

Clean Water 2020 Program

CONSENT DECREE QUARTERLY REPORT

October 1, 2017 – December 31, 2017



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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.a of the CD, the City has prepared this *Quarterly Report* that includes the following information (as excerpted from the CD):

1. A description of all projects and activities conducted during the most recently completed calendar quarter to comply with the requirements of this Consent Decree, in Gantt chart or similar format. This description shall include completion percentages of early action capital improvement projects under Paragraph 10, continuing sewer assessments under the CSAP, and the subsequent remedial actions under the IR Report;
2. The date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise resolve the cause of all SSOs for the most recently completed quarter in a tabulated electronic format;
3. The anticipated projects and activities that will be performed in the next quarter to comply with the requirements of this Consent Decree, in Gantt chart or similar format;
4. Any additional information that demonstrates that Columbia is implementing the remedial measures required in this Consent Decree; and
5. The results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the Consent Decree.

1.2 Report Organization

This Quarterly Report is organized as follows:

Section 1 – Introduction

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

Section 2 – Schedule of Projects and Activities

This section addresses the requirements of Sections IX.39.a.(i) and IX.39.a.(iii) of the Consent Decree. The section includes the projects and activities conducted during the most recently completed calendar

quarter to comply with the requirements of the CD as well as the anticipated projects and activities that will be performed in the next quarter to comply with the requirements of the CD. A Gantt chart schedule of these activities is provided and includes completion percentages of continuing sewer assessments under the CSAP and the subsequent remedial actions under the IR Report, as applicable.

Section 3 – Additional Information Demonstrating Implementation of Consent Decree Requirements

This section addresses the requirements of Section IX.39.a.(iv) of the Consent Decree and includes additional information that demonstrates that Columbia is implementing the remedial measures required in the CD. Information supplemental to that which is provided in Section 2 is provided in this section.

