

S S M P

SEWER SYSTEM MANAGEMENT PLAN

Hyperion
Sanitary Sewer System

February 2015

environment LA SANITATION
CITY OF LOS ANGELES



City of Los Angeles

Sewer System Management Plan (SSMP)

For the Hyperion Sanitary Sewer System

Overview

This Sewer System Management Plan (SSMP) has been prepared for the Hyperion Sanitary Sewer System pursuant to the State Water Resources Control Board's May 2, 2006, Statewide General Waste Discharge Requirements (WDRs). As shown on the following maps, the Hyperion System is by far the largest of the City's three sanitary sewer systems, including 6,117 miles of gravity sewer and 24 miles of force main. Currently an average wastewater flow rate of nearly 300 million gallons per day (MGD) is generated in the System. Approximately 60 MGD is treated at upstream Donald C. Tillman and Los-Angeles Glendale Water Reclamation Plants. All other flow in the System, and the biosolids from these reclamation plants which is returned to the collection system, are treated at the Hyperion Treatment Plant located in Playa Del Rey.

The original SSMP was adopted by the City's Board of Public Works and certified with the SWRCB on February 18, 2009. This SSMP represents the first five-year update of the original SSMP pursuant to Section D.14 of the WDRs which requires that:

> *"The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. ..."*

This SSMP is in full compliance with the WDRs and meets the following WDR objectives:

a. Properly fund, manage, operate and maintain, with adequately trained staffs and/or contractors possessing adequate knowledge, skills, and abilities as demonstrated through a validated certification program at all times, all parts of the sanitary sewer system owned and/or operated by the discharger.
b. Provide adequate capacity to convey base flows and peak flows, including flows during wet weather events, to the minimum design criteria as defined in the discharger's System Evaluation and Capacity Assurance Plan (a required component of the SSMP), for

all parts of the sanitary sewer system owned and/or operated by the discharger.

c. Take all feasible steps to stop and mitigate the impact of Sanitary Sewer Overflows (SSOs) in the sanitary sewer system owned and/or operated by the discharger.

The City achieves the above objectives by implementing a comprehensive sewer infrastructure asset management program that is documented in the following 11 components of the SSMP, including sewer condition assessment; master plans; repair, rehabilitation, and replacement; capacity assurance; operation & maintenance; source control; and overflow response.

i. Goal
ii. Organization
iii. Legal Authority
iv. Operation and Maintenance Program
v. Design and Performance Provisions
vi. Overflow Emergency Response Plan
vii. FOG Control Program
viii. System Evaluation and Capacity Assurance Plan
ix. Monitoring, Measurement, and Program Modifications
x. SSMP Program Audits
xi. Communication Program

The SSMP integrates numerous work elements and ongoing activities into one formal document. These are described in greater detail in a variety of reference documents. It is not the intent nor is it practical to include these documents in the SSMP. However, applicable documents that support various SSMP components are referenced and will be made available upon request. A pdf copy of this SSMP is posted on the internet at *http://www.lacitysan.org/lasewers/ssmp/index.htm.*

By agreements, the City accepts, conveys, and treats wastewater from 29 municipal satellite agencies. Since the City does not own, operate, fund, or control any of the sanitary sewer systems of these communities and they are not included under the NPDES permit conditions of the City's treatment facilities, it is assumed that these satellite agencies will be required to apply for permit coverage under the WDRs and develop and implement their own SSMPs.

Reference

SWRCB,ORDER NO. 2006-0003, STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS (WDRs) FOR SANITARY SEWER SYSTEMS, 05/02/2006

SWRCB WDRs MONITORING AND REPORTING PROGRAM OF 05/02/2006, AND AMENDMENTS THERETO EFFECTIVE 02/20/2008 AND 09/09/2013

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ACRONYMS

Acronym	Definition
ATF	Air Treatment Facility
BMPs	Best Management Practices
CCTV	Closed-Circuit Television
City	City of Los Angeles
CIS	Coastal Interceptor Sewer
d/D	The ratio of the depth of flow (d) in a sewer pipe to the diameter (D) of the pipe
ECIS	East Central Interceptor Sewer
EIR	Environmental Impact Report
ERIS	Eagle Rock Interceptor Sewer
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
FY	City of LA's Fiscal Year (July 1 through June 30)
GBIS	Glendale-Burbank Interceptor Sewer
GIS	Geographic Information System
LADWP	Los Angeles Department of Water and Power
MH	Maintenance Hole
MIKE URBAN	A GIS-based hydrodynamic modeling software
NCOS	North Central Outfall Sewer
NEIS	Northeast Interceptor Sewer
NORS	North Outfall Relief Sewer
NOS	North Outfall Sewer
PDWF	Peak Dry Weather Flow
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WCSD	Wastewater Collection System Division
WDRs	Statewide General Waste Discharge requirements
WLAIS	West Los Angeles Interceptor Sewer



i. GOAL

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

The long-standing City policy as affirmed by the City Council on December 7, 1956, provides the basis for and guides the actions of operating departments and bureaus in protecting the waters of the City and the region.

"It is the policy of the City of Los Angeles to provide and maintain facilities for the treatment and disposal of sewage which shall be, at all times, adequate in capacity and adequate for protection of the public health and public interest in this and neighboring communities including maintenance of the beaches and coastal waters in an attractive condition suitable for recreational and other beneficial uses equal to or better than the conditions specified by the State agencies having control over the subject water."

The Department of Public Works' Bureau of Sanitation owns and operates the City's sanitary sewer system. The mission of the Bureau's Wastewater Collection System Division, which has the primary responsibility for operation and maintenance of the sewer system, is:

"To operate the wastewater collection systems in a safe, efficient, and cost effective manner, with an emphasis on protecting the environment and public health, recognizing the public as our primary customer deserving of courteous and expeditious service, and recognizing our employees as our most valuable asset."

Consistent with the City policy and its mission *to protect public health and the environment*, the Bureau of Sanitation has adopted and is dedicated to achieving the following broad goals:

- Repair, rehabilitate, replace, and upgrade system components as needed
- Provide sufficient sewage capacity
- Eliminate all preventable dry-weather overflows
- Eliminate all preventable wet-weather overflows from all but the most severe storm events
- Maintain an effective SSO response plan to mitigate, in a timely manner, any SSOs that do occur
- Control corrosion and minimize odor releases

- Improve operational reliability & flexibility

These goals are consistent with the State General Waste Discharge Requirements (WDRs) provisions that are aimed at maintaining all parts of the system and providing adequate capacity to minimize and mitigate sewer overflows. This SSMP documents specific programs, functions, and activities deployed to attain the above goals.

References:

City Charter, City of Los Angeles, City Council Resolution of December 7, 1956

Bureau of Sanitation's Mission Statement, Five-Year Strategic Plan, Latest Edition

Wastewater Collection Systems Division's Mission Statement



ii. Organization

(a) The name of the responsible or authorized representative as described in Section J of this order (WDR);
(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an 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)).

The City owns and operates its sanitary sewer systems. The City also processes wastewater from 29 satellite communities under contractual agreements but does not fund, operate or have control over the sanitary sewer systems of these communities.

The City is governed by the Mayor, who is the chief executive, and 15 full-time Council Members. The Mayor and the City Council authorize the necessary funding. The City Attorney provides legal advice and guidance to the City and City departments in implementing the City ordinances and exercising legal authorities; and represents the City, its departments, commissions and employees in legal matters, including enforcement actions.

The Board of Public Works, a full-time Board, whose members are appointed by the Mayor and confirmed by the City Council, is the governing body of the Department of Public Works, which includes the City's Wastewater Program, also referred to as Cleanwater Program. Management of water programs is through the Department of Water and Power (DWP). DWP reports directly to the Mayor.

The Department of Public Works is made up of five Bureaus. Among these are the Bureaus of Sanitation, Engineering, and Contract Administration, which have specific responsibilities for the City's sanitary sewer systems. The Bureau of Sanitation has the primary responsibility for the operation and maintenance of the systems. The Bureau of Engineering has the primary responsibility for preparing engineering plans and specifications and performing construction management for new and rehabilitation projects. The Bureau of Contract Administration has primary responsibility for enforcing contract compliance and providing inspection

for construction and maintenance projects to ensure that they are constructed in accordance with contract documents.

The Department of Building and Safety is responsible for developing and implementing standards for upper private lateral sewer (building sewer) connections. The Department of Public Works issues permits for lower private laterals which are built in public right-of-way.

The lines of authority are clearly diagrammed from the Mayor through the Board of Public Works, Bureaus, Divisions, and workgroups to each individual position. Each unit within the City's organization, including each individual, has specific and clearly defined responsibilities and authorities that are designed to meet the City's mission and goals for the its sanitary sewer systems and collectively implement all of the State WDRs and SSMP requirements. City offices that are responsible for SSMP-related functions and activities are described in Subpart ii (b) and shown in Figure 2-1 of this SSMP.

The City's organization is fluid, changing with changing community and regulatory needs and priorities. The design of the structure and the staffing levels and skills of the organizational units are tailored to needs. For example, because of their size and complexity, some programs, such as the pretreatment program, are the responsibility of a separate division that is dedicated and focused primarily on the pretreatment program goals. Other programs, while the primary responsibility of a workgroup within a division, are accomplished with significant input from multiple divisions. Program work elements are subdivided into manageable work programs to ensure that full attention and support is given to each need and each task within the program. This organizational structure allows assignment of experts who are knowledgeable about the regulations and requirements of each specific task within each program work element.

The City Charter also provides for the formation of Neighborhood Councils throughout the City to promote increased public participation in City government; make government more responsive to local needs; facilitate the delivery of City services to neighborhoods by helping to identify community needs; and ensure equal opportunity for all stakeholders in all communities to be involved in addressing community concerns. The WDRs requirement to "… communicate on a regular basis with the public on the development, implementation, and performance of its SSMP…" which is a part of Part xi, Communication Program, of the required SSMP is primarily fulfilled through ongoing communications with the Neighborhood Councils.

The City is not responsible for the organization of the Satellite agencies or for implementing WDRs/SSMP measures within these organizations. Satellite agencies own and operate sanitary sewer systems within their jurisdictions.

Goal

The City's organizational goal is to clearly define responsibility and authority for accomplishing each program work element. This is accomplished through organization charts, position descriptions, adequate staffing, and work assignments.

Responsibilities

Principal Divisions within the Bureaus that have responsibility for sanitary sewer systems are shown in Figure 2-1. Fulfillment of these responsibilities is assured through monitoring and reporting on the progress of various programs, functions, activities. Adjustments are made as appropriate for optimal performance.

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

The City has designated a Legally Responsible Official (LRO) pursuant to Section J., REPORT DECLARATION, of the State General WDR (Order No. 2006-0003). Below is the contact information for the LRO.

Mr. Barry G. Berggren, Division Manager
Wastewater Collection Systems Division
2714 Media Center Drive
Los Angeles, CA 90065
(323) 342-6002
barry.berggren@lacity.org

(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

Lines of authority for the SSMP are shown in Figure 2-1 - SSMP Organizational Chart. A list of responsible positions is provided below. They may be reached by dialing the toll free number 311, or (213) 485-2121 if calling from outside the Los Angeles areas. The operator will transfer the call to the intended office.

- Wastewater Collection Systems Division, Division Manager (Legally Responsible Official)
  - Operation and Maintenance Program
  - Overflow Emergency Response Plan
  - Monitoring, Measurement and Program Modifications
  - SSMP Audits and Updates
  - Wastewater Engineering Services Division, Division Manager
    - System Evaluation and Capacity Assurance
    - Monitoring, Measurement and Program Modifications
    - GIS and Mapping
    - Communication Program
    - SSMP Audits and Updates
  - Industrial Waste Management Division, Division Manager
    - Fats, Oils, and Grease (FOG) Control Program
    - Legal Authority
      - ✓ Source Control
      - ✓ Pretreatment
      - ✓ Enforcement
  - Financial Management Division, Division Manager
    - Budget and Financial Support for Capital Improvement and O&M Programs
    - Legal Authority
      - ✓ Administration of the Contracts with Satellite Agencies
- Bureau of Engineering, City Engineer

Deputy City Engineer in Charge of Wastewater Program

- Wastewater Conveyance Engineering Division, Division Engineer
  - Design and Performance Provisions
  - Sewer Rehab/Replacement Planning
- Wastewater Conveyance Construction Division, Division Engineer
  - Sewer Rehab/Replacement Construction Management
- Design Standards and Investigation Group, Group Manager
  - Design Standards
- Geographic Information Systems, Group Manager
  - GIS and Mapping

- Bureau of Contract Administration, Director
  - Wastewater Construction Division, Division Manager
    - Inspection of Construction and maintenance Projects for Sanitary Sewer Systems Components

- Department of Building and Safety, General Manager
  - Uniform Plumbing Code Enforcement
  - Los Angeles Municipal Code Sewer Ordinance Enforcement for Work on Private Properties

October 23, 2007

City of Los Angeles SSMP Implementation Organization Chart

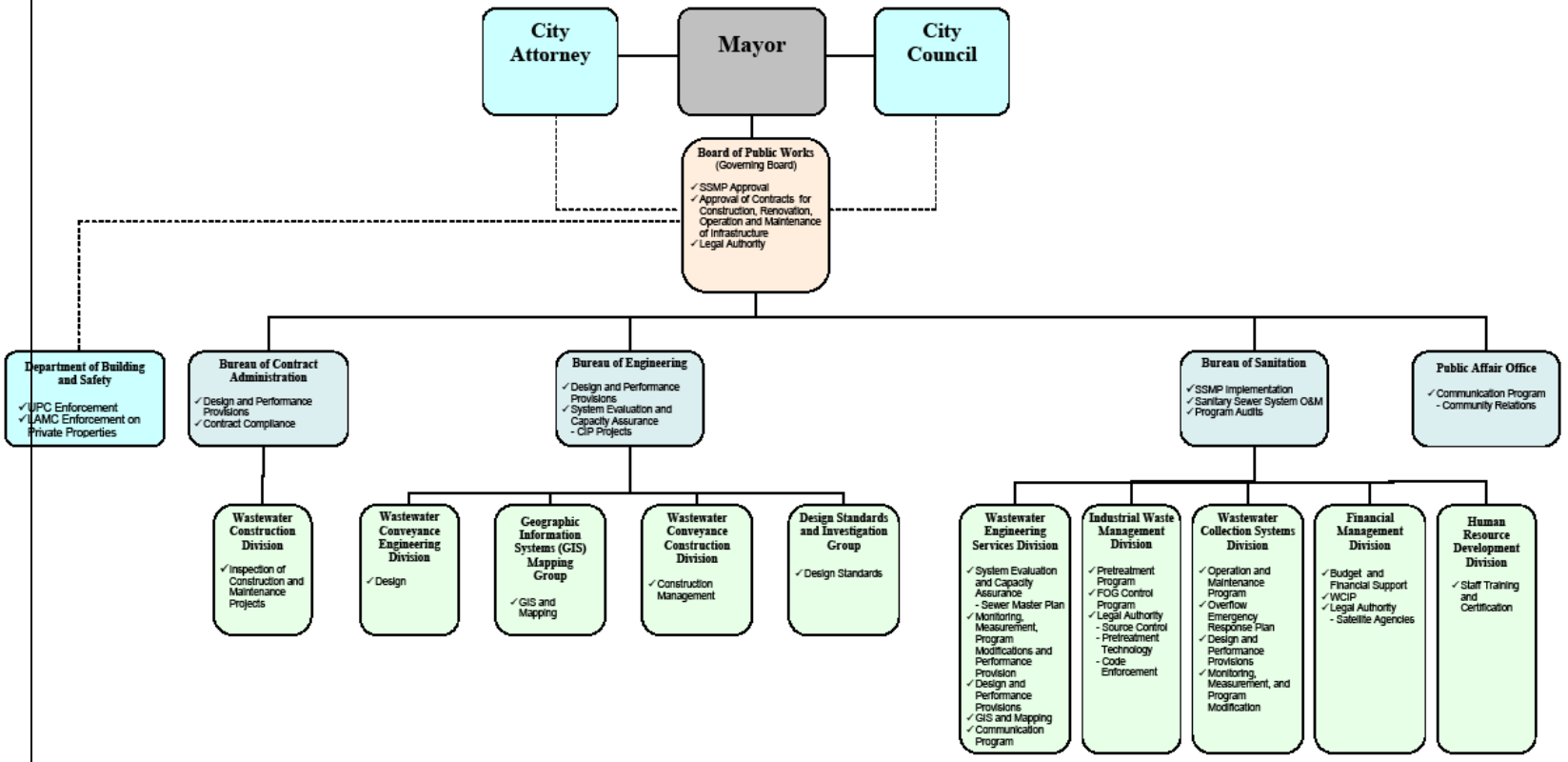


Figure 2-1

(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).

