

SEWER SYSTEM MANAGEMENT PLAN

for

CITY OF BREA



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ABBREVIATIONS/ACRONYMS

American Public Works Association (APWA)—Non-profit professional association of public works agencies

Authorized Representative—Pursuant to General Order 2006-0003 of the State Water Resources Control Board, each City that owns and operates a sanitary sewer system must designate an individual to be responsible for completing the certification portion in the Online Sanitary Sewer Overflow (SSO) Database Questionnaire following a SSO event. The Authorized Representative also certifies any updates to the City's Sewer System Management Plan prior to submittal to the State Water Resources Control Board.

Best Available Technology (BAT)—Practices and tools to limit pollution discharges

Best Management Practice (BMP)—Synonym for Best Available Technology

Brea Municipal Code (BMC)—City laws and ordinances some of which pertain to the operation and use of the City's sewer system.

Computer-Aided Design Drafting (CADD)—Use of a computer application to create technical drawings or plans

California Occupation, Safety and Health Administration (CAL-OSHA)—Agency dedicated to protect workers from health and safety hazards associated with their work

Capital Improvement Plan or Program (CIP)—Planning document prepared by Cities or public agencies to identify needed infrastructure improvements and funding sources.

Category 1 SSO—A discharge of any volume of untreated or partially treated wastewater from a sewer that reaches surface water or a Municipal Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system.

Category 2 SSO—A discharge of 1000 gallons or greater of untreated or partially treated wastewater from a sewer that does not reach surface water or a Municipal Storm Sewer System (MS4) or if the entire SSO discharged to the storm drain is recovered and disposed of properly.

Category 3 SSO—All other discharges of untreated or partially treated wastewater resulting from a sanitary sewer failure or flow condition.

California Integrated Water Quality System (CIWQS)—Computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Closed-Circuit Television (CCTV)—remotely-controlled driver-controlled camera capable of producing video of the inside of sewer pipes.

Cured-In-Place Pipe (CIPP)—One pipe rehabilitation technique in which a new pipe lining is pulled into the pipe from the surface and then expanded and cured in place. Most of the work is accomplished from the surface resulting in minimal trenching.

Department of Public Works (DPW)—City department dedicated to maintaining and improving public assets.

Enrollee—A public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.

Fats, Oils, and Grease (FOG)—Substances commonly produced by kitchens or restaurants that can solidify and cause blockages within the sewer system.

Food Service Establishments (FSE)—Any building, vehicle, place, or structure, or any room or division in a building, vehicle, place, or structure where food is prepared, served, or sold for immediate consumption on or in the vicinity of the premises.

Geographical Information System (GIS)—Computer system designed to depict, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

Hotspot—Location with frequent maintenance issues such as buildup of debris, root intrusion, FOG accumulation, or other operational deficiency.

Infiltration/Inflow (I/I)—Flow of groundwater or stormwater into the sewer system during a storm event or due to openings in sewer facilities

Lateral (House Connection Sewer)—Portion of sewer that connects a structure (residence or business) with the main sewer line in the street, alley or easement.

Maintenance Management System (MMS)—Systems and processes to manage maintenance tasks. Many organizations maintain a computer database of maintenance operations.

National Association of Sewer Service Companies (NASSCO)—Industry resource for specification guidelines, industry practices, and inspector training.

Office of Emergency Services (OES)—Agency responsible for overseeing and coordinating emergency preparedness, response, recovery and homeland security activities within the state.

Orange County Sanitation District (OCSD)—Agency that operates sewer trunk lines and sewer treatment facilities for Cities in the County of Orange.

Plumbing Code (PC)—Subset of the building code. Establishes standards for plumbing components within structures.

Pipeline Assessment and Certification Program (PACP)—Standardized system for evaluating the condition of pipes.

Private Lateral Sewer Discharge (PLSD)—Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the City's sanitary sewer system.

Publically Owned Sanitary Sewer System—Collection of sewer mainline pipes, laterals, and wastewater pumps that convey wastewater from source points to a municipal wastewater treatment plant. These systems are typically owned and operated by a public agency such as a City or a Sanitation or a Special District.

Regional Water Quality Control Board (RWQCB)—Makes critical water quality decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. The City of Brea is within Region 8.

Santa Ana Region Basin Plan—Last updated February 2008. Establishes water quality standards for the ground and surface waters of the region.

Sewer Maintenance Zones (SMZ)—Subarea of a larger sewer system that is used when referencing and scheduling maintenance operations.

Sewer Operations & Maintenance (SO&M)—Activities undertaken by a public agency to ensure continued optimal operation of a sewer system.

Sewer System Management Plan (SSMP)—Document that describes the activities and agency uses to manage its wastewater collection system efficiently.

Sanitary Sewer Overflows (SSO)—Overflow of untreated or partially treated wastewater due to inadequate system capacity or a blockage in the system.

State Water Resources Control Board (SWRCB)—The mission of SWRCB is to ensure the highest reasonable quality for waters of the State, while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water quality protection enables the Water Board to provide comprehensive protection for California's waters. The SWRCB oversees the operations of the Regional Water Quality Control Boards to ensure that their activities are in line with the SWRCB's objective.

Waste Discharge Requirements (WDR)—regulate point discharges such as sewage and wastewater.

Waters of the United States—(paraphrased from 33 CFR Part 328) – All waters that are used, were used, or may be used in interstate or foreign commerce, including those subject to the ebb and flow of the tide; including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), adjacent wetlands, impoundments of water, etc., the use, degradation or destruction of which could affect interstate or foreign commerce; tributaries of waters so identified; the territorial seas; and all waters within the 100-year floodplain of the preceding water bodies.

CITY OF BREA

SEWER SYSTEM MANAGEMENT PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Steve Kooyman, PE
City Engineer

Date

INTRODUCTION

On May 2, 2006 the State Water Resources Control Board (SWRCB) adopted a statewide General Waste Discharge Requirements (WDR) and Monitoring and Reporting Program by issuing Order No. 2006-003-DWQ (See Appendices A and C). Regulations in this order resulted from a growing concern about water quality impacts of sanitary sewer overflows (SSO), particularly those that cause beach closures or adverse effects to other bodies of water or that pose serious health and safety or nuisance problems to the public.

The order defines the program enrollees as all public entities that own or operate a sanitary sewer system greater than 1 mile in length. Provision 11 of this order requires that enrollees must prepare a document outlining the operation and maintenance of their sewer system to reduce and prevent future overflows.

11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

In August 2013, the SWRCB also released Order WQ 2013-0058-EXEC (Appendix 'B') which amended the monitoring (Section 9) and reporting (Sections 10 & 11) requirements for SSO events. Per these new requirements, the appropriate sections were revised in this updated SSMP report.

The essential elements of the SSMP are detailed in Provision Number 13 of the SWRCB's 2006 order. The City of Brea Sewer System Management Plan is documented in this report, which addresses each element listed in Provision 13 of the order.

The following list of sections are the essential elements of the SSMP.

- Section 1 Goal (WDR Section D.13i)
- Section 2 Organization (WDR Section D.13ii)
- Section 3 Legal Authority (WDR Section D.13iii)
- Section 4 Operation and Maintenance Program (WDR Section D.13iv)
- Section 5 Design and Performance Provisions (WDR Section D.13v)
- Section 6 Overflow Emergency Response Plan (WDR Section D.13vi)
- Section 7 Fats, Oil and Grease Control Program (WDR Section D.13vii)
- Section 8 System Evaluation and Capacity Assurance Plan (WDR Section D.13viii)
- Section 9 Monitoring, Measurement, and Program Modifications (WDR Section D.13ix)
- Section 10 SSMP Program Audits (WDR Section D.13x)
- Section 11 Communication Program (WDR Section D.13xi)

EXECUTIVE SUMMARY

This plan document was prepared in compliance with order 2006-0003-DWQ issued by the SWRCB. The order requires every owner and operator of publicly owned sewer systems to develop and implement a system-specific SSMP. This plan sets forth goals and actions to be followed, and guidelines for various activities involved in managing, operating, maintaining, repairing, replacing, and expanding the sewer system. Chapter 6 describes actions to follow when responding to a SSO occurrence within the community, including reporting obligations. There are chapters that describe legal authorities for managing the system and administrative actions required in monitoring, auditing, reporting, and communicating with the public and regulators. There are specific requirements for accomplishing public involvement and reporting and modifying (changing) the plan. These later requirements are intended to raise public awareness of the hazards and responsibilities associated with SSO events and to minimize the occurrence of such events.

- The City's initial plan was approved and certified in November 2009
- The plan is to be monitored and updated no less frequently than every five years
- The City's approved plan is to be made publically available for download via an internet web site along with critical supporting documents referenced in the SSMP and proof of local governing board approval of the SSMP. If that is not possible, the documents must be submitted to the SWRCB within 30 days of approval or recertification from the local governing board.
- The plan must be periodically internally or self-audited for effectiveness, a report compiled and kept on file and such audits must occur no less frequently than every two years. These audit reports do not need to be submitted to the SWRCB, but must be made available upon request. The most recent report of the audit must be kept on file in the Office of the City Clerk, the DPW office, and the field maintenance yard site.
- Per the 2013 Amendment the monitoring and reporting requirements have been updated for both emergency and routine reporting events as detailed in Appendix 'B'.
- The adoption of and any revision to the plan must be accomplished utilizing public notification and public hearing procedures as identified in the plan and general order.

A key element of the plan was the sewer system capacity evaluation utilizing a hydraulic model of the system to evaluate capacity constraints. Many of the initially identified deficiencies have been addressed as of the writing of this update. The previous five identified locations with then current pipe flows greater than 85% full (a critical condition) have all been upgraded. There are five segments remaining with flows greater than 64% (a serious but not critical condition). Those pipe segments equal 1,200 feet (0.19 % of the total system length).

To effectively correct and manage the City's sewer system, it is recommended that selective flow monitoring be conducted to refine modeling parameters to match the actual in-system flow conditions, especially as flows relate to the critical capacity locations. A regular schedule for CCTV inspection of the system is also an invaluable tool in defining existing structural defects and maintenance defects that are not identified by modeling or routine maintenance activities and records. These two activities will allow the hydraulic capacity assessment to be further refined, and condition inspection to define project specific design and repair methods to be considered before proceeding with corrective work in accomplishing the management of the City wastewater collection system.

CHAPTER 1 GOALS

The City must provide a plan and schedule to properly manage and maintain all parts of the sanitary sewer system.

The goals of the City of Brea SSMP are to:

1. Prevent sewer system overflows by:
 - a. Providing adequate capacity in its system in accordance with its criteria, and schedule detailed in its System Evaluation and Capacity Assurance Plan
 - b. Cost effectively minimizing the sources of inflow and infiltration
 - c. Implementing its Fats, Oils, and Grease (FOG) Control Program to minimize the entry of these substances into its collection system
 - d. Inspecting its system, assessing its condition, and replacing and/or rehabilitating it as detailed and scheduled* in its Operation and Maintenance Program
 - e. Establishing and implementing an operation and maintenance program with adequately trained staff to not only prevent SSOs, but also to extend the useful life of its system
 - f. Establishing proper legal authority for implementing the above
 - g. Maintaining the necessary level of funding for providing proper operation, maintenance, and repair of its system as detailed in its Operation and Maintenance Program and providing adequate capacity as detailed in its System Evaluation and Capacity Assurance Plan through periodic reviews of its rate structure.
2. Minimize the impact of SSOs that do occur by preparing a proper Overflow Emergency Response Plan, training staff in its implementation, and implementing the plan when needed.
3. Document all SSOs and establish procedures for reporting SSO events and taking remedial actions to prevent future SSOs.

*The City completed and certified its schedule prior to November 2, 2007.

The City has obtained a Username and Password for accessing the California Integrated Water Quality System (CIWQS) database and reports SSO events as they occur to the database. Monitoring and reporting procedures are described in greater detail in Chapters 6 and 9.

CHAPTER 2 ORGANIZATION

2.1 Management

The City was incorporated in February 1917 and currently serves a population of approximately 41,000 people within a 12 square mile area. The City's wastewater collection system is managed by the City's Street, Sewer, Storm Drain & Sanitation Division which has a total operating budget for (2015/16) of \$974,000. The collection system consists of about 119 miles of gravity sewer lines and three pump (lift) stations. Flows from these local sewers discharge into OCSD facilities for treatment and disposal.

The City has eight positions within the sewer fund budget. The distribution of the City's personnel is depicted in the organization chart presented in **Figure 2-1** of this plan. These personnel provide engineering evaluation of proposed and existing sewer facilities, administer the City's sewer service charge ordinance, carry out annexation proceedings for new service areas, form and dissolve service zones, maintain facility record plans and administer preventive maintenance and sewer construction programs.

2.1.1 Authorized Representative

The City's Public Works Superintendent, Will Wenz, is the authorized representative responsible for execution of compliance actions required under the Waste Discharge Requirements (WDR). This includes, but is not limited to, signing and certification of all reports and correspondence as required under this order.

2.2 City Responsibilities

The City of Brea City Council will review and adopt the 2016 SSMP Update and update the Sewer Enterprise Funding Plan and rate structure in order to comply with the State requirements outlined in this SSMP report.

2.2.1 Organization Chart and Explanation

The organization chart provided on the following page illustrates the lines of authority and function of City personnel groups. The City officials and staff responsible for implementing the SSMP measures are predominately within the Departments of Community Development and Public Works. During emergency operational events, both the Fire and Police personnel are additional responders to facilitate protection of people and the community. Specific responsibilities are described for key positions following the organizational chart.

2.2.2 City of Brea Organizational Chart – Figure 2-1



2.2.3 Description of Responsibilities

City Manager, Bill Gallardo, (714) 671-4418

- Establishes policy
- Allocates resources
- Delegates responsibility
- Oversees preparation of the Sewer Enterprise Funding Plan and rate structure for proper operation and maintenance of the collection system and implementing the capital improvement plan
- Oversees the development of Legal Authorities
- Oversees plan development for consistency with authorities and policies

City Engineer, Steve Kooyman, (714) 990-7657

- Enforces the goals of the SSMP
- Oversees preparation and updating of the SSMP, including:
 - Development of design criteria
 - Evaluation of hydraulic capacity of the gravity system and pump stations
 - Development of a short- and long-term Capital Improvement Program to address the identified hydraulic deficiencies along with its schedule and sources of funding
 - Revising elements based upon monitoring and/or performance evaluations
- Participates in preparation of Sewer System Rehabilitation Plan
- Oversees preparation and maintenance of an up-to-date map of the collection system, pumping facilities, and stormwater conveyance facilities
- Participates in preparation and implementation of the Emergency Overflow Response Plan
- Oversees preparation of design and construction standards and specifications for installing new sewers, pump stations, and other appurtenances and for rehabilitation and repair of the existing system
- Oversees development of procedures and standards for inspection and testing the installation of new sewers, pump stations, and appurtenances and for rehabilitation and repair of existing sewers
- Participates in preparation of a sewer funding plan and rate structure
- Oversees preparation of plans, specifications and estimates for the capital improvement projects, including rehabilitation and repair projects
- Oversees the periodic internal audits of the SSMP
- Oversees the communication program informing the public on the development, implementation, and performance of the SSMP
- Directs the work of the construction management and inspection staff
- Participates in development of:
 - Emergency Overflow Response Plan
 - Preventive Maintenance Plan
 - FOG Program
 - System Evaluation and Capacity Assurance Plan
 - Sewer System Rehabilitation Plan
 - Design and construction standards and specifications
 - Procedures and standards for inspection and testing
 - Construction inspection of new sewers and pump stations and rehabilitation projects

Environmental Services Coordinator, Brian Ingallinera, (714) 448-4827

- Manages the FOG Program
- Oversees implementation of the FOG Program, including inspection of FOG producing facilities and enforcement of the FOG Ordinance
- Participates in preparation of a regional plan for alternative methods of fat and grease disposal
- Establishes an implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG
- Oversees the development and implementation of source control measures for all sources of FOG discharged to the system

Engineering, Raul Lising, (714) 671-4550

- Oversees development of the Sewer System Rehabilitation Plan with its prioritized short- and long-term capital improvement projects

Public Works Director, Tony Olmos, (714) 990-7698

- Participates in measuring the effectiveness of SSMP elements
- Participates in updating the SSMP elements based upon monitoring and/or performance evaluations
- Participates in periodic SSMP program audits

Maintenance Services Superintendent, Will Wenz, (714) 990-7695

- Is the City's authorized representative under the WDR
- Oversees the CCTV inspection and condition assessment of the system
- Investigates SSOs and reviews the reports prior to approval of the Public Works Director
- Oversees collection and maintenance of relevant information for establishing and prioritizing SSMP activities
- Oversees illustration of SSO trends, including frequency, location, and volume
 - Assesses the success of the Operation and Maintenance Program
- Participates in the development of:
 - Emergency Overflow Response Plan
 - Preventive Maintenance Program
 - FOG Program
 - Sewer System Rehabilitation Plan
 - Design and construction standards and specifications
 - Procedures and standards for inspection and testing

Street Supervisor, Jerry Mestas, (714) 240-7629

- Oversees CCTV inspection and condition assessment of the system
- Prioritizes maintenance activities
- Oversees routine preventive operation and maintenance work by staff and contractors
- Schedules regular maintenance, system cleaning, inspection, and problem area cleaning activities
- Provides and arranges training for staff on a regular basis in collection system operations, maintenance, and monitoring
- Determines that contractor's staff is adequately trained
- Provides equipment and replacement parts inventories

- Identifies critical replacement parts
- Documents spill response activities
- Prepares reports
- Submits reports to appropriate agencies
- Directs correction of overflows
- Provides adequate operation and maintenance of facilities and equipment through Maintenance Services Department and contractors including:
 - Regular cleaning of the system
 - Scheduled cleaning of known problem areas
 - Pump station maintenance

Maintenance Workers

- Participate in:
 - Routine preventive operation and maintenance work along with contractors
 - CCTV inspection and condition assessment
 - Collection and maintenance of relevant information for establishing and prioritizing appropriate SSMP activities
 - Illustration of SSO trends, including frequency, location, and volume
 - Training in sanitary sewer system operations and maintenance
 - Preparation and maintenance of equipment and replacement part inventories; identifies critical replacement parts
 - Implementation of the Emergency Overflow Response Plan in response to SSOs

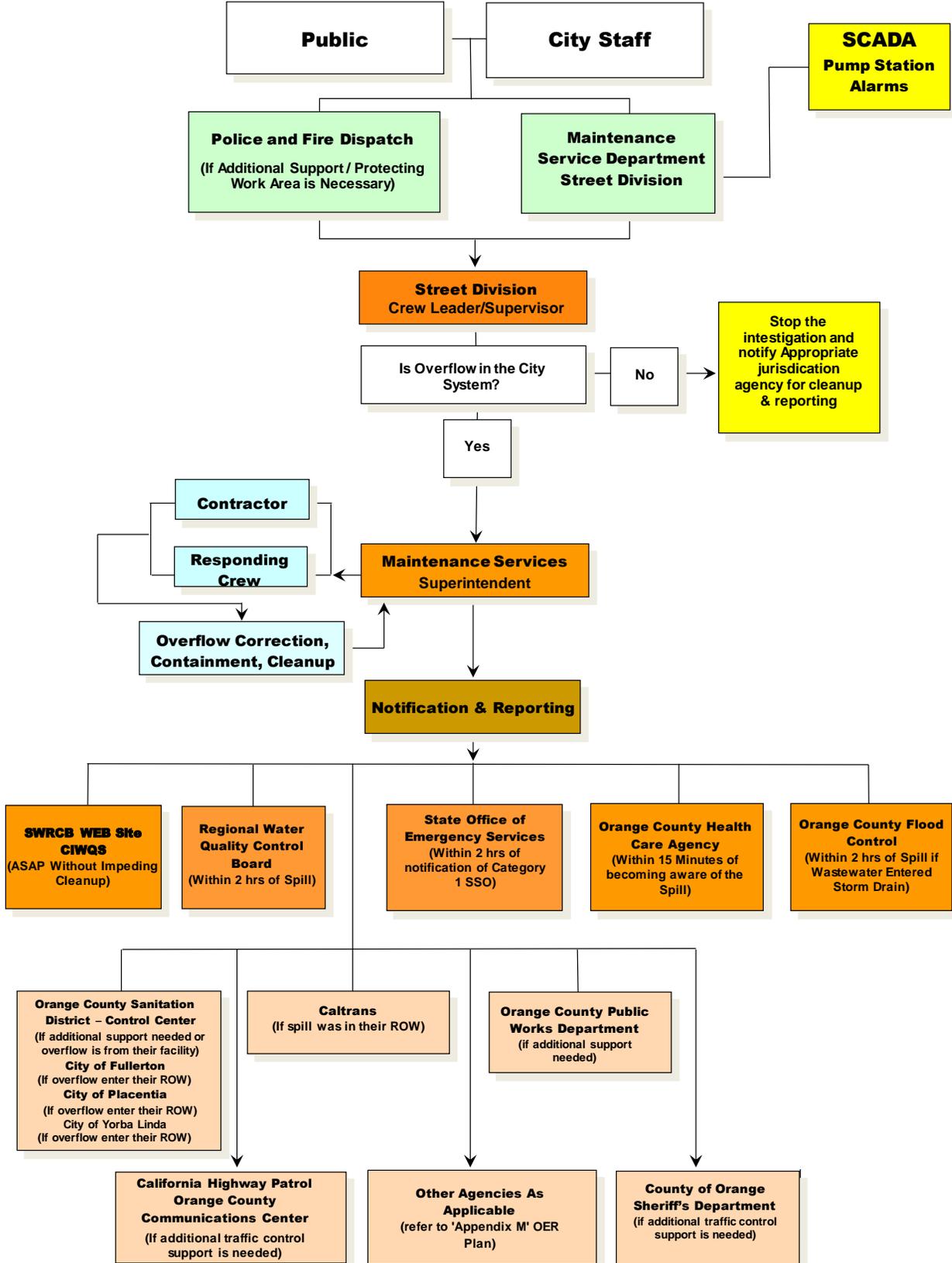
2.3 Chain of Communication for Reporting SSOs

The order requires that all sanitary sewer overflows “that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program” be reported to appropriate regulatory agencies and other potentially affected entities, such as health agencies, stormwater agencies, Regional Water Quality Control Boards, water suppliers, etc.

The SSO Reporting Chart (Figure 2-2) included on the next page illustrates the chain of communication for reporting SSOs beginning from receipt of an SSO notification. The resulting SSO reports are prepared by the **responsible staff person and/or the contractor** who responds to the SSO. The final report is reviewed by the **utilities/sewer maintenance supervisor**, who submits it to upper management and the appropriate agencies.

Overflow events must be reported on the Sanitary Sewer Overflow Report Form included in the Overflow Emergency Response Plan and requires the same information that will need to be entered into the Online SSO Database through California Integrated Water Quality System (CIWQS).

2.3.1 SSO Reporting Procedures Flow Chart – Figure 2-2



2.3.2 Responsible Party's Name Telephone/After Hours or Cell Phone

Maintenance Services Department:

Street/Sewer Maintenance Superintendent Will Wenz – (714) 990-7695/(714) 240-9168

Street/Sewer Maintenance Supervisor Jerry Mestas – (714) 990-7629/(714) 240-9478

Police and Fire Dispatch:

Police Department Dispatch (after hours) – (714) 990-7911

Police Department Watch Commander – (714) 990-7624

Fire Department Battalion Commander – (714) 990-7911

Environmental Programs:

Regional Water Quality Control Board:

Santa Ana Region – (951) 782-4130/(951) 782-4130 (voice mail)

Nick Amini, Chief of Site Cleanup Section – (951) 782-4904/(951) 782-5130

State Office of Emergency Services (OES) – (800) 852-7550

Orange County Health Care Agency:

Normal Hours – (714) 433-6419/(714) 628-7008 (Control1)

After Hours – (714) 433-6000

Larry Honeybourne – (714) 433-6015

OC Public Works Storm Drain/Flood Control – (714) 955-0600/(877) 897-7455

Orange County Sanitation District:

Control Center – (714) 593-7025

City of Fullerton – (714) 738-6897

City of Placentia – (714) 238-2425

City of Yorba Linda – (714) 961-7170

Orange County Public Works Department – (714) 567-6363/(714) 628-7008

California Highway Patrol Orange County Communications Center – (949) 559-7888

County of Orange Sheriff's Department – (949) 770-6011

Caltrans – (949) 724-2607

City Manager Bill Gallardo – (714) 671-4418

Director of Public Works Tony Olmos – (714) 990-7698

City Engineer Steve Kooyman – (714) 990-7657/(714) 319-3220

Building Official Gabe Linares – (714) 990-7769/(714) 471-4900

Public Works Services Yard Receptionist – (714) 990-7691

CHAPTER 3 LEGAL AUTHORITY

3.1 Statutory Authority

Pursuant to the California Government Code, Sections 37100 and 54350, the City Council, as the local legislative body, may by ordinances and resolutions make and enforce all rules and regulations necessary for the administration of the City's Sewer Operations and Maintenance (SO&M) program. Such actions include, but are not limited to, the cleaning, repair, construction, reconstruction, rehabilitation, replacement, operation, and maintenance of the wastewater collection system within the City. Consistent with the law, several ordinances have been enacted by the City Council to govern all aspects of the SO&M program.

BMC Section 13.00.551 expressly adopted by reference the Orange County Sanitation District and Orange County Health Care Agency for review of industrial wastewater permit applications. The legal authorities for the specific areas stipulated in the WDR are discussed below.

3.1.1 Authority to Prevent Illicit Discharges into Sanitary Sewer System

BMC Section 13.00.250 stipulates that all sewer connections must be approved per a City permit. Furthermore, Section 13.00.240 places further stipulations on the substances that can be discharged into the sewer system such that these discharges would not cause the City to violate federal, state, or local regulatory requirements. The BMC references the Orange County Sanitation District (OCSD) Maximum Allowable Local Discharge Limits (Ordinance No OCSD-48) that established the maximum concentrations of certain chemicals in sewer discharges.

3.2 Authority to Require Sewer and Connections Be Properly Designed, Constructed and Maintained

BMC Section 13.00.170 establishes that all sewer pipelines must be constructed in accordance with the City Sewer Standard Plans and Specifications. For non-standard construction items, the City adopted the California Plumbing Code, Uniform Plumbing Code, Standard Specifications for Public Works Construction (Greenbook), and Standard Plans for Public Works Construction (Greenbook).

3.3 Authority to Ensure Access for Maintenance, Inspection, or Repairs

BMC Section 13.00.150 establishes that construction of new structures must not prevent access for inspection and maintenance of sewers. Additionally, users or occupants of a premises that generates wastewater must allow the proper authorities to inspect or repair the required sewer areas upon presentation of the proper credentials.

3.4 Authority Limiting Discharge of FOG and Other Debris that May Cause Blockage

BMC Section 13.00.520 established that no FSE shall release concentrations of FOG in excess of a concentration adopted by the Orange County Sanitation or regulatory agencies such as the State and Regional Water Quality Control Boards. The City's authority to limit the discharge of FOG by individuals not associated with an FSE is established by BMC Section 13.00.570.

3.5 Legal Authority to Enforce Any Violation of Sewer Ordinances

BMC Section 13.00.570 establishes the actions or lack of actions the owner of a FSE could take which could be grounds for a violation notice. The section refers to Chapter 1.04 of the Code for remediation for the FSE Owner's violation.

BMC Section 13.00.572 establishes the City's authority to assess damages caused by any individual's discharge of FOG into the sanitary sewer system. Under the code, the individual is responsible for all costs to clean and repair the City's facilities and the expenses to resume normal operations.

3.6 Legal Authority to Fund Operations & Maintenance of Sewer System

BMC Section 13.00.420 outlines the City Sewer Fund for the purposes of funding necessary sewer improvements.

The codes, standard plans, specifications and other materials cited in this chapter are filed at the office of the Director of Public Works.

CHAPTER 4 OPERATION AND MAINTENANCE PROGRAM

The implementation of a comprehensive operation and maintenance program is a very important component of a wastewater collection agency's responsibility in minimizing the possibility of sanitary sewer overflows, and possible discharge of untreated sewage to surface water courses. A significant additional benefit of an operation and maintenance program is the extended useful life of the existing public assets.

The City's program consists of regular scheduled inspection of the sewer system including manholes, pipes, and lift stations, regular cleaning, repairs, and related activities. This program is structured and carried out to detect potential problems and take corrective actions.

4.1 Sewer Operations and Maintenance Mapping System

The City maintains a GIS based mapping system for its sanitary sewer collection system and sewer lift stations, as well as the storm water conveyance facilities.

The GIS files include information such as:

- Pipes with identification numbers, size, slope, length, upstream and downstream invert elevations
- Manholes with identification number
- Flow direction
- Inverted siphons
- Lift station locations
- Frequent maintenance locations
- Tributary area boundaries
- Connection points to Orange County Sanitation District facilities
- Local storm water facilities
- Drainage flow directions
- Drainage tributary area boundaries

The map of the system illustrating the locations of the sewer and storm water facilities is included as Appendix 'D'.

4.2 Routine Preventative Maintenance and Operation Activities

4.2.1 Sewer Line, Manhole and Lift Station Inspection

Since acquiring a vactor truck and CCTV equipment in 2010, City staff has performed the majority of the required sewer inspection and maintenance services in house. City staff performs closed circuit television inspection (CCTV) of the entire sewer system on an annual basis. Inspection reports including the type and location of any identified deficiencies are generated along with the CCTV inspection recordings for later reference.

Sewer manhole condition is assessed on an annual basis as part of the sewer segment inspection and cleaning. The City utilizes a software package to generate a report of CCTV investigation findings a sample output is provided in Attachment 'I-3'.

The City's Briarwood and Ariovista lift stations are inspected by a City crew on a monthly basis. The La Floresta lift station is in operation, and the City will accept ownership for that station within the next several months. Lift Station Maintenance is provided by Jamison Engineering, 17197 Newhope, Suite J, Fountain Valley, CA 92708, (714) 434-9196.

4.2.2 Drop Manholes, Gas Trap Manholes, and Siphons

There is one drop manhole in the sewer system located at Elm and Sievers Avenues and the change in depth is approximately 5 feet. There is one syphon in the Brea sewer system near Mercury Channel that is inspected on an as-needed basis. There are no gas trap manholes in the sewer system.

4.2.3 Sewer Line Cleaning

The City of Brea Maintenance Services Department staff hydro-cleans the entire sewer collection system annually, which is the industry standard for agencies with comprehensive sewer maintenance programs. The City has one sewer cleaning truck, operated by a two-man crew. The crew and truck cleans and maintains 3,000 to 5,000 feet of sewer per day. Roots are cut and foamed on an as needed basis.

Frequent as scheduled needed. Primary causes for hot spots include roots, fine deposits and fats, oils, grease (FOG) buildup. The City shall consider requiring the installation of grease interceptors for those sewers on the hot spot list that have a repeat history of FOG buildup. Hotspot locations are outlined in Appendix 'E'.

4.2.4 Flow Monitoring

Visual checks for comparison with prior records are conducted during scheduled inspections of manholes and pipelines. Unusual or unexpected changes in flow receive more thorough evaluation and as deemed necessary a flow monitoring device is placed to validate flow patterns over time for the affected sewer drainage area(s).

4.2.5 Vermin and Rodent Control

Vermin and rodent control is performed by a licensed contractor every two years. Chemicals utilized are acceptable to OCSD treatment procedures.

4.2.6 Work Schedule and Documentation

The City currently schedules inspections and cleaning annually utilizing a grid map of the City's jurisdiction. Additional special cleanings or repairs are scheduled as resident or business complaints are received or as hotspots are identified. Work completed is documented via a Microsoft Excel file with relevant work information for later reference as needed.)

4.2.7 Operating Revenues

The City's (2015/16) annual operating budget for the sewer department is \$974,000. An additional \$200,000 is allocated each year for Capital Improvements of structurally deficient pipe segments.

4.3 Rehabilitation and Replacement Program

Sewer facilities assessment and rehabilitation are an integral part of the city's SO&M program. A summary of recent year's capital improvement activities, actions to identify and prioritize system deficiencies (condition assessment), and the programming of short-term and long-term rehabilitation projects are discussed below. Sewer repair and replacement work is contracted out on an as needed basis to the two companies listed below. Work performed includes CIPP repairs.

Pro-Pipe Professional Pipe Services
249 S. Paseo Tesoro
Walnut, CA 91789
(909) 598-9743

RePipe California, Inc.
5525 E Gibraltar
Ontario, CA
(909) 291-4050

4.3.1 Recent Years' CIP Activities

The City has undertaken several CIP improvement activities in recent years to address capacity deficiencies within their system.

- Lambert Road Rehabilitation (Phase 1) from Delta Avenue to Tamarack Avenue (6/30/2014)
- Master Plan of Sewer Upgrade Phase III – Lambert to Imperial near Ariovista Park (6/9/2008)
- Master Plan Sewer Upgrades Phase IV – Lambert to Dalewood Place near Tamarack Park (4/3/2012)
- Master Plan Sewer Upgrades Phase V – Laurel Ave and Cherry Street from Evergreen to Peach Ave (7/19/2012)
- Berry Street and Imperial Highway Sewer Main Replacement Master Plan Sewer Upgrade Phase VI – S of Lambert Rd. to Imperial Highway (10/10/2013)
- Alley East of Brea Blvd S/O Imperial Highway (10/28/2014)
- Sewer Improvement on Alley West of Brea Blvd S/O Imperial Highway (10/28/2014)
- Sewer Improvement of Parking Structure No. 1 (10/28/2014)

There have also been two housing development projects and improvements to the sewer system associated with the Birch Hills Golf Course. These projects have extended the City's sewer service system.

