Sewer System Management Plan

January 2021 Revision

WDID #: 5SSO10891

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INTRODUCTION

This introductory section provides background information on the purpose and organization of this Sewer System Management Plan and provides a brief overview of the City of Brentwood's service area and sewer system.

SSMP Requirement Background
In May 2006, the State Water Resources Control Board ("SWRCB") implemented Order No. 2006-0003-DWQ requiring any municipality which owns or operates a sanitary sewer system greater than 1.0 mile in length and collects and/or conveys untreated or partially treated wastewater to publicly owned treatment plants in the State of California to comply with the terms of this order. This SSMP will facilitate the overall management of the City of Brentwood's Sewer System.

Document Organization
This SSMP is intended to meet the requirements of the Statewide General Waste Discharge Requirements ("GWDR"). The organization of this document is consistent with the SWRCB requirements. This SSMP includes eleven elements, as listed below:

1. **Goals**
2. **Organization**
3. **Legal Authority**
4. **Measures and Activities (Operation and Maintenance Program)**
5. **Design and Construction Standards (Design and Performance Provisions)**
6. **Overflow Emergency Response Plan**
7. **Fats, Oils and Grease Control Program**
8. **Capacity Management (System Evaluation and Capacity Assurance Plan)**
9. **Monitoring, Measurement, and Program Modification**
10. **SSMP Audits**
11. **Communication Plan**

Each element section is organized into sub-sections, as follows:

1. Description of the SWRCB requirement for that element.
2. Identification of associated appendix and list of supporting information included in the appendix.
3. Discussion of element. The discussion may be split into multiple sub-sections depending on length and complexity.

Supporting information for each element is included in an appendix associated with that section, as applicable. In general, information expected to require relatively frequent updates (such as names and phone numbers of staff) are included in appendices, as well as other supporting information, such as forms or schedules.

City Service Area and Sewer System
The City of Brentwood is located in Eastern Contra Costa County and is surrounded by the cities and/or communities of Antioch, Oakley, Knightsen, Discovery Bay, and Byron. As of January 1,

2019, the City had an estimated population of 65,118 based on the City of Brentwood's 2019/20 Comprehensive Annual Financial Report. The population growth of the City is projected to reach 80,917 at build-out based on the most recent General Plan Update.

The City of Brentwood's Wastewater Treatment Plant receives wastewater from approximately 19,612 residential connections and 504 commercial business connections. The City's sewer system consists of approximately 243 miles of main line, ranging from 8 inches to 42 inches in diameter, and two lift stations (Sellers and Dreamcatcher). The City provides sewer service to businesses and residents within the City. The City maintains the sewer system with the use of two combination trucks (suction and high pressure jet cleaning hoses) and a CCTV (Closed Circuit Television) van to inspect the City's infrastructure and laterals. The City also provides maintenance and emergency response services for the entire sewer system.

The tables below (Figures 1-1 & 1-2) outline the distribution of sewer system assets by size and age.

Estimated Size Distribution of Assets

Diameter of sewer pipe	Gravity Mainlines (%)	Force Mains (%)
6 inches or less	34	0
8 inches	40	0
9 – 18 inches	20	0
19 – 36 inches	5	0
>36 inches	1	0

Figure 1-1

Estimated Age of Sewer System Piping

Year of Construction	Gravity Mainlines & Forces Maines (%)	Pump Stations ≥75k (gpd)	Pump Stations <75k (gpd)
2000 – Present	77	0	1
1980 – 1999	18	1	0
1960 – 1979	4	0	0
1940 – 1959	1	0	0

Figure 1-2

The following map (Figure 1-3) shows the City's legal boundaries (service area), and notes the location of the two sewer lift stations and the Wastewater Treatment Plant.

City of Brentwood Service Boundaries

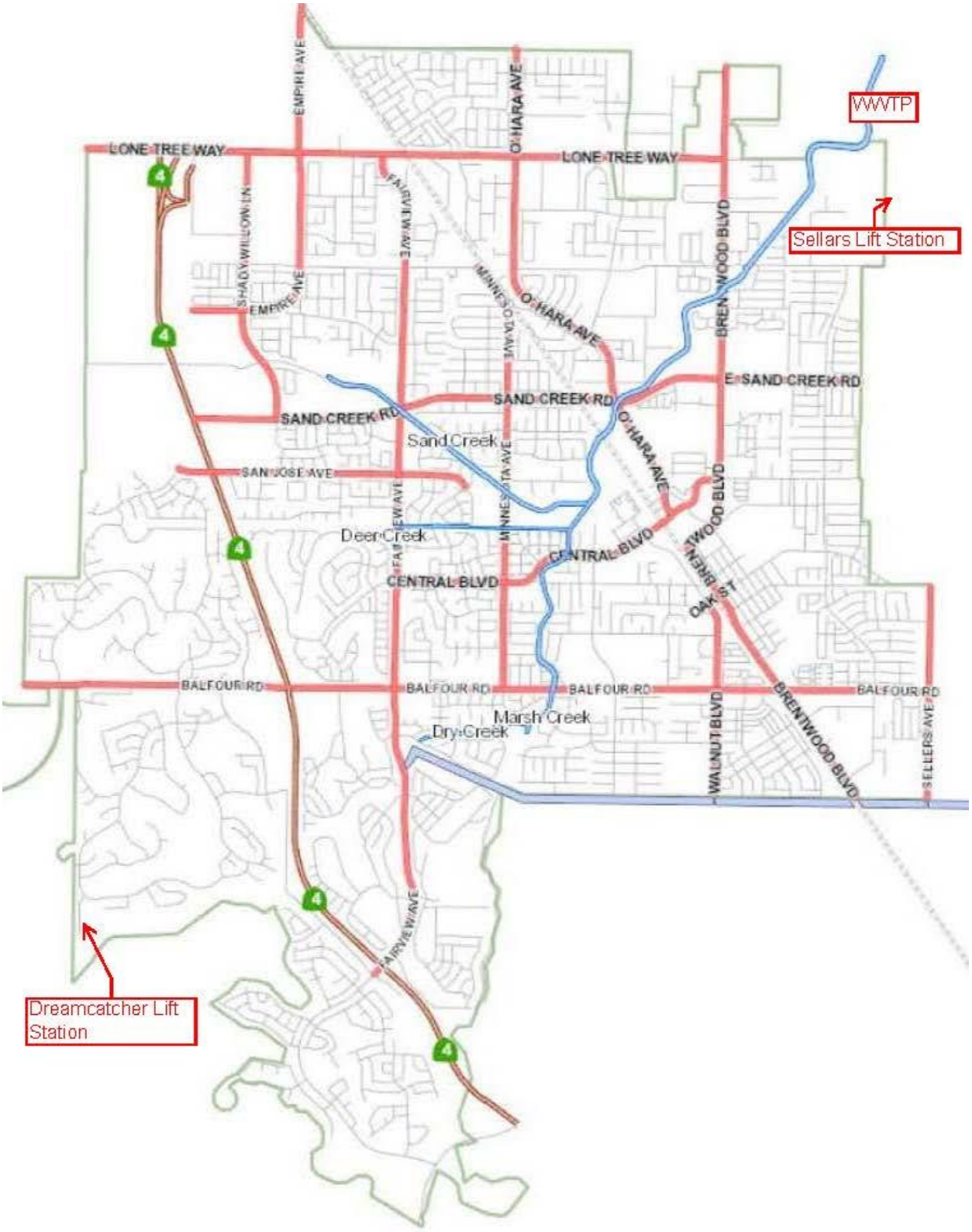


Figure 1-3

Element 1: GOALS

This section identifies the goals the City of Brentwood has developed for the management, operation, and maintenance of all parts of the sewer system. It also evaluates the role of the SSMP in supporting these goals.

Suggested SSMP from the CWEA: *The standards for the operation and maintenance of a wastewater collection system are to properly operate and maintain all portions of the collection system, to report overflows, and to respond effectively to any overflows which may occur. The collection system agency's goals should be at a high level which meets the requirements.*

Goals:
The main goal of the City's SSMP is to minimize the number and impact of sanitary sewer overflows ("SSO") which occur. This plan aims to provide a standard set of protocols to provide consistent, efficient management and operation of the City's collection system. The following list constitutes the SSMP goals:

1. **Minimize the number and impact of SSOs.**
2. **Maintain existing infrastructure and plan for future CIP projects.**
3. **Continue to provide capacity evaluation for the collection system and plan for future growth.**
4. **Develop a plan to increase the number of staff as needed to meet the obligations of the SSMP.**
5. **Operate in a safe and efficient manner.**

This SSMP provides quality, consolidated guidelines and procedures for all portions of the City's sewer system management. The SSMP will contribute to the proper management of the collection system and assist the City in minimizing the frequency and impact of SSOs by providing guidance for appropriate maintenance, capacity management, and emergency response.

Element 2: ORGANIZATION

This section of the SSMP identifies the City's organizational structure, chain of command, and communication flow for responding to SSOs and other related sewer calls. This section also identifies who will be responsible for managing and reporting any information related to the Sewer System Management Plan. The organization chart below shows the chain of command used for SSOs.

Sewer System Management Plan
Organizational Chart
Chain of Command

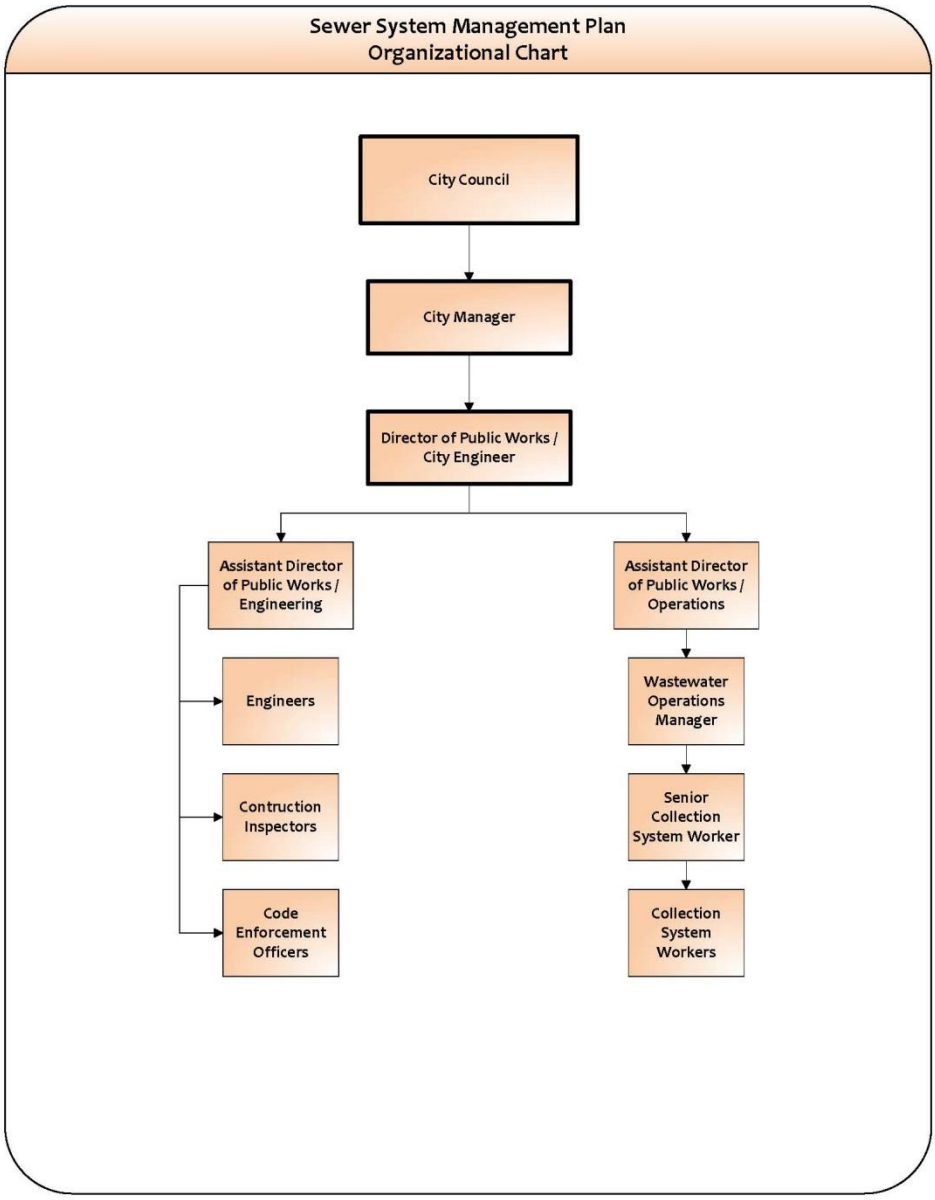


Figure 2-1

The roles established by the SSMP for the Wastewater Collection System staff for the City of Brentwood are as follows:

City Council – Establish policy.

City Manager, Director of Public Works / City Engineer, Assistant Director of Public Works / Engineering, Assistant Director of Public Works / Operations, and Wastewater Manager – Implement policy, plan strategy, lead staff, allocate resources, delegate responsibility, authorize outside contractors to perform services, lead emergency response and may serve as public information officer.

City Engineers – Prepare wastewater collection system planning documents, manage capital improvement projects, and document new and rehabilitated assets.

Inspectors – Ensure new and rehabilitated assets meet agency standards, and work with collection crew in handling emergencies when contractors are involved.

Code Enforcement – Enforce laws and regulations when called on by city staff or when discovering an existing or current violation.

Senior Collection System Worker – Lead field operations and maintenance activities, provide relevant information to management, prepare and implement contingency plans, investigate and report SSOs, and train field crews.

Collection Crew – Conduct preventative and corrective maintenance activities, respond to notification of stoppages and SSOs, and transport equipment to location to correct problem.

The following list shows the current personnel assigned to each role:

City Council
Joel Bryant, Mayor
Johnny Rodriguez, Vice Mayor
Jovita Mendoza, Council Member
Karen Rarey, Council Member
Susannah Meyer, Council Member

City Manager
Tim Ogden

Director of Public Works/City Engineer
Miki Tsubota

Assistant Director of Public Works
Jagtar Dhaliwal - Engineering
Casey Wichert, Operations

Engineers
Nouae Vu
Allen Baquilar
Amanjit Grewal
Meghan Laporta

Construction Inspectors
Casey Grijalva
Steve Quesada

Code Enforcement Officers
Roberta Portillo-Bienemann
Cynthia Hurtado
Linda Shale
Michael Cowperthwaite

Wastewater Operations Manager
Vacant

Wastewater Treatment Plant Supervisor
Ryan LaMunyon

Senior Collection System Worker
Gary Krehbiel

Collection System Worker
Dylan Ulrich
Kurt DeJanvier
Vacant

The following organization chart shows the responding communication flow chart in the event of notification of a potential SSO.

Communication Flow Chart

Chain of Communication for reporting an SSO:

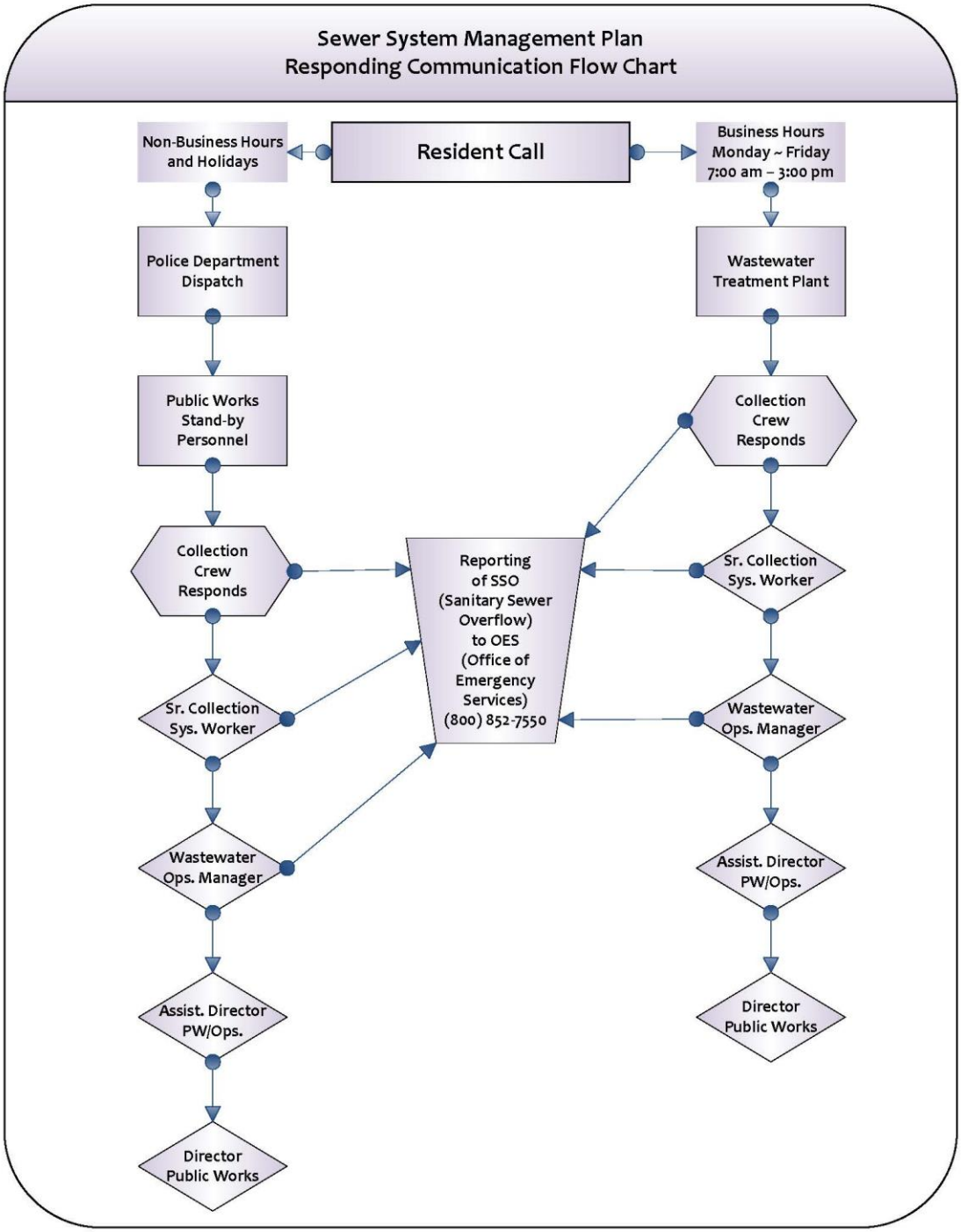


Figure 2-2

As it relates to an SSO, upon receiving a call regarding an overflow, Collection staff is first dispatched to investigate. They would notify the Senior Collection System Worker as to the severity of the overflow. The Senior Collection System Worker would then report to the Wastewater Operations Manager. These are three key elements in the process of reporting an SSO in addition to understanding the category the SSO falls under. When the spill is mitigated and the original problem is determined, a plan will be developed to fix the problem and minimize possible future SSOs at that location. The Wastewater Operations Manager, Senior Collection System Worker, and Collection Crew will work as a team to gather data which will be used to document and report the SSO. The City of Brentwood is dedicated to meeting requirements and to maintaining a productive sewer system.

Following are the phone numbers for notification purposes associated with this SSMP.

City Manager – (925) 516-5440

Director of Public Works/City Engineer – (925) 516-5420

Assistant Director of Public Works/Operations – (925) 516-6000
(Legally Responsible Official)

Wastewater Operations Manager – (925) 516-6060
(Legally Responsible Official)

Wastewater Treatment Plant Supervisor – (925) 516-6060
(Legally Responsible Official)

Senior Collection System Worker – (925) 516-6060
(Data Submitter)

City of Brentwood Police Department – (925) 634-6911
City of Brentwood Police Department Dispatch – (925) 809-7911

City Stand-by – (925) 382-4157
Rotating On-Call Staff

Collection Crew – (925) 516-6060
(Data Submitters)

Element 3: LEGAL AUTHORITY

This element of the SSMP discusses the City's Legal Authority, including its Municipal Code. This section fulfills the Legal Authority requirement for the SWRCB (Element 3).

3.1 Regulatory Requirements for Legal Authority Element

SWRCB Requirement: *The City must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:*

a. Prevent illicit discharges into its wastewater collection system (examples may include infiltration and inflow (I&I), storm water, chemical dumping, unauthorized debris, etc.);
b. Require sewers and connections be properly designed and constructed;
c. Ensure access for maintenance, inspection, or repair for portions of the lateral owned or maintained by the Public Agency;
d. Limit the discharge of fats, oils, and grease and other debris causing blockage; and
e. Enforce any violation of its sewer ordinances.

3.2 Municipal Code

The legal authority required for the SSMP by the SWRCB is contained within the City's Municipal Code. Chapter 13 of the Municipal Code is dedicated to the sewer system and can be accessed on the City's website via the link below:

Chapter 13.04 SEWER SYSTEM – RULES AND REGULATIONS, of the City's Municipal Code

The electronic version of the Municipal Code is updated quarterly on the City's website. Other supporting information for Element 3 is included in Appendix A and includes the following documents:

1. Diagram illustrating lateral maintenance responsibilities.

Portions of this chapter are discussed in the following sub-sections as they pertain to prevention of illicit discharges, proper design and construction of sewer and connections, maintenance access, and enforcement measures.