The Bureau of Sanitation's Wastewater Collection Systems Division follows procedures that provide for effective notification of each Category of SSOs through a clear and step-by-step method of communication. The policies and procedures for SSO reporting are reviewed and updated at appropriate intervals to ensure that they remain current and in full compliance with all regulatory and legal requirements.

These reporting procedures are incorporated herein by reference. Electronic and hard copies of the referenced document are available upon request.

Reference
Bureau of Sanitation, Wastewater Collection Systems Division, Sanitary Sewer Overflow Response and Reporting Procedures, Latest edition



iii. Legal Authority

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

(a) Prevent illicit discharges into its sanitary sewer system (examples may include 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.

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

- **Industrial Waste Pretreatment**

The California State Constitution provides in Article 11, Section 7, that "A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws." The City of Los Angeles Charter, Section 101 specifies the Powers of the City. It states that "The City of Los Angeles shall have all powers possible for a Charter City to have under the constitution and laws of this state as fully and completely as though they were specifically enumerated in the Charter, subject only to the limitations contained in the Charter."

The Los Angeles Charter and Administrative Code, Article V, Sec. 580 (a) gives the Department of Public Works the powers and duties to design, construct, excavate and

maintain streets and public works improvements including but not limited to bridges, public parkways and rights-of-way, sanitary sewers and storm drains, water and sewer treatment facilities, landfills and public rights-of-way lighting facilities owned by the City.
The City of Los Angeles implements the requirements set forth in 40 CFR Section 403.8 in the manner specified in the Los Angeles Municipal Code (LAMC), Section 64.30, as more specifically described herein. The pretreatment standards are applied to individual industrial users through Industrial Wastewater Permits issued to the users.

The City of Los Angeles ensures industrial user compliance with pretreatment standards, requirements, and conditions of the permit by taking administrative enforcement actions consistent with the City's Enforcement Response Plan (ERP) in the event of noncompliance. The City's first ERP documented existing enforcement procedures in October 1990 and was submitted to the EPA on October 30, 1991. The enforcement procedures described in the ERP have established criteria and other considerations for responding to violations of pretreatment regulations and discharge standards in a consistent and timely manner. The procedures provide a range of enforcement responses with the objectives of regulating industrial users to achieve and maintain consistent compliance and subjecting repeat offenders to escalated enforcement actions in a timely manner. The types of escalated enforcement actions from the ERP can range from notices of violation, and administrative orders, to suspension of discharge privileges, permit revocation, water or utility service termination, and/or City Attorney referral for filing of civil/criminal charges. The City reviews and updates its ERP periodically to ensure that it accurately reflects modifications to its authority and describes current operating practices.

The LAMC Section 64.30 provides the legal authority to implement provisions specified under Part 40 CFR Section 403.8(f)(1), which provides the basis for each procedure under 40 CFR Section 403.8(f)(2), as follows:

General Provisions - The City, pursuant to LAMC Section 64.30, commonly referred to as the Industrial Waste Control Ordinance (Ordinance) regulates industrial wastewater discharges into the publicly owned treatment works (POTW). Section 64.30 (A)(2) sets forth the objectives of the Ordinance. The objectives are met through a permit and inspection program administered under the jurisdiction of the Board of Public Works (Board) to ensure City compliance with all applicable State and Federal laws. The Director of the Bureau of Sanitation (Director) under the jurisdiction of the Board is given the authority to administer, implement and enforce the provisions of the Ordinance. The Ordinance gives the Board and the Director the power, jurisdiction, and supervision over places of discharge of wastewater into the POTW, necessary to adequately enforce and administer all applicable State and Federal laws. Section 64.30(A)(3) of the Ordinance states "This section shall apply to all dischargers within the City of Los Angeles and to all persons outside the City of Los Angeles who discharge to the City's POTW except as otherwise provided herein, the Director of the

Bureau of Sanitation under the jurisdiction of the Board of Public Works shall administer, implement and enforce the provisions of this section."

There are twenty-nine contributing jurisdictions (8 cities and 21 agencies) that discharge wastewater into the City's POTW. The City has sewage disposal contracts with all contributing jurisdictions including the Cities of Beverly Hills, Burbank, Culver City, El Segundo, Glendale, La Canada Flintridge, San Fernando, and Santa Monica. The sewage disposal contract requires the contract cities to ensure compliance with federal, state and local regulations, including pretreatment regulations. Section VI.B.1 makes regulatory liability a cost of the Amalgamated System and therefore proportionally chargeable to the City of Los Angeles and the contract cities and agencies, if this liability results from the construction or operation of the Amalgamated System (treatment plants and large trunk sewers). This liability may be related to industrial waste enforcement inside the contract cities and agencies. The sewage disposal contract allows the City to enter an agency's or contract city's jurisdiction if: (1) the federal or state government require the City of Los Angeles to establish a program, prepare a study, or undertake some other action, and (2) the action would require Los Angeles to enter the agency's or contract city's jurisdiction, and (3) the agency or contract city fails to take action that results in liability that is payable from the Amalgamated System (which means that the liability must also result from the City's operation of the Amalgamated System).

Contract cities and agencies will pay any fines resulting from their failure to comply with state or federal requirements. The term of an agency's or city's agreement will revert to a month-to-month relationship eventually leading to removing its wastewater from the City of Los Angeles' system if the agency is in default for more than 90 days. The sewage disposal contract also allows the City to sue for specific performance if a contracting city or agency defaults or breaches the agreement.

Section 64.30(A)(3) of the LAMC provides for the regulation of dischargers to the Publicly Owned Treatment Works (POTW) through the issuance of Industrial Wastewater Permits containing specific discharge requirements and through enforcement of general discharge prohibitions; authorizes monitoring and enforcement activities; imposes reporting requirements on specific permittees; and sets fees for the recovery of program costs. The City's Industrial Wastewater Permit is the control mechanism employed in applying pretreatment standards to industrial users.

The LAMC Section (C)(1)(a) states "No person shall discharge industrial wastewater to the POTW without permission as provided in an Industrial Wastewater Permit. The permit shall not be issued until determination has been made by the City's Board of Public Works that the wastewater to be discharged shall not violate any provisions of this Code, the Board's Rules and Regulations, the water quality objectives for receiving waters established by the California Water Quality Control Board, Los Angeles Region, or any applicable federal or state statutes, rules or regulations. Such determination shall be made from the information set forth in the application for permit." Sect 64.30(B) specifies the conditions and prohibitions placed on Industrial

Wastewater Permits. Industrial Wastewater Permits may deny or condition new or increased contribution of pollutants, or changes in the nature of pollutants to the POTW by industrial users where such conditions do not meet applicable pretreatment standards and requirements or where such conditions would cause the POTW to violate its NPDES Permit.

The LAMC Section 64.30(B)(3) specifies conditions on the Industrial Wastewater Permits that require compliance with applicable pretreatment standards and requirements by industrial users. Industrial Wastewater Permits incorporate pretreatment standard limitations based on such standards and requirements. It provides that upon the promulgation of mandatory National Categorical Pretreatment Standards (NCPS) for any industrial category, the NCPS, if more restrictive than limitations otherwise imposed under the Ordinance, shall apply, and that a discharger shall comply with applicable NCPS as set forth in 40 CFR Part 401 et seq. Section 64.30(C)(1) includes a statement which states that the granting of the permit shall not relieve the discharger from the responsibility for compliance with all provisions of the Ordinance. All other general pretreatment standards and prohibitions and local limits developed to implement the general and specific standards are included as permit conditions.

- **Illicit Discharges and Inflow/Infiltration Prevention**

The City's Municipal Code is very clear in regard to controlling infiltration and inflow. It has always been the policy of the City, through the foresight of its early leaders, to have a separation of the storm and sanitary sewer systems. The code prohibits connections of storm drains, downspouts, area drains, storm sewer connections and other sources that could contribute infiltration and/or inflow to the system. The ordinances provide for the inspection of new and rehabilitated private sewer laterals and mainline sewers to ensure that installation meets the City's performance standards. The ordinances also provide for enforcement actions for noncompliance.

Plumbing on private properties is under the jurisdiction of the Department of Building and Safety. The Los Angeles Municipal Code and the Section 1101.2 of the Los Angeles City Plumbing Code prohibit the connection of storm water or surface water drains to sanitary sewers stating *"… rainwater piping shall discharge to an approved point of disposal, not to a public sewer."*

On June 12, 2001, the City Council approved a motion, Council File 01-1055, authorizing the Department of Building & Safety and the Bureau of Sanitation to bring properties into compliance. Sanitation and Building & Safety jointly implemented measures to detect and eliminate sources of infiltration and inflow through a program titled Sewer Infiltration and Inflow Prevention (SIIP) Program. The program was designed to reduce the impacts from unauthorized discharges from roof drains, area drains, parking lot drains, and downspouts. An estimated average extraneous flow of 8 million gallons per day was eliminated from the system as a result of the SIIP Program.

Currently in the Hyperion Sanitary Sewer System, however, dry weather urban runoff is diverted from storm drains into the City sewers and conveyed to the Hyperion Treatment Plant for treatment. This is to protect groundwater, inland surface water, bays, estuaries, and the ocean from pollutants present in turban runoff that could reach these waters. The Hyperion Treatment Plant's current National Pollutants Discharge Elimination System (NPDES) Permit provides for this diversion. Originally, dry weather urban runoff diversion was only during the period of April 1 to October 31. However, since 2009, dry weather urban runoff has been diverted year-round to conform to the compliance schedule for bacteria concentrations during winter dry weather contained in the Santa Monica Bay Beach Dry-weather Bacteria Total Maximum Daily Load (TMDL) regulation (Resolution No. 02-004 and Resolution No. 2002-022) and adopted by the Los Angeles Regional Water Quality Control Board. There is no wet weather diversion to any plants and there is no dry weather diversion to any other plants.

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

The Los Angeles Municipal Code Chapter VI, Article 4 – Sewers, Watercourses, and Drains codify the City's policy for the design and construction of sewers and connections. The LAMC requires that all sewers constructed in the City comply with Bureau of Engineering's standard plans, specifications, policies and practices. This applies to private developer designed and constructed projects. The Code gives the authority and responsibility to the City Engineer to develop and enforce standards. These standards are continuously updated to incorporate new materials and construction methods to ensure that the completed installations meet the high performance standards of the City. Construction plans and technical specifications are prepared for each new or rehabilitation projects that document the standard of performance for the construction and the standards for acceptance. These are enforced by the Bureau of Contract Administration as described in Sub-part C below.

Service connections must be designed and constructed to meet the Los Angeles City Plumbing Code.

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

The City does not maintain private lateral sewer lines. Property owners are responsible for proper installation, operation and maintenance of both upper and lower laterals, including laterals on the City-owned easement. Property owners are required to obtain permits from the Department of Building & Safety for work on private properties and the Department of Public Works for work in the public right-of-way.

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

LAMC Section 64.30.B.1.(a) states "Except as expressly allowed in an Industrial Wastewater Permit, no person shall discharge, permit the discharge, cause the discharge or contribute to the discharge of the following to the publicly owned treatment

works (POTW): Any solid or viscous materials which could cause obstruction to the flow or operation of the POTW, and any material which will cause the POTW to violate its NPDES Permit, applicable Federal and State statutes, rules or regulations." The Ordinance requires the installation of a grease interceptor at all food Service Establishments that are to be newly constructed that have the potential to generate waste FOG and any remodels of existing FSEs valued at $100,000 or more. A grease interceptor is a plumbing device, with a minimum size of 750 gallons that is installed in a wastewater drainage system to intercept and prohibit fats, oil and grease from entering the sanitary sewer system.

The Industrial Wastewater Permit controls the contribution to the POTW by each industrial user to ensure compliance with applicable standards and requirements. Section 64.30(C)(1)(g) specifies the duration of Industrial Wastewater Permits. Section 64.30(C)(1)(e) controls the transfer of permits. The Ordinance specifies that any discharger may be required by the Director, by permit or otherwise, to engage in periodic monitoring and sampling of its discharge. Section 64.30(C)(1)(d) specifies that the Director shall have authority to impose permit conditions including limits regarding the discharge of specific pollutants, requirements, which may include specific sampling locations, frequency of sampling, times of sampling, number, types, test standards and reporting schedules, for monitoring programs, and requirements for maintaining and affording City access to plant records relating to discharges, including hauled waste records and manifests.

LAMC Section 64.30 (C)(1)(b)(12) requires the development of a compliance schedule by each industrial user for the installation of technology required to meet applicable pretreatment standards and requirements. Section 64.30(C)(1)(d)(11) specifies that the Director may require all industrial users to install pretreatment systems, upgrade existing pretreatment systems and/or install additional pretreatment systems, implement Best Management Practices, and any other conditions deemed appropriate to achieve the objectives of the Ordinance. Section 64.30(C)(2) requires industrial users to submit reports necessary to assess and assure compliance.

(e) Enforce any violation of its sewer ordinances.

The City's Ordinance provides the authority to carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by industrial users, compliance or noncompliance by industrial users with applicable pretreatment standards and requirements. The Ordinance gives the Board and the Director the power, jurisdiction, and supervision over places of discharge of wastewater into the POTW, necessary to adequately enforce and administer all applicable State and Federal laws. Section 64.30(C)(5) of the Ordinance specifies that whenever it is necessary to make an inspection to enforce any of the provisions of, or perform any duty imposed by this section or other applicable law, or whenever the Director has reasonable cause to believe that there exists upon any premises any violation of the provisions of this section or other applicable law, or any condition which makes such premises hazardous, unsafe, or dangerous, the Director is hereby authorized to enter

such property at any reasonable time and to inspect the same and perform any duty imposed upon the Director by this section or other applicable law.

LAMC Section 64.30(E) authorizes enforcement actions for non-compliance with pretreatment standards by an industrial user. It allows for the imposition of criminal penalties for violations. Section 64.30(E (7) specifies that except as expressly provided, violation of this section or any order issued by the Board or the Director as authorized by this section is a misdemeanor punishable by a fine not to exceed $1,000.00 per violation per day or by imprisonment in the County jail for a period of not more than six (6) months, or by both such fine and imprisonment. The Ordinance provides the authority to seek injunctive relief for noncompliance by industrial users with pretreatment standards and requirements. It specifies that whenever a discharger of wastewater is in violation of this section or otherwise causes or threatens to cause a condition of contamination, pollution or nuisance, the Board or the Director may cause the City to seek a petition to the Superior Court for the issuance of a preliminary or permanent injunction, restraining order, or other order, as may be appropriate in restraining the continuance of such discharge. The Ordinance also specifies the terms under which civil liabilities can be imposed.

References

Bureau of Sanitation, Industrial Waste Management Division, Guide for Discharging Industrial Wastewater To The Sewer, Latest Edition

Los Angeles Municipal Code



iv. Operation and Maintenance Program

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

A comprehensive set of sewer "S" and more detailed "Wye" maps show all the features of the City's sanitary sewer systems. These maps have been converted to Geographic Information System (GIS) maps and are the basis for "Navigate LA", which is a collection of electronic files that can be used in the field for locating pipelines, maintenance holes, service connections and other features of the City's systems. Modern state-of-the-art customized electronic GIS maps of the entire sanitary sewer systems and other information layers are actively used in system management, work prioritization, and management decisions. The maps are routinely updated to include new or rehabilitated sewers. The Bureau of Engineering District Offices and the Bureau of Contract Administration provide as-built information to the Bureau of Engineering's Mapping Group which maintains up-to-date maps.

Navigate LA is an easy to use desktop application that combines the power of electronic mapping with over 250 layers of data, linked databases and reports. This mapping is an invaluable data source for field locating utilities, avoiding damage and service disruption. Navigate LA will also be used for initial planning studies to locate potential conflicts to new construction or rehabilitation.

(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.

The City operates and maintains the largest sewer system in the nation, serving a population of over four million within a 600 square mile service area. It consists of more than 6700 miles of sewers, 140,000 maintenance holes, and 46 pump stations. In addition, there are about 700,000 privately owned sewer laterals with total length of more than 11,000 miles. The City also provides wastewater conveyance and treatment services to 29 satellite agencies under contractual agreements but is not responsible for satellite agencies' sewer system management.

The Department of Public Works, Bureau of Sanitation, Wastewater Collection Systems Division's operation and maintenance manuals guide the frequency of sewer cleaning and maintenance of pump stations and equipment. Tasks and their frequency are determined based on operation and maintenance experience, past performance, manufacturer's recommendations and site-specific conditions. Scheduled and completed tasks are catalogued and tracked by work orders in a maintenance management system called Enterprise Maintenance Planning and Control (EMPAC). Pump run times are routinely monitored and used in scheduling routine maintenance. Maintenance program includes preventive, proactive, predictive, and corrective maintenance; maintenance engineering; and quality control.