- Birch Hills Golf Course Sewer and Water Improvements (4/3/2012)
- Planning Area 1 Tonner Hills Tract No. 16977 Sewer Plans (4/30/2008)
- Sewer and Water Improvements for TTM 16934 – La Floresta (7/8/2011)

4.3.2 Identification and Prioritization of System Deficiencies

Between 1999 and 2001 approximately 78 percent of the City's existing sewer system was CCTV inspected. From those inspections, each pipe segment was assigned a condition grade or severity rating and a priority was assigned for the replacement of particular segments. The evaluation criteria and results of that review are outlined in Appendix 'F'. Many of the identified structural deficiencies have been addressed utilizing Cured in Place Pipe (CIPP) linings. The City maintains a log of segments that have been lined and the most recent update as of March 2016 is provided in Attachment 'F-1'.

City staff currently perform annual CCTV investigation of its entire sewer system. This provides for more frequent updating of deficiencies in the sewer network. A list of the identified spot repair locations is provided in Attachment 'I-3'.

4.3.3 Short- and Long-Term Rehabilitation Action Plans

As previously described, the scheduled CCTV inspection and evaluation activity will be a key basis in scheduling future rehabilitation projects. The City Council should continue to review future needed CIP projects and adjust sewer rates as needed for funding.

The City of Brea funds sewer related activities through its Sewer Enterprise Fund. In 2006, the City completed a rate study and adopted a new rate structure. The new rate structure includes an operating fund and a capital improvement fund. The sewer fund fully supports the operation and maintenance of the system and compliance with regulatory requirements. The Capital Improvement fund supports all capital sewer projects. The established rate structure also includes an annual increase to account for inflation impacts.

4.4 Training for Field Operations Personnel and Contractors

Currently, the City maintenance staff receives on the job training that includes training for safety, lockout-tag out, traffic control, confined space entry, and driver safety. The City supplements in house training with the California Water Environment Association's (CWEA) training program. The California Water Environment Association's (CWEA) Training Program is the current industry standard for training and certifying sewer collection system maintenance staff. This program provides four Grades of certification, each of which is appropriate for the level of knowledge and responsibility needed for maintaining the collection system.

City Operations staff also receives confined space and SSO response training annually. Confined space training is required for all personal who work in confined or hazardous spaces and is provided by the Occupational Safety and Health Administration (OSHA) as well as other certified organizations. Field supervisors hold tailgate meetings on a monthly basis for more frequent updates of current field procedures. A sample employee training record form is included in Appendix 'I'.

4.4.1 Contractor Training

City and contractor staff that perform flow monitoring, CCTV inspection, maintenance, repair, or replacement on the collection system, including lift stations and force mains are required to possess adequate levels of training and certifications appropriate for their duties. The contract documents requesting services of an outside contractor shall specify licensing and certification requirements for performing the work. Outside contractors shall be required to submit resumes and training program certifications to the City prior to award of a contract.

4.5 Equipment Maintenance and Replacement Policy

The City has a comprehensive equipment maintenance program. Equipment is regularly checked, adjusted, repaired or replaced as scheduled. However, major fixed assets are replaced when they meet or exceed the City's established fixed assets replacement criteria based on equipment age, mileage, hours of use, repair history, safety, etc. Replacement of or additions to major assets are done through the City's annual budget process. A list of the City's current equipment and spare parts can be found in Appendix 'K'.

CHAPTER 5 DESIGN AND PERFORMANCE PROVISIONS

5.1 Design and Construction Standards and Specification

The City has adopted the following design standards:

- Brea Design Standards for Sewer Facilities
- California Plumbing Code.
- Uniform Plumbing Code
- Standard Plans and Standard Specifications for Public Works Construction (Greenbook - latest edition)

Project specific plans and technical specifications are required for each project, which are prepared by California Registered Civil Engineers. Testing and inspection requirements are detailed in the project specifications, in addition to the City's Design Standards for Sewer Facilities.

Plans are submitted to the DPW for thorough review and professional engineering precepts and practices are used in an iterative plan development/review process to ensure the sewer will function properly over time. Permits for construction of any public sewer infrastructure are issued once the functional design and adequate capacity of the public sewer system has been analyzed.

5.2 Procedures and Standards for Inspection and Testing

The City provides inspection services for the installation of new and rehabilitated public sewer facilities. City inspectors (staff or contract) are required to be well trained in pipeline and lift station construction, and to attend training classes and educational seminars to be familiar with advancements in the industry. Inspectors are also provided with adequate materials to perform their jobs, including the Standard Specification for Public Works Construction, the Standard Plans and the Public Works Inspectors Manual, etc.

The City requires two specific actions prior to final approval and acceptance of sewer improvements as part of the city maintained system. These are: all newly constructed sewer lines are to be CCTV inspected, logged and then reviewed by city personnel, and the preparation and submittal of "As-Built" (record) plans of completed projects.

CHAPTER 6 OVERFLOW EMERGENCY RESPONSE PLAN

Definitions

Category 1 SSO—A discharge of any volume of untreated or partially treated wastewater from a sewer that reaches surface water or a Municipal Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system.

Category 2 SSO—A discharge of 1000 gallons or greater of untreated or partially treated wastewater from a sewer that does not reach surface water or a Municipal Storm Sewer System (MS4) unless the entire SSO discharged to the storm drain is recovered and disposed of properly.

Category 3 SSO—All other discharges of untreated or partially treated wastewater resulting from a sanitary sewer failure or flow condition.

6.1 Overflow Response Procedure

The Overflow Response Procedures (Appendix 'J') presents the City of Brea strategy for:

- Receiving reports of sanitary sewer overflows and providing the information to appropriate parties for action
- Mobilizing labor, materials, tools and equipment appropriate for the nature and magnitude of the overflow
- Containment of the overflow
- Eliminating the cause of the overflow
- Conducting clean-up of the impacted area
- Preparing reports for submittal to jurisdictional agencies and other interested parties

The City's target goal response time for an SSO is 30 minutes or less.

6.1.1 Incoming Calls and Response

City Maintenance Services Department personnel responds to all reports of sewage spills, on public or private property, and take actions to prevent or reduce the spills from reaching storm drains, flood control channels, or waters of the State, in accordance with State Waste Discharge Requirements. Figure 2-2 presents the City's SSO Reporting Flow Chart.

A sewer overflow may be detected and reported by either city employees or the general public. If a sewer overflow occurs during normal working hours, the incoming call is routed to the Maintenance Services Department at (714) 990-7629. The Maintenance Services Supervisor is immediately contacted by radio and dispatches both field crews and crew leaders to respond to the SSO report. After containment and cleanup, the spill event data is recorded on the CIWQS form included in Attachment 'J-1'.

A Maintenance Services Department Supervisor and a field crew are on-call 24 hours per day, 7 days per week to respond to a sewer overflow that occurs outside of normal working hours. The City's 24-hour Police and Fire Dispatch receives incoming calls outside of normal working hours either by direct line at (714) 990-7911 or through the 911 operator.

The Police and Fire Dispatch has immediate radio and cell phone access to field crews during both normal working hours and after-hours to contact on-call employees in the field or at home. The Police Dispatch Operator contacts the on-call Maintenance Services Department Supervisor and field crew when a sewer overflow is reported. Fire Department personnel are generally first responders to after-hour calls.

6.1.2 Regulatory Agencies Notification and Timeframe

Table 6-1

Type of Spill	Initial Notification Timeframe*	Agency to Notify by Phone	Report Timeframe
<p>Category 1 – Discharges of untreated or partially treated wastewater resulting from Enrollee’s sanitary sewer system failure or flow condition that:</p> <p>A. Reach surface water and/or reach a drainage channel tributary to a surface water; or</p> <p>B. Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly (Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).)</p> <p>Greater than or equal to 1,000 gallons, notify the OES and obtain a notification control number</p>	As soon as practical within 2 hours of becoming aware	OES ¹ OCHCA ² OC Public Works ³ and City	<p>Submit draft report within 3 business days of becoming aware of the SSO</p> <p>Certify within 15 calendar days of SSO end date</p> <p>SSO Technical Report: Certify within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater is spilled to surface waters</p>
<p>Category 2 – Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.</p>	As soon as practical	OCHCA ²	<p>Submit draft report within 3 business days of becoming aware of the SSO</p> <p>Certify within 15 calendar days of SSO end date</p>
<p>Category 3 – All other discharges of untreated or partially treated wastewater resulting from Enrollee’s sanitary sewer system failure or flow condition.</p>	As soon as practical	OCHCA ²	Submit certified report within 30 calendar days after the end of month in which SSO occurred
<p>Private lateral – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to Enrollee’s sanitary sewer system or other private sewer assets.</p>	As soon as practical	OCHCA ² OC Public Works and City ³	PLSDs that Enrollee becomes aware of may be voluntarily reported to the CIWQS Online SSO Database

Notes: *Updates should be provided as necessary; ¹ Water Code section 13271; ² Health and Safety Code; ³ NPDES Stormwater Regulations and local Water Quality Ordinance.

Normal Hours	After Hours
OCHCA (Please call down the list until someone is contacted) (714) 433-6419 (Office Support Staff) Larry Brennler (714) 433-6280 Dan Yokoyama (714) 433-6288 Juan Anzora (714) 433-6287	Control 1: (714) 628-7008 (will contact OCHCA on-call staff).
RWQCB Santa Ana Region (951) 782-4130 Najah Amin (951) 320-6362	RWQCB: (951) 782-4130 (voice mail) OES: (800) 852-7550
OES (Office of Emergency Services) (800) 852-7550	24 hours
OC Public Works (714) 955-0600 (storm drain/flood channel facility owners) (877) 89-SPILL (897-7455) 24 HR. Hotline	Control 1: (714) 628-7008 (specify water pollution incident notification)
Water Quality Monitoring Sierra Analytical Labs, Inc. (Rick Forsyth) (714)-348-9389	(714) 348-9389; sierralabs@sierralabs.net; www.sierralabs.net/sierra.html
Water Quality Monitoring Associated Laboratories (714) 771-6900	(714) 771-6900; info@associatedlabs.com; www.associatedlabs.com

6.1.3 Sewer Overflow Response Procedures

Refer to Appendix 'J' for the City's response procedures to contain and prevent the discharge of untreated or partially treated wastewater to waters of the United States.

6.1.4 Sewer Overflow Equipment

The City maintains much of the SSO response equipment that it may need in house. The City has an emergency response vehicle and a vactor truck. The emergency response truck is restocked each day. The City maintains several private contractors for equipment such as portable sewer pumps that it does not currently have in house.

6.1.5 Outside Support to City

The City contacts the Orange County Sanitation District Emergency Control Center or the following on-call contractors, if additional manpower and/or equipment are needed to supplement the City crew working on SSO containment:

On-Call Contactors		
OC Sanitation District Emergency Control Center (714) 593-7025	Pro Pipe Nick Herrera Supervisor 249 S Paseo Tesoro Walnut, CA 91789 (909) 598-9743 (800) 386-1497 (714) 920-1648 NHerrera@hswcorp.com	United Pumping Service, Inc. Pamela Heintz Sales Associate 14000 Valley Blvd City of Industry, CA 91746 (626) 961-9326 pjheintz@unitedpumping.com http://www.unitedpumping.com/

6.1.6 Monitoring

Per the SWRCB 2006 WDR, the City will perform adequate sampling to determine the nature and impact of a SSO. The City Maintenance Operations Manager will evaluate the need to perform water quality sampling depending upon the volume and extent of a Category 1 SSO.

For Category 1 SSOs where 50,000 gallons or more are spilled, water quality monitoring must be performed and submitted as part of a SSO technical report to be submitted to CIWQS within 45 calendar days of the end of the event. This report necessitates a more detailed analysis to determine the cause and volume of the SSO and methods used to terminate the spill. Refer to Appendix 'B' pages 7-8 for the requirements for an SSO technical report.

6.1.6a Water Quality Monitoring

Results from the water quality monitoring must be included in the submitted technical report and will:

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

6.1.7 Reporting

As previously noted, **Figure 2-2** illustrates the chain of communication for reporting SSOs from receipt of an SSO notification. SSO data is recorded by the supervisor in the field with input from the City crew and/or contractor that responds to the SSO. Specific field data for the overflow is reported on the CIQWS Sanitary Sewer Overflow Report Form. The CIQWS SSO final report is reviewed and approved by the Maintenance Services Superintendent. Upon approval, the CIQWS SSO final report is submitted to the SWRCB.

Category 1 SSOs

Category 1 SSOs will be reported to CIWQS, the RWQCB's Online SSO System as soon as possible, but no later than three business days after the City becomes aware of the SSO. A final certified report will be completed through the RWQCB's Online SSO

i. City of Fullerton if SSO is in its jurisdiction or is likely to enter its jurisdiction:

Maintenance services (714) 738-6897
Police dispatch (714) 738-6800

j. City of Placentia if SSO is in its jurisdiction or is likely to enter its jurisdiction

Public works (714) 993-8245
Police dispatch (714) 993-8164

k. City of Yorba Linda if SSO is in its jurisdiction or is likely to enter its jurisdiction

Public works (714) 961-7170

l. Orange County Sanitation Districts if SSO is from a Sanitation Districts' facility or if additional manpower or equipment is needed:

Emergency control center (714) 593-7025

Category 2 SSOs

Category 2 SSOs will be reported to RWQCB's CIWQS Online SSO System as soon as possible, but no later than three business days after the City becomes aware of the SSO. A final certified report will be completed through the RWQCB's Online SSO System within 15 calendar days of the conclusion of SSO response and remediation. The City of Brea will report Category 2 SSOs to all of the same agencies listed for Category 1 SSOs, except Orange County Public Works and the California State Office of Emergency Services.

Category 3 SSOs

Category 3 SSOs will be reported to the RWQCB's CIWQS Online SSO System as soon as possible, but no later than 30 days after the end of the calendar month in which the SSO occurred. The City of Brea will report Category 3 SSOs to all of the same agencies listed for Category 1 SSOs, except Orange County Public Works and the California State Office of Emergency Services.

Private Lateral Sewage Discharges (PLSD)

Per the General Statewide WDR, private lateral sewage discharge reporting is based upon the Enrollee's discretion. The City of Brea Operations and Maintenance staff may, at their discretion, report the private lateral sewage discharges to the RWQCB's CIWQS Online SSO System. If reported, the information should be updated in the same timeframe as Category 2 SSOs.

The City of Brea will report private lateral SSOs to all of the same agencies listed for Category 1 SSOs, except the California State Office of Emergency Services.

No Sanitary Sewer Overflows during Calendar Month

If there are no SSOs during a calendar month, a statement must be filed through the CIWQS Online SSO System within 30 days certifying that there were no SSOs for the previous month. The City shall certify a “No Spill” report if the only SSO event that occurred was a PLSD.

6.1.8 Public Education – Instructions for Reporting SSO

Instructions for reporting SSOs will be added to the City's website. The following sewer overflow notice is recommended:

“The City of Brea Maintenance Services Department cleans the City sewer system on an annual basis. To report a sewer concern (i.e., manhole overflow, odor, etc.), please contact the Maintenance Services Department at (714) 990-7629 during regular business hours or contact Brea Police and Fire to report after-hours emergencies at (714) 990-7911.”

Future public education efforts will also include this notification information.

6.1.9 Sewer Lift Station Alarms

Arovista Park Station

The Arovista Park Pump Station is a submersible pump station built in 2005. It relieves a deficient 15-inch diameter sewer in the Fullerton Drainage Region. It lifts the portion of the wastewater that exceeds the capacity of the existing 15-inch sewer along the west side of the Brea Creek Channel into a new 15-inch relief sewer at a higher elevation, located in Mulberry Avenue, Acacia Street, Walnut Avenue, and Juniper Street, to a connection to OCSD's Fullerton-Brea Interceptor.

The lift station has a sonic transducer level control system (Milltronics Hydroranger), a backup float switch at high level and a high level gravity overflow outlet from the lift station wet well to the gravity sewer. The high level alarm is set at elevation 314.78 feet. The lift station has an automatic dialer to transmit pump seal failure and high level alarm conditions to City staff. If a high level or pump failure is detected, the automatic dialer will call the Brea Service Center, and both the Street Supervisor and Street Superintendent cell phones and home phones during business hours, as well after normal business hours. The lift station also has a portable generator connection and a manual transfer switch.

In the event of a power outage, a City crew will mobilize and connect a trailer-mounted diesel generator to provide power to run the pumps.

Briarwood Pump Station

The Briarwood Station is located on Briarwood Drive in the southwest corner of the City. It is a submersible pump station that serves 11 homes. Three homes are located on South Puente Street just north of Briarwood Drive and eight homes are along Briarwood Drive just west of South Puente Street. The pumps are housed within a 5-foot diameter

sewer manhole. Sewage is discharged through a 4-inch diameter cast-iron force main. The alarm system for this facility consists of a flashing red light that indicates a high level or pump failure alarm. Local residents call Brea Police and Fire Dispatch to notify the City of an alarm at this station.

La Floresta Pump Station

The La Floresta Station is located in the southeast portion of the City and serves approximately 647 homes. It is equipped with two submersible vortex pumps that are housed in an 8-foot square by 28-foot deep wet well. Effluent from the lift station is discharged through a 6-inch force main. The lift station is equipped with an 80-kilowatt sound-attenuated diesel-driven generator and automatic transfer switch. Ownership of the lift station has not yet been formally transferred to the City. However, the lift station is currently in operation and flows discharge to the City sewer system. The lift station is equipped with an alarm system to send high level warnings to the cell phones of City sewer operations supervisors.

Appendix 'H' contains an exhibit that illustrates the three lift stations and their tributary areas.

CHAPTER 7 FATS, OILS, AND GREASE CONTROL PROGRAM

7.1 Public Education and Outreach Program

The City of Brea provides pamphlets and educational materials regarding proper FOG management and disposal to all food service establishments (FSEs). City staff provides a public service announcement DVD for kitchen best management practices during FSE grease interceptor inspections. The City maintains material on their website and in City publications to inform the general public of proper FOG disposal methods.

7.1.1 Public Education and Outreach Program Components

The City has developed a public education and outreach program to educate the general public on sewer management. This program consists of:

- Attending/hosting community events
- Presenting general knowledge at schools and other appropriate locations
- Keeping the City's website up-to-date with the provisions of the City's programs
- Providing educational material and mail-outs such as the City newsletter
- Running media ads

7.1.2 City Storm Water Program Webpage

The City plans to utilize and expand the Storm Water Outreach Program to educate the public on the proper disposal of FOG. For educational purposes, the City shall incorporate the provisions of the FOG Control Program with the Storm Water Outreach Program whenever possible. The City shall make all material regarding the proper disposal of FOG available on its website at <http://www.ci.brea.ca.us/Index.aspx?NID=415>.

7.2 Disposal Method and Schedule for FOG Generated within System Service Area

Solidified FOG found in the public sewer system during scheduled cleaning operations or clearing of a blockage are trapped, collected and taken to designated dump sites. These and other solid debris collected from the system are taken to designated FOG disposal facilities (usually OCSO facilities by prior arrangement). FOG in liquid form is flushed down by hydro jetting to receiving treatment facilities for disposal.

7.3 FOG Legal Authority

Title 13 Chapter 13 Sewer of the City of Brea Municipal Code contains City sewer rules and regulations. Chapter 13, Article V Fats, Oils and Grease Management and Discharge Control establishes rules and regulations for FOG control. Chapter 13, Article VI Legal Authority and Penalties grants the City the legal authority and enables the City to regulate discharge of FOG enforcement provisions to ensure compliance with statewide General Waste Discharge Requirements.

The City of Brea FOG Ordinance also stipulates that FSEs must obtain a FOG Wastewater Discharge Permit (Sections 13.00.521 & 13.00.530), install an appropriate grease interceptor, and maintain logs of their maintenance and cleaning activities. These requirements are in line with those of Orange County Sanitation District's Ordinance No. OCSD-25.

7.4 Design Standards and Installation Requirements for Grease Removal Devices and Maintenance, BMP, Recordkeeping, and Reporting Requirements

7.4.1 Design Standards

Section 13.00.540 of the BMC requires installation of grease traps and grease interceptors when determined necessary by the City. Sizing of grease control devices shall be per BMC 13.00.540 and 40 Code of Federal Regulations §403.5.

7.4.2 Maintenance and BMP Requirement

FSEs shall regularly maintain their grease interceptors per Section 13.00.543 that states "Grease interceptors and other grease control devices must be cleaned, maintained, and have FOG removed and disposed of in a proper manner at regular intervals and in accordance with the FOG Control Manual." Per Section 13.00.543, FSEs shall inspect their grease interceptors and document the amount of FOG and solids that has accumulated in the interceptors. The minimum maintenance frequency ranges from once every 20 days to once every 90 days depending upon the type of establishment.

FSEs shall be required to take monthly samples from both chambers of their grease interceptors. FSEs may use measuring devices such as Dip Stick Pro and Sludge Judge to measure the thickness of FOG and the settled solids that have accumulated in the interceptor. For recording purposes, the FSEs shall take full length pictures of the core sample and log the appropriate thicknesses for each sample.

The FSEs shall fully clean their grease interceptors:

- Once every three months
- When the volume of the accumulated FOG and solids reaches 25% of the total liquid depth of the grease interceptor – whichever occurs first (cleaning interval shall not exceed six months under any condition)

The cleaning of the grease interceptor must be performed in accordance with federal, state, and local laws by a waste hauler with a license from the Orange County Health Care Agency, Environmental Division.

7.4.3 Recordkeeping

The FSE shall keep a log that details the cleaning, repair, inspection, accidental spill, and disposal events for the grease interceptor. These logs shall be kept by the FSEs for a minimum of three years, and the FSEs shall make these documents available to the City when requested. The records shall include all manifests, receipts, and invoices for all cleaning, repairs, and inspections; FOG, solids, and liquids removed from the grease interceptor; waste hauler; and disposal site. Appendix 'J' contains several records assistance forms, including a sample FOG Application and forms to inventory kitchen equipment, FOG sources, and employee training log.

7.5 Authority to Inspect Grease-Producing Facilities, Enforcement Authorities, and Evidence of Adequate Staffing to Inspect and Enforce FOG Ordinance

The FOG Ordinance establishes the City's authority to inspect FSEs for compliance with the FOG manual. The operators of the FSEs shall allow City and other regulatory agencies to inspect the FSEs to confirm compliance with the FOG Ordinance, as well as the NPDES Permit or other applicable rules and regulations. (Section 13.00.560).

The City has two trained environmental specialist staff members trained to carry out FSE inspections. As part of FSE inspections, City staff collects FSE self-monitoring logs, checks the grease interceptor, and provides pamphlets and DVDs regarding FOG discharge prevention.

Upon City request, FSEs are required to provide "manifests, receipts, and invoices relating to cleaning, maintenance, and inspection of the grease control devices or interceptor" (BMC Section 13.00.560).

As deemed necessary, the City has the legal authority to require FSEs to enter a Compliance Schedule Agreement. If necessary, the City may suspend or revoke a permit when FSEs are not meeting the required standards. When required, the City may also physically terminate sewer and water services to any FSE. The City also has the power to enforce fines or imprisonment for violations of severe nature.

7.6 Cleaning Schedule for Identified FOG-Prone Sewer Segments

While FOG was identified as a contributing factor to only 6% of SSO events over the past six years, ongoing maintenance of FOG-prone areas is critical to minimizing FOG-related SSO. The City maintenance crews clean currently known Enhanced Maintenance Areas (Hotspots) at a minimum of once every 30 days as described in the Operations and Maintenance component of this report (Section 4). A list of the City's current Hotspots is provided in Appendix 'E'.

These Enhanced Maintenance Areas are typically cleaned by hydro jetting and rodding or cutting of roots. Those portions of the system found to have persistent FOG problems are inspected and cleaned more frequently, depending upon the magnitude of the problem. Segments of the collection system with persistent FOG problems are referred to the DPW for additional evaluation and corrective actions.

7.7 Source Control Measures Developed and Implemented for Enhanced Maintenance Areas

Each Enhanced Maintenance Area cause and condition is not the same. For each identified problem location, the means of effective maintenance is noted on the respective Enhanced Maintenance Areas list for review and regular follow-up action by the sewer maintenance crews. The activities can be amended as needed.

7.8 Some Best Management Practices for Fats, Oils, and Grease

Per Brea Municipal Code Section 13.00.542, FSE are required to implement Best Management Practices (BMP's), including recordkeeping and employee training as specified in the City FOG manual. Refer to Appendix 'L' for a sample list of recommended Kitchen Best Management Practices.

CHAPTER 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

8.1 System Evaluation

The City's system capacity model was most recently updated in 2009. The methodology and results of the capacity study are outlined in Appendix 'G'. The City has implemented several of the most critical improvements since completion of the capacity analysis.

The City's latest Sewer Master Plan was updated in 2009 and identifies Citywide improvements over the next 20 years. The Sewer Master Plan contained a Capital Improvement Program that includes recommended projects to increase sewer system capacity. Since the Sewer Master Plan was published, the City has completed construction of all phases of sewer improvements designed to increase the capacity of the Brea Canyon Channel trunk sewer along Brea Creek in the Fullerton Drainage Basin. Additionally, the City has upsized segments on Berry Street as well as Alder street. These improvements represent approximately 33% of the proposed upgrades recommended by the sewer capacity analysis completed in 2009.

8.2 Design Criteria

City's Engineering Division is the first line of defense in ensuring that the public sewer infrastructure is adequately sized, correctly designed, and reasonably maintainable. The DPW's legal authority to perform this important task is set forth in Chapter 3 of this report. For specifics on design and performance provisions, refer to Chapter 5.

8.3 Capacity Enhancement Measures

The City's most recent Capital Improvement Program document has programmed funds for several sewer segments as shown in Attachment 'N-1'. Since the projects included in the Capital Improvement Program do not cover all the remaining capacity deficient segments, the City will prioritize improvements to the sewer segments with the most critical capacity condition as detailed in Appendix 'G' Table 6.

The City also requires completion of a sewer capacity study by a registered engineer prior to giving approval for projects that can affect the capacity of the public sewer system. A completed study will analyze the existing system's capacity and will set forth mitigation requirements for the proposed project to ensure adequate capacity. The study will also justify sizing of proposed lines to accommodate the peak flows from all areas tributary to the mainline sewer under consideration or pumping station, under current conditions and in the future. The approved capacity study is referenced directly by the city plan checker when design plans for the new infrastructure are submitted to confirm adequately designed capacity.

8.4 Capital Improvements Program Schedule

Scheduling for both operating and capital improvement program (CIP) projects is contained in Appendix 'N'.

The cost to complete the remaining capital improvements is approximately \$5.7 million to eliminate the capacity deficiencies in the existing system as well as address future capacity deficiencies due to future demand growth.

CHAPTER 9 MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

9.1 Monitoring

Relevant data on all work done in the implementation/execution of the SSMP program shall be documented in the Maintenance Management System (MMS) and used in preparing the monthly summary of workload indicators (see Appendix 'O'). These data are used in the evaluation of the effectiveness of the overall program.

9.2 Program Effectiveness Evaluation

The effectiveness of the program shall be monitored and tracked through the City Performance Measure Indicators (See Appendix 'P'). Examples of key indicators are noted below:

- Total number of overflows in each year
- Total number of overflows equal to or greater than 1,000 gallons discharged or reaching the Waters of the United States in each year
- Overflow response time for each event
- Reduction of repeated incidents of overflow at the same location
- Reduction in number of overflows caused by flows exceeding the capacity of the collection system

9.3 Program Modifications

The City shall assess monthly the effectiveness of its program in order to minimize the possibility of SSOs and make modifications to the overflow prevention program as appropriate. The City may:

- Adjust the Hot Spot cleaning program
- Revise criteria
- Expand the scope of the FOG Program
- Adjust the notification and communications activities
- Modify the design and construction standards
- Revise the Capital Improvement Program
- Adjust the rate structure

9.4 SSO Location Mapping and Trends

9.4.1 Mapping of SSO Frequencies

The monthly numbers of SSOs are also depicted in charts and graphs (Appendix 'E'). A map of past SSO events recorded on the CIWQS was prepared and is included as Attachment 'E-1'. The graphs are used to identify SSO trends and to evaluate overall SSMP program success by comparing the results to preceding years and with results from other similar sewer agencies.

9.4.2 SSO Trends

Approximately 70% of the SSOs that have occurred over the past six years have been the result of debris, rags, or trash in the sewer system. SSOs of this nature can be prevented or at least reduced through an extensive public outreach program to minimize the amount of solids that do not belong in the sewer system. The City currently implements several public outreach efforts to educate the public on this matter. But since debris/rags account for a large percentage of SSO causes, particularly between 2013 and the 2016, it is recommended that the City document the event locations for correlation with its public outreach efforts and for updating its program as needed to reduce the incidence of these types of overflows.

9.5 Record Keeping

The City shall maintain records of the SSMP implementation for a minimum of five (5) years and make these records available upon request from the Water Boards:

9.5.1 General Records

These shall include records of maintenance, cleaning, and other actions to address all reasonable system deficiencies to reduce the likelihood of an SSO event in compliance with the State WDR.

9.5.2 SSO Reports

These shall include reports and records obtained before, during cleanup, and following a SSO event:

- Complaint records (regardless of whether or not the complaint was tied to a later SSO)
- Records of response to SSO event including spill cleanup, notification of the public, and actions taken to prevent a future SSO.
- Records of how volumes discharged and (if applicable) recovered were calculated
- Records documenting all changes to the SSMP since the previous certification.
- Electronic Monitoring records for documenting SSO's and/or estimating the volume discharged including:
 - Supervisory Control and Data Acquisition (SCADA) systems
 - Alarm system(s)
 - Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates, and/or volumes

CHAPTER 10 SSMP PROGRAM AUDITS

10.1 Program Audit

The City shall conduct periodic internal audits and prepare a report. At a minimum, these audits must occur every two years. The audit will focus on evaluating the operational and cost effectiveness of the SSMP, as well as compliance with all elements of the SSMP. The audit will include:

- Whether and spill occurred from its system
- Cause of the spill
- Identification of any deficiencies in the SSMP
- Steps taken to remediate any identified deficiencies
- Documentation of interviews with key responding City personnel and any contractors utilized
- Recorded notes of operational observations, especially of each SSO event
- Records of related equipment inspections
- Findings of all reviews of related records
- Capital improvement projects that have been implemented
- Next year's capital improvement program

The most recent report of the audit must be kept on file in the office of the City Clerk, the DPW Office, and the field maintenance yard site. These audit reports do not need to be submitted to the SWRCB, but must be made available upon request.

10.2 Plan Certification

The SSMP shall be certified by the City Manager or authorized representatives to be in compliance with the requirements set forth in the WDR and be presented to the City Council for approval at a public meeting. The City's authorized representative must also complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the signed form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

10.3 Plan Modification and Recertification

The SSMP must be updated at a minimum of every five years to keep it current. When significant amendments are made to any portion or portions of the SSMP, it must be resubmitted to the City Council for approval and recertification. The recertification shall be in accordance with the certification process described in Section 10.2 above.

CHAPTER 11 COMMUNICATION PROGRAM

11.1 Communication

The City must provide all stakeholders and interested parties, the general public, and other agencies with status updates on the development and implementation of the SSMP and consider comments made by them. The City must also utilize media such as letters, brochures, newsletters, annual reports, utility notices/bills, notices in newspapers, and the City's home web page to convey this information.

The City will communicate on a regular basis with interested parties on the implementation and performance of its SSMP.

11.2 SSMP Availability

Copies of the SSMP will be maintained in the City Clerk's office, the local library, and all DPW maintenance yards. In addition, the SSMP will be posted on the City's web page. The document shall also be made readily available to the RWQCB Region 8 representatives upon request and to the operators of any collection system or treatment facility downstream of the City sewer system.

APPENDIX 'A'

Waste Discharge Requirements (Order No. 2006-0003-DWQ)

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**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as “State Water Board”, finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as “Enrollees”.
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
 - (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (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 SSOs, as well as mitigate any SSOs that do occur.
- (ii) **Organization:** The SSMP must identify:
 - (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
 - (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).
- (iii) **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.
- (iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:
- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
 - (b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
 - (c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
 - (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

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

(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; and
 - (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.
- (vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:
- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
 - (b) A program to ensure an appropriate response to all overflows;
 - (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
 - (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
 - (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
 - (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

(vii) **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. This plan shall include the following as appropriate:

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

(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 an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

- (b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
 - (c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
 - (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.
- (ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:
- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
 - (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
 - (c) Assess the success of the preventative maintenance program;
 - (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
 - (e) Identify and illustrate SSO trends, including: frequency, location, and volume.
- (x) **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.