3.3 Prevention of Illicit Discharge

All measures prohibiting illicit discharges are included in Chapters 13.04.300 – 13.04.315. The specific purpose of these chapters is to prevent the discharge of pollutants into the sewers which would obstruct or damage the collections system, interfere with treatment, or threaten harm to human health or the environment.

3.4 Proper Design and Construction of Sewers and Connections

Regulations pertaining to the design, construction, and inspection of private sewer systems, building sewers, and connections are included in Chapters 13.04.800 – 13.04.850 of the City of Brentwood's Municipal Code.

3.5 Ensure access for maintenance, inspection, or repair for portions of the lateral owned or maintained by the Public Agency

Section 13.04.850 makes it a condition of continuing use and connection to the city sewerage system that the City have access to the lateral to inspect and verify the condition of the lateral.

Effective September 23, 2003, the Brentwood City Council approved a sewer lateral maintenance program for residents of single-family homes. The program was implemented to account for the costs associated with the maintenance, repair and/or replacement of the lower lateral located between the property line and main line. Section 13.04.820 states that each residential premises owner will be required to pay a monthly fee for the maintenance, repair, and/or replacement of their lower lateral as set forth by resolution of the City Council. The City will be responsible for the lower lateral so long as the lateral maintenance fee is paid. However, the City is not responsible for any sewer lateral of a commercial, industrial, and/or institutional sewer service.

3.6 Limit Discharge of FOG and Other Debris

As discussed under Element 4: Fats, Oils, and Grease (FOG) Control Program, City Municipal Code Sections 13.04.315 prohibits discharge of any substance into the sewer system which has characteristics which could threaten to cause an interference or pass-through in the City's sewer lines. Section 13.04.400 requires the installation of a grease, oil and sand removal device when deemed necessary by the Public Works Director.

3.7 Enforcement Measures

City Municipal Code Title 13 Article 10 lists the various enforcement mechanisms the City can utilize to provide adequate mechanisms to achieve maximum compliance with the sewer system regulations. These mechanisms include, but are not limited to:

- Informal administrative action
- Administrative orders
- Institution of a SEP
- Assessment of charges for obstruction or damage
- Suspension or termination of services
- Administrative citations
- Administrative complaints
- Civil action
- Criminal action

Element 4: OPERATION AND MAINTENANCE PROGRAM

This section of the SSMP discusses the City's operations, maintenance and other related measures and activities. The section fulfills the Operation and Maintenance Program SSMP requirement for the SWRCB (Element 4).

4.1 Element 4 Appendix

Supporting information for Element 4 is included in Appendix B. This appendix includes the following documents:

1. Quadrant Map
2. SSMP Maintenance Log
3. Spare Parts and Equipment Inventory
4. Collection System SOP List

4.2 Collection System Map Discussion

The City has maps of all sewer and storm drain systems. These maps are kept electronically and accessed via the City's intranet. Each manhole (sewer and storm) in the City limits has been assigned a GPS coordinate for its exact location. The maps show the location of lift stations, manhole ID, pipe size (as indicated on as-built plans), flow direction, and pipe diameter, as well as street names and addresses, and parcels ID numbers. The City is in the process of linking video files of pipeline inspections to the corresponding sections of piping on the maps. An example map is shown below in Figure 4-1.

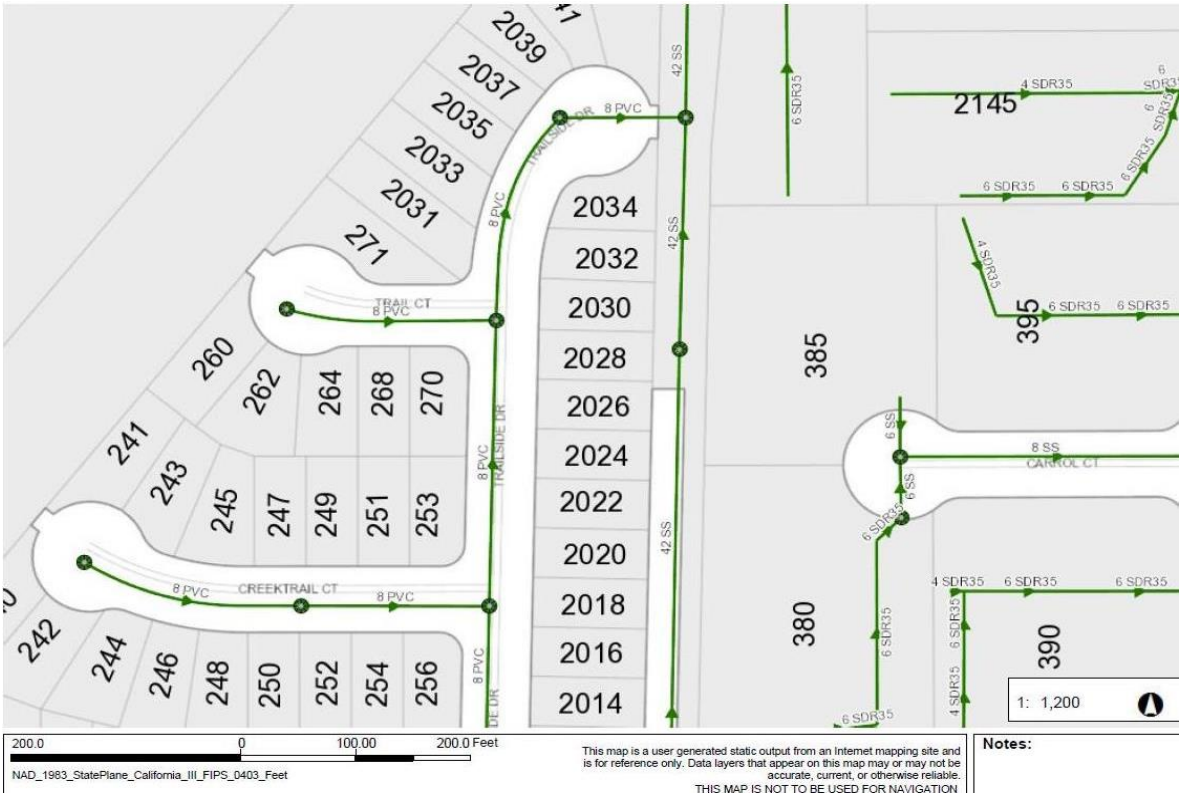


Figure 4-1

The maps are maintained in the City's GIS files through a software package called GeoVault, and are regularly updated as needed. The GIS files were originally created in 1999 and are continually updated as the City grows.

When errors are discovered on the maps, the error is reported to the GIS system administrator via a work order, or through direct discussion with the system administrator. Maps are updated as new developments are accepted or when discrepancies are identified. Hard copies of map books are printed annually and kept in vehicles. Digital based updated maps are available to the Collection System Workers via laptops and tablets.

4.3 Prioritized Preventive Maintenance Discussion

Preventive Maintenance tasks are accomplished by four Collection System Workers. The City prioritizes its preventive maintenance (PM) activities. The preventive maintenance program includes scheduled hot-spot cleaning, quadrant cleaning, regular inspection of pump stations, as well as investigating customer problems and complaints. The follow subsection summarizes the City's preventive maintenance activities.

4.3.1 Sewer Cleaning

a. Hot-Spot Cleaning

Through the daily rounds procedures where heavy grease/problem areas and lift stations are checked, the City is able to identify sections of pipe that need cleaning more often than the normal 4-year cleaning schedule. Sections of pipe that are considered Hot-Spots depend on the history and causes of stoppages or overflows on that pipe.

Approximately 7,500 ft. of sewers (1% of the system) is included in the hot spot cleaning program. Hot-spots are cleaned quarterly using Vaccon hydro-flushers. Hot-spot cleaning is typically a two-man (1 crew) job, occurs monthly, and accounts for ~5% of the Collection System Workers' time.

In rare cases a location may be removed from the hot-spot list. This occurs if there is a direct action that eliminates whatever problem caused the location to be placed on the hot-spot list originally.

b. Quadrant Cleaning

The City's Collections Division maintains a chart that documents and tracks the sewer lines cleaned. The information on this schedule includes grid number, street name, start and finish manhole id number, length of pipe cleaned, amount of debris in the line, and a section to include information if the crew ran into any problems in the line.

Areas of the sewer system not included in the hot spot cleaning program are inspected and or cleaned on a 4-year cycle (~25% of City's sewer system per year) by splitting the system into four quadrants. This 4-year cycle is consistent with industry standards and is achievable with current staffing

levels. Quadrant cleaning accounts for ~35% of the collection System Workers' time. Regular quadrant cleaning is normally a two-man (1 crew) job, unless traffic control requirements or other special circumstances necessitate additional manpower. One such special circumstance is when trunk lines (18 inch diameter) are cleaned. Trunk line cleaning typically requires an additional person or crew and traffic control measures.

c. CCTV Inspections

Current practice is to inspect the sewer prior to cleaning. If the line is clear and there are no mechanical deficiencies, the line does not need to be cleaned. If there is a significant amount of debris found, the line will be cleaned, or if a mechanical deficiency is found a repair can be scheduled. CCTV inspection accounts for ~35% of the collection System Workers' time.

4.3.2 Root Control

The City of Brentwood does not have a Root Foaming Program because root intrusion has not been a significant issue to date. Instances of root intrusion have been increasing and staff will continue to monitor to determine if a root foaming program is necessary.

4.3.3 Lift Station Maintenance

The City has three lift stations, Sellers, Sellers Point, and Dreamcatcher. Sellers Point serves approximately 60 homes in an area too low to adequately flow by gravity and has approximately 500 feet of force-main. Dreamcatcher serves approximately 20 homes located at the bottom of a hill and has approximately 250 feet of force-main. Sellars lift station has roughly 40 feet of force-main and serves the south-eastern portion of the City. City maintenance staff performs a daily inspection of the City's two lift stations, Sellers and Dreamcatcher, from the surface (no confined space entry). Comprehensive pump station maintenance is performed by City staff to clean wet wells and check for problems with pumps. If pumps have an issue, they are sent out to be overhauled and/or repaired.

4.3.4 Odor Control

The City receives approximately one (1) to two (2) odor complaints per year. These complaints are often calls which are not sewer related, but are storm water related. When there are complaints, City crews can jet clean sewer lines in the direct area to eliminate any possible odors and attempt to plug holes in manhole lids where odors may be escaping the system. The City does not currently have a formal odor control program.

4.3.5 Corrosion Control

Over 80 percent of the pipe material in the City's collection system is SDR 35 (PVC), which does not need corrosion control. The remaining pipe is vitrified clay (VCP) which also does not require a corrosion control program.

4.3.6 Investigation of Customer Complaints

When the City receives a call regarding a sewer issue (stoppages, overflows, and odors) the information is given to the Collections staff, or the standby worker if the call is received after hours, and is responded to accordingly. Staff first assesses the situation and makes contact with the person who called to report the issue. If it is determined there is an issue with the collection system, a plan to resolve the issue is developed based on guidelines listed in the OERP or other SOP. During an after-hours event when stand by personnel responds, they are directed to call in Collections System personnel if an overflow is observed.

The majority of complaints received by the City are related to stoppages occurring in residential laterals. During work hours, a Collections crew is diverted to investigate the stoppage. Most of the stoppages occur in the upper laterals, and are the responsibility of the homeowner. Although staff respond to all stoppage complaints, they are not responsible for clearing stoppages in laterals from the property line to the house. The City's initial response time goal is 30 minutes.

Sewer call response actions are documented in the City's CMMS program. This documentation contains the relevant information for each call. In the event a call is for an actual SSO, a separate file is generated for that SSO.

4.3.7 Maintenance Management and Work Orders

The City uses a CMMS (Computerized Maintenance Management System) program called Maintenance Connection to generate and track work orders and staff time. Work Orders can be generated by the public via an online system, or by phone call, or City staff will generate a work order upon receiving notification by the public.

For purposes of a maintenance work tracking metrics assessment, the SSMP Maintenance Log in Appendix B is used.

4.4 Scheduled Inspections and Condition Assessment Discussion

The City's manholes, pipelines, and lift stations are informally assessed during PM inspection/cleaning discussed in section 4.3.1. If abnormal conditions are noticed, a plan for repair/replacement can be developed through the CIP process.

4.4.1 Manhole Inspection

As part of the hot spot and quadrant cleaning program, City maintenance staff visually inspect manholes for corrosion, debris or damage around the base, cracks or holes, condition of manhole steps, and also the manhole ring and lid for damage. The City understands the importance of a robust manhole inspection program. High priority manholes needing to be epoxy lined are prioritized and added to a CIP project.

All new construction projects are inspected by both a City inspector and a member of the Collection Crew. These inspections help the City verify the new construction is up to code and is not going to be a problem in the near future.

4.4.2 Pipeline Inspection

The City purchased a CCTV truck in January 2004 which has the capability of visually inspecting sewer mains. The truck uses a Cues camera system with Granite XP software. The City has used this truck, with its formal coding system to inspect sewer lines and laterals, since its purchase.

Collections Crew uses the CCTV truck in its Quadrant and Hot Spot cleaning program when it feels there may be an offset, belly, or any deficiency in the lines being cleaned. Also, when there is a sewer backup or plug, and crews respond, the CCTV truck is used once the line is unplugged to inspect the lines for any problems (roots, offset, belly, debris). If a problem is identified, it is fixed by the City crew if it's the City's responsibility, or if it is the property owner's responsibility, a video recording of the line is given to the property owner showing the problem which needs to be fixed.

Lateral sewer lines are not routinely inspected. If residents call and report a problem Collections Crew will respond with a push camera to inspect the lateral. If a lateral must be cleaned, it is inspected after being cleaned to ensure there are no additional problems with the lateral.

4.4.3 Pump Station Inspection and Assessment

The City has three lift stations, Sellers, Sellers Point, and Dreamcatcher, which are in excellent condition. The Sellers lift station was part of a CIP project in 2010 which completely refurbished the existing site. It was redesigned in a way so if a lift station failure occurred, the City is able to use the existing site with external pumps and generators without disrupting traffic or wastewater flow. The Sellers Point lift station serves approximately 60 homes at the south east corner of town. It was accepted into the City's sewer system in 2019. The Dreamcatcher lift station serves approximately 20 homes at the southwest end of town. It was accepted into the City's sewer system in 2007.

The City inspects the lift stations daily. These daily inspections consist of a visual check of the wet wells, checking and cleaning of floats if needed, recording the hours on the meters for each pump at both stations, reading of PG&E meter numbers, checking for alarms on SCADA screen, and checking levels of wet well.

The lift stations are gone through at length every one to two years. Extensive maintenance includes cleaning out the wet well with pressure washing, use of the hydro-vac truck to remove debris, and removing pumps for inspection and repairs if necessary.

4.5 Contingency Equipment and Replacement Inventories

The City maintains an equipment inventory. All sewer maintenance equipment and replacement parts are stored at the City's Corporation Yard. Equipment and spare parts are replaced as necessary based on the estimated useful and remaining life of the product. The Collections system spare parts and equipment inventory list is included in Appendix B.

The City keeps spare parts in inventory to minimize the sanitary sewer system down time during a needed repair. Spare parts include manhole rings and lids, hoses, couplings, nozzle heads for maintenance and emergency response equipment, and 4, 6, and 8 inch diameter PVC spare pipe.

Pump stations and the City's trunk mains are considered to be "critical" parts of the system. Emergency equipment stored by the City for the effective response to a crisis in these areas includes sewer bypass pumps, emergency backup generator, and the combination jet-vac trucks.

The City maintains an emergency trailer which can be used in the event emergency repairs to the collection system are needed. This trailer is stocked with a generator, compressor, plugs, barriers, cones, etc. In addition to Collections System personnel, Public Works stand-by staff members are trained to respond to after-hours calls with the trailer, ensuring the fastest response time to overflow occurrences.

4.6 Training Discussion

The City budgets for training its Collection System operations and maintenance staff each year. Providing training opportunities to enable all Collection System operations and maintenance staff to remain certified is a goal and requirement of the City. The City assists with certification by reimbursing the employees the original test fees once the certification test is passed. Current staff certifications include:

- 7 Collection System Worker II's

The City uses numerous outside programs, as well as providing in-house and on-the-job training for sewer maintenance crews. Training programs used by the City include:

- CWEA
- Vendor sponsored training;
- In-house training by supervisor and lead workers; and
- Safety meetings by experienced staff and/or vendors (i.e. Safety Fair)

The City has established a cross-training program where all qualified employees of the City (with a Class B license) have the ability to complete training in other departments with some monetary benefits. This training must be approved by all affected department supervisors/managers. Once approved, the training is conducted by a member of the collections crew. The trainee has the opportunity to learn all facets of the job including operating the hydro-vac trucks, pipe and manhole cleaning and examination, lift station and hot spot check, and all tasks included in the collection crew cross-training program. To pass the cross-training, the individual must demonstrate competency in all skill sets including driving the trucks in order to get signed off as competent.

Element 5: DESIGN & CONSTRUCTION STANDARDS

This section of the SSMP discusses the City's design and construction standards. This section fulfills the Design and Performance Provisions SSMP requirements for the SWRCB (Element 5).

5.1 Regulatory Requirements for Design & Construction Standards

SWRCB Requirement: *The City must have design and construction standards and construction standards and specifications for the installation of new sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sewer systems. The City must also have procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.*

5.2 Standard Plans and Specifications

Supporting information for Element 5 is located in the following sections of the City's Standard Plans and Specifications:

Section	Title
120-1.01	Description
120-1.02	Materials
120-1.03	Excavation and Backfill
120-1.04	Bedding and Initial Backfill
120-1.05	Pipe Laying
120-1.06	Pipe Joints
120-1.07	Existing Manholes
120-1.08	Sewer Structures
120-1.09	Coating Manholes
120-1.10	Trench Resurfacing
120-1.11	Testing
Detail	**Title**
SS-1	Standard Sewer Service
SS-2	Sanitary Sewer Manhole
SS-3	Large Sanitary Sewer Manhole
SS-4	Sanitary Terminal Manhole Base
SS-5	Utility Crossing
SS-6a	Grease Interceptor Details
SS-6b	Grease Interceptor Notes
SS-7	Sewer Backflow Relief Devices

A complete copy of the Standard Plans and Specifications can be accessed on the City's website via the link below:

Standard Plans and Specifications, Section 120
http://www.brentwoodca.gov/civicax/fileban k/blobdload.aspx?BlobID=25823

5.3 Design & Construction Standards Discussion

Section 120 of the City's Standard Specifications addresses Sanitary Sewer Installation. This section includes specifications on pipe, manhole, cleanout, and sewer lateral materials and construction methods, as well as sewer line pressure testing, acceptance, and final inspection by CCTV. These requirements provide reasonable assurance sewers constructed to these specifications will perform adequately with minimal infiltration or maintenance problems and will maintain their structural integrity for the duration of their intended useful lives. The City's Standard Specifications are updated periodically to help prevent future problems in the City's sewer system.

Many of the specifications included in Section 120 of the City's Standard Specifications also apply to sewer pipeline rehabilitation and repair projects. Additional specifications related to sewer rehabilitation and repair will be added as needed when such projects are implemented by the City, or will be included in project-specific specifications.

The City owns three lift stations and does not anticipate many additional lift stations being built. Therefore, lift station plans and specifications are not included in the Standards. Design standards and construction specifications for pump stations will be developed as needed on a project-specific basis should any new pump stations or pump station rehabilitation projects be implemented.

Element 6: OVERFLOW EMERGENCY RESPONSE PLAN

This section of the SSMP provides an overview and summary of the City's emergency response documents and procedures for sewer overflows. This section contains the Overflow Emergency Response Plan and satisfies the SWRCB (Element 6) SSMP requirements.

6.1 Regulatory Requirements for Overflow Emergency Response Plan Element

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

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

B. A program to ensure appropriate response to all overflows;

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

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

6.2 Element 6 Appendix

Supporting information for Element 6 is included in Appendix C. This appendix includes the following documents:

1. Overflow Emergency Response Plan
2. Water Quality Monitoring Plan
3. City Map with Creek Sampling Locations

6.3 Overflow Emergency Response Plan

The Overflow Emergency Response Plan (OERP) is a stand-alone document. A copy of the OERP is included in Appendix C of this SSMP for ease of reference. The OERP was updated in 2014. The updated OERP includes the information required by the SWRCB, including the new SSO categories for reporting purposes, and the requirement for a Technical Report for SSOs greater than 50,000 gallons.

6.4 Claim Against the City

Anyone wishing to file a claim against the City as a result of a sewer backup or overflow can do so by submitting an insurance claim form to the City Clerks' office. The insurance claim form can be found on the City's website by following the link below:

http://www.brentwoodca.gov/civicax/filebank/blobdload.aspx?BlobID=23045

Element 7: FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

This section of the SSMP discusses the City of Brentwood's FOG control measures, including identification of problem areas, focused cleaning, and source control. This section fulfills the FOG Control requirements for the SWRCB (Element 7) SSMP requirements.

7.1 Regulatory Requirements for FOG Control Element

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

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

7.2 Element 7 Appendix

Supporting information for Element 7 is included in Appendix D. This Appendix includes the following documents:

1. "Preventing Sewer Backups" public outreach information pamphlet; and
2. Residential FOG public outreach brochure.

