

# Sanitary Sewer Overflow Prevention Performance Audit

*The number of Sanitary Sewer Overflow (SSO) incidents in Long Beach has stayed relatively consistent in the past three years. To achieve the goal of reducing SSOs the Department needs to reevaluate and improve activities, including maintenance, repair, compliance, and educational outreach, aimed at preventing SSOs.*



*Independence you can rely on*

**October 2019**

**Laura L. Doud**

*City Auditor*

**James Lam**

*Assistant City Auditor*

**Hannah Morgan**

*Performance Audit Manager*

**Verity Tawel**

*Performance Auditor*

**Jessica Tims**

*Performance Auditor*



# Report Highlights

## Sanitary Sewer Overflow Prevention Performance Audit

### October 2019



The Long Beach Water Department (LBWD) oversees the operations on 712 miles of sewer lines, including the collection of nearly 45 million gallons of sanitary sewage per day. In 2014-2018, Long Beach experienced 103 Sanitary Sewer Overflows (SSOs). The majority of SSOs in Long Beach were Category 3 which are not severe. Category 3 SSOs are less than 1,000 gallons of wastewater and do not reach surface water. However, the City did have more SSOs than similarly-sized jurisdictions. The potential adverse impacts of SSOs include environmental damage, public health risks, beach closures, business closures, damage to property, and financial costs and penalties against the City.

**Main Audit Takeaway:** The number of SSO incidents in Long Beach has stayed relatively consistent in the past three years. The City needs to align its SSO prevention activities to the goal of reducing SSOs and monitor the effectiveness of those activities.

#### Relevant Information

#### Key Findings

##### Sewer Operations

SSOs occur when sewage is discharged from a sanitary sewer system into the environment.



Despite LBWD meeting its preventative maintenance and repair targets in recent years, the annual number of SSOs has not declined, with an average of 21 SSOs per year.



The list of needed sewer repairs is growing. The number of sewer line repairs awaiting completion increased by 62% from 2014 to 2018.

##### Fats, Oils, and Grease (FOG)

SSOs can be caused by blockages that form in the pipe due to the presence of FOG, tree roots, or structural defects.



**71% of SSOs are caused by FOG. Activities aimed at preventing FOG-related SSOs need improvements:**



FOG Inspections are not being conducted at all food facilities that produce FOG. Of 81 FOG-prone franchise brands, 34% did not receive FOG inspections at all locations.



Residential outreach efforts did not always connect residents to their role in preventing FOG-related SSOs.

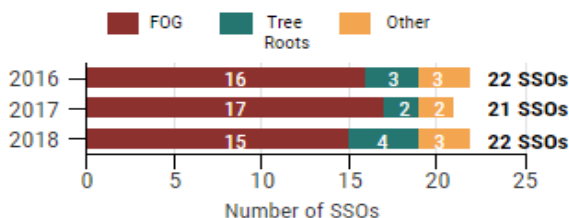


Expectations for the proper disposal of FOG are not comprehensively communicated to food facilities.



The checklist used by Health inspectors lacks necessary details to ensure thorough FOG inspections.

#### Causes of SSOs:



#### CITY AUDITOR'S RECOMMENDATIONS:

- Review preventative maintenance and repair targets, revise them as needed, and monitor those activities.
- Identify methods to speed up the repair process and prioritize the completion of severe repairs.
- Identify FOG-prone food facilities and inspect them regularly for FOG violations.
- Provide more outreach education on FOG disposal and SSO prevention to residents.
- Create a comprehensive FOG best practices document to clearly state expectations for food facilities.
- Update the FOG Inspection checklist to include specific requirements.

#### THE DEPARTMENTS AGREED WITH ALL RECOMMENDATIONS AND WILL IMPLEMENT THE FOLLOWING:

- Reassess maintenance targets and develop a system that will monitor their effectiveness.
- Incorporate trenchless technology to expedite the rate at which repairs are completed.
- Use multiple sources to identify all FOG-prone food facilities and ensure they receive FOG inspections.
- Develop more educational materials and expand efforts to reach residents.
- Create and distribute materials for food facilities that align with City regulations to ensure compliance.
- Update the current FOG Inspection checklist to include specific requirements.

# Table of Contents

Executive Summary .....	1
I. Background .....	2
II. Findings & Recommendations – Operation and Maintenance Activities .....	5
Finding #1 <i>LBWD is meeting its annual routine preventative maintenance and repair targets; however, they have not resulted in SSO reduction.</i> .....	6
Finding #2 <i>With the current repair process, the number of needed repairs will continue to increase, which could lead to needed repairs worsening over time and could impact customer service levels.</i> .....	8
Finding #3 <i>Methods used to track activities and progress towards targets are decentralized and initiated manually, making it challenging to analyze the data to make operational decisions.</i> .....	10
Finding #4 <i>LBWD's Sewer System Management Plan (SSMP) and SSO reporting are predominantly in compliance with state law; however, more specific information could be given to meet requirements.</i> .....	12
III. Findings & Recommendations – Fats, Oils, and Grease (FOG) Control Program .....	15
Finding #5 <i>FOG Inspections are not being conducted at all food facilities that produce FOG.</i> .....	16
Finding #6 <i>FOG Best Management Practices (BMPs) are not comprehensively communicated or enforced.</i> .....	18
Finding #7 <i>FOG education and outreach to the public needs to better connect the residents to prevention and effects of FOG.</i> .....	20
Finding #8 <i>The Envision Connect inspection data system has unlimited user access and is not being utilized in a manner conducive to effectively conduct and track FOG inspections.</i> .....	23
Finding #9 <i>Training for FOG inspections could be improved to more adequately prepare inspectors to conduct inspections.</i> .....	25
Finding #10 <i>Oversight of the FOG Control Program is limited because the Memorandum of Understanding (MOU) does not clearly set expectations.</i> .....	26
IV. Objective, Scope, and Methodology .....	28
V. Appendix .....	29

## Executive Summary

The Long Beach Water Department's (LBWD) Sewer Operations Division (Sewer Division) is responsible for the operations and maintenance of the City of Long Beach's (City) sanitary sewer system. One of the Sewer Division's main goals is to minimize the frequency of sanitary sewer overflows (SSOs), or sewage spills. SSOs can impact residents and businesses in the City by potentially damaging property or allowing sewage to reach bodies of water which leads to beach closures, public health risks, and environmental damage. Due to these risks, our audit evaluated the effectiveness of LBWD in preventing SSOs.

**Federal and State regulations say jurisdictions should be working towards zero preventable SSOs.**

Federal and State agencies consider SSOs to be a potential indicator of improper management, operation, and maintenance of a sewer system and a violation of the Clean Water Act if they reach a body of water. Regulations require jurisdictions to develop a Sewer System Management Plan (SSMP) aimed at reducing preventable SSOs to zero. LBWD is committed to reducing SSOs and evaluating its operations for continual improvement.

**Analysis of routine maintenance tasks and repairs is needed to distribute resources in the most effective way to reduce SSOs.**

LBWD has an SSMP in place that is predominately meeting regulatory requirements. The SSMP outlines set maintenance techniques and control programs as well as self-evaluation every two years. Although LBWD is employing multiple maintenance techniques, the number of SSOs occurring annually in Long Beach has not declined in the past three years, averaging about 21 per year. We found that the current targets for routine maintenance tasks, like cleaning and inspecting the sewer lines, need to be re-assessed to determine whether they are set at the appropriate frequencies to reduce SSO incidents. Furthermore, additional attention and resources are required to stem a growing repair backlog.

Maintenance activity data is split among multiple tracking systems by different Sewer Division work groups, making it challenging to track maintenance activities and progress towards targets. A new comprehensive system would allow the Sewer Division to better track their activities and to analyze data to make more informed operational and resource decisions.

**The FOG Control Program needs improvement, as FOG is the number one cause of SSOs in Long Beach.**

The principal cause of SSOs is fats, oils, and grease, collectively known as FOG. LBWD and the Department of Health and Human Services (DHHS) run the City's FOG Control Program, which seeks to educate and ensure compliance with FOG best management practices (BMPs). We found that aspects of this program need improvement to help reduce the amount of FOG in the City's sewer system. Commercial FOG inspections that test compliance to FOG BMPs are not occurring at all required locations. In addition, BMPs are not consistently communicated, so it is unclear what will be enforced. There should also be more focus on residents in relation to FOG prevention, not just commercial locations.

We thank management and staff at LBWD and DHHS for their collaboration, assistance, and cooperation during this audit.

# I. Background

## ***LBWD Sewer Operations***

The Long Beach Water Department (LBWD) Sewer Operations Division (Sewer Division) oversees, operates and maintains the City's sanitary sewer system, which consists of 712 miles of gravity sewer lines and generates approximately 45 million gallons per day of wastewater. The Sewer Division's mission is to collect sanitary sewage from Long Beach residences and businesses and transport it to a treatment plant in a safe and timely manner.

Since 1931, LBWD has been governed by the Board of five Water Commissioners, each of whom are appointed by the Mayor, subject to City Council approval. LBWD assumed the operations and management of the sanitary sewer system from the Department of Public Works in 1988.

## ***Regulations***

SSOs are regulated on the Federal and State level. While there is currently no governing Federal regulation or reporting requirements for sewer systems, the Federal Clean Water Act (CWA) prohibits the discharge of wastewater into the waters of the United States. SSOs are considered illegal discharges under the CWA if they reach a body of water.

Since 2006, the California State Water Resources Control Board (State Water Board) has regulated SSOs at the state level. The State Water Board further prohibits SSOs that result in a discharge to a body of water or create a nuisance. Additionally, CA State Water Board Order No. 2006-0003-DWQ mandates the creation of a Sewer System Management Plan (SSMP) to facilitate proper management of sanitary sewer systems and encourage a reduction in SSOs. The mandate also establishes recordkeeping and reporting requirements, including timeliness requirements and mandatory information that must be reported to the State Water Board.