The Enterprise Maintenance Planning and Control (EMPAC) is an asset management and maintenance system the Wastewater Collection Systems Division utilizes to manage work, track warehouse parts, and streamline maintenance related purchases. The Division also uses the Field Automation Sanitation Trucks (FAST) which is a field data access component to EMPAC. FAST greatly reduces the amount of paperwork in collecting closure data for work orders. Work orders are closed in the field, thus reducing data entry by clerks and supervisors. Geographic Information System (GIS) integration ties EMPAC assets to actual field locations, searchable by street address or intersection. Real-time access to data in the field enables crews to work more efficiently.

Sewer System Preventive and Proactive Maintenance

The City has a proactive and preventive maintenance program for its sewer system. Six maintenance yards are strategically located throughout the City to minimize travel time and maximize efficiency. Preventive maintenance is focused on critical and problematic areas. Maintenance is performed by staff assigned to each of the six maintenance yards. Problem sewers are identified, prioritized and scheduled for maintenance based on comprehensive review of the maintenance history and system characteristics of all the sewers in the City including overflows, blockages, excessive maintenance, age, material, condition, etc. Maintenance includes high velocity sewer cleaning, bucketing, mechanical and manual rodding of sewers. The City's sewers are classified into two groups: primary sewers (greater than 15 inches in diameter) and secondary sewers (15 inches or smaller in diameter). Primary sewers have been divided into 26 and secondary sewers into 218 basins.

All problem sewers are inspected as soon as possible, usually within 48 hours after the initial occurrence of an overflow, by closed circuit television (CCTV) to identify any necessary repairs or special maintenance needs.

Flow monitoring and CCTV inspection records are reviewed to identify deficiencies. Sewers that exhibit high flow levels or operational failure are identified. These may trigger further reviews to determine cause and/or immediate or accelerated

corrective actions. Priorities and schedules are set based on the severity of the problem.

In addition to the preventive maintenance, the City implements a proactive maintenance program where “non-problem” sewers are also scheduled for maintenance and cleaning, but on a less frequent basis. Proactive maintenance of secondary sewers is performed on a basin by basin basis.

The City implements a quality control/quality assurance program designed to examine the effectiveness of cleaning. After cleaning a sewer, a sampling of pipes are inspected by closed circuit television (CCTV) to ensure that cleaning has restored the flow area of the sewer to at least 95 percent of the pipe diameter. Any sewer that fails the inspection is re-cleaned and the crew is retrained on the proper procedures.

Fats, Oils, and Grease (FOG) Cleaning

Overflows caused by blockages from FOG are monitored for location and needed cleaning frequency. The City has increased the frequency of cleaning in sewers with repeated FOG-related blockages or overflows.

Root Control Strategy

In addition to the City’s routine maintenance activities including mechanical root removal, the City started a program in 2002 to control the growth of roots in sewers by the use of environmentally safe chemicals. The effectiveness of chemical root control treatment is carefully monitored and the frequency of treatment and application rates adjusted as required to eliminate blockages caused by roots.

In 2006, the City started a community outreach and education program to control roots in private sewer laterals located in root hot spots. A root control pamphlet http://www.lasewers.org/sewers_shared/pdf/tree_roots_brochure.pdf is mailed to properties in root hot spots where there is significant tree roots intrusion into the mainline sewers, requiring frequent root removal and chemical treatment to avoid sewer blockages. The City also dedicated a helpline (323) 342-1566, an email address sewr.root@lasewers.org, and a web site http://www.lasewers.org/sewers/roots/index.htm to this program.

Odor Control Strategy

The City maintains and implements a sewer odor master plan containing a multitude of odor control and response measures including:

- Ongoing sewer air pressure and odor monitoring;
- Air manipulation in the sewer using flow diversion and air curtains;
- Odor removal from air in the sewer using carbon scrubbers and biotrickling filters;
- Sewer cleaning and maintenance;
- Chemical treatment;
- Sewer construction and repair;
- Sealing of sewer maintenance holes;
- Trap maintenance hole inspection, cleaning, repair, and replacement; and
- Odor complaint response and investigation through the sewer odor hotline and other methods of receiving and responding to complaints.

Pump Stations Maintenance

All of the City's 46 sewage pump stations have built-in backup emergency and redundancy systems. The Venice Pumping Station serves as the main center for monitoring and control of all pump stations. The City has upgraded its pump stations and equipped them with state-of-the-art controls, emergency backups, and redundancy systems. This has eliminated overflows caused by power outages and mechanical failure.

As a part of routine preventive maintenance program, the Bureau of Sanitation's Wastewater Collection Systems Division conducts scheduled preventive maintenance of pumps and related accessories. On the average, each station is visited for inspection/maintenance about 80 times in each year by the various crafts. A crew spends about 30 minutes to 2 hours in a station for every scheduled preventive maintenance visit.

Construction-Related Overflow Prevention

In a determined effort to reach the City's goal to have no preventable dry weather overflows and wet weather overflows during all but most severe storm events, the Bureaus of Engineering, Contact Administration and Sanitation issued a "Joint Statement of Policy Pertaining to the Prevention of and Response to Construction Contract-Related Sewage Spills," which clearly documents the City's spill avoidance policy. The policy clearly states the responsibilities of each Bureau in prevention, spill response, reporting, public information dissemination and follow up. The policy requires, among other provisions, coordination among the Bureaus in pre-design reviews to determine appropriate means for preventing sewage overflows and to determine appropriate sewage flow control requirements during construction to be included in the design, bid and contract documents. The Policy further requires that

flow control requirements be explained to potential bidders at the pre-bid meeting. The contractor is required to provide an Emergency Response Plan for controlling sewage flow during the construction. The Bureau of Sanitation reviews and approves the Contractor's Emergency Response Plan prior to start of construction. The policy requires a sign-off for private development projects by the Bureau of Sanitation.

A map of all sewer construction projects is continuously updated by the Bureau of Engineering. Contact information for each ongoing construction project, including the names and telephone or pager numbers of the inspector, the inspector's supervisor and contractor's contact person, is prepared by the Bureau of Contract Administration and forwarded to the Bureau of Sanitation's Wastewater Collection Systems Division for staff information and use.

The Bureau of Contract Administration's inspector is responsible for communicating the City's "no-spills" policy and project plans and specifications to the contractor, enforcing the plans and specifications and ensuring the contractor responds appropriately in case of emergencies. The inspector is required to explain the City's "no-spills" policy to the contractor, remind them of their responsibility to prevent overflows and respond with quick mitigating action if an overflow does occur. Bureau of Contract Administration form M-159, Sewage Spill Prevention Preconstruction Meeting Check List, covering the bypass plan and implementation and Emergency Response Plan is discussed during the pre-construction meeting with the construction contractor. The construction contractor is required to sign the checklist agreeing to comply with these plans. A City inspector is on site during sewage bypasses.

(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.

As part of the City's Wastewater Collection System Rehabilitation and Replacement Report and Plan, dated June 30, 2006, structural deficiencies are identified and needed improvements are developed and implemented systematically. The Plan implementation entails a variety of short- and long-term activities that ensure the sustainability of the sanitary sewer system infrastructure.

Short Term:

The City staff and private contractors perform CCTV inspection in support of operational activities. All sewers are being or will be inspected by CCTV. Each maintenance hole to maintenance hole segment is assigned a condition rating from A to E. Condition E pipes are immediately rehabilitated on an emergency basis and condition D pipes, which are not considered to be in imminent danger of failure, are placed in a capital improvement program as a CIP project in a priority order based on sewer condition. Condition D pipes are scheduled for replacement or rehabilitation, as appropriate, usually within five years. These sewers are scheduled for re-televising annually until the CIP project is complete. This information is also used to identify short-term rehabilitation needs.

Follow-up CCTV inspections are conducted at overflow locations usually within 48 hours of overflow occurrence to identify the extent of necessary repairs or any special maintenance needs.

Long Term:

In its sewer overflow prevention program, the City conducts comprehensive and systematic inspections and assessments of all components of its sewer system. Inspections are used to identify problems requiring repair and prioritize needed improvement projects for inclusion in the City's capital improvement program. The City sewers are classified into two groups: primary sewers (greater than 15 inches in diameter) and secondary sewers (15 inches or smaller in diameter). Primary sewers have been divided into 26 and secondary sewers into 218 basins.

The City uses state-of-the-art closed circuit television (CCTV) equipment to inspect and assess the condition of secondary sewers. Secondary sewer basins are cleaned and inspected in priority order. CCTV inspections are prioritized using a ranking system that incorporates age, size, construction material, spill history, and known problem sewers. Some primary sewers are also inspected, depending on size and flow levels. Inspection and maintenance of remaining primary sewers at the City's discretion may be contracted to private contractors.

To assess the condition of CCTV inspected sewers, the City uses a five category rating system based on the types and severity of defects. The Categories range from Category A (Excellent) to Category E (Emergency Condition). The condition ratings trigger a follow-up action that includes either rehabilitation within a certain time frame or a follow-up inspection. Rehabilitation projects are developed and scheduled for implementation on a prioritized basis with other identified needs. Category A and B Sewers are in excellent to good condition and are scheduled for continued inspections and monitoring. Category C condition sewers are considered to be in fair condition and are scheduled for follow-up inspections every five years until repairs have been completed. Category D condition sewers are in a condition that requires close monitoring and may require rehabilitation within five years and are included in CIP program for planning, design and construction. Preventive measures are

intensified, as appropriate, to avoid emergency situations and follow-up inspections are conducted annually. Category E condition sewers are considered in an emergency condition. These are sewers where a pipe failure has already occurred or there is a full flow obstruction/blockage and immediate repairs are initiated.

In addition, CCTV inspections together with routine flow gauging and physical inspections provide up-to-date data that is used by the City to evaluate the hydraulic and structural condition of its sanitary sewer system. From this assessment, deficiencies are identified, evaluated, improvement projects identified and scheduled.

The City has identified short and long-term plans through the development of a Rehabilitation and Replacement Report and Plan (Rehab Plan). This report was completed in June 2006, and plays an integral part in documenting the City's legal/regulatory compliance and the overall activities aimed at reducing overflows and protecting public health and the environment. The Rehab Plan provides a summary of current project mileage and forecasted mileage for future projects. The following are key Rehabilitation and Replacement efforts as identified in the Rehab Plan:

- By the end of FY 2014 the City will have planned rehabilitation and replacement projects in the top 100 priority basins out of the 218 secondary basins.

- Over a 7-year period (FY 2008 through FY 2014), the City will repair, rehabilitate, or replace a minimum average of 60 miles of gravity sewers per year, for a minimum total of 420 miles.

Individual Rehabilitation and Replacement Projects are identified and described in the Capital Improvement Program (CIP). A CIP budget and plan is prepared annually and covers a 5 to 10-year period. This annual report contains a planned expenditure summary for identified projects, projects description, and a 10-year project expenditure plan.

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

Training comes under various City programs. It includes formal classroom training, informal on-the-job and hands-on training. Training is facilitated by both City staff and by outside training workshops. Most of the internal functional and safety training is provided through the Bureau of Sanitation's Industrial Safety and Compliance Division (ISCD). Training courses are added and existing courses are modified to stay current with the rapidly changing technology and requirements, including computer-aided and online training. On-the-Job cross training is actively pursued to ensure staff has a proficient working knowledge of each and every specific part of a task. City Staff is cross-trained so that critical tasks can be done without interruption

even when the crew members change. Task proficiency is a requirement for all job positions and promotions, and training records (Training Information Management System (TIMS)) are maintained to monitor completed classes and schedule employee training.

Crews are initially trained in the proper operation and maintenance of all new major mobile equipment and facilities by the contractor/manufacturer. Written operation and maintenance manuals are used as resource material for initial start-up training as well as new staff training. ISCD is responsible for providing operational training on sewer cleaning equipment.

Safety training is an integral part of the City's program. Every staff member receives formal training. Staff is trained in confined space entry. Employees are trained in hazardous materials management, as required by regulations.

ISCD prepares employees to respond to major emergencies and disasters and has established an operation center and emergency response teams. Emergency training exercises are conducted and documented annually.

The Fats, Oils, and Grease (FOG) Control Ordinance became effective on August 5, 2001. As part of the FOG Control Program, the City authorized and provided funding for Industrial Waste, Senior Industrial Waste and Chief Industrial Waste Inspectors. Training for these new staff additions was initiated with the implementation of the FOG Control Program on October 15, 2001. The training program consists of a comprehensive series of courses and lessons that are designed to provide inspectors with specific skills and knowledge necessary for their everyday operations.

In addition to the specific courses, inspector training is enhanced with presentations conducted by the FOG Control Program engineering staff who continuously research and develop new training materials associated with the SSMP and the FOG Control Program. To maintain expertise, FOG Control Program staff routinely attends seminars, as well as present information at specialty conferences. The City also invests in presentations by vendors.

In order to ensure a complete and thorough inspection of a food service establishment (FSE), Standard Operating Procedures (SOPs) have been developed to guide inspectors through inspection process in a systematic fashion. A summary of the process is contained in the appendixes to FOG SOP 001 reference below.

The City identifies training needs for staff development in its annual budget and provides adequate funding for tuition reimbursement. The City also maintains a library of self-improvement training courses and encourages and rewards self-training.

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

City crews maintain the pump stations but do not perform repair or replacement of underground pipelines. Repair and replacement of underground pipelines are contracted out to licensed contractors who have the equipment, materials and staff to complete the work. The City maintains an electronic inventory of equipment, replacement parts, and supplies and follows a structured process to ensure an up-to-date accounting and complete inventory of equipment and replacement parts for their specific duties. Parts that are needed for preventive maintenance are identified ahead of time for each specific maintenance task. Parts are secured prior to the start of preventive maintenance. Redundancy is provided for key pump station equipment and most pump stations have backup power to minimize the risk of a complete shut-down. As a backup, managers have credit authority to purchase needed materials and supplies from local vendors of non-stock items when they are critically needed. There has been little need to purchase parts through this means, which attests to the City's readiness.

The City maintains equipment such as sump pumps, portable generators, traffic control and night lighting systems, in a ready state for immediate deployment in an emergency.

The City has a procedure for pre-qualifying manufactures and equipment vendors and, in some cases, purchasing sole-source equipment to standardize equipment and parts. This additional procurement option reduces inventories, simplifies procurement procedures, and reduces training and operation & maintenance costs.

References

Sewer "S" Maps and "Wye" Maps

Navigate LA User's Manual

Bureau of Sanitation, Wastewater Collection Systems Division's Operation & Maintenance Manuals

Bureau of Sanitation, Wastewater Collection Systems Division's Pump Station Maintenance Schedules and Service Guide

Wastewater Collection Systems Division Enterprise Maintenance Planning and Control (EMPAC)

Bureaus of Engineering, Contract Administration, Sanitation; "Joint Statement of Policy Pertaining to the Prevention of and Response to Construction Contract-Related Sewage Spills; March 1997

Bureau of Contract Administration, Bureau Manual, Division C

City of Los Angeles, CCTV Inspection Manual

Condition Assessment Report (Structural)

Wastewater Collection Systems Division Crown Spraying Procedures

City of Los Angeles, Wastewater Collection System Rehabilitation and Replacement Report and Plan, June 2006

ISCD Training Materials

Self-study courses including online training

Bureau of Sanitation, Industrial Waste Management Division, Fats, Oils, and Grease Standard Operating Procedures 001

Training, Information, and Management System (TIMS)

Bureau of Sanitation Materials Management System Warehouse Manual

Enterprise Maintenance Planning and Control (EMPC)



v. Design and Performance Provisions

(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

New and rehabilitated sewers and pump stations are planned, designed and constructed to meet the highest performance standards in the industry in accordance with the City's Sewer Design Manual. The Manual contains criteria for planning and design of new sewers; pump stations, force mains, and appurtenances; and for the rehabilitation of existing sewers. It includes sections on:

- Flow projections and sewer hydraulics
- Sewer alignments
- Sewer materials and structures
- Planning and design for sewer rehabilitation and replacement
- Sewer construction
- Pump stations and force mains
- Sewer system operation and maintenance

Standard Plans are used to provide consistency and quality in design. The City encourages users of the Sewer Design Manual and Standard Plans to critique and provide feedback on the standards. Thus, the Sewer Design Manual and the Standard Plans are continuously being updated to incorporate improved materials, methods, and processes. The Bureau of Contract Administration provides recommendations to the Bureau of Engineering for modifying the standard details and master specifications for construction projects. The Bureau of Sanitation's Wastewater Collection Systems Division provides input for improved performance of system components based on experience gained in operation and maintenance. Proposed changes to the criteria and the Standard Plans are evaluated thoroughly before they are adopted.

Complicated connection, diversion, and transition structures are modeled in the City's hydraulic research laboratory to ensure that each structure will perform equal to or better than designed. Modelers work closely with designers to optimize performance.

As new products are introduced, they undergo a thorough review and evaluation by the "Green book" Committee, a group of public works officials in the Southern

California area that is dedicated to high performance construction materials and standards. The “Green Book” Committee is a clearinghouse for the review of new products and construction methods. It develops standard specifications that become part of the “Green Book.” The City supports this committee and references applicable “Green Book” specifications as appropriate for the construction of new and rehabilitation sewer projects. Emergency repairs are conducted according to the “Green Book” standards. Specifications for larger diameter sewers are tailored to meet the unique project needs. The Bureau of Contract Administration provides constructability reviews of sewer, pump station, and force main designs. All City designs are independently reviewed before they are signed by the City Engineer.