7.3 Summary of FOG Elements Identified by the State

State Element	City of Brentwood
An implementation plan and schedule for a public education outreach program promoting proper disposal of FOG.	The City periodically reminds residents of the proper way to dispose of grease by distributing a flyer with detailed information. A routine inspection program is anticipated to be sufficient for restaurants once staffing is complete.
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.	Currently it is the business owner's responsibility to dispose of the fats, oils, and grease and keep a manifest showing who is removing the grease, and where it is being taken.
The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG.	City of Brentwood Municipal Code includes adequate legal authority to prohibit discharges and to identify measures to prevent SSOs and blockages from FOG.
Requirements to install grease removal devices (such as traps or interceptors) design standards for the grease removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements.	City of Brentwood has a section of the Municipal Code, Ch.13.04 which meets this requirement. The Municipal code also incorporates by reference the Uniform Plumbing Code.
Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance.	The City hired an environmental compliance inspector in 2019 to accommodate this requirement. The City's FOG ordinances are in place and adequate at this time. The FOG program will continue to be updated as needed.
An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section.	Over the past several years, the City of Brentwood has identified the sections of sewer in the City which are subject to FOG and has an on-going maintenance schedule, as well as frequent checks of the manholes in these areas. If any new areas with FOG concerns become apparent, they will be checked more frequently and possibly added to the hotspot list.
Development and implementation of source control measures, for all sources of FOG discharged to the sewer system, for each sewer system section identified in the above section.	Known sources of FOG are required to install grease control devices. This coupled with monitoring and cleaning is currently sufficient.

7.4 FOG Control Discussion

The City has determined a FOG control program is necessary per SSMP requirements. Approximately 120 food service facilities are located within City limits and discharge to the City's sewer system. City staff has noted the tendency for grease buildup in specific sewer lines. This section discusses measures the City takes to control FOG.

The City's FOG control program consists of hot spot cleaning and maintenance as well as source control. The following subsections discuss identification and cleaning of grease-prone areas, legal authority to prohibit grease discharge or require a grease removal device, facility inspection, and public outreach.

7.5 Identification and Sewer Cleaning

The core means of FOG control utilized by the City is identification of trouble areas (hot-spots) or sewer lines which are prone to grease accumulation, and targeted cleaning of these areas on a regular basis.

A. Identification of Grease Problem Areas – The City identifies potential grease problem areas by tracking locations and causes of blockages and SSOs. Also, debris type and severity are noted by maintenance crews during routine cleaning. Areas with several restaurants or grease-producing facilities are also considered likely potential grease problem areas.

B. Hot Spot Cleaning – Approximately 7,500 feet of sewers are included in the hot spot cleaning program specifically for FOG control. Cleaning is generally done quarterly, but actual frequency depends on the history of stoppages or overflows on a line, recent inspection of lines during daily rounds, as well as areas expected to be prone to grease buildup. The City's downtown area is older and has a larger number of restaurants; so some lines in this area are cleaned more frequently than others.

   When cleaning and inspecting FOG related hotspots, the Collection Crew notes the date and time, manhole I.D. number, problems in line, and amount and type of debris found. This information is kept in a binder, and summarized in Maintenance Connection.

C. Blockage Investigation – The City CCTV inspects each sewer following a blockage. If the source of the grease in a lateral or main can be identified, the City contacts the restaurant or source of the grease and takes appropriate action to eliminate the problems.

FOG removed from the collection system is disposed of at the WWTP by dewatering, drying, and disposing of the dried FOG via solid waste disposal.

7.6 Legal Authority

Legal measures available to the City to control sources of FOG are included in the Municipal Code, Chapter 13.04 Article 4: Grease, Oil, and Sand Interceptor Program. The City also

incorporates the Uniform Plumbing Code into the Municipal Code by reference. The Municipal Code can be accessed in its entirety via the link below:

Chapter 13.04 SEWER SYSTEM – RULES AND REGULATIONS, of the City's Municipal Code

7.7 Facility Inspections

The City is aware of areas where a significant amount of grease is being introduced into the system. The City hired an Environmental Compliance Inspector in 2019. The inspector will be working with businesses to manage the problem areas with help from the collections crew. The FOG cleaning log will then be used to inspect lines as needed to verify for the inspector that restaurants are complying with regulations.

The City's obligation is to develop a relationship between the restaurants and the inspector. They must work together to accomplish a common goal of eliminating grease which is introduced to the sewer system at their location. The City will make sure the restaurants have all the information needed (Municipal Codes, etc.) to reach the common goal.

7.8 Public Outreach

The City conducts an annual Public Works Open House where the public has the opportunity to see what the City does for the community. During this open house, staff takes the opportunity to educate the individuals attending by showing them firsthand the cleaning equipment, CCTV truck, how to avoid sewer backups at home and restaurants, as well as some educational stories which help familiarize them on what not to put in the sewer system.

The City's website, http://www.brentwoodca.gov is another source for the public to use. The City has distributed brochures to all its restaurants to help educate them on the impacts of FOG related problems and best management practices. This is all in an effort to improve Public Outreach.

7.9 FOG Enforcement Actions

There have been no FOG related enforcement actions since the SSMP was adopted in 2006.

Element 8: CAPACTIY MANAGEMENT

This section of the SSMP discusses the City's capacity management measures, including the 2017 update of the Collection System Master Plan, and recommended capacity improvement projects. This section fulfills the Capacity Management SSMP requirements for the RWQCB (Element 8).

The Wastewater Collection System Master Plan was last updated in 2017 to make sure growth throughout the City does not overwhelm the sewer system. Currently, the collection system is effective. There are two CIP projects related to the collection system identified in the current 5-year CIP schedule. These two projects include the Highland Way sewer main upgrade, and the Lone Tree Way/Arroyo Seco Road sewer main upgrade.

8.1 Regulatory Requirements for Capacity Management

SWRCB Requirement: *The wastewater collection system agency prepares and implements a capital improvement plan providing hydraulic capacity of key sewer system elements under peak flow conditions. This plan includes:*

a. *Evaluation: The agency identifies actions needed to evaluate those portions of the sewer system experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation provides estimates of peak flows, estimates of the capacity of key system components, hydraulic deficiencies, and the major sources which contribute to the peak flows associated with overflow events.*

b. *Design Criteria: The agency identifies and establishes appropriate design criteria.*

c. *Capacity Enhancement Measures: The agency Identifies the steps needed to establish a short- and long-term capital improvement plan (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 includes an implementation schedule and identifies sources of funding.*

d. *Schedule: The agency develops a schedule of completion dates for all portions of the CIP developed in (a) through (c) above. This schedule is reviewed and updated at least every five years.*

8.2 Capacity Evaluation Discussion

A Wastewater Collection System Master Plan was prepared for the City in 2001 following adoption of the 2001 City of Brentwood General Plan Update of the General Plan adopted in 1993. The Wastewater Collection System Master Plan was updated in 2006 to evaluate the areas of development and forecast wastewater system flow conditions with build-out occurring in the year 2021, and updated again in 2010 and 2017. Due to the drought from 2011-2016, per capita water use declined significantly. Along with this, wastewater collection system flows also decreased. Current estimates forecast that system flows will be roughly 60% of previous estimates, indicating the collection system should have no hydraulic issues for the foreseeable future.

The 2017 Collection System Master Plan update made several notable assessments:

- Unit flow and peaking factors were reevaluated based on actual flows seen at the WWTP, resulting in a decrease in modeled values from 126 gpcd to 65 gpcd.
- I&I values previously estimated at 1000 gpd/acre were significantly reduced based on WWTP data.

The City has not experienced any sanitary sewer overflows caused by hydraulic deficiencies in the sewer system. Modeling of the sewer system conducted during preparation of the 2017 Collection System Analysis Update showed no overflow due to hydraulic deficiencies. Future deficiencies were identified and have begun to be planned for future CIP projects.

8.3 Hydraulic Model

Hydraulic modeling of the wastewater collection system was performed for the 2006 Update using the H_2OMap Sewer computer software. The hydraulic model update of the wastewater system was based on the 2006 hydraulic model, and analyzed the wastewater system conditions through the use of City maps, available as-built drawings and aerial imagery.

A City staff review of the 2006 update capacity assessment found discrepancies with respect to flows and tributary areas significant enough to warrant revising the model and re-analyzing the improvement recommendations for completion of the master plan. The unit flow and peaking factors the 2006 Plan used for dry weather factors were very high compared to actual flows measured at the Treatment Plant, indicating lower dry weather factors are more appropriate for city-wide planning. Significant discrepancies between the Update report description of the design flows and actual model configuration found the need for more accurate flow loadings supported by geographic and existing system information.

A new hydraulic model was created in 2009 to correct trunk and interceptor sewer pipeline system discrepancies, eliminate small pipe diameter pipes from the network, correct odd changes in pipe diameters, and correct adverse pipe slopes. The 2010 Update developed system improvements based on the City's Design Criteria for designing new pipes and improvements for new developments instead of analyzing the system for operation under normal conditions of pipes flowing full, or analyzing for minor surcharges in the system.

Flow generation factors and peaking factors for Peak Dry Weather and Peak Wet Weather flows were developed based on recorded flows at the Wastewater Treatment Plant, and the water usage information generated for the Water System Master Plan prepared for the City in 2010. The 2010 update used a value of 126 gpcd for the hydraulic model. For the 2017 update, WWTP flow data was analyzed and it was determined that actual flows to the treatment plant have decreased to approximately 63 gpcd. Future WWTP flow projections are based on 69 gpcd. To align with those projections, 69 gpcd was also used for the 2017 hydraulic model.

Future flows were estimated based on the City's General Plan Update EIR from 2014. Flows were estimated based on a combination of land use and land use flow factors adjusted based on comparisons to flow monitoring and water use data developed for the 2010 Water System Master Plan. The 2017 update modeled flows simulating an ultimate population of 92,000.

A copy of the most recent Collection System Master Plan is available on the City's website.

Element 9: MONITORING, MEASUREMENT, & PROGRAM MODIFICATION

This section of the SSMP discusses parameters the City tracks to monitor the success of the SSMP and how the City plans to keep the SSMP current. This section fulfills the SWRCB (Element 9) SSMP requirement.

9.1 Regulatory Requirements for Monitoring, Measurement, & Program Modifications

SWRCB Requirement: *The City shall*

- *maintain relevant information which can be used to establish and prioritize appropriate SSMP activities;*
- *monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;*
- *assess the success of the preventative maintenance program;*
- *update program elements, as appropriate, based on monitoring or performance evaluations; and*
- *identify and illustrate SSO trends, including: frequency, location, and volume.*

9.2 Monitoring and Measurement Discussion

The City tracks several performance measures through tracking logs, including, cause and location of stoppages; cause, location, and volume of SSOs; response time; number of and reason for customer complaints; length of pipe cleaned annually and type of debris found. The City plans to continue tracking all performance measures currently being tracked.

9.3 SSMP Modifications

The SSMP should be updated periodically to maintain current information, and determine how programs need to be enhanced or modified if they are determined to be less than effective. The City will review the successes and needed improvements of the SSMP as part of the SSMP biennial audit, described in Element 10.

City staff will update critical information, such as contact numbers and the SSO response chain of communication, as needed. A comprehensive SSMP update will occur every 5 years, as required by the SWRCB.

Element 10: SSMP AUDIT

This section of the SSMP discusses the City's SSMP auditing program. This section fulfills the SWRCB (Element 10) SSMP Audit requirements.

10.1 Regulatory Requirements for SSMP Audits

SWRCB Requirement: *The City shall conduct periodic internal audits appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.*

10.2 Element 10 Appendix

The most recent completed SSMP Audit is located in Appendix E.

10.3 SSMP Audit Discussion

The City will complete audits of the SSMP every other year, in odd years. The audit will focus on evaluating the effectiveness of the SSMP and compliance with the SSMP requirements.

Element 11: COMMUNICATION PROGRAM

This section of the SSMP discusses the City's communications with the public. This section fulfills the Communication Program requirement for the SWRCB (Element 11).

11.1 Regulatory Requirements for Communication Program

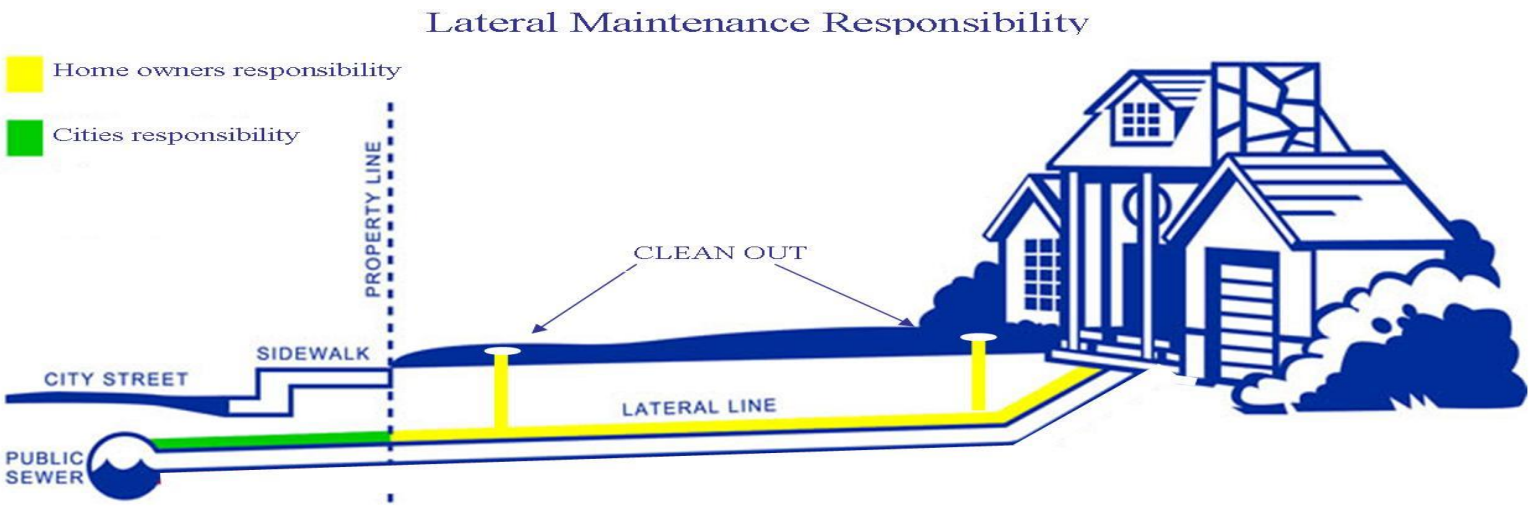
SWRCB Requirement: *The City shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the City as the program is developed and implemented.*

11.2 Communication Program Discussion

The City maintains a website, http://www.brentwoodca.gov to help inform the public about City activities. Included on the website is a link to the SSMP and a copy of the most recent Collection system master plan update.

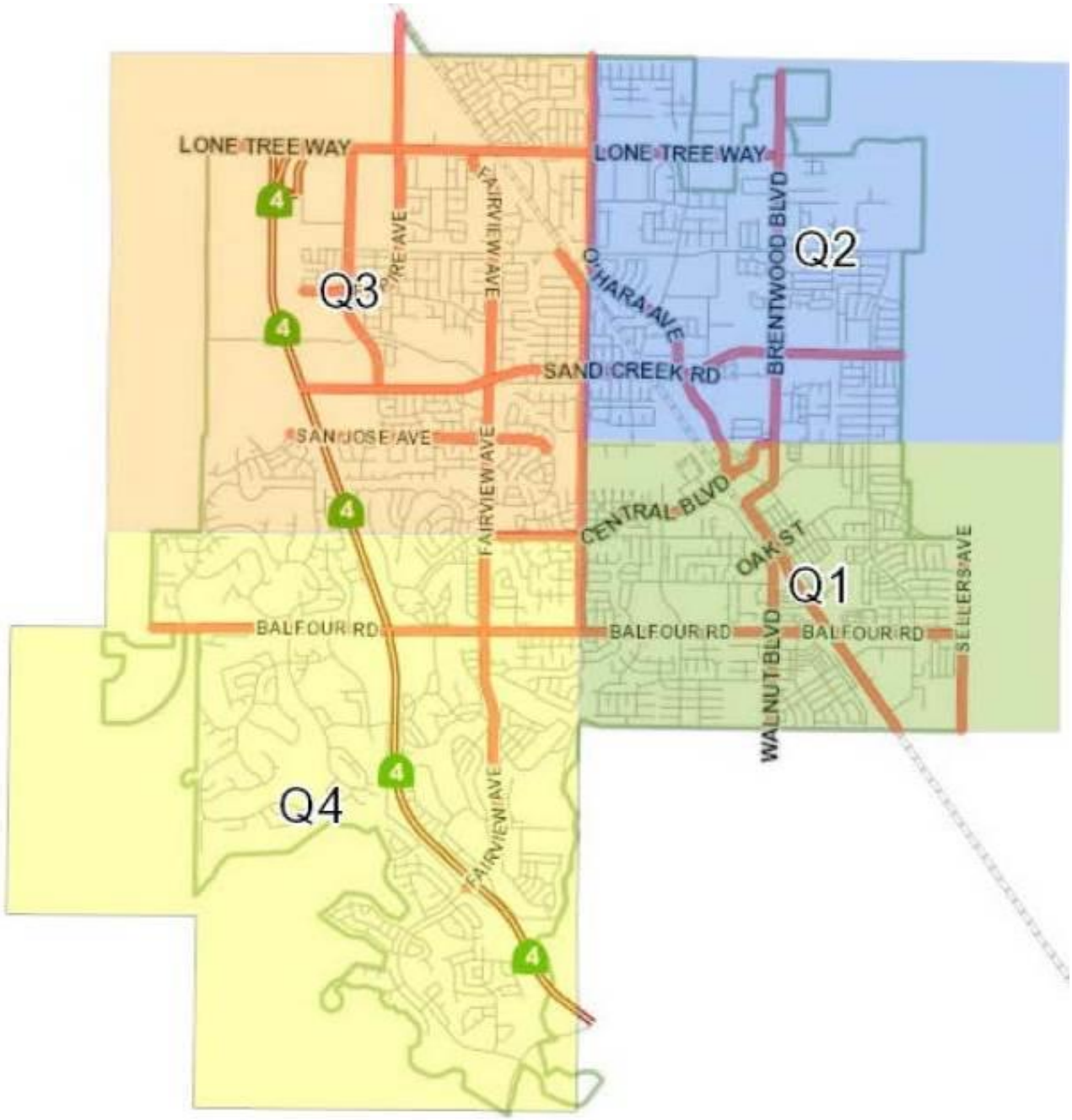
The City's website is an effective communication channel for providing information to the public. The main page of the website provides important announcements, agendas and past meeting information from City Council meetings, as well as information regarding FOG, lateral maintenance, and a link to the Association of Bay Area Governments ("ABAG") Sewer Smart Program, http://www.sewersmart.org, to help the public understand how to properly use their sewer connection.