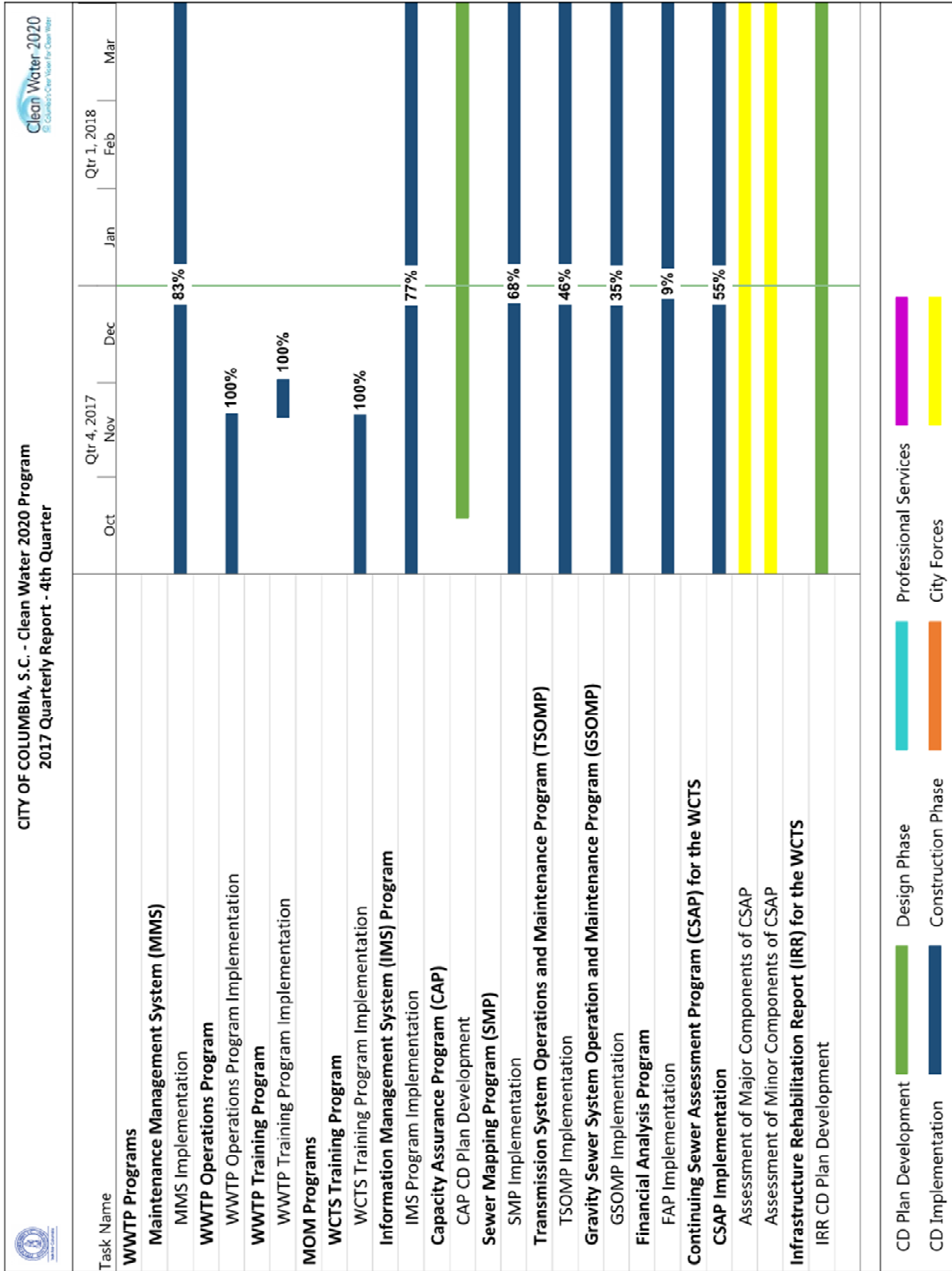
Section 4 – Quarterly SSO Report

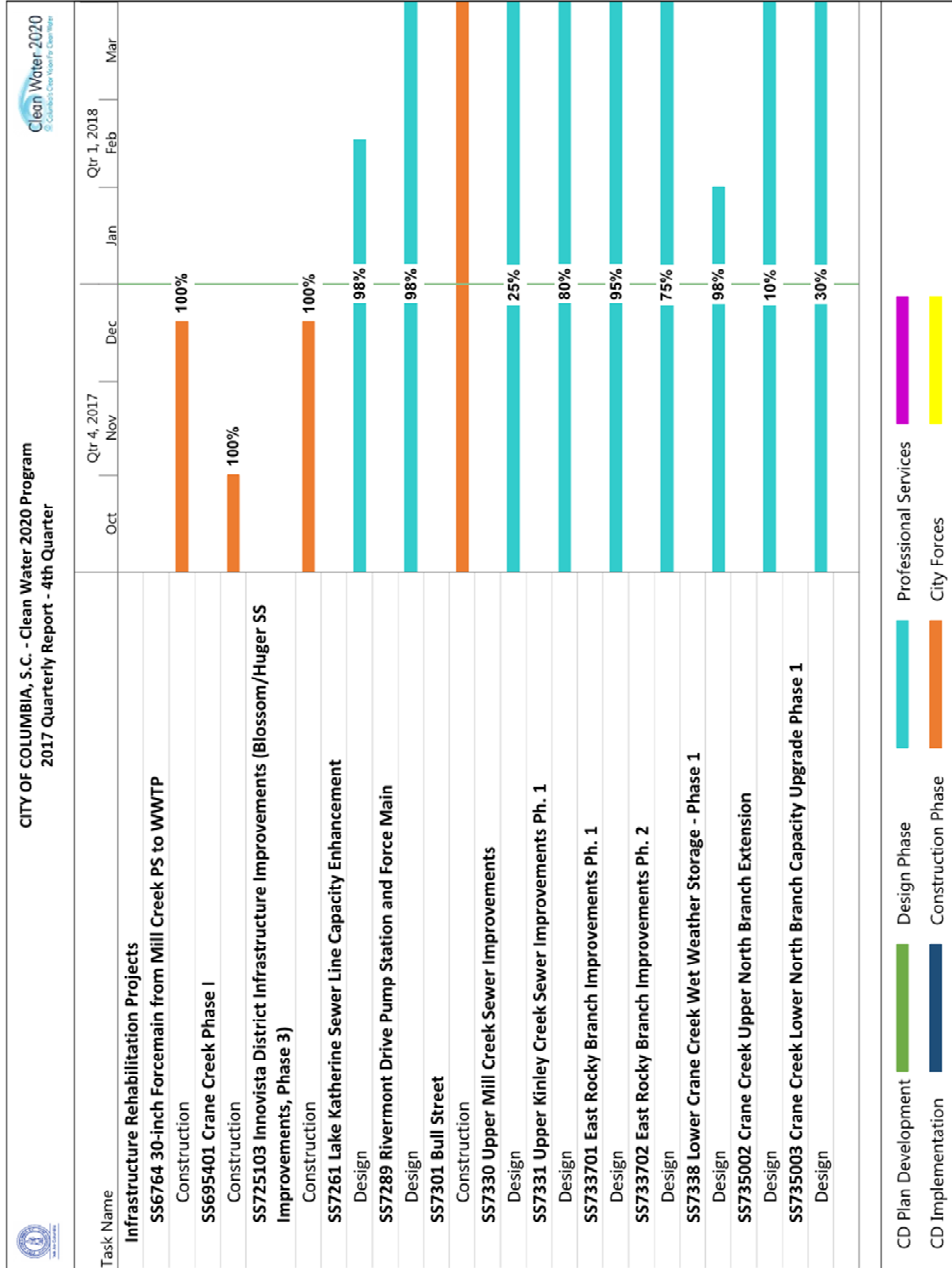
This section addresses the requirements of Section IX.39.a.(ii) of the Consent Decree and provides a tabular listing of sanitary sewer overflows (SSOs). The table includes the date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise resolve the cause of all SSOs that occurred during the most recently completed calendar quarter.

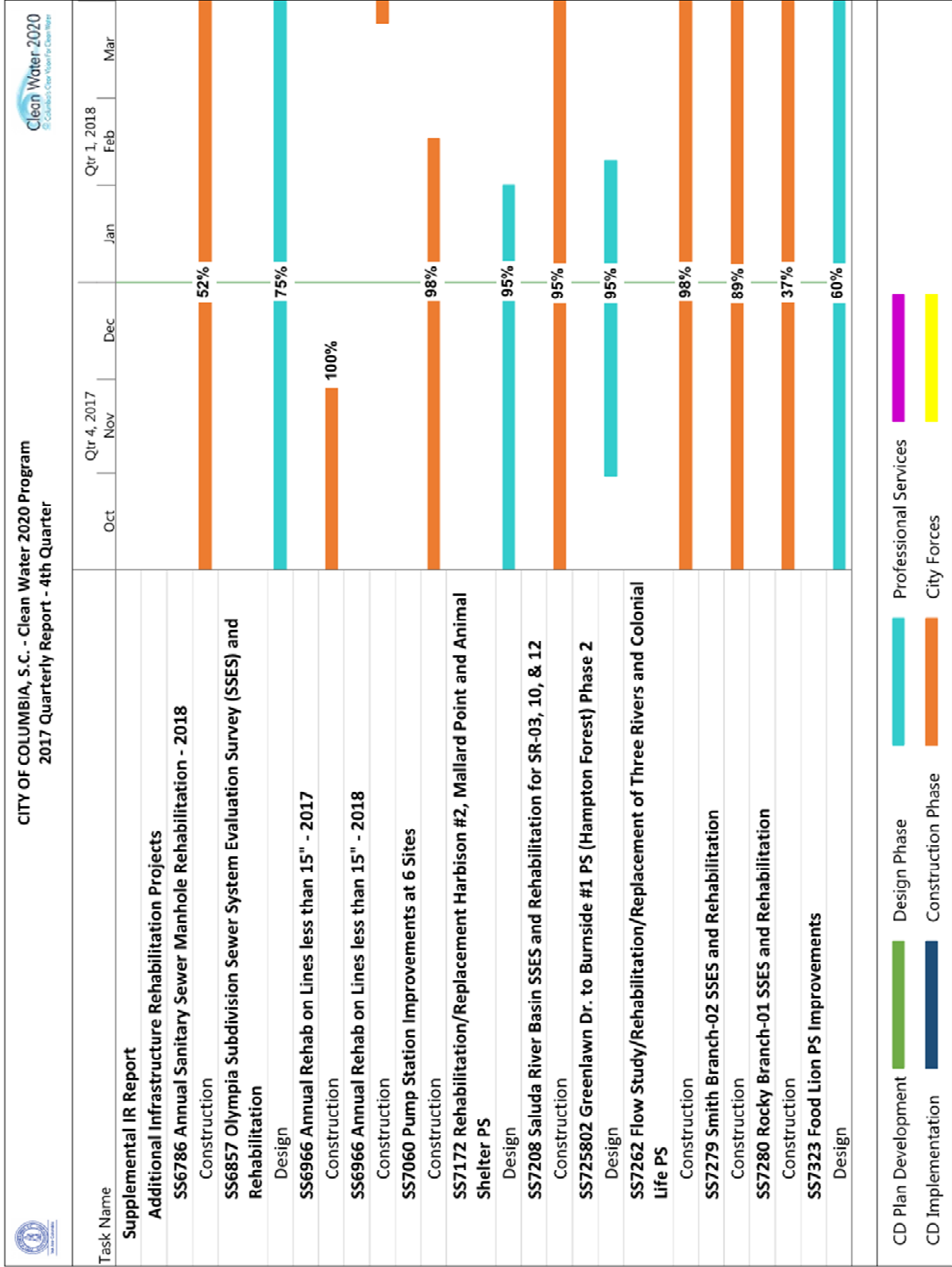
Section 5 – SEP Water Quality Monitoring Results

