☐ Private Cleanout ☐ No

CLEANOUT INFORMATION:

Action: ☐ Rodded ☐ Hydroflushed ☐ Vacuumed ☐ No Action

_____ ft. ○ BSW ○ BOC ○ EOP

_____ ft. ○ LWM ○ RWM ○ BOM

Cleanout Location: Distance From LPL _____ ft. Distance From RPL _____ ft.

Contact made with Home Owner: ○ Y ○ N **Name & Phone:** _____

Cleanout Accessable? ○ Y ○ N **Cleanout Access Notification:** ☐ Given To Customer ☐ Left On Door

MAIN INFORMATION:

Overflowing Manhole # _____ **Downstream Manhole:** _____

Distance from stoppage: _____ ft. **Action:** ☐ Rodded ☐ Hydroflushed ☐ Vacuumed ☐ No Action

STOPPAGE INFORMATION: Condition: check all that apply

☐ Debris	☐ Grease/FOG	☐ Flow Exceeded Capacity	☐ Other... _____
☐ Paper	☐ Root Intrusion	☐ Rainfall Exceeded Design	
☐ Rocks	☐ Vandalism	☐ Operator Error	
☐ Mud/Sludge	☐ Pipe Structure Faliure	☐ Unknown	

☐ Turned Over to CPAU TIme: _____ ○ AM ○ PM CPAU Representative: _____

OVERFLOW & CLEAN UP INFORMATION:

Spill Parameters (check all that apply):

☐ Customer's Property ☐ Planter Strip ☐ Street/Gutter ☐ Storm Drain ☐ Vault ☐ Unknown ☐ Other

How was overflow disposed of? ☐ Clean Out ☐ Hauled Away ☐ Main/Manhole

Was spill contained? ○ Yes ○ No **Estimated flow rate of overflow:** _____ gpm

Approx. Amount Spilled in gallons: _____ **Approx. Amount Collected in gallons:** ☐ 0 ☐ _____

If over 1000 gallons , you must complete Category 1 Page 2

Did spill reach any surface water? ○ Yes ○ No *If yes, you must complete Category 1 Report Page 2*

Estimated Amount that reached surface water: _____

Did spill reach storm drain? ○ Y ○ N **If yes, was it completely collected?** ○ Y ○ N

If no, how much was collected? _____

Observed Conditions: ☐ Dry Weather ☐ Rain ☐ Storm/Flood **Area Type:** ○ Residential ○ Commercial

TIME LINE:

Call Received by Dispatch:	Call Received from Dispatch:	Arrived at Jobsite:	Stoppage Cleared:	Call Cleared:
_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM	_____ ○ AM ○ PM

Follow Up Notes: ☐ CCTV ☐ Rodding ☐ Hydroflush ☐ Root X ☐ Inspect ☐ Repair ☐ Replace

_____

Responder's Name: _____ Sup Review: _____ Revised 1/29/08

Sewer Main / Lateral Overflow Report
SSO Compliance

☐ Category 1

Date _____ Street _____ House Number _____

Estimated spill start date & time: ___/___/___ _____ ○ AM ○ PM

Current spill rate if spill is still flowing: _____ gpm

Spill completion date & time: ___/___/___ _____ ○ AM ○ PM

Spill response completion date & time: ___/___/___ _____ ○ AM ○ PM

Estimated volume of spill that reached surface water, drainage channel, or not recovered from a storm drain _____ gallons

Spill response:
☐ Cleaned Up
☐ Contained all or portion of spill
☐ CCTV to determine cause
☐ Restored flow
☐ Returned all or portion of spill to sanitary sewer
☐ Other _____

Were Health warnings posted? ○ N/A ○ Yes ○ No

Were any beaches impacted? ○ N/A ○ Yes ○ No Names of beaches: _____

Were any waterways impacted? ○ N/A ○ Yes ○ No

Names of waterways:
☐ Adobe Creek
☐ Barron Creek
☐ Boronda Lake
☐ Felt Lake
☐ Mayfield Slough
☐ Matadero Creek
☐ San Francisco Bay
☐ San Francisquito Creek
☐ Other _____

Is this incident part of an ongoing investigation? ○ N/A ○ Yes ○ No

Were samples taken at waterways? ○ N/A ○ Yes ○ No

Water quality samples analyzed for: _____

Water sample results reported to:
☐ County Health Agency
☐ Regional Water Quality Control Board
☐ Other _____

Steps taken or planned to reduce, eliminate, and prevent reoccurence of overflow :
☐ Added sewer to preventative maintenance program
☐ Adjusted schedule or frequency of preventative maintenance program
☐ Enforcement action against FOG source
☐ Planned rehabilitation or replacement of sewer
☐ Repaired sewer
☐ Other _____

OES Control Number	Date & Time OES notified
	___/___/___ ○ AM ○ PM

Were County Health Officers called? Date & time: ○ N/A ○ Yes ○ No ___/___/___ _____ ○ AM ○ PM

Regional Water Quality Control Board notified? ○ N/A ○ Yes ○ No

Date & Time ___/___/___ _____ ○ AM ○ PM

Was spill reported Via Fax? Date & Time ○ Y ○ N ___/___/___ _____ ○ AM ○ PM

Notes: _____

_____ Operator Initial

_____ Supervisor Initial

_____ Manager Initial

Element 7 Appendix

1. Water Quality Plan Check Requirements: Newly Constructed, Tenant Improvement and Remodeled Food Service Establishment (FSE) Projects
2. List of FOG Hot Spots
3. Food Service Facility Inspection Survey Form
4. Example FOG Ad

Water Quality Plan Check Requirements:

Newly Constructed, Tenant Improvement and Remodeled Food Service Establishment (FSE) Projects

Please call the Environmental Compliance Division of Public Works Department at (650) 329-2598 for assistance, co-inspections or dye testing of drainage fixtures

Undesignated Retail Space:

A. PAMC 16.09

Newly constructed or improved buildings with all or a portion of the space with undesignated tenants or future use will need to meet all requirements that would have been applicable during design and construction. If such undesignated retail space becomes a food service facility the following requirements must be met:

Designated FSE Project:

B. Grease Control Device (GCD) Requirements, PAMC Section 16.09.103(a) & cited Bldg/Plumbing Codes

1. The plans shall specify the manufacturer details and installation details of all proposed GCDs. (CBC 1009.2)
2. GCD(s) shall be sized in accordance with the 2007 California Plumbing Code.
3. GCD(s) shall be installed with a minimum capacity of 500 gallons.
4. GCD sizing calculations shall be included on the plans. See a sizing calculation example below.
5. The size of all GCDs installed shall be equal to or larger than what is specified on the plans.
6. GCDs larger than 50 gallons (100 pounds) shall not be installed in food preparation and storage areas. Santa Clara County Department of Environmental Health prefers GCDs to be installed outside. GCDs shall be installed such that all access points or manholes are readily accessible for inspection, cleaning and removal of all contents. GCDs located outdoors shall be installed in such a manner so as to exclude the entrance of surface and stormwater. (CPC 1009.5)
7. All large, in-ground interceptors shall have a minimum of three manholes to allow visibility of each inlet piping, baffle (divider) wall, baffle piping and outlet piping. The plans shall clearly indicate the number of proposed manholes on the GCD. The Environmental Compliance Division of Public Works Department may authorize variances which allow GCDs with less than three manholes due to manufacture available options or adequate visibility.
8. Sample boxes shall be installed downstream of all GCDs.
9. All GCDs shall be fitted with relief vent(s). (CPC 1002.2 & 1004)
10. GCD(s) installed in vehicle traffic areas shall be rated and indicated on plans.

