

# Clean Water 2020 Program

## CONSENT DECREE ANNUAL REPORT

January 1, 2017 – December 31, 2017



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## Acronyms & Abbreviations

- CAP** – Capacity Assurance Program
- CCTV** – Closed Circuit Television
- CD** – Consent Decree
- CE** – City Engineer
- CERP** – Contingency Emergency Response Plan
- CFO** – Chief Financial Officer
- CIP** – Capital Improvements Program
- City** – City of Columbia
- CMOM** – Capacity, Management, Operations and Maintenance
- CSAP** – Continuing Sewer Assessment Program
- CW2020** – City’s Program to Manage the Consent Decree Compliance
- CY** – Calendar Year

**DOJ** – United States Department of Justice

**DUE** – Department of Utilities and Engineering

**EACIP** – Early Action Capital Improvement Projects

**EPA** – United States Environmental Protection Agency

**ERG** – Emergency Response Guide

**FOG** – Fats, Oils and Grease

**FSE** – Food Service Establishment

**GIS** – Geographic Information System

**GLPMP** – Gravity Line Preventive Maintenance Plan

**GSOMP** – Gravity Sewer System Operation and Maintenance Program

**IMS** – Information Management System

**IR** – Infrastructure Rehabilitation [Program]

**IRR** – Infrastructure Rehabilitation Report

**LGIM** – Local Government Information Model

**MAC** – Maintenance and Compliance

**NTP** – Notice to Proceed

**PTO** – Permit to Operate

**RFP** – Request for Proposal

**SCDHEC** – South Carolina Department of Health and Environmental Control

**SMP** – Sewer Mapping Program

**SOP** – Standard Operating Procedure

**SORP** – Sewer Overflow Response Program

**SEES** – Sanitary Sewer Evaluation Survey

**SSO** – Sanitary Sewer Overflow

**TSOMP** – Transmission System Operations and Maintenance Program

**WCTS** – Wastewater Collection and Transmission System

**WMD** – Wastewater Maintenance Division

**WWTP** – Wastewater Treatment Plant

## Section 1 Introduction

### 1.1 Summary of Reporting Requirements

On May 21, 2014 the City of Columbia (City) entered into a Consent Decree (CD) with the United States Environmental Protection Agency (EPA), the United States Department of Justice (DOJ) and the South Carolina Department of Health and Environmental Control (SCDHEC). To fulfill the reporting requirements as defined in Section IX.39.c of the CD, the City has prepared this *Annual Report*, which includes the following information (as excerpted from the CD):

1. A summary of the CMOM Programs implemented pursuant to this Consent Decree, including a comparison of actual performance with any performance measures that have been established;
2. A summary of each remedial measure and capital project implemented pursuant to this Consent Decree;
3. A trends analysis of the number, volume, duration, and cause of Columbia's SSOs for the previous twenty-four (24) month period.

### 1.2 Report Organization

This Annual Report is organized as follows:

#### **Section 1 – Introduction**

This section includes a summary of the reporting requirements and describes the report organization.

#### **Section 2 – CMOM Programs Update**

This section addresses the requirements of Section IX.39.c.(i) of the CD. The section provides a summary and update on the implementation of the specific Management, Operations, and Maintenance (MOM) Programs included in Section V.12 of the CD.

#### **Section 3 – Capital Projects Update**

This section addresses the requirements of Section IX.39.c.(ii) of the CD. The section provides a summary and update on the remedial measures and capital projects implemented as a part of the CD. The remedial measures and capital projects noted in this report have been identified by the City in the course of the assessment of the Wastewater Collection and Transmission System (WCTS) and may be included in the IR Report required under Section V.16 of the CD.

#### **Section 4 – Sanitary Sewer Overflow (SSO) Trends Analysis**

This section addresses the requirements of Section IX.39.c.(iii) of the CD. The section provides information on the number, volume, duration, and cause of the City's SSOs for the previous twenty-four month period.

## Section 2 CMOM Programs Update

In accordance with Section IX.39.c.(i) of the CD, this section provides a summary and update on the implementation of the specific CMOM Programs included in Section V.12 of the Consent Decree. The Program elements addressed in this section provide information regarding activities involving the Metro Wastewater Treatment Plant (WWTP) as well as the City's WCTS.

### 2.1 Sewer Overflow Response Program (SORP)

The City continues to implement the SORP as required under Section V.12.a of the CD.

Projects and significant activities completed during the current reporting period:

- Updated and redistributed the SORP to Department of Utilities and Engineering (DUE) personnel in November 2017.
- Trained new hires and existing personnel on the use of the SORP (completed December 2017).