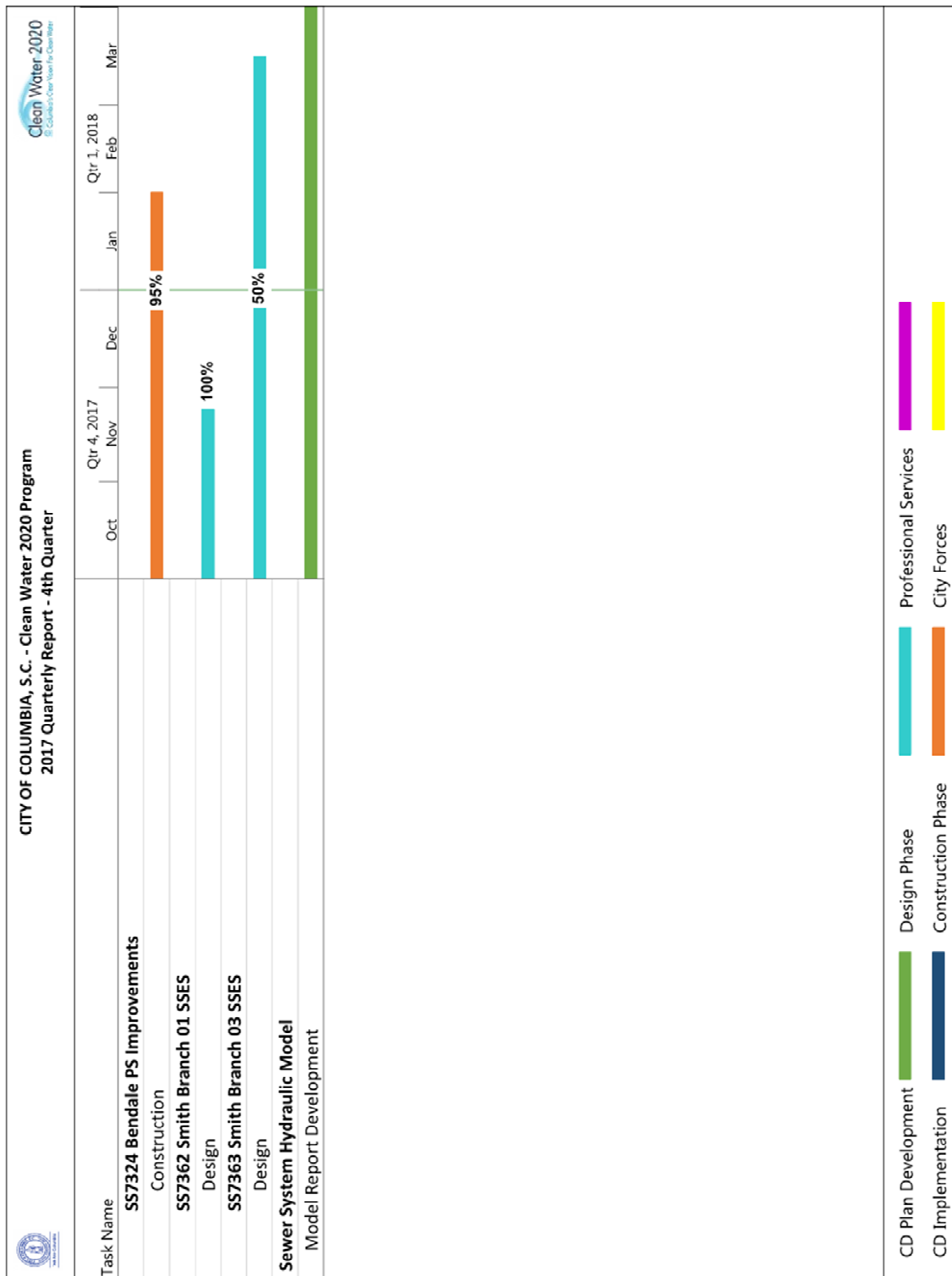
This section addresses the requirements of Section IX.39.a.(v) of the Consent Decree and provides the results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the CD.

Section 2 Schedule of Projects and Activities









Section 3 Additional Information Demonstrating Implementation of Consent Decree Requirements

In accordance with Section IX.39.a.(iv) of the CD, the following section provides additional information that demonstrates that the City is implementing the remedial measures required in the CD.