C. Drainage Fixture Requirements, PAMC Section 16.09.106(c) & cited Bldg/Plumbing Codes

1. To ensure all FSE drainage fixtures are connected to the correct drain lines, each drainage fixture shall be clearly labeled on the plans. A list of all fixtures and their discharge connection, i.e. sanitary sewer or grease waste line, shall be included on the plans.
2. A list indicating all connections to each proposed GCD shall be included on the plans. This can be incorporated into the sizing calculation.
3. All grease generating drainage fixtures shall connect to a GCD. These include but are not limited to:
    a. Pre-rinse (scullery) sinks (direct connection)
    b. Three compartment sinks (pot sinks) (direct connection)
    c. Drainage fixtures in dishwashing room except for dishwashers shall connect to a GCD (direct connection)
        i. Examples: trough drains (small drains prior to entering a dishwasher), small drains on busing counters adjacent to pre-rinse sinks or silverware soaking sinks
    d. Floor drains in dishwashing area and kitchens
    e. Prep sinks (indirect connection)
    f. Mop (janitor) sinks
    g. Outside areas designated for equipment washing shall be covered and any drains contained therein shall connect to a GCD.
    h. Drains in trash/recycling enclosures
    i. Wok stoves, rotisserie ovens/broilers or other grease generating cooking equipment with drip lines (indirect connection)
    j. Kettles and tilt/braising pans and associated floor drains/sinks

Drainage Fixture Requirements (continued)

4. The connection of any high temperature discharge lines and non-grease generating drainage fixtures to a GCD is prohibited. The following shall not be connected to a GCD:
    a. Dishwashers (direct connection)
    b. Steamers (indirect connection)
    c. Pasta cookers (indirect connection)
    d. Hot lines from buffet counters and kitchens (indirect connection)
    e. Hand sinks (direct connection)
    f. Ice machine drip lines (indirect connection)
    g. Soda machine drip lines (indirect connection)
    h. Drainage lines in bar areas (indirect connection)
5. No garbage disposers (grinders) shall be installed in a FSE. (PAMC 16.09.103(e))
6. Plumbing lines shall not be installed above any cooking, food preparation and storage areas.
7. Each drainage fixture discharging into a GCD shall be individually trapped and vented. (CPC 1014.5)

D. Covered Dumpsters, Recycling and Tallow Bin Areas PAMC, 16.09.032b(16)

1. New buildings constructed to house FSEs shall include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste cooking fats, oils and grease (FOG) or tallow.
2. The area shall be designed and shown on plans to prevent water run-on to the area and runoff from the area.
3. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a GCD.
4. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

E. Large Item Cleaning Sink, PAMC 16.09.032b(16)

FSEs shall have a sink or other area drain which is connected to a GCD and large enough for cleaning the largest kitchen equipment such as floor mats, containers, carts, etc. Recommendation: Generally, sinks or cleaning areas larger than a typical mop/janitor sink are more useful.

F. GCD sizing criteria and an example of a GCD sizing calculation (2007 CPC)

Sizing Criteria:

Drain Fixtures	DFUs
Pre-rinse sink	4
3 compartment sink	3
2 compartment sink	3
Prep sink	3
Mop/Janitorial sink	3
Floor drain	2
Floor sink	2

GCD Sizing:

Total DFUs	GCD Volume (gallons)
8	500
21	750
35	1,000
90	1,250
172	1,500
216	2,000

Example GCD Sizing Calculation:

Quantity	Drainage Fixture & Item Number	DFUs	Total
1	Pre-rinse sink, Item 1	4	4
1	3 compartment sink, Item 2	3	3
2	Prep sinks, Item 3 & Floor sink, Item 4	3	6
1	Mop sink, Item 5	3	3
1	Floor trough, Item 6 & tilt skillet, Item 7	2	2
1	Floor trough, Item 6 & steam kettle, Item 8	2	2
1	Floor sink, Item 4 & wok stove, Item 9	2	2
4	Floor drains	2	8
	1,000 gallon GCD minimum sized	Total:	30

Note:

- All resubmitted plans to Building Department which include FSE projects shall be resubmitted to Water Quality.
- It is frequently to the FSE's advantage to install the next size larger GCD to allow for more efficient grease discharge prevention and may allow for longer times between cleaning. There are many manufacturers of GCDs which are available in different shapes, sizes and materials (plastic, reinforced fiberglass, reinforced concrete and metal)
- The requirements will assist FSEs with FOG discharge prevention to the sanitary sewer and storm drain pollution prevention. The FSE at all times shall comply with the Sewer Use Ordinance of the Palo Alto Municipal Code. The ordinances include requirements for GCDs, GCD maintenance, drainage fixtures, record keeping and construction projects.

FOG Hotspot Location or Line	Cleaning Frequency	Comments
Lytton from Alma and Waverly	Quarterly	
Hamilton from Alma and Middlefield	Quarterly	
Cowper from University and Hamilton	Quarterly	
Emerson from Hamilton and Channing	Quarterly	
El Camino Real from Wells and Encina	Quarterly	
University from Alma and Waverly	Quarterly	Including adjacent block of High, Emerson, Ramona, Bryant, Florence, Waverly, Kipling
Homer from Emerson and High	Quarterly	
Middlefield from Bryson and Colorado	Quarterly	
Leland from El Camino Real and Park	Quarterly	
El Camino Real from College and Cambridge	Quarterly	
Birch between Sherman and Cambridge	Quarterly	
California between El Camino Real and Ash	Quarterly	
Cambridge between El Camino Real and Park	Quarterly	
Sherman between El Camino Real and Park	Quarterly	
Park between Sheridan to Cambridge	Quarterly	
Portage from El Camino Real to Park	Quarterly	
Wilton from El Camino Real to Park	Quarterly	
Ventura from El Camino Real to Park	Quarterly	
Park from Ventura to Lambert	Quarterly	

Regional Water Quality Control Plant
2501 Embarcadero Way
Palo Alto, CA 94303 * (650) 329-2598