APPENDIX A



Lateral Description

APPENDIX B



Quadrant Map

SSMP MAINTENANCE LOG

HOTSPOT, CCTV, PM CLEANING	DATE	QUAD #	ADDRESS / STREET NAME	START MANHOLE ID #	FINISH MANHOLE ID #	LENGTH OF PIPE CCTV'd OR CLEANED	TYPE/VOLUME OF DEBRIS IN LOAD	PROBLEMS / DETAILS

Spare Parts Inventory List

Size	Pump Parts	Bower Lock	In Stock
6"	Z Pipes	✓	**2**
6"	90 degree	✓	**2**
6"	Screens	✓	**3**
6"	Straight Pipe	✓	**3**
6"	Green Flex Pipe 1 needs male end	✓	**3**
6"	Black Flex Pipe	✓	**1**
6"	Black Flat Hose	✓	**3**

Size	Pump Parts	Bower Lock	In Stock
6"	Orange Flex Pipe	✓	**2**
6"	Yellow Flat Hose	✓	**6**
*Need 2 - 4" Screens w/ Bower Lock			

Size	Pump Parts	Cam Lock	In Stock
6"	Green Flex Pipe	✓	**3**
6"	Green Flat Hose	✓	**3**
6"	Yellow Flat Hose	✓	**1**
6"	Black Flat Hose	✓	**3**
* Need Gaskets - 10			

Size	Pump Parts	Black Lock	In Stock
8"	Black Flex Pipe	✓	**10**

PVC Fittings	4" with Gasket
22° Bell and Spiket	12
45° Bell and Bell	1
22° Bell and Bell	3
4" Y's	2

ABS Fittings	4" Slip
Cleanout	1
22°	10

ABS Fittings	3" Slip
4"-3" Reducer	1
T	
45°	

Rubber Colder Couplers	
4" Clay to Plastic	7
4" Plastic to Plastic	6
6" Clay to Plastic	2

PVC Fitting	6" with Gasket
45° Bell and Spiket	1
8" to 6" Reducer	1
12" to 4" Sadel	2
8" Y	1
12" Cuplers	4
8" Cuplers	4
4" SDR PVC Pipe 20 ft.	2

Plugs	Pipe Size
Flow Through Plug	15"
1	18"-24"
1	10"-16"
2	6"-10"

Misc Parts & Equipment	#
Generator	1
Power Snake 100ft	1
20 ft poles	2
3/4 x 20ft leader hose	2
1" x 20ft leader hose	4
3" Tiger Tail	2
4" Tiger Tail	5
Flat hose 4" x 50ft	6
Flex Suction Hoses 4" x 20ft	2
3" x 4" reducer	1
6" Hard Pipe	9
8" O rings for vac tubs	20
2.5" x 20ft Filler Hose - Flat	1
6" x 20ft Drain Hose - Flat	1
Spill kits	1
Multiple High Pressure Cleaning Heads	10
Air Pump	1

Trucks & Pumps	Vehicle #
AquaTech w/ 35ft 8" vac tubes	5916
Vac-Con w/ 24ft 8" vac tubes	5931
Ford F150	5929
Ford F450 CCTV Pearpoint	5924
Godwin 4" pump trailer mounted	5934
Godwin 3" pump trailer mounted	5933
Streets Depart. 6" pump	5128

Traffic Control	# of Items
Cones	100
Signs	14
Sign Board	2

Collection System SOP list:

WW-CL-001 Sewer Lateral Plug
WW-CL-002 Sewer Main Plug
WW-CL-003 Overflow Emergency Response Contact
WW-CL-004 Grease Interceptor Inspection
WW-CL-005 Grease Trap Inspection
WW-CL-006 Grease Removal Device Inspection
WW-CL-007 Cleaning of CDS Unit on Thompson Dr.
WW-CL-008 Dreamcatcher Lift Station
WW-CL-009 Sellers Lift Station
WW-CL-010 Response Trailer
WW-CL-011 Air Compressor
WW-CL-012 Tow Behind Trash Pump
WW-CL-013 Camera Truck
WW-CL-014 Generator
WW-CL-015 Vaccon

APPENDIX C

City of Brentwood

Water Quality Monitoring Plan

December 11, 2014

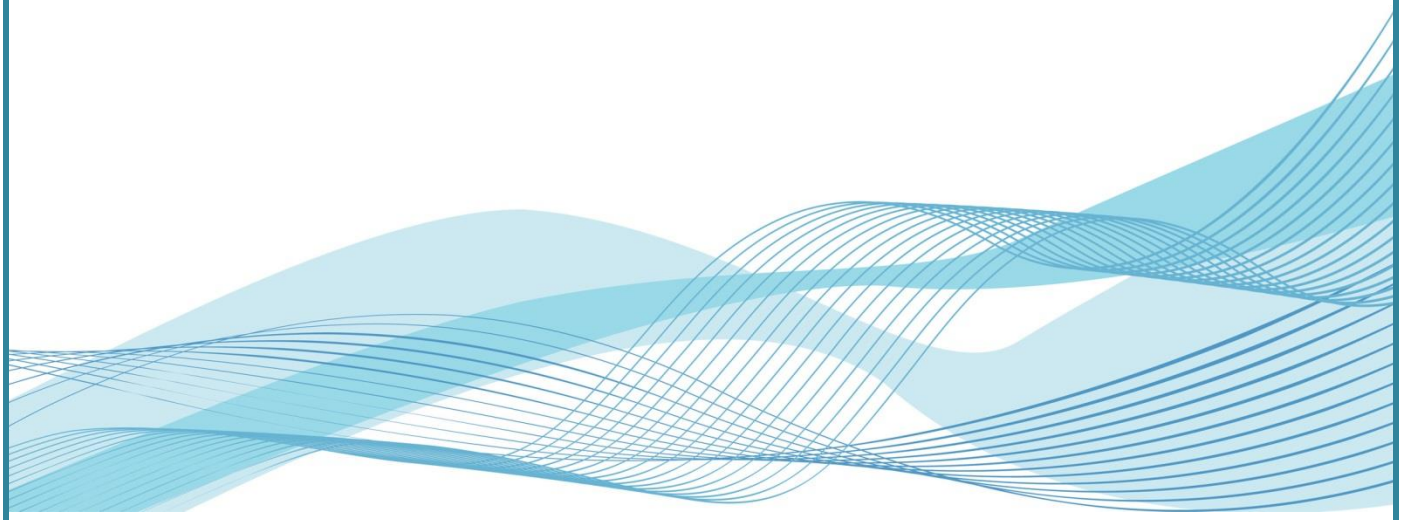


Table of Contents

1. PURPOSE OF PROGRAM PLAN

The purpose of this Water Quality Monitoring Program Plan (WQMP or Plan) is to implement the recent requirements for sampling of sanitary sewer overflows (SSOs) greater than 50,000 gallons that reach surface waters. This plan conforms to the State Water Resources Control Board Waste Discharge Requirements Order No. 2006-0003-DWQ, Section D.7(v) and Monitoring and Reporting Program (MRP) Section D, Water Quality Monitoring Requirements issued by executive order number WQ 2013-0058-EXEC effective on September 9, 2013. This WQMP provides the City of Brentwood (City) policies and procedures to assure consistent conformance to the regulatory requirements and to establish procedures for City staff and contractors in their responses to large releases of sanitary sewage that reach surface waters. This WQMP is consistent with and supplemental to the Brentwood Overflow Emergency Response Plan, Element VI of its SSMP. Finally, this document will be used to coordinate training for the City's new employees and regular refresher training for existing employees.

Additionally this Plan should also be useful for monitoring and sampling requirements that may be imposed upon the City from citizen suits under the Clean Water Act (CWA) resulting in settlement agreements, stipulated orders or consent decrees that can require monitoring and sampling of sanitary sewer overflows of any kind or size. This Plan establishes procedures for the identification of sampling locations, protocols for the proper collection of samples, the chain of custody for sample collections, the handling of samples, the reporting and recordkeeping to assure the legal integrity of monitoring for compliance with regulatory requirements. The plan will also establish policies and procedures that will be used to assure proper coordination between the taking and testing of samples, as well as assure that samples taken will satisfy the local regulatory agency's Basin Plan and the unique character of the City's local service area and surface waters.

This Program Plan is intended to establish protocols for all sampling including when, where and how, establish the required water quality sample analyses that will be conducted, identifying the access and safety requirements related to sampling considerations as well as the identification of any local concerns that this monitoring plan should address. In addition, the Plan establishes the requirements for equipment calibration, notification requirements related to an overflow, recordkeeping requirements, staff training issues and requirements for the regular reviews and audits of the WQMP. Finally, all City forms used for water quality monitoring are included and available for any incident.

2. DEFINITIONS

The following definitions and acronyms are used in this Program Plan:

BACTERIA	Prokaryotic microorganisms typically a few micrometers in length, with shapes from spheres to rods and spirals
CalOES	State of California Office of Emergency Services
CALOSHA	California Division of Occupational Safety and Health
CFR	Code of Federal Regulations
CFS	Cubic feet per second
CIWQS	California Integrated Water Quality System
CSRMA	California Sanitation Risk Management Association

CWA	Clean Water Act
DH2O	Distilled Water
DEET	N,N-Diethyl-meta-toluamide
DOHS	California Department of Health Services
E. Coli	Escherichia coli (bacteria)
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
Field QC	Field Quality Control
GPM	Gallons per minute
GWDR	General Waste Discharge Requirements or WDR
GIS	Geographic Information System
LIMS	Laboratory Information Management System
LRO	Legally Responsible Official
mg/l	Milligrams per liter
ml	Milliliter
MPN	Most probable number
MRP	Monitoring and Reporting Program
NH3	Ammonia
NH3-N	Ammoniacal Nitrogen
NPDES	National Pollution Discharge and Elimination System
OERP	Overflow Emergency Response Plan
OES	See CalOES
PPE	Personal Protective Equipment
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
RWQCB	Regional Water Quality Control Board

SOP Standard Operating procedure

SSC Sewer Service Charge

SSMP Sanitary Sewer Management Plan

SSO Sanitary Sewer Overflow

SSO GWDR Sanitary Sewer Overflow General Waste Discharge Requirements

SURFACE WATER
All waters whose surface is naturally exposed to the atmosphere; for example, rivers, lakes, reservoirs, ponds, streams, seas, estuaries, etc., and all springs, wells, or other collectors directly influenced by surface water.

SWRCB State Water Resources Control Board

WQMP Water Quality Monitoring Program Plan

WQ Water Quality

WDR Waste Discharge Requirements

VOC Volatile Organic Compound

3. RESPONSIBILITY

The City shall designate responsibility for all WQMP roles to appropriate classifications in the City to assure conformance of all activities for the monitoring of SSOs greater than 50,000 gallons reaching surface waters (Category 1 SSO), to reduce potential liability, protect public health, and to assure those responsible for this Plan are trained in their roles and responsibilities for the performance of proper protocols. It is further recognized that the proper application of this Plan will assure that all monitoring can withstand regulatory or legal scrutiny of the State, Regional Board, or from the actions of a citizen lawsuit. These roles and responsibilities are intended to be compliant with WDR Sections D.13(vi), G and Section C.5 and D of the September 9, 2013 MRP.

The following table contains the roles and responsibilities as assigned by the City to individual classifications or service contractors of the City:

Roles and Responsibility	Responsible Classification
Provide and document regular training on WQMP for all City classifications that have a role or responsibility in the WQMP and identified herein	Wastewater Operations Manager
Identification and assessment of potential impacts to local areas with surface waters that may require WQMP (i.e. aerial crossings, creeks, waterways, rivers, bays, estuaries, etc.)	Wastewater Operations Manager
Determination of specific sampling protocols and analytic methods to be used for the City-required testing	Regulatory Compliance Supervisor

Determination of appropriate bacterial indicators for sampling	Regulatory Compliance Supervisor
Annual review of all standard operating procedures related to this WQMP especially the Sample Collection procedures	Wastewater Operations Manager
Decision to invoke a WQMP and direct the monitoring program to conclusion	Wastewater Operations Manager
Selection of sampling locations	Regulatory Compliance Supervisor
Coordination of field sampling	Regulatory Compliance Supervisor
Conduct field sampling per City protocols	Regulatory Compliance Supervisor, Laboratory Technicians, Collections System Workers, or Public Works Standby Personnel
Authorization and direction for placement of public notifications and signage	Wastewater Operations Manager
Photographs of sampling and signage placed to protect public health and safety	Collections System Workers
Preparation of Chain of Custody for all samples taken including proper labeling	Regulatory Compliance Supervisor
Determination of spill travel time, if applicable.	Wastewater Operations Manager
Review and evaluate lab results for termination of sampling and to determine the nature and impact of the release	Wastewater Operations Manager
Decision to terminate sampling	Wastewater Operations Manager
Preparation of detailed sampling location map	Wastewater Operations Manager
Conduct sample analysis	*City of Brentwood Laboratory, FGL Environmental, Caltest*
Preparation of water quality sampling activities narrative for Technical Report	Wastewater Operations Manager
Certification and placement of Technical report in the CIWQS spill reporting system.	Wastewater Operations Manager
Failure Analysis Investigation of all water quality monitoring from the SSO event to determine all necessary changes or modifications to the WQMP	Wastewater Operations Manager
Audits of the WQMP as required by City SSMP Element 10, Audit.	Wastewater Operations Manager
Management of Change responsibilities for the WQMP and all associated forms and documents required for use during an incident	Wastewater Operations Manager

It is recommended that this list of responsibilities be placed on a laminated card and kept in the Monitoring and Sampling Kit for easy access during an SSO sampling incident.

4. AUTHORITY AND REFERENCES

The authority for the monitoring and sampling of sanitary sewer overflows are contained in the following regulations:

1. State Water Resources Control Board Waste Discharge Requirements Order No. 2006-0003-DWQ, Section D.7(v).
2. State Water Resources Control Board Monitoring and Reporting Program (MRP) Sections C.5 D, Executive Order number WQ 2013-0058-EXEC effective September 9, 2013

3. Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Organization et al.
4. Clean Water Act Sections 301(a), 304(h), and 501(a).
5. Code of Federal Regulations, Title 40, Part 136.

There are a number of applicable references that are available to assist with a proper Water Quality Monitoring Program as follows:

A. Basin Plan of the Regional Water Quality Control Board
B. Best Management Practices for Sanitary Sewer Overflow (SSO) Reduction Strategies, Central Valley Clean Water Associates and Bay Area Clean Water Agencies, December 2009
C. City Overflow Emergency Response Plans
D. Field Guide for Surface Water Sample and Data Collection, Air Program, USDA Forest Service, June 2001.
E. Standard Operating Procedures for Surface Water Quality Sampling, Arizona Department of Environmental Quality, Surface Water Section, September 2012.
F. Surface Water Sampling_AF.R3, Document Number SESDPROC-201-R3, Region 4, Environmental Protection Agency, Science and Ecosystem Support Division, Athens, Georgia, February 28, 2013.

5. IDENTIFICATION OF LOCAL SURFACE WATERS AND CHARACTERISTICS

An important element of any water quality monitoring program is the proper and thorough understanding of the service area and the various challenges the geography and sanitary sewer infrastructure of the service area present for the potential of wastewater reaching surface waters or storm water facilities. By evaluating the areas of concern in a service area such as lakes, rivers, dry creeks, aerial pipeline crossings over water ways and all storm water related infrastructure, the City can be better prepared to timely respond to any SSO reaching surface waters and to minimize the impacts of an SSO in or around local surface waters and storm water infrastructure.

A. Background Monitoring

Background monitoring of surface waters in the City's service area is intended to provide a profile of the water quality with respects to the constituents measured on a semi-annual basis. This background data will serve as a reference point for determining the level, if any, of water quality impairment following an SSO impacting surface waters in the service area.

1. The Regulator Compliance Supervisor, Laboratory Technician, or Collection System Worker will perform background monitoring of Marsh Creek.

2. Background monitoring will occur twice annually, once in the dry weather season and once in the wet weather season.

3. Background monitoring will measure the following constituents:
   - Ammonia-N
   - Fecal Coliform
   - pH
   - Temperature

4. Samples will be analyzed in accordance with Sections 6.0 and 7.0.

5. Sample results will be filed and retained by the Regulatory Compliance Supervisor.

B. Surface Waters of Concern

For the purposes of this Plan, surface waters are defined as all waters whose surface is naturally exposed to the atmosphere, for example, rivers, lakes, reservoirs, ponds, streams, seas, estuaries, etc., and all springs, wells, or other collectors directly influenced by surface water. In addition, the City will also identify and evaluate areas where collection system pipelines and force mains cross over or under waterways as these crossings can require additional resources and equipment to properly address any SSO from these collection system assets.

Surface waters of concern are those surface waters with the City's service area that may be impacted by a sanitary sewer overflow from the City's sanitary sewer collection system. Prior review and evaluation of potential failure mechanisms can help minimize any potential impacts to surface waters or storm water infrastructure when and if the WQMP must be invoked. Any review of these important areas of potential surface water contamination in advance of an SSO should allow the City to be better prepared to respond to an SSO with the proper equipment and a better understanding of the procedures that may need to be invoked during the SSO such as flow rate of a creek or stream, and potential areas of significant environmental concern such as shell fish beds or fish habitats. In addition, having all storm water infrastructure located on the collection system field maps will help the City's responders quickly determine if SSOs may flow into storm drains reach and impact surface waters.

The following (Table 5.1) are the surface waters of concern within the City's jurisdiction:

Table 5.1: Surface Waters of Concern					
Name	Type (see legend, below)	Map Location	Background Monitoring?	Access Considerations	Safety Considerations
Marsh Creek and Balfour Road	Stream	Attachment F	Yes	No special considerations	Always exercise caution, may be slippery
Marsh Creek and Sand Creek Road	Stream	Attachment F	Yes	No special considerations	Always exercise caution, may be slippery
Marsh Creek - approx. 300 feet downstream of WWTP Discharge point	Stream	Attachment F	Yes	No special considerations	Always exercise caution, may be slippery
Marsh Creek Tributaries - Sand Creek - Deer Creek - Dry Creek	Stream		No	No special considerations	Always exercise caution, may be slippery

Bog: Freshwater wetlands that are poorly drained and characterized by a buildup of peat.

Brackish Water: Generally, water containing dissolved minerals in amounts that exceed normally acceptable standards for municipal, domestic, and irrigation uses. Considerably less saline than sea water. Also, Marine and Estuarine waters with Mixohaline salinity (0.5 to 30 due to ocean salts). Water containing between 1,000-4,000 parts per million (PPM) Total Dissolved Solids TDS). The term brackish water is frequently interchangeable with Saline Water. The term should not be applied to inland waters.

Brook: A natural stream of water, smaller than a river or creek; especially a small stream or rivulet which breaks directly out of the ground, as from a spring or seep; also, a stream or torrent of similar size, produced by copious rainfall, melting snow and ice, etc.; a primary stream not formed by tributaries, though often fed below its source, as by rills or runlets; one of the smallest branches or ultimate ramifications of a drainage system.

Canal: A constructed open channel for transporting water.

Channel: An area that contains continuously or periodically flowing water that is confined by banks and a stream bed.

Culvert: A buried pipe that allows streams, rivers, or runoff to pass under a road.

Ditch: A long narrow trench or furrow dug in the ground, as for irrigation, drainage, or a boundary line.

Diversion channel: (1) An artificial channel constructed around a town or other point of high potential flood damages to divert floodwater from the main channel to minimize flood damages. (2) A channel carrying water from a diversion dam.

Drainage Channel: For the purposes of complying with the Statewide Sanitary Sewer Order, (1) a man-made canal used to transport storm water as part of a municipal separate storm sewer system, or (2) an intermittent or perennial stream bed.

Dry Wash: A streambed that carries water only during and immediately following rainstorms.

Ephemeral Streams: Streams which flow only in direct response to precipitation and whose channel is at all times above the water table.

Freshwater marsh:	Open wetlands that occur along rivers and lakes.
Intermittent stream:	Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two criteria.
Perennial streams:	Streams which flow continuously.
Pipe crossing:	Crossing of a pipe or force main over or under a surface water body.
Riverine:	Relating to, formed by, or resembling a river including tributaries, streams, brooks, etc.
Slough:	A shallow backwater inlet that is commonly exposed at low tide.
Stream:	A general term for a body of flowing water; natural water course containing water at least part of the year. In Hydrology, the term is generally applied to the water flowing in a natural channel as distinct from a canal. More generally, as in the term Stream Gaging, it is applied to the water flowing in any channel, natural or artificial.

For additional definitions refer to the glossary at http://www.streamnet.org/glossarystream.html.

6. LAB SELECTION

A. Analytical Lab

Samples collected for background monitoring purposes pursuant to Section 5.0 will be analyzed at the Brentwood Wastewater Treatment Plant (WWTP) lab, utilizing FGL Lab in Stockton or Caltest in Napa as backups. These labs are accredited through California's Department of Public Health Environmental Laboratory Accreditation Program (ELAP). ELAP provides evaluation and accreditation of environmental testing laboratories to ensure the quality of analytical data used for regulatory purposes to meet the requirements of the State's drinking water, wastewater, shellfish, food, and hazardous waste programs. The State agencies that monitor the environment use the analytical data from these accredited labs. The ELAP-accredited laboratories have demonstrated capability to analyze environmental samples using approved methods.

B. Getting Samples to the Lab

At all times, sample hold times identified below will be observed in accordance with Section 7.0. Once samples are collected, they will be transported to the lab as follows:

1. During Business Hours: Placed in the sample storage refrigerator at the WWTP Lab

2. After Hours: Placed in the sample storage refrigerator at the WWTP Lab

C. Lab Contact Info

Name: Jacqueline Parsons, Regulatory Compliance Supervisor

Address: 2251 Elkins Way, Brentwood WWTP

Hours Samples Are Accepted: 24 hours per day

Phone: 925-516-6074

Alternate or After Hours Phone: 925-382-1924

Emergency contact information: 925-382-1924

7. SAMPLING PARAMETERS

A. Required Sampling Parameters

The RWQCB Basin Plan and/or NPDES permit set the water quality standards against which one can judge the levels of impacts of an SSO on surface waters.

In accordance with the SWRCB Revised MRP WQ 2013-0058, the following parameters will be sampled:

1. Ammonia

Ammonia-N, is a key indicator of the extent of the gross pollution of the receiving water from a SSO. Untreated wastewater or partially-treated wastewater is generally high in ammonia-N (typical 20-30 mg/L), in comparison the natural background concentration in the surface water is low, typically, less than 0.5 mg/L. Therefore, the elevated concentration of ammonia of the surface water downstream or at the site of the SSO, as compared to that upstream of the site is a reasonable indication of the extent of gross contamination from the SSO.

2. Bacteriological Indicator as specified in the local Basin Plan

   Fecal coliform count is an indicator of potential public health impacts of an SSO on the receiving waters. If the concentrations of this group of bacteria are elevated above and beyond the natural background and/or above the RWQCB Basin Plan Water Quality Standards (objective), public notification and posting may be necessary.

   It should be noted that there may be non SSO-related causes of elevated bacteria in surface water, for example, animal sources or storm drain discharge. The upstream and or other samples may reflect the extent of bacterial contamination from these sources. Sometimes the extent of the SSO may be indistinguishable from the other natural sources beyond the City's control. This is particularly true when taking Source samples based on an estimated downstream location of the SSO plume (reference Section 7F).

   Generally, if the concentrations of these groups of bacteria at the downstream or at the site of impact are within the range of the non-impacted site (i.e. upstream) or levels indicated in historical background monitoring levels, the water quality impacts of the SSO are considered insignificant.

   The surface water quality objectives of these groups of bacteria are shown in Table 7.1 and 7.2, below.