3.1 WWTP Programs

In accordance with Section V.11 of the CD, the City is developing and implementing specific Wastewater Treatment Plant (WWTP) programs. The Program elements addressed in this section provide information regarding activities involving the Metro WWTP.

3.1.1 Maintenance Management System (MMS)

The MMS was submitted to EPA and SCDHEC on May 18, 2015. The City received final approval of the MMS from EPA and SCDHEC on September 2, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Cityworks Testing & Implementation – 95% Complete
- Summary Reports Generation, Equipment Failures for Prior Month – 50% Complete
- Summary Reports Generation, Outstanding Work Orders for Prior Month – 50% Complete

3.1.2 WWTP Operations Program

The WWTP Operations Program was submitted to EPA and SCDHEC on January 4, 2016. The City received final approval of the WWTP Operations Program from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Written procedures describing the various operational controls at the WWTP – 100% Complete

As of November 20, 2017, all implementation items associated with the WWTP Operations Program have been completed.

3.1.3 WWTP Training Program

The WWTP Training Program was submitted to EPA and SCDHEC on May 20, 2016. The City received final approval of the WWTP Training Program from EPA and SCDHEC on November 20, 2017.

The activities completed or in progress during the current reporting period are as follows:

- Develop CMMS SOP – 100% Complete
- Develop SOP and Training Program for Inventory Management – 100% Complete
- Develop SOP for Emergency Power Coordination – 100% Complete

As of December 1, 2017, all implementation items associated with the WWTP Training Program have been completed.

3.2 MOM Programs

In accordance with Section V.12 of the CD, the City is developing and implementing specific Management, Operations, and Maintenance (MOM) programs. The Program elements addressed in this section provide information regarding activities involving the Metro WWTP as well as the City's Wastewater Collection and Transmission System (WCTS).

3.2.1 WCTS Training Program

The WCTS Training Program was submitted to EPA and SCDHEC on January 4, 2016. The City received final approval of the WCTS Training Program from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Plant Maintenance Technologist Apprentice Program (PMTAP) – 100% Complete

As of November 20, 2017, all implementation items associated with the WCTS Training Program have been completed.

3.2.2 Information Management System (IMS) Program

The IMS Program was submitted to EPA and SCDHEC on January 4, 2016. The City received final approval of the IMS Program from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Storeroom Component of Cityworks – 85% Complete
- Sewer Mapping Program – 68% Complete

3.2.3 Sewer Mapping Program

In accordance with the requirements of the CD, the City was to develop and submit 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 continues to complete the electronic mapping of each Sewer Basin in accordance with the approved SMP implementation plan. 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

3.2.4 Transmission System Operations and Maintenance Program (TSOMP)

The TSOMP was submitted to EPA and SCDHEC on May 18, 2015. The City received final approval of the TSOMP from EPA and SCDHEC on September 2, 2016.

The activities completed or in progress during the current reporting period are as follows:

- SCADA System Enhancements – 50% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 20% Complete
- Corrosion Control – 6% Complete

3.2.5 Gravity Sewer System Operation and Maintenance Program (GSOMP)

The GSOMP was submitted to EPA and SCDHEC on November 20, 2015. The City received final approval of the GSOMP from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Gravity Line Preventive Maintenance Plan (GLPMP) – 30% Complete
- Evaluation of potential sulfide and corrosion control of the WCTS – 6% Complete
- Inspection and evaluation of crossings and stream bank encroachment areas with a higher likelihood of SSOs – 10% Complete
- Gravity Sewer Easement survey and marking and initial clearing to survey the limits, where practical – 20% Complete

3.2.6 Financial Analysis Program

The Financial Analysis Program was submitted to EPA and SCDHEC on January 4, 2016. The City received final approval of the FAP from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Capital Improvement Financing Program – 50% Complete

3.3 Continuing Sewer Assessment Program (CSAP) for the WCTS

The CSAP was submitted to EPA and SCDHEC on June 9, 2015. The City received final approval of the CSAP from EPA and SCDHEC on May 23, 2016.

The activities under the Major Components of the CSAP completed or in progress during the current reporting period are as follows:

- Major Gravity Sewer Video Inspection or Multi-Sensor Inspection – 55% Complete
- Major Manhole Inspection – 80% Complete
- Major Pump Stations Condition Assessment – 55% Complete
- Major Force Mains Field Assessment – 55% Complete

The activities under the Minor Components of the CSAP completed or in progress during the current reporting period are as follows:

- Initial Minor Gravity Sewer and Manholes Desktop Condition Assessment/Prioritization – 64% Complete
- Minor Gravity Sewer and Manholes Condition Assessment – 27% Complete
- Minor Pump Stations Condition Assessment – 27% Complete
- Minor Force Mains Field Assessment – 27% Complete

3.4 Infrastructure Rehabilitation Report (IRR) for the WCTS

In accordance with Section V.16 of the CD, the City shall submit an Infrastructure Rehabilitation Report (IRR) summarizing the results of the CSAP of the major components of the WCTS and a description of proposed rehabilitation projects. The IRR is to be submitted within six months after the City has assessed the major components of the WCTS once pursuant to the CSAP. As rehabilitation projects are identified through the assessments described in Section 3.4 and in the normal course of operations and maintenance, the City is proceeding with design and construction of those projects. Completion percentages of projects currently in progress are as follows:

- SS6764 30" Forcemain from Mill Creek PS to WWTP – Construction 100% Complete
- SS695401 Crane Creek Phase I – Construction 100% Complete
- SS725103 Innovista District Infrastructure Improvements – Construction 100% Complete