FOOD SERVICE FACILITY INSPECTION SURVEY

Record No.____ Business Name _____Ph. #_____ Fax _____
Business Address _____ Business Owner _____
Contact Person/Title _____Email _____
Seating Capacity_____ Meals/Peak Hour_____ Last Inspection _____Inspection Date _____

Food Service Establishment (FSE) Priority Level
- ☐ 1) Problem FSE in hot spot
- ☐ 2) Problem FSE
- ☐ 3) FSE in hot spot
- ☐ 4) FSE that has only had minor issues in the past
- ☐ 5) FSE with potential to generate FOG
- ☐ 6) FSE without significant potential to generate FOG

FSE Type
_____

Service Type
- ☐ Single service (Disposable)
- ☐ Full service
- ☐ Sit down
- ☐ Take out

Primary Languages
- ☐ English
- ☐ Spanish
- ☐ Chinese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other: _____

GRD(s) Maintenance Log
- ☐ Yes, available
- ☐ Yes, can not locate
- ☐ Offsite
- ☐ No, do not have

Cleaning GRD(s)
Last cleaning date:_____
Frequency:
_____ Week(s)
_____ Month(s)
Other: _____
- ☐ Self
- ☐ Contractor: _____

_____
Ph.#: _____
Additives: ☐ No ☐ Yes,
_____

Lateral/Internal Cleaning
☐ No ☐ Yes, Vendor:
_____
Ph.#: _____
Freq: _____

Grease Removal Device(s) (GRD)
☐ None
Grease trap # _____
Grease interceptor # _____
Mechanical # _____
_____gallons
_____lbs.
Dimensions:
L_____, W_____, H_____
☐ Opened & Appearance
_____

Equipment to GRD(s)
Sink # _____
3 comp. sink # _____
Mop sink # _____
Dishwasher # _____
Temperature_____
Floor drain # _____
Flow restrictor # _____
Other: _____

BMP Posters Displayed
- ☐ No
- ☐ Yes, #_____

Cooking Equipment
Grill # _____
Fryer # _____
Oven # _____
Stove # _____
Wok # _____
Rotisserie # _____

Best Management Practices (BMPs)
- ☐ Drain screens, frequent cleaning of screens
- ☐ Disposal of food waste to trash
- ☐ Dry wipe: pots, pans, dishes before washing
- ☐ Safe procedure for disposing of fats, oils & grease (FOG)
- ☐ Spill clean-up
- ☐ Employee training

Grinder/Disposer
- ☐ No
- ☐ Yes, #_____

Tallow Bin
☐ No ☐ Yes, #____
Vendor: _____
Ph.#: _____
Freq: _____
Condition
- ☐ Good
- ☐ Oil spilled
- ☐ Lid not on correctly

Trash/Back Area
- ☐ Covered/Enclosed
- ☐ Uncovered
- ☐ Dumpster(s)
- ☐ Container(s)
- ☐ Compactor(s)
- ☐ Shared
- ☐ Not shared
- ☐ Good condition
- ☐ Moderate condition
- ☐ Bad
- ☐ Leaking

Floor Mat Cleaning
☐ Outside to _____
_____
☐ Inside to _____
_____
Vendor: _____
Ph.#: _____

Exhaust Hood & Filter Cleaning
Hoods _____
Filters _____
_____
Vendor: _____
Ph.#: _____

Storm Drains # _____

Zinc-Free Floor Finish
☐ No ☐ Yes,
_____

BMP Posters Given
- ☐ No
- ☐ Yes, #_____

Language(s) _____

Comments: _____
_____
_____
_____

☐ **Please fax, (650) 494-3531, or mail (above address)** _____ **by** _____.

_____ _____
Inspector's Signature **Date** **Facility Contact Signature** **Date**

Print Name _____ **Print Name** _____

SO DON'T DISPOSE OF USED COOKING OIL OR GREASE DOWN THE DRAIN.

We live, work and play in a watershed that flows to the Bay .

When gr ease is pour ed down sinks, it can solidify and cause sewer backups into houses or onto str eets. Raw sewage can enter stor m drains, cr eeks and the Bay , which harms wildlife.

www.cleanbay.org
WE'RE ALL IN IT TOGETHER

POUR COOKING GREASE OR SMALL AMOUNTS OF OIL INTO A SEALED CONTAINER (solidified with an absorbant such as used paper towels for liquid cooking oil) and place in the garbage.

Deep fr ying a turkey? Bring your leftover frying oil to the Recycling Center , located at the east end of Embar cader o Road acr oss from Byxbee Park. For mor e infor mation, call 650-329-2598 or visit our website.

The Regional W ater Quality Contr ol Plant is operated by the City of Palo Alto for the East Palo Alto Sanitar y District, Los Alt os, Los Altos Hills, Mountain View , Palo Alto and Stanfor d.

Individuals with disabilities who r equire accommodations to access City facilities, ser vices or pr ograms, or who would like inf ormation on the City's compliance with the Americans with Disabilities Act (ADA) of 1990, may contact the City's ADA Coor dinator at 650-329-255 0 (voice) or e-mail ada@cityofpaloalto.or g

Printed on r ecycled paper . 11/08

Element 8 Appendix

1. Wastewater Collection System Master Plan – Capacity Assessment: Executive Summary
2. Wastewater Collection System Master Plan – Capacity Assessment (on CD)

Executive Summary

This report summarizes the results and recommendations of the Wastewater Collection System Master Plan Capacity Assessment prepared for the City of Palo Alto Utilities Department. The report was prepared by MWH Americas, Inc. (MWH) under an agreement with the City of Palo Alto (City).