- (xi) **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.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

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. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
Design and Performance Section D 13 (v)				
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee's offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30 days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

APPENDIX 'B'

Amended Monitoring and Reporting Program (No. 2013-0058)

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STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

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

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at <http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/ssol/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems" (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that: <ul style="list-style-type: none">• Reach surface water and/or reach a drainage channel tributary to a surface water; or• Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> • Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> • Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> • Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> • SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. REPORTING REQUIREMENTS

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

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

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

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13

Date



Jeanine Townsend
Clerk to the Board

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APPENDIX 'C'
WDR 'Fact Sheet'

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FACT SHEET

STATE WATER RESOURCES CONTROL BOARD

ORDER NO. 2006-0003

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State Water Resources Control Board (State Water Board) adopted Resolution 2004-80 in November 2004, requiring staff to work with a diverse group of stakeholders (known as the SSO Guidance Committee) to develop a regulatory mechanism to provide a consistent statewide approach for reducing Sanitary Sewer Overflows (SSOs). Over the past 14 months, State Water Board staff in collaboration with the SSO Guidance Committee, developed draft statewide general waste discharge requirements (WDRs) and a reporting program. The WDRs and reporting program reflect numerous ideas, opinions, and comments provided by the SSO Guidance Committee.

The SSO Guidance Committee consists of representatives from the State Water Board's Office of Chief Counsel, several Regional Water Quality Control Boards (Regional Water Boards), United States Environmental Protection Agency (USEPA), Region IX, non-governmental environmental organizations, as well as publicly-owned sanitary sewer collection system agencies. The draft WDRs, reporting program, and associated documents result from a collaborative attempt to create a robust and rigorous program, which will serve as the basis for consistent and appropriate management and operation of sanitary sewer systems.

During the collaborative process, several key issues regarding the draft WDRs were identified. These include:

- Is there a need for statewide collection system requirements?
- Should these systems be regulated under a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the Federal Clean Water Act or under WDRs issued pursuant to the California Water Code (the Porter-Cologne Water Quality Control Act or Porter-Cologne)?
- Should the regulatory mechanism include a prohibition of discharge and, if so, should the prohibition encompass only SSOs that reach surface waters, ground water, or should all SSOs be prohibited?
- Should a regulatory mechanism include a permitted discharge, an affirmative defense, or explicit enforcement discretion?
- Should the regulated facilities include publicly-owned facilities, privately owned facilities, satellite systems (public and private), and/or private laterals?

- Should all SSOs be reported, and if not, what should the reporting thresholds be; and what should the reporting timeframes be?
- How will existing permits and reporting requirements incorporate these new WDRs?
- How much will compliance with these new WDRs cost?

The WDRs and Reporting Program considered the comments of all stakeholders and others who commented on the two drafts circulated to the public. These documents also incorporate legal requirements and other revisions to improve the effectiveness and management of the regulatory program. Following is a discussion of the above issues, comments received on the drafts and an explanation of how issues were resolved.

The Need

As California's wastewater collection system infrastructure begins to age, the need to proactively manage this valuable asset becomes increasingly important. The first step in this process is to have a reliable reporting system for SSOs. Although there are some data systems to record spills and various spill-reporting requirements have been developed, inconsistent requirements and enforcement have led to poor data quality. A few Regional Water Boards have comprehensively tracked SSOs over the last three to five years, and from this information we have been able to determine that the majority of collection systems surveyed have had SSOs within this time period.

Both the San Diego and Santa Ana Regional Water Boards have issued WDRs over the last several years to begin regulating wastewater collection systems in an attempt to quantify and reduce SSOs. In fact, 44 out of 46 collection system agencies regulated by the San Diego Regional Water Board have reported spills over the last four and a half years, resulting in 1467 reported SSOs. Twenty-five out of 27 collection system agencies subject to the Santa Ana Regional Water Board's general WDRs reported SSOs between the years of 1999-2004. During this time period, 1012 SSOs were reported.

The 2004 Annual Ocean and Bay Water Quality Report issued by the Orange County Environmental Health Care Agency shows the number of SSOs increasing from 245 in 1999 to 399 in 2003. While this number indicates a concerning trend, the total annual spill volume from these SSOs has actually decreased dramatically, as has the number of beach closures due to SSOs. It is likely, therefore, that the rise in number of SSOs reflects better reporting, and not an actual increase in the number of SSOs.

This information also suggests that the Santa Ana Regional Water Board's WDRs, which contain sanitary sewer management plan (SSMP) requirements similar to those in the proposed statewide general WDRs, have been effective in

not only increasing the number of spills that are reported but also in mitigating the impacts of SSOs that do occur.

Data supports the conclusion that virtually all collection systems have SSOs and that implementation of a regulatory measure requiring SSO reporting and collection system management, along with required measures to limit SSOs, will greatly benefit California water quality. Implementation of these requirements will also greatly benefit and prolong the useful life of the sanitary sewer system, one of California's most valuable infrastructure items.

NPDES vs. WDRs

Porter-Cologne subjects a broader range of waste discharges to regulation than the Federal Clean Water Act. In general, the Clean Water Act prohibits the discharge of pollutants from point sources to surface waters of the United States unless authorized under an NPDES permit. (33 U.S.C. §§1311, 1342). Since not all SSOs result in a discharge to surface water, however, not all SSOs violate the Clean Water Act's NPDES permitting requirements. Porter-Cologne, on the other hand, covers all existing and proposed waste discharges that could affect the quality of state waters, including both surface waters and groundwater. (Wat. Code §§13050(e), 13260). Hence, under Porter-Cologne, a greater SSO universe is potentially subject to regulation under WDRs. In addition, WDRs under Porter-Cologne can address both protection of water quality as well as the prevention of public nuisance associated with waste disposal. (*Id.* §13263).

Some commenters contend that because all collection systems have the potential to overflow to surface waters the systems should be regulated under an NPDES permit. A recent decision by the United States Court of Appeals for the 2nd Circuit, however, has called into question the states' and USEPA's ability to regulate discharges that are only "potential" under an NPDES permit. In *Waterkeeper Alliance v. United States Environmental Protection Agency* (2005) 399 F.3d 486, 504-506, the appellate court held that USEPA can only require permits for animal feedlots with "an actual addition" of pollutants to surface waters. While this decision may not be widely followed, especially in the area of SSOs, these are clearly within the jurisdiction of the California Water Code.

USEPA defines a publicly owned treatment works (POTW) as both the wastewater treatment facility and its associated sanitary sewer system (40 C.F.R. §403.3(o)¹). Historically, only the portion of the sanitary sewer system that is owned by the same agency that owns the permitted wastewater treatment facility has been subject to NPDES permit requirements. Satellite sewer collection systems (i.e. systems not owned or operated by the POTW) have not been

¹ The regulation provides that a POTW include sewers, pipes, and other conveyances only if they convey wastewater to a POTW.

typically regulated as part of the POTW and, therefore, have not generally been subject to NPDES permit requirements.

Comments were received that argued every collection system leading to a POTW that is subject to an NPDES permit should also be permitted based upon the USEPA definition of POTW. Under this theory, all current POTW NPDES permits could be expanded to include all satellite sewer collection systems, or alternatively, the satellite system owners or operators could be permitted separately. However, this interpretation is not widely accepted and USEPA has no official guidance to this fact.

There are also many wastewater treatment facilities within California that do not have discharges to surface water, but instead use percolation ponds, spray irrigation, wastewater reclamation, or other means to dispose of the treated effluent. These facilities, and their satellite systems, are not subject to the NPDES permitting process and could not be subject to a statewide general NPDES permit. POTWs that fall into this category, though, can be regulated under Porter-Cologne and do have WDRs.

In light of these factors, the State Water Board has determined that the best approach is to propose statewide general WDRs at this time.

Prohibition of Discharge

The Clean Water Act prohibits the discharge of wastewater to surface waters except as authorized under an NPDES permit. POTWs must achieve secondary treatment, at a minimum, and any more stringent limitations that are necessary to achieve water quality standards. (33 U.S.C. §1311(b)(1)(B) and (C)). Thus, an SSO that results in the discharge of raw sewage to surface waters is prohibited under the Clean Water Act.

Additionally, California Water Code section 13263 requires the State Water Board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.

California Water Code section 13050 (m), defines nuisance as anything which meets all of the following requirements:

- a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
- b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

- c. Occurs during, or as a result of, the treatment or disposal of wastes.

Some SSOs do create a nuisance as defined in state law. Therefore, based upon these statutory requirements, the WDRs include prohibitions in Section C. of the WDRs. Section C. states:

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater, which creates a nuisance as defined in California Water Code section 13050(m) is prohibited.

Furthermore, the State Water Board acknowledges the potential for more stringent water quality standards that may exist pursuant to a Regional Water Board requirement. Language included in Section D.2 of the WDRs allows for these more stringent instances.

D. PROVISIONS

2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDRs, superseding the general WDRs, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

Permitted Discharge, Affirmative Defense, and Enforcement Discretion

Commenters from the discharger community have requested inclusion of an affirmative defense to an SSO on the grounds that certain SSO events are unforeseen and unavoidable, such as SSOs due to extreme wet weather events. An affirmative defense is a mechanism whereby conduct that otherwise violates WDRs or a permit will be excused, and not subject to an enforcement action, under certain circumstances. Since many collection system industry experts believe that not all SSOs may be prevented, given certain circumstances (such as unforeseen vandalism, extreme wet weather, or other acts of God), many

collection system owner representatives believe this should formally be recognized by including an affirmative defense for these unavoidable SSOs.

Previous informal drafts of the general WDRs included affirmative defense language, which was contingent upon appropriate development and implementation of sanitary sewer management plan (SSMP) requirements, as well as a demonstration that the SSO was exceptional and unavoidable. Other stakeholders, including USEPA and the environmental groups opposed the concept of an affirmative defense for SSOs. They argued that its inclusion in the WDRs would undermine the Clean Water Act and inappropriately limit both Regional Water Board and third party enforcement.

After considering input from all stakeholders, and consulting with USEPA, staff is not recommending inclusion of an affirmative defense. Rather, the draft WDRs incorporate the concept of enforcement discretion, and explicitly identify what factors must be considered during any civil enforcement proceeding. The enforcement discretion portion of the WDRs is contained within Sections D. 6 and 7, and is consistent with enforcement discretion provisions within the California Water Code.

Facilities Subject to WDRs

Collection systems consist of pipelines and their appurtenances, which are intended to transport untreated wastewater to both publicly-owned and private wastewater treatment facilities. While wastewater treatment facilities are owned by a wide variety of public and private entities, public agencies (state and federal agencies, cities, counties, and special districts) own the vast majority of this infrastructure.

Collection systems that transport wastewater to POTWs could be grouped into four different categories:

1. Publicly-owned treatment works – pipelines and appurtenances that are owned by a public agency that also owns a wastewater treatment facility;
2. Publicly-owned satellites – pipelines and appurtenances that are owned by a public agency that does not own a wastewater treatment facility; and
3. Private laterals - pipelines and appurtenances that are not owned by a public agency, but rather discharge into one of the above types of facilities.
4. Privately owned treatment works – pipelines and appurtenances that are owned by a private entity, which also owns a wastewater treatment facility (often a septic tank and leach field).

The WDRs require all public agencies, which own wastewater collection systems (category 1 and 2 above) to enroll in the WDRs. Privately owned systems (categories 3 and 4) are not subject to the WDRs; however, a Regional Water

Board may at its discretion issue WDRs to these facilities on a case-by-case or region wide basis.

Collection systems discharging into POTWs (categories 1, 2, and 3) represent, by far, the greatest amount of collection system infrastructure within California. Since regulating private entities (categories 3 and 4) on a statewide basis would be unmanageable and impractical (because of the extremely large number and lack of contact information and other associated records), staff believes focusing on the public sector is the best option for meaningful and consistent outcomes. The legal authority and reporting provisions contained in the WDR do require limited oversight of private laterals (category 3) by public entities. Given this limited responsibility of oversight, public entities are not responsible or liable for private laterals.

State Water Board staff will notify all known public agencies that own wastewater collection systems, regarding their obligation to enroll under these WDRs. However, because of data inaccuracies, State Water Board staff may inadvertently not contact an agency that should enroll in the WDRs or erroneously contact a public agency that does not own a collection system. Staff will make every effort to accurately identify public agencies. In the event that a public agency is overlooked or omitted, however, it is the agency's responsibility to contact the State Water Board for information on the application process. An agency can find the appropriate contact by visiting the State Water Board's SSO homepage at www.waterboards.ca.gov/ss0.

SSO Reporting

SSOs can be distinguished between those that impact water quality and/or create a nuisance, and those that are indicators of collection system performance. Additionally, SSO liability is attributed to either private entities (homeowners, businesses, private communities, etc...) or public entities. Although all types of SSOs are important to track, the reporting time frames and the type of information that need to be conveyed differ.

The Reporting Program and Online SSO Database clearly distinguish the type of spill (major or minor) and the type of entity that owns the portion of the collection system that experienced the SSO (public or private entity). The reason to require SSO reporting for SSOs that do not necessarily impact public health or the environment is because these types of SSOs are indicators of collection system performance and management program effectiveness, and may serve as a sign of larger and more serious problems that should be addressed. Although these types of spills are important and must be regulated by collection system owners, the information that should be tracked and the time required to get them into the online reporting system are not as stringent.

Obviously, SSOs that are large in nature, affect public health, or affect the environment must be reported as soon as practicable and information associated with both the spill and efforts to mitigate the spill must be detailed. Since the Online SSO Database is a web based application requiring computer connection to the internet and is typically not as available as telephone communication would be, the Online Database will not replace emergency notification, which may be required by a Regional Water Board, Office of Emergency Services, or a County Health or Environmental Health Agency.

Incorporating Existing Permits

It is the State Water Board's intent to have one statewide regulatory mechanism that lays out the foundation for consistent collection system management requirements and SSO reporting. While there are a significant number of collection systems that are not actively regulated by the State or Regional Water Boards, some efforts have been made to regulate these agencies on a facility-by-facility or region-by-region basis. General WDRs, individual WDRs, NPDES permits, and enforcement orders that specifically include collections systems are mechanisms that have been used to regulate collection system overflows.

However, because of these varying levels of regulatory oversight, confusion exists among collection system owners as to regulatory expectations on a consistent and uniform basis (especially with reporting spills). Currently, there are a myriad of different SSO reporting thresholds and a number of different spill report repositories. Because of the varying levels of reporting thresholds and the lack of a common database to capture this information, an accurate picture of SSOs throughout California is unobtainable.

In order to provide a consistent and effective SSO prevention program, as well as to develop reasonable expectations for collection system management, these General WDRs should be the primary regulatory mechanism to regulate public collection systems. The draft WDRs detail requirements associated with SSMP development and implementation and SSO reporting.

All NPDES permits for POTWs currently include federally required standard conditions, three of which apply to collection systems. NPDES permits must clarify that the following three conditions apply to that part of the collection system that is owned or operated by the POTW owner or operator. These conditions are:

- Duty to mitigate discharges (40 CFR 122.41(d))
- Requirement to properly operate and maintain facilities (40 CFR 122.41(e))
- Requirement to report non-compliance (40 CFR 122.41(l)(6) and (7))

Understandably, revising existing regulatory measures will not occur immediately. However, as time allows and, at a minimum, upon readopting existing WDRs or WDRs that serve as NPDES permits, the Regional Water Boards should rescind redundant or inconsistent collection system requirements. In addition, the Regional Water Boards must ensure that existing NPDES permits clarify that the three standard permit provisions discussed above apply to the permittee's collection system.

Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, there will be some instances when Regional Water Boards will need to impose more stringent or prescriptive requirements. In those cases, more specific or more stringent WDRs or an NPDES permit issued by a Regional Water Board will supersede this Order. Finding number 11, in the WDRs states:

11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

Cost of Compliance

While the proposed WDRs contain requirements for systems and programs that should be in place to effectively manage collection systems, many communities have not implemented various elements of a good management plan. Some agencies are doing an excellent job managing their collection systems and will incur very little additional costs. Other agencies will need to develop and implement additional programs and will incur greater costs. However, any additional costs that a public agency may incur in order to comply with these General WDRs are costs that an agency would necessarily incur to effectively manage and preserve its infrastructure assets, protect public health and prevent nuisance conditions. These General WDRs prescribe minimum management requirements that should be present in all well managed collection system agencies.

In order to estimate the compliance costs associated with the proposed WDRs, staff analyzed costs associated with implementing the Santa Ana Regional Water Board's general WDRs. Twenty-one agencies, which discharge to Orange County Sanitation District, submitted financial summaries for the last five years, representing both pre- and post-WDRs adoption. Operation and maintenance costs, program development costs, as well as capital improvement costs were

considered and fairly accurately represent what can be expected statewide with the adoption of the General WDRs.

After extrapolating the sample to yield a statewide cost perspective, the projected annual cost of implementing the statewide WDRs is approximately \$870 million. This total represents \$345.6 million in O&M costs and \$524.5 for capital improvement projects.

While this sum is substantial, presenting the costs on a per capita or per household basis puts the figure in perspective. Department of Finance estimated the total population for Californians that may be subject to the WDRs to be 30.3 million persons (1/1/05). Dividing the population by the approximate average household size of 2.5 yields 12 million households. The average household in California is assumed to be 2.5 persons. The increased average annual cost (in order to comply with these WDRs) per person is estimated to be \$28.74 and \$71.86 per household (or \$5.99 per month per household)

Given these average costs there will be some communities that realize higher costs on a per household basis and some that realize less cost. Furthermore, larger communities will probably also realize an economy of scale, which is dependent upon a community's size. While larger communities may see lower costs associated with compliance, smaller communities will probably see a higher cost associated with compliance. Costs for compliance in small communities may be as high as \$40 per month per household.

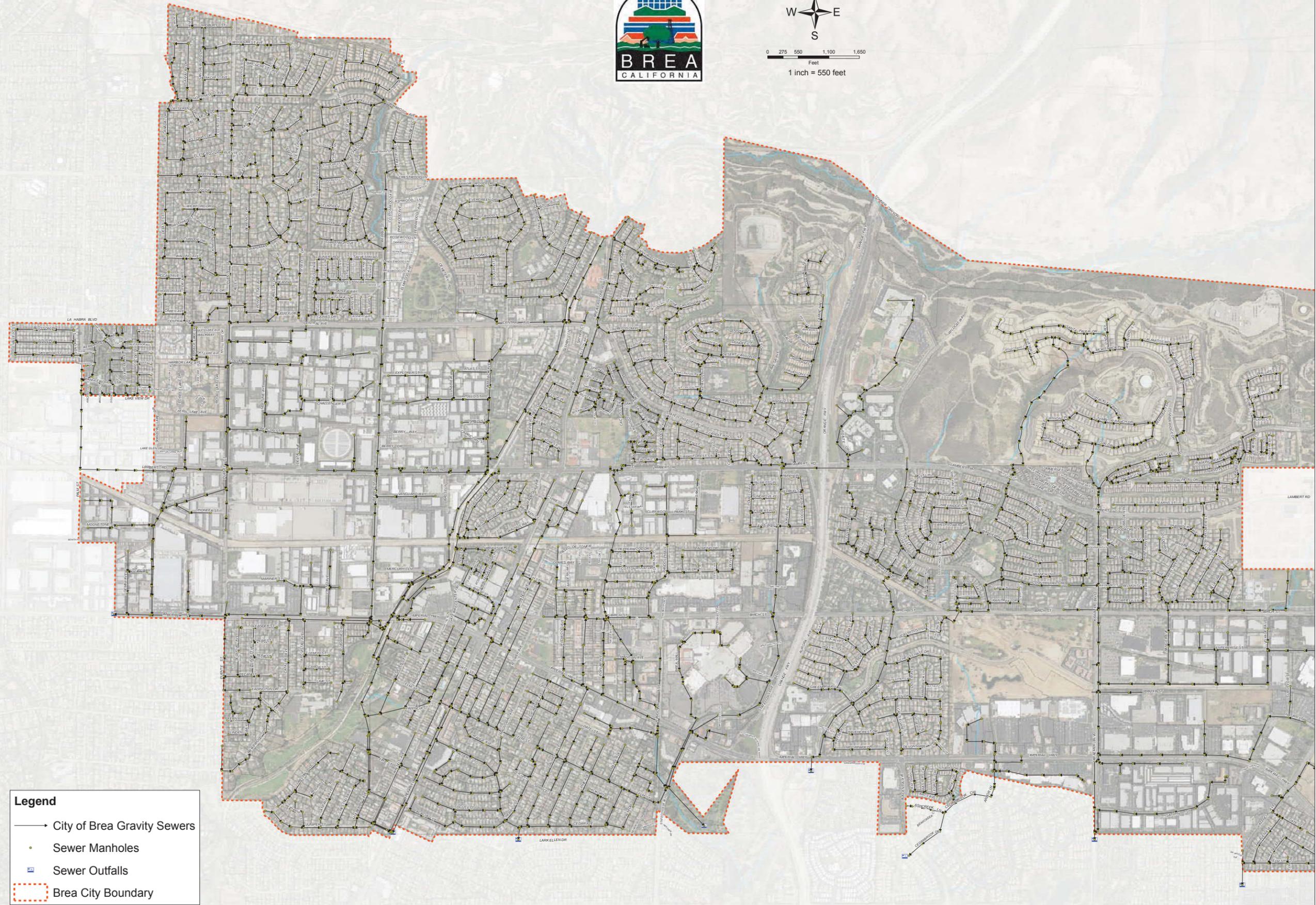
APPENDIX 'D'

Map of the Sewer System

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0 275 550 1,100 1,650
Feet
1 inch = 550 feet



CITY OF BREA SANITARY SEWER SYSTEM - WESTERN HALF OF CITY

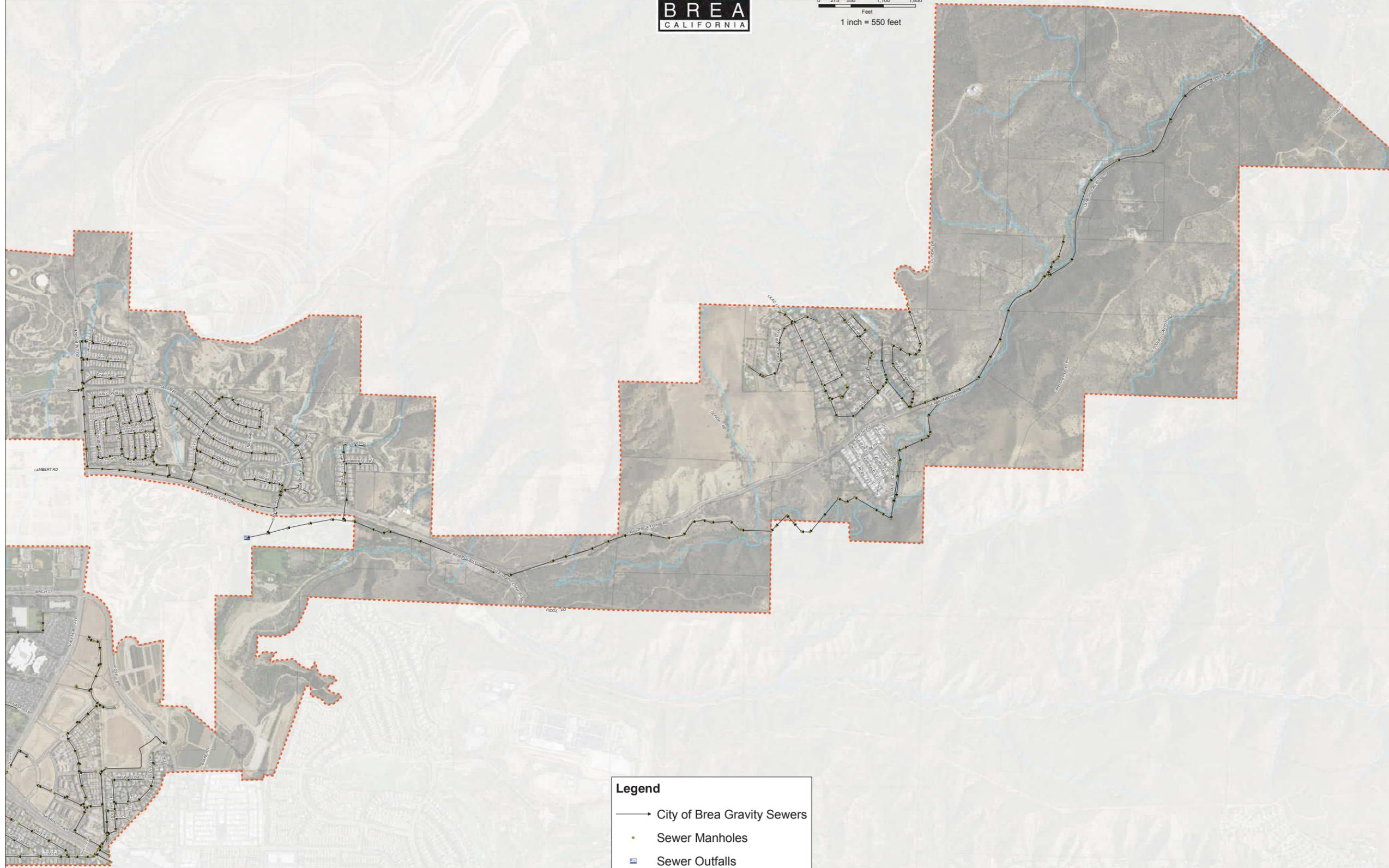
\\pwwilldan\shared\engineering\125722\Brea_SSWP_2016\Brea_City_Sewer_System_-_West_half

Legend

- City of Brea Gravity Sewers
- Sewer Manholes
- ☒ Sewer Outfalls
- ⋯ Brea City Boundary



0 275 550 1,100 1,650
Feet
1 inch = 550 feet



Legend

- City of Brea Gravity Sewers
- Sewer Manholes
- ☒ Sewer Outfalls
- ⋯ Brea City Boundary

CITY OF BREA SANITARY SEWER SYSTEM - EASTERN HALF OF CITY

APPENDIX 'E'

Historic SSO Locations and Current Hotspots

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City Records of Hot Spots and SSO Events

1. Hot Spots

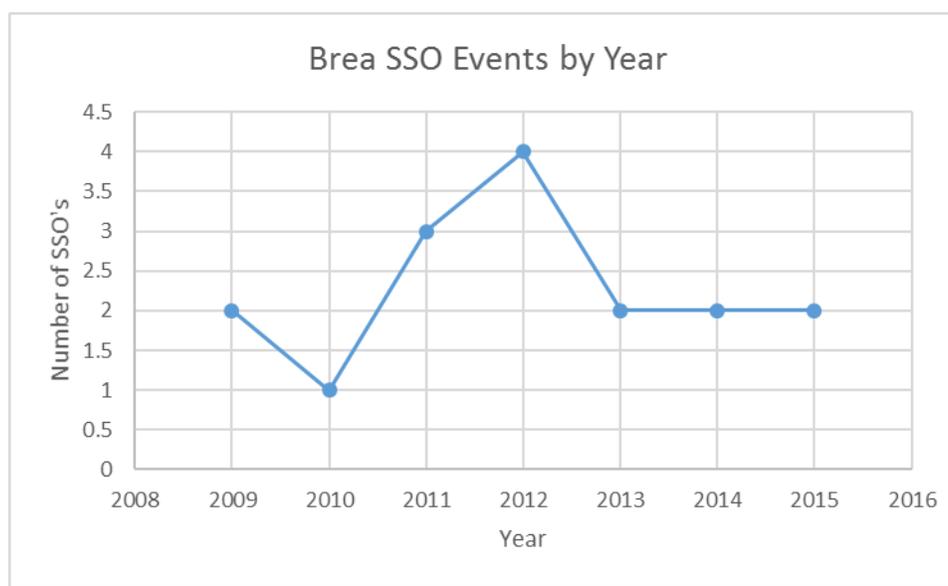
The City inspects updates its hot spots list on a monthly basis or more frequently as needed. Locations are added to the list as investigations reveal frequent FOG or debris buildup or other flow issues.

Location No.	Location	Heavy Grease Area	Root Problem
1	Pointe Dr. and Lambert	X	
2	Taps alley to Date St. to south Brea Blvd.	X	
3	Birch St. and Brea Blvd.	X	
4	Imperial Hwy. And Orange	X	
5	West Date at Jack in the Box	X	
6	15" siphon on west Date at the end of the street	X	
7	Fir and Brea Blvd.	X	
8	Mulberry and Juniper	X	
9	Columbia and Neptune (roof material)		
10	Central Ave. at the Flood Control Channel	X	
11	Red Bay at Birch St.	X	
12	St. College at Birch St.	X	
13	St. College to Cedar to Randolph	X	
14	Brea Golf Course Drain	X	
15	800 block of Walnut	X	
16	Date St. Alley to Imperial Hwy.	X	
17	Northwood / Wardman / Pointsettia		X
18	Greenbriar Park		X
19	Poplar Ave. cul-de-sac		X
20	Copa De Oro		X
21	Buckthorn		X
22	Lambert and Tamarack in the Channel		X
23	Elm St. at City Hall Park		X
24	Steele Dr.		X
25	Puente and Baywood		X
26	Flood Control Channel at the Railroad Tracks		
27	Imperial Hwy at Lamps Plus		

2. SSO Records

The City submits records of all SSO events to CIWQS. The following list of SSO events was compiled from the information available on the CIWQS website. The majority of the SSO events appear to be caused by some form of debris or rags. There are also sites that had more than one SSO event such as Tamarack Park, Imperial Highway, and Whittier Ave. This should be taken into consideration as the City focuses their SSO prevention efforts. A Map of the SSO locations is provided in **Attachment E-1**.

BREA SSO Event Matrix-Since January 2009					
Event ID	Date	Category	Location	Total Spill Volume (gal)	Explanation
734556	2/27/2009	3	4442 Carbon Canyon Road	94	Contractor working at pump station drove a 315B CAT Excavator over the 4-inch force main causing a shear crack on the 4-inch asbestos-cement (ACP) back-up force main pipeline.
740217	6/27/2009	1	312 W Imperial Highway	60	Debris-General 2 plastic baseballs obstructing the 6" main
756863	9/15/2010	3	1448 Whittier Ave	350	Debris-Rags
763851	2/27/2011	3	Tamarack Park	15	Root Intrusion
768236	7/7/2011	3	Olinda Ranch Park	200	Debris-General
773004	11/10/2011	1	Tamarack Park	40	Root Intrusion
780694	4/21/2012	3	642 Briarwood	50	Pump Station Failure
782126	6/12/2012	3	350 W Imperial Hwy	20	Debris-Rags
788042	11/14/2012	1	143 S Laurel Ave	10	Debris-General
788317	11/23/2012	3	Cliffwood	300	Debris-General
798311	8/28/2013	1	Valencia and Madrona	900	Grease deposition (FOG)
799902	10/17/2013	3	400 S Brea Blvd	60	Debris-Rags
804630	3/14/2014	1	Imperial/Mercury Pedestrian Trail	1970	Debris-Rags
804862	3/24/2014	1	950 W Central Ave	10,500	Debris-Rags
812049	1/4/2015	1	1440 Whittier Ave	425	Non-Dispersables-and a portion of a mop head
820278	12/18/2015	1	1100 Beacon St	800	Debris-Rags



Legend

Sanitary Sewer Overflow Locations

Event Category

-  1: Any discharge volume that reaches surface water
-  2: A discharge equal to or greater than 1,000 gallons
-  3: All other discharges

Operation and Maintenance Center



Sewer Pipes

Sewer Manholes

Brea City Boundary

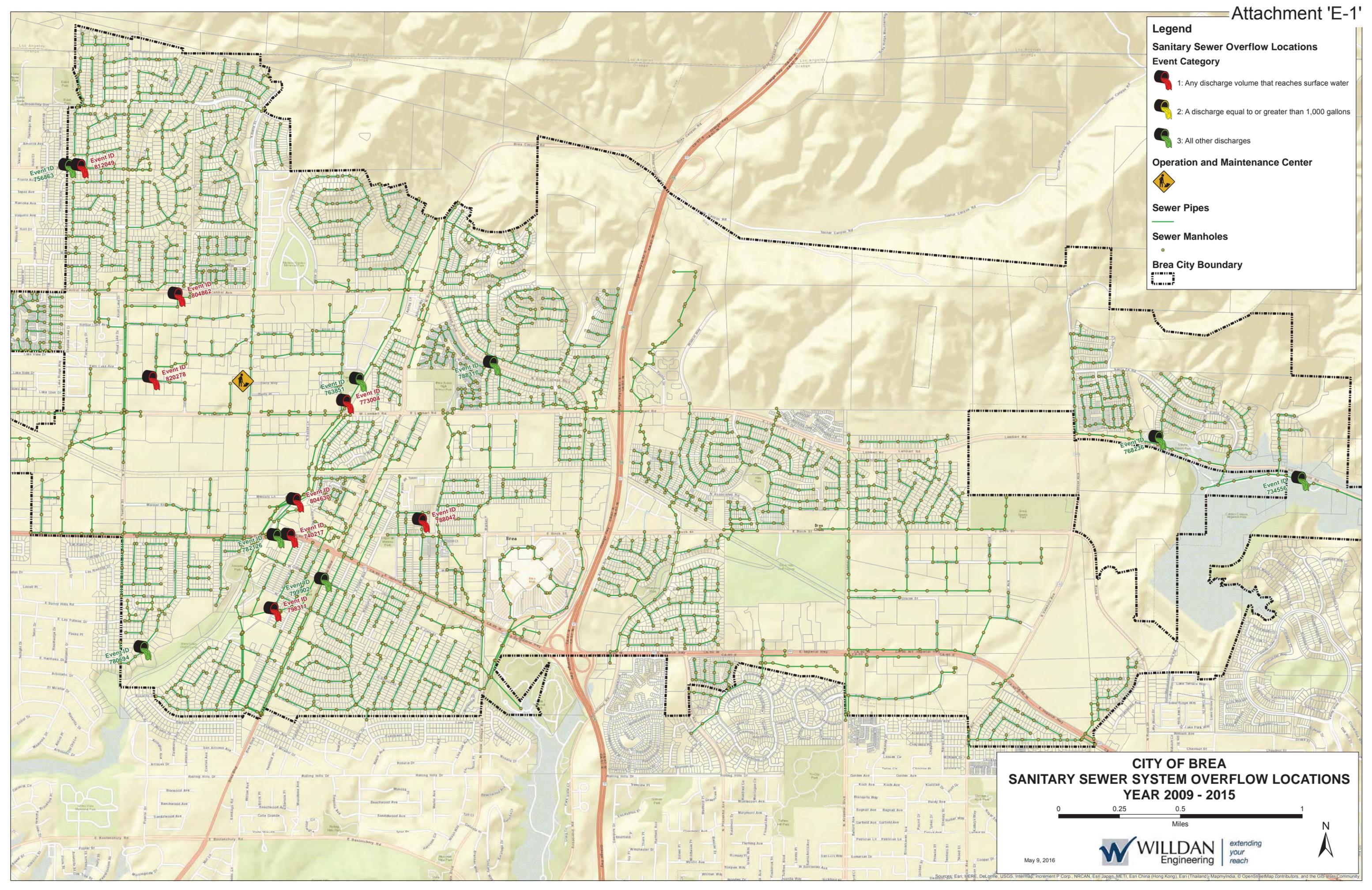
CITY OF BREA
SANITARY SEWER SYSTEM OVERFLOW LOCATIONS
YEAR 2009 - 2015



May 9, 2016



Source: Esri, HERE, DeLorme, USGS, Intermap, iPlanet, P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



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APPENDIX 'F'

CCTV Investigation and Prioritization of System Deficiencies

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CCTV Investigations and Prioritization of Sewer Deficiencies

No CCTV inspection videos were reviewed as part of this SSMP update. City operations and maintenance staff reviews CCTV videos on an ongoing basis to identify system deficiencies and recommend or implement improvements. It is recommended that the City prepare a formal report with a tabulation of all CCTV videos conducted as part of the review. All future CCTV investigations should utilize the NAASCO PAPC rating system as an industry wide accepted system with established condition codes and standards. The following information is intended to capture the information included in the 2009 SSMP with regard to the maintenance activities that have been performed between 2009 and 2015.