### 2.2 Contingency and Emergency Response Plan (CERP)

In consultation with SCDHEC, the City developed and submitted to EPA and SCDHEC a CERP within 18 months of the Date of Entry of the CD. The City received final approval of the CERP from EPA and SCDHEC on May 23, 2016.

Projects and significant activities completed during the current reporting period:

- Completed CERP Training on the Activation of the CERP in March 2017.
- Completed Emergency Operations Table Top Exercise in March 2017.
- Completed the review of the Table Top Exercise in March 2017.

### 2.3 WCTS Training Program

In accordance with the requirements of the CD, the City submitted a WCTS Training Program to EPA and SCDHEC by January 5, 2016. The City received final approval of the WCTS Training Program from EPA and SCDHEC on May 23, 2016.

Projects and significant activities completed during the current reporting period:

- Staff has updated plan and will implement in current calendar year as required by USEPA.

### 2.4 Information Management System (IMS) Program

In accordance with the requirements of the CD, the City submitted an Information Management System (IMS) Program to EPA and SCDHEC by January 5, 2016. The City received final approval of the IMS Program from EPA and SCDHEC on May 23, 2016.

Projects and significant activities completed during the current reporting period:

- The City has continued to use Cityworks as their CMMS system for work order and service request processing for corrective and preventative maintenance, tracking inspections, and for complaint tracking.
- The City has continued to use a series of Microsoft Excel spreadsheets to track CIPs throughout the project lifecycle, from concept through completion.
- The City has continued to use the Storeroom module as part of the Cityworks software. As of December 31, 2017, 85% implementation of the Storeroom component was achieved with full implementation scheduled to be completed by December 30, 2018.
- The City has continued to obtain metrics and reports directly from Cityworks regarding the amount, type and frequency of work performed in the WCTS.
- Sewer basin electronic mapping has continued to be implemented in accordance with the submitted and EPA approved Sewer Mapping Plan (SMP). As of December 31, 2017, 68% implementation of the SMP was achieved.

## 2.5 Capacity Assurance Program (CAP)

In accordance with the requirements of the CD, the City is to submit to EPA and SCDHEC a CAP within 180 days after approval of the Hydraulic Model Report. Additionally, within 90 days after the Date of Entry of the CD, Columbia was required to establish a list of all authorized new sewer service connections or increases in flow from existing service connections, which flows have not yet been introduced into the WCTS. Columbia is required to update and maintain this list as necessary until full implementation of the CAP, as approved by EPA. In addition, upon execution of the CD and until EPA approves the CAP as required by Section 12.e, Columbia agreed to continue to implement its current capacity program.

Projects and significant activities completed during the current reporting period:

- Continued to collect and process CAP requests received from satellite systems and developments within the City's Service Area.
- Continued to develop the CAP Tool and began testing of the CAP Tool.

## 2.6 Sewer Mapping Program

In accordance with the requirements of the CD, the City submitted a Sewer Mapping Program (SMP) to EPA and SCDHEC within 60 days of the date of entry of the CD. The City received final approval of the SMP from EPA and SCDHEC on December 9, 2014.

Projects and significant activities completed during the current reporting period:

- The City is continuing the electronic mapping of each Sewer Basin in accordance with the approved SMP implementation plan therein. Progress for each WCTS Minor Gravity Mapping basin is as follows:
  - West Columbia Basin – 95% complete

- Smith Branch Basin – 67% complete
  - Saluda River Basin – 87% complete
  - Rocky Branch Basin – 44% complete
  - Mill Creek Basin – 26% complete
  - Gills Creek Basin – 29% complete
  - Crane Creek Basin – 65% complete
  - Broad River Basin – 27% complete
- Progress for each WCTS Major Gravity Mapping basin is as follows:
    - West Columbia Basin – 100% complete (Mapping complete as of November 20, 2017.)
    - Smith Branch Basin – 100% complete (Mapping complete as of November 20, 2017.)
    - Saluda River Basin – 80% complete
    - Rocky Branch Basin – 62% complete
    - Mill Creek Basin – 84% complete
    - Gills Creek Basin – 77% complete
    - Crane Creek Basin – 87% complete
    - Broad River Basin – 92% complete

## 2.7 Fats, Oils, and Grease (FOG) Management Program

The City continues to implement its FOG Management Program. The FOG Management Program was submitted to the EPA on July 2, 2013 and incorporated into the CD as Appendix G.

Projects and significant activities completed during the current reporting period:

- Public education program and website information are available to the public to promote FOG awareness throughout the City of Columbia.
- The City continues to implement the existing FOG Program to include annual inspections of Food Service Establishments (FSEs) and Public Outreach Programs.