All system components are designed to meet permit requirements of the various federal, state and local agencies. In addition, environmental documents are prepared to comply with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both as appropriate. This process ensures that projects benefit from the input of all affected and interested parties including the communities.

The Bureau of Engineering, Wastewater Conveyance Engineering Division is responsible for updating and maintaining the City’s design requirements and standards. Users of the design guide are responsible for submitting suggested modifications to the standards. Bureau of Contract Administration is responsible for enforcing compliance with the plans and specifications for installing new sewers, pumps and appurtenances, and rehabilitation and repair projects.

(b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects

The Bureau of Contract Administration (BCA)provides inspection on all rehabilitation and new sewer system construction contracts. Written inspection procedures are followed to ensure that sewer system facilities are built to conform to the plans and specifications. Inspections are conducted both on the jobsite and at material fabricators during manufacture and testing. The Bureau of Contract Administration coordinates its work with the design engineers to ensure the intent of the design is met. The City does not accept the installed components until they pass all required performance tests and a field acceptance from the BCA final inspector is issued. New or rehabilitated system components are placed into service upon certification by the Bureau of Contract Administration’s inspectors that they have been installed in accordance with plans and specifications.

References

Building News, “Public Works Inspectors’ Manual, Latest Edition

City of Los Angeles Master Specifications

City of Los Angeles, Bureau of Engineering, Sewer Design Manual

City of Los Angeles, Department of Public Works, Bureau of Engineering, Standard Plans

Building News, “Standard Specifications for Public Works Construction,” (referred to as the “Green Book”), Anaheim, California, Latest Edition

Building News, “Public Works Inspectors’ Manual,” Anaheim, California, Latest Edition

City of Los Angeles, City Uniform Plumbing Code, Latest Edition



vi. Overflow Emergency Response Plan

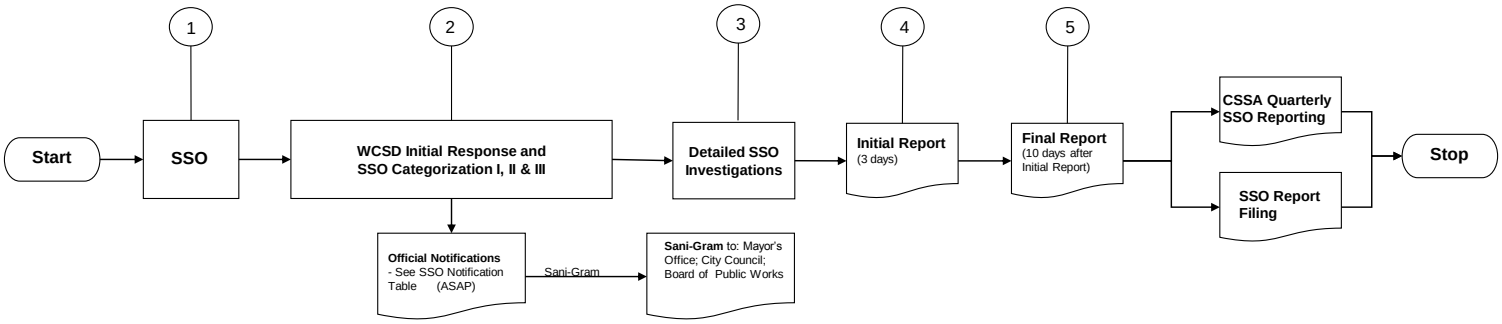
(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner

The Bureau of Sanitation's Wastewater Collection Systems Division maintains an up-to-date Sanitary Sewer Overflow Response and Reporting Procedures. City staff meets all permit and regulatory requirements by following these procedures. The City encourages citizens to report overflows to the Bureau of Sanitation. Citizens may use the toll free telephone number "311" or (213) 773-CITY to report overflows and other sewer problems. Staff is available 24 hours per day, seven days per week to receive calls. The appropriate phone numbers are listed in local phone directories and posted on the Bureau's web sites. All calls are automatically forwarded to the Venice Pump Station to ensure that none are missed. Once verified, all sewer overflows regardless of volume or potential impact are reported to all parties in the chain of communication within the City and to the appropriate regulatory agencies, as shown in Figure 6-1. When an overflow is due to private construction activities, the construction contractors and City inspectors are required to report the overflow to the Bureau of Sanitation immediately.

All sewer overflows that enter the waters of the state such as ocean and waterways must be reported immediately. For the purposes of reporting to the Health Officer, the term immediate is defined as within 15 minutes of the knowledge of an overflow event. Immediate reporting is made when an overflow results in a direct discharge into the waters of the State and/or when the Bureau of Sanitation's Wastewater Collection Systems Division's personnel determine that an overflow could potentially reach the waters of the State based on their knowledge of the sewer and storm drain infrastructure. All other overflows must be reported to the Health Officer and the RWQCB within two hours of the knowledge of overflow event. In addition, other agencies must be notified a list of which is included in the Wastewater Collection Systems Division's Sanitary Sewer Overflow Response and Reporting Procedures, Latest Edition.

Figure 6-1

Sanitary Sewer Overflow (SSO) Reporting and Response Cycle



1. SSO Occurs Reported by a private individual to City departments: LAFD, LAPD, 311, BOS, etc. Report of SSOs is relayed to WCSD in BOS. Specific response procedures are set up for after hour SSO reporting.

2. WCSD Initial Response

a) Dispatches response crews, identify possible causes and initiate the appropriate corrective measures to contain, clean up and repair the SSO.

b) Categorize SSO into Categories I-III based on discharge amount, water body impacted, and drainage/storm system affected responsible parties. (Category I: SSOs All Sanitary Sewer Overflows of any volume that; Reach surface water and/or reach a drainage channel tributary to a surface water; Reach a Separate Storm Sewer System and are not fully captured and returned to the sanitary sewer system. Category II: All Sanitary Sewer Overflows of 1,000 gallons or greater that; Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system. Category III: All Sanitary Sewer Overflows less than 1,000 gallons that; Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system.)

c) Makes official telephone notifications to LACDHS, RWQCB, OES, and other departments depends on category.

d) Perform necessary clean up, take SSO samples for laboratory analysis if required, Identify schools in immediate vicinity of the SSO if impacted, post community warning signs and barricades as necessary.

e) Informs BOS director or executive in charge.

3. Detailed SSO Investigations And Field Response

a) Document initial observations, estimate SSO volume, take pictures and CCTV recordings of SSO, QA/QC of SSO response.

b) Immediate repair conducted by on-call BOE contractor if necessary.

4. Initial Report

a) Sani-Gram issued by BOS Executive Office as soon as possible, but no later than 9:00 AM the following business day.

b) Initial report shall include information such as: date and time, location, duration, causes, nature and volume, sewer conditions, type of remedial/cleanup measure, corrective/preventive actions taken, water body impacted, date and time of notifications for regulatory agencies.

c) Initial written report faxed to the RWQCB & LADHS within 24 hours of occurrence (CAT I) or next business day (CAT II and III)

d) Initial report of the SSO shall be completed within 3 days of the SSO incident, entered into CIWQS (California Integrated Water Quality System) database.

e) Initial report of the SSO shall be submitted within 5 days of the SSO incident to Los Angeles Regional Water Quality Control Board (LARWQCB).

5. Final Report

a) Final report of the SSO shall be completed within 10 days of submission of the Initial Report.

b) CSSA Quarterly SSO Reporting and filing need to be conducted periodically within BOS.

Sani-Gram Distribution List (BOS Executives)

TO:	CC:		
President of Board of Public Works	All Council Members	Office of Chief Legislative Analyst	All Bureau Division Heads
Vice President of Board of Public Works	Mayor's Office	Environmental Monitoring Division	Baykeeper
President Pro-Tempore of Board of Public Works	Public Affairs Office	L. A. County Public Works	Pacific Palisades Community Council
Commissioners of Board of Public Works	City Engineers, Deputy City Engineer	Community Council	Santa Monica Canyon Civic Association
	City Attorney's Office	All Bureau Assistant Directors	Surfrider
	Office of the City Administrative Officer	Los Angeles County, Public Health Department	Heal the Bay

SSO Notification Table (WCSD)

SSO Category	I	II	III
District Supervisor, Manager I, II, III	√	√	√
Los Angeles County Department of Health Services (LADHS)	√	√	√
California State Department of Health Services (SDHS)	√	√	√
Los Angeles Regional Water Quality Control Board (LARWQCB)	√	√	√
State Office of Emergency Services (OES)	√	√	
Environmental Protection Agency, Region 9 (EPA) / National Response Center	√	√	
Board of Public Works (BPW), Mayor's Office, Council Offices (as directed by BOS Executive Management)	√		
Heal the Bay (notified when beach advisory or closure occurs)	√		
Los Angeles Unified School District (LAUSD, when SSO impacts a school)	√	√	√
Board of Public Works Public Affairs Office (notified when beach advisory or closure occurs)	√		
California State Department of Fish and Game (notified when SSO reaches receiving waters)	√		
Watershed Protection Division (WPD, notified when SSO reaches City of Los Angeles storm drain)	√		
Los Angeles County Department of Public Works, Information Technology Division (notified when SSO reaches Los Angeles County drainage and/or storm drain system)	√	√	√
Environmental Monitoring Division (EMD, notified when SSO reaches receiving waters)	√		
Department of Water and Power (DWP), Water Control Office (WCO) (notified when SSO would impact shallow groundwater)	√		
Human Resource Development Division (HRDD, notified when requiring coordination of multi-agency response and upon approval from the Division Manager)	√	√	√
Los Angeles County, Department of Beaches and Harbor	√	√	
Issue Sani-Gram to Distribution List	√	√	

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

The City's emergency response procedures require full, immediate, and appropriate attention and response to a sanitary sewer overflow with the ultimate goal of minimizing impacts to public health and safety and the environment. It is the City policy that "Every reported sewage spill affecting public or private property within the City of Los Angeles shall be acted upon by the Division." Telephone calls to report overflows or other maintenance problems are answered 24 hours per day, 7 days per week. Crew leaders are immediately notified upon receipt of a reported potential sewer overflow and are instructed to respond immediately. Written procedures are provided for assessing the overflow, notifying supervisors, documenting the overflow, estimating the volume of the overflow, sampling and laboratory analysis, posting warning signs and following up. The highest priorities are to contain the overflow and minimize, if not prevent the overflow from reaching the storm drain system, and to minimize or eliminate exposure to the public and impact on public health. The City's procedures are designed to protect public health and safety, meet all regulatory reporting requirements, and ensure immediate and effective response.

Construction contractors are required to have an approved sewage flow bypass system and Emergency Response Plan in place prior to start of construction. Contractors are instructed to take immediate action to stop any overflow. These are discussed at the pre-construction conference and enforced by the Bureau of Contract Administration.

(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 SSMP should identify the officials who will receive immediate notification

The City's Sanitary Sewer Overflow Response and Reporting Procedures outlines notification steps and includes a comprehensive contact and notification list. Notification depends on the severity and potential impact of the overflow. All sewer overflows that enter the waters of the state such as ocean and waterways must be reported immediately. For the purposes of reporting to the Health Officer, the term immediate is defined as within 15 minutes of the knowledge of an overflow event. Immediate reporting is made when an overflow results in a direct discharge into the waters of the State and/or when the Bureau of Sanitation's Wastewater Collection Systems Division's personnel determine that an overflow could potentially reach the waters of the State based on their knowledge of the sewer and storm drain infrastructure. All other overflows must be reported to the Health Officer and the

RWQCB within two hours of knowledge of overflow event. In addition, immediate notification of the public, health agencies, and others of overflows “that may imminently and substantially endanger human health” is required. Initial notification includes posting warning signs and barricades as necessary by the responding crews. Appropriate agencies and impacted entities are notified in accordance with City procedures. The notification lists are updated to keep officials names and positions current. Construction contractors are required to take immediate measures to mitigate and report overflows as soon as they are discovered. The Department of Public Works’ Bureau of Contract Administration inspectors report construction-related overflows to the Bureau of Sanitation and document the time, location, cause, estimated quantity, and any impact of the overflow, and take mitigation measures as needed.

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

The emergency response plan is clearly documented and available to all personnel. It is used as a resource in the emergency response training. All wastewater operation and maintenance staff are trained on emergency response procedures at least annually. New employees receive this training as part of their orientation and this training is reinforced during tailgate training sessions. Construction inspectors are also trained in emergency response procedures. The City emphasizes its goal to have no construction-related overflows during pre-bid and pre-construction meetings. Construction contractors are required to submit and obtain approval of all flow bypasses and emergency response plans prior to the start of construction.

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

The City has developed and implemented an advanced and comprehensive overflow prevention, response and reporting program. These include timely reporting to the impacted agencies and stakeholders, computer templates for estimating overflow volume, training for overflow review committee, and follow-up CCTV inspection to accurately determine cause and prevention methods.

Adequate staff is placed on standby status to supplement existing staff as needed or respond to an emergency after hours. The City maintains a list of pre-qualified on-call contractors who provide specific equipment, materials, and crews to the City in emergency operations. Operation Staff at the Venice Pump Station constantly monitor the status of the remote pump stations and are authorized to dispatch standby personnel as necessary. In addition, the City’s Police Department, Fire Department, and Department of Transportation can be utilized to assist in emergency situations. The Bureau of Sanitation conducts table top exercises to simulate a multi-agency response to major sewer emergency.

(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

The City seeks to protect public health & safety and the environment through the implementation of all Federal and State laws, standards, and orders applicable to untreated wastewater. Through a comprehensive and systematic program of cleaning, condition assessment, repair, and upgrade of its sewer system, the City controls the discharge of untreated and partially treated wastewater into receiving waters such as ground water, streams, and rivers.
When an overflow occurs, the highest priorities are to contain the overflow and minimize, if not prevent, the overflow discharge into the storm drain system, and to minimize or eliminate exposure to the public and impact on public health. The Wastewater Collection Systems Division's Sanitary Sewer Overflow Response and Reporting Procedures provide guidance to the crews in order to accomplish this objective.

A comprehensive investigation is performed for each overflow event to diagnose cause and take remedial measures to prevent and mitigate similar future events.

Furthermore, the City has ongoing public outreach and education programs on untreated or partially treated wastewater, its health risk and impact to the receiving waters.

References

Bureau of Sanitation, Wastewater Collection Systems Division, Sanitary Sewer Overflow Response and Reporting Procedures, Latest Edition

Bureaus of Engineering, Contract Administration and Sanitation; "Joint Statement of Policy Pertaining to the Prevention of and Response to Construction Contract-Related Sewage Overflows."



vii. Fats, Oils, and Grease (FOG) Control Program

FOG Control Program: **Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification 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.**

Background

In July 1997, the City launched a study to assess the impacts of excessive Fast, Oils, and Grease (FOG) discharges on its sewer system. The study was intended to identify the sources of and recommend measures to control FOG discharges into the system, thereby minimizing FOG-related sewer blockages and overflows in a cost-effective manner. The study revealed that, at the time, approximately 50% of all sanitary sewer overflows (SSOs) were caused by FOG. Major FOG contributors were Food Service Establishments (FSEs), non-profit organizations involved in food processing or preparation, and residential dwellings.

The study recommended the establishment of a grease control program that included a more aggressive preventive maintenance program, more extensive sewer inspection and cleaning, and the implementation of a source control program that would restrict the amount of grease from all possible sources.

Following an extensive outreach to and in partnership with the over 10,000 FSEs in Los Angeles, the City developed a three-pronged approach to FOG Control, including:

1. Source Control
2. Sewer Cleaning
3. Community Outreach and Education

The City's FOG Control Program

Recognizing in the adverse impact of FOG-related SSOs on public health and the environment, the City Council enacted a FOG Control Ordinance (Number 174,047) effective August 5, 2001. This Ordinance amended the Los Angeles Municipal Code Section 64.30 and the Board of Public Works' (Board) Rules and Regulations

Governing Disposal of Industrial Wastewater into Publicly Owned Treatment Works (POTW) of the City of Los Angeles (Rules and Regulations).

Through the implementation of its FOG Control Program, the City achieved a 94% reduction of FOG-related sanitary sewer overflows (SSOs) over the period from the baseline fiscal year 2000/01 through FY 2012/13.

The following is a description of the City's FOG Control Program corresponding to Sub-parts (a) through (g) of the State's General Waste Discharge Requirements for developing SSMP Part vii, FOG Control Program.