1. Introduction

California Pipeline Inspection Inc. (CPI) was retained by the City to perform video inspection work between June 16, 1999 and July 20, 2001. Approximately 531,208 feet (99 miles) of sewer pipe was inspected by closed circuit television. This is about 78 percent of the City's existing gravity system.

A total of 330 video tapes and 2,361 written reports were produced by CPI. Each written report lists the service connections and any deficiencies by its location in the inspected pipe. The Inspection Report Database Summary can be found in Attachment J-3 of this report. The summary includes date of inspection, street location, manhole identifications, recorded length of pipe, tape number, size of pipe, pipe material, a summary of the deficiencies identified, and a severity rating assigned by CPI. In the case of reverse set-ups, conducted to complete runs when the camera is blocked for any reason, the reports are combined into one entry in the summary table.

The Database Summary contains a tabulation of the deficiencies identified in the written reports, including the following information:

- Tape Number (Media Identification)
- CCTV Date
- Location (Street Name)
- Upstream Manhole, Downstream Manhole and Sewer Pipe Identification Numbers
- Pipe Size and Material
- CCTV Inspected Length of Pipe
- Deficiency Tabulation

2. Review of Representative CCTV Recordings

CPI reviewed a representative sample of the videos showing the most severe structural problems and multiple deficiencies, as well as severe operation and maintenance issues. First, any reaches that listed deficiencies such as deformed pipe, hole in pipe, broken pipe, and large offset joint were selected for review. These deficiencies can be a cause of sanitary sewer collapse, overflow or exfiltration into the surrounding soil and may need immediate attention. Next, reaches that had numerous or multiple deficiencies such as fractures, cracks, roots, deposits, obstructions, sags, camera underwater, and survey abandoned were selected. Finally, several reaches without listed deficiencies were selected in order to develop insight into the overall condition of the CCTV inspected system. Recordings for 80,229 feet of pipe (15.1% of total inspected) were selected and reviewed in detail.

3. Evaluation

A ranking system was generated for evaluating the severity of the pipes inspected and developing a list of priorities for future improvements.

Priority 1

The highest priority is assigned to projects that exhibit severe structural deficiencies were identified by review of CCTV reports and recordings. These structural deficiencies are believed to be severe enough that leakage may be occurring from the sewer system into the surrounding soils. When segments of sewers with lower priorities are located in the same vicinity as a higher priority project, an exception is made to include these lower priority sewers in that project to provide a more economically feasible Capital Improvement Program.

Priority 2

The second priority has been assigned to projects that will attend to some of the moderate structural deficiencies (Priority 2) identified by review of CCTV reports and tapes. These structural deficiencies are less severe, but significant enough to require remedial action. These planning level recommendations are based upon the ranking and pipe defects from the CCTV Inspection Report, and reviews of recordings. Actual improvements must be designed based upon further detailed reviews of each recording, taking into consideration other factors such as location, age and flow capacity of the pipe, existing utilities, and concurrent infrastructure construction projects.

Priority 3 and 4

Priority 3 and Priority 4 sewer segments consist of sewers considered to be in poor condition. The deficiencies found in these sewers are mostly structural in nature but to a slightly lesser degree than the first priority sewers. The deficiencies include offsets, cracks, broken pipe, sags, roots, grease, mineral deposits, and high water levels. The problems are significant but not as urgent as those sewers placed in the first priority.

Priority 5 through 8

Priority 5 through 8 consist of sewers considered to be in fair condition. These reaches typically have minor deficiencies. Immediate replacement is not recommended for these sewers. Some of these sewers have significant root problems. It is recommended that these sewers be treated for roots either by cutting and foaming. If the roots can be effectively treated, the life of the sewer may be prolonged.

Priority 9 and 10

Priority 9 through 10 consists of sewers considered to be in good condition. These sewers have minimal deficiencies and do not currently require repair or replacement at this time.

4. Repair and Replacement Program

Since the completion of the study by CPI, the City has made several upgrades to its sewer system. Table 1 below lists the segment upgrades that have been completed since 2009. Of the 108 reaches of collection system identified as in Priority 1, Priority 2, Priority 3, and Priority 4 condition a total of 53 have been improved. While the majority of the segments repaired were identified as Priority 1, 2, or 3, there remain several segments in each of these categories that have not been replaced.

Table 2 below outlines the remaining projects that had identified structural deficiencies that have not yet been repaired. Planning level implementation costs based upon May 2016 dollars are also provided for each segment. Cost estimates (in 2009 dollars) were prepared based upon replacement at \$47.55 per diameter inch per foot of pipe. Implementation cost is determined by increasing the 2005 Brea Sewer Master Plan sewer pipe unit construction cost (\$30 per diameter inch per foot of pipe) by 17.4 percent based on the increase in Engineering News Record (ENR) Los Angeles Area Construction Cost Index and adding 35 percent of construction cost to cover engineering, inspection, contingency, and administration. The total estimated cost of upgrading the remaining sewers with Priority 1 and Priority 2 conditions is \$2,752,629.

Table 2
Sewer Segments not yet Repaired per 2009 Recommendations

	Location No.	Drainage Region	Location Description	Deficiency Description	From MH (GS ID)	To MH (GS ID)	From MH (CCTV ID)	To MH (CCTV ID)	Qty (ft)	Size (in)	Exist Size (in)	Unit Cost (\$/ft)	Unit Cost (\$/LF) [2016]	Cost (2016)	Total Project Cost	Year of Construction
Priority 1	2	Fullerton	Madrona Ave Alley	Structural Defects	B-47-28	B-47-27	38-28	38-27	318	8	6	380	456	\$145,151	\$145,151	
	4	Associated	Easement	Structural Defects	NA	NA	63-28	63-30	227	8	8	380	456	\$103,614	\$103,614	
	5	Fullerton	W Central Ave	Structural Defects	A-19-97	A-19-89	45-49	45-48	259	8	8	380	456	\$118,221	\$118,221	1
	6	Laurel	Elm St	Structural Defects	NA	NA	51-01	51-02	243	8	8	380	456	\$110,918		
		Laurel	Elm St	Structural Defects	B-06-01	06	52-54	52-53	24	8	8	380	456	\$10,955		
		Brea	Date St Alley	Structural Defects	15-22	15-21	51-03	39-32	315	8	8	380	456	\$143,782		
	7	Brea	Cypress St R/W	Structural Defects	NA	09-18	48-12A	48-12	175	8	8	380	456	\$79,879	\$79,879	
	9	Rolling Hills	Westridge Wy	Structural Defects	B-45-32	B-45-23	61-05	61-04	140	8	6	380	456	\$63,903	\$63,903	
															Priority 1 Total	\$365,617
Priority 2	13	Associated	Easement	Structural Defects	14	15	73-20	73-37	134	10	10	475	571	\$76,456	\$76,456	
	16	Rolling Hills	Avocado St	Structural Defects	A-28-02	A-28	60-19	60-05	187	8	8	380	456	\$85,356	\$85,356	
	17	Carbon Canyon	Carbon Canyon Easement	Structural Defects	44	45	156-04	156-05	322	15	15	713	856	\$275,582		
		Carbon Canyon	Carbon Canyon Easement	Structural Defects	43	44	156-03	156-04	218	15	15	713	856	\$186,574	\$462,157	4
	18	Laurel	Alden St	Structural Defects	C-02	C-04	39-19	39-20	144	8	8	380	456	\$65,729	\$65,729	
	19	Associated	Redbay Ave	Structural Defects	26-62	26-61	74-21	74-20	170	8	8	380	456	\$77,597	\$77,597	
	20	Imperial	N Puente St	Structural Defects	A-01	A-02	22-01	11-18	673	8	8	380	456	\$307,192	\$307,192	
	21	Brea	Brea Blvd Alley	Structural Defects	11-06	11	39-33	38-29	642	8	6	380	456	\$293,042	\$293,042	
	23	Valencia	Imperial Hwy R/W	Structural Defects	12	13	113-24	113-23	236	8	8	380	456	\$107,722		
	25	Imperial	Bonnie Wy	Structural Defects	B-05-31	B-05-30	19-03	19-02	200	8	8	380	456	\$91,290		
	26	Fullerton	Honeysuckle Ln	Structural Defects	A-34-47	A-34-46	37-29F	37-29E	133	8	8	380	456	\$60,708	\$60,708	6
	31	Fullerton	Imperial Hwy	Structural Defects	B-35-02	B-35-01	26-23	26-24	730	10	10	475	571	\$416,512		
		Fullerton	Imperial Hwy	Structural Defects	B-35-34	B-35-03	26-22	26-21	845	8	8	380	456	\$385,701	\$802,213	
32	Fullerton	Driftwood Ave	Structural Defects	A-07-09	A-07-08	45-44	46-11	107	8	8	380	456	\$48,840	\$48,840		
														Priority 2 Total	\$2,387,012	
Priority 3	36	Rolling Hills	Lambert Rd	Structural Defects	B-29	B-30	47-28	48-20	75	8	8	380	456	\$34,234	\$34,234	
	38	Associated	Birch St	Structural Defects	21-09	21-08	85-56	85-55	202	10	10	475	571	\$115,254	\$115,254	
	41	Kraemer	Easement	Structural Defects	12-14	12-13	110-07	110-06	452	8	8	380	456	\$206,316	\$206,316	
	42	Rolling Hills	Brea Mall	Structural Defects	B-66-12	B-66-11	62-14	62-15	258	8	8	380	456	\$117,764		
		Rolling Hills	Brea Mall	Structural Defects	B-66-11	B-66-10	62-15	62-18	122	8	8	380	456	\$55,687	\$173,451	
	44	Fullerton	Fir St	Structural Defects	B-53-08	B-53-05	40-05A	40-05	154	8	8	380	456	\$70,293	\$70,293	
	47	Laurel	Spruce St R/W	Structural Defects	B-04-05	B-04-04	52-48	52-47	290	8	8	380	456	\$132,371	\$132,371	
														Priority 3 Total	\$731,919	
Priority 4	49	Kraemer	Woodacre St	Structural Defects	07-21	07-20	97-08	97-09	221	8	6	380	456	\$100,876	\$100,876	
	50	Kraemer	Easement	Structural Defects	12-01	12	98-13	98-03	163	12	12	571	685	\$111,602		
		Kraemer	Kraemer Blvd	Structural Defects	12	13	86-03	86-04	155	15	15	713	856	\$132,656	\$244,258	
	51	Rolling Hills	Apricot Ave	Structural Defects	B-20-02	B-20-01	59-02	59-01	306	8	8	380	456	\$139,674	\$139,674	
	52	Rolling Hills	Redwood Ave	Structural Defects	B-46-21	B-46-16	50-04A	49-08	90	8	6	380	456	\$41,081	\$41,081	
	53	Associated	Easement	Structural Defects	01	02	71-22	72-01	223	8	8	380	456	\$101,789	\$101,789	
	54	Associated	Easement	Structural Defects	11-12	11-11	72-10	72-11	130	8	8	380	456	\$59,339	\$59,339	
	55	Kraemer	Birch St	Structural Defects	08-02	08-01	85-60	85-61	282	8	8	380	456	\$128,719		
		Kraemer	Birch St	Structural Defects	08-01	08	85-61	85-62	352	8	8	380	456	\$160,671	\$289,390	
	56	Fullerton	S Madrona Ave	Structural Defects	B-47-09	B-47-08	38-20	39-15	381	8	8	380	456	\$173,908	\$173,908	
	57	Fullerton	Park Ln	Structural Defects	A-12-31	A-12-28	47-21	47-22	188	8	8	380	456	\$85,813	\$85,813	
	60	Brea	Brea Blvd	Structural Defects	12	13	38-33	39-40	334	8	8	380	456	\$152,455	\$152,455	
	61	Laurel	Brea Blvd R/W	Structural Defects	C-09-11	C-09-10	39-17	39-16	315	8	8	380	456	\$143,782	\$143,782	
	62	Carbon Canyon	Carbon Canyon Rd	Structural Defects	18-02	18-01	166-31	166-50	293	8	8	380	456	\$133,740	\$133,740	
	63	Rolling Hills	Shopping Center Easement	Structural Defects	B-58	B-59	51-38	51-37	50	12	12	571	685	\$34,234	\$34,234	
	64	Rolling Hills	Laurel Ave	Structural Defects	B-60-16	B-60-05	51-16	51-17	300	8	8	380	456	\$136,935	\$136,935	
	66	Brea	Ash St Alley	Structural Defects	NA	11-03	49-01A	49-01	330	8	6	380	456	\$150,629		
		Brea	Ash St Alley	Structural Defects	11-04	NA	49-02	49-01A	367	8	6	380	456	\$167,518		
	Brea	Birch St Alley	Structural Defects	11-03	11-02	49-01	38-31	650	8	8	380	456	\$296,693	\$614,840		
68	Imperial	Pioneer St	Structural Defects	A-13	A-14	12-11A	12-11	168	10	10	475	571	\$95,855	\$95,855		
70	Laurel	Poplar Easement	Structural Defects	B-04-10	B-04-08	51-24	52-45	351	8	8	380	456	\$160,214	\$160,214		
71	Associated	Greenbriar Ln	Structural Defects	26-31	26	74-01	75-14	297	8	8	380	456	\$135,566	\$135,566		
73	Rolling Hills	Montain Ct	Structural Defects	B-24-14	B-24-13	47-61	47-60	230	8	8	380	456	\$104,984	\$104,984		
74	Associated	Ironbank Cir	Structural Defects	08-13	08-12	72-31	72-30	70	8	8	380	456	\$31,952	\$31,952		
76	Fullerton	Brea Blvd R/w	Structural Defects	A-09	A-11	46-20	46-21	343	8	8	380	456	\$156,563	\$156,563		
														Priority 4 Total	\$3,137,246	
								Total	14,266					Grand Total	\$6,978,739	

5. Follow-up CCTV Inspection and Condition Assessment Program

Future repair and replacement activities will be implemented per the findings of the City's ongoing CCTV and cleaning operations.

- a. Portions of the system rated to be in **Priority 1 and Priority 2 Structural Deficiency** condition will be inspected **annually** and evaluated to determine if immediate corrective action is needed.
- b. Portions of the system rated to be in **Priority 3 and Priority 4 Structural Deficiency** condition will be CCTV inspected and evaluated once every **three (3) years**
- c. Portions of the system rated to be in **Priority 5 through Priority 8 Structural Deficiency** condition will be CCTV inspected and evaluated once every **five (5) years**
- d. Portions of the system with **Priority 9 and Priority 10 or no structural deficiencies** will be CCTV inspected and evaluated once every **ten (10) years**
- e. Portions of the system with **Operational and Maintenance** deficiencies, except the **Hot Spots**, will be CCTV inspected and evaluated once every **four (4) years**.
- f. **Hot Spots**, except siphons, will be CCTV inspected and evaluated **before and after each maintenance activity and cleaning for one year** to establish the appropriateness of the method, and then **annually**.

As structural deficiency mitigation projects are implemented, their condition will be reclassified, and they will be included in the appropriate category for follow up CCTV inspection and condition assessment work.

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APPENDIX 'G'

Hydraulic Model

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Sewer Capacity Calculated Hydraulic Deficiencies

PART A—SEWER CAPACITY ANALYSIS SUMMARY

1.0 SYSTEM CAPACITY OVERVIEW

The City's previous system capacity analysis was completed in 2009. There have been sewer network extensions since then from two development projects and upgrades associated with the Birch Hills Golf Course. For the purposes of this SSMP update, the hydraulic model was not available nor updated. Therefore, it was assumed that the associated sewer capacity studies completed for each of these developments were deemed acceptable for determining compliance with the City's goal of providing adequate sewer capacity. The primary purpose of this Appendix is to capture the methodology that was used in developing the 2009 sewer capacity analysis while discussing the system upgrades that have taken place since then. Several sections have been updated including Section 2: Drainage Regions, Section 10: Hydraulic Analysis, and Section 13: Capital Improvements Program. Table 10 of this Appendix outlines those sewer segments that have been upgraded versus the remaining sewer upgrades that have yet to be completed. Appendix D includes maps of the City's current sewer system including the developments that have been constructed since the 2009 capacity study.

2.0 DRAINAGE REGIONS

The sewer system service area consists of ten major sewer sheds that drain to City trunk sewers, which in turn outlet to Orange County Sanitation District (OCSD) facilities. The boundaries of the ten drainage areas were delineated from review of the City's sewer atlas maps and record drawings. Table 1 lists the designated names, the total areas, and the receiving OCSD facility of each drainage area.

**Table 1
Major Sewer Drainage Regions**

	Designation	Drainage Region Name	Area (Ac)	Downstream OCSD Facility
1	I	Imperial	940	Imperial Relief Interceptor/Miller Holder Trunk
2	F	Fullerton	2,824	Fullerton Brea Interceptor/Euclid Trunk Sewer
3	B	Brea	131	Fullerton Brea Purchase/Euclid Trunk Sewer
4	L	Laurel	161	Fullerton Brea Purchase/Euclid Trunk Sewer
5	R	Rolling Hills	1,022	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
6	A	Associated	835	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
7	C	Cypress	201	Cypress Sub-Trunk/Santa Ana River Interceptor
8	K	Kraemer	1,003	Kraemer BI. Interceptor/Santa Ana River Interceptor
9	V	Valencia	448	Kraemer BI. Interceptor/Santa Ana River Interceptor
10	CC	Carbon Canyon	6,990	Carbon Canyon Dam/Santa Ana River Interceptor.
		Total Acres	14,555	

In evaluating the City's 2009 capacity study, it was noted that the 2009 hydraulic model appeared to include significant portions of the Chino Hills State Park as part of the Fullerton and Carbon Canyon

drainage areas. For the purposes of commenting on the previous capacity study, it was estimated that any sewer flows from the Chino Hills State Park likely enters flows into the County sewer system so should be considered separated from the City's sewer model. Assuming that the Park acts as a tributary area equivalent to residential also results in an overestimate of flows within the sewer system. The total area for each sewer drainage region was recalculated for reference and the results are presented in Table 1A below. The boundaries of the updated drainage areas are shown in Attachment 'G-1'. Given the discrepancy in the area calculations and system extensions that have occurred since 2009, a full hydraulic analysis for the impacted zones is warranted in the near future in order to more accurately depict the sewer system performance.

**Table 1A
Updated Major Sewer Drainage Regions**

	Designation	Drainage Region Name	Area (Ac)	Downstream OCSD Facility
1	I	Imperial	959	Imperial Relief Interceptor/Miller Holder Trunk
2	F	Fullerton	1,218	Fullerton Brea Interceptor/Euclid Trunk Sewer
3	B	Brea	131	Fullerton Brea Purchase/Euclid Trunk Sewer
4	L	Laurel	161	Fullerton Brea Purchase/Euclid Trunk Sewer
5	R	Rolling Hills	1,022	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
6	A	Associated	835	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
7	C	Cypress	201	Cypress Sub-Trunk/Santa Ana River Interceptor
8	K	Kraemer	903	Kraemer Bl. Interceptor/Santa Ana River Interceptor
9	V	Valencia	258	Kraemer Bl. Interceptor/Santa Ana River Interceptor
10	CC	Carbon Canyon	2,135	Carbon Canyon Dam/Santa Ana River Interceptor.
		Total Acres	7,823	

PART B – 2009 Sewer System Capacity Analysis

3.0 SYSTEM HYDRAULIC MODEL

To perform a detailed analysis of the sewer collection system, it is essential to create a mathematical model that is capable of simulating the operating characteristics of the system. The simulations for this study were performed utilizing software designed for the analysis of sewer systems. The software selected for the 2009 study was MWHSoft's InfoSewer – a GIS-based computer program that performs steady-state analyses of sanitary sewer system flows. The program manages and maintains the database that stores the sewer analysis input and output results. Manning's Equation is used for depth of flow calculations in the gravity sewer pipes.

The sewer system was modeled by entering data for pipe diameters, lengths, invert elevations, and roughness coefficients as well as unit flow factors and land use classifications. The developed sewer model included all of the City's manholes and sewer pipes (excluding laterals and private sewers). It is important to include all pipes in the model to comply with the Statewide Waste Discharge Requirements that requires hydraulic analysis of the City's entire collection system. The model identified points of connection to the Orange County Sanitation District's trunk sewers and to other adjacent agencies.

The model uses the average dry weather flows and determines peak flows based upon relationships specified by the user. At the completion of a modeling run, output data is created for viewing on the screen or for printing. Output data for pipes include average and peak flow rate, velocity, pipe capacity, and ratio of flow depth to diameter (d/D). Table 6 outlines the results of the

hydraulic model and notes the segments that have been upgraded since the model was completed.

4.0 GEOMETRIC MODEL

The geometry of the hydraulic model was originally based on the City sewer atlas maps, the sewer GIS database and the sewer as-built drawings. Pipeline and manhole information from these sources was used to create the model of the City's sewer system as a part of the Sewer Master Plan. The model also includes sewer segments constructed prior to 2009 and the City's Briarwood and Arovista sewer pump stations. Table 2 lists the pipe and manhole information that were entered into 2009 the hydraulic model.

Table 2
Input Data for the Hydraulic Model

Pipe Information	Manhole Information
Identification Number	Identification Number
Upstream and Downstream Manhole Identification Number	Rim Elevation
Upstream and Downstream Invert Elevation	Invert Elevation
Size	Size
Length	Installation Year
Slope	
Material	
Installation Year	

5.0 LAND USE

Land use information utilized in this System Evaluation and Capacity Assurance Plan (SECAP) was based upon the City's Traffic Analysis Zone (TAZ) numbers (October 2009) and known specific plan details for upcoming development areas. Land use was divided into four major categories: Residential, Commercial, Industrial, and Other. The "other" land use category includes car wash establishments, commercial recreational facilities, hotels/motels, parks, schools, theaters and vacant land. The existing conditions were based upon the year 2009 TAZ data, and the ultimate conditions were based upon the year 2035 TAZ data. Table 3 provides a summary of the study area land use categories under existing and ultimate conditions. The TAZ maps generally follow the City's General Plan Land Use Policy Map, shown in Attachment 'G-2'.

The TAZ numbers and a map showing the TAZ boundaries are provided in Attachment 'G-6' of this report.

**Table 3
Study Area Land Use**

Land Use Category	Land Uses	Units	Existing Conditions (2009)	Ultimate Conditions (2035)
Residential	Hillside Residential	DU	8	1,191
	Low Density Residential	DU	7,832	8,876
	Medium Density Residential	DU	2,117	2,470
	High Density Residential	DU	4,995	5,811
	Mixed Use Residential	DU	202	1,496
	Total	DU	15,154	19,844
Commercial	General Commercial	TSF	2,994	3,320
	Mixed Use Commercial	TSF	299	1,693
	Neighborhood Commercial	TSF	99	111
	Office	TSF	104	228
	Office/Financial	TSF	1,918	2,052
	Recreational Commercial	TSF	52	102
	Regional Commercial	TSF	1,289	1,400
	Restaurant	TSF		33
	Total	TSF	6,755	8,939
Industrial	General Industrial	TSF	4,031	4,010
	Light Industrial	TSF	10,596	10,925
	Total	TSF	14,628	14,935
Schools	Elementary/Middle School	STU	4,877	6,061
	High School	STU	1,908	1,908
	Total	STU	6,785	7,969
Other	Cemetery	AC	60	60
	Church	TSF	120	140
	Civic Center	TSF	155	155
	Golf Course	AC	90	80
	Landfill	AC	599	599
	Motel/Hotel	ROOM	639	609
	Natural Open Space	AC	2,173	4,347
	Oil Production	AC		24
	Open Space	AC	50	50
	Parks/Recreation/OS	AC	371	781
	Post Office	TSF	22	22
	Public Facilities	AC	23	23
	Reservoir	AC	32	32
	Vacant Land	AC	7,689	1,033

Refer to Attachment 'G-2' for Land Use Policy Map

6.0 FLOW MONITORING

Data collection and review is essential in developing unit flow factors, calibrating the system model, and estimating the average and peak flows. In order to assess residential, commercial, and manufacturing wastewater flows in the City, a temporary flow monitoring study was conducted by ADS Environmental Services. Flow monitoring was conducted over a period of seven days, from December 18, 1999 through December 24, 1999, during the Sewer Master Plan study. The 16 strategic locations chosen for flow monitoring are shown in Figure 4. A summary of the flow monitoring results is listed in Table 4.

Sites 1, 2, 6, and 12 were specifically chosen because each tributary area consists of primarily residential land uses. The flow monitoring data collected at these sites was used to estimate the existing residential unit flow factors for low, medium, and high-density residences. Sites 3, 4, and 11 were chosen because each tributary area consists of primarily industrial land uses. The flow monitoring data collected at these sites was used to estimate the existing industrial unit flow factors.

The remaining sites were selected for the fact that each is located in the vicinity of the City boundary, where wastewater flows exit the City's sewer system and drain into the Orange County Sanitation District's (OCSD) collection system. The drainage areas of these sites consist of a combination of several land use categories. The flow monitoring data collected at these locations was used to verify the existing residential and industrial unit flow factors as well as to estimate the remaining unit flow factors, such as those for commercial and recreational land uses.

Table 4
Flow Monitoring Results

Site No.	Location	Measured Flow (MGD)		
		Minimum	Average	Maximum
1	1796 Palm Street, north of Tangle Wood	0.005	0.032	0.089
2	Palm Street at Sonora High School, north of Emery Ave.	0.021	0.112	0.265
3	1355 Imperial Hwy (north side), east of Gemini Ave.	0.270	0.879	1.688
4	1225 Imperial Hwy (north side), east of Site 3	0.009	0.050	0.120
5	770 S. Brea Blvd. (east side), north of Acacia St.	0.031	0.175	0.583
6	Brea Canyon Rd. (east side), south of Canyon Country Rd.	0.005	0.034	0.100
7	State College Blvd., north of Birch St.	0.067	0.206	0.632
8	Craig Regional Park, east of State College & south of Imperial	0.375	1.005	1.515
9	State College Blvd. (west side), south of Imperial Hwy.	0.072	0.304	0.608
10	Southwest corner of Imperial Hwy. and Associate Rd.	0.138	0.584	1.236
11	Kraemer Blvd., south of Imperial Hwy.	0.058	0.294	0.849
12	3130 Laurel Ave., south of Alder St.	0.057	0.213	0.395
13	Parkhurst Gallery Housing Development, south of Imperial Hwy. and east of Placentia Ave.	0.225	0.343	0.514
14	Valencia Ave. at Elm St.	0.028	0.106	0.226
15	Rose Dr. (east side) at Carbon Canyon Dam, south of Vesuvius Dr.	0.000	0.066	0.602
16	3020 S. Brea Blvd. at Juniper St.	0.341	1.097	1.860

Refer to **Attachment 'G-3'** for the flow monitoring locations

7.0 UNIT FLOW FACTORS

The unit flow factors developed for the City's Sewer Master Plan and utilized in this study are listed in Table 5. These factors were developed based upon the existing land use obtained from the Traffic Area Zone (TAZ) data and results of the temporary flow monitoring study. Review of vacancies, water use records, and field reviews supplemented this information.

The average daily flow recorded at each flow monitoring station was utilized in determining calibrated unit flow factors. These calibrated flow factors were then increased by 5 percent for vacancies. The residential unit flow factors utilized in the ultimate system analyses were increased by an additional 5 percent to account for future densification.

It should be noted that Table 5 lists two low-density residential flow factors. Evaluation of the temporary flow monitoring data led to the conclusion that the low density residential homes located in the southern area of the City (See Drainage Region 4 – Laurel on Figure 2) produced a higher unit flow factor than other residential areas within the study area.

**Table 5
Unit Flow Factors**

Land Use Designation	Land Uses	Existing Unit Flow Factor	Future Unit Flow Factor	Units
R1-H	Hillside Residential	368	385	GPD/DU
R1 (Laurel)	Low Density Residential	310	325	GPD/DU
R1	Low Density Residential	257	270	GPD/DU
R2	Medium Density Residential	236	248	GPD/DU
R3	High Density Residential	200	210	GPD/DU
CC	Shopping Center	73.5	73.5	GPD/TSF
CG	General Commercial	73.5	73.5	GPD/TSF
CM	Industrial Commercial	73.5	73.5	GPD/TSF
CN	Neighborhood Commercial	73.5	73.5	GPD/TSF
CP	General Offices	73.5	73.5	GPD/TSF
RES	Restaurants	1,575	1,575	GPD/TSF
M1	Light Industrial	73.5	73.5	GPD/TSF
M2	General Industrial	73.5	73.5	GPD/TSF
CAR	Car Wash	21,000	21,000	GPD/Location
C-RC	Commercial Recreational	3.15	3.15	GPD/AC
MOTEL	Motel/Hotel	173.25	173.25	GPD/Room
PARKS	Parks	10.5	10.5	GPD/AC
SCH	High Schools	21	21	GPD/Student
SCH	Schools	10.5	10.5	GPD/Student
THE	Theaters	8.4	8.4	GPD/Seat

8.0 PEAKING CRITERIA

The goal of the City of Brea is to provide sufficient capacity to convey the design peak wet weather flow in its collection system pipes at or below a depth to diameter ratio of 0.75.

Design Flows

The peak wet weather flow consists of peak dry weather flow, which is observed daily during dry weather periods, plus flows which enter the system during storm events as inflow and infiltration. Based on the best information currently available, the following methodology is used in determining the average dry weather, peak dry weather, and peak wet weather flows:

1. Average Dry Weather Flow

Average dry weather flow in any pipe is calculated as the summation of the product of the area of each type of land use tributary to that pipe and its respective unit wastewater flow factor. High water users and pumped flows are accounted for separately in order to accurately calculate the average dry weather flows.

2. Peak Dry Weather Flow

Peak dry weather flow (PDWF) is calculated from the average dry weather flow (ADWF) utilizing the following formula:

$$\text{PDWF} = 1.84 \times \text{ADWF}^{0.92}$$

Where, PDWF = Peak dry weather flow (cfs)

ADWF = Average dry weather flow (cfs)

Or

$$\text{PDWF} = 1.777 \times \text{ADWF}^{0.92}$$

Where, PDWF = Peak dry weather flow (mgd)

ADWF = Average dry weather flow (mgd)

These formulas were adopted during the development of the Sewer Master Plan.

3. Peak Wet Weather Flow

The peak wet weather flow consists of peak dry weather flow, which is observed daily during dry weather periods, plus flows which enter the system during storm events as inflow and infiltration.

The City's goal is to provide sufficient capacity to convey the peak dry weather flow in its collection system pipes at or below a depth to diameter ratio of 0.64. The additional area in the pipe, which is equivalent to about 25 percent of the total flow capacity, is reserved for wet weather flows.

Peak wet weather flow (PWWF) is calculated from the peak dry weather flow (PDWF) utilizing the following formula:

$$\text{PWWF} = 1.25 \times \text{PDWF}$$

Where, PWWF = Peak wet weather flow (cfs or mgd)

PDWF = Peak dry weather flow (cfs or mgd)

This formula was adopted during the development of the Sewer Master Plan.