## 2.8 Transmission System Operations and Maintenance Program

In accordance with the requirements of the CD, the City submitted to EPA and SCDHEC a Transmission System Operations and Maintenance Program (TSOMP) within one year after the Date of Entry of the CD. The City received final approval of the TSOMP from EPA and SCDHEC on September 2, 2016.

Projects and significant activities completed during the current reporting period:

- Recommended SCADA Improvement design has been completed by an outside Engineering Firm. Contract bid documents to complete the improvements are being completed with the goal to bid these documents in March of 2018. Project is on schedule.



- Force Main and Easement Maintenance is currently underway with surveying the limits of these easements and initial clearing. Project is on schedule.
- Corrosion Control to evaluate and develop findings and recommendations, cost estimates and implementation schedule for mitigation measures was under development in 2017. Project to bid in March 2018.

The Key Performance Indicators (KPIs) that are tracked by the City to measure the performance of the WCTS include the number of Force Main related SSOs per mile of Force Main and/or number of SSOs per number of Pump Stations; and maintenance activities tracked by type (corrective, preventive, and emergency).

**Table 1: CY 2017 Lift Station Work Order Summary**

Wastewater Collection System (WCTS) Maintenance	Percentage of Work Orders
Corrective Maintenance	18.7%
Preventive Maintenance	81.1%
Emergency Maintenance	0.2%
Total	100%

SSO KPIs related to Force Main and/or SSOs per number of Pump Stations are provided under Section 4 Sanitary Sewer Overflow (SSO) Trends Analysis.

## 2.9 Gravity Sewer System Operation and Maintenance Program

In accordance with the requirements of the CD, the City submitted to EPA and SCDHEC a Gravity Sewer System Operation and Maintenance Program (GSOMP) within 18 months of the Date of Entry of the CD. The City received final approval of the GSOMP from EPA and SCDHEC on May 23, 2016. When the City developed the GSOMP, no inverted siphons were identified in the Gravity Sewer System. Recently, in the course of implementation of the CSAP, the City discovered two inverted siphons in the System. The City will be revising the GSOMP to establish procedures and schedules for inspection and maintenance of these inverted siphons and will submit the revised GSOMP to the EPA for approval as required by Paragraph 23.b of the CD.

Projects and significant activities completed during the current reporting period:

- Development of Gravity Line Preventive Maintenance Plan (GLPMP) is being finalized ahead of implementation schedule.

- Gravity Main and Easement Maintenance is currently underway with surveying the limits of these easements and initial clearing. Project is on schedule.
- Corrosion Control to evaluate and develop findings and recommendations, cost estimates and implementation schedule for mitigation measures was under development in 2017. Project to be completed by November 2018.
- Evaluation of crossings and stream bank encroachment is currently underway to complete a comprehensive field investigation. Project to be completed by November 2018.

The Key Performance Indicators (KPIs) that are tracked by the City to measure the performance of the WCTS include the linear footage of Gravity Sewer cleaned, the number of manholes inspected, the number of manholes cleaned/maintained, the number of inverted siphons inspected, the number of inverted siphons cleaned/maintained, and the number of SSOs per mile of Gravity Sewer; and maintenance activity tracked by type (corrective, preventive, and emergency).

**Table 2: CY 2017 WCTS Work Order Summary**

Wastewater Collection System (WCTS) Maintenance	Percentage of Work Orders
Corrective Maintenance	28%
Preventive Maintenance	71%
Emergency Maintenance	1%
Total	100%

**Table 3: CY 2017 WCTS Key Performance Indicators (KPIs)**

Reportable Consent Decree Key Performance Indicators (KPIs) for Wastewater Collection System (WCTS)	Annual Projection	As of 12/31/17	% Completed vs Projected
Linear footage of gravity sewer inspections (linear feet)	564,960	2,012,784	356.3%
Linear footage of gravity sewers cleaned (linear feet)	1,129,920	1,261,638	111.7%
Number of manholes inspected (each)	2,799	6,973	249.1%
Number of manholes cleaned/maintained (each)	2,799	2,342	83.7%

SSO KPIs related to WCTS are provided under Section 4 Sanitary Sewer Overflow (SSO) Trends Analysis.

## 2.10 Financial Analysis Program

In accordance with the requirements of the CD, the City submitted a Financial Analysis Program to EPA and SCDHEC by January 5, 2016. The City received final approval of the FAP from EPA and SCDHEC on May 23, 2016.