## ***Sanitary Sewer Overflows (SSOs)***

SSOs occur when untreated sewage is discharged from a sanitary sewer system into the environment. SSOs can be caused by both structural deficiencies in the pipe and by operational disturbances, such as blockages that form due to the presence of fats, oils and grease (collectively referred to as FOG), debris, or tree roots that infiltrate and block the sewer line.

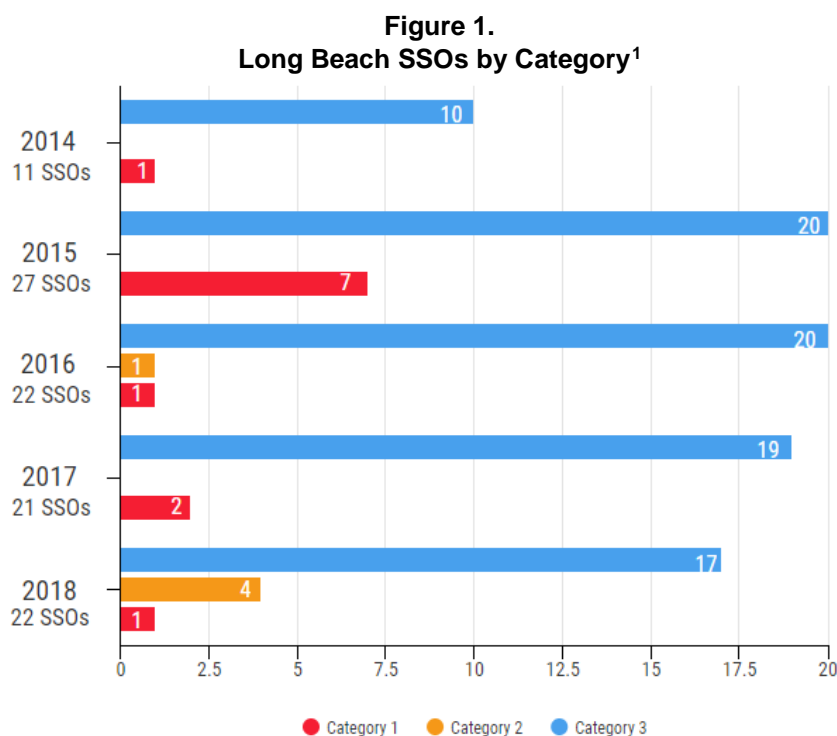
The severity of an SSO can vary. Severity is categorized based on the volume of wastewater discharged (ranging from 1 gallon or less to millions of gallons) and whether the SSO reaches a body of water. SSOs are classified as either Category 1, Category 2, or Category 3 – from most severe to least severe. The potential adverse impacts of SSOs include beach closures, public health risks,

environmental damage, business closures, damage to property, and financial costs and penalties against the City.

### ***SSOs in Long Beach***

**From 2014 to 2018, Long Beach had 103 SSOs. See page 7 for a comparison with other agencies.**

During 2014-2018, LBWD had 103 SSOs; see Figure 1 below. The number of SSOs that occur each year has stayed relatively consistent over the last three years, with an average of 21 per year. Overflows of any volume that affect a surface body of water are considered Category 1 SSOs. Notably, most SSOs in Long Beach are Category 3 SSOs, which are less than 1,000 gallons of wastewater and do not reach a surface water.



### ***Infrastructure***

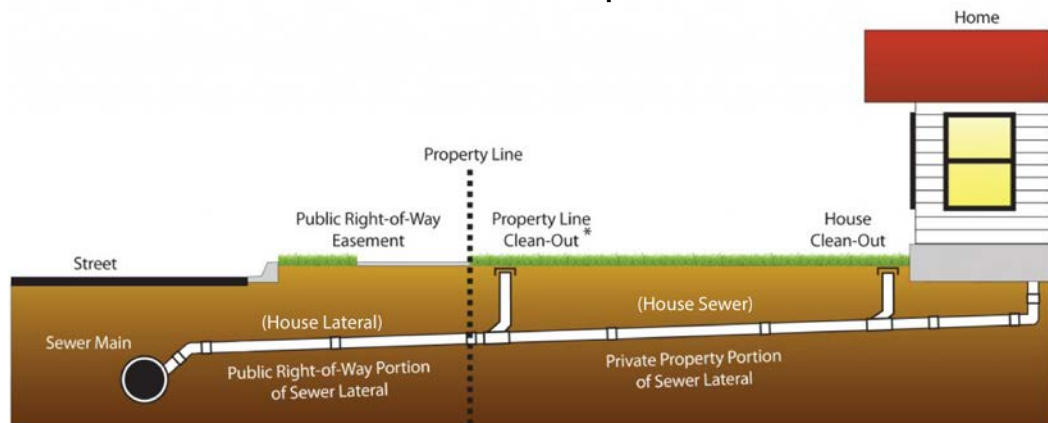
There are two principal types of sewer lines: mains and laterals. Mains are the primary lines that transport the wastewater from homes and buildings to the treatment plant. Laterals are smaller lines that connect the interior plumbing of a house or building to the sewer main. In Long Beach, the lateral line is divided into two sections: that on the side of the private property line and that in the public right-of-way. LBWD is responsible for maintaining mains and the portion of the lateral that is in the public right-of-way. Property owners are responsible for the portion of the lateral on their private property. Figure 2 on the next page illustrates the division between main and lateral lines.

---

<sup>1</sup> LBWD was unable to explain the variances in 2014 and 2015 SSO numbers. It is our understanding that no major changes to the operations or regulations were made.



**Figure 2.**  
**Sewer Infrastructure Responsibilities<sup>2</sup>**



\* Not standard on all properties.

The sewer system infrastructure in Long Beach is aging. Fifty-nine percent (59%) of main lines and 70% of lateral lines were installed prior to 1950. Most of the pipes are made of Vitrified Clay. Due to incomplete data, we were not able to determine how many of the lines have been rehabilitated or replaced since their installation.

Sewer systems vary in key factors such as their age, materials, location, amount of wastewater, and environment. Some of the Long Beach sewer system's key concerns include the aging infrastructure, high number of tree roots in the City, relatively large population, a high number of restaurants and businesses, and the positioning of the City downstream from other sewer systems.

---

<sup>2</sup> Source of Figure 2: City of Milpitas, CA <http://www.ci.milpitas.ca.gov/milpitas/departments/public-works-department-home-page/sewer-home-page/>

## II. Findings & Recommendations – Operation and Maintenance Activities

Federal and State regulations prohibit sanitary sewer overflows (SSOs) that result in a discharge into a body of water because of the potential impacts they can have on the environment and public health. Part of the regulations require jurisdictions to develop a Sewer System Management Plan (SSMP) that will help to more effectively manage sewer systems.

The Long Beach Water Department (LBWD) SSMP established the following specific goals:

- Goal 1: To properly manage, operate and maintain all portions of LBWD's wastewater collection system.
- Goal 2: To provide adequate capacity to convey peak flows.
- Goal 3: To minimize the frequency of SSOs.
- Goal 4: To mitigate the impact of SSOs.
- Goal 5: To meet all applicable regulatory notification and reporting requirements.

This audit focused on LBWD's effectiveness in preventing SSOs, which directly corresponds to Goal 3 above. However, all of the goals are connected to each other and to the overall mission of LBWD to maintain the sewer system and provide reliable customer sewer services. LBWD outlines various activities in the SSMP that will help meet its goals, but the number of SSOs occurring in Long Beach each year has not changed in the past three years.

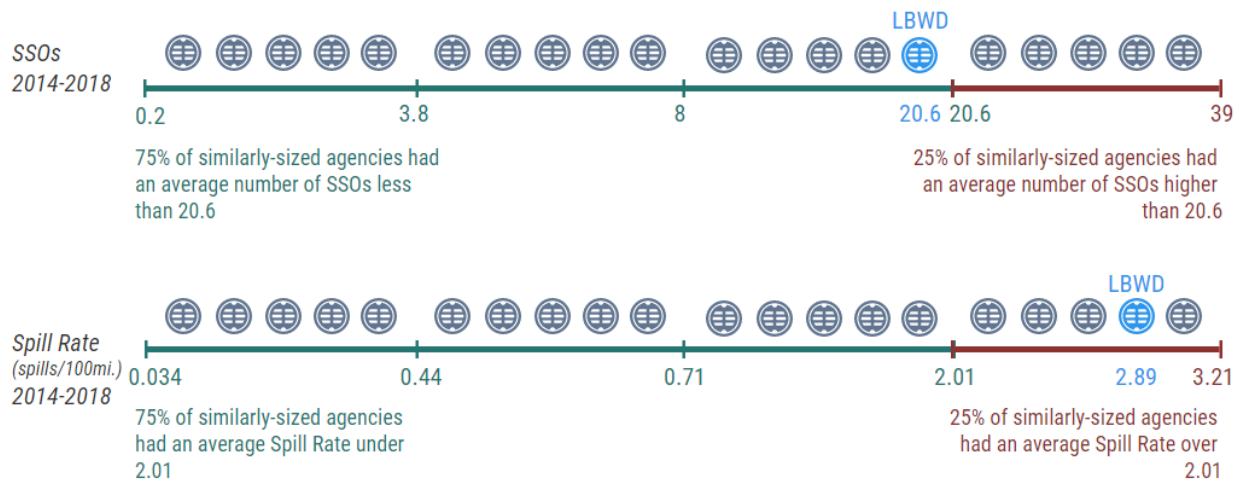
The State Water Board uses SSO data from each agency to assess agency performance across the state. The State Water Board calculates each agency's spill rate (SSOs/100 Miles/Year) and reports the average spill rate for the state and for each region. LBWD is in Region 4 along with 112 other agencies. There are twelve regions in the state, with 752 agencies in total. When compared to statewide and Region 4 averages, LBWD has a lower spill rate in almost every SSO category. However, most agencies in Region 4 and statewide are not comparable in size, ranging from one mile to 6,043 miles of gravity sewer, to LBWD which consists of 712 miles.