4. Pump Station Peak Flow Criteria

The minimum firm pumping capacity for pump stations is the larger of the following:

$$\text{PWWF} = 1.25 \times \text{PDWF} \text{ or}$$

$$\text{PWWF} = 3.0 \times \text{ADWF}$$

Where, PWWF = Peak wet weather flow (cfs or mgd)

PDWF = Peak dry weather flow (cfs or mgd)

ADWF = Average dry weather flow (cfs or mgd)

9.0 TRIGGER DEPTH TO DIAMETER RATIOS

Capacity evaluation of sewer pipelines is typically based upon the depth of flow to diameter ratio (d/D).

Existing Collection System Pipes

In order to meet the above peaking criteria, the existing collection system pipes are considered capacity deficient when the calculated depth to diameter ratio is equal to or greater than 0.64. The capacity available between the depth to diameter ratios of 0.64 and 0.75 are reserved for wet weather flows.

New Collection System Pipes

New collection system pipes will be designed to meet the following flow and velocity criteria:

- Peak dry weather flow d/D less than or equal to 0.50 for pipes 15-inches and smaller
- Peak dry weather flow d/D less than or equal to 0.64 for pipes greater than 15-inches
- Peak wet weather flow d/D less than or equal to 0.75 for all pipes
- Average dry weather flow minimum velocity of 2 feet per second
- Peak dry weather flow minimum velocity of 3 feet per second.

Using these criteria, extra pipeline capacity is reserved for the possibility that actual wastewater flows may be slightly higher than anticipated, especially during the hours when instantaneous or intermittent peaks may occur. These peaks are generally observed between the hours of 6:00 a.m. and 9:00 a.m. and 7:00 p.m. and 9:00 p.m. They may also be observed during rainfall events due to inflow. Additionally, the area above the water surface helps to keep the sewage aerated, reducing the possibility of septic conditions and odors.

At a minimum, all pipes should be 8 inches or larger in diameter and the velocity of flow should be greater than 2 feet per second at average flow. This velocity will prevent deposition of solids in the sewer. A velocity of 3 feet per second is desired at peak dry weather flow, to re-suspend any materials that may have already settled in the pipe.

10.0 COLLECTION SYSTEM HYDRAULIC ANALYSIS

The hydraulic analysis is based upon the existing and ultimate land use conditions provided in Table 3. The analyses assume that the defined land uses within the tributary area are fully developed and occupied. The hydraulic analysis may be conservative in comparison to actual flows, therefore all calculated deficiencies should be field verified through flow monitoring before the implementation of any projects.

Table 6 below shows the results of the hydraulic calculations that were performed for the sewer system in 2009. Since the completion of that analysis, two development projects have been completed and several sewer segments have been upgraded to increase capacity. It is assumed that adequate capacity studies were completed prior to the approval of the new development projects such that the proposed projects either did not cause undue burden on the sewer system or included mitigation measures to reduce their impact on the sewer system. The pipe segments that have been upgraded are highlighted below and marked accordingly if they have been completed and if not, what their projected future flow condition will be for a design year of 2035 based on the City's Traffic Analysis Zones (TAZ). The difference between Traffic Analysis Zones and Sewer Maintenance Zones (SMZ's) should be noted. Traffic Analysis Zones are planning tools based on

expected development by area. Since higher traffic is correlated with higher population density, TAZ's can be used as an indicator for utility, water and sewer usage growth as well. Sewer Maintenance Zones are subareas currently utilized by sewer operations staff to plan and execute maintenance and repair activities.

Legend	
	Pipeline Capacity Improvement Completed
	Pipeline Capacity Not Improved, current PWWF d/D < 0.64
	Pipeline Capacity Not Improved, current PWWF d/D=0.64-0.75
	Pipeline Capacity Not Improved, current PWWF d/D=0.76-1

TABLE 6

Location	Atlas Index Page	Upgraded During	General Information						Existing Conditions										Ultimate Conditions									
			Pipe ID	U/S MH ID	D/S MH ID	Dia (in)	Length (ft)	Slope	Full Flow (mgd)	ADWF (mgd)	PDWF (mgd)	PDWF Vel (ft/s)	PDWF d/D	PDWF Depth (ft)	PWWF (mgd)	PWWF Vel (ft/s)	PWWF d/D	PWWF Depth (ft)	ADWF Flow (mgd)	PDWF (mgd)	PDWF Vel (ft/s)	PDWF d/D	PDWF Depth (ft)	PWWF (mgd)	PWWF Vel (ft/s)	PWWF d/D	PWWF Depth (ft)	
Canyon County Rd / Brea Blvd	12A-12C		P-F-(A)-02	MH-F-(A)-02	MH-F-(A)-03	8	395	0.0030	0.4298	0.0252	0.0602	1.34	0.25	0.17	0.0752	1.43	0.28	0.19	0.1599	0.3290	2.10	0.66	0.44	0.4113	2.17	0.78	0.52	
Canyondale Dr / Brea Blvd	12C		P-F-(A)-03	MH-F-(A)-03	MH-F-(A)-04	8	404	0.0025	0.3915	0.0261	0.0622	1.27	0.27	0.18	0.0777	1.35	0.30	0.20	0.1608	0.3308	1.95	0.70	0.47	0.4135	1.83	1.00	0.67	
Brea Blvd	12C		P-F-(A)-04	MH-F-(A)-04	MH-F-(A)-05	8	336	0.0036	0.4699	0.0496	0.1120	1.71	0.33	0.22	0.1400	1.82	0.37	0.25	0.1855	0.3771	2.32	0.68	0.45	0.4714	2.09	1.00	0.67	
State College Blvd / Brea Blvd	12C		P-F-(A)-05	MH-F-(A)-05	MH-F-(A)-06	8	336	0.0030	0.4293	0.0505	0.1139	1.61	0.35	0.23	0.1423	1.71	0.40	0.26	0.1864	0.3789	2.15	0.73	0.49	0.4736	2.10	1.00	0.67	
Brea Blvd	12C-11D		P-F-(A)-07	MH-F-(A)-07	MH-F-(A)-08	8	353	0.0035	0.4622	0.0778	0.1695	1.89	0.42	0.28	0.2119	2.00	0.48	0.32	0.2151	0.4322	2.33	0.77	0.51	0.5403	2.39	1.00	0.67	
	11D		P-F-(A)-08	MH-F-(A)-08	MH-F-(A)-09	8	271	0.0030	0.4255	0.0792	0.1723	1.79	0.44	0.30	0.2154	1.89	0.50	0.34	0.2170	0.4357	1.93	1.00	0.67	0.5446	2.41	1.00	0.67	
	11D		P-F-(A)-09	MH-F-(A)-09	MH-F-(A)-10	8	80	0.0048	0.5397	0.1090	0.2313	2.30	0.46	0.30	0.2891	2.43	0.52	0.35	0.2487	0.4940	2.71	0.75	0.50	0.6175	2.74	1.00	0.67	
	20B		P-F-(A)-10	MH-F-(A)-10	MH-F-(A)-11	8	264	0.0036	0.4673	0.1104	0.2340	2.07	0.50	0.33	0.2925	2.19	0.57	0.38	0.2506	0.4974	2.20	1.00	0.67	0.6218	2.76	1.00	0.67	
	20B		P-F-(A)-11	MH-F-(A)-11	MH-F-(A)-12	8	292	0.0039	0.4871	0.1104	0.2340	2.14	0.49	0.33	0.2925	2.26	0.56	0.37	0.2506	0.4974	2.20	1.00	0.67	0.6218	2.76	1.00	0.67	
	20B		P-F-(A)-12	MH-F-(A)-12	MH-F-(A)-13	8	156	0.0090	0.7418	0.1565	0.3225	3.17	0.46	0.31	0.4032	3.36	0.53	0.35	0.2990	0.5852	3.64	0.67	0.45	0.7315	3.75	0.81	0.54	
Near channel	20B	Plan 7618	P-F-(A)-17	MH-F-(A)-17	MH-F-(A)-18-DROP	8	131	0.0040	0.4981	0.1816	0.3698	2.42	0.64	0.43	0.4623	2.51	0.76	0.51	0.3253	0.6325	2.80	1.00	0.67	0.7906	3.50	1.00	0.67	
		Plan 7618	P-F-(A)-18	MH-F-(A)-18-DROP	MH-F-(A)-19-DROP	8	85	0.0044	0.5166	0.1924	0.3901	2.52	0.65	0.43	0.4877	2.60	0.77	0.52	0.3368	0.6529	2.89	1.00	0.67	0.8161	3.62	1.00	0.67	
		Plan 7618	P-F-(A)-19	MH-F-(A)-19-DROP	MH-F-(A)-20	10	466	0.0024	0.6961	0.5659	1.0524	2.99	1.00	0.83	1.3155	3.73	1.00	0.83	0.7467	1.3583	3.85	1.00	0.83	1.6979	4.82	1.00	0.83	
Along channel	11D		P-F-(A)-19-05	MH-F-(A)-19-05	MH-F-(A)-19-04	10	569	0.0021	0.6520	0.2339	0.4668	2.01	0.63	0.52	0.5836	2.09	0.74	0.62	0.2635	0.5209	2.05	0.68	0.56	0.6511	2.11	0.82	0.68	
Along channel	20B	Plan 7618	P-F-(A)-20	MH-F-(A)-20	MH-F-(A)-21	10	579	0.0024	0.6906	0.5659	1.0524	2.99	1.00	0.83	1.3155	3.73	1.00	0.83	0.7467	1.3583	3.85	1.00	0.83	1.6979	4.82	1.00	0.83	
	20B	Plan 7618	P-F-(A)-21	MH-F-(A)-21	MH-F-(A)-22	10	90	0.0026	0.7178	0.5659	1.0524	2.99	1.00	0.83	1.3155	3.73	1.00	0.83	0.7467	1.3583	3.85	1.00	0.83	1.6979	4.82	1.00	0.83	
	20B	Plan 7618	P-F-(A)-23	MH-F-(A)-23-DROP	MH-F-(A)-24	12	74	0.0080	2.0616	0.6865	1.2572	4.26	0.56	0.56	1.5716	4.47	0.65	0.65	0.9916	1.7632	4.56	0.71	0.71	2.2040	4.34	1.00	1.00	
	20B-20D		P-F-(A)-25	MH-F-(A)-25	MH-F-(A)-26	15	194	0.0029	2.2491	0.7215	1.3159	2.95	0.55	0.69	1.6449	3.10	0.64	0.79	1.0268	1.8207	3.16	0.68	0.85	2.2759	2.87	1.00	1.25	
Imperial and Channel (near Berry)	29A		P-F-(A)-34	MH-F-(A)-34-DROP	MH-F-(A)-35	15	381	0.0020	1.8941	0.6274	1.1573	2.51	0.56	0.71	1.4089	2.62	0.64	0.80	0.8490	1.5286	2.66	0.68	0.85	1.8647	2.72	0.81	1.01	
Berry and Peppercom	11A		P-F-(B)-10	MH-F-(B)-10-DROP	MH-F-(B)-11	8	271	0.0037	0.4733	0.1361	0.2837	2.19	0.56	0.37	0.3546	2.30	0.65	0.43	0.1871	0.3802	2.33	0.68	0.45	0.4752	2.11	1.00	0.67	
Apollo and Berry	20A		P-F-(B)-19	MH-F-(B)-19	MH-F-(B)-20	8	271	0.0069	0.6505	0.1764	0.3601	2.96	0.53	0.35	0.4501	3.11	0.61	0.41	0.2456	0.4884	3.16	0.65	0.43	0.6105	3.28	0.77	0.51	
Lambert and berry	20A-20C	Sewer Main Replacement on Lambert/Berry (PN 7297)	P-F-(B)-24	MH-F-(B)-24	MH-F-(B)-25	8	390	0.0052	0.5622	0.2222	0.4454	2.76	0.67	0.45	0.5567	2.84	0.81	0.54	0.2915	0.5716	2.53	1.00	0.67	0.7145	3.17	1.00	0.67	
Vanguard and Berry	20C	Plan 7620	P-F-(B)-25	MH-F-(B)-25	MH-F-(B)-26	8	72	0.0086	0.7267	0.2263	0.4529	3.40	0.57	0.38	0.5662	3.56	0.66	0.44	0.2956	0.5790	3.58	0.67	0.45	0.7238	3.67	0.82	0.54	
Berry	20C	Plan 7621	P-F-(B)-26	MH-F-(B)-26	MH-F-(B)-27	8	328	0.0045	0.5224	0.2414	0.4805	2.63	0.76	0.50	0.6007	2.66	1.00	0.67	0.3107	0.6063	2.69	1.00	0.67	0.7579	3.36	1.00	0.67	
	20C	Plan 7622	P-F-(B)-27	MH-F-(B)-27	MH-F-(B)-28	8	404	0.0047	0.5370	0.2455	0.4881	2.70	0.75	0.50	0.6101	2.70	1.00	0.67	0.3149	0.6137	2.72	1.00	0.67	0.7671	3.40	1.00	0.67	
	20C	Plan 7623	P-F-(B)-28	MH-F-(B)-28	MH-F-(B)-29	8	13	0.0046	0.5320	0.2496	0.4956	2.68	0.76	0.51	0.6195	2.75	1.00	0.67	0.3190	0.6211	2.75	1.00	0.67	0.7763	3.44	1.00	0.67	
	20C	Plan 7624	P-F-(B)-29	MH-F-(B)-29	MH-F-(B)-30	8	445	0.0050	0.5556	0.2537	0.5031	2.79	0.75	0.50	0.6289	2.79	1.00	0.67	0.3231	0.6284	2.79	1.00	0.67	0.7855	3.48	1.00	0.67	
	20C	Plan 7625	P-F-(B)-30	MH-F-(B)-30	MH-F-(B)-31	8	340	0.0047	0.5389	0.2537	0.5031	2.71	0.77	0.51	0.6289	2.79	1.00	0.67	0.3231	0.6284	2.79	1.00	0.67	0.7855	3.48	1.00	0.67	

Appendix 'G'

Location	Atlas Index Page	Upgraded During	General Information										Existing Conditions							Ultimate Conditions							
			Pipe ID	U/S MH ID	D/S MH ID	Dia (in)	Length (ft)	Slope	Full Flow (mgd)	ADWF (mgd)	PDWF (mgd)	PDWF Vel (ft/s)	PDWF d/D	PDWF Depth (ft)	PWWF Vel (ft/s)	PWWF d/D	PWWF Depth (ft)	ADWF Flow (mgd)	PDWF (mgd)	PDWF Vel (ft/s)	PDWF d/D	PDWF Depth (ft)	PWWF Vel (ft/s)	PWWF d/D	PWWF Depth (ft)		
Imperial and Berry	20C-29A	Plan 7620	P-F-(B)-31	MH-F-(B)-31	MH-F-(B)-32	8	161	0.0049	0.5485	0.2537	0.5031	2.76	0.75	0.50	0.6289	2.79	1.00	0.67	0.3231	0.6284	2.79	1.00	0.67	0.7855	3.48	1.00	0.67
	29A	Plan 7620	P-F-(B)-34	MH-F-(B)-34	MH-F-(B)-35	8	49	0.0043	0.5126	0.2537	0.5031	2.59	0.80	0.54	0.6289	2.79	1.00	0.67	0.3231	0.6284	2.79	1.00	0.67	0.7855	3.48	1.00	0.67
	29A	Plan 7620	P-F-(B)-35	MH-F-(B)-35	MH-F-(B)-36	10	172	0.0016	0.5729	0.3244	0.6308	1.79	1.00	0.83	0.7885	2.24	1.00	0.83	0.3995	0.7640	2.17	1.00	0.83	0.9550	2.71	1.00	0.83
	29A	Plan 7620	P-F-B-36A	MH-F-(B)-36	MH-F-B-36-01	10	93	0.0016	0.5713	0.3244	0.6308	1.79	1.00	0.83	0.7885	2.24	1.00	0.83	0.3995	0.7640	2.17	1.00	0.83	0.9550	2.71	1.00	0.83
Walling Ave and De Jur St	10D		P-I-(C)-32	MH-I-(C)-32	MH-I-(C)-33-DROP	8	366	0.0030	0.4254	0.1667	0.3419	2.10	0.68	0.45	0.4274	1.89	1.00	0.67	0.1760	0.3594	2.11	0.70	0.47	0.4492	1.99	1.00	0.67
Carey and De Jur St	10D		P-I-(C)-36	MH-I-(C)-36	MH-I-(C)-37	8	148	0.0047	0.5385	0.1900	0.3856	2.60	0.63	0.42	0.4820	2.70	0.74	0.49	0.2005	0.4051	2.62	0.65	0.43	0.5063	2.71	0.77	0.51
Central Ave	10D		P-I-(C)-37	MH-I-(C)-37	MH-I-(C)-38	8	132	0.0041	0.5009	0.1900	0.3856	2.45	0.66	0.44	0.4820	2.53	0.79	0.53	0.2005	0.4051	2.47	0.68	0.45	0.5063	2.24	1.00	0.67
Sky Lake Ave and Village Lake Mall	10D		P-I-(C)-41	MH-I-(C)-41	MH-I-(C)-42	8	204	0.0058	0.5956	0.2660	0.5255	2.98	0.73	0.49	0.6569	2.91	1.00	0.67	0.2802	0.5513	3.00	0.76	0.51	0.6891	3.05	1.00	0.67
Village Lake Mall and Columbia	10D-19B		P-I-(C)-42	MH-I-(C)-42	MH-I-(C)-43	8	166	0.0058	0.5986	0.2766	0.5448	3.01	0.75	0.50	0.6810	3.02	1.00	0.67	0.2914	0.5715	3.02	0.78	0.52	0.7144	3.17	1.00	0.67
Village Lake Mall and Columbia	19B		P-I-(C)-43	MH-I-(C)-43	MH-I-(B)-13	8	352	0.0094	0.7594	0.2873	0.5641	3.69	0.64	0.43	0.7051	3.82	0.76	0.51	0.3026	0.5917	3.72	0.66	0.44	0.7396	3.84	0.80	0.53
Starflower and Birch	31B		P-K-12-22	MH-K-12-22	MH-K-12-21	10	132	0.0036	0.8562	0.0676	0.1490	1.82	0.28	0.24	0.1863	1.94	0.32	0.26	0.3691	0.7104	2.72	0.70	0.58	0.8880	2.52	1.00	0.83
Wintergreen and Primrose	31B		P-K-12-47	MH-K-12-47	MH-K-12-33	8	324	0.0064	0.6259	0.0141	0.0353	1.50	0.16	0.11	0.0441	1.60	0.18	0.12	0.2512	0.4986	3.08	0.67	0.45	0.6232	3.16	0.82	0.54
Bluegrass and Primrose	31B		P-K-12-48	MH-K-12-48	MH-K-12-47	6	142	0.0064	0.3153	0.0121	0.0306	1.58	0.21	0.11	0.0383	1.68	0.24	0.12	0.2490	0.4946	3.90	1.00	0.50	0.6182	4.87	1.00	0.50
Flower Hill	31B		P-K-12-50	MH-K-12-50	MH-K-12-49	6	324	0.0035	0.2157	0.0081	0.0211	1.08	0.21	0.11	0.0264	1.15	0.24	0.12	0.2446	0.4866	3.83	1.00	0.50	0.6082	4.79	1.00	0.50
Flower Hill and Birch	31B		P-K-12-69	MH-K-12-69	MH-K-12-50	8	220	0.0039	0.4896	0.0020	0.0059	0.74	0.08	0.05	0.0074	0.79	0.09	0.06	0.2381	0.4746	2.47	0.79	0.53	0.5932	2.63	1.00	0.67
Birch	31B		P-K-12-79	MH-K-12-79	MH-K-12-69	8	253	0.0032	0.4431	0.0010	0.0031	0.57	0.06	0.04	0.0039	0.61	0.07	0.04	0.2370	0.4726	2.09	1.00	0.67	0.5907	2.62	1.00	0.67
Cherry and Peach Ave	29D	PN 7619	P-L-(B)-09	MH-L-(B)-09	MH-L-(B)-10	8	235	0.0001	0.0722	0.0294	0.0693	0.36	0.79	0.52	0.0866	0.38	1.00	0.67	0.0312	0.0732	0.32	1.00	0.67	0.0915	0.41	1.00	0.67
Cherry St	29D	PN 7619	P-L-(B)-10	MH-L-(B)-10	MH-L-(B)-11	8	383	0.0001	0.0895	0.0345	0.0802	0.45	0.74	0.49	0.1003	0.44	1.00	0.67	0.0365	0.0846	0.45	0.77	0.52	0.1057	0.47	1.00	0.67
Paseo de Toner and Taylor Ct	21C		P-R-(B)-37	MH-R-(B)-37-DROP	MH-R-(B)-38-DROP	8	300	0.0040	0.4953	0.1747	0.3569	2.39	0.63	0.42	0.4461	2.48	0.74	0.49	0.1821	0.3708	2.41	0.65	0.43	0.4635	2.50	0.77	0.51
Imperial and Randolph	30C		P-R-(B)-59	MH-R-(B)-59-DROP	MH-R-(B)-60-DROP	10	215	0.0044	0.9438	0.4610	0.8716	3.04	0.76	0.63	1.0895	3.09	1.00	0.83	0.5240	0.9806	2.78	1.00	0.83	1.2257	3.48	1.00	0.83
Imperial and Randolph	30C		P-R-(B)-60	MH-R-(B)-60-DROP	MH-R-(B)-61-DROP	10	118	0.0051	1.0124	0.5015	0.9417	3.26	0.76	0.64	1.1772	3.34	1.00	0.83	0.5776	1.0724	3.04	1.00	0.83	1.3405	3.80	1.00	0.83
Imperial and Randolph	30C		P-R-(B)-62	MH-R-(B)-62-DROP	MH-R-(B)-63-DROP	10	50	0.0080	1.2699	0.5044	0.9468	3.95	0.64	0.54	1.1835	4.09	0.76	0.64	0.5806	1.0776	4.04	0.71	0.59	1.3470	3.82	1.00	0.83
Imperial and Randolph	30C		P-R-(B)-63	MH-R-(B)-63-DROP	MH-R-(B)-64-DROP	10	32	0.0131	1.6266	0.5754	1.0687	4.92	0.59	0.49	1.3358	5.15	0.69	0.57	0.6546	1.2034	5.05	0.64	0.53	1.5042	5.24	0.76	0.63
Channel near Arivovista Park	29A	Plan 7616	P-F-(B)-40	MH-F-(B)-40	MH-F-(B)-41	15	102	0.0015	1.6053	1.1488	2.0188	2.55	1.00	1.25	2.5235	3.18	1.00	1.25	1.5491	2.6580	3.35	1.00	1.25	3.3225	4.19	1.00	1.25
Brea Creek Golf Course	29C		P-F-(B)-47	MH-F-B-56	MH-F-(B)-48	15	24	0.0017	1.7090	0.9803	1.7090	2.15	1.00	1.25	1.7090	2.15	1.00	1.25	1.0048	1.7090	2.15	1.00	1.25	1.7090	2.15	1.00	1.25
Fir and Mulberry	29C		P-F-(B)-48	MH-F-(B)-48	MH-F-(B)-49	15	308	0.0016	1.6867	0.9803	1.7448	2.20	1.00	1.25	1.7762	2.24	1.00	1.25	1.0048	1.7848	2.25	1.00	1.25	1.8170	2.29	1.00	1.25
Fir and Mulberry	29C		P-F-(B)-49	MH-F-(B)-49	MH-F-(B)-50-DROP	15	39	0.0018	1.7735	0.9803	1.7448	2.55	0.81	1.01	1.7762	2.24	1.00	1.25	1.0048	1.7848	2.25	1.00	1.25	1.8170	2.29	1.00	1.25
Acacia and Mulberry	29C		P-F-(B)-50	MH-F-(B)-50-DROP	MH-F-(B)-51	15	725	0.0016	1.6672	0.9849	1.7523	2.21	1.00	1.25	1.7858	2.25	1.00	1.25	1.0096	1.7927	2.26	1.00	1.25	1.8270	2.30	1.00	1.25
Juniper and Mulberry	38A		P-F-(B)-51	MH-F-(B)-51	MH-F-(B)-52	15	454	0.0010	1.3179	0.9858	1.7538	2.21	1.00	1.25	1.7877	2.25	1.00	1.25	1.0106	1.7943	2.26	1.00	1.25	1.8290	2.31	1.00	1.25
Juniper and Walnut	38A		P-F-(B)-52	MH-F-(B)-52	MH-F-(B)-53-DROP	15	310	0.0035	2.4709	1.0226	1.8140	3.40	0.64	0.80	1.8642	3.42	0.65	0.81	1.0492	1.8574	3.42	0.65	0.81	1.9092	3.44	0.66	0.82
Brea Blvd near juniper	38A		P-F-(B)-53	MH-F-(B)-53-DROP	MH-F-(B)-54-DROP	15	340	0.0020	1.8858	1.0646	1.8823	2.71	0.82	1.02	1.9510	2.46	1.00	1.25	1.1178	1.9687	2.48	1.00	1.25	2.0507	2.59	1.00	1.25
Brea Blvd near juniper	38A		P-F-(B)-54	MH-F-(B)-54-DROP	OUTLET-F	15	25	0.0020	1.8721	1.0737	1.8972	2.39	1.00	1.25	1.9700	2.48	1.00	1.25	1.1375	2.0006	2.52	1.00	1.25	2.0912	2.64	1.00	1.25
Mulberry near Acacia	29C		P-F-B-61	MH-F-B-60	MH-F-B-61	15	433	0.0020	1.8650	0.2974	0.5823	2.08	0.38	0.48	1.1598	2.48	0.57	0.71	0.7315	1.3328	2.56	0.63	0.78	2.0829	2.63	1.00	1.25
Imperial and Alley	28B		P-I-(E)-10	MH-I-(E)-10	MH-I-(E)-11	12	15	0.0047	1.5772	1.0311	1.8278	3.60	1.00	1.00	2.2848	4.50	1.00	1.00	1.0686	1.8889	3.72	1.00	1.00	2.3611	4.65	1.00	1.00
Imperial and Gemini	28B		P-I-(E)-11	MH-I-(E)-11	MH-I-(E)-12	12	418	0.0048	1.5970	1.0311	1.8278	3.60	1.00	1.00	2.2848	4.50	1.00	1.00	1.0686	1.8889	3.72	1.00	1.00	2.3611	4.65	1.00	1.00
Imperial and Gemini	28B		P-I-(E)-12	MH-I-(E)-12	OUTLET-I	12	229	0.0063	1.8308	1.0486	1.8562	3.66	1.00	1.00	2.3203	4.57	1.00	1.00	1.0864	1.9177	3.78	1.00	1.00	2.3971	4.72	1.00	1.00
Alder and Laurel	38B		P-L-(C)-13	MH-L-(C)-13-DROP	OUTLET-L	8	203	0.0036	0.4728	0.1812	0.3691	2.32	0.66	0.44	0.4614	2.39	0.80	0.53	0.2039	0.4114	2.36	0.72	0.48	0.5143	2.28	1.00	0.67

11.0 PUMP STATION HYDRAULIC ANALYSIS

The City owns and maintains the following two pump stations, both located in the Fullerton Drainage Region:

- Briarwood Pump Station
- Arovista Park Pump Station

Typically, sewage pump stations should be designed to pump the expected wet weather flows with the firm capacity of the station. This allows the pump station to be able to sufficiently handle flows during a wet weather event even when one pump is out of operation. As stated in Section 8.0, the wet weather flows are calculated by the following formula:

$$\begin{aligned} \text{PWWF} &= 1.25 \times \text{PDWF} & \text{PWWF} &= 1.25 \times \text{PDWF} \\ &= 1.25 \times (1.84 \times \text{ADWF}^{0.92}) & &= 1.25 \times (1.777 \times \text{ADWF}^{0.92}) \\ &= 2.30 \times \text{ADWF}^{0.92} & &= 2.221 \times \text{ADWF}^{0.92} \end{aligned}$$

Where, PWWF = Peak wet weather flow (cfs)
 PDWF = Peak dry weather flow (cfs)
 ADWF = Average dry weather flow (cfs)

Where, PWWF = Peak wet weather flow (mgd)
 PDWF = Peak dry weather flow (mgd)
 ADWF = Average dry weather flow (mgd)

11.1 Briarwood Pump Station

The *Briarwood Pump Station* is located on Briarwood Drive in the southwest corner of the City. It is a submersible pump station that serves 11 homes. Three homes are on South Puente Street just north of Briarwood Drive and eight homes are along Briarwood Drive just west of South Puente Street. The tributary area, shown in Figure 7, is approximately 10 acres.

The pumps are housed within a 5-foot diameter sewer manhole. The sewage is discharged through a 4-inch diameter cast iron force main. The force main extends north along Briarwood Drive, approximately 125 feet to the next manhole, where it outlets to the gravity system. The pump station has two pumps (one duty and one standby). The pump characteristics are summarized in Table 7.

Table 7
Briarwood Pump Station Pump Characteristics

Model	Goulds WS2012D4
Motor	2 Horse Power, 230 Volt, Single Phase, 16.3 Amps
Rotational Speed	175 RPM
Maximum Flow	420 gpm
Maximum Total Dynamic Head	34 feet

The firm capacity of the Briarwood Pump Station is 420 gpm which exceeds the ultimate estimated peak wet weather flow of only 8 gpm. Therefore, the existing pump station firm capacity is adequate.

11.2 Arovista Park Pump Station

The *Arovista Park Pump Station* is a submersible pump station built in 2005. It was constructed to relieve a 15-inch diameter sewer that starts at Arovista Park and extends south on Mulberry Avenue

and east toward the intersection of Juniper Street and Brea Boulevard, where it terminates at OCSD's Fullerton-Brea Interceptor. The portion of the wastewater that exceeds the capacity of the existing 15-inch pipe is lifted and discharged into a parallel 15-inch diameter sewer at a higher elevation.

The tributary service area for Arovista Pump Station is shown in Appendix 'H'. It encompasses a total of 795 net acres. The land uses within the tributary service area includes the following:

- 357 acres of low density residential (1,796 dwelling units)
- 61 acres medium density residential
- 83 acres high density residential
- 101 acres light industrial
- 109 acres general industrial
- 34 acres general commercial
- 12 acres mixed use
- 38 acres of open space

The pump station has a 10 ft x 8 ft rectangular epoxy urethane lined wet well with two slide rail submersible angle flow pumps and one torque flow sump pump. The wet well invert is at elevation 308.28 feet and the top slab is at elevation 340.5 feet. The pumps discharge into a common manhole through 10-inch diameter ductile iron force mains southwesterly of the pump station. The discharge pipe centerlines are at elevation 331.13 feet. The pump station has a 10-inch diameter overflow pipe between the wet well and the discharge manhole, with the centerline of the pipe at elevation 331.26 feet.

The duty pump is set to start at elevation 313.78 feet, and the lag pump at elevation 314.28 feet. The high level alarm is set at elevation 314.78 feet. The pump station has a sonic transducer level control system (Milltronics Hydromanager), a backup float switch at high level, and an automatic dialer to transmit pump seal fail and high level alarm conditions to City staff. The pump station also has a portable generator connection and a manual transfer switch. The duty pump characteristics are shown in Table 8.

Refer to Appendix 'H' for sewer lift station tributary areas.

Table 8
Arovista Park Pump Station Pump Characteristics

Model	ESSCO 6x6x14x4.25
Motor	20 hp
Rotational Speed	1,175 RPM
Flow	1,400 gpm
Total Dynamic Head	22 feet

The Arovista Park Pump Station is regularly maintained to insure that it is in good working condition and meet the capacity of its tributary area. No improvements are required to increase pumping capacity.

11.3 La Floresta Pump Station

The La Floresta station is located in the southeast portion of the City and serves approximately 647 homes. It is equipped with two submersible Vortex Pumps which are housed in an 8 foot square by 28 foot deep wetwell. Effluent from the lift station is discharged through a 6" force main. The lift

station is equipped with an 80kW sound attenuated diesel driven generator and automatic transfer switch. Ownership of the lift station has not yet been formally transferred to the City. However, the lift station is currently in operation and flows discharge to the City sewer system. The lift station is equipped with an alarm system to send high level warnings to the cell phones of City sewer operations supervisors.

The pump station is located on the north side of Imperial Highway, west of Carbon Canyon Channel. It will be a submersible pump station with two submersible vortex pumps. The pump characteristics are shown in Table 9.

**Table 9
Proposed La Floresta Pump Station Pump Characteristics**

Model	ESSCO 4x12
Motor	15 hp
Rotational Speed	1150 RPM
Flow	500 gpm
Total Dynamic Head	50 feet

The wet well is an 8-foot square box, approximately 25 feet in depth. The sewage will be discharged through an 8-inch diameter ductile iron force main. The force main will extend north in an easement and proposed streets within the development to an existing OCSD trunk sewer in Rose Drive. The discharge point will be located in Rose Drive just north of Vesuvius Drive.

The firm capacity of the proposed La Floresta pump station is 500 gpm which exceeds the ultimate estimated peak wet weather flow of 319 gpm. Therefore, firm capacity of the proposed pump station is expected to be adequate.