Projects and significant activities completed during the current reporting period:

- Continued assessing staffing impacts connected to CD programs and included needs and levels in both FY17/18 and FY18/19 budget plans.
- Continued planning for costs of equipment and materials needed for the proper management, operation and maintenance of the WCTS and WWTP (based on an evaluation of past needs, recent budgeting levels and costs, and projected needs) and for implementing CD programs.
- Continued planning for outsourcing needs based on past budgeting levels and costs, and on specific requirements for implementing CD programs.
- A rate study update was presented to City Council on March 21, 2017 and April 4, 2017. The next rate study update was begun in January 2018.
- IFAS (Integrated Financial and Administrative Solution) continues to be in use and can track and report capital improvement costs.
- Continued assessment of an updated/rolling 5 year CIP plan.
- Created business cases for projects for the FY17/18 Capital Projects Budget.

## Section 3 Capital Projects Update

In accordance with Section IX.39.c.(ii) of the CD, the following section provides a summary and update on the remedial measures and capital projects implemented as a part of the Consent Decree.

### 3.1 Infrastructure Rehabilitation Report (IRR) Projects

In accordance with Section V.16 of the CD, the City shall submit an IRR to EPA and SCDHEC summarizing the results of the Continuing Sewer Assessment Program (CSAP) of the major components of the WCTS and a description of proposed rehabilitation projects, including rehabilitation projects currently underway. As rehabilitation projects are identified through the CSAP and in the normal course of operations and maintenance, the City is proceeding with those projects. The following projects have already been identified and are currently in progress.

**Table 4: IRR Projects (V.16)**

CIP #	Project Name	Project Status/Summary
SS6764	30-inch Forcemain from Mill Creek PS to WWTP	Construction NTP issued on April 14, 2016. Construction was completed in December 2017.
SS695401	Crane Creek Phase I	Construction NTP issued on March 31, 2015. Construction was completed in October 2017.
SS725103	Innovista District Infrastructure Improvements (Blossom/Huger SS Improvements, Phase 3)	Construction NTP issued on July 28, 2015. Construction was completed in December 2017.
SS7259	Replacement of 24" Smith Branch Outfall Underneath I-277	Construction NTP issued on June 11, 2016. Construction was completed in June 2017.
SS7301	Bull Street	City Council approved project on April 21, 2015. Construction ongoing throughout 2017.

In accordance with Section V.16.c of the CD, the City shall submit a Supplemental Infrastructure Rehabilitation Report (SIRR) to EPA and SCDHEC which shall update all portions of the IRR to reflect additional information developed by the City through completion of the CSAP of the minor components of the WCTS. As rehabilitation projects are identified through the CSAP and in the normal course of operations and maintenance, the City is proceeding with those projects. The following projects have already been identified and are currently in progress.

Table 5: SIRR Projects (V.16.c)

CIP #	Project Name	Project Status/Summary
SS6786	Annual Sanitary Sewer Manhole Rehabilitation	Construction to be performed in FY 2017 was completed in July 2017. Construction for projects to be performed in FY 2018 began in July 2017 and was ongoing throughout remainder of 2017.
SS6966	Annual Rehab on Lines less than 15"	Construction to be performed in FY 2017 was completed in November 2017.
SS7060	Pump Station Improvements at 6 Sites	Construction NTP issued on June 7, 2016. Construction ongoing throughout 2017.
SS7199	Saluda River Basin SSES and Rehabilitation for SR-06 & 13	Construction NTP issued on July 31, 2014. Construction was completed in February 2017.
SS7208	Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12	Construction NTP issued on August 19, 2014. Construction ongoing throughout 2017.
SS7218	West Columbia Basin SSES and Rehabilitation for WC-02	Construction NTP issued on June 17, 2014. Construction was completed in June 2017.
SS725801	Greenlawn Dr. to Burnside #1 PS (Hampton Forest) Phase 1	Construction NTP issued on June 21, 2016. Construction was completed in September 2017.
SS7262	Flow Study/Rehabilitation/Replacement of Three Rivers and Colonial Life PS	Construction NTP issued on May 16, 2016. Construction ongoing throughout 2017.
SS7279	Smith Branch-02 SSES and Rehabilitation	Construction NTP issued on November 17, 2016. Construction ongoing throughout 2017.
SS7280	Rocky Branch-01 SSES and Rehabilitation	Construction NTP issued on August 22, 2016. Construction ongoing throughout 2017.
SS7324	Bendale PS Improvements	Design 100% complete in January 2017. Construction NTP issued on June 19, 2017. Construction ongoing throughout remainder of 2017.
SS7362	Smith Branch 01 SSES	Design 100% complete in November 2017. Construction anticipated to begin in 2018.
SS737902	Olympia Emergency Repair	Construction NTP issued on February 3, 2017. Construction was completed in May 2017.

## Section 4 Sanitary Sewer Overflow (SSO) Trends Analysis

In accordance with Section IX.39.c.(iii) of the CD, the following section provides a trends analysis of the number, volume, duration, and cause of the City's Sanitary Sewer Overflows (SSOs) for the previous twenty-four month period.

