Clean Water 2020 Program

CONSENT DECREE
QUARTERLY REPORT

July 1, 2018 – September 30, 2018

We Are Columbia

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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.

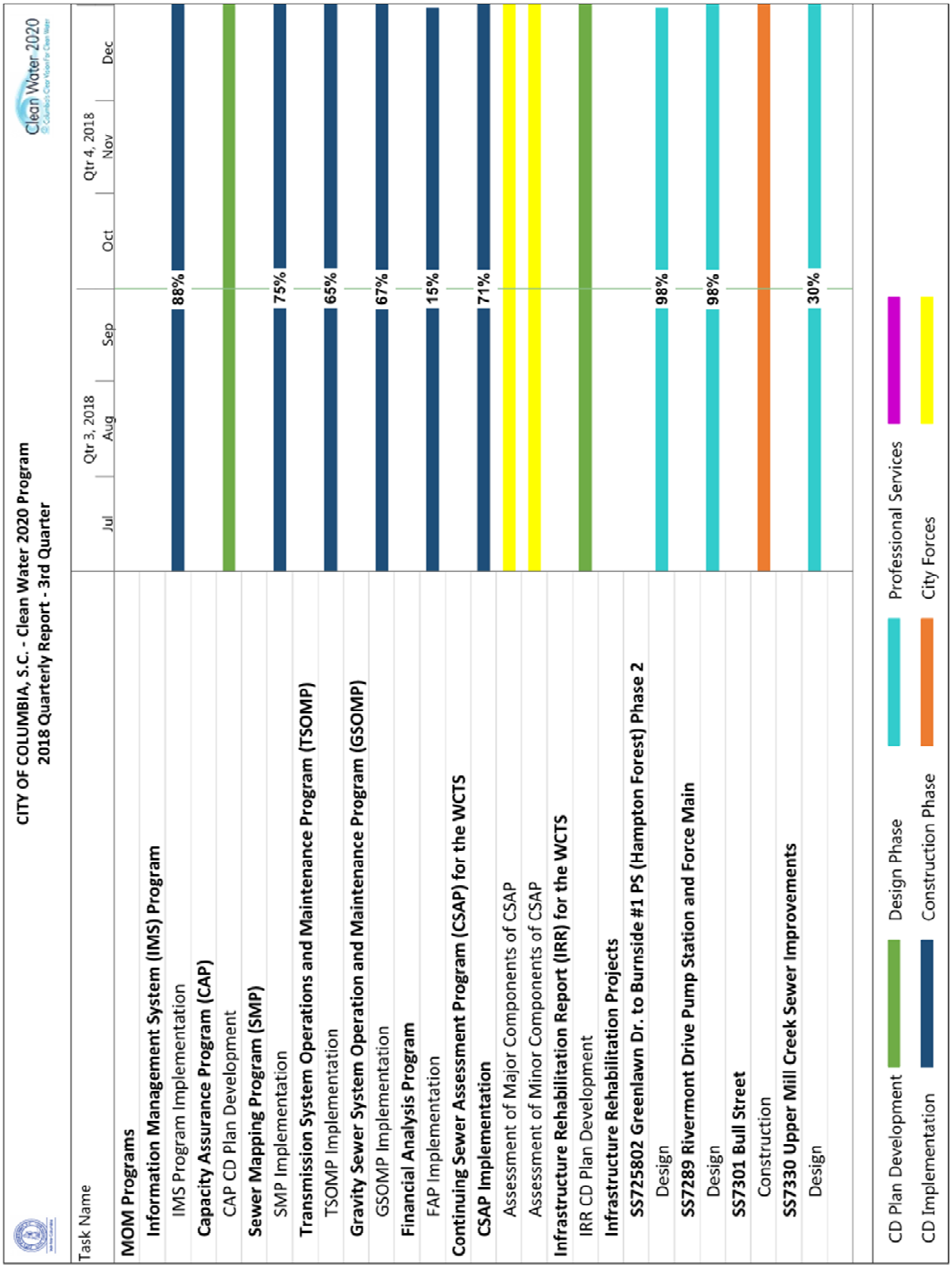
Section 4 – Quarterly SSO Report