12.0 PROJECT PRIORITIES

In order to establish an effective capital improvement program, an equitable method of project prioritization must be established. The capital improvement projects were selected primarily with consideration of the health and safety of the public and protection of the environment by minimizing the possibility of overflows. Capital improvement projects to correct capacity deficiencies are prioritized as follows:

1. The highest priority has been assigned to facilities with existing capacity deficiencies, where pipe sections were flowing with a depth to diameter (d/D) ratio of 0.76 or greater with calculated peak dry weather flows.
2. The second priority was assigned to those facilities flowing with a d/D ratio between 0.64 and 0.75 with calculated peak dry weather flows. It is recommended that these sewers be flow monitored to better define the presence and extent of the deficiency before project implementation. When the measured peak dry weather flows exceed the pipe capacity (d/D=0.64 under peak dry weather conditions), the sewers should be replaced. If the peak flow does not exceed the pipe capacity, the City may consider proceeding with the lower priority projects.
3. Facilities identified as capacity deficient under ultimate conditions and dependent on future development were given the last priority.

PART C – UPDATED CAPITAL IMPROVEMENTS PROGRAM

13.0 CAPITAL IMPROVEMENT PROGRAM

The capital improvement program for capacity improvements is formulated to eliminate the deficiencies in accordance with the City's criteria. The capacity improvement projects recommended are based upon the best information currently available. Detailed studies will be necessary to formulate that precise scope of each project. The City of Brea will flow monitor its system, particularly in the areas where the hydraulic model indicates capacity deficiencies. The recommended priorities will be adjusted based upon the actual need.

Table 10 below provides a prioritized listing of the recommended projects, as well as their implementation costs. The project segment is highlighted to indicate whether the project has been completed at the time of this update. The costs provided are estimated replacement costs, assuming the under capacity pipe can be replaced with a larger pipe in the same alignment with the same slope.

The collection system construction estimates are based upon replacement at \$47.55 per diameter inch per foot of pipe. Implementation cost is determined by increasing the 2005 Brea Sewer Master Plan sewer pipe unit construction cost (\$30 per diameter inch per foot of pipe) by 17.4 percent based on the increase in Engineering News Record (ENR) Los Angeles Area Construction Cost Index and adding 35 percent of construction cost to cover engineering, inspection, contingency, and administration. The total projected cost of the remaining capacity improvements is approximately \$5,642,000. However, if alternative construction methods, such as pipe bursting are feasible in the City's geotechnical ground conditions the unit cost per foot per diameter inch can be 50% less than use of open trench methods.

Project Descriptions

Projects C3 through C6 have been completed per the hydraulic analysis. This encompasses all of the projects assigned a Priority 1 category. Project C7 through C9 in the second priority, have hydraulic model estimates of existing peak dry weather depth to diameter ratios between 0.64 and 0.75. Existing peak wet weather depth to diameter ratios are often greater than full capacity. Though not as serious as the Priority 1 projects, these segments also have unstable capacity demands.

Project C12 through C21 were placed in the third priority based on the fact that the hydraulic model estimates ultimate peak dry weather depth to diameter ratios greater than 0.64. These projects are dependent on upstream development and ultimate flow paths / connection points to the existing system. Should the assumed flow paths for upstream developments change as more detailed planning is conducted, the hydraulic model as well as the capacity deficiencies and Capital Improvement Project locations should be updated.

Legend	
	Pipeline Capacity Improvement Completed
	Project Programmed in CIP
	Pipeline Capacity Improvement Not Yet Completed

Table 10

Recommended Capacity Improvement Projects

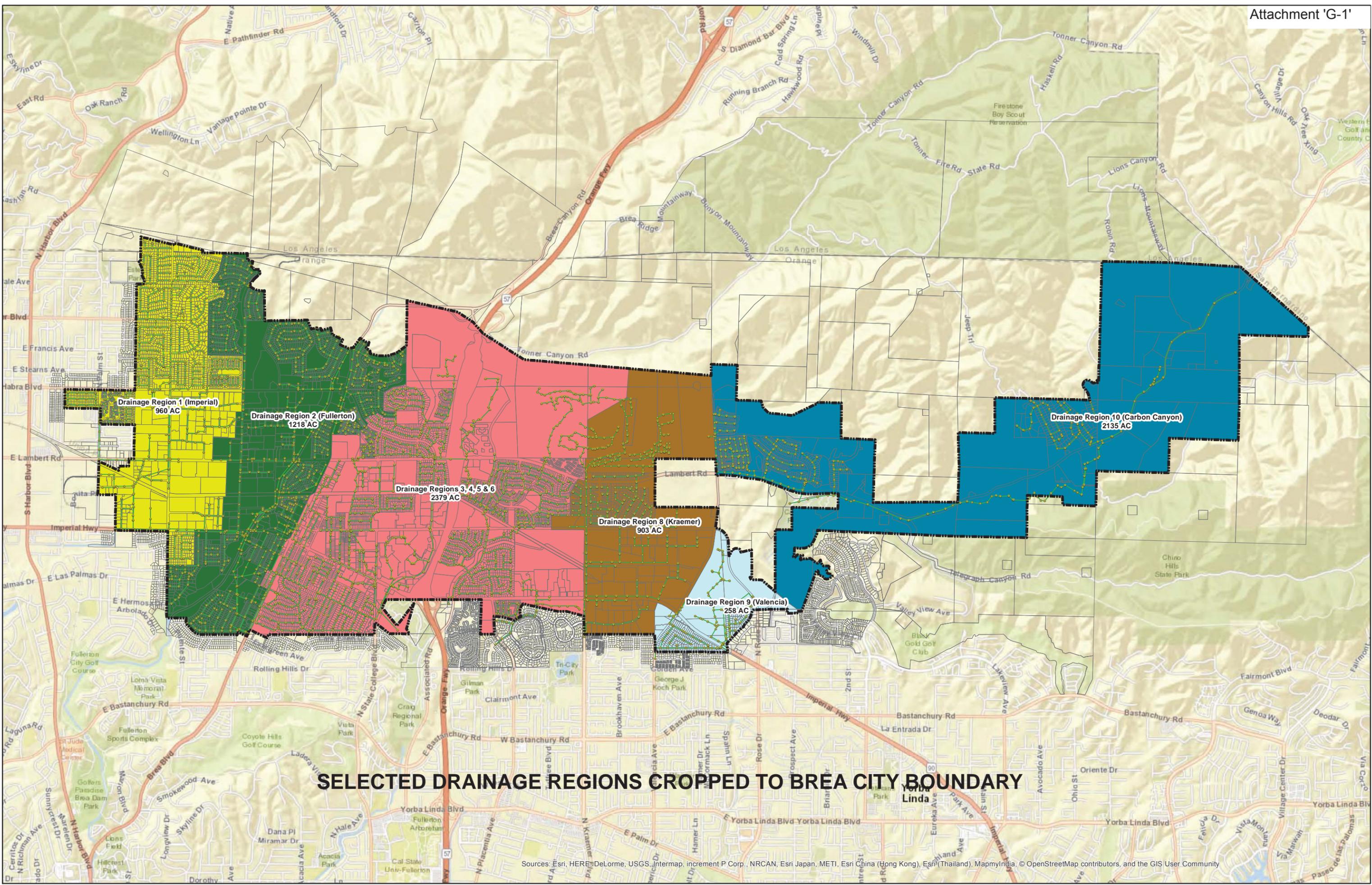
	Project No.	Drainage Region	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Length (ft)	Slope	Existing Diameter (in)	Proposed Diameter (in)	Unit Cost (\$/ft)	Cost (\$)	Total Project Cost (\$)
Priority 1	C3	Fullerton	Existing Capacity Deficiency	Along Brea Creek Channel north of Lambert Rd	P-F-(A)-17	MH-F-(A)-17	MH-F-(A)-18-DROP	131	0.0040	8	10	476	62,291	
					P-F-(A)-18	MH-F-(A)-18-DROP	MH-F-(A)-19-DROP	85	0.0044	8	10	476	40,418	
					P-F-(A)-19	MH-F-(A)-19-DROP	MH-F-(A)-20	466	0.0024	10	15	713	332,375	
					P-F-(A)-20	MH-F-(A)-20	MH-F-(A)-21	579	0.0024	10	15	713	412,972	
					P-F-(A)-21	MH-F-(A)-21	MH-F-(A)-22	90	0.0026	10	15	713	64,193	
					P-F-(A)-22	MH-F-(A)-22	MH-F-(A)-23-DROP	92	0.0186	12	15	713	65,619	
					P-F-(A)-23	MH-F-(A)-23-DROP	MH-F-(A)-24	74	0.0080	12	15	713	52,781	1,030,646
	C4	Fullerton	Existing Capacity Deficiency	West bank of Brea Creek Channel south of Imperial Highway	P-F-(B)-34	MH-F-(B)-34	MH-F-(B)-35	49	0.0043	8	12	571	27,959	
					P-F-(B)-35	MH-F-(B)-35	MH-F-(B)-36	172	0.0016	10	15	713	122,679	
					P-F-B-36A	MH-F-(B)-36	MH-F-B-36-01	93	0.0016	10	15	713	66,090	
					P-F-B-36-01	MH-F-B-36-01	MH-F-B-40-04	89	0.0016	12	15	713	63,729	280,457
	C5	Laurel	Existing Capacity Deficiency	Cherry St; Alder St from Cherry St to Laurel Ave	P-L-(B)-09	MH-L-(B)-09	MH-L-(B)-10	235	0.0001	8	10	476	111,743	
					P-L-(B)-10	MH-L-(B)-10	MH-L-(B)-11	383	0.0001	8	10	476	182,117	
					P-L-(B)-11	MH-L-(B)-11	MH-L-(B)-12	297	0.0299	8	10	476	141,224	
					P-L-(B)-12	MH-L-(B)-12	MH-L-(B)-13	208	0.0084	8	10	476	98,904	
P-L-(B)-13					MH-L-(B)-13	MH-L-(C)-12	5	0.0042	8	10	476	2,378	536,364	
Priority 2	C6	Fullerton	Existing Capacity Deficiency	Berry St from Lambert Rd to railroad tracks	P-F-(B)-24	MH-F-(B)-24	MH-F-(B)-25	390	0.0052	8	10	476	185,445	
					P-F-(B)-25	MH-F-(B)-25	MH-F-(B)-26	72	0.0086	8	10	476	34,236	
					P-F-(B)-26	MH-F-(B)-26	MH-F-(B)-27	328	0.0045	8	10	476	155,964	
					P-F-(B)-27	MH-F-(B)-27	MH-F-(B)-28	404	0.0047	8	10	476	192,102	570,125
				Berry St from railroad tracks to Imperial Hwy	P-F-(B)-28	MH-F-(B)-28	MH-F-(B)-29	13	0.0046	8	10	476	6,182	
					P-F-(B)-29	MH-F-(B)-29	MH-F-(B)-30	445	0.0050	8	10	476	211,598	
					P-F-(B)-30	MH-F-(B)-30	MH-F-(B)-31	340	0.0047	8	10	476	161,670	
					P-F-(B)-31	MH-F-(B)-31	MH-F-(B)-32	161	0.0049	8	10	476	76,556	
					P-F-(B)-32	MH-F-(B)-32	MH-F-(B)-33	320	0.0338	8	10	476	152,160	
					P-F-(B)-33	MH-F-(B)-33	MH-F-(B)-34	171	0.0127	8	10	476	81,311	689,475
	C7	Rolling Hills	Existing Capacity Deficiency	Randolph Ave from Imperial Hwy to State College Blvd	P-R-(B)-59	MH-R-(B)-59-DROP	MH-R-(B)-60-DROP	215	0.0044	10	12	571	122,679	
					P-R-(B)-60	MH-R-(B)-60-DROP	MH-R-(B)-61	118	0.0051	10	12	571	67,331	
					P-R-(B)-61	MH-R-(B)-61	MH-R-(B)-62	10	0.0113	80	12	571	5,706	
P-R-(B)-62					MH-R-(B)-62	MH-R-(B)-63-DROP	50	0.0080	10	12	571	28,530		
P-R-(B)-63					MH-R-(B)-63-DROP	MH-R-(B)-64	32	0.0131	10	12	571	18,259	242,505	

Appendix 'G'

	Project No.	Drainage Region	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Length (ft)	Slope	Existing Diameter (in)	Proposed Diameter (in)	Unit Cost (\$/ft)	Cost (\$)	Total Project Cost (\$)
Priority 2	C9	Imperial	Existing Capacity Deficiency	Walling Ave	P-I-(C)-32	MH-I-(C)-32	MH-I-(C)-33-DROP	366	0.0030	8	10	476	174,033	
				De Jur St	P-I-(C)-33	MH-I-(C)-33-DROP	MH-I-(C)-34	356	0.0043	8	10	476	169,278	
				De Jur St	P-I-(C)-34	MH-I-(C)-34	MH-I-(C)-35	290	0.0187	8	10	476	137,895	
				De Jur St	P-I-(C)-35	MH-I-(C)-35	MH-I-(C)-36	351	0.0361	8	10	476	166,901	
				Central Ave	P-I-(C)-36	MH-I-(C)-36	MH-I-(C)-37	148	0.0047	8	10	476	70,374	
				Central Ave	P-I-(C)-37	MH-I-(C)-37	MH-I-(C)-38	132	0.0041	8	10	476	62,766	
				Terrace Lake Dr	P-I-(C)-38	MH-I-(C)-38	MH-I-(C)-39	78	0.0176	8	10	476	37,089	
				Terrace Lake Dr	P-I-(C)-39	MH-I-(C)-39	MH-I-(C)-40	78	0.0092	8	10	476	37,089	
				Terrace Lake Dr	P-I-(C)-40	MH-I-(C)-40	MH-I-(C)-41	532	0.0260	8	10	476	252,966	
				Sky Lake Ave	P-I-(C)-41	MH-I-(C)-41	MH-I-(C)-42	204	0.0058	8	10	476	97,002	
				Village Lake Ave	P-I-(C)-42	MH-I-(C)-42	MH-I-(C)-43	166	0.0058	8	10	476	78,933	
				Harbor Lake Ave	P-I-(C)-43	MH-I-(C)-43	MH-I-(B)-13	352	0.0094	8	10	476	167,376	1,451,702
Priority 3	C12	Fullerton	Ultimate Capacity Deficiency	Brea Blvd from north of Central Ave to Eastwood Pl	P-F-(A)-05	MH-F-(A)-05	MH-F-(A)-06	336	0.0030	8	10	476	159,768	
					P-F-(A)-06	MH-F-(A)-06	MH-F-(A)-07	131	0.0224	8	10	476	62,291	
					P-F-(A)-07	MH-F-(A)-07	MH-F-(A)-08	353	0.0035	8	10	476	167,852	
					P-F-(A)-08	MH-F-(A)-08	MH-F-(A)-09	271	0.0030	8	10	476	128,861	
					P-F-(A)-09	MH-F-(A)-09	MH-F-(A)-10	80	0.0048	8	10	476	38,040	
					P-F-(A)-10	MH-F-(A)-10	MH-F-(A)-11	264	0.0036	8	10	476	125,532	
					P-F-(A)-11	MH-F-(A)-11	MH-F-(A)-12	292	0.0039	8	10	476	138,846	
					P-F-(A)-12	MH-F-(A)-12	MH-F-(A)-13	156	0.0090	8	10	476	74,178	
					P-F-(A)-13	MH-F-(A)-13	MH-F-(A)-14	300	0.0184	8	10	476	142,650	
					P-F-(A)-14	MH-F-(A)-14	MH-F-(A)-15	244	0.0160	8	10	476	116,022	
					P-F-(A)-15	MH-F-(A)-15	MH-F-(A)-16	253	0.0119	8	10	476	120,302	
					P-F-(A)-16	MH-F-(A)-16	MH-F-(A)-17	179	0.0313	8	10	476	85,115	1,359,455
	C13	Fullerton	Ultimate Capacity Deficiency	Brea Blvd from Canyon Country Rd to north of	P-F-(A)-02	MH-F-(A)-02	MH-F-(A)-03	395	0.0030	8	10	476	187,823	
					P-F-(A)-03	MH-F-(A)-03	MH-F-(A)-04	404	0.0025	8	10	476	192,102	
					P-F-(A)-04	MH-F-(A)-04	MH-F-(A)-05	336	0.0036	8	10	476	159,768	539,693

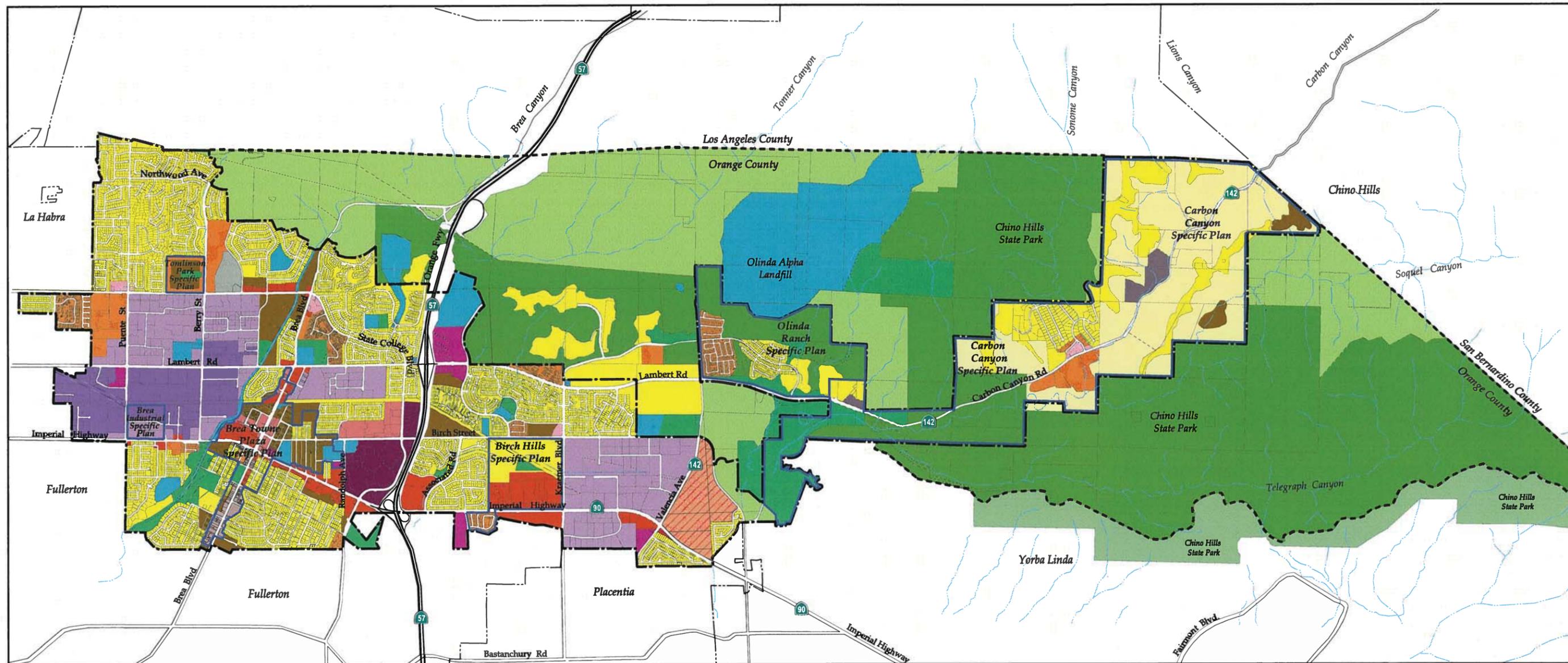
Appendix 'G'

	Project No.	Drainage Region	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Length (ft)	Slope	Existing Diameter (in)	Proposed Diameter (in)	Unit Cost (\$/ft)	Cost (\$)	Total Project Cost (\$)
Priority 3	C15	Kraemer	Ultimate Capacity Deficiency	Easement	P-K-12-79	MH-K-12-79	MH-K-12-69	253	0.0032	8	10	476	120,302	
				Flower Hill St	P-K-12-69	MH-K-12-69	MH-K-12-50	220	0.0039	8	10	476	104,610	
				Easement	P-K-12-50	MH-K-12-50	MH-K-12-49	324	0.0035	6	10	476	154,062	
				Easement	P-K-12-49	MH-K-12-49	MH-K-12-48	39	0.0141	8	10	476	18,545	
				Easement	P-K-12-48	MH-K-12-48	MH-K-12-47	142	0.0064	6	10	476	67,521	
				Primrose Ave	P-K-12-47	MH-K-12-47	MH-K-12-33	324	0.0064	8	10	476	154,062	
				Primrose Ave	P-K-12-33	MH-K-12-33	MH-K-12-24	287	0.0262	8	10	476	136,469	
				Starflower St	P-K-12-22	MH-K-12-22	MH-K-12-21	132	0.0036	10	12	571	75,319	830,889
	C16	Fullerton	Ultimate Capacity Deficiency	West bank of Brea Creek Channel south of Lambert Rd	P-F-(A)-25	MH-F-(A)-25	MH-F-(A)-26	194	0.0029	15	18	856	166,045	166,045
	C17	Fullerton	Ultimate Capacity Deficiency	West bank of Brea Creek Channel north of Imperial Hwy	P-F-(A)-34	MH-F-(A)-34	MH-F-(A)-35-DROP	381	0.0020	15	18	856	326,098	326,098
	C18	Fullerton	Ultimate Capacity Deficiency	West bank of Brea Creek Channel south of Central Ave	P-F-(A)-19-05	MH-F-(A)-19-05	MH-F-(A)-19-04	569	0.0021	10	12	571	324,671	324,671
	C19	Fullerton	Ultimate Capacity Deficiency	Berry St at Salveson Rd	P-F-(B)-10	MH-F-(B)-10-DROP	MH-F-(B)-11	271	0.0037	8	10	476	128,861	128,861
	C20	Fullerton	Ultimate Capacity Deficiency	Berry St at Apollo St	P-F-(B)-19	MH-F-(B)-19	MH-F-(B)-20	271	0.0069	8	10	476	128,861	128,861
	C21	Rolling Hills	Ultimate Capacity Deficiency	Poplar Ave at the railroad tracks	P-R-(B)-37	MH-R-(B)-37	MH-R-(B)-38-DROP	300	0.0040	8	10	476	142,650	142,650



SELECTED DRAINAGE REGIONS CROPPED TO BREA CITY BOUNDARY

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Legend

- City Boundary
- Sphere of Influence
- Specific Plan Boundary

General Plan Land Use Designations

Residential Designations

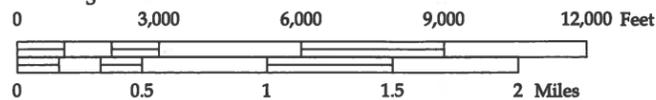
- Hillside Residential
- Very Low Density Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential

Mixed Use Designations

- Mixed Use I
- Mixed Use II
- Mixed Use III

Non-Residential Designations

- Regional Commercial
- General Commercial
- Neighborhood Commercial
- Recreational Commercial
- Office/Financial
- Light Industrial
- General Industrial
- Public Facilities
- Parks/Recreation/Open Space
- Natural Open Space
- Cemetery



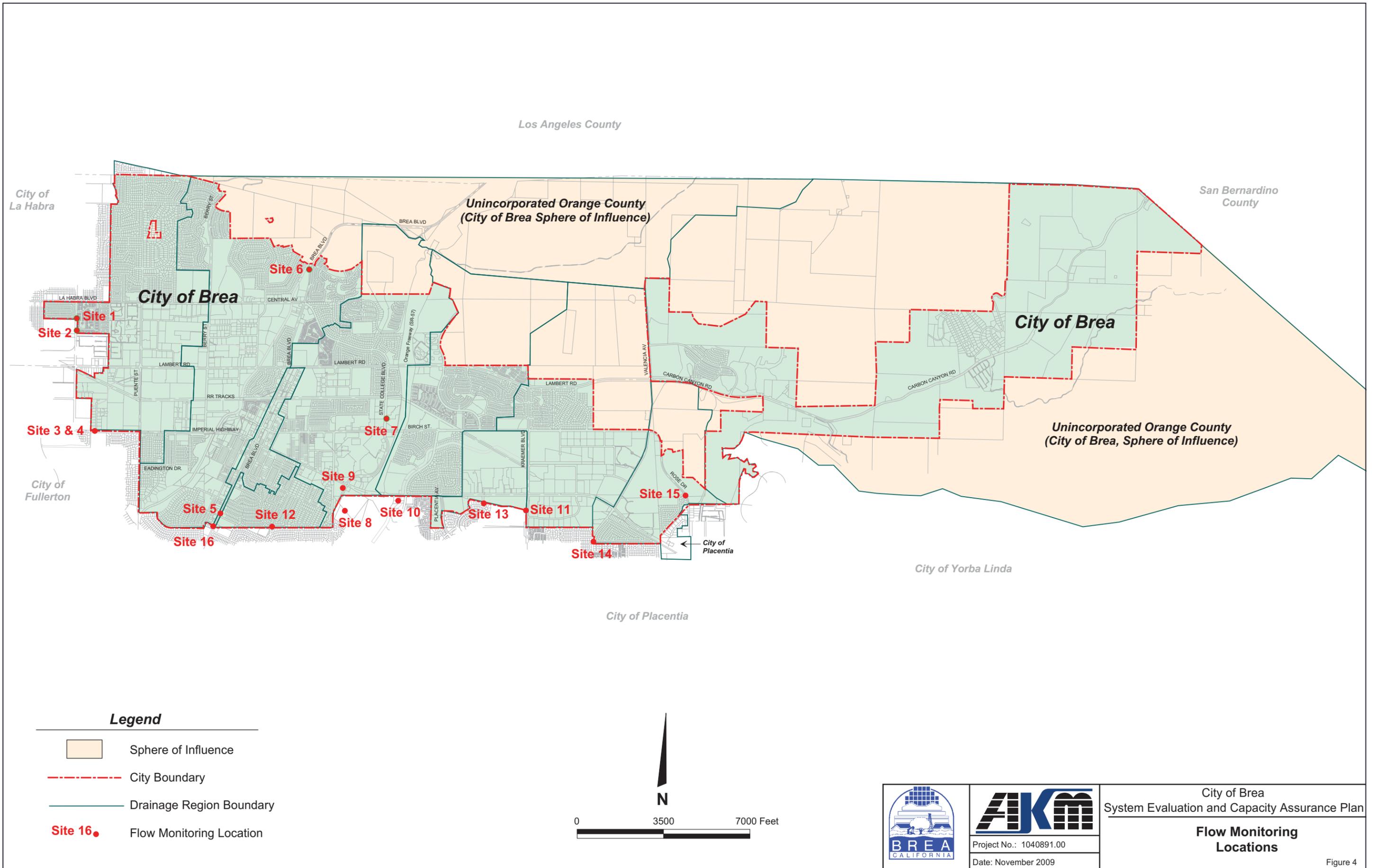
Notes:

The Land Use Policy Map provides general guidance regarding the type and intensity/density of use permitted on a specific property. Users must consult the entire General Plan, the City's Zoning Ordinance, and the Hillside Development Ordinance to determine the extent to which a property may be developed and/or used.

To determine the residential density and development capacity allowed in the Hillside Residential designation, the Hillside Density Calculation Process (as described on page CD 2-19 to CD 2-24 of the Land Use Section in the Community Development Chapter) must be applied.

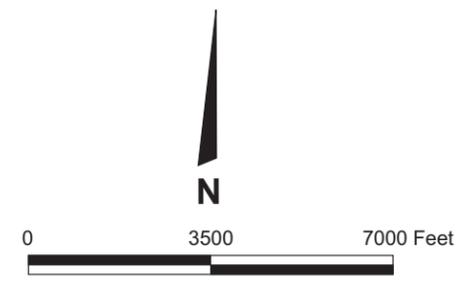
Figure 3

Land Use Policy Map



Legend

- Sphere of Influence
- City Boundary
- Drainage Region Boundary
- Site 16 • Flow Monitoring Location



AKM

Project No.: 1040891.00
Date: November 2009

City of Brea
System Evaluation and Capacity Assurance Plan

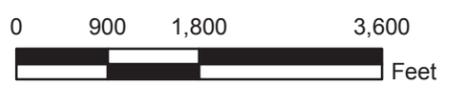
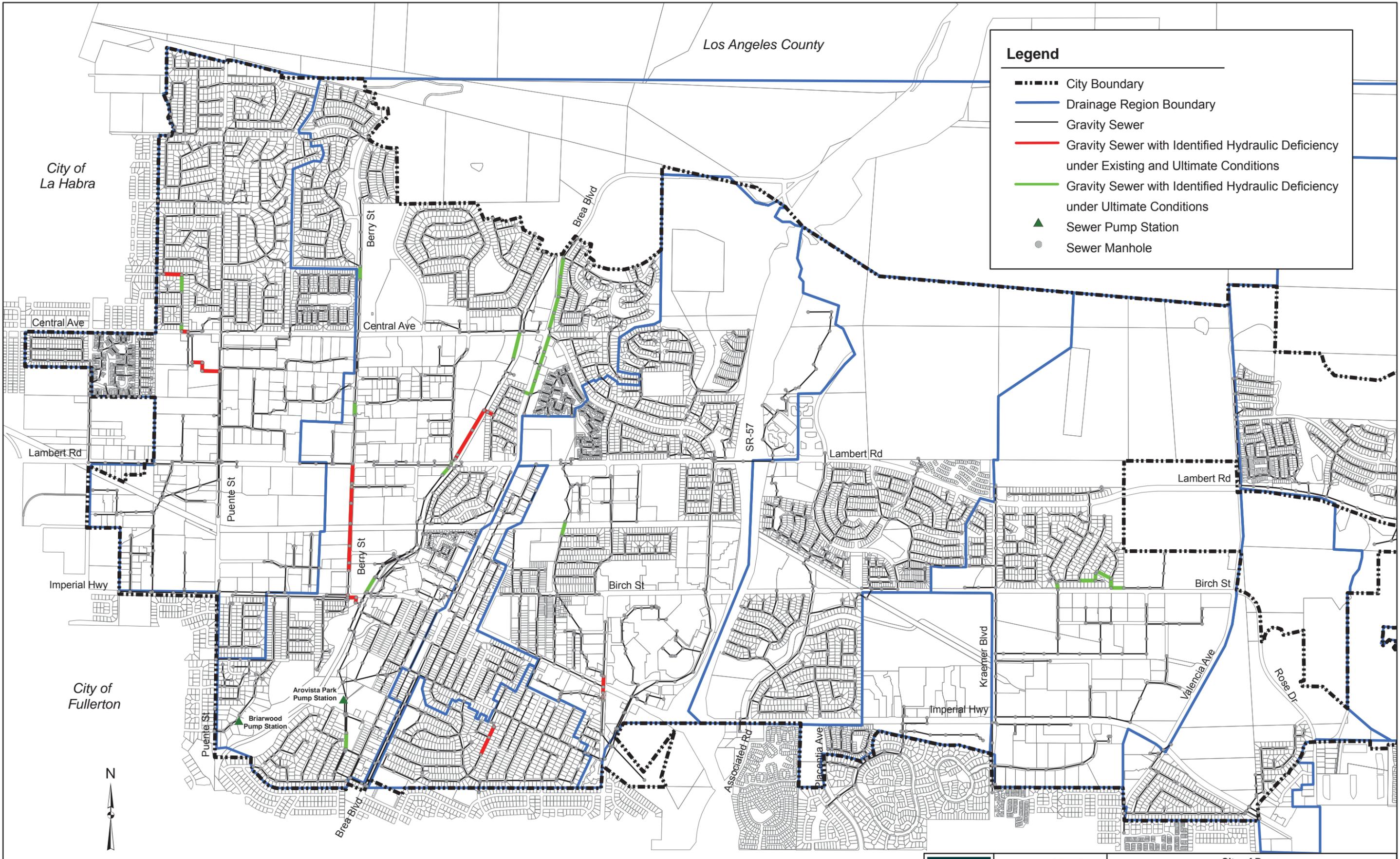
Flow Monitoring Locations

Figure 4

Los Angeles County

Legend

- City Boundary
- Drainage Region Boundary
- Gravity Sewer
- Gravity Sewer with Identified Hydraulic Deficiency under Existing and Ultimate Conditions
- Gravity Sewer with Identified Hydraulic Deficiency under Ultimate Conditions
- ▲ Sewer Pump Station
- Sewer Manhole