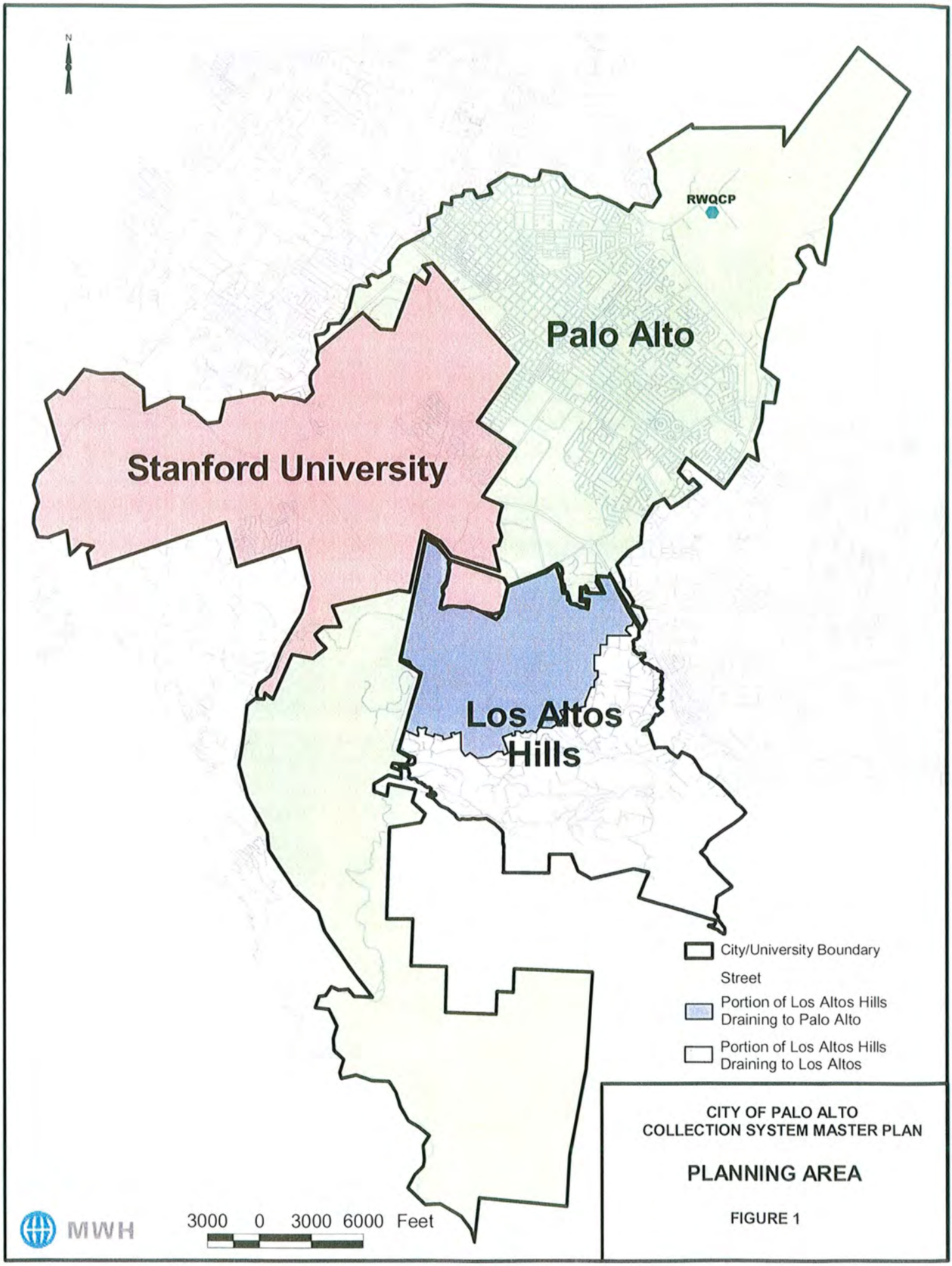
The Capacity Assessment summarized in this report comprises one part of the City's overall Wastewater Collection System Master Plan. The capacity assessment addresses the hydraulic capability of the wastewater collection system to convey existing and future flows, and identifies improvements to provide additional hydraulic capacity where needed. The other aspect of the Master Plan is the Condition Assessment of the collection system, which addresses the need for sewer system rehabilitation to reduce infiltration/inflow, minimize maintenance requirements, and ensure the long-term structural integrity of wastewater collection system facilities.

This report identifies and recommends the elimination of approximately $21 million (2003 dollars) of capacity improvement (augmentation) projects originally recommended in the City's 1988 Wastewater Collection System Master Plan. The Wastewater Collection (WWC) Capital Improvement Program (CIP) projects will be refocused to concentrate on system rehabilitation of existing sewers rather than capacity augmentation. The proposed CIP budgets will be adjusted after the Fiscal Year 2005-06 budget cycle to reflect the differences in augmentation versus rehabilitation project costs. Utilities Department staff anticipates the funding requests for the WWC CIP to be reduced 20 to 25 percent for future CIPs.

PROJECT BACKGROUND

The City owns and operates an approximate 200-mile wastewater collection system that serves residents and businesses within the City limits, and operates the Regional Water Quality Control Plant (RWQCP) that also serves the Cities of Mountain View, Los Altos, and East Palo Alto, the Town of Los Altos Hills, and Stanford University. Flows from Stanford University and a portion of Los Altos Hills are also conveyed through the City's collection system to the RWQCP. **Figure 1** shows the planning area for the Wastewater Collection Master Plan capacity assessment.

The City's previous collection system master planning efforts were completed during the 1980s. That work included a multi-phase Infiltration/Inflow (I/I) Study, as well as the Wastewater Collection System Master Plan completed in 1988. The 1988 Master Plan addressed the capacity of the trunk sewer system (primarily the 10-inch and larger pipes) and identified $32 million in 1988 dollars (equivalent to approximately $42 million in 2003 dollars) of required capacity improvements. Based on the 1988 Master Plan recommendations, the City constructed a number of new diversions to better distribute


N
RWQCP
Palo Alto
Stanford University
Los Altos Hills
City/University Boundary
Street
Portion of Los Altos Hills Draining to Palo Alto
Portion of Los Altos Hills Draining to Los Altos
CITY OF PALO ALTO
COLLECTION SYSTEM MASTER PLAN
PLANNING AREA
FIGURE 1
MWH
3000 0 3000 6000 Feet

flow in the system, and completed construction of several trunk system capacity improvement projects, including a major relief sewer in Amarillo Avenue. A partial update of the Master Plan for the area of the system tributary to the Amarillo Relief Sewer was conducted in 1997 in conjunction with the design of that project. As of the start of this current Master Plan study, 10 of the 14 diversion projects and all or portions of 8 of the 13 relief/replacement project priority groups identified in the original 1988 Master Plan (approximately 40 percent of the total dollar value of the recommended projects) had been completed.

In the 1980s, the City also completed a comprehensive I/I Study to identify system rehabilitation needs. The study was conducted in several phases over the period 1980 through 1987, and included extensive flow monitoring, testing, and inspection of sewers throughout the City. At the time of these studies, it was estimated that over 40 percent of the City's total annual flow was comprised of I/I, or extraneous groundwater and storm water that enter the collection system via direct surface drainage connections or through defects in sewer pipelines, manholes, and service laterals, primarily during wet weather. Based on the recommendations of the I/I Study, the City has completed a substantial amount of sewer rehabilitation, as well as various other projects designed to improve the operation and structural condition of the system. The City's sewer rehabilitation program is still continuing, with each year averaging about 25,000 feet of primarily smaller (6- and 8-inch) diameter sewers and associated service laterals within the public right-of-way being rehabilitated or replaced.

The capacity relief and rehabilitation projects, along with other operational improvements and land use changes over the years, have altered system flows and hydraulics from 1988 Master Plan conditions. Thus, a comprehensive update to the Collection System Master Plan was needed to effectively plan for future system improvements. This report addresses the capacity assessment portion of the Master Plan update. In addition, the City will conduct the condition assessment portion to complete the full update of the Collection System Master Plan.