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

Ongoing public and stakeholder education, outreach, and involvement are one of the pillars of the City's FOG Control Program. Educational videos, DVDs, and brochures describing the FOG Control program and best management practices (BMPs) are distributed to FSEs identified as doing business in the City in five languages: English; Spanish; Korean; and two Chinese dialects, Mandarin and Cantonese. BMP pamphlets and door hangers are also distributed to Los Angeles residents. In addition, the City's Bureau of Sanitation maintains an up-to-date website www.lacitysan.org/iwmd/biz_industry/pre_treat_fog.htm which serves as an additional source of information to the food service industry and the community at large. A FOG Ordinance Summary, BMP Guidebook for FSEs, and general information about eliminating FOG discharges into the sewer system are among the information provided on the website.

The City participates in conferences and expositions, and conducts annual workshops to communicate its FOG Control Program requirements to and obtain feedback from the general public, FSEs, and regulatory agencies.

(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.

The City does not own or operate any FOG disposal facilities. The FSEs must, at a minimum, collect the waste FOG and prevent the waste FOG discharge into the sewer system by implementing the following BMPs:

- "Dry wipe" pots, pans, dishware and work areas prior to washing. Use rubber scrapers or paper towels to remove FOG from cookware, utensils, and serving ware.
- Collect waste cooking oil and store properly in recycling barrels or drums. Use a licensed hauler or recycling facility to dispose of this waste.

- Use absorbent products to clean under fryer baskets and other locations where FOG may be spilled or dripped.

The City does not allow FOG waste haulers to discharge waste FOG into the sewer system either. However, it provides FSEs with a list of licensed grease haulers and rendering companies.

(c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG

The City's FOG Control Ordinance (Number 174,047) prohibits FOG discharges by food service establishments (FSEs). To mitigate SSOs resulting from blockages caused by FOG accumulation, the City's Bureau of Sanitation implements its Sewer Spill Response Plan (SSRP). The SSRP provides guidelines for investigating FOG-related SSO's and taking enforcement and corrective actions to prevent future occurrences.

(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

The Los Angeles Industrial Waste Control Ordinance (Paragraph (l) of Subdivision 1 of Subsection C) states:

> *"FSEs that are required to maintain an Industrial Wastewater Permit are also required to install, operate, and maintain an approved type and adequately sized, remotely located and readily accessible, grease interceptor, unless a conditional waiver is granted by the Director [of the Bureau of Sanitation]."*

Major provisions of the FOG Control Ordinance and its Rules and Regulations regarding the requirements for installing and maintaining grease removal devices are summarized below:

- **Grease Interceptor Requirements**

Installation of grease interceptor(s) is required at all FSEs that have the potential to generate waste FOG unless a Conditional Waiver is granted, including: (1) FSEs that are to be newly constructed, (2) any existing non-FSE converting to an FSE, (3) FSEs with remodeling valued at $100,000 or more, and (4) any FSE deemed by the Director of the Bureau of Sanitation, for example, any FSE that is known to cause FOG-related sewer blockages or overflows or fails to implement BMPs.

A grease interceptor is a plumbing device, with a minimum size of 750 gallons that is installed in an industrial wastewater drainage system to intercept and prohibit FOG from entering the sewer system. If an FSE can demonstrate that installation of a grease interceptor is not feasible due to space constraints or other considerations,

the Director may issue a variance from grease interceptor requirements and authorize the installation of alternative grease removal devices.

The design, construction, installation and testing of commercial kitchen grease interceptors or grease traps shall be in accordance with Section 94.1000 of the City of Los Angeles Plumbing Code.

- **Operation and Maintenance of Grease Interceptors**

FSEs are required to comply with the following requirements for operation and maintenance of grease interceptors:

a) Grease interceptors shall be maintained in efficient operating condition by periodic removal of accumulated grease including floating material, sludge and solids.

b) Grease interceptors shall be cleaned at a frequency such that the combined FOG and solids accumulation does not exceed 25% of the total liquid depth of the grease interceptor.

c) A logbook of grease interceptor cleaning and maintenance practices shall be maintained.

d) Copies of records and manifests of hauled waste FOG or hauled interceptor wastewater shall be maintained in FSEs files.

FSEs are also required to comply with the requirements for the operation and maintenance of grease traps as follows:

a) Grease traps shall be cleaned on a daily basis.

b) A visual inspection of grease traps shall be conducted on a daily basis to check for leaking seams and pipes and ensure effective operation of the baffles and flow regulating device.

c) Grease traps and baffles shall be maintained free of all caked-on FOG and food waste.

d) Removable baffles shall be removed and cleaned during the maintenance process.

e) Grease traps shall be maintained free of all food residues and any FOG waste dislodged during the cleaning and scraping process.

f) Any waste including FOG and solid material removed from the grease removal device shall not be discharged into the sanitary sewer.

(e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance

The Industrial Waste Control Ordinance was amended in August 2001 by the FOG Control Ordinance (No. 174,047), contained in Section 64.30 of the Los Angeles Municipal Code (LAMC), in order to control waste FOG discharges from food service establishments. A major stipulation under this amendment requires those FSEs that generate waste FOG during food preparation processes to obtain an Industrial Wastewater Permit.

The FOG Control Ordinance provides the Bureau of Sanitation with the legal authority to visit and inspect FSEs and monitor the implementation of Best Management Practices. As part of routine inspection activities, inspectors from the Bureau's Industrial Waste Management Division (IWMD) determine permit requirements and verify compliance with the FOG Ordinance provisions. Additionally, information and training materials such as multi-language DVDs, BMP posters, a summary of the FOG Control Ordinance, and lists of licensed grease waste haulers and pretreatment equipment manufacturers are provided to help businesses comply with the Rules and Regulations.
Major provisions of the FOG Control Ordinance and its Rules and Regulations are summarized below:

- **Industrial Wastewater Permit**

  Unless exempt, FSEs are required to obtain a Permit, pay a Permit application fee and an annual Inspection and Control fee. An FSE is exempted from obtaining an Industrial Wastewater permit if it does not potentially generate waste FOG during food preparation processes, and does not significantly affect the publicly owned treatment works (POTW), provided that the FSE has implemented and demonstrates compliance with BMPs as specified in the Rules and Regulations. Determination of permit exemption shall be based upon cooking equipment on site at the FSE. Exempted establishments shall not be engaged in preparation of foods that are prepared using grills, fryers, stir-fry type (woks) ranges, barbecues, or similar devices where grease can be introduced in the wastewater.

- **Best Management Practices (BMPs)**

  FSEs are subject to BMP requirements as specified in Section 64.30, Subsection C.1.(c) and (k) of the code. All FSEs shall be required, at a minimum, to comply with the following BMPs, when applicable. Acceptable fulfillment of all requirements is subject to approval by the Director. The BMPs that FSEs are required to implement include collecting waste cooking oil and storing in drums or barrels for recycling, disposing food waste directly into the trash/garbage can and not into the sink, dry-wiping pots, pans, dishware prior to washing, using absorbent pads or other materials to clean up spills before mopping the floor, and removing garbage grinders which force food containing FOG into the sewer.

- **Revocation of Conditional Waivers**

  The Director's determination to revoke an FSE's Conditional Waiver from Grease Interceptor Installation Requirements is based on the FSE's non-compliance with any of the terms and conditions of the Conditional Waiver. Specific violations that result in revocation of the FSE's Conditional Waiver are as follows:

  a) The FSE disposes of food waste into sinks or equivalent, rather than directly into the trash or garbage receptacles;

  b) The FSE fails to "Dry Wipe" all pots, pans, dishware and work areas prior to washing of such utensils, equipment or areas;

  c) The FSE fails to collect waste cooking oil and store it properly in recycling barrels or drums;

  d) The FSE is confirmed to have contributed to FOG accumulation within the sewer collection system that resulted in, or threatens to result in, an Sanitary Sewer Overflow (SSO); or

  e) The FSE fails to comply with any other condition deemed appropriate by the Director.

- **Variance to allow Alternative Grease Removal Devices**

  LAMC Section 64.30 (C)(1) states: "If an FSE can demonstrate that installation of a grease interceptor is not feasible due to space constraints or other considerations, the Director may issue a variance from grease interceptor requirements and authorize the installation of alternative grease removal devices. Alternative grease removal devices include, but not limited to, devices that are used to trap, separate and hold grease from wastewater and prevent it from being discharged into the POTW. All alternative grease removal devices must be approved, by the Director, on a case-by-case basis. The FSE must also demonstrate that BMPs have been implemented.

(f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section

SSOs caused by blockages from FOG are monitored for location and required cleaning frequency. All blockages are plotted on a GIS overlay map. Locations with a high number of FOG blockages are given special investigation and cleaning status. Sewers prone to FOG accumulation or blockages are given high priority and cleaned more frequently in an effort to prevent FOG-related overflows. All reaches, including "non-problem" sewers, are included in a routine preventive maintenance cleaning schedule.

Scheduled and completed tasks are catalogued and tracked by work orders in a maintenance management system called Enterprise Maintenance Planning and Control (EMPAC). The maintenance program includes preventive, proactive,

predictive, and corrective maintenance; maintenance engineering; and quality control.

EMPAC is an asset management and maintenance system the Wastewater Collection Systems Division utilizes to manage work, track warehouse parts, and streamline maintenance related purchases. The Division also uses the Field Automation Sanitation Trucks (FAST) which is a field data access component to EMPAC. FAST greatly reduces the amount of paperwork in collecting closure data for work orders. Work orders are closed in the field, thus reducing the need for data entry by clerks and supervisors. Geographic Information System (GIS) integration ties EMPAC assets to actual field locations, searchable by street address or intersection. Real-time access to data in the field enables crews to work more efficiently.

(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

The Industrial Waste Management Division (IWMD) investigates potential source(s) of FOG waste to verify compliance with applicable sections of LAMC 64.30. The City has developed an Enforcement Response Plan. FSEs are required to have an industrial wastewater permit, comply with source control measures for all sources of grease as specified in LAMC 64.30, implement BMPs, install grease interceptors as applicable, and are subject to annual inspections to verify continuous compliance.

The FOG Control Ordinance provides the Bureau of Sanitation with the legal authority to visit and inspect FSEs and monitor the implementation of Best Management Practices. As part of routine inspection activities, inspectors from the Industrial Waste Management Division (IWMD) determine permit requirements and verify observance of FOG Ordinance provisions. Additionally, information and training materials such as multi-language DVDs, BMP posters, an ordinance summary, lists of licensed grease waste haulers, and pretreatment equipment manufacturers are provided to help businesses comply with the Rules and Regulations.

Installation of grease interceptor is required at all FSEs that have the potential to generate waste FOG unless a Conditional Waiver is granted, including: (1) FSEs that are to be newly constructed, (2) any existing non-FSE converting to an FSE, (3) those FSEs with remodeling valued at $100,000 or more, (4) any FSE is deemed by the Director of the Bureau of Sanitation. For example, any FSE that is known to cause FOG-related sewage overflows or fails to implement BMPs will be required to install a grease interceptor.

In the event an industrial discharger fails to comply with the requirements of the FOG Control Ordinance, the IWMD takes immediate enforcement action by applying one or more appropriate enforcement action(s). The Enforcement actions available

to the City of Los Angeles are outlined in the Enforcement Response Plan that includes the following:

- Notice of Violation (NOV) – A notice by certified mail or personal service which identifies the permit condition(s) violated, the circumstances surrounding the violation(s), and provides the FSE with an opportunity to correct the noncompliance on its own initiative.

  Within 10 days of the NOV, the FSE is required to conduct an investigation and submit a written response describing the cause of the violation, the actions taken to correct the violation or prevent future violations and the date those corrective actions will be completed.

- Telephone Assistance – A telephone call or verbal notification to an FSE official used to address violations, usually of a minor nature. All phone or verbal notifications are documented in the FSEs' file.

- Conditional Waiver Revocation – IWMD personnel revoke the FSEs Conditional Waiver for cause and require an installation of a grease interceptor.

- Administrative Enforcement Order – An order that requires the FSE to cease a specific activity and implement corrective actions to permanently achieve and maintain compliance. An Order may be issued when an FSE fails to achieve compliance after a NOV is issued or when a pattern of noncompliance is observed.

- The City may pursue civil and criminal penalties, as well as injunctive relief.

Reference

LAMC Section 64.30 and Board of Public Work Rules and Regulations Governing the Disposal of Industrial Wastewater into the Publicly Owned Treatment Works of the City of Los Angeles

City of Los Angeles, Department of Public Works, Bureau of sanitation, Industrial waste Management Division's Referral and Enforcement Response Procedures for fats, Oils, and Grease Discharges Resulting in a Sanitary Sewer Overflow

viii. System Evaluation and Capacity Assurance Plan

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 a Sanitary Sewer Overflow (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.

Flow monitoring, hydraulic condition assessment, sewer master plans, and capital improvement program are essential elements of the City's System Evaluation and Capacity Assurance Plan. The Wastewater Collection System Capacity Report and Plan documents the City's approach to capacity assurance. This report is available online at http://www.lasewers.org/cssa/CRP/2006-06-20_CapacityPlanReport.pdf.

The City's sewer system has sufficient capacity to handle peak dry-weather flows and has not experienced any wet weather overflows since major relief sewers were completed in 2006. Overall overflows decreased by more than 80 percent from FY 2000/01 through FY 2011/12. The City has virtually eliminated dry-weather overflows resulting from power outages or equipment failures at its pump stations.

The system has the capacity to convey wet-weather flows from 10-year storms. The vast majority of the system components have sufficient capacity to handle larger, less frequent storms. However, overflows can occur at a limited number of locations during larger than 10-year storm events.

Through an ongoing flow monitoring program and Close Circuit Television (CCTV), system components with current or projected hydraulic deficiencies are identified and sewer relief and replacement projects are developed and included in Wastewater Capital Improvement Program (WCIP).

Real-time flow gauging is conducted at 15 locations on primary sewers (sewers larger than 15 inches in diameter). A Supervisory Control and Data Acquisition (SCADA) system is currently being implemented which transmits flow data to a central location for real-time monitoring and control. In addition, portable flow gauges are installed at over 600 strategic locations throughout the City for duration of 24 to 48 hours on a quarterly, semi-annual, or annual cycle. Special gauging, which is short-term monitoring of one day to a week long, may be performed at any location upon request by planners, engineers, or operators.

The City maintains a database where all gauging data is recorded. Data is retrieved from all gauging locations and evaluated. Exception reports are generated for appropriate follow-up actions for the monitoring stations where the flow depths are 75 percent or more of the pipe inside diameter. Causes of high flow rates are immediately determined through flow analysis and field investigations that could include sewer blockage, structural failure, unusually high and excess discharges by industrial users, or continued growth in the basin. Locations where gauged flow depth is equal to or greater than 50 percent but is less then 75 percent of the pipe diameter are also listed and closely monitored. Flows are compared to historic flows and trending reports are developed. Sewer basins planning reports are prepared including recommended capital improvement projects. Recommended projects are included in the Wastewater Capital Improvement Program (WCIP) in a priority order to meet near-term needs and accommodate future growth.

The City conducts several levels of planning studies to assess current capacity and future capacity needs. These include the 100-year, long-term Advanced Planning Report; the Wastewater Integrated Resources Plan (WIRP) including a facilities plan with a 20-year planning horizon; master plans for major interceptor and outfall system, primary (larger than 15 inches in diameter) and secondary (15 inches or smaller in diameter) sewer basin plans; and concept reports which identify and evaluate alternatives to address specific needs and make recommended improvements. System needs and planning priorities are determined by analyzing field data including flow gauging records, maintenance history, population and flow projections, and system expansion proposals.

The City uses a GIS-based flow estimating model and a hydrodynamic model which support the planning efforts.

Sewer Flow Estimating Model

The Sewer Flow Estimating Model (SFEM) is a GIS-based static model used to project current and future flows.

MIKE URBAN Hydrodynamic Model

This advanced GIS-based computer model is used in projecting future capacity needs under various network configuration and operational scenarios. It also supports the collection system operations in identifying potential problems in the large sewers during rain events and other flow conditions, and developing cost effective and optimal flow routing plans. The model is calibrated periodically using actual flow gauging data.

System Wide Planning - Advanced Planning Report

The advanced planning report was completed in the early 1990s. It was a long-term forward-looking planning study consisting of nine volumes. It evaluated the then existing and future system conditions versus the City's clean water goals, assessed broad system needs, and provided foot print and planning guidance for wastewater collection, conveyance and storage; biosolids disposal and reuse; wastewater treatment; water reclamation; and appurtenant systems.

System-wide Planning - Integrated Resources Plan

In November 2006, the City completed an Integrated Resources Plan (IRP) for the year 2020. The IRP is a stakeholder-based water resources plan that incorporates the values of Los Angeles communities into infrastructure planning and integrates planning for the three interdependent water systems: wastewater, recycled water, and stormwater. By realizing the relationships among these interdependent water resources, and planning on a watershed basis, the community and the environment can get the highest benefit for the least overall cost with the least impact to the communities. Over 100 community leaders joined the City in planning the future of wastewater, recycled water, and urban runoff management.