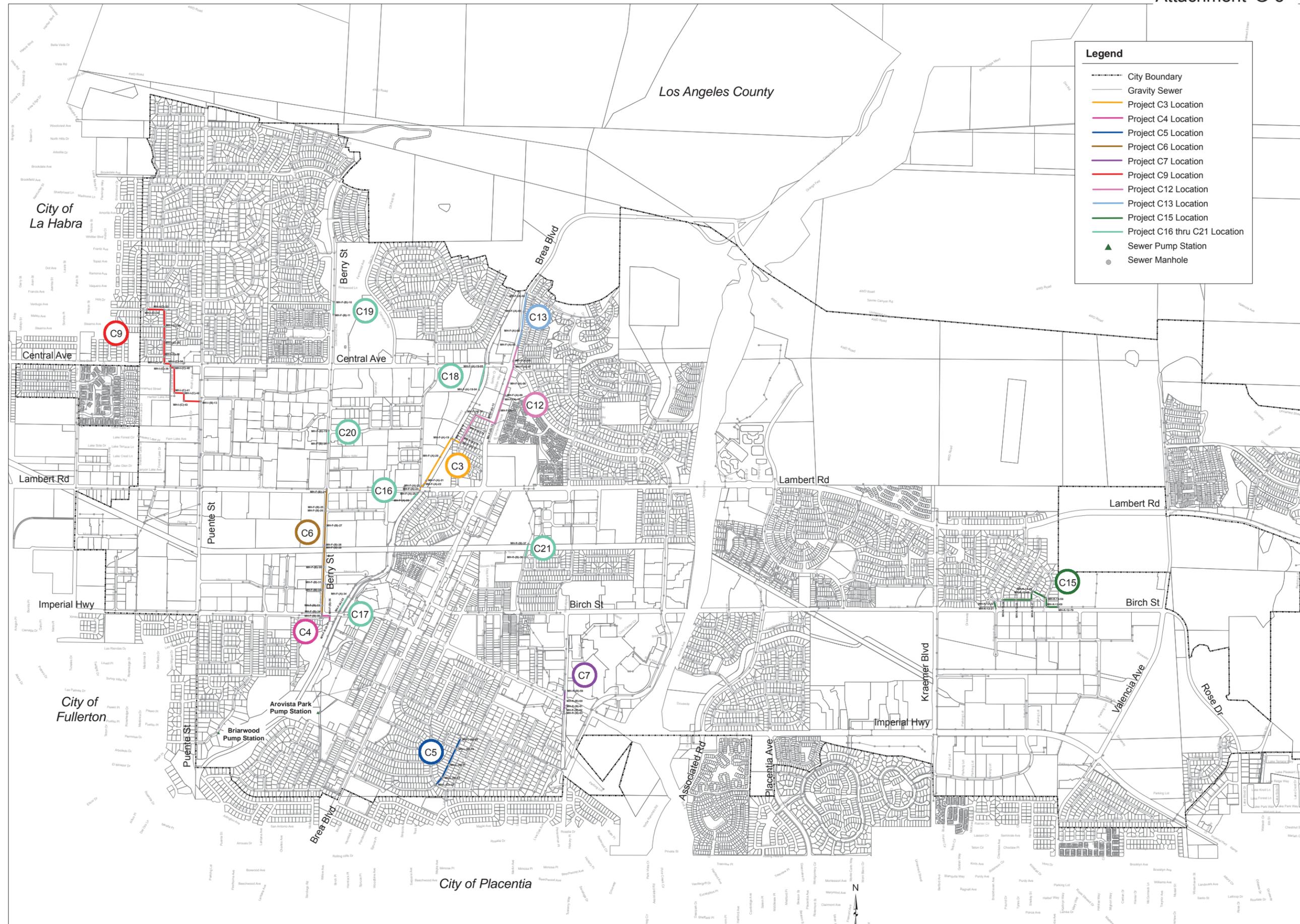


City of Placentia



AKM
 Project No.: 1040891.00
 Date: November 2009

City of Brea
 System Evaluation and Capacity Assurance Plan
Calculated Hydraulic Deficiencies
 Figure 5



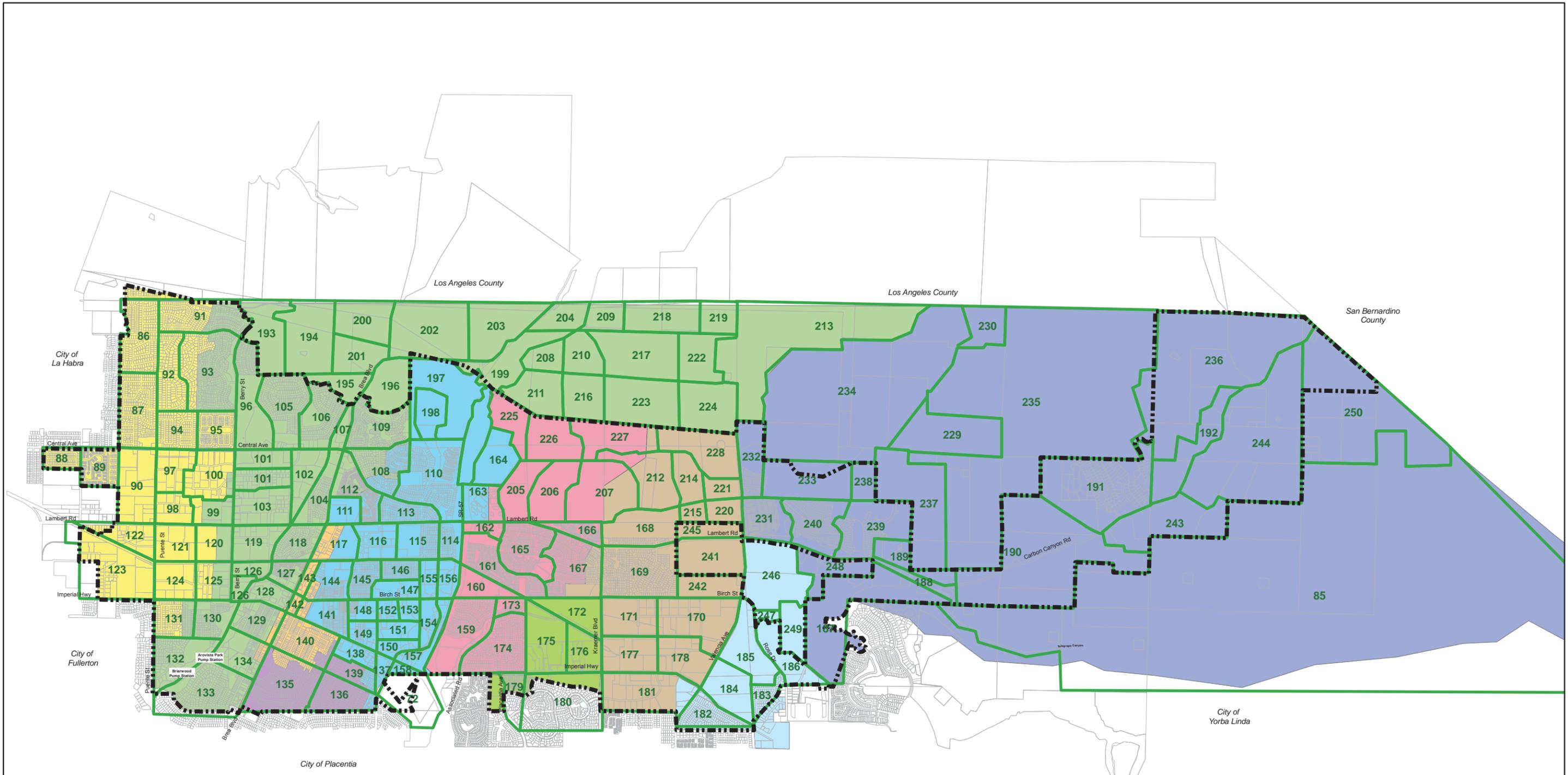
Legend

- City Boundary
- Gravity Sewer
- Project C3 Location
- Project C4 Location
- Project C5 Location
- Project C6 Location
- Project C7 Location
- Project C9 Location
- Project C12 Location
- Project C13 Location
- Project C15 Location
- Project C16 thru C21 Location
- Sewer Pump Station
- Sewer Manhole



AKM
 Project No.: 1040891.00
 Date: November 2009

City of Brea
 System Evaluation and Capacity Assurance Plan
Capacity Improvement Projects



Legend

- City Boundary
- Traffic Analysis Zone (TAZ) with ID Number



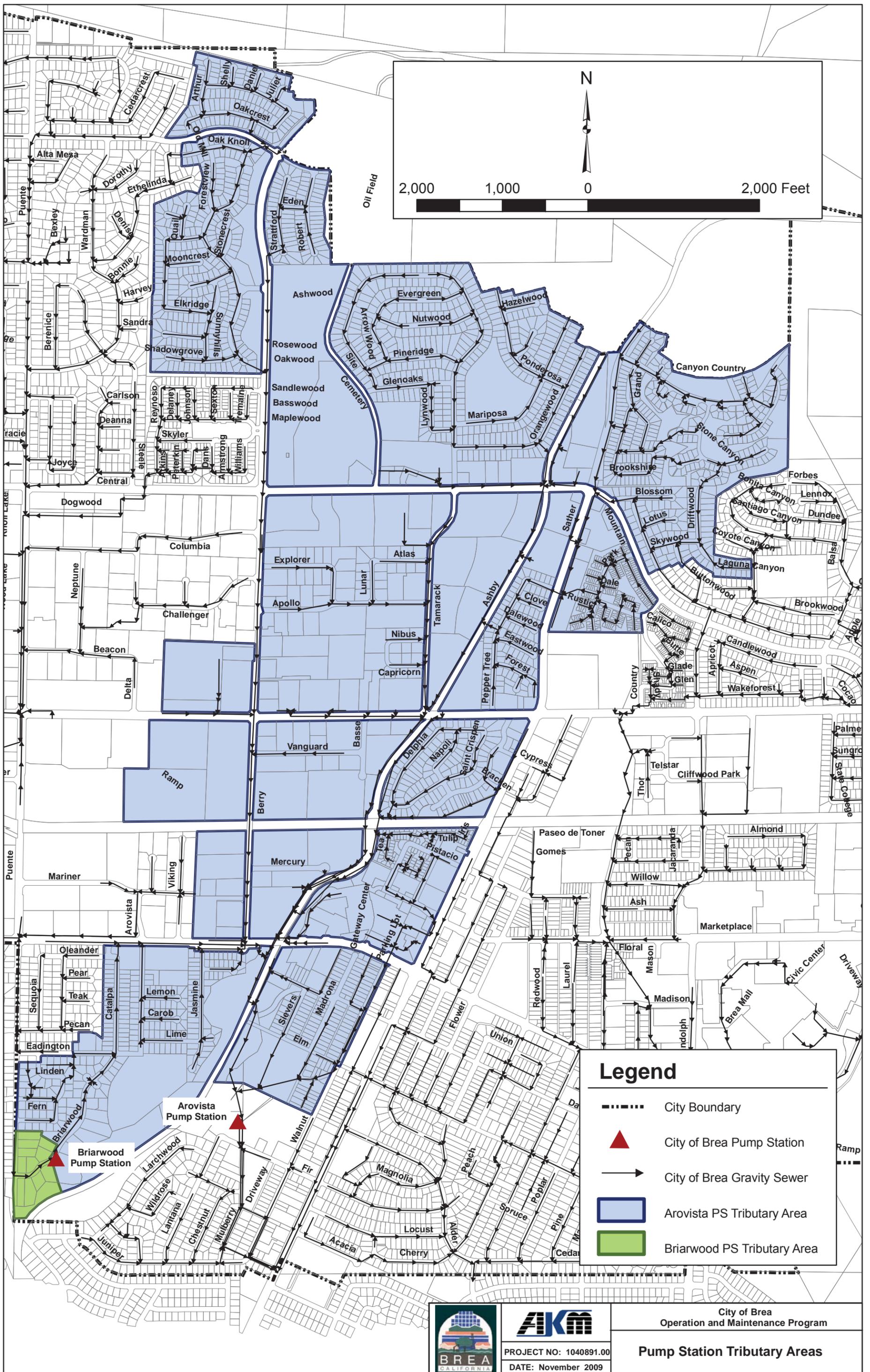
AKM
 Project No.: 1040891.00
 Date: November 2009

City of Brea
 System Evaluation and Capacity Assurance Plan
Traffic Analysis Zones

APPENDIX 'H'

Lift Station Tributary Areas

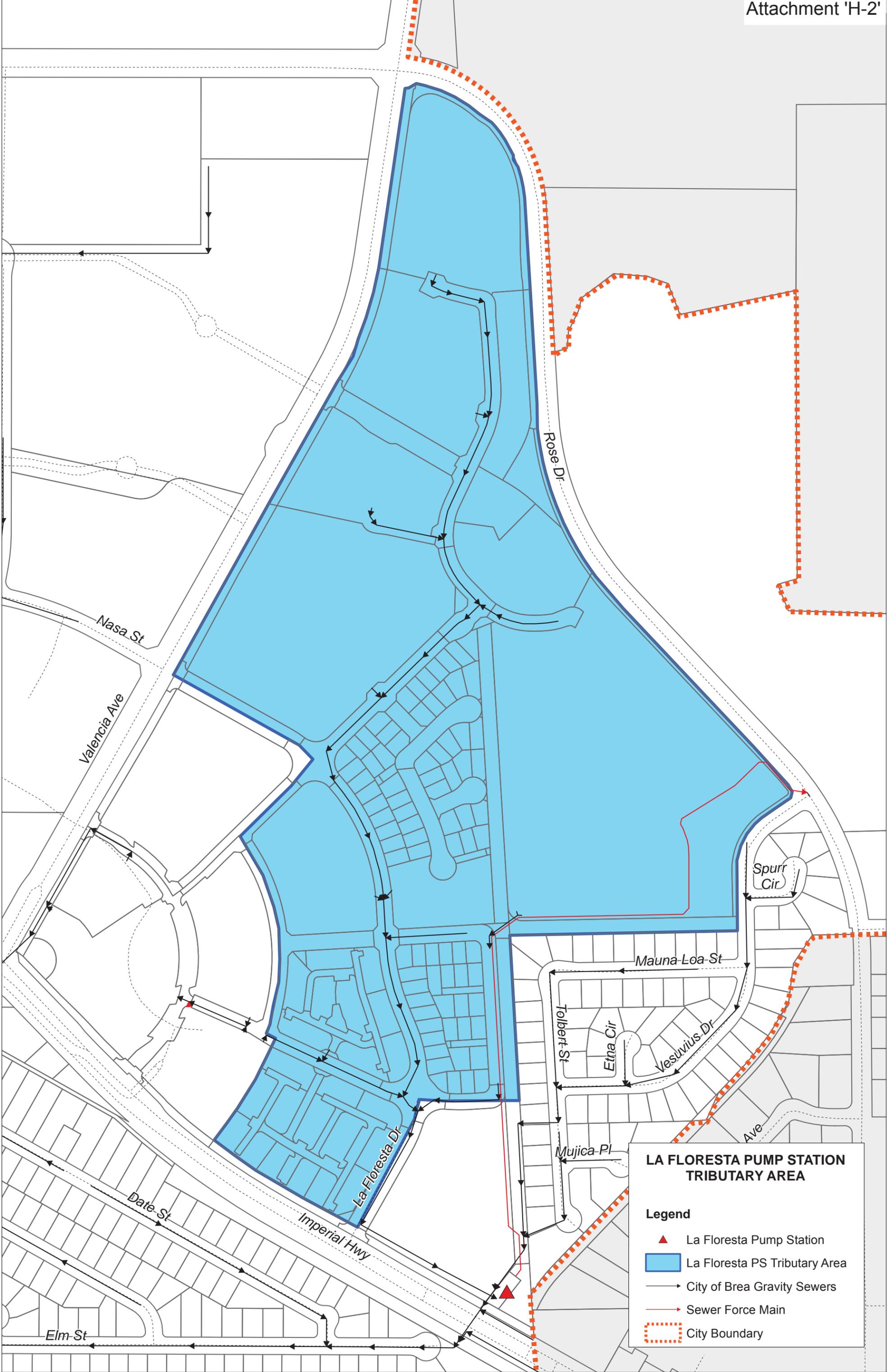
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AKM
 PROJECT NO: 1040891.00
 DATE: November 2009

City of Brea
 Operation and Maintenance Program

Pump Station Tributary Areas



LA FLORESTA PUMP STATION TRIBUTARY AREA

Legend

- ▲ La Floresta Pump Station
- La Floresta PS Tributary Area
- City of Brea Gravity Sewers
- Sewer Force Main
- ⋯ City Boundary

APPENDIX 'I'

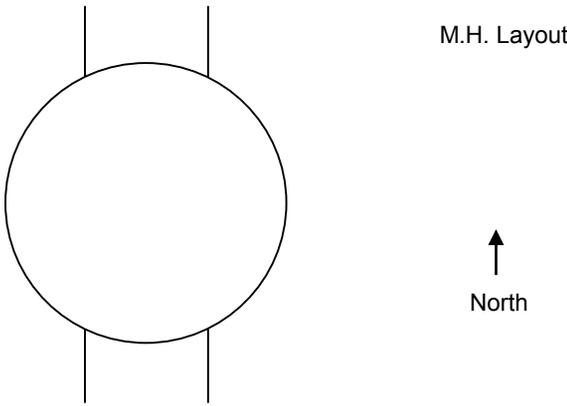
O&M Training Log
&
Maintenance Records

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Manhole Inspection Report

Attachment 'I-1'

<u>Overview</u>	<u>City of Brea</u>	Weather: _____
Manhole Number:	<u>M/H #</u>	Inspector Name: _____
Location:	_____	Date of Inspection: _____
Atlas Page Number:	_____	Time of Inspection: _____

<u>Pictures</u>	<u>Notes</u>																			
Cover On	_____	 <p style="text-align: right;">M.H. Layout</p> <p style="text-align: center;">↑ North</p>																		
General Area	_____																			
Down Manhole	_____																			
Other:	_____																			
Other:	_____																			
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%;">Pipe Diameter</th> <th style="width: 20%;">Pipe Material</th> </tr> </thead> <tbody> <tr><td>Line 1 (Effluent):</td><td>_____</td><td>_____</td></tr> <tr><td>Line 2 (Influent)</td><td>_____</td><td>_____</td></tr> <tr><td>Line 3 (Influent):</td><td>_____</td><td>_____</td></tr> <tr><td>Line 4 (Influent)</td><td>_____</td><td>_____</td></tr> <tr><td>Other:</td><td>_____</td><td>_____</td></tr> </tbody> </table>		Pipe Diameter	Pipe Material	Line 1 (Effluent):	_____	_____	Line 2 (Influent)	_____	_____	Line 3 (Influent):	_____	_____	Line 4 (Influent)	_____	_____	Other:	_____	_____	
	Pipe Diameter	Pipe Material																		
Line 1 (Effluent):	_____	_____																		
Line 2 (Influent)	_____	_____																		
Line 3 (Influent):	_____	_____																		
Line 4 (Influent)	_____	_____																		
Other:	_____	_____																		

<u>Site Information</u>							
Status:	<input type="checkbox"/> Located	<input type="checkbox"/> Not Located	<input type="checkbox"/> Could Not Open	<input type="checkbox"/> Not Accessible			
Surface Cover:	<input type="checkbox"/> Pavement	<input type="checkbox"/> Off Pavement	<input type="checkbox"/> Sidewalk	<input type="checkbox"/> Parking Lot	<input type="checkbox"/> Landscape	<input type="checkbox"/> Back Yard	<input type="checkbox"/> Open Field
Surface Condition:	<input type="checkbox"/> No Problem	<input type="checkbox"/> Cracked	<input type="checkbox"/> Pothole	<input type="checkbox"/> Raised	<input type="checkbox"/> Concrete Collar		
Traffic Setup:	<input type="checkbox"/> Roadway	<input type="checkbox"/> Off Roadway	<input type="checkbox"/> Intersection	<input type="checkbox"/> Sidewalk	<input type="checkbox"/> Driveway	<input type="checkbox"/> Private Property	<input type="checkbox"/> Highway
Traffic Volume:	<input type="checkbox"/> None	<input type="checkbox"/> Light Night TC	<input type="checkbox"/> Heavy				

<u>Manhole Cover</u>								
Status when located:	<input type="checkbox"/> Normal	<input type="checkbox"/> Missing	<input type="checkbox"/> Cracked	<input type="checkbox"/> Rocking	<input type="checkbox"/> Seized	<input type="checkbox"/> Sealed	<input type="checkbox"/> Bolted/Locked	<input type="checkbox"/> Buried/Covered
Shape:	<input type="checkbox"/> Round	<input type="checkbox"/> Square	<input type="checkbox"/> Other					
Size:	<input type="checkbox"/> 24" Diameter	<input type="checkbox"/> 36" Diameter	<input type="checkbox"/> Other	Shape: _____	Size: _____			
Material:	<input type="checkbox"/> Iron	<input type="checkbox"/> Plastic/Composite	<input type="checkbox"/> Other					
Corrosion on Bottom:	<input type="checkbox"/> None	<input type="checkbox"/> Light	<input type="checkbox"/> Medium	<input type="checkbox"/> Heavy				

<u>Grade Ring/Frame</u>	<u>General</u>
Condition:	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Missing
Corrosion:	<input type="checkbox"/> None <input type="checkbox"/> Light <input type="checkbox"/> Medium <input type="checkbox"/> Heavy
Cover to Frame Seal:	<input type="checkbox"/> None <input type="checkbox"/> Good <input type="checkbox"/> Poor
Frame to MH Seal:	<input type="checkbox"/> None <input type="checkbox"/> Good <input type="checkbox"/> Poor
	Steps/Rungs: <input type="checkbox"/> None <input type="checkbox"/> Iron <input type="checkbox"/> Plastic/Coated <input type="checkbox"/> Other
	Step Condition: <input type="checkbox"/> Good <input type="checkbox"/> Deteriorated
	Evidence of Surcharge: <input type="checkbox"/> No <input type="checkbox"/> Yes Height__no_____
	Vandalism: <input type="checkbox"/> No <input type="checkbox"/> Yes Description_____

Chimney & Cone

Shape: Concentric Eccentric Other Describe _____

Material: CIP Concrete PreCast Concrete Lined Brick Other

Condition – Visual: Good Fair Poor

Scrape/Penetrates – Near Surface: Hard Soft Inches _____

Scrape/Penetrates @ Cone: Hard Soft Inches _____

Infiltration/Inflow: None Stains/Deposits Dripping Running Streaming

Barrel / Wall

Material: CIP Concrete PreCast Concrete Lined Brick Other

Condition-Visual: Good Fair Poor

Scrape/Penetrates invert +4ft: Hard Soft Inches _____

Scrape/Penetrates @ Bench: Hard Soft Inches _____

Infiltration/Inflow: None Stains/Deposit Dripping Running Streaming

Bench

Material: CIP Concrete PreCast Concrete Lined Brick Other

Condition-Visual: Good Fair Poor

Scrape/Penetrates near wall: Hard Soft Inches _____

Scrape/Penetrates near channel: Hard Soft Inches _____

Infiltration/Inflow: None Stains/Deposits Dripping Running Streaming

Channel

Material: CIP Concrete PreCast Concrete Lined Brick Other

Condition-Visual: Good Fair Poor

Scrape/Penetrates @ crown of pipe: Hard Soft Inches _____

Scrape/Penetrates @ invert: Hard Soft Inches _____

Infiltration/Inflow: None Stains/Deposits Dripping Running Streaming

Flow Velocity: Dry Stagnant Slow (0-1 fps) Normal (1-4 fps) Fast (>4 fps) Turbulent

Flow Depth: Dry ≤1/4 Pipe Dia. ≤1/2 Pipe Dia. ≤3/4 Pipe Dia. Full Pipe Surcharged

Grease: None Light Medium Heavy

Pests/Insects: Few Many Infested Type _____

Manhole Rim to Invert Depth: _____

Silt: No Yes Inches _____

Unusual odor: No Yes Description _____

APPENDIX 'J'

Overflow Emergency Response Procedures

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Brea Sanitary Sewer Overflow Response Plan

The following outlines the procedure the City implements to stop and clean up after an SSO event. Refer to chapter 6 in the City's Sanitary Sewer Management Plan: Overflow Emergency Response for details on reporting requirements following an SSO event.

1. Response Time

The City has a target response time of 30 minutes for each reported SSO event. However, for some locations, the optimal response time is much shorter than this period. The City operates two Briarwood and Arovista lift stations which are in close proximity to the Brea Canyon Channel. For both of these locations, there is a high probability that a SSO event will develop into a Category 1 event due to the close proximity to a drainage channel. The Arovista pump station is approximately 500 feet to the east of the Brea Canyon Channel and approximately 18 feet higher in elevation. So, a quick response by City operations staff is needed to ensure that any overflow does not enter private property or the drainage channel.

The Briarwood lift station is located 300 feet to the northwest of the Brea Canyon Channel and is approximately 30 feet higher in elevation, so an expedited response is also recommended at this location. To date there has been one reported Category 3 SSO at this location due to a pump station failure. Setting up systems to alert City operations staff to potential pump station failures at all lift station locations is critical to ensuring that overflows do not develop into Category 1 events. Additionally, considerations of provision for overflow storage for potential lift station failures and a delayed response by operations staff should be implemented where necessary.

2. Sewer Overflow Assessment

The Maintenance Services Superintendent will assess the information provided by the dispatcher. He/she will either dispatch a supervisor to visit the site for further investigation or immediately dispatch a supervisor, the sewer crew and equipment to the site. In either case, the responsible Maintenance Services Department Supervisor will respond and visit the site within 30 minutes of receiving the report.

Upon arrival at the site, he/she will verify the overflow, determine whether it originates on private property, and conduct further investigation for selecting the appropriate subsequent tasks. He/she will direct the response crew to contain the spill first and then eliminate the cause of the overflow.

Refer to Attachment 'J-2' for a sample guide for SSO volume estimation.

2. Sewer Overflow Containment

A Maintenance Services Department Supervisor visits the site to respond to all SSO calls, whether the overflow originates from a problem in the City sewer system (City property) or in a private sewer system or sewer lateral (private property). The Supervisor assesses the

problems and calls for mobilization of a crew and equipment to contain the spill. Two City trucks are set up with materials to cover storm drain access.

The Maintenance Services Department Crews are trained to use sand bags, polyethylene sheeting and rubber mats to contain the spills and block catch basin entrances to storm drain. Crews are also trained to use the storm drain system as a containment device, if needed. Storm drain catch basins are blocked with polyethylene sheeting and sand bags to prevent the spill from entering the storm drain. Fire Department personnel are also trained to block sewage from public right-of-way and/or storm drains, when necessary. Any blockage within the City sewer system is cleared by the responding City crew. The City Vactor truck is used to vacuum up spills and wash down water. The City uses a four-step approach to contain SSOs and to prevent discharge to a storm drain:

- A. Sandbags are used to form a barricade to contain the spill on the site.
- B. The field crew blocks the catch basin with polyethylene sheeting and sand bags to prevent an overflow from entering the storm drain system
- C. With the barricades in place, City crew uses the Vactor truck to vacuum up the spill and wash down water at the barricades.
- D. If the discharge flow cannot be contained and reaches the storm drain, the storm drain is blocked downstream of the spill and used as a containment device to prevent discharge to a storm channel.

3. Sewer Overflow Corrective Action

After containment of the sewer overflow, the response crew(s) and/or contractor will eliminate the cause of the overflow. The City's sewer maps will be utilized in assessing the potential cause of the overflow from the gravity system, such as grease, roots, structural defects, or a capacity deficiency.

a—Overflow due to pipe blockage:

The crews and/or contractor will open the upstream and downstream manholes, and remove the blockage with appropriate equipment. Once the pipe blockage is removed, the Supervisor and crew will observe the flow and dip the upstream and downstream manholes to confirm that the source of overflow is eliminated. At a minimum, the location of the pipe blockage and three reaches downstream of the pipe blockage will be CCTV inspected within the next five days to verify that the blockage has been cleared.

b—Overflow due to a gravity sewer pipe break:

Bypass pumping will be set-up to divert flow around the blockage and the failed pipe sections will be replaced. Suspected sub-surface leakage from the damaged gravity sewer system will be pumped back into the sewer system.

c—Overflow due to a force main break:

Temporary bypass piping and the pumps will be set up to divert flow until a pipe repair is completed. In an emergency, damaged sections of the force main may be

repaired using repair clamps and temporary above-ground piping. A description of both the temporary and subsequent permanent repairs will be considered and included in the spill report.

d—Overflow caused by a power failure at a pump station:

A portable generator will be connected to provide temporary power to the station or bypass pumping will be implemented where a standby generator outlet and manual transfer switch is not provided at the pump station.

e—Overflow caused by a mechanical failure at a pump station:

For a failure such as pump or piping failure, bypass pumps will be used to divert flow until the failure is repaired. In instances where bypass pumping cannot be utilized, a Vactor truck will be brought in to pump out and transport the influent sewage flow to a downstream manhole in the City sewer system or a downstream manhole in an Orange County Sanitation District trunk sewer.

Should the overflow response work continue beyond one shift, the Supervisor for the current shift will refer all pertinent information to the Supervisor for the next shift, including details of any problems reported by customers. The Supervisor will collect all information regarding the overflow, and complete a field report prior to leaving the site.

4. Clean-Up

The response crew(s) and/or contractor will clean up all spills. Initially, all contained sewage will be vacuumed from the gutter, street, and the storm drain system. The impacted area will then be washed down with potable water until all evidence of sewage is removed. Water used for cleanup will be measured and recorded. The wash water will be removed by vacuuming.

Any solids and semisolids remaining will be removed for disposal at the Orange County Sanitation District Wastewater Treatment Plant No. 1 in the City of Fountain Valley. If it is determined that use of portable aerators may be required where complete recovery of sewage is not possible, and where severe oxygen depletion in existing surface water is expected, the City will seek assistance from the OCSD Emergency Control Center (714) 593-7025. The OCSD response time to an SSO is normally less than 60 minutes.

5. SSO Containment for SSO Originating on Private Property

If the SSO originates on private property, it is the property owner's responsibility to contain the spill and remove the blockage. The City Supervisor visits the site to assess the location and probable cause of the blockage. If the cause of the SSO is a blockage in a private sewer or a sewer lateral, the City Supervisor contacts and directs the property owner or property management company to hire an emergency plumber to contain the SSO, remove the blockage and clean up the spill. If needed, the Supervisor will provide contact information for private plumbers that the property owner can call to remove the blockage. If the property owner/manager cannot be located or does not address the problem, or if there is

imminent danger of the overflow reaching the public right-of-way or a storm drain catch basin, the Supervisor will address the overflow as if it were on public property. In the event that a City crew must contain the spill and remove the blockage in a private sewer or sewer lateral, the Supervisor shall document the time and material spent to contain the SSO and shall prepare a time and material invoice to the property owner or property management company for City services rendered.

Whether the SSO occurs in a City sewer system, or a private sewer system or sewer lateral, the City supervisor and crew will remain on site until the problem is resolved and the SSO is stopped and cleaned up. The Supervisor will remain at the overflow site to verify that work by the property owner's plumber and/or the City crew eliminates the cause of the overflow and completes the required clean-up.

6. Post Response Activities

The information gathered from overflow response activities will be used in the planning of and regular inspection and preventive maintenance activities, and in formulating repair/replacement projects which will minimize the possibility of future overflows in the same vicinity.

1. If the overflow originated on private property, the property owner/manager will be provided with information as to his/her responsibilities for ascertaining that the source of the overflow is properly mitigated.
2. If the overflow originated on private property, and the property owner/manager did not assume prompt and proper responsibility, the City of Brea will enforce the requirements of the Clean Water Act, the California Water Code, California State Water Resources Control Board, Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems and Brea Municipal Code Chapter 13.
3. Perform CCTV inspection of the sewers upstream, through, and downstream of the overflow location to determine if:
 - a. The overflow response was performed properly
 - b. Additional maintenance or repair/replacement is necessary in any of these reaches to prevent overflows
4. Perform any immediate maintenance activities deemed necessary
5. Formulate and implement short and long term design and construction projects to eliminate the source of the overflow
6. Verify the completeness and accuracy of the information included in the reports
7. Update the databases and the sewer maps to include the overflow information
8. Evaluate the effectiveness of the SSEORP, and recommend improvements and/or

amendments to the plan

9. Implement the updates to the plan within 35 days of the overflow
10. Correspond with the person who reported the overflow and advise him/her of the results
11. Re-stock equipment, tools, and supplies for the next response

NOTIFICATION REPORTING FORM

Time: _____ a.m./p.m. Date: _____ Report taken by: _____

Location of Problem: _____

_____ (Repeat for clear understanding)

Nature and Details of Problem: _____

_____ (Repeat for clear understanding)

Reporting Party: _____ Telephone No. _____

Address: _____

Assigned to: _____ Assigned by: _____ Time assigned: _____

Field Report (for responder use)

Time arrived at site: _____ Time overflow stopped: _____

Duration of overflow: _____ Estimate of overflow volume: _____

U/S MH # _____ D/S MH # _____ Pipe size/length: _____

Findings: _____

Samples taken by: _____ Location of samples taken: _____

Describe cause of overflow: _____

Describe cleanup method(s): _____

Describe receiving water affected & location: _____

Were photographs taken? _____ Yes _____ No

Describe any property damaged and affected area:

Signs posted? _____ Yes _____ No Barricaded? _____ Yes _____ No

Neighbors notified:

Individuals and Regulators Notified & Times:

Follow-up measures:

Detailed sketch of affected area:

My signature indicates responsibility for content and accuracy of above information: _____

**Collection System Collaborative Benchmarking Group
Best Practices for Sanitary Sewer Overflow (SSO) Prevention and
Response Plan**

Attachment D - Sample Templates for SSO Volume Estimation

TABLE 'A'
ESTIMATED SSO FLOW OUT OF M/H WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in inches	S S O FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

Height of spout above M/H rim H in inches	S S O FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

Disclaimer:

This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

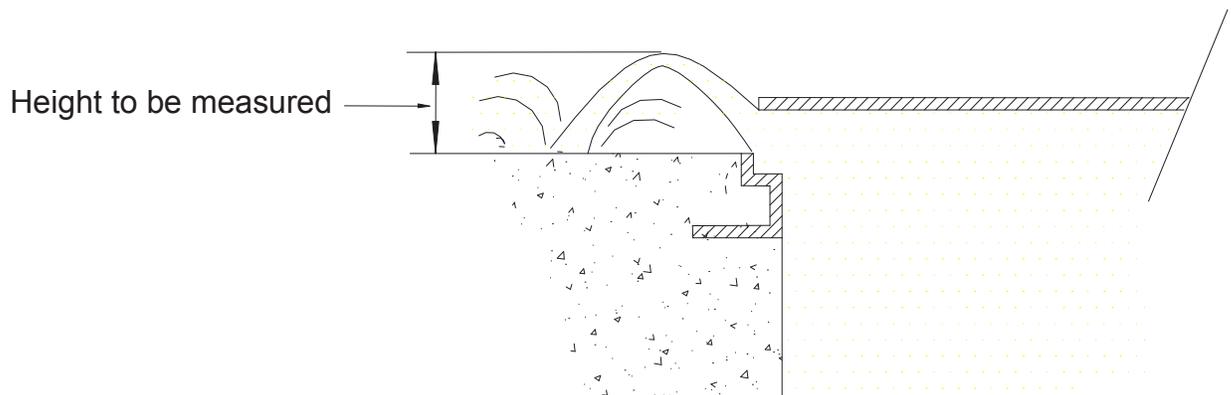
**Collection System Collaborative Benchmarking Group
Best Practices for Sanitary Sewer Overflow (SSO) Prevention and
Response Plan**

The formula used to develop Table A measures the maximum height of the water coming out of the maintenance hole above the rim. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is unseated and slightly elevated on a 24" casting. The maximum height of the discharge above the rim is 5 ¼ inches. According to Table A, these conditions would yield an SSO of 185 gallons per minute.