Due to the wide range in sewer system size among LBWD and other agencies in the state, we compared Long Beach to more similarly sized agencies. There are 20 agencies in California, including LBWD, that have between 500 and 1,600 miles of gravity sewer. We calculated the yearly average spill rate for LBWD and the 19 other agencies for a five-year period (2014-2018). Seventy-five percent of similarly-sized agencies had an average number of SSOs less than that of Long Beach. See Figure 3 on the next page for the results of this comparison.

The benchmark comparison found notable differences in the number of SSOs and spill rates between LBWD and the similarly-sized agencies. This analysis also allowed us to understand and to document both similar and different operations and practices among the agencies in the comparison. As a result, we believe that there are improvements that LBWD can make to be more in line with similarly-sized agencies.



**Figure 3.  
SSOs and Spill Rate  
Long Beach vs. Comparable Agencies  
Yearly Average for 2014-2018**



**Finding #1**

***LBWD is meeting its annual routine preventative maintenance and repair targets; however, they have not resulted in SSO reduction.***

The SSMP outlines activities that are designed to help accomplish the goal to minimize the frequency of SSOs, including routine, preventative maintenance of the sewer system and repairs. The specific targets for the preventative maintenance and repair of sewer lines consist of:

- Hydraulic Jet Cleaning (cleaning) – Goal of 328 miles of sewer lines cleaned per year, which results in lines being cleaned close to once every 2 years.
- Closed Circuit Television (CCTV) inspections – Goal of 136 miles of sewer lines televised per year, which results in lines being inspected about once every 5 years.
- Repeat Cleaning – Higher frequency cleaning for lines that have been identified as areas prone to obstructions.
- Repairs – Goal of three repairs per week on identified pipes.

**Preventative maintenance and repair targets are based on staffing levels, not on the frequencies required to reduce SSOs.**

LBWD has had the same targets since 2009, when the first SSMP was developed as required by the State. LBWD indicated that these targets were first established based on staffing levels, meaning that the targets were built around what could be accomplished by the number of existing employees. While setting targets based on staffing levels allows you to monitor the productivity of the staff, it does not necessarily mean that such targets will contribute to the goal to reduce the occurrence of SSOs. The Sewer Division has recently become fully staffed and has been meeting its preventative maintenance and repair targets over the past few years; however, they have

not resulted in a decline of SSOs since 2016.

**Analysis is not performed system-wide to determine effectiveness of routine activities.**

As part of ongoing internal audits of its SSMP, which are required by the State, the Sewer Division reviews the effectiveness of Operation & Maintenance activities. The Sewer Division currently analyzes areas that are prone to blockages and has placed those segments on more frequent cleaning schedules (Repeat Cleaning). The Sewer Division has also installed Smart Covers in areas that have experienced multiple SSOs to provide advance notice of potential overflows. These practices are examples of how the Sewer Division has used analysis to inform maintenance activity; however, Smart Covers and Repeat Cleaning areas comprise only a small portion of the sewer system. Currently, system-wide cleaning and CCTV targets have not been fully analyzed for their effectiveness in reducing SSOs.

Both the 2016 and 2018 SSMP audits discussed the need for the Sewer Division to expand targeted maintenance to the entire sewer system. This cannot be achieved without analysis of the entire sewer system to better allocate resources where they are most needed.

Six benchmarked agencies, that have lower SSO spill rates, based their preventative maintenance targets on some type of analysis rather than only on staff capacity.

- San Diego uses CCTV footage to continuously assess cleaning frequencies. They televised the entire sewer system, coded each segment, and assigned appropriate cleaning frequencies for each segment in a computerized maintenance system.
- Both San Diego and Riverside regularly analyze SSO frequency to determine if operations are meeting the goal of lowering SSOs.
- Union Sanitary District hired a third-party consultant to evaluate their maintenance targets and analyze ways to reduce SSOs. As a result, Union Sanitary District changed its system-wide cleaning frequency from 72 months (6 years) to 84 months (7 years).

In addition, most benchmarked agencies, that have lower numbers of SSOs and lower spill rates, also have lower frequency targets for cleaning and CCTV than Long Beach:

- On average, benchmark agencies have a target of cleaning lines every 3.13 years (1.13 years longer than LBWD's cleaning target).
- On average, benchmark agencies conduct CCTV inspections of lines every 6.25 years (1.05 years longer than Long Beach's CCTV target).

Without further analysis of the entire sewer system by the Sewer Division, it is not possible to determine whether the frequency of routine activities should be increased or decreased. The benchmark analysis suggests that the Sewer Division's current frequencies of some of these activities may be higher than

necessary. The Sewer Division will need to re-evaluate its system-wide preventative maintenance and repair targets and determine how changes made to them will affect SSOs.

### **Recommendations:**

Water Department:

**1.1 Reassess the methodology used to establish annual preventative maintenance and repair targets by incorporating ideas from benchmark agencies. Take into consideration available data on:**

- **Obstructions (FOG, roots, debris),**
- **Condition of main and lateral pipes,**
- **Workorder locations, and**
- **Customer complaints.**

**1.2 Track and monitor how changes to routine preventative maintenance and repairs affect overall SSO numbers.**

**Finding #2** *With the current repair process, the number of needed repairs will continue to increase, which could lead to needed repairs worsening over time and could impact customer service levels.*

As part of its routine activities the Sewer Division schedules a repair crew to complete repairs three days each week on lateral lines<sup>3</sup>. Most of the lateral repairs can be completed in one day, but some repairs will span multiple days. Therefore, the target is set at completing three repairs per week.

The Sewer Division tracks needed repairs on its Repair List. The Repair List consists of necessary repairs categorized by their current level of severity: P1 (priority 1), P2 (priority 2), and PM (preventative maintenance). Repairs are added to the list through observations during cleaning and inspections by employees or through customer complaints.

Ideally, a repair categorized as a P1 would only be on the Repair List for a few weeks until it is fixed. However, at the time we received the list, there were 129 P1 repairs, 349 P2 repairs, and 294 PM entries that were not yet completed. It would not be possible for the Sewer Division to repair 129 P1s in a few weeks if their current rate is three repairs per week. Of the 129 incomplete P1 repairs, 77% had been on the Repair List for over one year.

The Repair List documents the current categorization and the initial date the location was added to the list. However, the list does not show if the severity of the problem worsened over time, which the Sewer Division stated is

---

<sup>3</sup> Main line sewer repairs are part of LBWD's larger capital improvement projects and are handled by the Engineering Division of LBWD.

occurring for some, and if this is the reason why they may be on the list for a longer time. It is important to know how quickly a repair worsens over time.

**More needed repairs are added to the Repair List each year than are completed, creating an expanding backlog.**

We found that the Repair List is growing each year because more repairs are added to the list than can be completed by the Sewer Division, as shown in Figure 4. The average number of lateral repairs added to the list each year is 185, while the average number of lateral repairs completed is only 103. Given that for every repair completed, nearly two (1.80) additional repairs are added to the Repair List, the Sewer Division's current repair production level is unable to reverse the growing backlog.

**Figure 4.**  
**Repair List Growth**

Year	No. of Repairs Completed During Year	No. of Repairs Added During Year	No. of Repairs at End of Year
2014	111	221	482
2015	99	200	583
2016	98	186	671
2017	112	179	738
2018	93	139	784

A potential consequence of a growing Repair List is the impact on the amount of time it takes to complete a repair. The Sewer Division's main concern is ensuring customers have uninterrupted sewer service, which the Sewer Division claims is currently being achieved. However, if this backlog continues to grow, providing uninterrupted service could become more challenging.

To maintain uninterrupted service, LBWD must service or clean locations on the Repair List prior to them being repaired. The crews currently perform non-routine/emergency service more frequently at locations while they wait to be repaired. While most services are routine, 37% are in response to non-routine/emergency requests. The longer needed repairs are delayed, the more non-routine work is necessary. Crews returned to locations between one and ten times, with 30% of locations serviced three or more times while waiting to be repaired.

- For example, this is the timeline and summarized notes for a Gale Avenue address:
  - 8/8/17 – Added to Repair List due to roots
  - 2/8/18 – Cleaned stoppage
  - 5/12/18 – Consumer experiencing stoppage, cleaned
  - 6/4/18 – Cleaned due to heavy roots
  - 6/13/18 – Cleaned and televised, got line flowing
  - 6/15/18 – Cleaned four times to break stoppage
  - 7/14/18 – Cleaned multiple times to get line flowing
  - 7/20/18 – Cleaned twice to break stoppage, got line flowing
  - 8/31/18 – Cleaned to break stoppage
  - As of January 2019 – Still waiting to be repaired

These additional cleanings contribute to the 37% of workorders that are related to non-routine/emergency services. That means that crews sometimes must interrupt their routine cleaning or inspecting to respond to an emergency situation like the one described above.

It costs the Sewer Division an average of approximately \$1,700 in labor costs for a four-person repair crew and two-person CCTV crew to complete a repair in one day. To perform all 128 uncompleted P1 repairs, it would cost an estimated \$220,000 in staff time.<sup>4</sup>

The Sewer Division recognizes that it needs other solutions to speed up the repair process. The Sewer Division has explored alternative methods to performing repairs like pipe-lining instead of digging. Four agencies in the benchmark analysis (Irvine, Chula Vista, Huntington Beach, and San Diego) use lining as their primary method of repairing pipes. We encourage the Sewer Division to continue to think of ways to speed up repairs, and to determine if more time or resources need to be dedicated to this work.