- SS7261 Lake Katherine Sewer Line Capacity Enhancement – Design 98% Complete
- SS7289 Rivermont Drive Pump Station and Force Main – Design 98% Complete
- SS7301 Bull Street – Construction in Progress; a completion percentage cannot be provided due to a varying scope of work and timeline for this project.
- SS7330 Upper Mill Creek Sewer Improvements – Design 25% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Ph. 1 – Design 80% Complete
- SS733701 East Rocky Branch Improvements Ph. 1 – Design 95% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 75% Complete
- SS7338 Lower Crane Creek Wet Weather Storage - Phase 1 – Design 98% Complete
- SS735002 Crane Creek Upper North Branch Extension – Design 10% Complete
- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 30% Complete

In accordance with Section V.16.c of the CD, the City shall submit a Supplemental Infrastructure Rehabilitation Report (SIRR) 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. The SIRR is to be submitted within six months after the City has assessed the remainder of the entire WCTS pursuant to the CSAP. As rehabilitation projects are identified through the assessments described in Section 3.4 and in the normal course of operations and maintenance, the City is proceeding with design and construction of those projects. Completion percentages of projects currently in progress are as follows:

- SS6786 Annual Sanitary Sewer Manhole Rehabilitation – 2018 Construction 52% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation – Design 75% Complete
- SS6966 Annual Rehab on Lines less than 15” – 2017 Construction 100% Complete, 2018 Construction 0% Complete
- SS7060 Pump Station Improvements at 6 Sites – Construction 98% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Design 95% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 95% Complete
- SS725802 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) Phase 2 – Design 95% Complete
- SS7262 Flow Study/Rehabilitation/Replacement of Three Rivers and Colonial Life PS – Construction 98% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Construction 89% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 37% Complete
- SS7323 Food Lion PS Improvements – Design 60% Complete
- SS7324 Bendale PS Improvements – Construction 95% Complete
- SS7362 Smith Branch 01 SSES – Design 100% Complete
- SS7363 Smith Branch 03 SSES – Design 50% Complete

3.5 Supplemental Environmental Project

In accordance with Section VIII and Appendix I of the CD, the City will perform a Supplemental Environmental Project (SEP). Within three years of the effective date of the CD, the City was to submit to EPA preliminary reports on the condition of Rocky Branch, Smith Branch, and Gills Creek and plans for Phase II for each of the SEP watersheds. On March 24, 2016, the City submitted a supplemental report related to the October 4, 2015 *force majeure* event and requested an additional six months to November 21, 2017 to complete the submittal of the preliminary reports and plans for improving the SEP areas. This request was granted by EPA. The SEP Preliminary Report and Phase II plan for Rocky Branch, Smith Branch, and Gills Creek was submitted to EPA on June 14, 2017.

The activities completed or in progress during the current reporting period are as follows:

- Bid opening for the Rocky Branch project was on December 12, and recommendation for acceptance of the low responsive bid has been made. The project will be placed on Council agenda in the near future for approval. Since the St. Patrick's Day festivities take place at MLK park (the site of the project) on March 17, groundbreaking is likely to be scheduled for late March or early April.
- Sediment and debris removal has taken place within the waterways in the Smith Branch watershed. Evaluation is underway to determine additional activities that may be planned to supplement the previously-completed work.
- The City and Gills Creek Watershed Association (GCWA) have agreed on an approach for completion of the stream cleanup. Staff turnover in GCWA has caused a slight delay in project execution, but adjustments have been made, and the project continues to move forward.

Section 4 Quarterly SSO Report

In accordance with Section IX.39.a.(ii) of the CD, the City is to provide a list of all SSOs that occurred during the reporting period in a tabular format along with information on the date, time, location, source, duration, estimated volume, receiving water, cause, and actions taken to resolve the SSO.

Table 1 - SSO Report, 4th Quarter 2017

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
10/1/2017	18:15	17 Tawny Branch Ct, Columbia, SC 29212	Cleanout	10/2/2017	08:30	600	Storm Drain Ditch	Roots	Washed Mainline 80 Feet To Resume Normal Flow. Root Cut Removing Roots From Mainline. Mainline Repair Is Scheduled.
10/2/2017	17:45	4413 Hawthorne Ave, Columbia, SC 29203	Cleanout	10/3/2017	09:30	1		Debris	Service Line Was Washed 15 Ft To Resume Normal Flow. Service Line Was Re-Televised 32 Ft, The Line Is Clear And In Good Condition.
10/3/2017	11:00	1820 Wayne St, Columbia, SC 29201	Cleanout	10/3/2017	11:00	10		Equipment Failure	Service Line Washed 40 Ft To Resume Normal Flow. Blockage On City Side, Washed From City Clean Out 40 Ft To Remove Blockage.
10/3/2017	17:17	1101 Peachwood Dr, Columbia, SC 29203	Manhole	10/3/2017	17:42	50	Unnamed Tributary To Crane Creek	Roots	Mainline Was Washed 75 Ft To Resume Normal Flow. Mainline Washed 104 Ft, Manhole To Manhole. Used Terminator Nozzle To Remove Roots.
10/7/2017	11:15	1912 Kathleen Dr, Columbia, SC 29210	Cleanout	10/7/2017	13:15	63		Roots	Washed Service Line 75 Ft From Homeowner Cleanout & Mainline 200 Ft To Resume Normal Flow. Blockage On City Side Of Service Line. Installed City Clean Out & Renewed Service Line To The Mainline.
10/14/2017	13:00	343 Wycombe Rd, Columbia, SC 29212	Cleanout	10/14/2017	14:03	126		Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 389 Feet To Remove Stoppage.
10/15/2017	13:40	1356 Country Squire Dr, Columbia, SC 29212	Cleanout	10/20/2017	13:00	13		Equipment Failure	The City's Service Line Was Washed 25 Ft To Resume Normal Flow. City Clean Out Was Repaired.
10/15/2017	16:43	2350 Rolling Hills Rd, Columbia, SC 29210	Cleanout	TBD		23		Collapsed Line	The Mainline Was Washed 400 Ft To Resume Normal Flow. Televised Mainline 155.6 Ft, Offset Joint And Belly. Repair To Be Determined.
10/16/2017	15:20	4800 Ridgewood Ave, Columbia, SC 29203	Cleanout	10/17/2017	11:00	45		Roots	The Service Line Was Washed 30 Ft To Resume Normal Flow. The Service Line Was Repaired To Remove Roots.
10/17/2017	12:47	611 Park St, Columbia, SC 29201	Manhole	10/17/2017	13:00	13		Debris	Removed Stoppage To Resume Normal Flow. Washed Mainline 450 Feet To Remove Stoppage.
10/19/2017	14:00	4835 Portobello Ct, Columbia, SC 29206	Manhole	10/19/2017	14:45	225	Pen Branch	Collapsed Line	Washed Mainline And Removed Stoppage To Resume Normal Flow. Washed Mainline 1472 Feet, Followed Blockage Downstream, Broke Blockage Up With Jetter Head. Will Be Setup On Preventive Maintenance.
10/21/2017	10:14	7101 Gavilan Ave, Columbia, SC 29203	Cleanout	TBD		1,400	Storm Drain	Collapsed Line	The Mainline Was Washed 45 Ft To Resume Normal Flow. The Mainline Was Washed & Degreased. Will Be Setup On Preventive Maintenance.
10/22/2017	17:46	506 Stamford Bridge Rd, Columbia, SC 29212	Manhole	10/22/2017	18:39	1,300	Rawls Creek	Roots	Washed Mainline And Removed Stoppage To Resume Normal Flow. Washed Mainline 400 Feet To Remove Stoppage.
10/23/2017	10:40	918 S Bonham Rd, Columbia, SC 29205	Manhole	UNKNOWN		350		Roots	The Mainline Was Washed 450 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
10/24/2017	14:00	31 Bendale Ct, Columbia, SC 29203	Force Main	10/24/2017	17:00	1		Force Main	Turned Pump Off That Was Spraying Sewer Through Lift Station Lid. Patched Hole In The Lid Of Lift Station.
10/24/2017	11:00	4412 & 4411 Palmetto Ave, Columbia, SC 29203	Manhole	10/24/2017	11:30	390		Collapsed Line	Removed Stoppage To Resume Normal Flow. Washed 150 Feet To Clear Line, Washed Upstream 100 Feet.
10/25/2017	07:45	3900 Bentley Dr, Columbia, SC 29210	Manhole	10/25/2017	08:50	300	Tributary To Broad River	3rd Party Responsibility	Installed New Plug To Stop The Spill.