Table 7.1: Water Quality Objectives for Coliform Bacteria[a]		
Beneficial Use	**Fecal Coliform (MPN/100ml)**	
Water Contact Recreation	Geometric mean < 200 90th percentile < 400	
Shellfish Harvesting[b]	N/A	
Non-contact Water Recreation[d]	N/A	
Municipal Supply: • Surface Water[c] • Groundwater	Geometric Mean < 2.2	

NOTES:

a. Based on a minimum of five consecutive samples equally spaced over a 30-day period.

b. Source: National Shellfish Sanitation Program.

c. Based on a five-tube decimal dilution test or 300 MPN/100ml when a three-tube decimal dilution test is used.

d. Source: Report of the Committee on Water Quality Criteria, National Technical Advisory Committee, 1968.

Source: Sacramento River and San Joaquin River Basin (Region 2)
Water Quality Control Plan (Basin Plan)
California RWQCB, Central Valley Region
October 2011

Table 7.2 – U.S. EPA Bacteriological Criteria for Water Contact Recreation[1, 2]
(in colonies per 100 ml)

Steady State (all areas)	Fresh Water		Salt Water
	Enterococci	E. Coli	Enterococci
	33	126	35
Maximum at:			
• Designated beach	61	235	104
• Moderately used area	89	298	124
• Lightly used area	108	406	276
• Infrequently used area	151	576	500

NOTES:

1. The criteria were published in the Federal Register, Vol. 51, No. 45 / Friday, March 7, 1986 / 8012-8016. The criteria are based on:
   a. Cabelli, V.J. 1983. Health Effects Criteria for Marine Recreational Waters, U.S. EPA, EPA 600/1-80-031, Cincinnati, Ohio, and
   b. Dufour, A.P. 1984, Health Effects Criteria for Fresh Recreational Waters, U.S. EPA, EPA 600/1-84-004, Cincinnati, Ohio.

2. The U.S. EPA criteria apply to water contact recreation only. The criteria provide for a level of production based on the frequency of usage of a given water contact recreation area. The criteria may be employed in special studies within this region to differentiate between pollution sources or to supplement the current coliform objectives for water contact recreation.

B. Sampling Parameters for City of Brentwood

1. Ammonia
   - Discussion: See Section 7A
   - Sample Container: Plastic/glass
   - Sample Type: Grab
   - Sample Volume Required: 200 ml. minimum
   - Hold Time: 28 days
   - Preservative: Sulfuric acid
   - Analytical Method: Method 4500-XX R and C, Standard Methods for the Examination of Water or Wastewater, 21st Edition

2. Total Coliform/Fecal
   - Discussion: See Section 7A.2
   - Sample Container: Plastic (sterile)
   - Sample Type: Grab
   - Sample Volume Required: 100 ml. minimum
   - Hold Time: 8 hours
   - Preservative: None if waters are not chlorinated
   - Analytical Method: Method 9221 B, C and E, Standard Methods for the Examination of Water or Wastewater, 21st Edition

3. Enterococcus (not currently used by City in this Plan)
   - Discussion: See Section 7A.2
   - Sample Container: Plastic (sterile)
   - Sample Type: Grab
   - Sample Volume Required: 100 ml. minimum
   - Hold Time: 8 hours
   - Preservative: None if waters are not chlorinated
   - Analytical Method: IDEXX Enterolert® Test Kit, Method 9230D, Standard Methods for the Examination of Water or Wastewater, 21st Edition

4. pH
   - Discussion: Just as “degree” is a measure of temperature, pH is a measure of how acidic or basic the water is. Water pH is critical to fish habitat because it can affect fish egg production and survival, aquatic insect survival and emergency, and the toxicity of other pollutants such as heavy metals or ammonia. Like water temperature, pH naturally varies both daily and seasonally.

     Most daily cycles in pH occur as a result of the photosynthesis of aquatic plants. Through photosynthesis, plants convert the sun’s energy into chemical products they need to live and grow. During daylight hours, aquatic plants consume carbon dioxide (an acid), and produce hydroxide (a base). As a result, water becomes more basic during the day (pH values get higher) and usually peaks mid- to late-

afternoon. Virtually all aquatic organisms produce carbon dioxide (an acid) through their normal metabolism of food (respiration). As a result, water becomes more acid during the night (pH values drop) and usually is lowest just before sunrise.

- Sample Container: None, in-field measurement
- Sample Type: Grab
- Hold Time: 15 minutes
- Preservative: None
- Analytical Method: Direct read pH meter, calibrated per manufacturer's instructions prior to use.

5. Temperature
   - Discussion: Water temperature is a key factor affecting the growth and survival of all aquatic organisms. The effect of stream temperature on fish, amphibians, macroinvertebrates, etc. varies between species and within the life cycle of a given species (Armour 1991; Beschta et al. 1987; Bjornn and Reiser 1991; Lantz 1971; DEQ 1995). As stream temperatures increase, the amount of dissolved oxygen (DO) available to aquatic biota decreases. As a result, even if food is abundant at higher temperatures, decreases in DO may metabolically stress aquatic organisms, further increasing their susceptibility to disease.
   - Sample Container: None, in-field measurement
   - Sample Type: Grab
   - Hold Time: None
   - Preservative: None
   - Analytical Method: Direct read temperature meter, calibrated per manufacturer's instructions prior to use.

6. Dissolved Oxygen
   - Discussion: The dissolved oxygen concentration is an indication of the potential impacts of the spill on the biological community of the receiving water. The dissolved oxygen concentration of <2 mg/L downstream or at the site of the spill is an indication of serious biological impacts including potential fish kill. Generally, the dissolved oxygen at the downstream should not drop below 5 & 7 mg/L for warm and cold water, respectfully.
   - Sample Container: Non, in-field measurement
   - Sample Type: Grab
   - Hold Time: 15 minutes
   - Preservative: None
   - Analytical Method: Direct read temperature meter, calibrated per manufacturer's instructions prior to use.

8. SAMPLING EQUIPMENT AND CALIBRATION

A. Sampling Equipment Used At the City of Brentwood

The following are the sampling equipment used by the City

- Sampling pole with fixed container
- Sampling pole with removable container
- Portable pH and temperature probe
  - Make and model
- Portable dissolved oxygen meter
  - Make and model
- Sampling pail and rope
- Stream velocity meter
  - Make and model
- Grab-n-Go Sample Kit containing:
  - Ice pack
  - Waterproof pen
  - Sample labels
  - Camera
  - Sample bottles
  - Etc.

B. Calibration and Record Keeping

Each piece of equipment is required to have an up-to-date calibration and maintenance logbook. The logbook will be maintained to have consecutively numbered pages and shall contain at least the following:

- Date
- Calibration Results
- Calibration comments
- Initials of the individual calibrating the instrument

Each instrument must be clearly identified (*e. g.,* the make, model, serial and/or ID number) to differentiate among multiple meters.

The appropriate calibration procedure must be followed pursuant to City standard calibration operating procedure and if the instrumentation does not have an electronic program that maintains a running calibration log, then the results must be recorded in the logbook each time a piece of field equipment is used, along with the date and name/initials of the person performing the calibration.

If difficulty is encountered in calibrating an instrument, or if the instrument will not hold calibration, this information must also be recorded. Malfunctioning equipment should not be used to collect data. Steps should be taken to correct the problem as soon as possible. All equipment maintenance should be recorded in the logbook indicating what was done to correct the problem, along with the date and signature/initials of the staff person that corrected the problem.

9. Sampling Procedures

A. Sample Location and Identification Procedures:

Samples will be collected by the Regulatory Compliance Supervisor, Laboratory Technicians, Collection System Workers, or Public Works Standby personnel. The most precise and accurate analytical measurements are worthless and even detrimental if performed on a sample that was improperly collected and stored, or was contaminated in the process. The purpose of sampling and analysis is to provide data that can be used to interpret the quality or condition of the water under investigation.

Unfortunately, water quality characteristics are not spatially or temporally uniform from one effluent to another. A sampling program must recognize such variations and provide a basis for compensations for their effects. The sample must be:

1. representative of the material being examined;
2. uncontaminated by the sampling technique or container;
3. of adequate size for all laboratory examinations;
4. properly and completely identified;
5. properly preserved, and
6. delivered and analyzed within established holding times.

These six requirements are absolutely necessary for a proper assessment of water quality.

It is impossible to establish hard and fast rules concerning sampling locations. However, the following general guidelines should be applied whenever City personnel conduct surface water sampling:

1. The sampling location should be far enough upstream or downstream of confluences or point sources so that the surface water and SSO volume is well mixed. Natural turbulence can be used to provide a good mixture.
2. Samples should be collected at a location where the velocity is sufficient to prevent deposition of solids, and to the extent practical, should be in straight reach having uniform flow. All flow in the reach should be represented, so divided flow areas should be avoided and samples should be taken towards the middle of the reach where feasible.
3. Sampler must always stand downstream of the collection vessel, and sample “into the current”. Care must be taken to avoid introducing re-suspended sediment into the sample.

B. Sample Types:

Grab samples are appropriate for the characterization of surface waters at a particular time and place, to provide information about minimum and maximum concentrations, to allow for the collection of variable sample volume.

Grab samples may be collected directly into the sample container, or a clean decontaminated intermediate container may be used if a wading sample is not possible or safe. If an intermediate container is used, when in the field, double rinse the sampling device (bucket, automatic sampler) with sample water prior to collecting the sample and be sure to discard rinse water downstream of where sample will be collected. If samples are collected in a bucket and distributed a consolidation collection container, swirl the contents of the bucket as it is being

poured into the consolidation collection container to avoid settling of solids (and pour in back and forth pattern – *e.g*., 1-2-3-3-2-1).

Grab Sample: A grab sample is defined as an individual sample collected at a given time. Grab samples represent only the condition that exists at the time the sample is collected (US EPA 1977).

Surface Grab Sample: A sample collected at the water surface (i.e. skimming) directly into the sample container or into an intermediate container such as a clean bucket. A single or discrete sample collected at a single location.

Field Blanks are used to evaluate the potential for contamination of a sample by site contaminants from a source not associated with the sample collected (e.g., airborne dust, etc.). Sterile, deionized water is taken into the field in a sealed container. This is the stock water. The stock water is then poured into the sample container. The containers and sample submission forms are labeled as "Field Blank". The same template selected for the test samples should be used. Field blanks are subject to the same holding time limitations as samples. The appropriate FIELD QC box on the sample Chain of Custody form should be checked.

C. Decontamination Procedures

Removing or neutralizing contaminants from sampling equipment minimizes the likelihood of sample cross contamination, reduces or eliminates transfer of contaminants to clean areas, and prevents the mixing of incompatible substances.

Gross contamination can be removed by physical decontamination procedures. These abrasive and non-abrasive methods include the use of brushes, air and wet blasting, and high and low pressure water cleaning.

The decontamination procedure described above may be summarized as follows:

1. Physical removal
2. Non-phosphate detergent wash
3. Tap water rinse
4. Distilled/deionized water rinse
5. 10% nitric acid rinse
6. Distilled/deionized water rinse
7. Solvent rinse (pesticide grade)
8. Air dry
9. Distilled/deionized water rinse

D. Sample Labeling and Chain of Custody Procedures

A sample is a physical evidence of a facility or the environment. An essential part of all enforcement investigations is that evidence gathered be properly documented. To accomplish this, the following sample identification and chain of custody procedures are established.

1. The method of sample identification depends on the type of measurement or analyses performed. When in-situ measurements are made, the data are recorded directly in Field

Data Worksheets with identifying information, field observations, and remarks. Examples of in-situ measurements are:

- pH
- Temperature
- Dissolved Oxygen
- Stream Flow Measurement

Samples other than in situ measurements must be identified by a sample label. These samples are removed from the sample location and transported to a laboratory for analyses. Before removal, however, a sample is often separated into portions depending upon the analyses to be performed. Each portion is preserved in accordance with applicable procedures and each sample container is identified by a sample label.

2. At a minimum, the following grab samples will be collected, in duplicate:
   - Field Blank: See Section 9.B for discussion.
   - Upstream: This sample will be collected far enough upstream of the SSO's point of entry into the surface water as to be free of contaminants from the SSO. Typically, 50-feet is sufficient, but this may vary depending on circumstances of
   - Source: Immediate vicinity where the SSO entered the surface water. This point will actually be downstream of the actual SSO entry point for SSO's that have stopped entering the surface water to be sampled. If the SSO has stopped, calculate the approximate downstream distance from the original SSO location by dividing the time since the SSO occurred by the estimated velocity. This is the approximate downstream distance from the SSO discharge point to the "source" sampling location.
     - Due to possible tidal action in the surface water or other factors, another method may be used to determine the "source" location at the discretion of the *Wastewater Operations Manager.*
     - See Section 9.F for information on determining velocity of the surface water in order to determine the Source sample location.
   - "Downstream" of SSO: This sample will be collected far enough downstream to be representative of the water quality of the surface water after adequate mixing of the surface water and the SSO have occurred. Typically, this location will be 50-feet downstream of the Source sample, but this may vary on the size and velocity of the surface water to be sampled.

3. Sample labels shall be completed for each sample, using waterproof ink. The information recorded on the sample tag/label includes:
   - Date: a six digit number indicating the year, month, day of collection
   - Time: a four-digit number indicating military time of collection (e.g., 0954)
   - Sample Location: sampling location description as either Upstream, Source, or Downstream
   - Samplers: each sampler is identified
   - Parameter/preservative: the analysis to be conducted for the sample /sample preservation

4. Photos or video of each sample location will be taken, properly labeled with date, time, and view direction and a map of the photo locations completed. Photos and videos shall include relevant landmarks to identify sampling locations and their surroundings.

   Due to the evidentiary nature of samples collected during enforcement investigations, possession must be traceable from the time the samples are collected until they are analyzed. To maintain and document sample possession, chain of custody procedures (Attachment C) are followed. A sample is under custody if:

   - It is in your possession, or
   - It is in your view, after being in your possession, or
   - It was in your possession and under your control to prevent tampering, or
   - It is in a designated secure area.

5. As few people as possible should handle samples. The person taking the samples is personally responsible for the care and custody of the samples collected until they are transferred or dispatched properly.

6. Samples are accompanied by a chain of custody record. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents sample custody transfer from the sampler, often through another person, to the analyst at the laboratory. The samples are typically transferred to the sample-receiving custodian at the laboratory.

E. Safety Considerations

Personal safety of staff engaged in any fieldwork activity (e.g., in transit, walking or hiking, and any field activities while at the sample site) is of primary importance. Staff should never place themselves in dangerous or risky situations. Any hazards that are known by field personnel should be communicated to other members of the field crew.

Fieldwork should be postponed if there is indication that engagement in the field activity could cause bodily harm. Working during lightning storms, at night, in heavy vegetation or poison oak, near aggressive wildlife or domestic animals, traversing steep or rugged terrain, unstable slopes or creek banks, near swiftly moving water or potential flash flood conditions, or during snowy weather is not considered "normal risk". If any member of the field crew is uncomfortable with a reasonable self-determined hazardous field condition, it is that person's responsibility to bring this to the attention of the on-site field supervisor or their supervisor. A "reasonable self-determined hazardous field condition" is defined as other than normal risk. Supervisors shall not dismiss any person's spoken concerns that field conditions are too hazardous to complete the work assignment.

The person taking the samples must have adequate protection, including protective clothing. They must wear gloves, as protection against chemical and/or bacteriological hazards, while they are sampling or handling samples that are known or suspected to be hazardous (e.g. visible solids or sheens, downstream from sewage spills, etc.), or if hands have open wounds. The type of gloves worn shall be determined by the sampling circumstance and type of

pollutants expected – for instance longer gloves are needed when samples must be taken well below the surface.

When wading in a stream, a personal floatation device shall be worn at all times. Other protective measures shall be taken in accordance with Brentwood safety procedures.

Upon arrival at a sampling site, safety equipment such as signs, cones, lights, etc. shall be set out as appropriate. Vehicles shall be parked in locations and directions to minimize traffic disruption and avoid sample contamination. Photos should be ultimately taken of the placement of all safety equipment and signage

The following guidelines apply to all fieldwork by City staff.

- No sample or measurement is worth the risk of injury.
- All staff shall use proper personnel protective gear as appropriate for the incident (e.g., life preservers, gloves, goggles, etc.)
- Field sampling crews should consist of at least two members unless otherwise approved by a supervisor.
- Be conscious of the whereabouts of rattlesnakes, mountain lions, and other dangerous animals.
- Open body wounds are entry sites for infection; take the necessary precautions for self-protection.
- If there is storm activity in the work area, wait for safer conditions to develop or postpone the sampling.
- Do not sample at night without approval from your supervisor.
- Do not trespass on private property, or posted restricted public lands without prior permission and written approval from property owner or administrator.
- If strange or suspicious looking people are in the work area, either wait for them to leave or postpone the work to a later time. Do not force confrontations with strangers and back away from any confrontations with the public. Be courteous and understanding of public concerns of the situation.
- Take the necessary precautions against exposure to harmful weather conditions such as heat, wind, snow, cold, rain, etc.
- Carefully evaluate a given on-site situation to determine if the task can be performed safely.
- Wear protective footwear when entering streams.
- Do not enter the stream if the water is flowing too fast.

F. Stream Velocity Measurements

If sampling is performed after the SSO has stopped, the velocity of the impacted surface water must be determined in order to estimate SSO travel time and select an accurate Source sample location. One way to measure the SSO travel time is to use a velocity probe (such as a Global Water FP111-S Flow Probe) to determine the rate of flow in the water body. In cases where a water velocity probe is used, the manufacturer's instructions will be followed.

G. Grab-n-Go Sampling Kit

The City maintains a Grab-n-Go sampling kit located at the WWTP Lab. The kit is inspected quarterly by a Collections System Worker. Additionally, any Brentwood staff utilizing the kit is responsible for notifying the Regulatory Compliance Supervisor of the need for decontaminating sampling equipment and field monitoring devices and replenishing the kit.

SSO Sample Collection Kit Inventory:

- Cooler
- Surface Water Sampling SOP (Attachment B)
- Ice Pack (stored in freezer)
- 5 Ammonia sample bottles, preserved (3 for samples, 1 for Field Blanks and 1 extra in the event of contamination, spillage of the preservative or other contingency)
- 6 sample bottles (4 for samples, 1 for Field Blanks and 1 extra in the event of contamination, or other contingency)
- Field monitoring device(s) for pH, temperature, and salinity (calibrated on regular basis) and extra batteries for each device
- Latex gloves
- Safety glasses/goggles
- Surface Water Sampling Worksheet (Attachment D)
- Sampling Pole
- Field Lights
- Waterproof Pen
- Minimum of 20 blank sample bottle labels
- Chain of Custody form (Attachment C)
- Velocity probe
- Personal floatation device (if applicable)

H. Surface Water Maps
Maps of surface waters in the Brentwood service area that may be impacted by an SSO are located in Attachment F.

I. Follow Up Sampling
1. Sampling will be repeated every 24 hours, or as directed by the RWQCB or County Environmental Health Department, until such time as one of the following criteria has been met:
   - The County Environmental Health Department or the RWQCB indicates follow up sampling is no longer required, or
   - Both the ammonia and bacteria levels downstream are approximately equal to or less than the upstream levels; or
   - The concentration of fecal coliform levels is below the applicable water quality objective for the beneficial use (400 MPN/100ml).

Table 9.1 Summary of the October 2011 Sacramento & San Joaquin River Basin Plan

Beneficial Use	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)	Enterococcus Bacteria (MPN/100mL)		E. coli (MPN/100mL)
			Estuarine and Marine	Fresh Water	Fresh Water
Water Contact Recreation	90th percentile < 400				
Shellfish Harvesting					
Non-contact Water Recreation					

J. Surface Water Sampling SOP
The Surface Water Sampling SOP, Attachment B, provides step-by-step procedures to collect samples and deliver them for analysis in accordance with Sections 6, 7 and 9.

10. NOTIFICATIONS OF SENSITIVE RECEPTORS AND REGULATORY AGENCIES

Table 10.1 describes regulatory and other notifications that must be made in accordance with the triggers indicated:

Table 10.1 Notifications of Sensitive Receptors and Regulatory Agencies

Contact	Trigger	Deadline	How	Person(s) Responsible
OES	If SSO is greater than or equal to 1,000 gallons and reaches or has potential to reach surface waters.	2 hours after awareness of SSO	Call CalOES at (800) 852-7550.	
County Environmental Health	N/A	N/A	N/A	
SWRCB	If 50,000 gal or more were not recovered.	45 days after SSO end time, Submit SSO Technical Report.	CIWQS*	

** In the event that the CIWQS online SSO database is not available, notify the State Water Resources Control Board (SWRCB) by phone or email and provide required information until the CIWQS online SSO database becomes available.*

11. TECHNICAL REPORT

The MRP requires that in the event of a 50,000 gal or greater overflow spilled to surface waters, the City must prepare and submit an SSO Technical Report that includes a description of all water quality sampling activities conducted, a location map of all water quality sampling points, and the analytical results and evaluation of the results, pursuant to Section B.5 of the MRP. In addition, this report must be submitted to the CIWQS Online SSO Database within 45 days of the end of the SSO and must be certified by the City's Legally Responsible Official, the Wastewater Operations Manager.