Items required include the detailed number (frequency) and volume, by cause, of reportable spills as well as a trend analysis of the number, volume, and cause of the City's SSOs, by month, for the previous twenty-four month period.

### 4.1 SSO Frequency and Volume by Cause

The detailed number and volume, by cause, for reportable spills is presented for review. The following table represents the SSO volume spilled by cause, frequency and volume for calendar years 2016 and 2017.

**Table 6: Total SSO Frequency and Volume by Cause, CY 2016 & 2017**

SSO Cause	Frequency	Volume (gal)
Collapsed Line	71	279,861
Grease	25	24,376
3 <sup>rd</sup> Party	25	292,236
Pump Station Failure	7	140,595
Roots	71	56,374
Debris	38	49,082
Wet Weather	46	1,122,126
Force Main	9	994,150
Equipment Failure	33	65,775
Wastewater Treatment Plant	5	3,518

The following table shows the SSO category (cause), number of SSOs of that category by month, and the total for each month in CY 2016 and CY 2017. The total number of SSOs by category is then calculated as a percentage of all SSOs for the overall time period.

Table 7: Monthly SSO Frequency by Cause, CY 2016 & 2017

Month / Year	Collapsed Line	Grease	3rd Party	Pump Station Failure	Roots	Debris	Wet Weather	Force Main	Equipment Failure	Wastewater Treatment Plant	Total
Jan-16	0	1	2	0	2	2	0	1	3	1	12
Feb-16	7	1	1	0	5	3	0	1	3	0	21
Mar-16	3	6	2	1	3	0	0	0	0	0	15
Apr-16	1	1	1	1	5	1	0	0	0	1	11
May-16	2	1	0	0	4	1	0	4	0	1	13
Jun-16	1	0	0	0	1	1	0	0	0	1	4
Jul-16	3	0	0	2	1	0	0	0	0	0	6
Aug-16	1	0	0	0	2	1	9	0	1	0	14
Sep-16	3	0	2	0	1	1	6	0	0	0	13
Oct-16	5	1	3	1	4	0	7	1	0	0	22
Nov-16	4	1	0	0	1	1	0	1	2	0	10
Dec-16	2	1	3	0	5	2	0	0	1	0	14
<b>CY 2016 Total</b>	<b>32</b>	<b>13</b>	<b>14</b>	<b>5</b>	<b>34</b>	<b>13</b>	<b>22</b>	<b>8</b>	<b>10</b>	<b>4</b>	<b>155</b>
Jan-17	3	2	1	0	7	3	2	0	0	0	18
Feb-17	5	1	1	0	2	4	0	0	0	0	13
Mar-17	5	0	1	0	3	1	4	0	0	1	15
Apr-17	1	3	0	1	4	4	10	0	5	0	28
May-17	1	1	1	1	1	2	0	0	4	0	11
Jun-17	2	1	3	0	2	1	0	0	1	0	10
Jul-17	2	0	1	0	1	1	8	0	1	0	14
Aug-17	1	0	1	0	0	0	0	0	2	0	4
Sep-17	1	0	1	0	1	2	0	0	8	0	13
Oct-17	6	1	1	0	9	3	0	1	2	0	23
Nov-17	7	1	0	0	1	2	0	0	0	0	11
Dec-17	5	2	0	0	6	2	0	0	0	0	15
<b>CY 2017 Total</b>	<b>39</b>	<b>12</b>	<b>11</b>	<b>2</b>	<b>37</b>	<b>25</b>	<b>24</b>	<b>1</b>	<b>23</b>	<b>1</b>	<b>175</b>
<b>Grand Total</b>	<b>71</b>	<b>25</b>	<b>25</b>	<b>7</b>	<b>71</b>	<b>38</b>	<b>46</b>	<b>9</b>	<b>33</b>	<b>5</b>	<b>330</b>
<b>% of Total</b>	<b>21.5%</b>	<b>7.6%</b>	<b>7.6%</b>	<b>2.1%</b>	<b>21.5%</b>	<b>11.5%</b>	<b>13.9%</b>	<b>2.7%</b>	<b>10.0%</b>	<b>1.5%</b>	

In CY 2016, the highest number (22%) of reportable spills was attributable to roots. The next highest area of reportable spills was attributable to collapsed lines (21%), while wet weather represented 14%. In CY 2017, the highest number of reportable spills were due to collapsed lines (22%) and roots (21%). The next highest areas of reportable spills were attributable to debris and wet weather (14% each). Overall, collapsed lines, roots, wet weather, and debris combined to represent a significant majority (68%) of the reportable spills for the period.