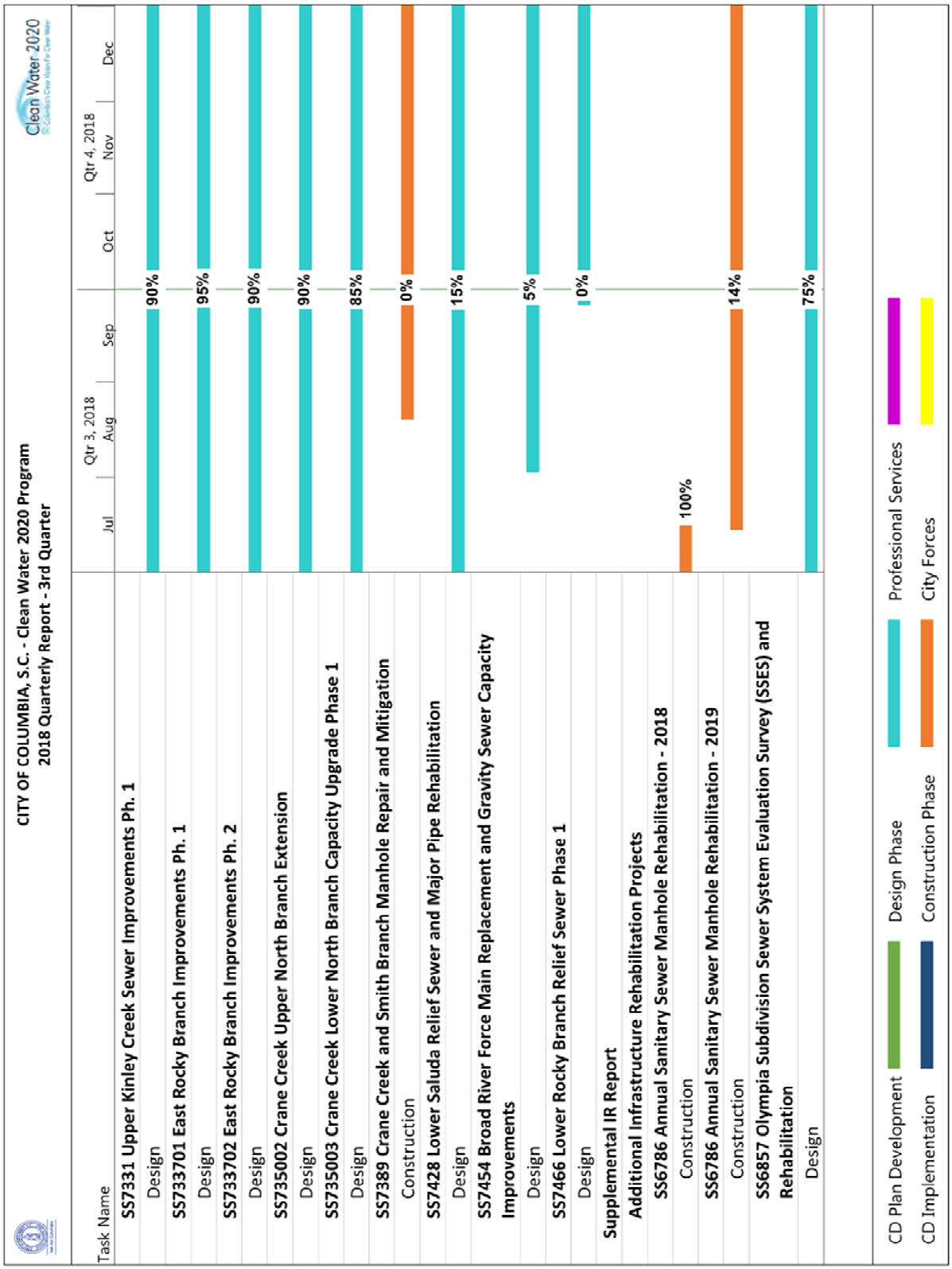
This section addresses the requirements of Section IX.39.a.(ii) of the Consent Decree and provides a tabular listing of sanitary sewer overflows (SSOs). The table includes the date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise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