12. RECORDKEEPING

All sampling related records associated with this WQMP should be contained in the appropriate SSO Incident file designated with a specific locator record number. These records shall include at least the following documents related to the WQMP:

- A narrative description of water quality sampling activities associated with the event.
- Timeline of the sampling activities until sampling is terminated.
- All surface water sampling worksheets.
- Computations of spill travel time in surface waters, if appropriate.
- Chain of Custody for all samples.
- Sampling Map of all sample locations.
- All photos or video showing sampling activities.
- Final analytical results from the certified laboratory conducting the sample analysis along with an Agency evaluation of the results to determine the nature and impact of the release.
- Failure analysis reviews of the WQMP including recommendations for changes and modifications.
- Calibration records for specific equipment used in the sampling processes.
- Notification documentation for all public and private agencies involved with or requiring monitoring related to final sample results.

The City shall maintain all records including records from service contractors associated with this WQMP as part of the file records for an SSO as required by the WDR and MRP. These records shall be maintained for a minimum period of five-years from the end date of the SSO unless required by regulatory enforcement action, request of the State or Regional Board or as support for claims litigation resulting from the SSO. All records associated with the SSO shall be destroyed upon reaching the end of the file retention period or as otherwise required by the Regional or State Board.

Samples of all City forms and records used in this WQMP are included as attachments.

13. TRAINING

Training will be provided in accordance with Table 13.1.

Table 13.1 Brentwood surface water sampling training program	
Who Is Trained To Collect Surface Water Samples?	Collection System Staff Public Works Standby Staff
Trainer Qualifications	The trainer shall, by virtue of training, experience, education or a combination thereof demonstrate expertise in surface water sampling science, techniques and documentation.
Training Curriculum	at a minimum, training shall include: • The City of Brentwood Water Quality Monitoring Plan • Sampling technique, including hands on practice • Sampling equipment calibration, use and decontamination procedures, including hands on practice • Sampling safety • Completion of the Sampling Equipment Calibration/Maintenance Log, Surface Water Sampling Report and Chain of Custody
Training Documentation	Attendees shall be required to sign-in to all training on the appropriate forms used by the City.
Refresher Training Frequency	Annual
Who is Responsible for Ensuring Training Occurs?	Wastewater Operations Manager
Required Training Records	Employee training sign in log
Who is Responsible for Maintaining Records?	Wastewater Operations Manager

14. INTERNAL REVIEW AND UPDATE OF THE WQMP

The WQMP is a requirement of the WDR and MRP regulations and therefore the WQMP must be adopted by the City governing board when completed and thereafter at the same time as the new adoption of the SSMP every five years or when major changes to the SSMP are required. Internal reviews of the WQMP should be conducted at a minimum with City SSMP audits or with a failure analysis following a SSO event requiring the use of this WQMP. This latter evaluation should be used to determine if any procedures or program changes would improve the WQMP.

The internal review of the WQMP must include a thorough review of the then existing WQMP against actual performance by the agency staff and testing laboratory during and after the event. All documents associated with the water quality sampling should be reviewed and included in the SSO file and compared to the requirements in this Plan. Particular attention should be given to all dates and times associated with the monitoring, proper tests in support of the Regional Board Basin Plan, proper completion of the Chain of Custody, equipment calibration documentation of all equipment used for sampling and available photographs or video of the sampling processes, review and sign-offs by all responsible parties, review of the sampling locations map, final lab results and the certification report that the Technical Report was submitted within 45 calendar days of the end of the SSO to the CIWQS system.

In addition, the City should also conduct regular reviews of the WQMP at least annually or along with the bi-annual SSMP Audit required by the WDR. The review should be undertaken to determine that all information in the Program is current, that all classification responsibilities have not changed, that all forms are still appropriate and that all contract relationships with testing laboratories, if not associated with the agency, are still current and available 24 hours per day and 7 days per week. The review should also include a review of the Regional Board Basin Plan to assure continuing conformance with the Basin Plan.

This internal review should be conducted by senior management of the collection systems personnel, laboratory management and any outside contract laboratory services subsequent to any event or once per year if the WQMP has not had to be invoked during the preceding year.

Finally, a schedule and assignment of responsibility for completion of the recommended changes should be prepared along with additions to the SSMP Change Log for these changes and modifications of the WQMP.

CHANGE LOG

The new MRP, Section E.3 requires that all changes to the Sanitary Sewer Management Plan be recorded and documented using an SSMP Change Log indicating what section is being change, a description of the changes, and the person or persons authorizing the changes. Because the WQMP is required by the WDR and MRP, it is also necessary that changes to the WQMP be included in the documentation of changes to the SSMP. Any changes resulting from Section 14 above should be added to the Change Log of the SSMP upon implementation and adoption of the changes as required by the WDR.

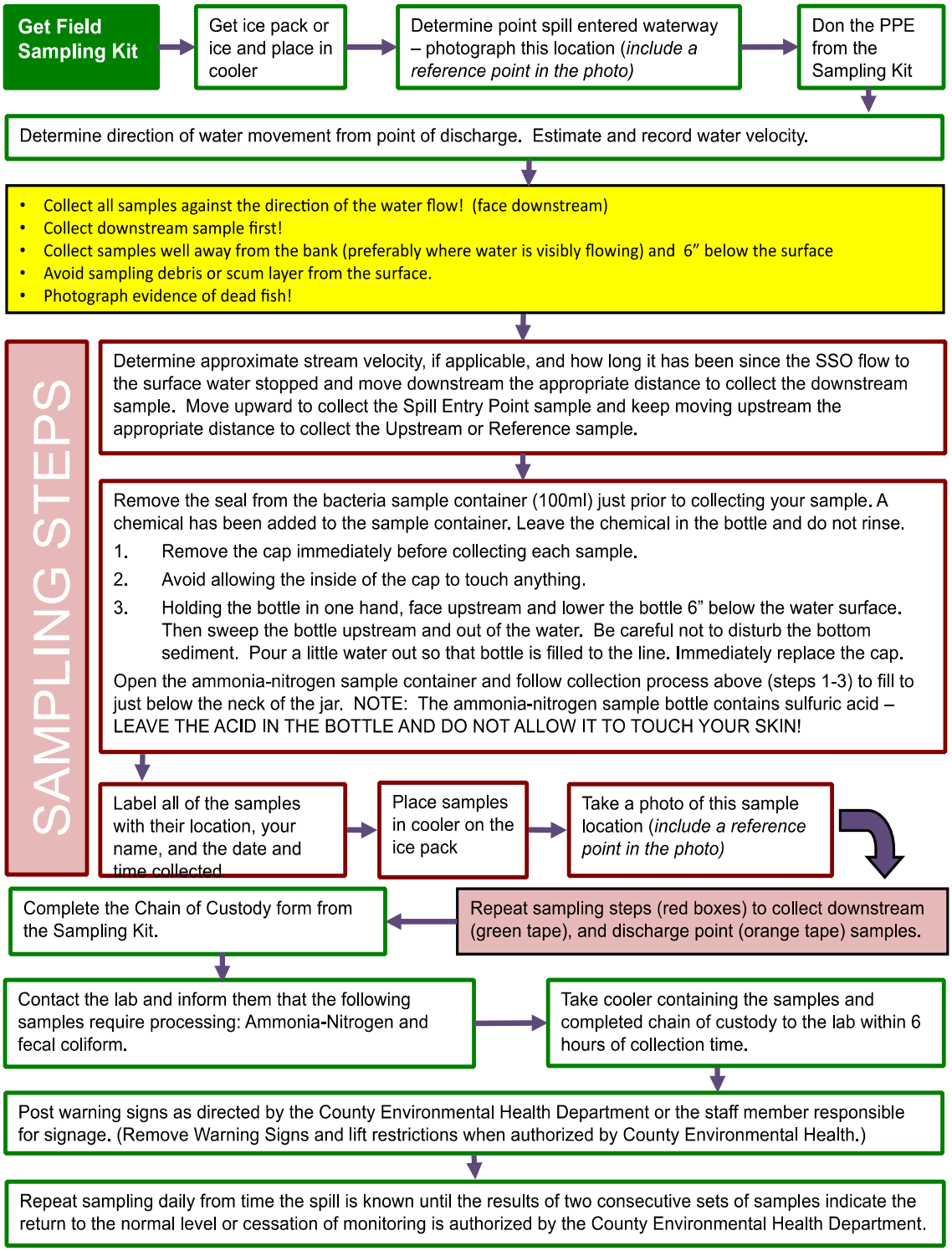
ATTACHMENT A
Water Quality Monitoring Plan Change Log

Water Quality Monitoring Plan Change Log

Date	Section(s) Changed	Summary of Change	Approved (signature)

ATTACHMENT B
Surface Water Sampling SOP

Surface Water Sampling Standard Operating Procedure



ATTACHMENT C
Sample Collection Chain of Custody Record

Surface Water Sample Collection Chain of Custody Record

Customer Name				☐	**Hazardous Waste**	**PO#**	
Customer Address				☐	**Unknown Material**	**WO#**	
Customer Telephone		**Mail Code**		**CONTRACT LAB INFORMATION**		**Turnaround Requirement**	
Program Name				Ship to:		☐ Normal (21 days) ☐ Rush: _____ ☐ Other:	
Lab Program Coordinator		**Phone #**		Ship Date:			
Sampled By				Courier:			

LIMS# (Issued by Lab)	SAMPLE COLLECTION INFORMATION								Analysis Requested					QA/QC Requirements	
	Date	Time	Type: Composite	Type: Grab	Sample Location	Field pH	Field Temp	# Containers	Matrix*	Ammonia	Enterococcus			☒ Lab Standard ☐ Special (see attached)	Remarks/Notes
			☐	☒	Upstream			2	A	☒	☒	☐	☐	☐	
			☐	☒	Entry Point			2	A	☒	☒	☐	☐	☐	
			☐	☒	Downstream			2	A	☒	☒	☐	☐	☐	
			☐	☐				2		☐	☐	☐	☐	☐	
			☐	☐				2		☐	☐	☐	☐	☐	
			☐	☐				2		☐	☐	☐	☐	☐	
			☐	☐				2		☐	☐	☐	☐	☐	

*Matrix: P = Potable Water, W = Wastewater, A = Ambient Water, G = Groundwater, S = Soil, B = Biosolids, I = Industrial, O = Other (specify in remarks)

Relinquished	Date	Time

Relinquished to	Date	Time

Transport/Shipping Information		
☐ USPS	☐ UPS	☐ FedEx
Tracing #:		
☐ Other:		

Sample Receiving Documentation

Container intact? ☐ Yes ☐ No	Correct container? ☐ Yes ☐ No	Field preserved? ☐ Yes ☐ No	Custody tape intact? ☐ Yes ☐ No
Cooled? ☐ Yes ☐ No	Temp. Blank? ☐ Yes ☐ No (°C)	Comments:	
Sample distribution: ☐ Lab bench ☐ Ice chest ☐ Walk-in cooler shelf #		Disposal Date:	Disposed by: (int.)
C-O-C Distribution Date: By: ☐ Lab Admin File ☐ Prog/proj Mgr. ☐ Lab Prog. Coord. ☐ Delivery courier ☐ Pick-up courier			

ATTACHMENT D
Surface Water Sampling Worksheet

Surface Water Sampling Worksheet

Sample Date:	Sample Time: ☐AM ☐PM	Sample Location:	
Sampler(s)' Name(s):			
Sampler(s)' Signature(s):			

What is being sampled?
☐Stream ☐Pond ☐Lake ☐Lagoon
☐Bay/Estuary ☐Ocean ☐River ☐Other:

Weather at time of sampling: ☐Sunny ☐Overcast
☐Sprinkling ☐Raining ☐Snowing

Was the SSO actively entering the surface water during Sampling? ☐YES ☐NO
If no, complete A-D in the gray box to the right ➔

If the SSO was not actively entering the surface water during sampling:

A. Stream Velocity: _____CFS
B. How Long Has the SSO ***NOT*** Been Entering the Surface Water?
_____ minutes X 60sec/min = _____ seconds
C. How Far Downstream Did You Travel To Collect The SOURCE Sample?
(A X C = Feet): _____ feet
D. Explain why you travelled a different distance, if you did, to collect the source sample:

NOTE: Calibrate equipment prior to use and record in the Equipment Calibration/Maintenance Log

Sample Location	# of Samples*	pH	Temp. (°C)	DO (mg/l)	Photo ID# of Sample Location	Visual Observations and/or Interferences
Upstream						
Source						
Downstream						
Field Blank						

* Minimum of 2 per location

FINISH CHECKLIST	NOTES / OBSERVATIONS
☐ **All Samples Labeled with:** ☐ Date: a six-digit number indicating the year, month, day of collection ☐ Time: a four-digit number indicating military time of collection. e.g. 0954 ☐ Sample Location: Upstream, Source, or Downstream ☐ Samplers: each sampler is identified ☐ Parameter/preservative: analysis to be conducted for sample/sample preservation ☐ **Chain of Custody Completed** ☐ **Samples on Ice in Cooler** ☐ **Pictures Taken of Each Sample Location and the Photo ID/# Noted Above**	

☐ **All Sampling Equipment Collected**	

ATTACHMENT E
Technical Report Outline

Technical Report
Outline

1. Introduction
   Agency/system description

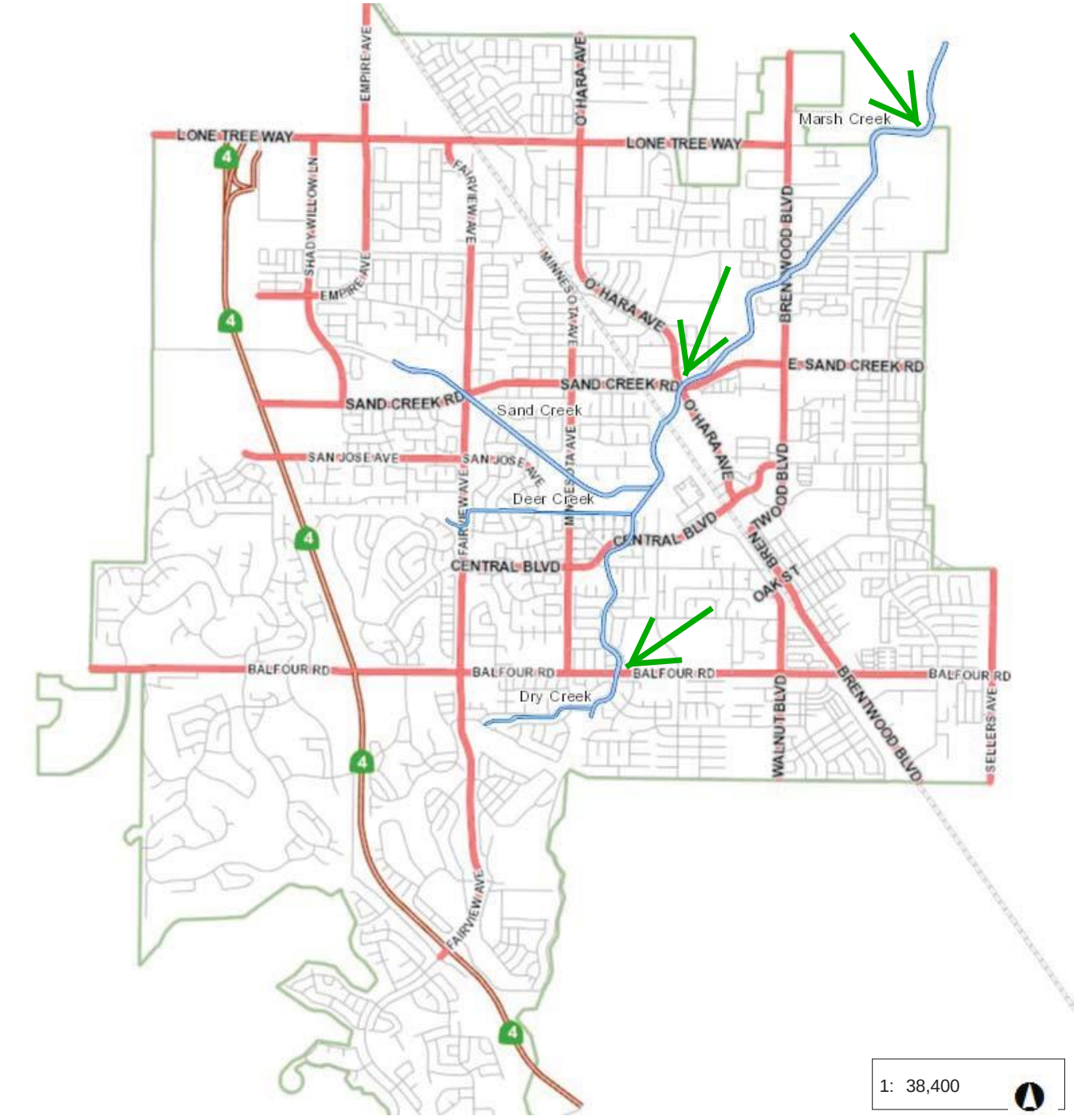
2. SSO Technical Report - Contents and Responses
   a. Causes and Circumstances of the SSO
      i. Detailed explanation of how and when SSO was discovered
      ii. Diagram indicating SSO "Cause point", appearance point, and final destination (use attachments, maps and diagrams as needed)
      iii. Detailed description of methodology employed and available data used to calculate the SSO volume and any volume recovered
      iv. Detailed description of the cause(s) of the SSO
      v. Copies of the original field crew records used to document the SSO (attachment)
      vi. Historical maintenance records for the lines involved in the cause of the SSO (attachment)

   b. Agency's Response to the SSO
      i. Chronological narrative description of actions taken by agency to terminate the SSO
      ii. Description of how the OERP was implemented to respond to and mitigate any impacts of the SSO
      iii. Final corrective action(s) completed and/or planned, including a schedule for actions not yet completed

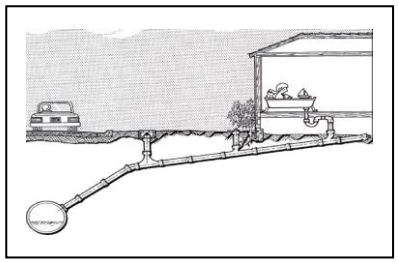
   c. Water Quality Monitoring
      i. Description of all water quality sampling activities conducted, including analytical results and evaluation of the results
      ii. Detailed location map illustrating all water quality sampling points

3. Conclusions

ATTACHMENT F
SURFACE WATER MAPS


LONE TREE WAY
EMPIRE AVE
O'HARA AVE
Marsh Creek
SHADY WILLOW LN
FAIRVIEW AVE
MINNESOTA AVE
BRENTWOOD BLVD
SAND CREEK RD
E SAND CREEK RD
Sand Creek
SAN JOSE AVE
Deer Creek
CENTRAL BLVD
OAK ST
BALFOUR RD
Dry Creek
WALNUT BLVD
SELLERS AVE
1: 38,400
6,400.0 0 3,200.01 6,400.0 Feet
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION
Notes:
Sampling Locations

APPENDIX D



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Ways to Prevent Backups in Your Sewer Lateral and in the City Main

Property owners can do many things to prevent their laterals from backing up. If everyone would be very careful about how they dispose of certain products, our system would be a much more efficient. There would be fewer backups/overflows; saving the City and homeowners the cost of correction and/or replacement.

- **Grease:** Cooking oil should be poured into a heat-resistant container and disposed in the garbage after it cools off, **not** down the drain. When the grease goes down the drain, cools off, and solidifies either in the drain, the property owner's line, or in the sewer main; the line can become constricted, and potentially clog causing a sewer overflow.
- **Paper Products:** Paper towels, diapers, and feminine products cause a great deal of problems in the property owner's lateral as well as in the City main. These products do not deteriorate quickly, unlike bathroom tissue. They become lodged in a portion of the lateral/main, causing a sewer overflow. These products should also be disposed of properly in the garbage.
- **Roots:** Shrubs and trees, seeking moisture, will make their way into sewer line cracks and connections. These roots can cause extensive damage. They may start out small, but as the tree or shrub continues to grow, so do the roots. In time, this may cause your sewer line to break, which in turn allows debris to hang up in the line on the roots, thus causing a backup. When planting greenery; place 5-7 feet from your sewer line to help prevent root intrusion. If you have continuing problems with roots in your lateral, you may have to remove the tree or shrub associated with the roots.
- **Sewer Odor:** Another concern property owners have is they can smell sewer odors inside their home or building. Under each drain in your plumbing system, there is a "P-Trap". If there is water in this fitting, odors or gasses from the sewer cannot enter through the drain from either the property owner's lateral or the City main. Periodically check to make sure unused floor drains, sinks etc. have water in the "P-trap". Another way to prevent sewer odor is to ensure the vents, which are located on your roof, are free from bird nests, leaves, etc. When these vents are clear, the sewer odors will escape through these vents.
- **Illegal Plumbing Connections:** Do not connect French drains, sump pumps and other flood control systems to your sanitary sewer. It is *illegal*, and debris and silt will clog your line. You may need to consult a plumber to correct any illegal connections.
- **Needles:** The presence of hypodermic needles in the wastewater collection system presents special and possible deadly problems for wastewater collection and wastewater treatment employees. **PLEASE DO NOT FLUSH NEEDLES**. The proper method of disposal is to re-cap the needle and put it into a "sharps container". When full, tape the container securely, and call your local pharmacy for advice on proper disposal methods. For disposal sites in the area go to http://www.safeneedledisposal.org/centers.html to find the nearest location. **PLEASE DO NOT FLUSH THEM OR THROW THEM INTO THE GARBAGE!**

What Causes a Sewer Back-up?