### **Recommendations:**

Long Beach Water Department, Sewer Division:

- 2.1 Update Repair List to start showing how needed repairs go through the severity categorization (PM to P2 to P1) as they await repair. Track how quickly the change in severity occurs.**
- 2.2 Consider completing more P1 repairs to catch-up on the backlog using overtime or contractors. Prioritize the most severe repairs and the locations that are re-visited most often.**
- 2.3 Continue to research alternative repair methods to speed up the repair process. Complete the feasibility study within one year.**

**Finding #3** *Methods used to track activities and progress towards targets are decentralized and initiated manually, making it challenging to analyze the data to make operational decisions.*

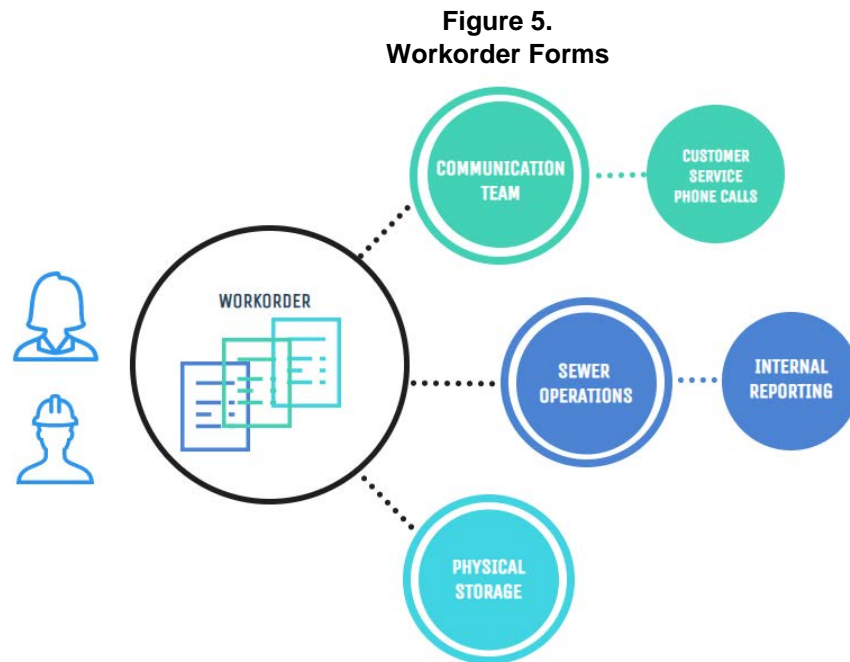
For the Sewer Division to be able to better analyze its maintenance data and make decisions like those discussed in Finding #1, the Sewer Division must first review its process for collecting the data.

Most sewer operational activities performed by crews are recorded on manual workorder forms, including cleaning, CCTV inspections, repairs, and responses to emergencies and calls for service. The workorder form

---

<sup>4</sup> This is only an estimate. It represents the minimum dollar amount of additional repairs since it does not reflect the cost of materials, account for repairs lasting longer than one day, nor any additional repairs that may be added to the list.

documents information such as: date, time, type of activity, service location, truck number, amount of footage serviced, service details, and service code, all of which are key pieces needed to analyze activities. It is a triplicate form that ends up at three locations within LBWD, as shown in Figure 5 below.



- The Communication Team, which deals with customer service calls and dispatches crews, is concerned with the address (service location) and the type of activity performed found on these workorder forms. If a customer calls to communicate a complaint or ask for an update on a specific location, the Communication Team can provide them with the latest information. The Communication Team enters workorder information into an access database that is later utilized to look up information when fielding customer calls.
- Administrative personnel in the Sewer Division are concerned with the service code and the footage associated with the service. That information is used to track the progress towards routine targets. Administrative personnel enter the workorder information into an access database. However, the staff is unfamiliar with how to run reports from the database, so the information is entered a second time into an excel spreadsheet to summarize the data.

**Duplicate information is input into different databases and spreadsheets instead of being centrally recorded.**

Neither database captures the complete information from the workorder form; therefore, one database cannot be used by everyone in LBWD. LBWD is also duplicating the input of some information across multiple databases and spreadsheets, which is an inefficient use of staff time. Our benchmark showed that 90% of agencies used a central database system to report and maintain



operational data, and four of these agencies used an automated workorder system.

There are also risks associated with the manual entry of workorders into the databases. Human error could cause mistakes and jeopardize the integrity of the data. We reviewed a sample of workorder forms and databases from three months in 2018 and found some discrepancies. The more complete the information, the more reliable it will be for analysis and decision-making.

- There were 988 physical workorders in the three months reviewed. However, the two databases had information related to 19 additional workorders during this time period, indicating that the physical forms were missing and that the database information could not be verified.
- There were 60 locations in the Communication Team database that were said to be on the list of repairs but were not actually on the Repair List. This means that a member of the team might tell a customer that the location they are asking about is waiting to be repaired when that is not the case.

### **Recommendations:**

Long Beach Water Department, Sewer Division:

#### **3.1 Utilize one central database to record and report on workorder information:**

- Utilize the existing Access Database across all teams to review the workorder information; or
- Continue to research new workorder system options with automated input and decide on a system within one year.

#### **3.2 Ensure staff are trained in recording and reporting capabilities within the selected database.**

### **Finding #4**

***LBWD's Sewer System Management Plan (SSMP) and SSO reporting are predominantly in compliance with state law; however, more specific information could be given to meet requirements.***

#### **SSMP**

As previously mentioned, State Water Board Order No. 2006-0003-DWQ requires agencies to develop a SSMP and specifies the topics that must be included, see list on the next page. Each of the eleven topics has specific items that need to be addressed in the SSMP. For example, under Operation and Maintenance Program, it requires that routine preventative operation and maintenance activities be described.

- Goal
- Organization
- Legal Authority
- Operation and Maintenance Program
- Design and Performance Provisions
- Overflow Emergency Response Plan
- Fats, Oils, and Grease (FOG) Control Program
- System Evaluation and Capacity Assurance Plan
- Monitoring, Measurement, and Program Modifications
- SSMP Program Audits
- Communication Program

Some content in the SSMP should be more specific to help explain operations.

LBWD's most recent SSMP was published in 2014. The Department is currently working towards an update of the SSMP for 2019. While the 2014 SSMP covers all the topic areas, there are a few items in which the content is vague and could be more specific to make the SSMP a better operational tool.

- For example, the FOG Control Program section suggests specific public outreach activities that could be implemented to educate residents on the proper disposal of FOG, but it does not include the required implementation plan and schedule for a public outreach program.

### **SSO Reporting**

The State Monitoring and Reporting Program Order No. WQ 2013-0058-EXEC requires agencies to report SSO events within certain time periods, as seen in Figure 6 below. The category of an SSO is based on the volume and destination of the spill, with Category 1 SSOs being the most severe.

**Figure 6.**  
**California Integrated Water Quality System (CIWQS) Requirements**

<b>Category 1 SSO</b>	1	If the SSO has 1,000 gallons or more discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services within 2 hours
	2	Submit draft report within 3 business days of becoming aware of the SSO
	3	Certify the report within 15 calendar days of the SSO end date
	4	Submit Technical Report within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters.
<b>Category 2 SSO</b>	1	Submit draft report within 3 business days of becoming aware of the SSO
	2	Certify the report within 15 calendar days of the SSO end date
<b>Category 3 SSO</b>	1	Submit certified report within 30 days of the end of the month in which the SSO occurred

LBWD uses the CIWQS online SSO database to report SSO events. The audit

found no significant violations of reporting requirements. There were three minor violations in the five years reviewed (2014 to 2018):

- Two Category 1 SSO events greater than 1,000 gallons were not reported to the California Office of Emergency Services within two hours of being known, but not significantly past the notification period.
  - SSO in January 2015 – notification within 5 hours and 38 minutes.
  - SSO in January 2018 – notification within 2 hours and 50 minutes.
- One Category 3 SSO event was not certified within 30 days but was within one week of the deadline.
  - SSO in May 2017 was certified seven calendar days late.

**Recommendations:**

Long Beach Water Department, Sewer Division:

- 4.1 Provide more specific information in the organization, design and performance provisions, overflow emergency response plan, and FOG control program sections of the SSMP to better address the topics required by the State.**
- 4.2 Follow reporting requirement deadlines in all instances.**

### III. Findings & Recommendations – Fats, Oils, and Grease (FOG) Control Program

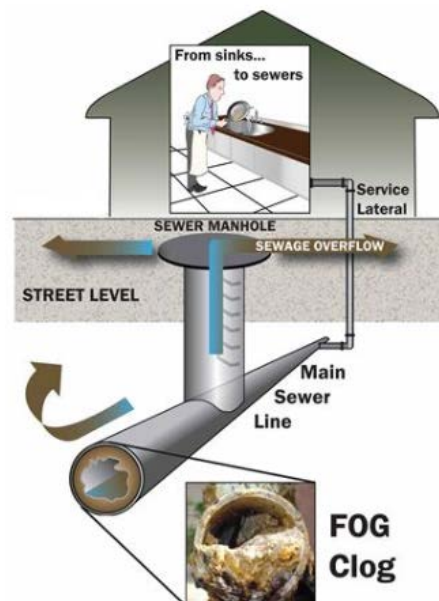
Fats, Oils, and Grease (FOG) cause 71% of SSOs in the City of Long Beach, as shown in Figure 7 below. LBWD has implemented a two-pronged approach to reduce the amount of FOG that is discharged into the sewer system: through its Operation & Maintenance Program discussed in Section II and its FOG Control Program.

**Figure 7.**  
**Long Beach SSO Causes**

	2014	2015	2016	2017	2018	Total	Percentage of Total
FOG	7	18	16	17	15	73	<b>71%</b>
<i>Commercial FOG</i>	6	4	5	5	6	26	25%
<i>Residential FOG</i>	1	14	11	12	9	47	46%
Tree Roots	3	6	3	2	4	18	<b>17%</b>
Other	1	3	3	2	3	12	<b>12%</b>
<b>Total</b>	<b>11</b>	<b>27</b>	<b>22</b>	<b>21</b>	<b>22</b>	<b>103</b>	<b>100%</b>

The FOG Control Program consists of commercial enforcement and education, as well as residential outreach. In 2005, a FOG Control Ordinance was added to the Long Beach Municipal Code to establish LBWD's legal authority to limit commercial establishments' discharge of FOG into the sewer. Figure 8 below shows the effect that FOG can have on the sewer lines.