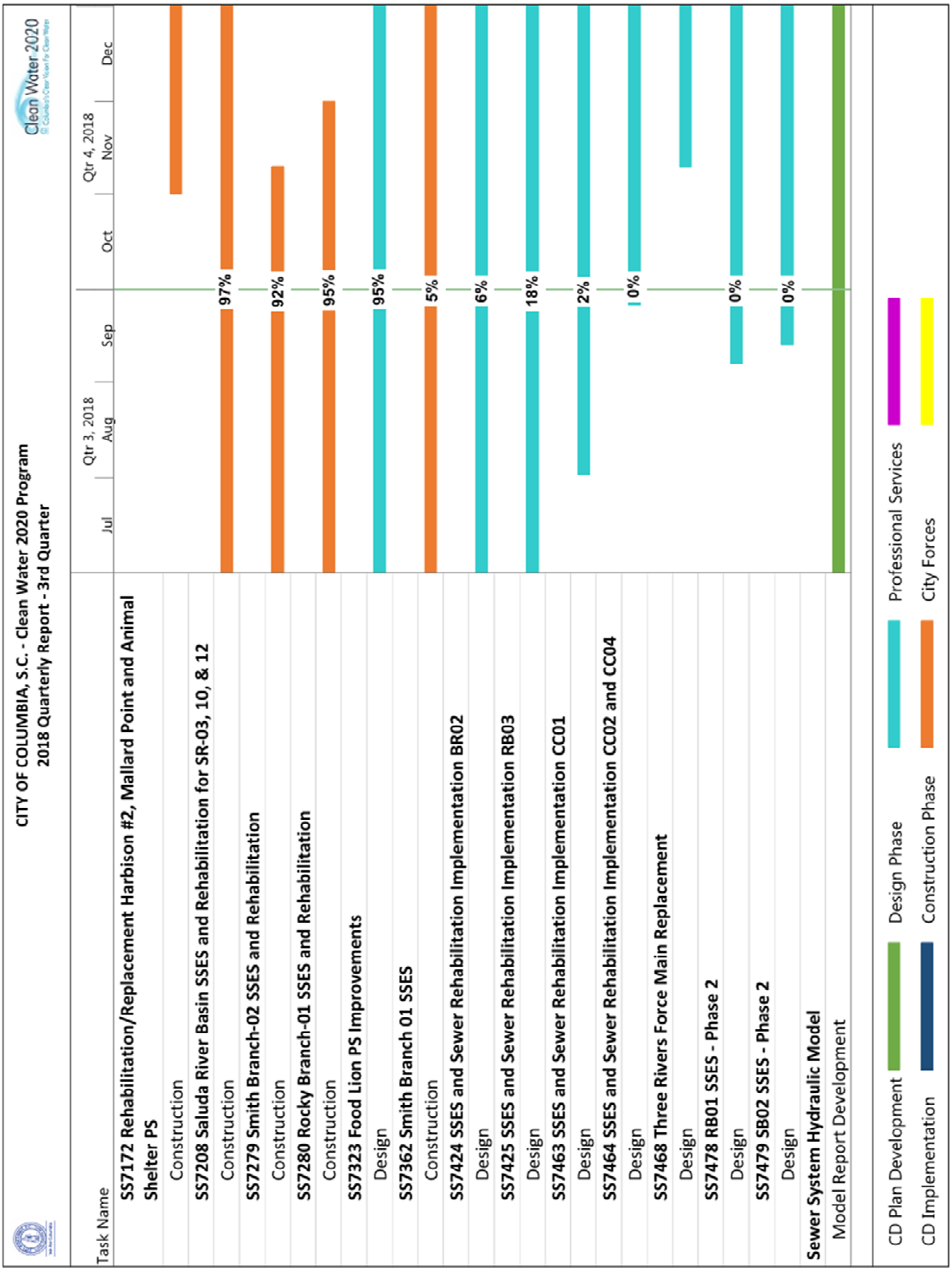
Section 5 – SEP Water Quality Monitoring Results

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




CITY OF COLUMBIA, S.C. - Clean Water 2020 Program
2018 Quarterly Report - 3rd Quarter
Clean Water 2020
Task Name
Qtr 3, 2018
Jul
Aug
Sep
Qtr 4, 2018
Oct
Nov
Dec
SS7331 Upper Kinley Creek Sewer Improvements Ph. 1
Design
90%
SS733701 East Rocky Branch Improvements Ph. 1
Design
95%
SS733702 East Rocky Branch Improvements Ph. 2
Design
90%
SS735002 Crane Creek Upper North Branch Extension
Design
90%
SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1
Design
85%
SS7389 Crane Creek and Smith Branch Manhole Repair and Mitigation
Construction
0%
SS7428 Lower Saluda Relief Sewer and Major Pipe Rehabilitation
Design
15%
SS7454 Broad River Force Main Replacement and Gravity Sewer Capacity Improvements
Design
5%
SS7466 Lower Rocky Branch Relief Sewer Phase 1
Design
0%
Supplemental IR Report
Additional Infrastructure Rehabilitation Projects
SS6786 Annual Sanitary Sewer Manhole Rehabilitation - 2018
Construction
100%
SS6786 Annual Sanitary Sewer Manhole Rehabilitation - 2019
Construction
14%
SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation
Design
75%
CD Plan Development
Design Phase
Professional Services
CD Implementation
Construction Phase
City Forces


CITY OF COLUMBIA, S.C. - Clean Water 2020 Program
2018 Quarterly Report - 3rd Quarter
Clean Water 2020
Task Name
Qtr 3, 2018
Jul
Aug
Sep
Oct
Qtr 4, 2018
Nov
Dec
SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS
Construction
SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12
Construction
97%
SS7279 Smith Branch-02 SSES and Rehabilitation
Construction
92%
SS7280 Rocky Branch-01 SSES and Rehabilitation
Construction
95%
SS7323 Food Lion PS Improvements
Design
95%
SS7362 Smith Branch 01 SSES
Construction
5%
SS7424 SSES and Sewer Rehabilitation Implementation BR02
Design
6%
SS7425 SSES and Sewer Rehabilitation Implementation RB03
Design
18%
SS7463 SSES and Sewer Rehabilitation Implementation CC01
Design
2%
SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04
Design
0%
SS7468 Three Rivers Force Main Replacement
Design
SS7478 RB01 SSES - Phase 2
Design
0%
SS7479 SB02 SSES - Phase 2
Design
0%
Sewer System Hydraulic Model
Model Report Development
CD Plan Development
Design Phase
Professional Services
CD Implementation
Construction Phase
City Forces

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 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).