- Kitchen grease, food scraps, egg shells, potato peels, excessive toilet paper, disposable diapers, baby wipes and feminine products can accumulate and cause a blockage
- Tree roots seeking moisture can grow through joints and cracks in the lines, causing a blockage
- Vandals have stopped up lines by putting bricks, concrete, wood, oil filters, construction debris, and garbage into the sewer lines
- Illegal hookups allow excess water into the lines. Outside stairwell drains, sump pumps, roof leaders, and drain gutters should never be connected to the sewer system. A sewer system is designed to carry a predetermined amount of sewage. Rain water not only overloads the system, but also raises the cost of the treatment process

To protect your property follow these simple **Do's** and **Don'ts;**

- **DON'T** Put diapers or sanitary napkins in the toilet
- **DON'T** Dispose of grease down the drain
- **DON'T** Plant trees near sewer lines
- **DON'T** Connect any drains or sump pumps to the sewer system
- **Do** locate and keep accessible the sewer cleanout in your front yard. If you do not have a cleanout, have one installed by a plumber. The cleanout is the property owner's responsibility
- **Do** check your homeowner's insurance policy. If you are not covered for back-ups, call your agent for information on costs and coverage options

Do You Know Where Your Cleanout Is?

- The cleanout is a pipe located near the property line which rises from your sewer line to about 4" below ground level and is capped in a sewer cleanout box
- Quite frequently, the cleanout becomes buried or hidden over the years and is forgotten. In some cases, older homes may never have had a cleanout installed
- As a property owner, you are responsible for your cleanout. If the cleanout is buried, a plumber should be able to locate and raise it for you

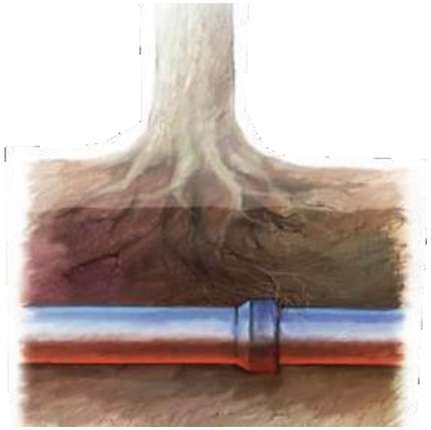
What About The Cost Involved In The Clean Up?

The Wastewater Division is very sensitive to your feelings for the inconvenience caused by a sewer back-up in your home. The City is responsible for maintaining the wastewater lines from the main line to your property line. We clean a quarter of the City's sewer system each year and take pride in eliminating sewer back up all together. The City also checks all areas of concern each day to make sure we are doing our part to eliminate overflows. Public Works personnel will respond immediately to investigate and resolve collection system or storm drain issues...with your help; we can reduce sewer back-ups.

It is the homeowners' responsibility to maintain the house cleanouts and sewer lateral from the property line to the house.

OTHER CAUSES OF SEWER OVERFLOWS

The continual flow of nutrient-filled water found in sewer lines can attract tree roots through pipe joints and manholes. The roots can then grow, forming blockages in the pipes. Always avoid planting trees and shrubs near residential and City sewer lines.



Rock, debris, vandalism and construction are also factors which can contribute to sewer overflows.

Report Sewer Overflows!!

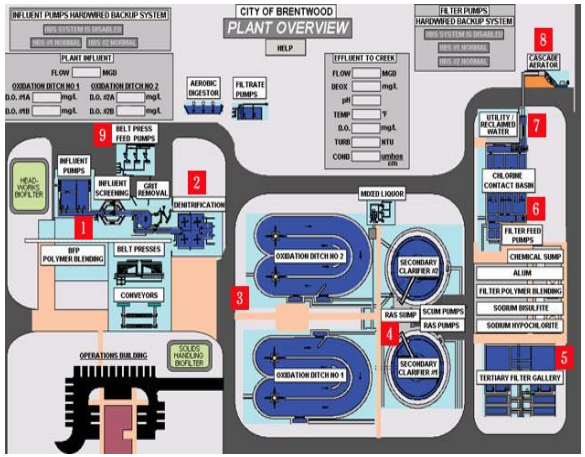
If you see or smell something you think might be a sewer spill, report it immediately by calling: 925-516-6060

After Hours Water or Sewer Emergency contact Police Dispatch (925) 809-7911

About The City of Brentwood

The City of Brentwood's sanitary sewer system collects and treats an average of 3.5 million gallons of wastewater per day at its city owned and operated treatment plant.

The city serves an estimated 58 thousand residents and more than 1000 current businesses within the city limits.



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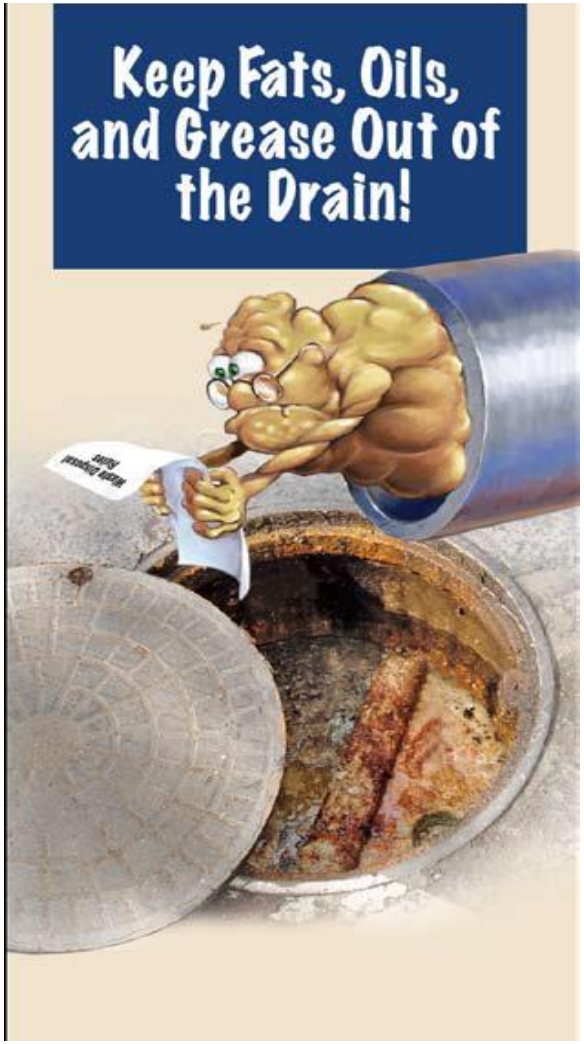


COOKING GREASE

Cooking grease is one of the primary causes of sewer overflows throughout the City of Brentwood's sanitary sewer system. Sewer overflows can not only pollute streams, rivers, and the Bay, they can endanger public health.

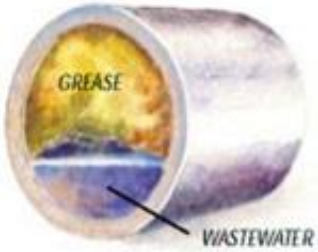
All cooking oils disposed of improperly can cause problems in the sewer system. These include:

- **Frying oil**
- **Salad oil**
- **Soups**
- **Meat drippings**
- **Bacon fat**
- **Greasy leftovers**

IMPORTANT FACTS

Cooking grease clogs pipelines in much the same way fatty foods clog human arteries. The grease clings to the inside of a pipe, builds up and eventually causes a complete blockage.

Costly home plumbing bills are often the result of grease-clogged pipes. Residential laterals can clog easily since they are only 4" inches in diameter.



Many people are unaware that pouring hot water and detergent down the drain only breaks up grease temporarily. Grease should never be poured down the drain. If a small amount of grease gets in your drain, flush immediately.

Step 1

Small amounts of cooking oil and grease should be poured into a disposable container (can, milk or juice carton) and put in the trash. Larger amounts of used cooking oil should be brought to the Household Hazardous Waste Collection Facility for disposal. Call **800-646-1431** for any information.

Step 2

Dishes and pots coated with grease should be wiped clean with a disposable paper towel prior to being washed in the sink or dishwasher.

Step 3

Do not put egg shells, meat trimmings, or scraps in the garbage disposal; always put them in the trash.

APPENDIX E

PUBLIC WORKS DEPARTMENT
150 City Park Way, Brentwood, CA 94513-1164
www.brentwoodca.gov

Operations Division
2201 Elkins Way, Brentwood, CA 94513
Phone (925) 516-6000 – Fax (925) 516-6001

Solid Waste Operations
2300 Elkins Way, Brentwood, CA 94513
Phone (925) 516-6090 – Fax (925) 516-6091

Wastewater Operations
2251 Elkins Way, Brentwood, CA 94513
Phone (925) 516-6060 – Fax (925) 516-6061

City of Brentwood
2021 SSMP Internal Audit

Table of Contents

Introduction

The California State Water Resources Control Board adopted Order No. 2006-0003 (State Order) on May 2, 2006, to create an equitable statewide mechanism to manage all publicly owned wastewater collection agencies with more than one mile of pipeline, to reduce the number and severity of Sanitary Sewer Overflows (SSOs), and to set up a central depository for online reporting of SSOs when they do occur.

A principal element of the State Order is the requirement that the collection agencies adopt and maintain a management plan for the system, referred to as a Sewer System Management Plan (SSMP).

The City of Brentwood's SSMP was certified and implemented on July 31, 2009, in accordance with the State Order.

One of the provisions of the State Order is that agencies perform an internal audit of the SSMP every two years. These audits are to focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in section D.13., including identification of any deficiencies in the SSMP and what steps are/will be taken to correct them.

The SSMP is required to be updated every five years, and the update must include any significant program changes. If significant changes are made, the SSMP must be re-certified by the City Council. A revised version of the SSMP, based on the 2013 Internal Audit, was presented to the City Council and approved on May 14, 2013. In 2014 the City began a comprehensive review and update of the SSMP. This review led to many changes and updates to the SSMP, the last of which were incorporated in 2016. On May 9, 2017 City Council passed resolution 2017-58 approving the 5-year SSMP (2017 Revision).

Background and System Overview

The City of Brentwood (City) was incorporated in 1948 as a General Law City. The City is predominately a bedroom community, of approximately 65,118 residents, that collects and treats wastewater generated almost exclusively by domestic (household) users. The City currently has no categorical significant industrial users. The bulk of the commercial businesses are retail food establishments, retail grocery stores, home improvement centers and retail department stores.

The City has a service area of nearly 12 square miles with roughly 319 miles of City owned and maintained sanitary sewer piping systems (including lower laterals) and three lift stations. The City's sewer mains range in diameter from six inches to 42 inches with approximately 80% of these lines being eight inches in diameter or smaller. Nearly all of the sewer laterals are four inches in diameter. Similar to other organizations, the City maintains a portion of the residential sewer laterals. The City maintains the "lower" lateral for single family residences, which is defined as the portion of the lateral extending from the edge of the property line (typically the back of the sidewalk) to the sewer main.

Summary of SSO Events and Data

The City of Brentwood had two SSO's in 2019, and ten SSO's in 2020 (total volume = 193 gallons). The chart below (Figure 1) shows the number of recorded SSO's and the calculated number of SSO's

per 100 mile of sewer main line since the City began tracking SSO events in 2007. This data represents an average of 2.2 SSO's per year, 1.1 SSO's per 100 mile of sewer main, and is considered indicative of a very high performing collection system.

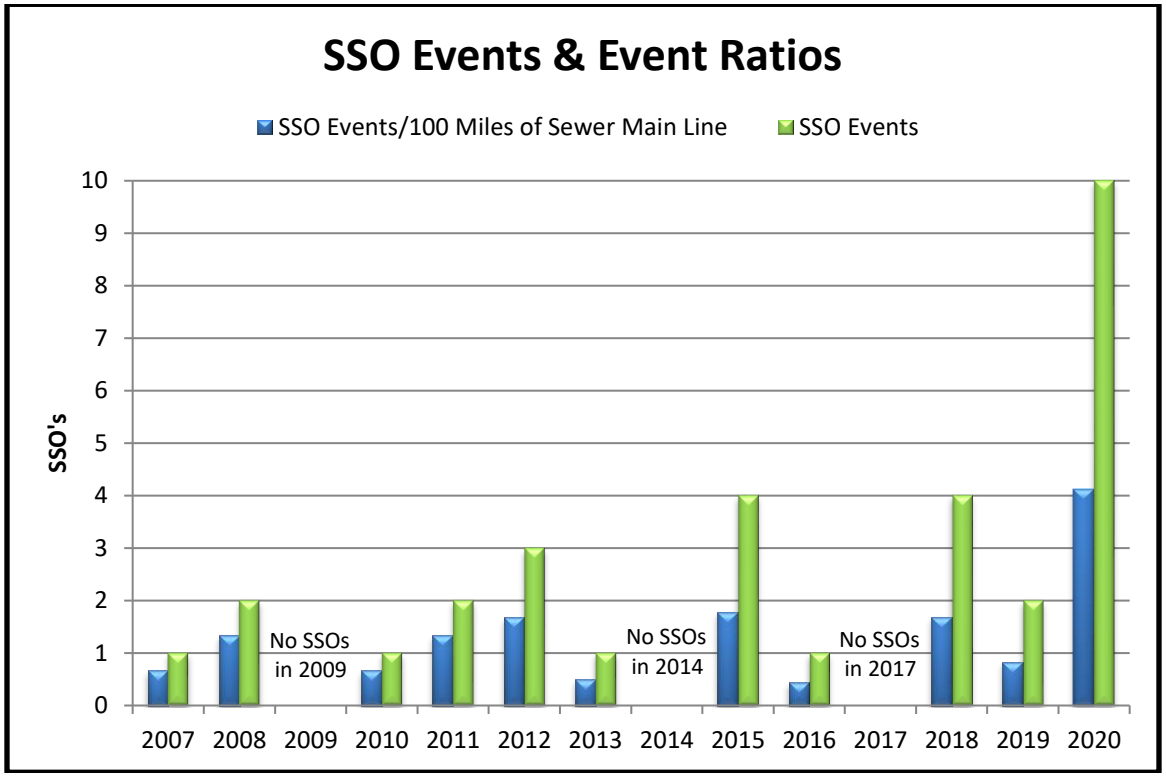


Figure 1

Figure 2 below shows a 14-year history of SSO volumes. Of the 17,730,670,000 gallons of sewage that flowed through the City's collection system since 2007 a total of 7119 gallons left the system as SSO's. Since the City began measuring SSO's the highest annual total of SSO volume was 1962 gallons. The 14-year average annual total SSO volume is 509 gallons per year, with a per-event average volume of 230 gallons.

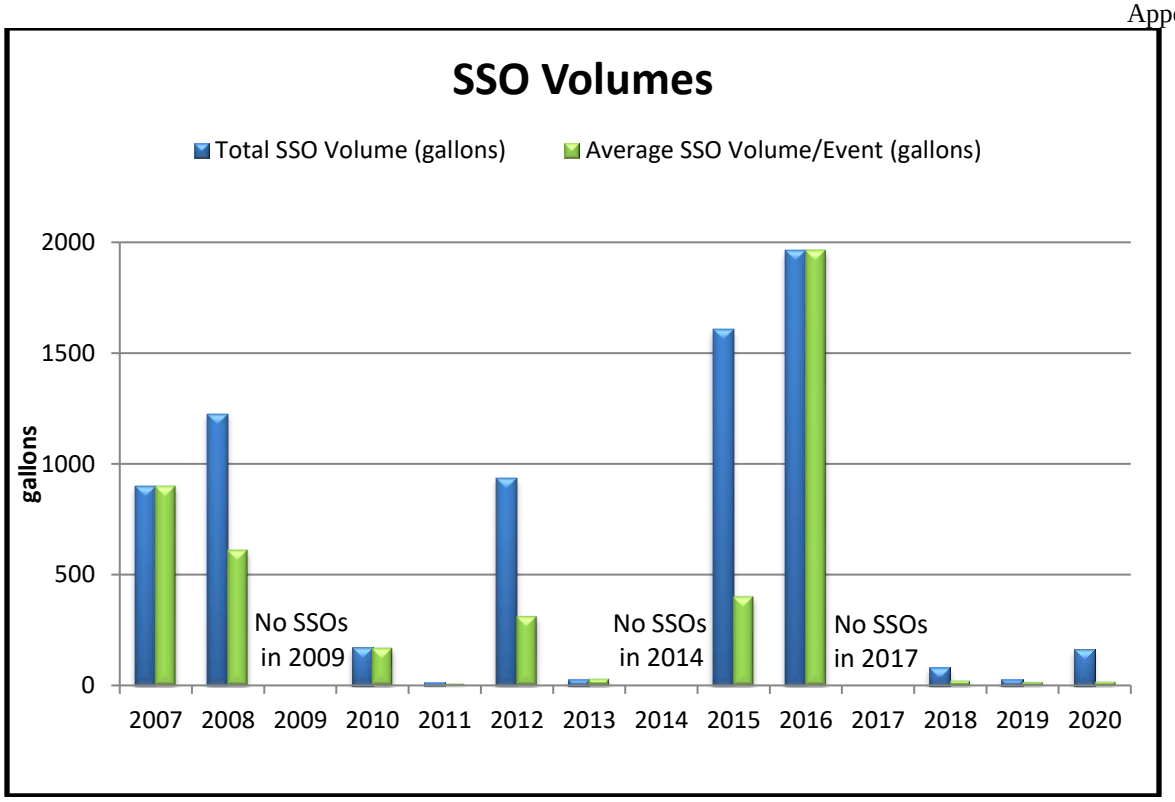


Figure 2

Historically, most of the SSOs recorded in the City are completely recovered and do not reach surface waters. Since 2007 the City has averaged an SSO recovery rate of 63%. Of the 193 gallons lost during the twelve SSO's in 2019 & 2020 38 gallons (20%) were recovered and returned to the sewer system. Figure 3 below shows the annual percent recovery of SSO's.

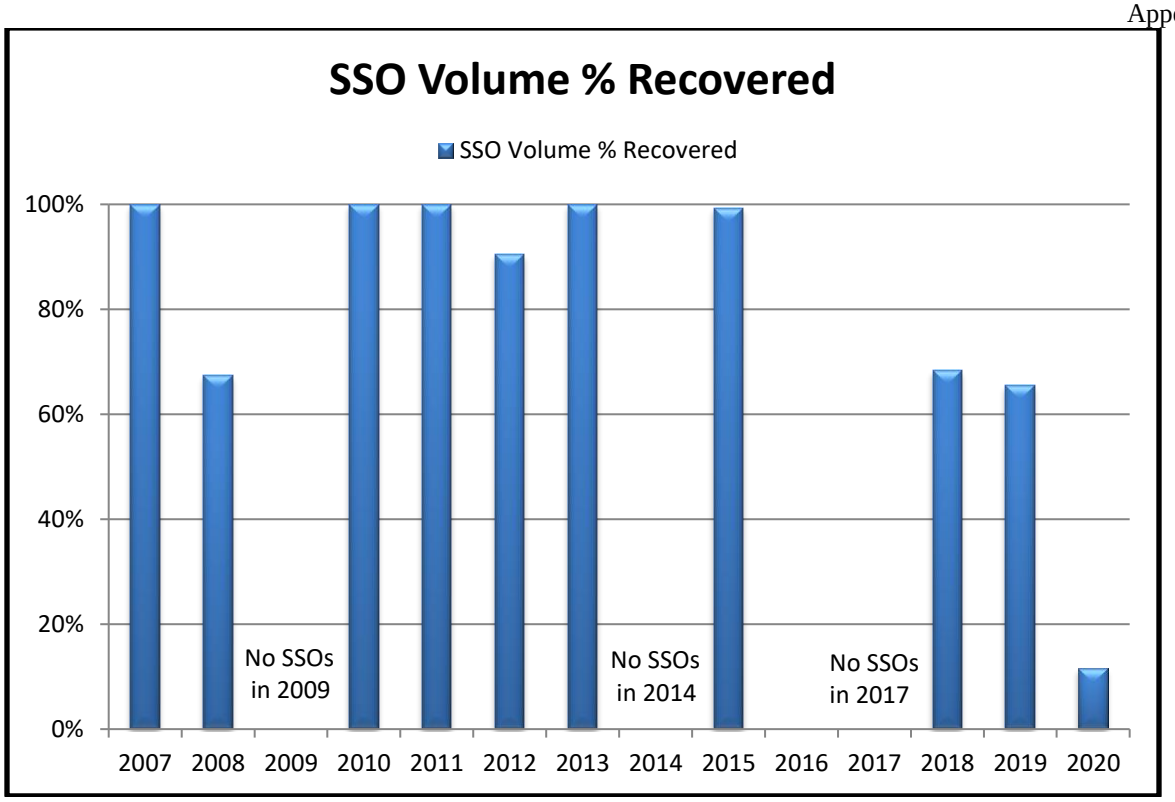


Figure 3

Table 1 below lists the data used in Figures 1, 2, and 3 above.