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City of Columbia, SC Quarterly SSO Listing 4th Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
10/28/2017	10:50	1227 Barnwell St, Columbia, SC 29201	Manhole	TBD		100		Roots	The Mainline Was Washed 25 Ft To Remove Stoppage And Resume Normal Flow. Mainline Repair To Be Scheduled.
10/28/2017	17:10	7111 Gavilan Ave, Columbia, SC 29203	Manhole	10/31/2017	13:46	900	Unnamed Storm Drain	Debris	The Mainline Was Washed 50 Ft To Resume Normal Flow. The Mainline Was Televised 54.5 Ft, No Problems Were Found With The Line.
10/29/2017	21:10	204 Braewick Rd, Columbia, SC 29212	Cleanout	TBD		150		Collapsed Line	Washed Mainlines 125 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
10/30/2017	13:05	1234 Universal Dr, Columbia, SC 29209	Manhole	10/30/2017	13:05	750	Storm Drain	Grease	Washed Mainline 150 Feet To Remove Stoppage To Resume Normal Flow. Washed Main Line 150 Feet And Applied Degreaser.
10/31/2017	14:45	1227 Barnwell St, Columbia, SC 29201	Manhole	10/31/2017	14:45	60		Roots	Washed Mainline 40 Ft To Remove Stoppage And Resume Normal Flow. Mainline Repair To Be Scheduled.
10/31/2017	20:18	204 Braewick Rd, Columbia, SC 29212	Cleanout	TBD		45		Collapsed Line	Washed Service Line 60 Feet To Resume Normal Flow. Mainline Repair Is Scheduled.
11/2/2017	14:40	7648 Garners Ferry Rd, Columbia, SC 29209	Manhole	11/6/2017	08:00	365	Unnamed Tributary To Reeder Point Branch	Collapsed Line	Removed Stoppage, Washed Main Line 160 Feet To Resume Normal Flow. Main Line Repair Scheduled.
11/3/2017	12:50	707 Pavillion Ave, Columbia, SC 29205	Cleanout	11/8/2017	14:22	60	Rocky Branch	Collapsed Line	Emergency Service Line Repair. Installed Service Line Clean Out And Tap Renewal. The Service Line Was Collapsed Across The Street, And Not Tied To The Mainline.
11/5/2017	13:40	401 Columbiana Dr, Columbia, SC 29212	Cleanout	11/7/2017	14:05	20		Grease	The Mainline Was Washed 130 Ft To Resume Normal Flow. The Mainline Was Televised 124 Ft. No Problems Were Found.
11/12/2017	17:15	100 Lorick Cir, Res 12E, Columbia, SC 29203	Manhole	11/12/2017	19:00	1,827	Storm Drain In Parking To Smith Branch	Debris	Removed Stoppage To Resume Normal Flow. Washed Line From The Nearest Downstream Manhole.
11/12/2017	12:40	607 Shadowbrook Dr, Columbia, SC 29210	Cleanout	11/13/2017	14:00	52		Roots	Washed Service Line 5 Ft To Resume Normal Flow. Service Line Repair & Tap Renewal.
11/16/2017	12:00	11 Downing St, Columbia, SC 29209	Cleanout	TBD		7		Collapsed Line	Service Line Washed 45 Feet. Broken Pipe At 4 Feet Marked For Service Line Repair.
11/19/2017	11:06	804 Woodland Dr, Columbia, SC 29205	Manhole	11/19/2017	11:48	210	Storm Drain	Collapsed Line	Removed Mainline Blockage With Rod To Resume Normal Flow. Loss Of Grade In Line Caused Build Up.
11/20/2017	09:51	8 Larry Ct, Columbia, SC 29203	Cleanout	11/20/2017	13:25	10	Ditch To Unnamed Tributary	Collapsed Line	Repaired Service Line. Flush Creek And Repaired Service Line.
11/23/2017	11:57	533 N Pines Rd, Blythewood, SC 29016	Manhole	11/23/2017	00:45	960		Debris	Removed Stoppage To Resume Normal Flow. Washed Main Line 100 Feet.
11/23/2017	18:43	2405 Cardington Dr, Columbia, SC 29209	Manhole	11/23/2017	22:00	6,085		Collapsed Line	Removed Stoppage To Resume Normal Flow. Wash Mainline.
11/28/2017	12:25	2972 S Partridge Cir, Hopkins, SC 29061	Manhole	11/28/2017	12:25	100	Goose Branch	Collapsed Line	Washed Main Line 300 Feet To Resume Normal Flow. Removed Stoppage. Flushed Creek And Recovered Spill Water.
12/2/2017	09:00	4233 Melbourne Dr, Columbia, SC 29203	Cleanout	12/2/2017	10:00	60		Roots	Removed Stoppage To Resume Normal Flow. Washed 120 Feet To Remove Blockage From Cleanout To Manhole.
12/2/2017	15:00	81 & 92 Windward Way, Columbia, SC 29212	Cleanout	12/2/2017	16:00	60		Roots	Removed Blockage To Resume Normal Flow. Washed 80 Feet, Stoppage Removed.
12/2/2017	15:30	800 Kingsbridge Rd, Columbia, SC 29210	Cleanout	TBD		42		Collapsed Line	Washed 60 Feet. Removed Stoppage To Resume Normal Flow. Service Line Repair.
12/3/2017	10:00	5618 Colonial Dr, Columbia, SC 29203	Cleanout	TBD		3		Collapsed Line	Washed Service Line 20 Feet To Remove Stoppage To Resume Normal Flow. Service Line Repair, Broken Pipe.
12/4/2017	12:25	2405 Duncan St, Columbia, SC 29205	Cleanout	UNKNOWN		20		Roots	Washed Service Line 10 Feet Followed By Root Cut To Resume Normal Flow. Emergency Repair.
12/7/2017	09:30	51 Meadowlake Dr, Columbia, SC 29203	Manhole	12/7/2017	10:30	440	Tributary To Crane Creek	Collapsed Line	Washed Main Line 250 Feet To Resume Normal Flow. Washed Mainline 250 Ft And Removed Stoppage, Raked Up Solids, Spread Lime.