MASTER PLAN OBJECTIVES AND SCOPE

The objectives of this Master Plan capacity assessment were to update land use and flow projections for the wastewater collection system, develop a new computer hydraulic model that could be utilized to identify existing and future capacity deficiencies, and develop needed improvement projects to alleviate the predicted deficiencies.

The scope of the study consisted of 12 tasks that are listed below:

- Task 1 – Data Review and Staff Interviews
- Task 2 – Flow Monitoring
- Task 3 – Development of Land Use Planning Criteria
- Task 4 – Model Database Development
- Task 5 – Flow and Hydraulic Criteria

- Task 6 – Model Calibration and Flow Projections
- Task 7 – Capacity Analysis
- Task 8 – Project Development
- Task 9 – Capital Improvement Program
- Task 10 – Master Plan Report
- Task 11 – Model Training and Support
- Task 12 – Project Management

The Master Plan report presents detailed descriptions of the methodologies and results of all of these tasks. The end product of the Master Plan is a list of prioritized capital improvements and estimated costs, along with recommendations for project implementation and related planning efforts to facilitate the future management, operation, maintenance, and upgrade of the wastewater collection system. The hydraulic model will also be provided to the City so that Utilities Department staff can update the capacity analysis as changes occur in the system over time.

RECOMMENDED CAPITAL IMPROVEMENTS

Based on the results of the Master Plan capacity analysis, eight locations were identified for capacity improvements. Potential solutions were developed and tested using the hydraulic model. Solutions considered included increasing pipe sizes or possibly diverting flow to new sewers or other existing sewers with excess capacity. Relief or replacement pipes were sized to handle the peak flows that would be expected for a 20-year frequency rainfall event.

Table 1 presents the recommended capacity improvement projects, including estimated costs and priorities. The locations of the projects are shown in **Figure 2.** Note that for this Master Plan, the projects have been given designations starting with "100" (e.g., 101, 102, 103, etc.) to distinguish them from the 1988 Master Plan and City's current Capital Improvement Program (CIP) project designations.

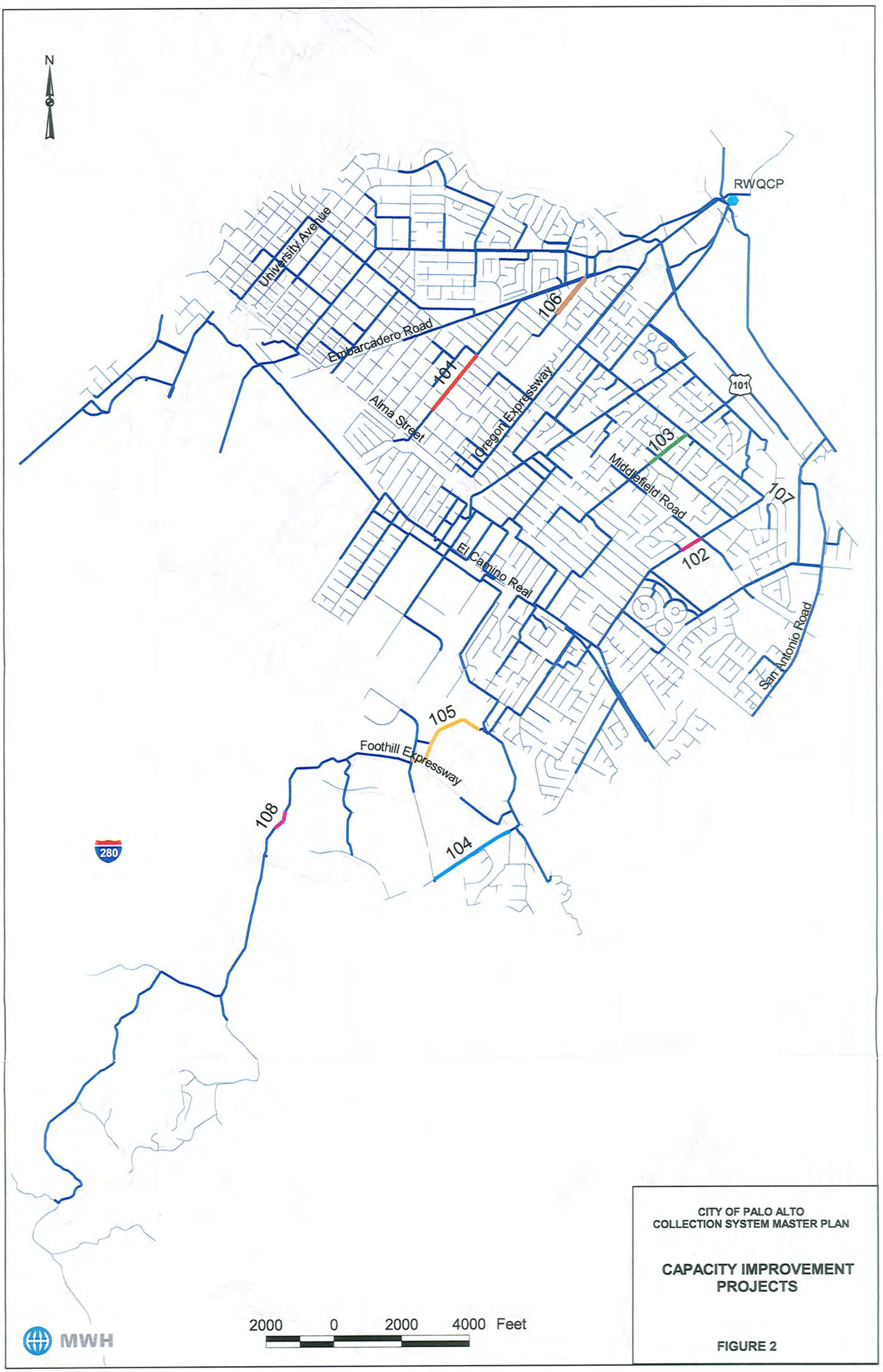
Three of the recommended projects in this Master Plan (Projects 103, 104, and 105) correspond to projects that were also identified in the 1988 Master Plan but not yet completed. The other projects are needed primarily to address capacity deficiencies in smaller diameter sewers that were not modeled in the previous Master Plan. One of these projects, Project 101, is already being addressed as part of current CIP Project 15. The total estimated capital cost of the recommended capacity improvement projects identified in this Master Plan is approximately $4.3 million (2003 dollars).

The analyses conducted for this Master Plan indicate that many of the previously identified capacity improvement projects that have not yet been constructed are no longer necessary. The reason for this is likely the reductions in I/I that have been achieved through the City's sewer rehabilitation program, as well as more realistic and less conservative projections of peak wet weather flows due to more current flow monitoring data and use of a more accurate hydraulic model.