**Figure 8.**  
**How FOG Causes SSOs<sup>5</sup>**



Compliance with the FOG Ordinance is monitored through FOG inspections of commercial food facilities. In July 2016, LBWD and the Department of Health and Human Services (DHHS) entered

<sup>5</sup> Source of Figure 8: City of Port Hueneme, CA <https://www.ci.port-hueneme.ca.us/992/Fats-Oils-and-Grease-FOG>

into a Memorandum of Understanding (MOU) in which DHHS assumed responsibility of FOG inspections by incorporating them into the department's already-existing food facility inspections. There are approximately 2,400 active food facilities in Long Beach; 1,600 of which we identified as being prone to producing FOG (FOG-prone).

**Finding #5** ***FOG Inspections are not being conducted at all food facilities that produce FOG.***

FOG inspections of food facilities are a principal component of LBWD's FOG Control Program. According to the MOU, DHHS should be conducting FOG inspections at least once every 12 months at all FOG-prone food facilities. During regular food facility inspections, DHHS inspectors are expected to review the facility to determine if it is FOG-prone and would conduct a FOG inspection accordingly.

We attempted to determine if all food facilities that produced or are prone to produce FOG had received FOG inspections. However, DHHS records kept on food facilities do not indicate whether the food facility is FOG-prone. Therefore, we used two methods to identify FOG-prone food facilities and to determine whether they had received FOG inspections.

- First, we utilized LBWD's grease recovery device (GRD) list. During the plan check phase to permit a new business, the food facility must be checked by LBWD. LBWD will review the layout of the new business and the food menu to determine if a GRD is required and the type of GRD needed. A list of these businesses requiring GRDs is tracked by LBWD and sent to DHHS. If a food facility was required to have a GRD, a FOG inspection is required unless operational or menu changes were made.
- Second, we identified food facility franchise brands within the City (e.g. In-N-Out or McDonald's), and determined if each franchise brand was FOG-prone. If most locations in a given franchise brand received a FOG inspection, then other locations within that franchise brand should have also received a FOG inspection because menus and preparation methods across franchise locations are consistent, with only minimal variations, if any.

Using these two methodologies we determined that not all FOG-prone food facilities are receiving FOG inspections:

- Food facilities on the GRD List are not receiving FOG inspections.
  - In 2017, LBWD required 50 businesses to install GRDs. Of these, 16 (32%) did not receive a FOG inspection as of February 2019.
  - A review of 195 active food facilities that had not received FOG inspections found that 24 (12%) were required to have a GRD.

**Not all FOG-prone food facilities are receiving FOG inspections.**

- Franchise brands do not receive FOG inspections across all locations despite having the same menus and preparation methods.
  - We identified 80 franchise brands in Long Beach that are FOG-prone. Of these franchise brands, 27 (34%) did not receive FOG inspections at all locations.
  - For example, the In-N-Out Burger franchise brand has four locations in Long Beach, but only three locations have received a FOG inspection.

Causes of incomplete FOG inspections were identified:

**DHHS does not use available information to inform FOG inspections and lack of review has allowed necessary FOG inspections to not occur.**

- While DHHS receives the GRD List from LBWD, DHHS is not using it to identify the food facilities in need of FOG inspections. In addition, the GRD List contains multiple naming and grammatical errors that can make it difficult to identify certain food facilities. The information on the GRD list is also not entirely current because it is obtained during plan check; the information needs to be kept up-to-date to be the most useful.
- FOG-prone food facilities are not identified specifically in the records of DHHS. Therefore, when on-site for a regular food facility inspection, inspectors determine if a location needs a FOG inspection based on their observations. Further, DHHS supervisory review of the FOG Control Program does not assess the uniformity or completeness of FOG inspections. Supervisory review should be examining food facilities that did not have a FOG inspection and determine whether the lack of a FOG inspection is appropriate, as well as reviewing the uniformity of FOG inspections across all inspectors and locations.

### **Recommendations:**

Long Beach Water Department, Sewer Division:

- 5.1 Continually update the GRD List to ensure its accuracy. Continue to send to DHHS.**

Department of Health and Human Services:

- 5.2 Utilize the GRD List to inform FOG inspections through identifying FOG-prone food facilities.**
- 5.3 Strengthen supervisory review of FOG Inspections to ensure that FOG-prone food facilities and those on the GRD list are receiving FOG inspections and that FOG inspections are being performed uniformly and comprehensively.**



## Finding #6

### *FOG Best Management Practices (BMPs) are not comprehensively communicated or enforced.*

The FOG Ordinance in the Long Beach Municipal Code (Chapter 8.46) sets requirements for food facilities and their grease recovery devices, as well as establishes authority and consequences related to enforcement of those requirements. In general, the FOG Ordinance requires that food facilities comply with best management practices (BMPs) established by LBWD. Any violation of the ordinance is a misdemeanor, constitutes a public health hazard, and may be declared a public nuisance.

The FOG Ordinance itself does not specify all the BMPs that are required; it lists some, but also leaves it open to any other BMPs determined by LBWD. LBWD and DHHS utilize a BMP Poster (produced by Los Angeles County) and FOG inspections to communicate BMPs to food facilities<sup>6</sup>.

The FOG Poster is handed out to food facilities during the inspection and is an important tool to educate food facilities on proper handling and disposal of fats, oils, and grease. The Poster provides specific information and photos to demonstrate four BMPs. However, absent from the Poster are other BMPs listed in the FOG Ordinance and on the inspection checklist. These BMPs include ensuring storage containers are leakproof and have close fitting lids.

Such educational documents would be more valuable and effective if they were comprehensive to all BMPs. For example, the City of St. Petersburg, FL provides a comprehensive FOG BMP Manual to food facilities that lists and explains all BMPs in detail and clearly states what inspectors will look for and do during a FOG Inspection. It also educates food facility staff on what FOG is and how it causes blockages in the sewer system.<sup>7</sup>

Furthermore, when we observed actual inspections and compared Long Beach's three primary documents on FOG BMPs, we found inconsistent guidance on BMPs communicated to food facilities, as shown in Figure 9 on the next page. For example, there are no temperature requirements reviewed during the FOG inspections, although it is a requirement in the FOG Ordinance. In addition, even though the inspection checklist asks for documentation of staff training on FOG, this item is not included in the FOG Ordinance or the Poster and was not actually asked for by inspectors.

---

<sup>6</sup> Los Angeles County also produces a BMP Fact Sheet, of which the LBWD and DHHS are aware. LBWD and DHHS indicated that this Fact Sheet is not handed out to food facilities.

<sup>7</sup> City of St. Petersburg, FL Water Resources Department, Environmental Compliance Division, Grease Management Program  
[http://www.stpete.org/water/environmental\\_compliance/docs/Best\\_Management\\_Practices\\_Manual\\_for\\_Fats\\_\\_Oil\\_and\\_Grease.pdf](http://www.stpete.org/water/environmental_compliance/docs/Best_Management_Practices_Manual_for_Fats__Oil_and_Grease.pdf)

**Figure 9.**  
**FOG BMP Guidance**

There are discrepancies between the different documents used for the FOG program to ensure best management practices are encouraged and performed.

Source:	FOG Ordinance	BMP Poster	Inspection Checklist	Inspection Observations
Collect waste oil and store recycling in a barrel.	✓	✓	✓	✓
Ensure grease storage containers are leakproof and have close-fitting lids.	✓		✓	✓
Remove grease from the Grease Interceptor as necessary.	✓		✓	✓
Scrape fats, oils and grease from dishware. Dispose of food waste directly into the trash.		✓		✓
Do not wash or pour cooking residue / waste oil directly into the parking lot or street.		✓		✓
Do not allow wastewater in excess of 140°F to discharge into a grease trap.	✓			
Empty containers before they are full to avoid spills.	✓			
Document that staff has been trained to properly dispose of FOG.			✓	

FOG best management practices used by Long Beach are less robust than those used by agencies that were benchmarked.

The combined list of BMPs from the various documents is also less robust than those used by seven other agencies that were benchmarked:

- Six agencies impose a measurable limit on the amount of FOG and accumulated solids in grease interceptors.
- Four agencies require either new employee training, frequent refresher training, and/or specific training to clean and maintain grease traps.
- Three agencies require signage of spill response procedures, proper disposal methods, and other BMPs.
- Three agencies impose a minimum emptying frequency, ranging from every 90 days to every 180 days, for grease interceptors.

## Recommendations:

Long Beach Water Department, Sewer Division and Department of Health and Human Services:

- 6.1 **Strengthen BMPs to be more in line with benchmarked agencies. At a minimum, consider incorporating: measurable limits on grease, requiring signage and training for staff, and minimum emptying frequencies for grease interceptors.**
- 6.2 **Create a comprehensive document to clearly state expectations for food facilities, such as St. Petersburg, Florida's comprehensive FOG BMP Manual. This will allow for all BMPs to be clearly communicated and enforced. This document should be given to food facilities upon opening and should align with the FOG Ordinance and inspection checklist.**

## Finding #7

### ***FOG education and outreach to the public needs to better connect the residents to prevention and effects of FOG.***

An important component of a FOG Control Program is a plan and schedule for public education and outreach to the public to inform them about the proper disposal and control of FOG. Since 2014, 71% of Long Beach SSOs have been caused by FOG, and the majority of those, 64%, were linked to residential properties.