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
12/16/2017	17:12	654 Old Friars Rd, Columbia, SC, 29210	Cleanout	12/16/2017	18:00	5		Debris	Washed Service Line 20 Ft From City's Clean Out To Resume Normal Flow. The Service Line Was Televised 37 Ft From City's Clean Out. No Problems Found. The Service Line Is In Good Condition.
12/16/2017	18:10	313 Saint Albans Rd, Irmo, SC 29063	Manhole	12/16/2017	18:53	215		Roots	The Mainline Was Washed 490 Feet To Resume Normal Flow. Mainline CCTV, Found Roots At 87 Ft. The Mainline Was Washed To Remove Roots.
12/16/2017	21:20	218 Saddletrail Rd, Columbia, SC 29203	Cleanout	TBD		38		Collapsed Line	The Mainline Was Washed 260 Feet And Service Line 55 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled - Broken Pipe At Tap.
12/17/2017	10:30	1108 Peachwood Dr, Columbia, SC 29203	Cleanout	12/17/2017	10:37	7		Debris	Washed Service Line 35 Feet To Resume Normal Flow. Removed Stoppage, Raked Up Solids And Spread Lime.
12/19/2017	15:07	1902 Liberty St, Columbia, SC 29203	Cleanout	12/21/2017	14:00	42		Collapsed Line	The Service Line Was Washed 30 Ft To Resume Normal Flow. Tap Renewed To Mainline.
12/21/2017	10:45	108 N Shorecrest Rd, Columbia, SC 20209	Cleanout	12/21/2017	11:15	100		Grease	The Service Line Was Washed 70 Feet To Resume Normal Flow. Televised Service Line From Clean Out To Mainline 70 Ft, All Is Clear.
12/24/2017	19:00	430 Stamford Bridge Rd, Columbia, SC 29212	Cleanout	12/24/2017	12:00	40		Grease	Washed Main Line 200 Feet And Washed Service Line 70 Feet To Resume Normal Flow. Removed Stoppage And Spread Lime Over Area.
12/25/2017	18:00	1411 Cedar Ter, Columbia, SC 29209	Manhole	TBD		1,100		Roots	Washed Main Line 220 Feet To Resume Normal Flow. Main Line Repair.
12/28/2017	08:58	1201 Bailey St, Columbia, SC 29203	Manhole	12/29/2017	11:08	24		Roots	Washed Main Line 100 Feet. Washed, Terminated And Degreased Main Line 480 Ft To Remove Roots.

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 listing provided in Table 1 above, the following table identifies building backups within the City's system for the current reporting period.

Table 2 - Building Backup Report, 4th Quarter 2017

City of Columbia, SC Quarterly Building Backup Listing 4th Quarter 2017									
Date	Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
12/8/2017	05:15	717 Charlot Way, Hopkins, SC 29061	Inside Property	12/9/2017	16:00	2		Collapsed Line	Washed Service Line To Resume Normal Flow. Service Line Repair.
12/17/2017	11:30	3005 Devine St, Columbia, SC 29205	Inside Property	12/18/2017	09:00	40		Roots	Washed Mainline 200 Ft, Saw (Root) From Manhole, Vacuum Manhole Of Debris. Removed Stoppage & Removed Roots.
12/19/2017	14:15	105 Leslie Loch Ln, Columbia, SC 29212	Inside Property	12/19/2017	14:15	10		Grease	The Service Line Was Washed 60 Ft To Resume Normal Flow. The Service Line Was Washed To Remove Stoppage.
12/20/2017	16:30	1600 Brunswick Dr, Columbia, SC 29203	Inside Property	12/21/2017	12:00	4		Collapsed Line	The Service Line Was Washed 10 Feet From Manhole To Resume Normal Flow. Tap Renewal.