Figure 1: CY 2016 SSOs by Cause

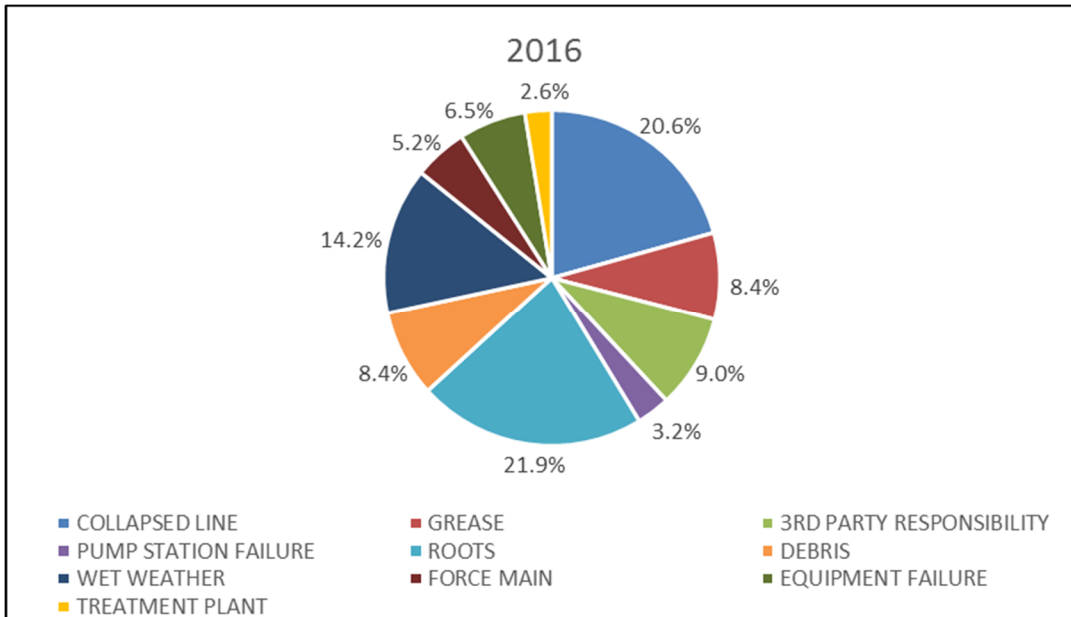
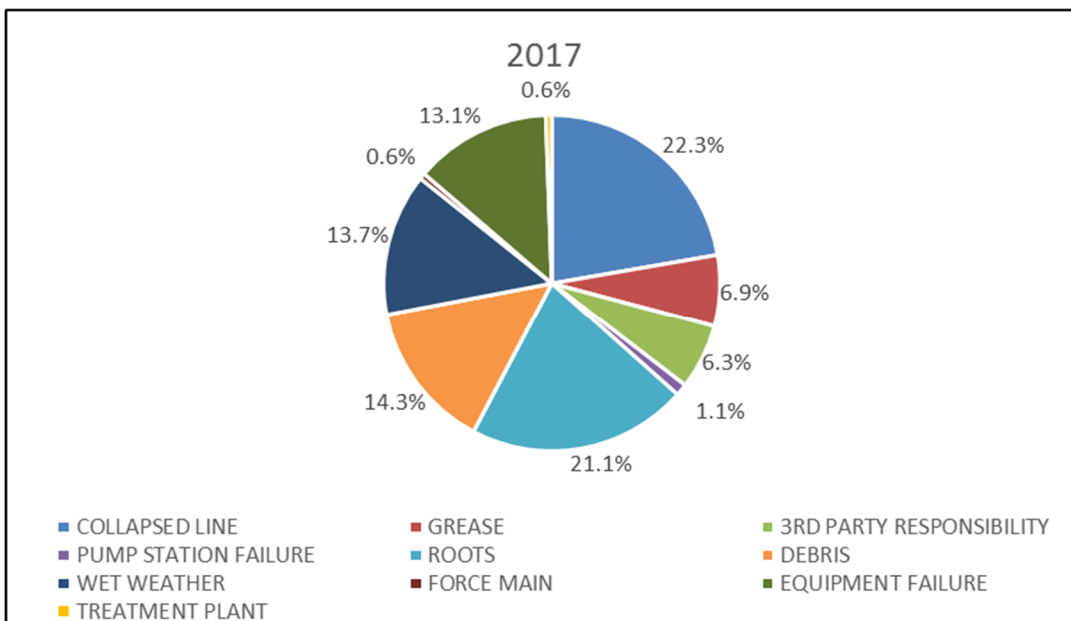