Year	SSO Events	Total SSO Volume (gallons)	SSO Volume recovered (gallons)	SSO Volume % Recovered	Average SSO Volume/Event (gallons)	Sewer Main Line (miles)	SSO Events/100 Miles of Sewer Main Line	Sewer Connections	WWTP Influent Flow (Mgal)
2007	1	900	900	100%	900	150	0.7	14,789	1,324.59
2008	2	1225	825	67%	613	150	1.3	15,104	1,218.61
2009	0	0	0			150	0.0	15,860	1,171.42
2010	1	170	170	100%	170	150	0.7	15,860	1,176.54
2011	2	15	15	100%	8	150	1.3	15,679	1,229.32
2012	3	937	847	90%	312	179	1.7	16,460	1,242.86
2013	1	29	29	100%	29	202	0.5	16,800	1,289.03
2014	0	0	0			209	0.0	17,505	1,343.27
2015	4	1606	1595	99%	402	225	1.8	17,674	1,189.20
2016	1	1962	0	0%	1962	226	0.4	18,180	1,233.41
2017	0	0	0			235	0.0	18,748	1,315.13
2018	4	82	56	68%	21	237	1.7	19,517	1,273.26
2019	2	29	19	66%	15	242	0.8	19,878	1,268.65
2020	10	164	19	12%	16	243	4.1	20,116	1,455.38
2007-present Total:	**31**	**7119**	**4475**						**17,730.67**
2007-present Average:	**2.2**	**509**	**320**	**63%**	**230**		**1.07**		
5 yr. Average:	3.4	447	19	36%	503		1.41		

Table 1

Table 2 below provides a breakdown of the listed causes of each of the SSO's recorded since 2007.

	Mainline Stoppages by Cause															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	%
Debris - General						1						1			2	6
Debris - Rags															0	0
Flow exceeded capacity															0	0
Grease (FOG)		1		1	2	2	1		2				2	2	13	42
Operator Error															0	0
Pipe strucural problem/failure									1			2		5	8	26
Pump station failure															0	0
Rainfall exceeded design															0	0
Root intrusion									1			1		3	5	16
Vandalism															0	0
Contractor Causes	1	1								1					3	10
TOTAL	1	2	0	1	2	3	1	0	4	1	0	4	2	10	31	100

Table 2

Until 2013, the total footage of sewer mainline cleaning was relatively consistent. Beginning in 2013 the City transitioned to more of a proactive investigation of sewer mainlines rather than a "blind cleaning" method. Covid-19 caused a significant decline in the amount of mainline maintenance done in 2020. The City anticipates 2021 will see more mainline maintenance performed. Figure 4 below compares the overall footage of cleaning versus CCTV inspecting per year.

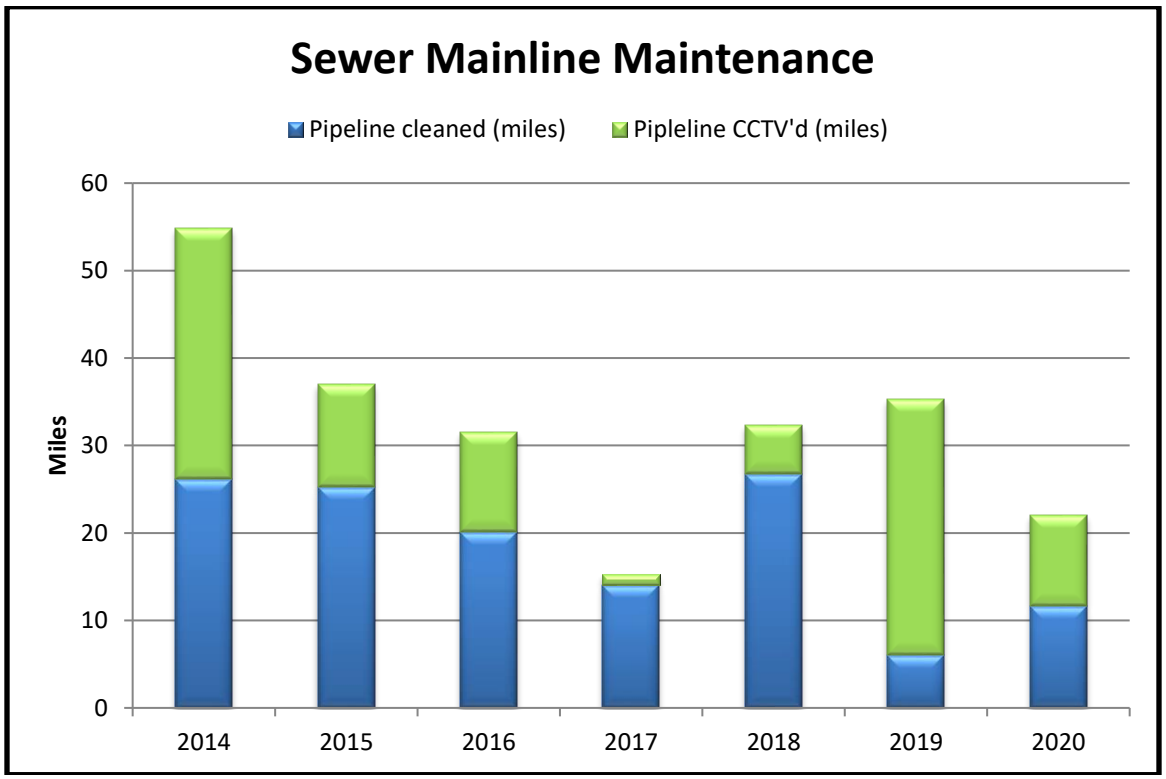
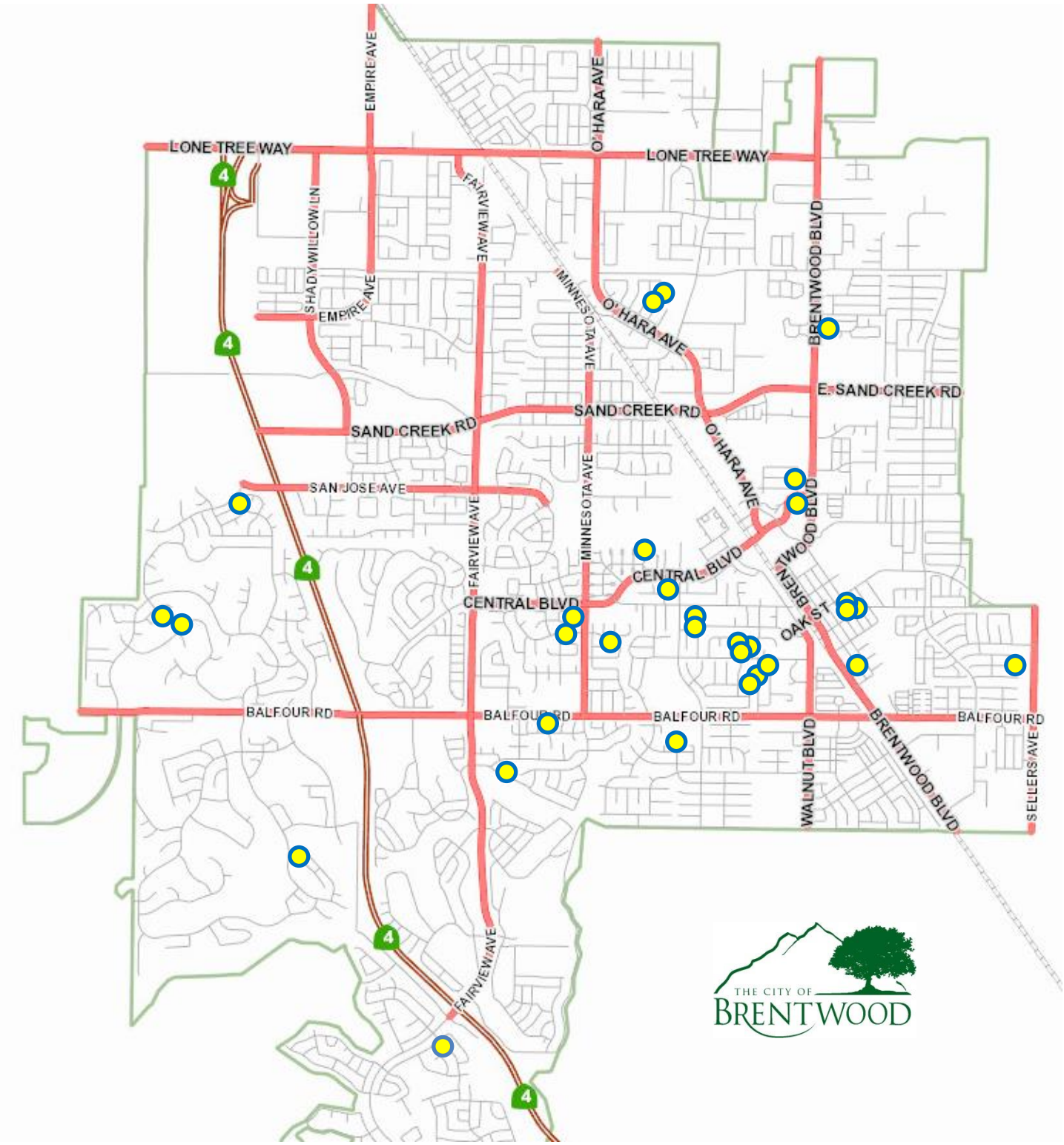


Figure 4

Figure 5 is a map of the City's entire collection system with the locations of all the SSOs since 2012. This map serves as an indicator of overall system health. Since the SSOs occur in random places, the City can reasonably conclude that there are no overly problematic areas that are in danger of having SSOs or needing repair.

Historical SSO Map 2007-2020



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Audit Approach

As specified in the State Order, the SSMP is comprised of eleven sections or subsets of Section D.13 of the State Order, as follows:

D.13.i	Goals
D.13.ii	Organization
D.13.iii	Legal Authority
D.13.iv	Operation and Maintenance Program
D.13.v	Design and Performance Provisions
D.13.vi	Overflow Emergency Response Plan
D.13.vii	FOG (Fats, Oils, & Grease) Control Plan
D.13.viii	System Evaluation and Capacity Assurance Plan
D.13.ix	Monitoring, Measurement and Program Modifications
D.13.x	SSMP Program Audits
D.13.xi	Communication Program

This internal audit is focused on the above eleven categories as required by the State Order. The evaluation of each element in each category is standardized with sufficiency. Compliance ranking has been based on State Order audit guidelines and sufficiency. A recommendation has been provided when there is enough information to support it.

The format for audit reporting is as follows:

- State Order Section/Subsection
- Sufficiency Ranking
  - Complies,
  - Substantially complies,
  - Partially complies,
  - Marginally complies,
  - Does not comply
- Findings
- Reference Information
- Recommendation when appropriate

1. Audit of Goals – State Order D.13.i

Review the SSMP to determine if it complies with the State Order by having a goal to provide a plan to manage, operate, and maintain all parts of the City of Brentwood Wastewater Collection System.

Sufficiency: **Complies**.

Findings: The City has established a list of goals in its SSMP that complies with the goals established in the State Order.

The City's Goals for the SSMP together with progress to date are as follows:

1. To minimize the number and impact of SSOs;

Complete. Adherence to the SSMP has helped limit the average number of SSOs to 2.2 per year with an average total volume of 509 gallons per year since the SSS WDR was adopted in 2007.

2. To maintain existing infrastructure and plan for future Capital Improvement Projects (CIPs);

   Complete. Adherence to the SSMP coupled with sound planning has resulted in an up-to-date infrastructure with no major deficiencies. The average age of the collection system piping is approximately 19 years.

3. To continue to provide capacity evaluation for the collection system and plan for future growth;

   Complete. A Wastewater Collection System Master Plan was prepared in 2001 and subsequently updated in 2006 to accommodate a rapidly growing community. Additional updates were prepared in 2010 and 2017 to forecast collection system flow conditions at the current General Plan "build-out", taking into account changes in water use as a result of the drought years in 2013-2015. The 2017 update provided recommendations for capital improvement projects to optimize the collection system to handle the planned growth.

4. To develop a plan to increase the number of staff to meet the obligations of the SSMP;

   Complete. The City added one full-time Collection System Worker in FY 2014/15. An additional Collection System Worker was hired in FY 2018/19. Staffing levels are reviewed annually through a City-wide 10-year staffing plan.

5. To operate the Collection System in a safe and efficient manner, thus maximizing production;

   Complete. There were no lost-time injuries associated with the collection system since the last audit period.

Reference: City of Brentwood SSMP (COB SSMP).

Recommendation: None. The City is in compliance with the *Goals requirement of the State Order*.

2. Audit of Organization – State Order D.13.ii

Review the SSMP to determine if it complies with the State Order by having the names of authorized representatives published and updated in the SSMP.

Sufficiency: **Complies**.

Findings: The City has identified the names of its authorized representative, management, administration, and maintenance personnel and has shown the chain of communication for reporting SSOs. The organization chart is up to date as of January 1, 2021.

Reference: COB SSMP, Element 2, Page 5, Organizational Chart
COB SSMP, Element 2, pages 6-7, Staff Roles
COB SSMP, Element 2, Page 8, Communication Flow Chart

Recommendation: None.

3. Audit of Legal Authority – State Order D.13.iii

Review the SSMP to determine if it complies with the State Order by having ordinances and agreements in place and updated to prevent illicit discharges, provide for proper design of sewers and connections, ensure access for maintenance, inspection, and repair of laterals, limit the discharge of blockage causing debris, and enforce any violation of sewer ordinances.

Sufficiency: Complies

Findings: The City has an adopted Municipal Code that addresses the legal authority required to carry out actions identified in the SSMP. Specifically, section 13 of the Brentwood Municipal Code prohibits illicit discharges, sets standards for the design of sewers and connections, and provides a means to enforce violations of the provisions within the Code. In March 2015, the City adopted a revision to section 13 (Sewers) of the Municipal Code. A link to the Municipal Code is included in the electronic version of the SSMP and is available on the City's website.

Reference: COB SSMP, Element 3
City of Brentwood Municipal Code, Section 13.

Recommendation: None

4. Audit of Operation and Maintenance Program – State Order D.13.iv

Review the SSMP and activities of staff, consultants, and contractors to determine compliance with the State Order by having (a) an up-to-date map of the Collection System that shows all pipe reaches, manholes, siphons, diversion structures, and pump stations and (b) a routine preventative maintenance program, (c) a rehabilitation and replacement plan, (d) an operations and maintenance training program, and (e) a parts inventory program including identification of critical replacement parts.

Sufficiency: Complies

Findings: The Collection System Map is kept up-to-date electronically through a GIS program (GeoVault) managed by the Engineering division. The map is available on the City's intranet. Collections crews have access to the electronic map room via a laptop in the field, and through desktop computers in the office.

As outlined in the COB SSMP the routine preventative maintenance program consists of quarterly hot-spot cleaning, and CCTVing/cleaning of the balance of the collection system on a 4-year basis. The City utilizes Maintenance Connection, an enterprise asset management software package to track all the O&M activities of the collection system, including customer complaints and investigation results..

Formal pipeline condition assessments are not currently conducted. Manholes, pipelines, and lift stations are informally assessed during routine cleaning/CCTVing activities. If system deficiencies are noted, rehabilitation and replacement are accomplished through capital improvement projects. The City has an annual asset replacement fund to cover any urgent major pipeline repairs. In addition, periodic CIPs are done on a case-by-case basis as needs are identified. The latest examples of these are the Park Way Rehab project and the Citywide Wastewater Rehab project completed in fiscal year 2016/17. These projects replaced sewer mainlines and laterals and installed new manholes in various locations.

The City maintains a sufficient spare parts inventory of critical equipment. This list can be found in Appendix B of the SSMP.

The City budgets for employee training each year. Collections staff occasionally participates in industry-wide training events .

Reference: COB SSMP, Appendix E

Recommendation: None.

5. Audit of Design and Performance Provisions – State Order D.13.v

Review the SSMP to determine if it complies with the State Order by having design and construction standards and specifications for installation of new facilities, including coverage for testing of new facilities prior to acceptance.

Sufficiency: **Complies**

Findings: The City has adopted Standard Plans and Specifications for, among other things, construction of sewers and sewer appurtenances. A link to the applicable Standard Specifications (Section 71 and 75) is included in the SSMP. These specifications address testing necessary for acceptance.

Reference: COB SSMP, Element 5
City of Brentwood Standard Plans and Specifications

Recommendation: None

6. Audit of Overflow Emergency Response Plan – State Order D.13.vi

Review the SSMP to determine if it complies with the State Order by having an overflow emergency response plan that includes (a) proper notification procedures, (b) a program that assures proper response to all overflows (c) procedures that ensure prompt notification of regulatory agencies and other affected entities, (d) procedures to ensure that appropriate personnel are aware of the plan and appropriately trained, (e) procedures to address traffic control and crowd control, and, (f) implementation of steps to prevent SSOs from reaching waters of the United States.

Sufficiency: **Complies**

Findings: The City has a stand-alone Overflow Emergency Response Plan (OERP) that is incorporated into the SSMP. This plan effectively addresses notification procedures, assures proper response to overflows, contains procedures to ensure the proper regulatory notifications are made, and has provisions to address traffic control associated with SSOs. Copies of the Sewer Overflow Reports used by staff are found in the SSMP in Appendix B.

Reference: City of Brentwood Overflow Emergency Response Plan
COB SSMP, Element 6

Recommendation: None

7. Audit of FOG (Fats, Oils, and Grease) Control Plan– State Order D.13.vii

Review the SSMP to determine if it complies with the State Order by having a FOG Control plan with (a) a public education outreach element, (b) a plan for the disposal of FOG, (c) ordinances, rules and regulations to prevent FOG, (d) requirements to install FOG traps together with standard drawings for traps, owner maintenance, record keeping, and reporting requirements, (e) FOG inspection and enforcement authority and staffing, (f) FOG mapping and cleaning schedule, and (g) source control measures.

Sufficiency: **Complies**

Findings: The City's FOG program accomplishes the above requirements. The Municipal Code establishes the enforcement authority for FOG inspections, and in 2019 the City hired an environmental compliance inspector whose duties include FOG inspection/prevention/enforcement, and implementing the FOG control plan.

Reference: COB SSMP, Element 7
City of Brentwood Municipal Code, Section 13.

Recommendation: None.

8. Audit of System Evaluation and Capacity Assurance Plan – State Order D.13.viii

Review the SSMP to determine if it complies with the State Order by having a Capital Improvement Plan (CIP) that considers (a) Evaluation of those portions of the Collection System that experience SSO's due to hydraulic deficiency, (b) Design Criteria commensurate with the Collection System, (c) Capacity Enhancement Measures and steps to address short term and long term CIP goals and an implementation schedule, and (d) Schedule for completion of items identified in (a) – (c).

Sufficiency: **Complies**

Findings: The City has a Wastewater Collection System Master Plan that addresses the requirements identified in State Order D.13.viii. The City initially prepared the Wastewater Collection System Master Plan in 2001 following adoption of the "City of Brentwood General Plan 2021". Due to an extremely accelerated growth rate in the years immediately following 2001, the City updated the Wastewater Collection System Master Plan in 2006. This Plan was updated again in 2010 and 2017. The 2017 update includes a capacity assessment based on hydraulic modeling of the collection system with future design flows at ultimate "build-out" development of the City. This modeling identified three projects that will ultimately require some sections of the sewer main piping to be replaced with larger diameter piping, or have parallel piping installed.

The City has not experienced any sanitary sewer overflows caused by hydraulic deficiencies in the existing wastewater collection system. As the City grows, the hydraulic capacity of the system continues to be monitored and the previously identified sections requiring replacement or parallel piping will be implemented as CIPs.

The City has comprehensive design criteria and standards relating to collection system design and construction. These criteria may be found in the City of Brentwood Standard Plans and Specifications.

References: COB SSMP, Element 8
City of Brentwood Wastewater Collection System Master Plan Update, 2017

Recommendations: None.

9. Audit of the Monitoring, Measurement, and Program Modifications – State Order D.13.ix

Review the SSMP to determine if it complies with the State Order by (a) maintaining relevant information that can be used to establish and prioritize appropriate SSMP activities, (b) measuring the effectiveness of each element of the SSMP, (c) assessing the success of the preventative maintenance program, (d) updating program elements, based on monitoring or performance evaluations, and (e) identifying and illustrating SSO trends, including frequency, location and volume.

Sufficiency: **Complies**

Findings: The City began collecting data on SSOs upon the implementation of the State Order. This data is summarized in the figures and tables in *the Summary of SSO Events and Data* section on pages 3-6 of this document. This data continues to support the notion that the City's SSMP is working effectively to properly manage the collection system. SSO trends based on frequency, location, and volume are readily available, as are records of pipeline cleaning.

References: COB SSMP
2019 SSMP Internal Audit, Summary of SSO Events and Data section

Recommendations: None.

10. Audit of SSMP Program – State Order D.13.x

Perform an internal audit of the SSMP to determine if it complies with the State Order by evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements including identification of any deficiencies in the SSMP and steps to correct them.

Sufficiency: **Complies**

Findings: The City has embarked on this audit of its SSMP within the two-year requirement specified in the State Order. The previous audit was performed in March of 2019.

References: COB SSMP, Appendix E

Recommendations: None

11. Audit of Communication Program – State Order D.13.xi

Review the activities of staff to determine if they have complied with the State Order by (a) communicating the performance of the SSMP with the public, and (b) providing the public the opportunity to provide input.

Sufficiency: **Complies**

Findings: Public input was solicited during the development of the SSMP in 2006 and 2007. Since the adoption of the SSMP, there has been little public input to the program.

With the completion of each audit, City staff makes the audit available to the general public by posting it, along with a copy of the SSMP, on the City website. SSO data is also publicly available on the CIWQS website.

References: City of Brentwood website, www.brentwoodca.gov

Recommendations: None.