Section 5 SEP Water Quality Monitoring Results

In accordance with Section IX.39.a.(v) of the CD, the following section provides a summary of the results of water quality monitoring conducted during the previous calendar quarter as part of the Supplemental Environmental Project (SEP) described in Appendix I of the CD.

5.1 Sampling Conducted and Results

As a part of the SEP requirements established in Section VIII and Appendix I of the CD, the City is to conduct water quality monitoring at three locations to assist in evaluation of the environmental benefits of the SEP in improving water quality in Smith Branch and Gill's Creek. The City is to implement a program for ambient monitoring of dissolved oxygen (DO), total suspended solids (TSS), temperature, and E. coli at the following monitoring sites:

- Gill's Creek at Garner's Ferry Road
- Smith Branch at North Main Street
- Gill's Creek at Bluff Road

In accordance with the requirements of the CD, the City was to submit a Quality Assurance Project Plan (QAPP) to SCDHEC within 60 days of the date of entry of the CD. The City originally submitted the QAPP to SCDHEC on July 18, 2014 in advance of the deliverable deadline. The City subsequently received comments from SCDHEC and resubmitted the QAPP to SCDHEC on January 13, 2015. The City received final approval of the QAPP from EPA and SCDHEC on January 15, 2016. The QAPP was revised and resubmitted to SCDHEC on May 31, 2017 to reflect a change in City personnel. The City will monitor quarterly for the first three years under the CD and monthly (or every other month at the Gills Creek at Bluff Road site) from years four through six under the CD.

Water quality monitoring for 2017 Q4 was completed on October 30, 2017. Monitoring results are provided below for the following samples:

- C-001: Gill's Creek at Garner's Ferry Road
- B-280: Smith Branch at North Main Street
- C-017: Gill's Creek at Bluff Road

City Of Columbia Quality Assurance Project Plan (QAPP) Data
Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 10/30/2017

The undersigned verifies the data in the above referenced report, per the QAPP requirements.



Ralana Wilson/QA Manager

10/31/17

Date

The undersigned validates the data in the above referenced report, per the QAPP requirements.



Michael Jaspers/Project Validator

10/31/17

Date



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

10.30.17

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager

bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
 25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com



Report of Analysis

Lab ID #: 07126-001

Project: WATER QUALITY MONITORING

Sample Name: C-017

Matrix: Waste Water

Collected: 10/24/2017 @ 13:00

Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	5.59	None	mg/L	SM 4500-O G-2011		10/24/2017 13:00	JRS
E. Coli (MPN)	2419.6	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	19.6	None	oC	SM 2550B-2010		10/24/2017 13:00	JRS
TSS	22.4	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA



ACCESS
ANALYTICAL, INC.

Report of Analysis

Lab ID #: 07126-002

Project: WATER QUALITY MONITORING

Sample Name: C-001

Matrix: Waste Water

Collected: 10/24/2017 @ 13:31

Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.61	None	mg/L	SM 4500-O G-2011		10/24/2017 13:31	JRS
E. Coli (MPN)	770.1	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	21.1	None	oC	SM 2550B-2010		10/24/2017 13:31	JRS
TSS	14.8	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA



Report of Analysis

Lab ID #: 07126-003

Project: WATER QUALITY MONITORING

Sample Name: B-280

Matrix: Waste Water

Collected: 10/24/2017 @ 14:04

Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.60	None	mg/L	SM 4500-O G-2011		10/24/2017 14:04	JRS
E. Coli (MPN)	1732.9	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	21.2	None	oC	SM 2550B-2010		10/24/2017 14:04	JRS
TSS	23.6	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA



Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.



ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES



Chain of Custody

Chain of Custody Record

Access Analytical, Inc. - Irmo
 15 Thames Valley Rd. - Irmo, SC 29053
 Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.access-sc.com
 SCDHEC Lab Certification # 23571

Client: City of Columbia
Attn: Mike Jaspers
Address: 1136 Washington Street
City: Columbia **State:** SC **Zip Code:** 29201

Phone: 803-545-0076
Email: mjjaspers@columbiasc.net
Project Name: Water Quality Monitoring

Sampled By (Signature): *[Signature]*

Lab ID	Sample Name	Date Collected	Time Collected	Matrix (one per container)	Grab (Composite)	Program Area (see code)	Total # Containers
001	C-017	10-24-17	1300	WW	G	CWA	2
002	C-001	"	1331	WW	G	CWA	2
003	B-280	"	1404	WW	G	CWA	2

Requested Lab Analysis:
 TSS, F: Coll, DO, Temperature

Notes / Comments:
 DO (mg/L) = 5.59 Temperature (°C) = 14.6
 DO (mg/L) = 6.61 Temperature (°C) = 21.1
 DO (mg/L) = 7.66 Temperature (°C) = 21.2

***Preservative Codes:** B = None, 1 = HCl, 2 = HNO₃, 3 = H₂SO₄, 4 = NaOH, 5 = Na₂SO₄, 6 = Method 5035 set w/ NaHSO₃ & CH₃OH, 7 = NaOH/zinc, 8 = H₂PO₄, 9 = cooled to 5°C, 10 = cooled to 310°C, 11 = AmmCl, 12 = Ascorbic Acid/HCL, 13 = EDTA
***Matrix Codes:** GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)
***Program Area Codes:** CWA - Water Act (for wastewaters), SDWA - Safe Drinking Water Act (for drinking water), SW - Solid and Hazardous Wastes (for soils, ground waters and waste samples)
***Container Type:** G = Glass, P = Plastic

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C) = _____
Meter Reading After: _____
Meter Reading Before: _____
Difference: _____

Turnaround Time Requested: Standard
 Rush
 Date Required

Project Location: SC, NC, Other (Specify)

Relinquished By: _____
Received By: _____
Date: _____
Time (24hr): _____
Samples Received on ice: _____

Chain of Custody Page _____ **of** _____
Received in lab by: *[Signature]*
Sample Temp. Upon Receipt in Lab: 6.3 (°C)

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.