Figure 2: CY 2017 SSOs by Cause



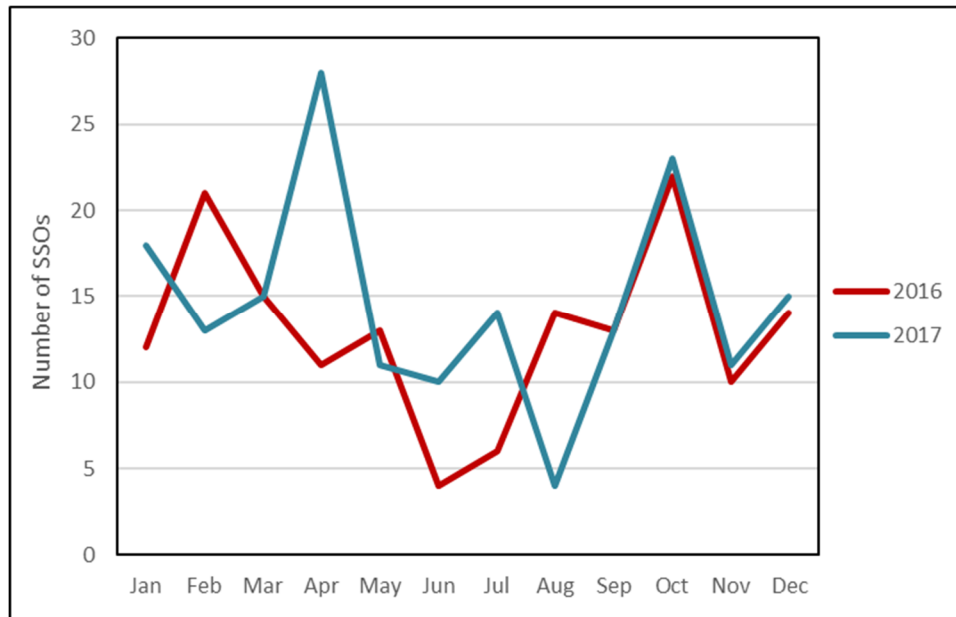
## 4.2 SSO Frequency and Volume by Month

As shown in the tables above, the City experienced a total of 155 SSOs in CY 2016. In CY 2017, the City experienced a total of 175 SSOs for a combined total of 330 SSOs. This number was less than the previous two-year total of 373, a decrease of 13%. The average number of SSOs per month during CY 2016 was 12.9, and 14.6 in CY 2017. The fluctuation in SSOs monthly is caused by a combination of wet weather, roots, and collapsed lines. In CY 2017, there continues to be a significant effort to reduce SSOs



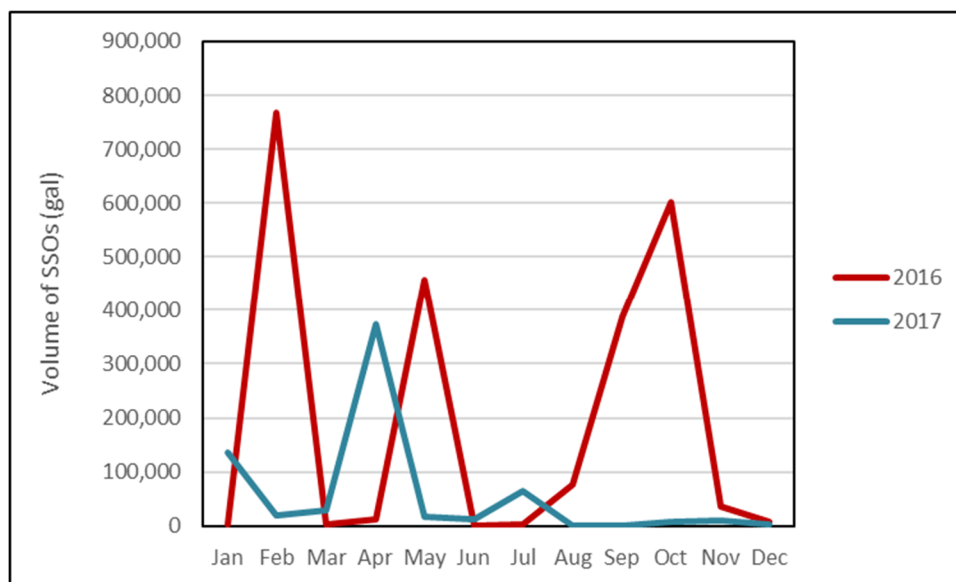
due to grease. During CY 2016, February and October averaged 21.5 SSOs per month, above the annual average of 12.9. In CY 2017, April and October averaged 25.5 SSOs per month, once again well above the annual average of 14.6.