LBWD is responsible for the residential component of FOG education and outreach. The Department uses two primary approaches to educate and conduct outreach to the public: letters sent to residents after an SSO in their area and social media posts. LBWD also attends community events and discusses multiple LBWD operations, which potentially includes FOG prevention.

After an SSO, LBWD investigates the source of the blockage. If the blockage was determined to be from a residential area, a letter is sent to residents in the vicinity of the SSO to educate them on FOG. The SSO letters are reactive to the occurrence of an SSO and need more information about the potential causes and negative effects of the SSO.

- An example from the letter reads, "this is a reminder that through the proper disposal of fats, oils, and grease into the trash and not down the drain, we can [prevent SSOs]". While this does leave the reader with the overall message of not putting fats, oils, and grease down the drain, it does not detail exactly how to accomplish that. The information could be enhanced to further help the public understand. For example, a flyer from San Diego details specific steps for residents:

**LBWD needs to provide residents more specific information about their role in preventing FOG-related SSOs.**

**Figure 10.**  
**Excerpt from San Diego FOG Flyer**

By following a few simple steps, you can help prevent costly sewer spills in the future.

### Step 1

All cooking oil should be poured into an old milk carton, frozen juice container, or other nonrecyclable package, and disposed of in the garbage, not down the drain.



### Step 2

Dishes and pots that are coated with greasy leftovers should be wiped clean with a disposable towel prior to washing or placement in dishwashers.

### Step 3

Instead of placing fat trimmings from meat in the garbage disposal, put them in a trash can. ALWAYS put cooking grease containers and greasy towels in a plastic bag before disposing of them in your trash bag. NEVER dispose of cooking grease directly into your automated trash container.



- The letter says SSOs are “environmentally-damaging incidents” and says that they can “place the City in a position of paying extensive fines for future spills, invite negative publicity, and ultimately degrade the quality of life that we all enjoy.” While this information is accurate, it does not sufficiently connect the resident to the effects of SSOs. The letter could be more specific about SSOs’ negative effects to residents. Another part of the San Diego flyer says, “costly home plumbing bills are often the result of grease-clogged pipelines. Residential pipelines clog easily since they are only 2”-4” in diameter.” Furthermore, many Long Beach residents would care to know that surface bodies of water could be affected by SSOs and, thus, closed during a contamination.

Other benchmarked agencies employed more approaches to educate residents:

**Benchmarked agencies employed more approaches to educate residents on FOG, such as mailers and door hangers.**

- Coachella Valley Water District, Eastern Municipal Water District, and Huntington Beach have included FOG mailers with residential utility bills.
- Riverside has door hangers that are distributed to each residence.
- Riverside and San Diego hold or attend events to educate residents about FOG. Scrapers and sponges are handed out at the events.

- Chula Vista allows residents to drop off their oil year-round and promotes that service more during the holiday season.

Social media is now a highly used tool to inform residents. LBWD started to use social media at the end of 2018 to educate residents about FOG, posting on Facebook and Twitter. LBWD made improvements to the content of the posts during the time we were performing the audit. See example of twitter posts below. In the more recent post from April 2019, LBWD emphasized to residents that FOG can have consequences for them, like costly backups, which was not in the post from November 2018.

**Figure 11.**  
**Long Beach Water Social Media Posts**



### **Recommendations:**

Long Beach Water Department, Sewer Division:

- 7.1 Provide residents with additional preventative education on FOG and SSOs. Use ideas from benchmarked agencies. Materials and in-person education should highlight how residents can specifically help to prevent FOG from going into the sewer and how they will be affected by an SSO.**
- 7.2 Continue utilizing social media to promote awareness and educate residents. Posts should include how to properly dispose of FOG and the adverse effects of FOG to residential pipes, the sewer system, the environment, and the community.**

## Finding #8

***The Envision Connect inspection data system has unlimited user access and is not being utilized in a manner conducive to effectively conduct and track FOG inspections.***

Envision Connect is the system utilized by DHHS for all their inspection programs, including routine food facility and FOG inspections. Currently, within the Envision Connect system, FOG is included as an add-on to routine food facility inspections. Current functions of Envision Connect include the following:

- Notifies the inspectors when a routine inspection is due (based on pre-set time periods).
- Houses the checklist that inspectors use when evaluating a food facility.
- Documents the results of the inspection and creates a report.
- Maintains a record of all past inspections, dates, and notes.

User access to the Envision Connect system could compromise the data's integrity.

- Envision Connect has unlimited user access. Any user can edit and delete inspections records. There is a total of 59 users with the same unlimited access. Users need to be divided into groups based on their job functions and each group given appropriate access related to its job function. No one should be allowed to delete records. If editing an inspection, a supervisor sign-off should be required to ensure that the edit was appropriate.

We also found that Envision Connect could be better formatted and utilized for FOG inspections.

- Since FOG inspections are added on as part of routine food facility inspections in the system, the automatic alerts to tell inspectors that the food facility is due for an inspection are not on the correct schedule. Routine food inspections can vary in timelines, from one to three times per year. However, FOG inspections are due once per year. It is up to the inspector to monitor when the next FOG inspection is due separately because the alerts are based on the routine food facility inspection schedule. For this reason, FOG inspections could be missed.
- The performance of a FOG inspection is dependent on the judgement of the inspector. If the inspector does not see evidence that the food facility works with a significant amount of fats, oil, and grease, a FOG inspection will not be performed. While this discretion stops unnecessary inspections, there is no place in Envision Connect for inspectors to note why a FOG inspection was not performed. In that food facility's records, it would appear as if the inspector skipped a FOG inspection, since a reason was not recorded.



Envision Connect does not have a feature to mark FOG-prone food facilities for an inspection.

The FOG inspection checklist needs more specific items to assist with identifying any issues.

- As noted earlier, during the permitting process, when LBWD determines that a food facility needs a grease recovery device, it should signal to inspectors and supervisors that a FOG inspection needs to be performed. However, Envision Connect does not currently have a place to flag these food facilities as having a grease recovery device.
- The FOG inspection checklist has six categories that must be marked for compliance or non-compliance. These categories have vague titles, like “FOG BMP Compliance” and “Clean & Maintain Facility.” The point of the checklist should be to provide the inspector the specific items to examine. With the current titles, it is dependent on the inspectors to be familiar with all requirements. There is additional information housed inside the six categories that would be better incorporated into the checklist itself, such as “observed accumulated grease” and “provided documentation that all facility staff have been trained in BMPs.” See Long Beach’s checklist items below:

**Figure 12.**  
**Long Beach FOG Inspection Checklist**

Inspection Details <b>2</b> Compliance		Prior Violations	History	Facility Details	Record Details	Measured Observations
P	Description					
	FOG BMP COMPLIANCE					
	FOG STORAGE & RECYCLING					
<b>2a.</b>	CLEAN & MAINTAIN FACILITY					
	CHANGES TO GREASE INTERCEPTOR/TRAP					
	GREASE SYSTEM RECORDS					
	GREASE SYSTEM MAINTENANCE					

- As an alternative example, below is an excerpt from Huntington Beach’s inspection report that shows how more detailed and clearer BMPs can be used:

**Figure 13.**  
**Excerpt from Huntington Beach Inspection Checklist**

Kitchen Best Management Practices
1. Are all drains with the potential to introduce grease into sewer system connected to a GCD
2. Are drain screens installed on all drains (including floor drains)
3. Are kitchen hood filters maintained and in good operating condition
4. Does the facility “dry wipe” pots, pans, and dishware prior to rinsing and washing
5. Are “No Grease” signs in appropriate languages placed around drains that are not connected to a GCD
6. Does the facility have a documented employee training program (twice a calendar year)
7. Are records (GCD maintenance and/or inspection records, waste collection manifests) onsite for review.
8. Have private sewer lateral(s) been serviced within the past year

## Recommendations:

Department of Health and Human Services:

- 8.1 Limit user access to ensure data integrity. If inspectors can edit past inspections, require a supervisor sign-off to verify the edits are appropriate. No staff should be able to delete an inspection completely.
- 8.2 Separate FOG inspections into their own category in Envision Connect. Set up notification feature that will notify DHHS inspectors when a FOG inspection is due.
- 8.3 Create a function in Envision Connect to cite a reason for why a FOG inspection was not conducted at a food facility.
- 8.4 Create a function in Envision Connect to flag known FOG-producing food facilities as needing a FOG inspection. Have supervisors review this list to ensure all known FOG locations did receive a FOG inspection.
- 8.5 Update the inspection checklist to include the specific requirements that inspectors should be looking for without needing to open the categories.

## Finding #9

*Training for FOG inspections could be improved to more adequately prepare inspectors to conduct inspections.*

LBWD provides trainings for DHHS staff to educate them on FOG and help prepare them for performing FOG Inspections. Inspectors also receive on-the-job training from colleagues.

We reviewed training materials from October 2017, when LBWD provided training to DHHS inspection staff. Those training materials provide an overview of the sewer operation and the adverse effects of FOG but lack detailed information about recurring tasks and inspection specifics that would inform FOG inspections and mitigate the amount of fats, oils, and grease in the sewer system.

**DHHS Inspectors need training on performing an effective FOG inspection step-by-step.**

The training materials and primary reliance on inspector discretion are not conducive to adequately preparing inspectors to conduct FOG inspections.

- The training material primarily focuses on what FOG is and why it is important to reduce FOG. While this is relevant, it does not explicitly educate inspectors on what should be done during a FOG inspection. While DHHS does also train inspectors on-the-job, there needs to be more coordinated training to ensure that inspectors are carrying out the program as LBWD intended.

- DHHS management allows and expects DHHS inspectors to utilize and rely on their discretion when deciding whether or not to conduct a FOG inspection.