The IRP includes four major elements: Wastewater facilities Plan, Financial Plan, Environmental Impact Report/Statement, and a Public Outreach and Education Program. While some of the recommended projects have started or will start in the near future, others are identified for later implementation when changes take place or additional information is available. Implementation is dependent on monitored triggers such as population growth, recycled water regulations, wastewater discharge regulations, Total Maximum Daily Load (TMDL) requirements, and available funding. This staging of projects enables the City to target the most critical and immediate needs to assure health and environmental protection, while assuring that public monies are conserved for the highest priorities.

Since the IRP's adoption in 2006, the City continues to implement the recommended policy directions and monitor triggers for the recommended

projects. Annual progress reports are presented to the City Council and Stakeholders.

The next phase of the IRP, called The 2040 One Water L.A. Plan, is due to begin in mid-2014. This phase will study the City's water and wastewater use through 2040 to advance further integration of the City's water resources. Similar to the IRP, the One Water L.A. Plan will recommend "Go To" and "Go To If Triggered" projects and will address water supply, conservation, wastewater, storm water, and sustainable water solutions.

Major Interceptors and Outfalls

The City performs studies and needs assessment for major Interceptors and outfalls, the backbone of the sanitary sewer system. Long-term hydraulic, structural, environmental, and operational needs are studied. Operating (flow routing) options and alternatives for major physical facilities for wastewater collection, conveyance, and storage are evaluated and recommendations for capital improvement and optimal operating scenarios are made.

Coastal Interceptor Sewer (CIS)
Central Outfall Sewer (COS)
North Outfall Sewer (NOS)
North Central Outfall Sewer (NCOS)
North Outfall Replacement Sewer (NORS)
West Los Angeles Interceptor Sewer (WLAIS)
Westwood Relief Sewer (WRS)
Wilshire-Hollywood Interceptor Sewer (WHIS)
La Cienega Interceptor Sewer (LCIS)
La Cienega – San Fernando Valley Relief Sewer (LCSFVRS)
Valley Outfall Relief Sewer (VORS)
Additional Valley Outfall Relief Sewer (AVORS)
East Valley Relief Sewer (EVRS)
East Valley Interceptor Sewer (EVIS)
East Central Interceptor Sewer (ECIS)
North East Interceptor Sewer (NEIS)
Eagle Rock Interceptor Sewer (ERIS)

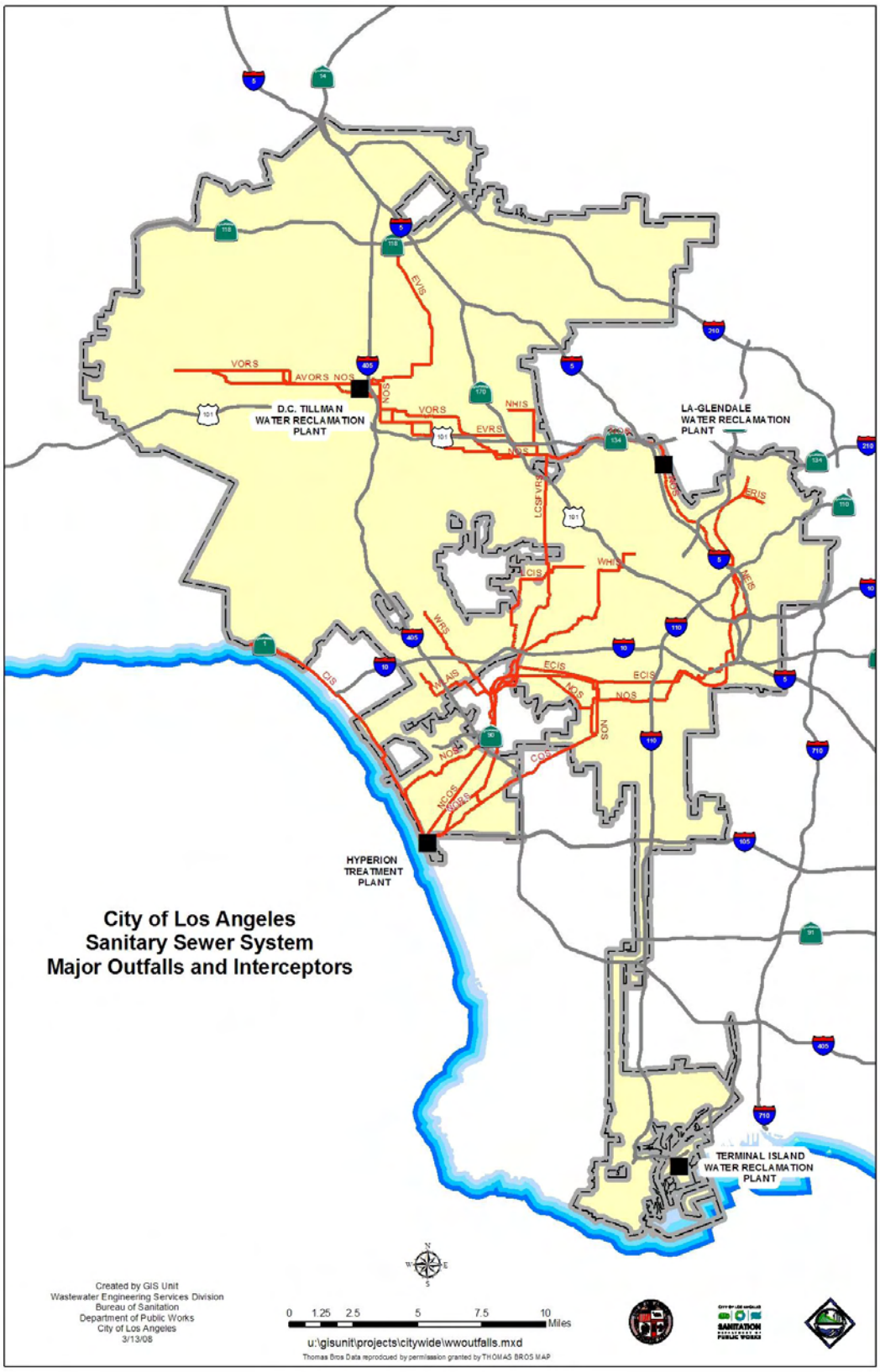

City of Los Angeles
Sanitary Sewer System
Major Outfalls and Interceptors
D.C. TILLMAN
WATER RECLAMATION
PLANT
LA-GLENDALE
WATER RECLAMATION
PLANT
HYPERION
TREATMENT
PLANT
TERMINAL ISLAND
WATER RECLAMATION
PLANT
VORS
AVORS
NOS
EVRS
NHIS
LCSFVRS
ERIS
WHIS
ECIS
WRS
WES
CIS
SON
COS
NCOS
EORS
Created by GIS Unit
Wastewater Engineering Services Division
Bureau of Sanitation
Department of Public Works
City of Los Angeles
3/13/08
0 1.25 2.5 5 7.5 10
Miles
u:\gisunit\projects\citywide\wwoutfalls.mxd
Thomas Bros Data reproduced by permission granted by THOMAS BROS MAP

Figure 8-1

Primary Basin Plans

Sewers 16 inches and larger in diameter are categorized as primary sewers. As shown in Figure 8-2, there are 26 primary sewer drainage basins in the City. Basin boundaries coincide with natural drainage boundaries. Primary basin plans provide comprehensive analysis of basin conditions and recommendations for needed improvements to meet current and future demands. Basin needs are identified through hydraulic, structural, and environmental (odor) condition assessment; alternative solutions are developed, screened, and evaluated based on selection criteria for technical feasibility, cost-effectiveness, community and environmental impact; and selected alternatives are recommended for inclusion with the city's Wastewater Capital Improvement Program (WCIP). Master plans are updated on a 5- to 8-year cycle to meet new demands due to changes in population and population forecast, aging system components, and application of new and superior technologies.

Primary Master Plans were completed for the Central Business District and the Silver Lake/Central City North, Wilshire, and Northeast Wilshire Areas in the early 1990's before a need to shift resources to repair sewer damages caused by the Northridge earthquake. By 2003, a majority of the earthquake sewer repair projects had been completed and the City resumed work on Primary Master Plans. Master plans for all of the City's 26 Primary Basins listed below have since been completed.

1. **Lincoln Heights**
2. **Boyle Heights**
3. **Central Business District**
4. **Silver Lake/Central City North**
5. **Granada Hills/Mission Hills**
6. **Van Nuys/Sylmar**
7. **South Los Angeles**
8. **Wilmington**
9. **San Pedro**
10. **Brentwood/Pacific Palisades**
11. **Venice**
12. **Westchester**
13. **Baldwin Hills**
14. **Northeast Wilshire**
15. **Wilshire**
16. **Hollywood**
17. **West Los Angeles**
18. **North Hollywood/Sunland**
19. **Woodland Hills/Canoga Park**
20. **Chatsworth**
21. **Northridge**
22. **Tarzana**

23. **Encino/Studio City**
24. **Pacoima**
25. **Highland Park/ Eagle Rock**
26. **Griffith Park**

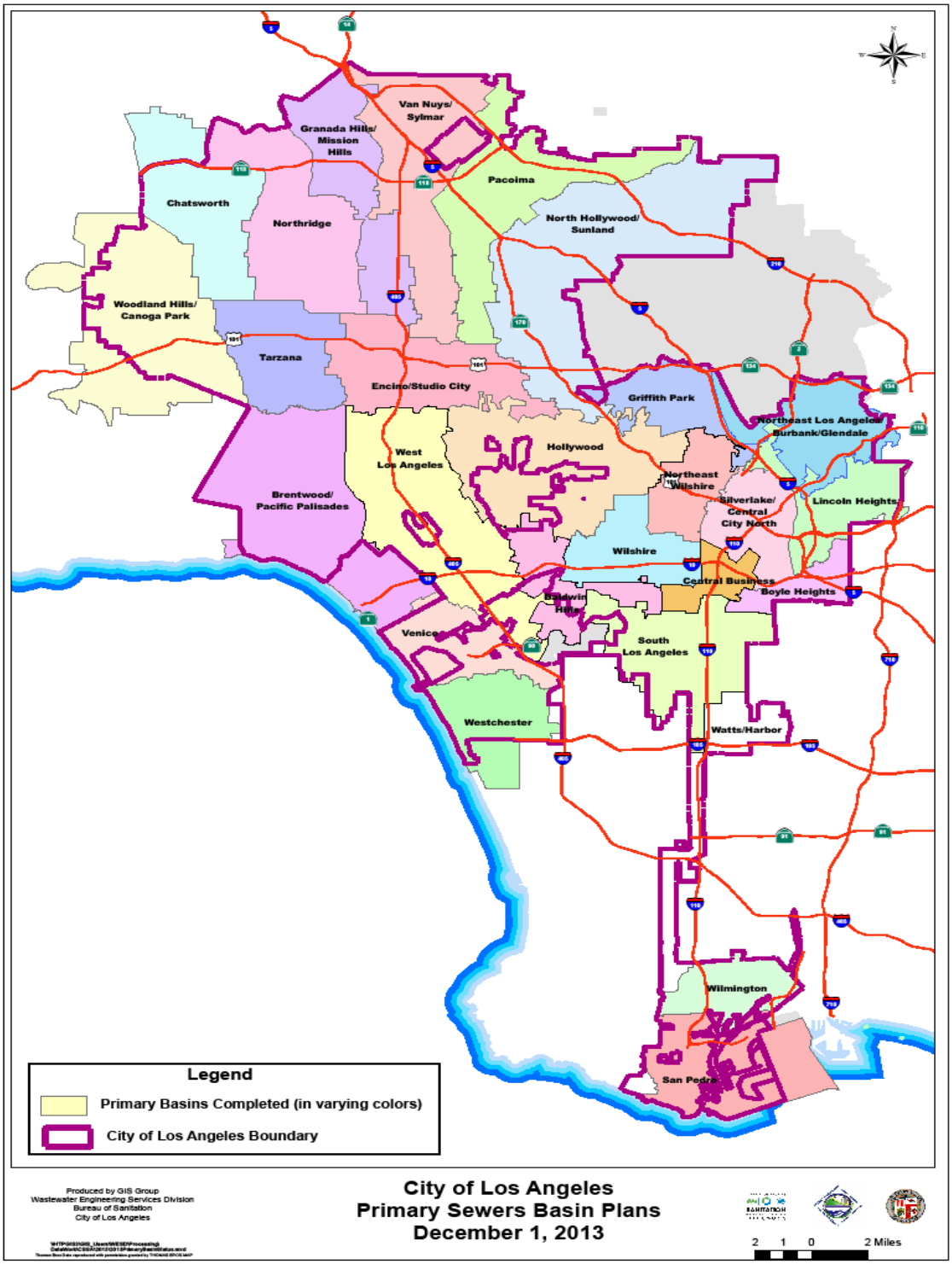

Van Nuys/
Sylmar
Granada Hills/
Mission
Hills
Pacoima
Chatsworth
Northridge
North Hollywood/
Sunland
Woodland Hills/
Canoga Park
Tarzana
Encino/Studio City
Griffith Park
Northeast Los Angeles/
Burbank/Glendale
West
Los Angeles
Hollywood
Northeast
Wilshire
Brentwood/
Pacific Palisades
Silverlake/
Central
City North
Lincoln Heights
Wilshire
Central Business
Boyle Heights
Baldwin
Hills
Venice
South
Los Angeles
Westchester
Watts/Harbor
Wilmington
San Pedro
Legend
Primary Basins Completed (in varying colors)
City of Los Angeles Boundary
Produced by GIS Group
Wastewater Engineering Services Division
Bureau of Sanitation
City of Los Angeles
City of Los Angeles
Primary Sewers Basin Plans
December 1, 2013
2 1 0 2 Miles

Figure 8-2

Secondary Basin Plans

Secondary sewers are the City sewers that are smaller than 16 inches in diameter. The City's entire sewer system, including all three sanitary sewer systems, is divided into 220 secondary sewer basins (also known as sewer sheds), shown in Figure 8-3. The secondary basins follow the natural sewer drainage boundaries. The basins are prioritized for planning purposes by performing a Sanitary Sewer Overflow (SSO) analysis using weighted risk factors such as number of SSOs per unit length of sewer, percentage of known problem material, and age categories.

The basin plans provide comprehensive analysis of the secondary sewer basins; identify structural, operational, and hydraulic deficiencies in the system; and provide corresponding renewal recommendations. The recommended renewal projects are prioritized and included in the City's Wastewater Capital Improvement Program (WCIP).

Since 2004, the City has completed all 100 of the highest priority secondary basin plans. Recommended projects are prioritized and implemented as part of the City's Wastewater Collection System Rehabilitation and Replacement Report and Plan described in further details in Part iv, Operation and Maintenance Program, of this SSMP.