Figure 3: SSO Frequency by Month



During CY 2016, total known volume spilled represented approximately 2.36 million gallons; in CY 2017, total known volume spilled represented approximately 0.67 million gallons, for an estimated combined total known volume of 3.03 million gallons. Wet weather events accounted for 27.0 percent of the known volume spilled in CY 2016 and 72.3 percent of the known volume spilled in CY 2017.

Figure 4: SSO Volume by Month



Based on an analysis of the wet weather SSO events, there is an identifiable correlation between spill volume and rainfall. During major rainfall events, the City experienced significant volume of SSOs related to wet weather. In 2017, total volume has decreased significantly.

### 4.3 SSO Duration

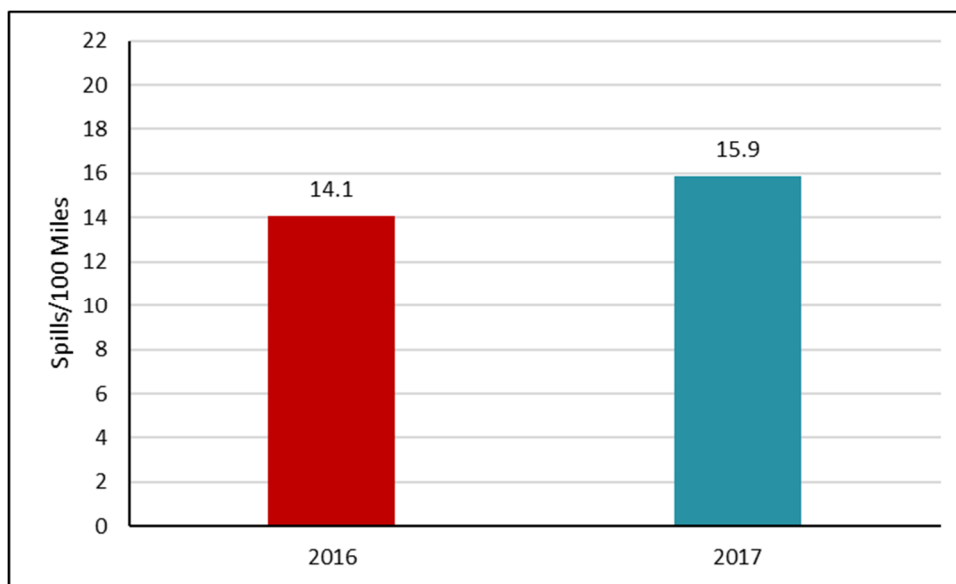
The documented duration of an SSO is the amount of time between the estimated start time of the SSO event (observed) and the estimated end time of the SSO event (observed). In CY 2016, non-wet weather SSOs represented an average duration of 137 minutes per SSO. Wet weather SSOs represented an average duration of 292 minutes per SSO. In CY 2017, non-wet weather SSOs represented an average duration of 80 minutes. Wet weather SSOs represented an average duration of 301 minutes.

Of all SSOs in CY 2016 and 2017, 34 percent of the non-wet weather SSO durations and 24 percent of the wet weather SSO durations were reported as unknown or undetermined due to overflow being unobserved.

### 4.4 SSOs per 100 Miles of Pipe

The City currently operates and maintains 1,100 miles of pipe. In CY 2016 the number of SSOs per 100 miles equaled 14.1 and in CY 2017 15.9. This is an increase of 1.8 SSOs per 100 miles of pipe.

Figure 5: SSOs per 100 Miles of Pipe



### 4.5 Building Backup Frequency by Month

As noted in Section IV.8.a of the CD, a Building Backup is defined as a release of wastewater into a building or onto private property that is caused by blockages, flow conditions, or other malfunctions in the WCTS.

Separate from the SSO data noted above in Sections 4.1 through 4.4, the following table represents the frequency of building backups within the City’s system for each month in CY 2016 and CY 2017. Building backup claims are investigated by the City in order to determine whether the cause of the building backup is a condition within the City’s system. If so, the City corrects the problem in the City’s WCTS. Issues on private property are documented for the City by a third-party administrator. Through May 2017, neither the City nor the third-party administrator maintained records on volume, duration, or specific root causes of building backups. In June 2017, the City developed a new Standard Operating Procedure (SOP) for Building Backup data collection and documentation. As of July 2017, additional information on building backups is being collected. While only frequency information is provided in this report, additional analysis regarding building backups over the two-calendar-year reporting period will be included in subsequent annual reports.

**Table 8: Monthly Building Backup Frequency, CY 2016 & 2017**

Month	2016	2017
January	1	4
February	4	1
March	0	1
April	1	2
May	0	1
June	0	2
July	2	0
August	3	1
September	0	2
October	0	0
November	1	0
December	0	4
<b>Total</b>	<b>12</b>	<b>18</b>