TABLE 1
RECOMMENDED CAPACITY IMPROVEMENT PROJECTS

Project ID	Priority (a)	Project Name	Description/Location	Length (ft.)	Estimated Capital Cost ($)
101	A	Seale Avenue Sewer Replacement	Upsize existing 6-inch sewer in Seale Ave. from Bryant St. to Middlefield Rd. to 8-inch pipe (as part of current CIP Project 15).	2,235	556,000
102	A	East Meadow Drive Sewer Replacement	Upsize existing 8-inch sewer in E. Meadow Dr. from Cowper St. to Middlefield Rd. to 12-inch pipe	733	246,000
103	A	Loma Verde Ave. Sewer Replacement	Replace existing 15-inch sewer in Loma Verde Ave. from Loma Verde Pl. to Louis Rd. with 18-inch pipe	1,500	664,000
104	C	Arastradero Road Relief Sewer	Parallel existing 12-inch sewer in Arastradero Rd. from Hillview Ave. to Foothill Expwy. with 12-inch pipe	3,125	865,000
105	C	Matadero Creek Relief Sewer	Parallel existing 15-inch sewer from Hillview Ave. and Foothill Expwy. through VA Hospital property with 15-inch pipe	3,200	1,217,000
106	B	N. California Ave. Sewer Replacement	Upsize existing 8-inch sewer in N. California from Bellview Dr. to Embarcadero Rd. with 10-inch pipe	1,460	499,000
107	B	Louis Road at E. Meadow Sewer Replacement	Replace existing 8-inch sewer in Louis Rd. from Nathan Way to E. Meadow Dr. with 10-inch pipe at steeper slope	227	68,000
108	C	Old Page Mill Road Sewer Replacement	Replace two reaches of existing 12-inch sewer in Old Page Mill Rd. with 15-inch pipe at uniform slope	650	202,000
			Total	13,130	4,317,000

(a) Priority A – highest priority (predicted surcharge level more than 1 foot above pipe and less than 5 feet below ground).
Priority B – lower priority (predicted surcharge level less than 1 foot above pipe or more than 5 feet below ground).
Priority C – required only if flows from Los Altos Hills increase significantly in the future.



CITY OF PALO ALTO
COLLECTION SYSTEM MASTER PLAN

CAPACITY IMPROVEMENT PROJECTS

FIGURE 2

Table 2 lists the 1988 Master Plan projects and their respective status (completed, eliminated, or still remaining to be completed as part of a current Master Plan project). Overall, approximately 50 percent or over $21 million (2003 dollars) of the previously identified capacity improvement projects will no longer be needed. It should be noted that the cost of this Master Planning effort represents less than two percent of this total savings from eliminated capital projects.

As indicated in Table 1, the eight capacity improvement projects recommended in this Master Plan have been divided into three priority groups, designated A, B, and C. The priorities reflect the relative need for the projects in terms of severity of existing capacity deficiencies and projected future problems. The priority groups can be used as a guideline for scheduling the recommended improvements. In most cases, the need for and timing of the projects should be confirmed by project-specific flow monitoring prior to project implementation. The alignment, sizes, and construction methods of recommended projects should also be verified with detailed predesign analyses prior to final design and construction.

ADDITIONAL MASTER PLAN RECOMMENDATIONS

As discussed in the introductory section of this Executive Summary, this Master Plan Capacity Assessment should be considered only one part of an overall Master Plan for the City's wastewater collection system. Additional efforts, including capital improvement projects, will be needed to address the condition and maintenance of the sewer system. Furthermore, potential new regulatory requirements, as discussed below, will require additional measures to document that the City's collection system is being well managed, operated, and maintained.

Pending Capacity, Management, Operation and Maintenance Requirements. In early 2001, the U.S. Environmental Protection Agency issued a draft Proposed Rule aimed at closer regulation of wastewater collection systems in order to minimize the impacts of sanitary sewer overflows (SSOs) in sewer systems across the United States. A key element of the draft Proposed Rule was new requirements for sewer system owners/operators, including "satellite" collection systems tributary to regional wastewater treatment plants, to develop and maintain a Capacity, Management, Operation and Maintenance (CMOM) program to control and mitigate the impacts of SSOs. More recently, some California Regional Water Quality Control Boards have started to issue waste discharge requirements that contain many of the CMOM-related provisions described in the EPA proposed rule. In California, these requirements have been given the designation of "Sewer System Management Plans" (SSMPs). The San Francisco Regional Board has recently adopted a resolution stating its intention to begin implementation of SSMPs within the next year, with a draft timetable of about 36 months after that time for completion of the SSMPs by collection system agencies.

TABLE 2
STATUS OF PREVIOUS MASTER PLAN PROJECTS

Priority Group	Estimated Capital Cost ($) (a)	Estimated Eliminated Cost ($) (a)	Projects Completed or Still Needed	Projects Eliminated
1	2,234,000	--	All projects	
2	4,791,000	2,683,000	San Antonio & Transport Ave. Stanford Univ. (Lasuen St.) (c) San Antonio Rd. & E. Charleston	Easement near El Camino Real
3	4,934,000	--	All projects	
4	1,987,000	--	All projects	
5	2,290,000	--	All projects	
6	2,493,000	--	All projects	
7	1,556,000	--	All projects	
8	2,187,000	1,465,000	Louis Rd. & Colorado Ave.	All other projects
9	3,174,000	3,174,000		All projects
10	4,848,000	4,848,000		All projects
11	6,523,000	5,871,000	Loma Verde Ave. & Louis Rd. (d)	All other projects
12	2,822,000	2,822,000		All projects
13	1,912,000	746,000	Easement nr. Matadero Creek (e) Hillview Ave. & Miranda Ave. (e) Arastradero nr. Old Adobe Rd. (f) Arastradero & Foothill Expwy. (f)	All other projects
Total	**41,751,000**	**21,609,000**		

(a) Costs and projects as updated for 1997 Master Plan Update; costs updated to 2003 dollars based on Engineering News Record Construction Cost Index.
(b) Projects eliminated on basis of capacity; some improvements may still be needed to address condition issues.
(c) Project would be responsibility of Stanford University.
(d) Project 103
(e) Project 105
(f) Project 104

The City has many of the programmatic elements in place to respond to new CMOM and SSMP requirements, and many of the efforts and products of this Master Plan can be applied to the development of CMOM program documentation. Listed below are additional planning recommendations for the City to consider – some that pertain to pending CMOM requirements, and some that make "good planning sense" for the City moving forward.

Additional Planning Recommendations. Additional recommended programs or activities that would aid in future planning as well as the development of the City's CMOM program include the following:

- **Sewer Maps and GIS.** The City should continue to maintain up-to-date sewer collection system maps in the City's GIS database.