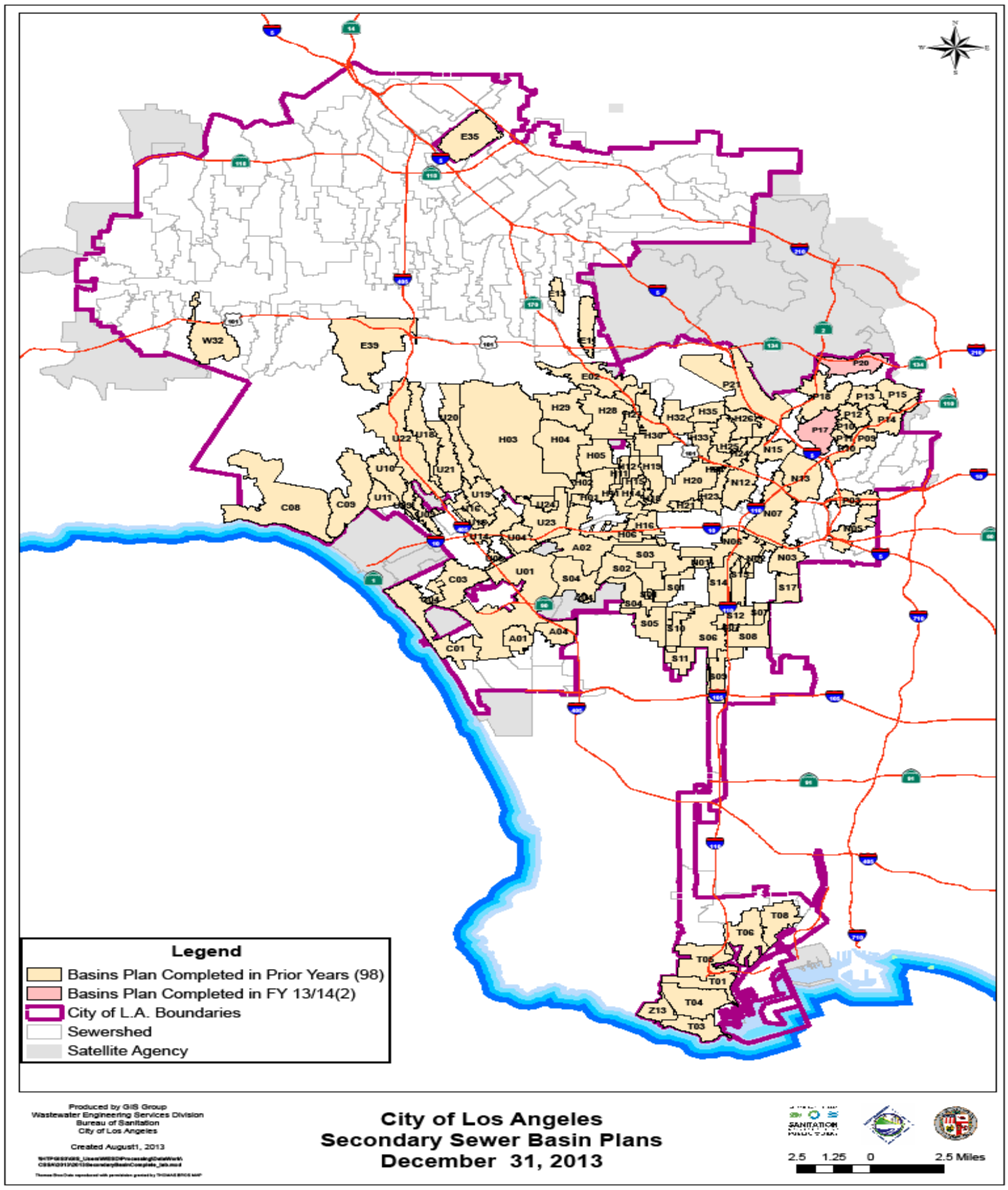

E35
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A01
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S09
T08
T06
T05
T01
Z13
T04
T03
Legend
Basins Plan Completed in Prior Years (98)
Basins Plan Completed in FY 13/14(2)
City of L.A. Boundaries
Sewershed
Satellite Agency
Produced by GIS Group
Wastewater Engineering Services Division
Bureau of Sanitation
City of Los Angeles
Created August1, 2013
City of Los Angeles
Secondary Sewer Basin Plans
December 31, 2013
2.5 1.25 0 2.5 Miles

Figure 8-3

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

The City has a long-established Sewer Design Manual that undergoes periodic review and updates to incorporate the latest advances in design and construction techniques as described in Part v, Design and Performance Provisions, of this SSMP. The Sewer Design Manual is maintained by the City's Bureau of Engineering. The Bureau is in charge of design, construction, start-up and optimization of public works projects.

(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.

Through hydraulic condition assessment, population forecast, and modeling, the City identifies the current and predicts the future capacity needs and develops and implements capital improvement projects to address these needs. Flow gauging data is recorded in a computer-based network database, analyzed, and displayed in GIS map overlays, tables and other forms for evaluation and decision-making. When the peak flow in a sewer reaches a predetermined level, it triggers a planning study that is initiated in time to ensure that additional capacity is provided to meet future demands before the sewer d/D (ratio of flow depth to pipe diameter) reaches 0.75 in conformance with the City's Sewer Design Manual criteria. The study results are summarized in a concept report.

Concept reports are prepared for locations in need of additional capacity. The reports validate and quantify capacity needs; develop and evaluate alternative solutions considering current and future structural, hydraulic, and operational needs; and recommend preferred solutions consistent with long-term Master Plans. Environmental documents are prepared and public outreach conducted to incorporate community feedback in project planning and meet the requirements of National Environmental Policy Act (NEPA) and/or California Environmental Quality Act (CEQA) as appropriate.

Projects recommended in concept reports are prioritized, funded, and implemented as a part of the City's Wastewater Capital Improvement Program (WCIP). The City's WCIP is available for viewing online at *http://san.ci.la.ca.us/fmd/wcip/WCIPbook07-08.pdf*.

As a result of these efforts, capacity enhancement projects have been completed that provided additional sewer capacity in locations that overflowed during the

1998 El Nino storm event along major interceptor sewers to avoid future overflows during major storm events. Among these are the $280 million East Central Interceptor Sewer (ECIS); the $186 million Northeast Interceptor Sewer (NEIS); and the $20 million Eagle Rock Interceptor Sewer (ERIS). ECIS has eliminated wet weather capacity deficiencies in a critical section of the North Outfall Sewer (NOS) and made possible rehabilitation of the structurally deteriorated reaches of the NOS. The NEIS and ERIS addressed capacity deficiencies in the Eagle Rock areas. These interceptors are shown in Figure 8-1.

Over $3 billion in wastewater capital expenditures are planned for Fiscal Years 2008/09 through 2017/18 including approximately $2 billion for the collection system.

The WCIP project schedules are routinely reviewed and validated by a Wastewater Program Review Committee that meets regularly and is made up of members of executive management from the Bureaus of Sanitation and Engineering. Priorities and project schedules may be adjusted as justified based on a variety of reasons including technical and financial considerations and new or changing needs resulting in changes to project objectives and scope.

The City's WCIP is funded by revenues generated through collection of fees for wastewater services that are determined based on a fair and equitable system of cost-sharing by all users of the system. These include Sewerage Facilities Charge (SFC), Sewer Service Charge (SSC), Quality Surcharge Fees, and fees paid by the City's satellite agencies in accordance with the terms of sewage conveyance, treatment, and disposal agreements between the City and the satellite agencies. WCIP funding is augmented through the issuance of revenue bonds.

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

The City's 10-Year Wastewater Capital Improvement Program (WCIP) is reviewed and updated annually and lists the wastewater collection, conveyance, treatment, disposal, reclamation, and reuse projects. Projects get included in the WCIP based on a risk-based prioritization system. The collection and conveyance projects description and expenditure plans are included in a section titled "Collection System (CS)."

The 10-Year WCIP (Fiscal Years 2013/14 through 2022/23) is available online at http://san.ci.la.ca.us/fmd/wcip/WCIPbook13-14.pdf.

References

Flow Meter and Data Acquisition Operation and Maintenance Manuals

City of Los Angeles, Wastewater Collection System Capacity Report and Plan, June 2006

Integrated Plan for the Wastewater Program

Los Angeles Municipal Code, Section 64.30

Board of Public Works' Rules and Regulations Governing the Disposal of Industrial Wastewater into the Publicly Owned Treatment Works of the City of Los Angeles

City of Los Angeles Annual 10-Year Wastewater Capital Improvement Program, Latest Edition



ix. Monitoring, Measurement, and Program Modifications: The Enrollee shall:

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

The City has multiple ongoing programs that support the collection and management of data and information essential to successful implementation of its Sewer System Management Plan (SSMP). Major SSMP activities are established and prioritized as follows:

- **Information Management Systems**

  Extensive and continuing data collection and analysis lead to an effective and efficient use of City resources and optimization of its wastewater collection and conveyance system. The City's information management systems are an essential element of the operation and maintenance program. All attributes of each sewer segment are included in a comprehensive inventory database. Information regarding all maintenance activities, sewer condition, overflows, and odor complaint is entered into electronic information management systems. This information is routinely evaluated to document maintenance needs, identify problem locations, and assist in analysis of overflow events and odor complaints. This data coupled with flow information is overlayed on a GIS base map of the sewer system to quickly identify and visualize problem areas, communicate actual condition and maintenance needs to operation and maintenance staff, prioritize cleaning and root removal activities, and provide for corrective measures. Through its information system, the City is able to monitor hydraulic and structural condition of its collection system and focus on the areas of greatest needs. The GIS maps are a primary tool used to prioritize and schedule sewer assessments and maintenance activities in preventive maintenance program.

- **Sewer Condition Assessment**

  To assess the condition of CCTV inspected sewers, the City uses a five-category rating system based on the types and severity of defects. They range from A (excellent) to E (emergency) condition. The condition ratings trigger follow-up actions that could include increased monitoring and maintenance to keep a problem sewer fully operational while a capital improvement project is being developed and implemented to provide long-term solution. Rehabilitation or replacement projects are developed and scheduled for implementation on a priority order with other identified needs. Category A and B sewers are in

excellent to good condition and are scheduled for continued inspections and monitoring on 10-year cycles. Category C condition sewers are considered to be in fair condition and are scheduled for follow-up inspections once every five years. Category D condition sewers are closely monitored and are included in the Wastewater Capital Improvement Program (WCIP) for replacement or rehabilitation within five years. Increased preventive measures are taken for Category D condition sewers, as appropriate, to avoid emergency situations and follow-up inspections are conducted annually. Category E condition sewers are considered emergency. These are sewers where a pipe failure has already occurred or there is a full flow obstruction. Condition E sewers are immediately repaired and restored to condition A or B sewers.

- **Operation and Maintenance Program**

  The City has an extensive proactive and preventive maintenance program for its collection system. Maintenance is performed by staff assigned to one of 13 maintenance sections. Six maintenance yards are strategically located throughout the City to minimize travel time and maximize efficiency. Preventive maintenance is focused on critical and problem areas. Critical sewers are identified, prioritized and scheduled for maintenance based on a comprehensive review of maintenance history and system characteristics of all sewers in the City including overflows, blockages, excessive maintenance, age, pipe material, and condition assessment records.

  In an effort to prevent overflows, flow monitoring and CCTV records are reviewed to identify potential weaknesses in the system. Sewer locations that exhibit high flow levels and sewers that are in poor condition are identified through this process. These assessment activities may trigger further reviews to determine cause and/or may trigger immediate or accelerated corrective actions. Maintenance priorities are set based on the relative severity of the problem.

  In addition to the focused preventive maintenance efforts, the City has implemented a proactive maintenance program where “non-problem” sewers are also scheduled for maintenance and cleaning on a less frequent basis.

- **Overflow Emergency Response**

  Managers and staff meet monthly to review emergency response actions and collaborate on methods and procedures that will improve performance. Aggressive performance standards for timely response to sewer overflows are established and communicated to overflow response teams. Response protocol is reviewed periodically and updated as needed based on a review of established and actual response times.

- **Odor and Corrosion Abatement**

  The City has a four-pronged approach to odor control: regular maintenance, system-wide treatment, site-specific corrective action, and capital improvement including new and state-of-the-art odor control facilities. Most odor problems are resolved by regular cleaning. However, some complex odor problems, such as

airflow restrictions in a line due to high flow, cannot be resolved by maintenance. In these instances the City will implement site-specific actions, including flow diversions, chemical addition and the use of relief sewers. The City has also implemented an aggressive, system-wide odor control program at a cost approaching $3 million per year. Under this program, chemicals are injected into the system at key locations to reduce the levels of hydrogen sulfide, the predominant source of odors. This program has been extremely successful in reducing hydrogen sulfide levels by over ninety percent since 1997. The City has also built permanent odor treatment facilities at strategic locations along major interceptors. These new odor facilities will capture hydrogen sulfide through the use of fans and treat sewer gases using highly advanced treatment technologies.

- **System Evaluation and Capacity Assurance Plan**

The City regularly monitors and evaluates hydraulic performance of the entire sewer system. There are 15 automatic "real time" flow monitors located in the 650-mile primary sewer system. The monitors use radio transmission to send data to a central location. In addition, flow gauging is performed at over 600 strategic locations throughout the City on either a quarterly, semi-annual, or annual cycle. Special gauging, which is short-term monitoring of one day to a week long, may be performed at any location upon request by planners, engineers, or operators. Gauging data is compared to historical data and any unusual change in flow depth is investigated to validate the change and determine the cause. Blockages are removed immediately. Sewer capacity planning is prioritized based on the current and projected hydraulic conditions.

Two d/D (ratio of sewer flow depth to sewer diameter) levels are considered in capacity planning for existing sewers, Trigger d/D and Relief d/D.

The Relief level is the highest Peak Dry Weather Flow (PDWF) d/D in a sewer that will accommodate the projected peak wet-weather flow to be handled by a sewer pipe. This means that hydraulic relief of the sewer must be in place and operational by the time the PDWF in the pipe reaches the Relief level. The Relief d/D is currently 0.75 for all City sewers per the Sewer Design Manual.

The Trigger level is (by definition) the PDWF d/D that triggers initiation of sewer relief projects. The Trigger d/D is smaller than the Relief d/D to allow for an increase in flow level during the time it takes to plan for, design, and build the relief projects. The difference between the Trigger and Relief levels is referred to as the buffer.

While the Relief d/D is currently 0.75 across the City for all existing sewers, the Trigger d/D varies on a project by project basis because each project's tributary area has its own unique characteristics such as population growth projection, commercial and industrial discharge forecast, and other contributing factors that determine how quickly flows are projected to increase over time.

In addition, the Sewer Design Manual requires d/D of 0.5 for the design of all new sewers. Existing sewers are replaced or relieved by the time d/D reaches 0.75. Replacement and relief sewers are designed for a PDWF d/D of 0.5 for the projected design year. Figure 9-1 which is a graphical depiction of the foregoing is an excerpt from the City's Sewer Design Manual.

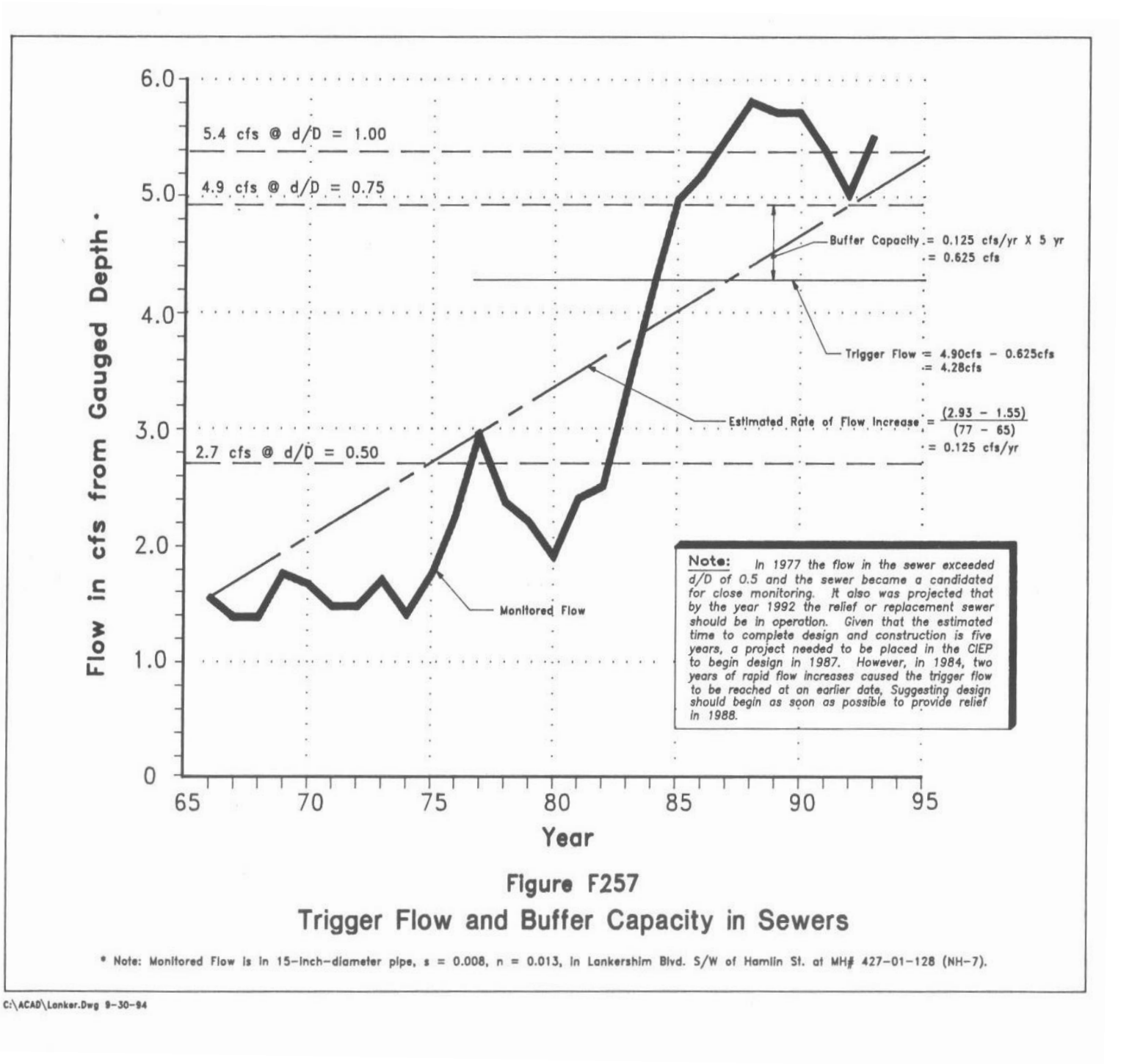


Figure 9-1

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

The City's SSMP is a well-integrated plan with each element designed to complement and support the other elements. Each year as a part of the City's Bureau of Sanitation's Five-Year Strategic Planning, the SSMP goals are set, the deliverables required to meet goals are defined and prioritized, lead and support offices and resources are assigned, and progress is measured and reported to ensure meeting or exceeding goals and achieving compliance with the SSMP requirements. Overall SSMP performance is evaluated and reported to management quarterly, and annually following the end of each fiscal year. Any plan updates necessary to enhance the SSMP performance are identified and become a part of the following year's Five-Year Strategic Planning as a part of this process.