### **Recommendations:**

Long Beach Water Department, Sewer Division and Department of Health and Human Services:

- 9.1 LBWD and DHHS should work together to develop and strengthen training materials. Have repeat trainings at least every two-years for existing staff and continue holding trainings for new staff.**

### **Finding #10** *Oversight of the FOG Control Program is limited because the Memorandum of Understanding (MOU) does not clearly set expectations.*

Prior to July 2016, LBWD was executing the FOG Control Program with its own department staff. However, the department was finding it difficult to perform the volume of inspections needed. So, in July 2016, the LBWD entered into a Memorandum of Understanding (MOU) with DHHS to take over part of the responsibilities of the program. The MOU transferred the responsibility of conducting FOG inspections to DHHS because it already employed inspectors who visit food facilities and have the authority to enforce the FOG Ordinance requirements.

**The FOG Control Program MOU was never updated to reflect actual program practices and costs.**

From the very beginning, the MOU did not reflect how the FOG Control Program was to be executed by both departments. Since then, the MOU has not been updated and is, therefore, not reflective of the current program practices. Due to some of these issues, it is difficult for LBWD to verify compliance with all aspects of the MOU.

- The MOU “Responsibilities” section lists the tasks that are part of the FOG Control Program. However, it does not attribute all these tasks to a specific department. For example, one bulleted task is to “provide ongoing education and outreach to restaurant staff and the general public regarding the proper disposal and control of FOG.” In practice, this one task is split between the two departments, with LBWD responsible for the education of the general public and DHHS responsible for the education of food facility staff. The MOU does not specify this division or say who should be held accountable for this task.
- One task is to “inspect all (approximately 2,200) food service establishments operating within Long Beach...for compliance with [FOG Ordinance].” In practice, DHHS inspectors are responsible for this task. However, not all food facility use FOG or require FOG inspections. The MOU should reflect a better estimate of businesses

that should receive FOG inspections. DHHS is not inspecting 2,200 businesses each year, but the MOU makes it seem like LBWD could hold them to that standard.

Another main purpose of the MOU is to establish an agreement for the compensation for these services. However, since the MOU was never updated to reflect actual program tasks and practices, it does not reflect accurate costs.

- The fees listed for personnel services (the staff used to support the FOG inspections at DHHS) lists budgeted salaries and estimates for the number of work hours to be dedicated to the program. While the estimates for work hours seem reasonable, they should be updated yearly based on actual time spent. Also, actual salaries of the personnel involved should be used because the budgeted salaries are not close enough to actuals to provide an accurate estimate.
- The fees listed for non-personnel services (other materials and services outside of inspection staff) are not all applicable to the operation. DHHS did not have a standard methodology used for these estimates. There are charges for items like postage and books listed on the MOU, but these are not items used for FOG inspections.

### **Recommendations:**

Long Beach Water Department, Sewer Division and Department of Health and Human Services:

**10.1 Update the MOU to accurately and clearly reflect the responsibilities and expectations for each department.**

**10.2 Review the MOU annually or as changes occur to ensure it remains current. Discuss at quarterly meetings.**

Department of Health and Human Services:

**10.3 Update fees to reflect the actual costs associated with the operation.**

## IV. Objective, Scope, and Methodology

The objective of this audit was to assess the effectiveness of the Long Beach Water Department, Sewer Division's efforts to prevent sanitary sewer overflows (SSOs). The audit scope covered data on SSOs from January 1, 2014 through December 31, 2018 (5 years). To achieve this objective, we:

- Reviewed LBWD Sanitary Sewer Management Plan and assessed its compliance with state law;
- Traced LBWD SSOs to the state database;
- Conducted interviews and ride-alongs with LBWD sewer operations and DHHS health inspection personnel;
- Evaluated LBWD progress towards meeting operations targets by reviewing a sample of back-up documentation;
- Reviewed the Memorandum of Understanding between LBWD and DHHS regarding FOG inspections;
- Analyzed the list of food facilities and FOG inspections and the Envision Connect system they are recorded in; and
- Benchmarked against agencies for both sewer operations and FOG programs.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on the audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives.

## V. Appendix



## Management Response



## **City of Long Beach**

*Working Together to Serve*

## **Memorandum**

**Date:** October 15, 2019

**To:** Laura L. Doud, City Auditor

**From:** Chris Garner, General Manager, Long Beach Water  
Kelly Colopy, Director, Health and Human Services *KG*

**Subject:** **Joint Management Response to the Sanitary Sewer Overflow Prevention Performance Audit**

---

The Long Beach Water Department (LBWD) and the Long Beach Department of Health and Human Services (DHHS) thank the Office of the City Auditor for conducting a thorough review of our practices pertaining to Sanitary Sewer Overflow (SSO) Prevention. We truly appreciate the dedicated staff from the City Auditor's Office for taking the time to understand our operations and for conducting the review in a professional, productive, and collaborative manner.

LBWD and DHHS agree with the recommendations set forth in the Performance Audit and have attached the Management Response and Action Plan to address each item in detail. We are pleased to report that many of the recommendations have since been implemented, and those remaining will soon be implemented. We are confident that these changes will improve the effectiveness of our Fats, Oils, and Grease (FOG) control strategy, and will be beneficial for our long-term goal of reducing the frequency of SSOs.

LBWD and DHHS are committed to preserving the long-term integrity of the City's sewer infrastructure and providing our customers with uninterrupted, reliable sewer service while protecting community health and the environment. We are looking forward to building upon the foundation of our current SSO prevention program with the timely implementation of the recommended actions contained in the audit report. Additionally, we recognize the importance of continuous evaluation with appropriate modifications to ensure the long-term, sustained effectiveness of our program. We also welcome any feedback you may have as we progress with our implementation of the recommendations.

Thank you, once again, for your effort and assistance throughout this process.

**MANAGEMENT RESPONSE AND ACTION PLAN**  
**Long Beach Water Department and Department of Health Human Services**  
**Sanitary Sewer Overflow Prevention Performance Audit**

No.	Recommendation	Priority	Page #	Agree or Disagree	Responsible Party	Action Plan / Explanation for Disagreement	Target Date for Implementation
1.1	Reassess the methodology used to establish its annual preventative maintenance and repair targets by incorporating ideas from benchmark agencies. Take into consideration available data on: Obstructions (FOG, roots, debris), Condition of main and lateral pipes, Workorder locations, and Customer complaints.	H	8	AGREE	LBWD	LBWD will reassess the methodology used to establish its Operations and Maintenance goals. LBWD staff will utilize the list of benchmark agencies and contacts provided by the Audit team to explore different approaches to preventative maintenance. In addition to initiating contact with these agencies, LBWD will review their published SSMPs to understand the implementation of these ideas.	June 2020
1.2	Track and monitor how changes to routine preventative maintenance and repairs affect overall SSO numbers.	M	8	AGREE	LBWD	LBWD will use tools available through new workorder system (see 3.1) to track and monitor how maintenance activity and repairs affect overall SSO numbers.	October 2020
2.1	Update Repair List to start showing how needed repairs go through the severity categorization (PM to P2 to P1) as they await repair. Track how quickly the change in severity occurs.	H	10	AGREE	LBWD	Since all lateral repairs do not necessarily change categories before completion, LBWD will ensure that repairs are prioritized and then systematically reviewed. As a result of the audit findings, LBWD has implemented a protocol whereby the workorder history of each address that requests lateral maintenance is reviewed on the same day. If the address has requested service 3 or more times in the preceding year, it will automatically be moved to the front of the repair list.	Immediate
2.2	Consider completing more P1 repairs to catch-up on the backlog using overtime or contractors. Prioritize the most severe repairs and the locations that are re-visited most often.	L	10	AGREE	LBWD	LBWD is committed to prioritizing the most severe repairs, as well as those locations that are re-visited most often (see 2.1). With the addition of a trenchless repair solution (see 2.3), the repair rate should, at a minimum, double its current rate. LBWD is also open to using overtime and/or contractors, when appropriate and if budget allows.	March 2020
2.3	Continue to research alternative repair methods to speed up the repair process. Complete the feasibility study within one year.	M	10	AGREE	LBWD	- LBWD Sewer Operations will begin using Pipe Patch repair system to supplement the traditional, open excavation repair method. A crew of 4 will be dedicated to this activity for a 6-month period. Evaluation of the program's effectiveness will be done on an ongoing basis, with a documented summary completed monthly. - LBWD Engineering is currently designing a pilot study to explore other trenchless repair methods. This should yield additional data to help determine other processes that could be implemented for future repairs.	March 2020 / October 2020
3.1	Utilize one central database to record and report on workorder information: • Utilize the existing Access Database across all teams to review the workorder information; or • Continue to research new workorder system options with automated input and decide on a system within one year.	H	12	AGREE	LBWD	LBWD is working on creating a workforce application through ARCGIS online. This application will allow LBWD to direct, track, and analyze its various Operations and Maintenance activities more efficiently. In addition, LBWD is planning to implement a Department-wide Enterprise Computerized Maintenance Management System (CMMS). LBWD is in the process of securing a consultant to initiate the first phase of this process.	January 2020 (Beta Testing of ArcGIS) / Immediate (Search for CMMS)

**MANAGEMENT RESPONSE AND ACTION PLAN**  
**Long Beach Water Department and Department of Health Human Services**  
**Sanitary Sewer Overflow Prevention Performance Audit**