- **Closed-Circuit Television Inspection (CCTV) Program.** The City is currently planning for a long-term inspection program to assess the condition of all of the sewers in the wastewater collection system. The City's proposed CCTV sewer inspection program will identify sewer rehabilitation needs for the Condition Assessment portion of the Master Plan, as well as help refine any CMOM-required operation and maintenance programs.

- **CCTV Data Management.** In planning its CCTV inspection program, the City should evaluate the most efficient and effective way of collecting, storing, and utilizing the CCTV data, ideally as part of an overall computerized maintenance management system (CMMS). Use of digital video technology should be considered to facilitate storage and linking the data to other systems such as GIS. The City should adopt a standardized set of observation codes so that recorded data can be loaded into a database and used for condition ranking and rehabilitation assessment.

- **Maintenance Management System.** The City should review the effectiveness and utilization of its CMMS to maximize its utility for the most cost-effective management of the collection system as well as maintenance staff utilization, rehabilitation project prioritization, and financial reporting. A carefully designed and well-managed CMMS is a critical element of an effective asset management program.

- **Permanent Flow Monitoring.** It is recommended that the City upgrade and/or relocate permanent flow meters as needed so that they will consistently provide accurate and reliable data. The meters should also be calibrated regularly. The City should also continue to monitor flows at other key locations, particularly those areas with predicted high I/I and locations where flows from Stanford University and the Town of Los Altos Hills enter the City's collection system.

- **Wet Weather Flow Monitoring.** The City should conduct wet weather flow monitoring after all currently recommended projects are implemented to verify the effectiveness of the improvements to the collection system.

- **Coordination with Stanford.** Additional coordination with Stanford University is recommended to reconcile their growth plans with their capacity rights in the RWQCP and potential capacity requirements in the collection system.

- **Coordination with RWQCP.** The City should coordinate with its RWQCP partners to develop estimates of total flows to the wastewater treatment plan and in the RWQCP's 72-inch interceptor, which conveys flows from several of the partner cities, including Palo Alto.

- **Manhole Inspection Program.** A regular manhole inspection and assessment program in conjunction with the sewer inspection program would help continue the City's excellent track record for reducing I/I in the collection system;

- **Smoke and Dye Testing.** These techniques may be used selectively in areas with suspected high I/I to identify additional rehabilitation or potential inflow removal projects.

- **Collection System Self-Audit.** An on-going self-audit by Utilities Engineering and Operations would help identify gaps in the City's collection system management, operations, and maintenance practices as compared to potential CMOM requirements.

- **Asset Management.** The City should consider implementing an asset management program, within which the planning efforts for the entire wastewater system (collection and treatment), as well as other City-owned utilities, could be coordinated. Consistent measurements and monitoring of capacity, condition, and performance of all of the City's assets would facilitate prioritization and decision-making for improved long-term planning of capital needs.

Element 9 Appendix

1. Annual SSO Report Template

City of Palo Alto Utilities Department
Water Gas Wastewater Division
Sanitary Sewer Overflows (SSO)
[*Date*] Annual Report

Introduction

The City of Palo Alto owns and operates approximately 202 miles of gravity flow wastewater collection system pipeline that range from 6 to 72 inches in diameter. The City also owns and operates the lower portion of approximately 18,000 lateral service connections that serve residents and businesses within the City limits. The City's wastewater is treated by the Regional Water Quality Control Plant that is operated by the City of Palo Alto in partnership with the City of Mountain View, City of Los Altos, East Palo Alto Sanitary District, Town of Los Altos Hills and Stanford University.

Highlights

In [*year*] the Utilities Wastewater Collection System program continued with the planning, operation and maintenance of the City's collection system to reduce overflows, protecting public health and the San Francisco Bay. During this period, over *[number*] feet of sewer mainlines were cleaned, videoed, or replaced. In addition, the City spent over [*amount*] in contracts with various firms for the maintenance and rehabilitation of its collection system. A summary of [*year*] activities is provided in Table 1.

During the same period, the operation and crew responded to [*number*] sewer related calls in which [*number*] were overflows. [*number*] of the overflows were due to the sewer main blockages and [*number*] were due to the blockage of the lower laterals. In Palo Alto, the City owns and maintains the lower portion of the laterals that extend from the house line at the property line to the sewer main. The Field Service Representative (FSR) continues to be the first responders to all sewer calls. Each FSR is trained to assess the severity of each sewer call based on type of blockage or volume of overflow and make decisions in the next level of response required. In case of an overflow, the FSR will provide immediate protection of the storm water system by placing a rubber mat on the catch basin or applying spill absorbent (Spill Shark) to dam the flow. In [*year*] the FSR's average response time to a sewer call was [*number*] minutes.

All field data are collected for data entry to an ICOMMM database and if needed, entry to the State Water Resources' database (CIWIQS). The operation crews are trained on field data collection, proper documentation, and improved accuracy. In [*year*], the ICOMMM database and the City GIS were fully utilized to generate follow up inspection report and hydroflushing schedules. The City authorized contract services with

ICOMMM to update and improve the database. The new program will generate work orders and various map based reports.

The City maintains a service contract with Roto Rooter Company. The contract provides the City with additional coverage to respond to customers' sewer calls. This service is used on weekdays when the crew is busy with scheduled work. The City crew responds to sewer calls as needed on evenings and weekends. In addition to the Roto Rooter contract, the City maintains a service contract for sewer lateral replacement, cleanout installations and spot repairs.

Table 1
Collection System Maintenance & Construction Activities
[*year*]

Activities	Footage
Sewer Main Rehabs	
Replace Laterals	
CCTV & Line Cleaning	
Service Calls	
Manhole Replacement	

Number and Size of Sanitary Sewer Overflows

There were [*number*] Sanitary Sewer Overflows (SSOs) for the [*year*] reporting period. This number includes the overflows from city clean-outs and manholes. [*overflow cause*] caused the majority of overflows. Approximately [*number*] % of the overflows occurred [*location*]. Only [*number*] % of the overflows were caused by grease. As indicated in Table 2, the size of the distribution of SSO (gallons) category has remained the same, with approximately [*number*] % of SSOs being less than [*number*] gallons. The standby and the maintenance crews are trained to report all SSOs regardless of their volume.

Table 2
Range of Overflows
[*date range]*

Size of SSO (gallons)	Number			% of Total		
	[*year*]	**[*year*]**	**[*year*]**	**[*year*]**	**[*year*]**	**[*year*]**
1,000 or more						
100 to 999						
10 to 99						
Less than 10						
Total*						

* These numbers include incidents of overflows from both manholes and clean-outs.