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

The City assesses the success of its programs by analyzing the condition assessment results and keeping track of the quantities and trends of various types of sewer blockages and overflows as well as odor problems and complaints. Successful practices are continued and program adjustments are made when appropriate.

Examples of these assessments include: weekly condition assessment review meetings, monthly Sanitary Sewer Overflow (SSO) reviews, monthly performance meetings with chemical root control contractors, annual capacity assurance review, and a comprehensive annual review of the preventive maintenance program.

The City's preventive measures also include community outreach and education programs on the workings of the sewer system and steps the public can take to help reduce blockages and overflows.

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

The following are examples of ongoing monitoring and review processes that are a part of system performance evaluation and continual improvement efforts.

- **Annual review of preventive maintenance**

  On an annual basis a comprehensive review of the maintenance program is conducted. Critical sewers are identified, prioritized and scheduled for maintenance based on a comprehensive review of maintenance history and system characteristics including overflows, blockages, frequent maintenance requirement, age, pipe material and condition assessment records.

  In an effort to prevent overflows, flow monitoring and CCTV records are reviewed to identify potential weaknesses in the system. Sewer locations that exhibit high flow levels and sewers that are in poor condition are identified through this process. These assessment activities may trigger further reviews to determine cause and/or may trigger immediate or accelerated corrective actions. Maintenance priorities are set based on the relative severity of the problem.

- **Fats, Oils, and Grease (FOG) Control Program**

  The City is implementing a robust program that includes ongoing user education and involvement. The goal is to eliminate all preventable sewer overflows caused by grease. Program modifications are made when necessary with active support of the food service establishments to optimize ability to attain this goal. As a result, FOG-related overflows decreased by about 94% from 290 in Fiscal Year 2000/01 when the program was initiated to 17 in 2012/13.

- **Root Control Program**

  The City has an aggressive root control program that entails chemically treating problem sewer reaches using environmentally friendly chemicals. The program includes root growth monitoring by CCTV inspection, mechanical root removal, and chemical treatment with herbicide to prevent root re-growth. Currently, the City's root control program includes root removal from more than 1,000 miles and chemical treatment in more than 350 miles of sewers per year. Similar to the grease control program, the goal is to eliminate all preventable sewer overflows caused by roots.

  Recognizing that private sewer laterals are a major source of tree roots intrusion into the sewer system, beginning in 2006 the City expanded the root control program by the addition of a community outreach and education program where property owners in root hot spots are informed of the need for inspection of their private laterals. Property owners are also provided helpful information on routine maintenance and corrective actions required to protect the laterals from further damage, save costs, and prevent sewage overflows on private properties and in City streets. Additional information on this community service program may be obtained at:

  Web site: http://www.lasewers.org/sewers/roots/
  Email: sewr.root@lacity.org
  Phone: (323) 342-1566

- **Stormwater Inflow and Infiltration Prevention (SIIP) Program**

  In the late 1990's and early 2000's, the City identified sources of unauthorized discharges of stormwater into the sanitary sewer system using smoke testing. These included roof drains, yard area drains, parking lot drains, downspouts, and other sources draining directly to the sewer system. The Bureau of Sanitation and Department of Building & Safety jointly sent notices to property owners, including evidence of such unauthorized connections and the need for corrective action as required by City ordinances. Follow-up inspections and surveys conducted in the mid 2000's confirmed the success of the SIIP Program. An estimated annual average of more than 8 million gallons per day (mgd) of extraneous water has been excluded from the system due to the SIIP Program.

- **Flow Monitoring Expansion Program**

  Flow monitoring is an important activity that supports planning and operation & maintenance. To effectively manage the system, it is essential to gather flow data to support resource allocation for operation & maintenance as well as for planning and design to build future relief or replacement sewers. To meet this need, the City is currently working on expanding its flow monitoring program by installing 120 permanent monitors and 50 temporary monitors that continually measure flow quantities at strategic locations in the City's major sewers and interceptors. When the unrestricted flow in a pipe reaches a predetermined "trigger flow" depth, a planning study will be initiated to clearly define and validate the problem; evaluate future needs; and develop, evaluate, and recommend alternatives for implementing sewer relief or replacement projects.

  Trending reports are used to project future flows and prioritize planning studies, design and construction projects. Sewers where peak dry weather flow levels reach 75 percent of the pipe diameter receive the highest priority. The trigger flow concept described in Paragraph (a) above, Sup-paragraph **System Evaluation and Capacity Assurance Plan** ensures that projects planning are initiated sufficiently in advance so that capital improvements are implemented to provide additional capacity by the time needed.

- **Hydraulic Modeling**

  The City has been an industry leader in using leading edge technology to model and assess the hydraulic performance of its complex network of pipes, diversion structures, flow splits, and pumping plants. The City has been utilizing hydraulic models as planning and operation & maintenance tools since early 1980's and is currently expanding its sewer modeling capability. MIKE URBAN, a GIS-based hydraulic model, predicts sewer flows in the primary sewer system for planning purposes and is used to simulate various flow scenarios to help with operational control.

  In addition, the City employs a technology that greatly improves the accuracy of wet weather flow prediction using radar generated instantaneous rainfall data. Historic data from the National Weather Service is used to refine the accuracy of rainfall simulations used for assessing various historic storm impacts on the City's collection system. Using this data the MIKE URBAN model is calibrated for wet-weather projections.

- **Sewer Design Manual**

  The City's Bureau of Engineering maintains a highly advanced and practical sewer design manual through periodic reviews and updates. The manual serves as a guide for all phases of sewer work and provides design criteria, specifications, and standard details. The City Engineer issues Special Orders whenever new criteria or

standards are developed to meet a particular need or to provide for cutting-edge methods that have not yet been included in the manual. The requirements set forth in these Special Orders become a part of the Sewer Design Manual as the Manual is updated periodically.

- **Construction**

  To avoid construction related sewer overflows to comply with the City's "zero [construction] spill" policy, the Bureau of Contract Administration requires that a spill prevention and response plan be developed and implemented for all sewer construction projects. The City's zero spill policy is documented in the Brown Book which is an adaptation of the "Standard Specifications for Public Works Construction (Green Book)" including the City's amendments and additions that address specific City needs and wants and policy requirements.

- **Project (ad hoc) Teams**

  Ad hoc teams are formed to address specific issues as they are identified. For example, a Strategic Planning Team (SPT) was formed with the specific mission to develop a plan to meet new NPDES stormwater permit conditions without increasing staff. This was done by increasing organizational efficiency and effectiveness through critical assessment of each ongoing task. The SPT is a joint labor/management team that identifies related functions, tasks and sub-tasks, personnel requirements, actual labor expenditures, and workload requirements. Core business activities are identified and a task analysis of each activity is used to determine appropriate staffing levels and equipment needs. The effectiveness of the joint labor/ management review process is evident by the reductions in staffing levels while achieving increases in the level of core services.

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

Information management system is an integral part of the City's operation and maintenance program. SSO trends are identified and tracked through a state-of-the art GIS tracking system. When complaints are called in, they are uploaded to a master database and plotted on a City-wide map. All attributes of each sewer pipe gravity and pressure segment are included in a comprehensive inventory database. Information regarding each new overflow and odor complaint is entered into a maintenance management database. This information is evaluated to document locations, causes, and frequency of overflows and odors. This data is overlain on a GIS base map of the sewer system to quickly identify and visualize problem areas; communicate conditions and needs to City policy makers and management; and prioritize maintenance activities, urgent and emergency repairs, and mid- and long-term solutions.

References

City of Los Angeles CCTV Inspection Manual

City of Los Angeles FOG Control Ordinance

City of Los Angeles, Bureau of Sanitation, Industrial Waste Management Division FOG Program Enforcement Response Plan

Bureau of Sanitation, Industrial Waste Management Division, Fats, Oil, and Grease, Standard Operating Procedures 001

Standard Specifications for Public Works Construction (Green Book), Latest Edition

City of Los Angeles, Department of Public Works, Additions and Amendments to the 2006 Edition of the Standard Specifications for Public Works Construction (Brown Book)

City of Los Angeles, Bureau of Engineering Sewer Design Manual

City of Los Angeles Master Specifications

Flow Meter and Data Acquisition Operation and Maintenance Manuals

Integrated Resources Plan for the Wastewater Program

Primary and Secondary Basin Plans

City of Los Angeles 10-year WCIP

Navigate LA User's Manual



x. SSMP Program Audits

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

Audit and benchmarking programs are among primary City strategies in accomplishing its mission to protect public health and the environment and meeting goals. As a part of the City's continuing performance measurement, the City's SSMP undergoes ongoing reviews at all levels of the organization having authorities and responsibilities in the SSMP implementation shown in Figure 2-1, Part ii, Organization, of this SSMP. These reviews culminate in internal (self) audits of the SSMP that result in biennial audit reports. As a part of these audits, all parts and sub-parts of the SSMP are reviewed critically with regards to their ability to effectively and efficiently meet the State General Waste Discharge Requirements (GWDR), comply with City policies, and provide excellent community service. In addition to these self-audits, the City may engage outside entities to independently review and assess the SSMP performance once every five (5) to 10 years as appropriate.

Each year as a part of a Five-Year Strategic Planning process, the SSMP goals are set; deliverables that are required to meet goals defined and prioritized; the lead and support offices and resources necessary to complete deliverables assigned; and progress measured and reported on an ongoing basis to ensure full and timely completion of deliverables. Any gaps between targeted results and actual progress are identified or anticipated and mitigation measures developed and implemented to close or avoid any performance gaps. The overall SSMP performance is evaluated and reported to management quarterly and annually following the end of each fiscal year. Any plan updates necessary to enhance the SSMP performance are identified and included as a part of the following year's Five-Year Strategic Planning process.

Performance measures and benchmarks are established and through ongoing performance review, experienced personnel audit the SSMP at least once every two years by evaluating the effectiveness of each SSMP Part and Sub-part and making recommendations for improvements and updates as appropriate. The SSMP is updated by incorporating adopted recommendations. Audit reports and related

materials are maintained in a comprehensive hard copy and electronic document tracking and management system.

The following are examples of ongoing self-monitoring and plan modification:

- **Overflow Emergency Response**
  Staff and managers meet regularly to review emergency response actions and collaborate on methods and procedures that will improve performance. Performance standards are developed, published and communicated. Actual response times are compared to standards; changes are made and documented and staff retrained as appropriate.

- **Hydraulic Performance Monitoring**
  The City monitors and evaluates the hydraulic performance of the entire system. Automatic “real time” flow monitors including radio transmission of data to a central location are placed at strategic locations in the 650-mile primary sewer system (sewers larger than 15 inches in diameter). In addition, flow is measured at over 600 maintenance holes at strategic locations throughout the City’s secondary sewer system (sewers equal to or smaller than 15 inches in diameter) on either a quarterly, semi-annual, or annual cycle. This data is compared to historical flow level data. Any unusual change in flow depth is investigated to determine the cause and if a blockage is found it is immediately removed. When the unrestricted flow reaches a predetermined “trigger flow” depth, a planning study will be initiated to clearly define the problem; evaluate future needs; and develop, evaluate and recommend alternatives to provide required relief or replacement sewers. This system of data gathering coupled with the “trigger flow” concept ensures that planning is started in advance of need to ensure sufficient time is allowed for planning, design, and construction. Work priorities and the capital improvement projects schedules are adjusted based on a review of the system performance and needs.

- **Hydraulic Models**
  The City has been an industry leader in using leading edge technology to model and assess the hydraulic performance of its complex network of pipes, diversion structures, flow splits, and pumping plants, and to predict future flow based on growth projections. Modeling was first used in the City in the 1980's.

  In addition, the City uses a technology that greatly improves the accuracy of wet weather flow prediction using radar generated instantaneous rainfall data. Historic data from the National Weather Service is used to refine the accuracy of rainfall simulations.

- **Structural Condition Assessment**
  Nearly all of the City’s major interceptor and outfall system has been inspected by closed circuit television. Based on these inspections, the condition of each sewer reach is assessed and rated in a five-category

condition ranking. The ranking system is used to prioritize and schedule future inspections and rehabilitation or replacement planning studies. Changes are made to work priorities and project delivery schedules based on the findings of field investigations and criticality of system needs.

- **Maintenance Management Approaches**

  The City takes a sewer shed based approach to maintaining its secondary sewer system with the goals of improving efficiency of its maintenance efforts and system performance. Priority is given to sewers within sewer sheds that return the most benefit for the maintenance effort. Data are accumulated on maintenance hot spots and displayed on GIS maps to display locations requiring additional attention. This information forms the basis for prioritizing cleaning, inspection, and rehabilitation. All maintenance holes are physically inspected biennially, all sewers cleaned on a maximum five year rotation, and operationally challenged sewers will be cleaned more often as needed. Each sewer shed is assigned to one of the City's six maintenance yards. Very high but realistic standards are developed for each sewer shed and used to measure crew and system performance. This ongoing monitoring and adjustment process will work to optimize staff efficiency and system performance. The maintenance program is regularly reviewed for changes such as disconnection or new connections including restaurants and industrial users and priorities adjusted as appropriate. Effectiveness of root control is also monitored and changes to cleaning schedules made as needed.

- **Sewer Design Criteria and Standard Plans and Specifications**

  The City has a long-established Sewer Design Manual that undergoes periodic review and updates to incorporate the latest advances in design and construction techniques as described in Part v, Design and Performance Provisions, of this SSMP. he Sewer Design Manual is maintained by the City's Bureau of Engineering that is in charge of design, construction, start-up and optimization of public works projects.

  Design standards, specifications and standard details are continuously monitored for currency and effectiveness. Staff input based on field experience is provided and reviewed systematically. Appropriate changes are incorporated into the City's standards and work in progress as needed.

- **Change in Construction Activities**

  In another effort to avoid SSO's, the City developed and implemented a requirement that a spill prevention and response plan has to be developed and implemented for all wastewater construction projects. This construction requirement is designed to eliminate SSOs caused by construction activities. Standard Plan 610 – 27 was developed to document the City's policy on no overflows related to construction activities and contractor activities.

References

City of Los Angeles Department of Public Works Bureau of Sanitation, A Five-Year Strategic Plan, Latest Edition



xi. Communication Program

Communication Program: The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented. The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

The City implements comprehensive and extensive community outreach which includes mass mailing of pamphlets, newsletters, and surveys; handing out materials at community events; presentations to neighborhood councils and other community organizations; advisories and press releases; websites; and toll-free help lines. Outreach events are held for the general public, commercial and industrial entities, trade associations, professional organizations, and students, to familiarize them with the Fats, Oils, and Grease (FOG) Control Program, root control program, and other programs within the SSMP.

Outreach events include community fairs, the Bureau of Sanitation Maintenance Yard Open Houses, and school visits. Electronic versions of the outreach materials are also made available on CDs and DVDs and can be found on the website.

City staff periodically reviews and provides timely updates and enhancements to the lasewers.org website. Regulatory compliance reports such as implementation plans and periodic progress reports to the RWQCB are also posted on the site. Annual questionnaires are sent out on selected programs to seek public input, gauge the effectiveness of the programs, and make changes as appropriate.

The following are examples of the community outreach activities within the City's SSMP:

FOG Control Program

The FOG Control Program outreach is geared towards food service establishments (FSEs), non-profit groups that have large food preparation services, and residents. The City staff participates in conferences and expositions and conduct annual workshops to communicate Program requirements and obtain feedback from the general public, (FSEs), and regulatory agencies.

Private Lateral Sewer Maintenance and Root Control Outreach

This outreach is focused in the areas of City designated as “root hot spots where a large number of SSOs occur due to blockages caused by roots. Properties in the “root hot spot” areas were sent pamphlets which contained information regarding causes of root growth in private laterals, prevention methods and proper operation and maintenance for private laterals. Customers can use a telephone helpline and an e-mail address to contact City staff for further assistance. A website also provides additional information and useful tips.

Capital Improvement Projects (CIPs)

Capital Improvement Projects (CIPs) are listed on lasewers.org and are advertised in the community through updates from City Staff, on billboards throughout the community. Phone numbers are posted on project signs that customers can call either for more information on a project or to report dust or noise coming from the project site, as well as project start and end dates. Outreach is also conducted by meeting with local businesses and community. These activities ensure that the communities are informed about projects in their neighborhoods.

Satellite Agencies

The City provides wastewater conveyance and treatment services to 29 satellite communities under contractual agreements but does not fund, operate or have control over the sanitary sewer systems of these communities. The agencies that meet the applicability criteria of the WDRs are required to maintain and implement their own SSMPs. The City meets with its satellite agencies on common contractual matters regularly.