No.	Recommendation	Priority	Page #	Agree or Disagree	Responsible Party	Action Plan / Explanation for Disagreement	Target Date for Implementation
3.2	Ensure staff are trained in recording and reporting capabilities within the selected database.	M	12	AGREE	LBWD	LBWD Sewer Operations staff will begin training on the ARCGIS workforce application during Beta testing. All division personnel will be thoroughly trained on its recording and reporting capabilities by the full implementation target date.	March 2020 - June 2020
4.1	Provide more specific information in the organization, design and performance provisions, overflow emergency response plan, and FOG control program sections of the SSMP to better address the topics required by the State.	H	14	AGREE	LBWD	LBWD has completed its revision to the SSMP and has expanded the sections listed in the recommendation. It provides more specific information to better address the topics required by the State. The 2019-2024 SSMP will be reviewed by the Board of Water Commissioners on October 10, 2019 for authorization to submit and implement the plan.	December 2019
4.2	Follow reporting requirement deadlines in all instances.	H	14	AGREE	LBWD	LBWD is committed to complying with the State Water Resources Control Board (SWRCB) SSO reporting deadlines at all times.	Immediate and Ongoing
5.1	Continually update the GRD List to ensure its accuracy. Continue to send to DHHS.	M	17	AGREE	LBWD	LBWD and DHHS will collaborate on a continuous basis to build a more complete and accurate GRD list. DHHS' database of FSEs will be used as the foundation of the GRD list, with LBWD continually adding, modifying, and verifying the list with its latest development data.	Immediate and Ongoing
5.2	Utilize the GRD List to inform FOG inspections through identifying FOG-prone food facilities.	H	17	AGREE	DHHS	The GRD List provided by the LBWD will be utilized and compared to the existing FOG program records created in Envision Connect database. The GRD List and FOG Program records will serve as the primary source of FOG-prone food facilities and will guide Health Inspectors in prioritizing which food facilities will require an annual FOG inspections. Additional food facilities not identified on this list will receive FOG educational materials to ensure operators are pro-active in preventing sewer overflows due to FOG.	6 months - 1 year
5.3	Strengthen supervisory review of FOG Inspections to ensure that FOG-prone food facilities and those on the GRD list are receiving FOG inspections and that FOG inspections are being performed uniformly and comprehensively.	H	17	AGREE	DHHS	The DHHS Water Program Supervisor currently reviews the FOG paperwork and all FOG Inspections to ensure that FOG-prone food facilities identified in the GRD List and Envision Connect database are receiving annual inspections. The DHHS Water Program Supervisor will also ensure that all Health Inspectors complete the introductory and refresher trainings for FOG to ensure that FOG inspections are performed uniformly and comprehensively. DHHS and LBWD staff will work on the training curriculum and develop materials reinforcing the FOG BMPs and other materials designed to assist Health Inspectors during their FOG inspections.	6 months - 1 year

**MANAGEMENT RESPONSE AND ACTION PLAN**  
**Long Beach Water Department and Department of Health Human Services**  
**Sanitary Sewer Overflow Prevention Performance Audit**

No.	Recommendation	Priority	Page #	Agree or Disagree	Responsible Party	Action Plan / Explanation for Disagreement	Target Date for Implementation
6.1	Strengthen BMPs to be more in line with benchmarked agencies. At a minimum, consider incorporating: measurable limits on grease, requiring signage and training for staff, and minimum emptying frequencies for grease interceptors.	M	20	AGREE	LBWD and DHHS	LBWD and DHHS will meet to review BMPs of benchmarked agencies, LBMC 8.46 and LBWD's Rules and Regulations. Educational materials designed for Health Inspectors and food facility employees will focus on BMPs that fall within our municipal code and LBWD's Rules and Regulations.	6 months - 1 year
6.2	Create a comprehensive document to clearly state expectations for food facilities, such as St. Petersburg, Florida's comprehensive FOG BMP Manual. This will allow for all BMPs to be clearly communicated and enforced. This document should be given to food facilities upon opening and should align with the FOG Ordinance and inspection checklist.	M	20	AGREE	LBWD and DHHS	LBWD and DHHS have discussed the need to create local materials designed for Long Beach food facilities. These document/training materials will align with the FOG Ordinance and Inspection Checklist; which will be given out during the FOG inspections to ensure that food facilities understand the local requirements and how they can achieve compliance.	6 months - 1 year
7.1	Provide residents with additional preventative education on FOG and SSOs. Use ideas from benchmarked agencies. Materials and in-person education should highlight how residents can specifically help to prevent FOG from going into the sewer and how they will be affected by an SSO.	M	22	AGREE	LBWD	- LBWD will work with its P.I.O. to develop educational materials to reach residential customers throughout Long Beach's diverse communities. Materials will be available in its most prevalent non-English languages (i.e., Spanish, Khmer, Tagalog). LBWD will contact benchmark agencies for ideas on developing new materials targeting FOG. - DHHS can assist with the distribution of FOG educational materials to Long Beach residents. DHHS coordinates various health fairs and attends several community events throughout the city. DHHS Health Inspectors and Health Educators can educate the public and increase their awareness of FOG and help to prevent sanitary sewer overflows in their respective neighborhoods.	New materials October 2020 / Ongoing
7.2	Continue utilizing social media to promote awareness and educate residents. Posts should include how to properly dispose of FOG and the adverse effects of FOG to residential pipes, the sewer system, the environment, and the community.	H	22	AGREE	LBWD	- LBWD will expand on its "Healthy Sewers" social media campaign. FOG awareness and FOG control will continue as a primary focus, but there will be additional emphasis on how residents can implement these practices in their homes, workplaces, and throughout the community. - DHHS has its own social media platforms and can assist in promoting and educating residents how to properly dispose of FOG and prevent sanitary sewer overflows.	Ongoing / expansion by June 2020
8.1	Limit user access to ensure data integrity. If inspectors can edit past inspections, require a supervisor sign-off to verify the edits are appropriate. No staff should be able to delete an inspection completely.	H	25	AGREE	DHHS	DHHS will create a procedure for inspectors to obtain supervisor approval before editing a saved inspection. Deletion of an inspection (in special circumstances) will be limited to the database administrator with Environmental Health Management approval. A procedure will also be created to provide proper steps and documentations are in placed.	6 months - 1 year
8.2	Separate FOG inspections into their own category in Envision Connect. Set up notification feature that will notify DHHS inspectors when a FOG inspection is due.	M	25	AGREE	DHHS	DHHS has created over 800 FOG program records in Envision Connect. The GRD list will also be utilized to identify FOG generating facilities that were not in our Envision Database.	6 months - 1 year

**MANAGEMENT RESPONSE AND ACTION PLAN**  
**Long Beach Water Department and Department of Health Human Services**  
**Sanitary Sewer Overflow Prevention Performance Audit**

No.	Recommendation	Priority	Page #	Agree or Disagree	Responsible Party	Action Plan / Explanation for Disagreement	Target Date for Implementation
8.3	Create a function in Envision Connect to cite a reason for why a FOG inspection was not conducted at a food facility.	M	25	AGREE	DHHS	DHHS is looking into addressing this recommendation and testing out various options with the inspectors.	6 months - 1 year
8.4	Create a function in Envision Connect to flag known FOG-producing food facilities as needing a FOG inspection. Have supervisors review this list to ensure all known FOG locations did receive a FOG inspection.	M	25	AGREE	DHHS	DHHS has created the FOG Program Records which will allow supervisors to review a list of all food facilities that we know for sure need a FOG inspection once per year and also see which ones haven't been inspected within the last year. FOG Program Records will also utilize the GRD list.	6 months - 1 year
8.5	Update inspection checklist to include the specific requirements that inspectors should be looking for without needing to open the categories.	H	25	AGREE	DHHS	LBWD and DHHS to review the current checklist and benchmarked agencies' checklist to create a checklist with specific requirements for inspectors.	6 months - 1 year
9.1	LBWD and DHHS should work together to develop and strengthen training materials. Have repeat trainings at least every two-years for existing staff and continue holding trainings for new staff.	M	26	AGREE	LBWD and DHHS	LBWD and DHHS have been meeting on a quarterly basis to discuss program needs and programmatic areas that can be improved. As part of these meetings, LBWD and DHHS will work together on the development, implementation and evaluation of the annual and refresher training. Training materials will be pilot tested and will be an integral component of the training designed for new and existing Health inspectors.	6 months - 1 year
10.1	Update MOU to accurately and clearly reflect the responsibilities and expectations for each department.	H	27	AGREE	LBWD and DHHS	LBWD and DHHS have begun identifying areas of the MOU that can be strengthened. Specific deliverables and objectives will be clearly stated in the MOU to reflect accountability, responsibilities and expectations from both departments.	Ongoing
10.2	Review MOU annually or as changes occur to ensure it remains current. Discuss at quarterly meetings.	L	27	AGREE	LBWD and DHHS	LBWD and DHHS will update the MOU annually or as needed during the quarterly meetings. This is a great opportunity for both departments to learn from one another and revise the MOU to reflect current changes or future goals and objectives of the FOG program.	Ongoing
10.3	Update fees to reflect the actual costs associated with the operation.	H	27	AGREE	DHHS	Quarterly and/or annual review of the MOU will include a fiscal examination and an opportunity to increase or decrease costs in the personnel and operating costs of the FOG program.	Ongoing

**Priority**

H – High Priority - The recommendation pertains to a serious or materially significant audit finding or control weakness. Due to the seriousness or significance of the matter, immediate management attention and appropriate corrective action is warranted.

M – Medium Priority - The recommendation pertains to a moderately significant or potentially serious audit finding or control weakness. Reasonably prompt corrective action should be taken by management to address the matter. Recommendation should be implemented no later than six months.

L – Low Priority - The recommendation pertains to an audit finding or control weakness of relatively minor significance or concern. The timing of any corrective action is left to management's discretion.

**Yellow areas - to be completed by the department**



**Long Beach City Auditor's Office**

411 W. Ocean Blvd., 8<sup>th</sup> Floor

Long Beach, CA 90802

Telephone: 562-570-6751

Fax: 562-570-6167

Email: [Auditor@longbeach.gov](mailto:Auditor@longbeach.gov)

Website: [CityAuditorLauraDoud.com](http://CityAuditorLauraDoud.com)

MyAuditor App available at the [App Store](#) or [Google Play](#)

**Follow Us:**

Facebook: [@LBCityAuditor](#)

Instagram: [@LBCityAuditor](#)

Twitter: [@LBCityAuditor](#)

**CITY AUDITOR'S FRAUD HOTLINE: 1-888-FRAUD-07**

---