Table 3
Volume of SSOs

Subject	Volume (gallons)	Percent of Total by Volume	
Estimated SSO			
Estimated volume that was contained and returned to the sewer or hauled away			
Estimated volume of wastewater that may have reached surface water			

Based on the operator's reports, approximately [*number*] % of the total gallons of SSOs were vacuumed and wither hauled away or discharged back into the sanitary sewer. Only [*number*] % of the total gallons of SSOs that entered the storm drains could not be recovered and may have reached the wet wells or the creeks.

Cause of SSOs

On our SSO reports for [*year*], the causes contributing to the SSO were documented. The predominant causes of SSOs during this reporting period were [*causes*]. The causes of [*number*] % of the blockages were unknown.

Table 4
Causes of SSOs

Cause of SSO	Number			Percent of Total Calls
	[*year*]	[*year*]	[*year*]	[*year*]
Roots				
Grease				
Debris				
Other (rags, paper)				
Offset Joints				
Unknown				
Total Causes				

Location of SSOs

The SSOs predominantly occurred in [*location*]. The majority of SSOs were a result of [*explanation*]. The number of FOG related SSOs has decreased by [*number*] % over the [*year*] values. The location of FOG related problems [*explain distribution*] between residential and commercial areas. The areas of the collection system with high occurrence of FOG related SSOs are flushed on a [*duration*] basis. The Operations and Environmental Compliance Division (ECD) coordinate their resources to identify the locations of the problems. If FOG is caused by a commercial facility, the ECD staff conducts an inspection of the facility and if needed, a compliance directive will be issued. All of the results are discussed art monthly operational meetings.

Status of Development of Sewer System Management Plan

[*include status report*]

Certification

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiries of the staff who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

[**City Official**]

Element 10 Appendix

1. Annual SSMP Audit Report Form

City of Palo Alto
Sewer System Management Plan (SSMP)
***[YEAR]* Annual Audit Report**

The purpose of the Annual SSMP Audit is to evaluate the effectiveness of the City of Palo Alto's (City's) SSMP and to identify any needs for improvement. The audit is submitted pursuant to the requirements included in the State Water Resources Control Board Order No. 2006-0003-DWQ and San Francisco Bay Regional Water Quality Control Board's Sewer System Management Plan Development Guide, July 2005. Information collected in the Annual Report of Sanitary Sewer Overflows was used in preparing this audit and therefore the two reports are intended to be submitted as one document.

Directions: Please check **YES** or **NO** for each question. If **NO** is answered for any question, describe the updates/changes needed and the timeline to complete those changes in the "*Description of Scheduled Updates/Changes to the SSMP"* section on Page 5 of this form.

		YES	NO
ELEMENT 1 – GOALS			
A.	Are the goals stated in the SSMP still appropriate and accurate?	☐	☐
ELEMENT 2 -- ORGANIZATION			
A.	Is the Public Works Services Key Staff Telephone List current?	☐	☐
B.	Is the Sanitary Sewer Overflow Responder Telephone List current?	☐	☐
C.	Is Figure 1 of the SSMP, entitled "City Organization Chart," current?	☐	☐
D.	Are the position descriptions and accurate portrayal of staff responsibilities?	☐	☐
E.	Is Table 2 of the SSMP, titled "Chain of Communication for Reporting and Responding to SSOs," accurate and up-to-date?	☐	☐
ELEMENT 3 – LEGAL AUTHORITY			
Does the SSMP contain excerpts from the current Redwood City Municipal Code documenting the City's legal authority to:			
A.	Prevent illicit discharges?	☐	☐
B.	Require proper design and construction of sewers and connections?	☐	☐
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	☐	☐
D.	Limit discharges of fats, oil and grease?	☐	☐

		YES	NO
E.	Enforce any violation of its sewer ordinances?	☐	☐
ELEMENT 4 – OPERATIONS AND MAINTENANCE			
	Collection System Maps		
A.	Does the SSMP reference the current process and procedures for maintaining the City's wastewater collection system maps?	☐	☐
B.	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	☐	☐
	Resources and Budget		
C.	Does the City allocate sufficient funds for the effective operation, maintenance and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	☐	☐
	Prioritized Preventive Maintenance		
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	☐	☐
E.	Based upon information in the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	☐	☐
	Scheduled Inspections and Condition Assessments		
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	☐	☐
	Contingency Equipment and Replacement Inventory		
G.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management?	☐	☐
H.	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	☐	☐
	Training		
I.	Is the training calendar current?	☐	☐
J.	Does the SSMP document current training expectations and programs within the City's Wastewater Division?	☐	☐
	Outreach to Plumbers and Building Contractors		
K.	Does the SSMP document current outreach efforts to plumbers and building contractors?	☐	☐

		YES	NO
ELEMENT 5 – DESIGN AND PERFORMANCE STANDARDS			
A.	Does the SSMP contain 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?	☐	☐
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	☐	☐
ELEMENT 6 – OVERFLOW AND EMERGENCY RESPONSE PLAN			
A.	Does the City's Sanitary Sewer Overflow and Backup Response Plan establish procedures for the emergency response, notification, and reporting of sanitary sewer overflows (SSOs)?	☐	☐
B.	Are Wastewater Division staff and contractor personnel appropriately trained on the procedures of the Sanitary Sewer Overflow and Backup Response Plan?	☐	☐
C.	Considering performance indicator data in the Annual SSO Report, is the Sanitary Sewer Overflow and Backup Response Plan effective in handling SSOs in order to safeguard public health and the environment?	☐	☐
ELEMENT 7 – FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM			
A.	Does the Fats, Oils, and Grease (FOG) Control Program include efforts to educate the public on the proper handling and disposal of FOG?	☐	☐
B.	Does the City's FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	☐	☐
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping and reporting established in the City's FOG Control Program?	☐	☐
D.	Does the City have sufficient legal authority to implement and enforce the FOG Control Program?	☐	☐
E.	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system	☐	☐
ELEMENT 8 – SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN			
A.	Does the Redwood City Sanitary Sewer Master Plan evaluate hydraulic deficiencies in the system, establish sufficient design criteria and recommend both short and long term capacity enhancement and improvement projects?	☐	☐
B.	Does the City's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	☐	☐

		YES	NO
ELEMENT 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?	☐	☐
B.	Is the City able to sufficiently evaluate the effectiveness of SSMP elements based on relevant information?	☐	☐
ELEMENT 10 – SSMP AUDITS			
A.	Will the SSMP Audit be submitted with the SSO Annual Report to the Regional Water Board by March 15th of the year following the end of the calendar year being audited?	☐	☐
ELEMENT 11 – COMMUNICATION PROGRAM			
A.	Does the City effectively communicate with the public and other agencies about the development and implementation of the SSMP and continue to address any feedback?	☐	☐

Description of Scheduled Updates/Changes to the SSMP

Directions: For each NO answer, please describe the planned revision and indicate the date the revision will be completed. Reference the SSMP element and question number with each explanation.