FLOW OUT OF M/H WITH COVER IN PLACE



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

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**TABLE 'B'
ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED**

24" FRAME

Water Height above M/H frame H in inches	S S O FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in inches	S S O FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Disclaimer:

This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

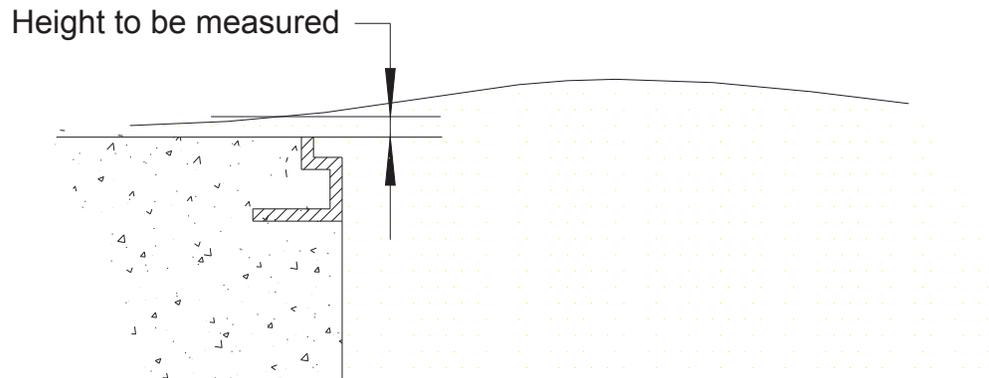
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Response Plan**

The formula used to develop Table B for estimating SSO's out of maintenance holes without covers is based on discharge over curved weir -- bell mouth spillways for 2" to 12" diameter pipes. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is off and the flow coming out of a 36" frame maintenance hole at one inch (1") height will be approximately 660 gallons per minute.

FLOW OUT OF M/H WITH COVER REMOVED (TABLE "B")



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

**Collection System Collaborative Benchmarking Group
Best Practices for Sanitary Sewer Overflow (SSO) Prevention and
Response Plan**

**TABLE 'C'
ESTIMATED SSO FLOW OUT OF M/H PICK HOLE**

Height of spout above M/H cover <u>H in inches</u>	SSO FLOW <u>Q in gpm</u>	Height of spout above M/H cover <u>H in inches</u>	SSO FLOW <u>Q in gpm</u>
1/8	1.0	5 1/8	6.2
1/4	1.4	5 1/4	6.3
3/8	1.7	5 3/8	6.3
1/2	1.9	5 1/2	6.4
5/8	2.2	5 5/8	6.5
3/4	2.4	5 3/4	6.6
7/8	2.6	5 7/8	6.6
1	2.7	6	6.7
1 1/8	2.9	6 1/8	6.8
1 1/4	3.1	6 1/4	6.8
1 3/8	3.2	6 3/8	6.9
1 1/2	3.4	6 1/2	7.0
1 5/8	3.5	6 5/8	7.0
1 3/4	3.6	6 3/4	7.1
1 7/8	3.7	6 7/8	7.2
2	3.9	7	7.2
2 1/8	4.0	7 1/8	7.3
2 1/4	4.1	7 1/4	7.4
2 3/8	4.2	7 3/8	7.4
2 1/2	4.3	7 1/2	7.5
2 5/8	4.4	7 5/8	7.6
2 3/4	4.5	7 3/4	7.6
2 7/8	4.6	7 7/8	7.7
3	4.7	8	7.7
3 1/8	4.8	8 1/8	7.8
3 1/4	4.9	8 1/4	7.9
3 3/8	5.0	8 3/8	7.9
3 1/2	5.1	8 1/2	8.0
3 5/8	5.2	8 5/8	8.0
3 3/4	5.3	8 3/4	8.1
3 7/8	5.4	8 7/8	8.1
4	5.5	9	8.2
4 1/8	5.6	9 1/8	8.3
4 1/4	5.6	9 1/4	8.3
4 3/8	5.7	9 3/8	8.4
4 1/2	5.8	9 1/2	8.4
4 5/8	5.9	9 5/8	8.5
4 3/4	6.0	9 3/4	8.5
4 7/8	6.0	9 7/8	8.6
5	6.1	10	8.7

Unrestrained
M/H cover will
start to lift

Note: This chart is based on a 7/8 inch diameter pick hole

Disclaimer: This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

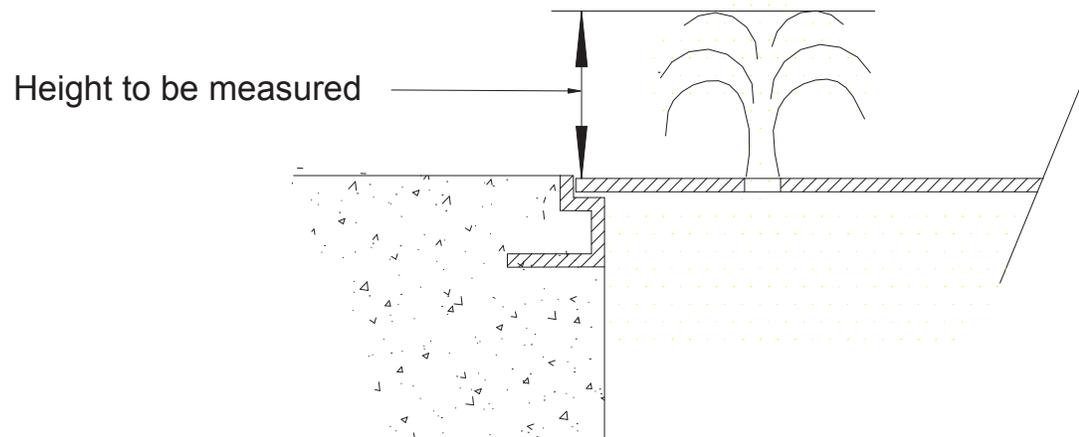
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The formula used to develop Table C is $Q=CcVA$, where Q is equal to the quantity of the flow in gallons per minute, Cc is equal to the coefficient of contraction (.63), V is equal to the velocity of the overflow, and A is equal to the area of the pick hole.² If all units are in feet, the quantity will be calculated in cubic feet per second, which when multiplied by 448.8 will give the answer in gallons per minute. (One cubic foot per second is equal to 448.8 gallons per minute, hence this conversion method).

Example Overflow Estimation:

The maintenance hole cover is in place and the height of water coming out of the pick hole seven-eighths of an inch in diameter (7/8") is 3 inches (3"). This will produce an SSO flow of approximately 4.7 gallons per minute.

FLOW OUT OF VENT OR PICK HOLE (TABLE "C")



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

² Velocity for the purposes of this formula is calculated by using the formula $h = v^2 / 2G$, where h is equal to the height of the overflow, v is equal to velocity, and G is equal to the acceleration of gravity.

Collection System Collaborative Benchmarking Group Best Practices for Sanitary Sewer Overflow (SSO) Prevention and Response Plan



Wastewater Collection Division
(619) 654-4160

Flow Estimation Pictures

**Reference Sheet for Estimating Sewer Spills
from Overflowing Sewer Manholes**
All estimates are calculated in gallons per minute (gpm)



5 gpm



100 gpm



225 gpm



25 gpm



150 gpm



250 gpm



50 gpm



200 gpm



275 gpm

rev. 4/99



City of San Diego
Metropolitan Wastewater Department

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

APPENDIX 'K'

SSO Equipment and Spare Parts Inventory

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EQUIPMENT AND REPLACEMENT PARTS INVENTORIES

The major items of sewer maintenance equipment owned by the City include the following:

Vehicles

1 - 2013 Vactor Truck

1 – 2012 CCTV Truck

Pump Station Equipment

1 spare pump for the Briarwood lift station

Sewer Spill Containment Equipment

- Gravel bags
- Polyethylene Sheets
- Absorbent

Safety Equipment

- Blowers
- Tripods
- Harness
- Gas detectors
- Large crowd control barricades
- Traffic cones
- Arrow boards
- Light towers
- Caution tape
- Flashlights

All other equipment is rented or purchased as necessary from one of the following contractors:

Material Suppliers

Western Water Works
11232 Firestone Boulevard
Norwalk, CA 90650

S&J Supply Company, Inc.
13105 Florence Avenue
Santa Fe Springs, CA 90670
(562) 944-7433

Plumbers Depot Inc.
14404 Gramercy Place
Gardena Ca 90249
(310) 851-5715

Advanced Infrastructure technologies
19815 Hamilton Ave
Torrance, Ca 90502
(310) 532-9050

Equipment Rental, including pumps, pipes, and hose

PDQ Rentals
Santa Fe Springs
10826 Shoemaker Avenue
Santa Fe Springs, CA 90670
(562) 944-3206

United Rentals
1301 S State College Bl.
Fullerton Ca 92831
(714) 871-5712

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APPENDIX 'L'

Food Service Best Management Practices

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Some Best Management Practices (BMP) for Fats, Oils, and Grease

Residual fats, oils and grease (FOG) are by-products that food preparation and food service establishments and automotive service facilities and machine shops must constantly manage. Typically, FOG enters a facility's plumbing from wash sinks and floor drains during daily operations. Sanitary sewer systems are not designed or equipped to handle accumulating FOG on the interior of sewer collection system pipes due to unmanaged – unmaintained discharges. Keeping FOG materials out of the plumbing system, by reasonable methods, is an important factor. The following are suggestions for proper FOG management:

Bulk or Dry Clean-Up

- Practice bulk and dry materials clean-up before using wet methods that use water.
- Remove bulk or other solid food and grease laden substances into a suitable container before rinsing or washing the initial containers or surfaces that will drain into the plumbing system.
- Keep drain screens in place and fully serviceable to avoid clogging drains or accumulating FOG or grit on the interiors of pipes.
- Do not pour grease, fats, or oils down the drain nor place food scraps in the drain.
- Use food grade paper to soak up oils and grease and dispose of appropriately.
- Use paper towels to wipe down surfaces and work areas. Cloth towels require washing and thereby introducing FOG back into the drains.
- Success of bulk or dry clean-up is dependent upon the behavior of individuals and their access to tools and materials for use in removing bulk and dry materials before washing.

Spill Prevention

- Preventing spills reduces the amount of waste that will require clean-up.
- A dry surface work place is safer for everyone in avoiding slips, trips and falls.
- Capture bulk or dryer materials and

place them into an appropriate container.

- Empty containers before they are full to avoid spills.
- Cover any FOG container before transporting to the rendering storage container.
- Provide employees with proper tools to transport materials without spilling.

Maintenance

- Whatever method(s) are being used to collect, filter and store FOG, ensure that equipment is regularly maintained.
- Employees should be aware of and trained to perform correct and scheduled cleaning procedures.
- A daily and weekly maintenance schedule is highly recommended.
- Contract with a responsible service company to regularly and thoroughly clean larger components and spaces requiring specialized equipment and skills (e.g. large hood filters, hot tanks, floor drain pipes, specialty tools).
- Smaller and less complex elements can be cleaned by hand by the user (e.g. small hood filters, counter/bench tops, sinks, storage areas, daily tools).
- Skim/filter fryer grease daily and test the oil to determine when change is necessary. Build-up of carbon deposits on the bottom of the fryer acts as an insulator that forces the fryer to heat longer, thus causing the oil to break down sooner. This

- extends the life of both the fryer and the oil.
- Avoid discharging fryer oil into a drain or grease trap, but dispose into a rendering container for transport to a rendering company.
- Cleaning intervals depend upon the type of product being prepared and the typical deposition of materials experienced. The larger the volume produced and deposits incurred, the more frequent the cleaning. This may warrant setting up a system of high use, high deposition work to be done in certain equipment that is cleaned more frequently than others to confine maintenance efforts.
- Use only covered rendering barrels and make sure all drain screens are installed.
- Use a 3-compartment sink for ware washing. Begin with a hot pre-wash, then a scouring detergent wash, then a hot rinse. Each step should be trapped to capture non-emulsified FOG.
- Donations can reduce disposal costs. Ensure that edible food is not washed or flushed down the drain. Edible food waste may be donated to a local food bank. Inedible food waste can be collected by a garbage feeder that will use discards for feeding livestock

Grease Traps and Interceptors

- For grease traps and interceptors to be effective, the units must be properly sized, constructed and installed in a location to provide an adequate retention time for settling and accumulation of the FOG.
- For information on properly locating, constructing and sizing grease traps and interceptors, contact the local governmental agency and examine EPA guidance documents and UPC criteria.
- Ensure all grease-bearing drains discharge to the grease trap/interceptor.
- No toilet or shower waste should be plumbed to the trap/interceptor

Oil and Grease Collection/Recycling and Food Donations

- FOG consists of commodities that if handled properly can be treated as a valuable resource.
- Some rendering companies will offer services free-of-charge and other will give a rebate on the materials collected. Contact local rendering representative for specific information and details.

APPENDIX 'M'

FOG Application

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CITY OF BREA
FOG WASTEWATER DISCHARGE
PERMIT APPLICATION

- New
- Modification
- Ownership Change

Application Date _____

Business Address _____

Business Name _____ Phone No. _____

Business Owner Name _____ Phone No. _____

Billing Address _____ Phone No. _____

Business Manager Name _____

Emergency Contact

Name _____ Phone No. _____

City Business License Tax No. _____

Description of Business (include hours of operation)

Send completed application and \$60.00 processing fee to:

City of Brea
1 Civic Center Circle
Brea, Ca 92821
Attn: Brian Ingallinera

City Use Only

Accounting: 410-00-0000-3226

Approvals

Environmental _____

Comments/Restrictions/Conditions

Permit Fee _____ date _____ Mitigation Fee _____ date _____

BEST MANAGEMENT PRACTICES (BMP'S)

Category	Action	Reason
Training	Provide training for staff regarding the requirements of the City's FOG Program	All staff needs to be trained to handle those portions of the FOG program that relate to their duties. Managers and supervisors need to be familiar with all aspects of the program including the maintenance of records.
	Maintain a record of each employee's training	Should a problem arise regarding compliance with the FOG regulations the lack of a complete training record will be viewed as evidence of a willful intent not to comply
Outdoor Wash Rack	Provide containment, cover and drain with a drain screen Connected to the sewer system	Any outdoor area used for washing equipment, empty food containers or cooking utensils must have a drain that is connected to the sewer system. To prevent rainwater from falling into this area the wash rack must have a solid roof type cover.
FOG Sewer Line Interceptor	Install grease interceptor/grease trap in the sewer line	This equipment is designed to trap any FOG that gets into the sewer and remove it so it doesn't contribute to a main sewer line blockage
	Establish cleaning schedule to maintain proper operation of the unit	Establishing a schedule ensures the unit won't accumulate an amount of FOG that causes FOG to bypass the collecting unit and enter the main sewer line
	Maintain a unit cleaning log	A well maintained log will demonstrate the FSE did not contribute to a main sewer line SSO caused by a grease obstruction
Outdoor Trash Storage	Place all trash inside trash containers. Trash containers need to be maintained such that liquids cannot drain out of the trash container	Trash and liquids that accumulate on the ground can be washed into the storm drain system during heavy rains or during general wash down of the area
General outdoor areas including parking lot	Pick up trash in all outdoor areas and deposit in trash containers	Trash can be blown by the wind or carried by water runoff to the storm drain.

KITCHEN EQUIPMENT INVENTORY

Ref. No. _____

Business Name _____

Business Address _____

List only equipment that is likely to come in contact with grease or oil (do not include drink dispensers, coffee makers, ice machines, refrigerators, freezers, warming ovens or trays and other similar items)

Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____
Manufacturer _____ Model _____ Equipment Description _____	<input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> Removed Date _____

FOG SOURCE	FOG TYPE	DISPOSAL METHOD	WASTE HAULER	DESTINATION
<input type="checkbox"/> Grease Interceptor <input type="checkbox"/> Collection Container <input type="checkbox"/> Other	<input type="checkbox"/> Fat _____ lbs/gal <input type="checkbox"/> Oil _____ lbs/gal <input type="checkbox"/> Grease _____ lbs/gal	<input type="checkbox"/> Trash <input type="checkbox"/> Waste Hauler <input type="checkbox"/> Other	Name _____ Address _____	Name _____ Address _____
Date of Disposal _____ Signature _____ FSE Manager _____			I have received the FOG material as indicated above and will deliver it to the destination indicated. Signature _____ Waste Hauler Representative	
<input type="checkbox"/> Grease Interceptor <input type="checkbox"/> Collection Container <input type="checkbox"/> Other	<input type="checkbox"/> Fat _____ lbs/gal <input type="checkbox"/> Oil _____ lbs/gal <input type="checkbox"/> Grease _____ lbs/gal	<input type="checkbox"/> Trash <input type="checkbox"/> Waste Hauler <input type="checkbox"/> Other	Name _____ Address _____	Name _____ Address _____
Date of Disposal _____ Signature _____ FSE Manager _____			I have received the FOG material as indicated above and will deliver it to the destination indicated. Signature _____ Waste Hauler Representative	
<input type="checkbox"/> Grease Interceptor <input type="checkbox"/> Collection Container <input type="checkbox"/> Other	<input type="checkbox"/> Fat _____ lbs/gal <input type="checkbox"/> Oil _____ lbs/gal <input type="checkbox"/> Grease _____ lbs/gal	<input type="checkbox"/> Trash <input type="checkbox"/> Waste Hauler <input type="checkbox"/> Other	Name _____ Address _____	Name _____ Address _____
Date of Disposal _____ Signature _____ FSE Manager _____			I have received the FOG material as indicated above and will deliver it to the destination indicated. Signature _____ Waste Hauler Representative	
<input type="checkbox"/> Grease Interceptor <input type="checkbox"/> Collection Container <input type="checkbox"/> Other	<input type="checkbox"/> Fat _____ lbs/gal <input type="checkbox"/> Oil _____ lbs/gal <input type="checkbox"/> Grease _____ lbs/gal	<input type="checkbox"/> Trash <input type="checkbox"/> Waste Hauler <input type="checkbox"/> Other	Name _____ Address _____	Name _____ Address _____
Date of Disposal _____ Signature _____ FSE Manager _____			I have received the FOG material as indicated above and will deliver it to the destination indicated. Signature _____ Waste Hauler Representative	

APPENDIX 'N'

Operations and Capital Budget

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Brea Capital Outlay Budget and Capital Improvement Program

Appendix 'G' described the hydraulic model that was completed for the City in 2009 and recommended specific improvements to be made to address capacity deficient segments. Attachment 'N-2' in this Appendix outlines the City's currently planned CIP budget. Projects 7617 through 7627 correspond to the City's planned improvements for the sanitary sewer system. Of the projects recommended in Appendix 'G', Randolph Avenue from Imperial Highway to State College Boulevard is included in the City's CIP (Project # 7621). The CIP also includes budget items for sewer main relining (Project # 7617) and south Brea sewer repairs (Project # 7626).

A well planned capital budget is critical to ensuring that adequate funding is available to make repairs to the sewer system as deficiencies are identified. Attachment 'N-1' describes the City's estimated anticipated revenue sources and amounts as well as their anticipated expenditures to estimate amounts available for capital improvements over the next several years.

CITY OF BREA
Sanitary Sewer Operations and Capital Outlay Budgeting

2012 - 2013 2013 - 2014 2014 - 2015 2015 - 2016 2016 - 2017 2017 - 2018 2018 - 2019 2019 - 2020 2020 - 2021

Revenues

Charges for Services & Facilities	2,002,555	2,053,869	218,732	2,164,000	2,239,600	2,261,996	2,284,616	2,307,462	2,330,537
Sewer Permit Fees	15,850	82,894	22,690	30,000	95,000	85,000	765,000	68,850	61,965
Special Assessments									
Investment Earnings	26,288	29,655	25,366	60,000	60,000	27,000	27,000	27,000	27,000
Total Revenues	<u>2,044,693</u>	<u>2,166,418</u>	<u>266,788</u>	<u>2,254,000</u>	<u>2,394,600</u>	<u>2,373,996</u>	<u>3,076,616</u>	<u>2,403,312</u>	<u>2,419,502</u>

Expenditures

Salaries & Benefits	672,824	696,748	749,460	772,636	621,879	770,000	770,000	770,000	770,000
Transmission & Treatment									
Professional & Technical	75,440	69,000	100,256	113,441	148,750	150,000	150,000	150,000	150,000
Interdepartmental Services	69,444	108,348	118,625	125,565	133,591	135,600	142,600	149,600	156,600
Service Contracts	300,000	300,000	300,000	300,000	200,000	300,000	300,000	300,000	300,000
Other Services & Costs									
Capital Outlay	70,000	1,775,000	100,000	100,000	1,750,000	1,000,000	1,000,000	1,000,000	1,000,000
Total Expenditures	<u>1,187,708</u>	<u>2,949,096</u>	<u>1,368,341</u>	<u>1,411,642</u>	<u>2,854,220</u>	<u>2,355,600</u>	<u>2,362,600</u>	<u>2,369,600</u>	<u>2,376,600</u>
Balances	856,985	-782,678	-1,101,553	842,358	-459,620	18,396	714,016	33,712	42,902

CITY OF BREA
Sanitary Sewer Operations and Capital Outlay Budgeting

	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
<u>Revenues</u>									
Charges for Services & Facilities	2,002,555	2,053,869	218,732	2,164,000	2,239,600	2,261,996	2,284,616	2,307,462	2,330,537
Sewer Permit Fees	15,850	82,894	22,690	30,000	95,000	85,000	765,000	68,850	61,965
Special Assessments									
Investment Earnings	26,288	29,655	25,366	60,000	60,000	27,000	27,000	27,000	27,000
Total Revenues	2,044,693	2,166,418	266,788	2,254,000	2,394,600	2,373,996	3,076,616	2,403,312	2,419,502
<u>Expenditures</u>									
Salaries & Benefits	672,824	696,748	749,460	772,636	621,879	770,000	770,000	770,000	770,000
Transmission & Treatment									
Professional & Technical	75,440	69,000	100,256	113,441	148,750	150,000	150,000	150,000	150,000
Interdepartmental Services	69,444	108,348	118,625	125,565	133,591	135,600	142,600	149,600	156,600
Service Contracts	300,000	300,000	300,000	300,000	200,000	300,000	300,000	300,000	300,000
Other Services & Costs									
Capital Outlay	70,000	1,775,000	100,000	100,000	1,750,000	1,000,000	1,000,000	1,000,000	1,000,000
Total Expenditures	1,187,708	2,949,096	1,368,341	1,411,642	2,854,220	2,355,600	2,362,600	2,369,600	2,376,600
Balances	856,985	-782,678	-1,101,553	842,358	-459,620	18,396	714,016	33,712	42,902

CITY OF BREA

**SEVEN-YEAR CAPITAL IMPROVEMENT
PROGRAM BUDGET**

FY 2016-17 through FY 2022-2023

**GENERAL PLAN
CONFORMANCE RESOLUTION**



**GENERAL PLAN CONFORMANCE MATRIX
2016/17 CAPITAL IMPROVEMENT PROGRAM**

PROJECT NUMBER	DESCRIPTION	COMMUNITY DEVELOPMENT	COMMUNITY RESOURCES	PUBLIC SAFETY
<u>STREET IMPROVEMENTS</u>				
7219	Traffic Calming Improvements	CD 2.3, 6.4, 11.5		
7251	57 Freeway/Lambert Road Interchange	CD 10.1, 11.1, 11.6, 27.1, 28.1		
7278	Imperial / Berry Intersection Improvements	CD 11.1, 11.2		
7288	Randolph Avenue Rehabilitation	CD 10.3, 10.4, 10.5		
7305	Brea Boulevard Widening	CD 10.3, 10.4, 10.5, 11.1, 28.1		
7306	Imperial Hwy /SR-57 Interchange Improvements	CD 10.1, 11.1, 11.6, 27.1, 28.1		
7309	North Brea Boulevard Underground Utility District	CD 4.2,		
7310	Central Ave & Tamarack Ave Intersection Improvements	CD 11.1, 11.2		
7312	Citywide Slurry Seal Program	CD 1.12		
7313	Citywide Sidewalk Replacement	CD 2.4, 13.2		PS 3.1
7315	Alley Rehabilitation East of Redwood North of Birch	CD 1.12, 11.1, 11.3		
7316	Alley Rehabilitation East of Puente North of Joyce	CD 1.12, 11.1, 11.3, 2		
7317	Cliffwood Industrial Park Pavement Rehabilitation	CD 1.12, 11.1, 11.3		
7318	Kraemer Blvd & Lambert Rd Pavement Rehabilitation	CD 10.3, 10.4, 10.5		
7319	Alley Rehabilitation West of Flower North of Imperial	CD 1.12, 11.1, 11.3		
<u>TRAFFIC SAFETY ENHANCEMENTS</u>				
7212	Illuminated Street Name Sign Upgrade	CD-17		
7218	Traffic Signal Controller Upgrade	CD 2.3, 4.3, 11	CR 13.1	
7702	Regulatory Sign Replacement	CD 2.3, 4.3, 11.1, 11.5		
7703	Street Name Sign Replacement	CD-17		

7704	Emergency Changeable Message Signs	CD 11.6,		
7707	Brea Boulevard Traffic Synchronization	CD 2.3, 10.3, 11.2		
7708	Central/State College Traffic Synchronization	CD 2.3, 10.3, 11.2		
7709	Birch Street Traffic Signal Synchronization	CD 2.3, 10.3, 11.2		
7710	Kraemer Boulevard Traffic Signal Synchronization	CD 2.3, 10.3, 11.2		
7714	Imperial Highway Traffic Signal Synchronization	CD 2.3, 10.3, 11.2		
7890	Opticom Traffic Control System	CD 2.3, 4.3		PS 1.2, 1.5
<u>WATER IMPROVEMENTS</u>				
7442	Miscellaneous Water Improvement Program	CD 1.12, 13.2, 14.2		
7452	Glenbrook Tract Pavement & Water Line Improvements	CD 1.12, 13.2, 14.2		
7453	Gemini Ave, Steele Drive Water Improvements	CD 1.12, 13.2, 14.2		
7454	Walnut & Orange Avenue Water Improvements	CD 1.12, 13.2, 14.2		
7457	Pleasant Hill Water Improvements	CD 1.12, 13.2, 14.2		
7461	Cliffwood Tract Water Improvements	CD 1.12, 13.2, 14.2		
7473	Valencia Reservoir Repainting	CD 27.2		
<u>STORM DRAIN IMPROVEMENTS</u>				
7522	Randolph Creek Restoration	CD 15.1	CR 10.5, 12.1	PS 7.1
7524	Catch Basin Inserts	CD 15		
<u>SEWER IMPROVEMENTS</u>				
7617	Sewer Main Relining	CD 14.1, 14.2		
7621	Randolph/Imperial Highway & Lambert/State College Sewer Main Replacements	CD 14, 27.2, 27.3		
7625	Brea Villas - Sewer Point Repairs	CD 14, 27.2, 27.3		
7626	South Brea Sewer Repairs	CD 14, 27.2, 27.3		
7627	Central Avenue 8" Sewer Main Upsize	CD 14, 27.2, 27.3		

<u>FACILITY IMPROVEMENTS</u>				
7873	Tracks at Brea	CD 1.7, 11.3, 12.5, 13	CR 1.6, 3.5, 6, 7, 13.5	
7903	Super Block 1 Parking Structure	CD 4.2, 23, 25, 26		PS 3.1
7909	ADA Public Facilities Upgrade Strategic Plan	CD 3.1, 13.2		
7924	Brea Mall Bus Stop Improvements	CD 27.1, 27.2,		
7927	Senior Center Facility Improvements - Flooring & Door	CD 27.2		
7929	Lagos De Moreno Park Upgrades	CD 9.6		
7930	Police Department Locker Room Remodel	CD 27.2		
7931	Civic Center 3 rd Floor Remodel	CD 27.2		
7932	Reclaimed Water Conversion Project	CD 14.1, 14.2		
7933	Junior High Parking Lot Paving	CD 27.2		PS 3.1
7934	Playground Surfacing at 9 Parks	CD 9.6		
7935	New Sports Park Playground	CD 9.6	CR 1.1, 2.2	
7936	Turf Removal @ Various City Facilities	CD 14		
7937	Art Gallery Replacements	CD 27.2		

APPENDIX 'O'

Sewer Maintenance Activity Report

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SEWER MAINTENANCE ACTIVITY REPORT
Work Completed: January 1, 20xx to December 31, 20xx

Number of parcels added/annexed to system during 20xx - XX

Total length of pipe in system as of December 31, 20xx - XXX,XXX L.F.

Total number of manholes in system as of December 31, 20xx - XXX

Total number of pump stations in system as of December 31, 20xx - XX

Total number of siphons in system as of December 31, 20xx - XX

PREVENTATIVE MAINTENANCE ACTIVITIES

Sewer Pipe

- Hydro cleaned xx,xxx l.f. of pipe
- Mechanically rodded x,xxx l.f. of pipe
- CCTV inspected and recorded xx,xxx l.f. of pipe
- Chemically treated (root control) x,xxx l.f. of pipe
- Repaved xxx l.f of pipe trench due to subsidence

Manholes

- Inspected xxx manholes
- Adjusted xx manhole frames and lids

Pump Stations

- Performed xxx inspections of pump stations
- Performed xx equipment repairs/overhauls
- Responded to xx alarma/service requests

Siphons

- Performed xxx inspections of siphons
- Mechanically or hydro cleaned xx siphons, of which xx were two or more times

SERVICE REQUEST RESPONSES

- xx Blockages / Stoppages
- xx Overflows
- xx Floodouts
- xx Rodent/Insect complaints
- xx Odor complaints
- xx Others (record types)
- False alarms

CONSTRUCTION ACTIVITY

- Installed x,xxx l.f. of pipe lining material
- Removed and replaced xxx l.f. of pipe
- Service saddles / connections installed = xx

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APPENDIX 'P'

Sewer Performance Measures Report

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City of Brea
Sanitary Sewer Management Program
Performance Measure Indicators

Overflow Prevention / Collection System Maintenance					
Performance Indicator	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019
	Actual	Actual	Estimated	Projected	Projected
<u>INPUT</u>					
Total SSO response time (receipt of notification to site arrival)					
Total person-hours spent in responding to and alleviating SSO's					
Total miles of SS in the system					
Total number of gravity sewer system maintenance personnel					
Total number of pumping plant maintenance personnel					
Total number of scheduled manhole inspections					
<u>WORKLOAD / OUTPUT</u>					
Total number of SSO's responded to in 12-month period					
Number of SSO's > 1,000 gallons responded to					
Number of SSO's responded to within 30-minutes of less					
Total miles of sewer line maintained					
Total number of pump stations maintained					
Total number of manhole inspections completed					
Total FOG related SSO's cleared					
Total root related SSO's cleared					
Total SSO's due to other causes (debris, vandalism,etc.)					
Total number of capacity related SSO's					
Total number of SSO's due to pump station malfunction					
Total number of stoppages					
Miles of sewer on monthly check-n-clean					
Miles of sewer on quarterly check-n-clean					
<u>EFFICIENCY</u>					
Number of SSO's per 100 miles of sewer line					
Number of stoppages per 100 miles of sewer line					
Number of SSO's that reached "Waters of the United States"					
Number of pump stations with one or more malfunctions					
Number of pump stations per electro-mechanic crew					
Average response time per SSO					

City of Brea
Sanitary Sewer Management Program
Performance Measure Indicators

Performance Indicator	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019
	Actual	Actual	Estimated	Projected	Projected
Percent decrease in length of sewer line on quarterly of less schedule					
<u>EFFECTIVENESS / OUTCOME</u>					
Percentage of SSO's > 1,000 gallons					
Percentage of SSO's due to FOG					
Percentage of SSO's due to roots					
Percentage of SSO's due to other causes					
Percentage of SSO's that reached "Waters of the United States"					
Percentage of sewer on quarterly of less frequent schedules					
Percentage of pump stations with one or more malfunctions resulting in an SSO					
Percentage of SSO's with response time less than 30-minutes					
Percentage of stoppages not resulting in SSO					
<u>OBJECTIVE: To establish baseline performance measures for effective operations and maintenance of the community sewer system</u>					
<u>EXPLANATORY NOTES:</u>					