3.1.1 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® – 100% Complete
- Sewer Mapping Program – 75% Complete

3.1.2 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 – 88% 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 – 100% complete (Mapping complete as of May 23, 2018.)
- Rocky Branch Basin – 100% complete (Mapping complete as of May 23, 2018.)
- Mill Creek Basin – 99% complete
- Gills Creek Basin – 96% complete
- Crane Creek Basin – 99% complete
- Broad River Basin – 99% complete

3.1.3 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 – 60% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 33% Complete
- Corrosion Control – 80% Complete

3.1.4 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) – 100% Complete
- Evaluation of potential sulfide and corrosion control of the WCTS – 80% Complete
- Inspection and evaluation of crossings and stream bank encroachment areas with a higher likelihood of SSOs – 75% Complete
- Gravity Sewer Easement survey and marking and initial clearing to survey the limits, where practical – 20% Complete

3.1.5 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 – 100% Complete

- O&M Costs Tracking by Type of Activity – 5% Complete

3.2 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 – 79% Complete
- Major Pump Stations Condition Assessment – 79% Complete
- Major Force Mains Field Assessment – 79% 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 – 94% Complete
- Minor Gravity Sewer and Manholes Condition Assessment – 39% Complete
- Minor Pump Stations Condition Assessment – 39% Complete
- Minor Force Mains Field Assessment – 39% Complete

3.3 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:

- SS725802 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) Phase 2 – 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 30% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Ph. 1 – Design 90% Complete
- SS733701 East Rocky Branch Improvements Ph. 1 – Design 95% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 90% Complete
- SS735002 Crane Creek Upper North Branch Extension – Design 90% Complete

- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 85% Complete
- SS7389 Crane Creek and Smith Branch Manhole Repair and Mitigation – Construction 0% Complete
- SS7428 Lower Saluda Relief Sewer and Major Pipe Rehabilitation – Design 15% Complete
- SS7454 Broad River Force Main Replacement and Gravity Sewer Capacity Improvements – Design 5% Complete
- SS7466 Lower Rocky Branch Relief Sewer Phase 1 – Design 0% 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 100% Complete, 2019 Construction 14% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation – Design 75% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Construction 0% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 97% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Construction 92% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 95% Complete
- SS7323 Food Lion PS Improvements – Design 95% Complete
- SS7362 Smith Branch 01 SSES – Construction 5% Complete
- SS7424 SSES and Sewer Rehabilitation Implementation BR02 – Design 6% Complete
- SS7425 SSES and Sewer Rehabilitation Implementation RB03 – Design 18% Complete
- SS7463 SSES and Sewer Rehabilitation Implementation CC01 – Design 2% Complete
- SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04 – Design 0% Complete
- SS7468 Three Rivers Force Main Replacement – Design 0% Complete
- SS7478 Rocky Branch 01 SSES Phase 2 – Design 0% Complete
- SS7479 Smith Branch 02 SSES Phase 2 – Design 0% Complete

3.4 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:

- Construction is underway for the MLK Detention Project, which will meet the SEP Phase II requirements for Rocky Branch. The completion date has been further extended, and the new expected completion timeframe is early December 2018.
- The City and Gills Creek Watershed Association (GCWA) have scheduled a volunteer debris/trash cleanup in the Gills Creek Watershed on October 20, 2018.

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, 3rd Quarter 2018

City of Columbia, SC Quarterly SSO Listing 3rd Quarter 2018									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
7/2/2018	18:22	2721 Pleasant Ridge Dr, Columbia, SC, 29209	Cleanout	7/2/2018	18:22	20		Roots	Washed Main Line 100 Feet To Resume Normal Flow. Main Line Repair.
7/2/2018	16:43	300 Forest Grove Ln, Columbia, SC 29210	Cleanout	7/4/2018	11:46	10		Roots	Washed Service Line 30 Feet Through Homeowner Cleanout 5 Feet Deep. Service Line Repair And Cleanout Installed.
7/5/2018	01:30	3127 Chinaberry Dr, Columbia, SC 29204	Cleanout	7/5/2018	03:30	946	Storm Drain	Roots	Removed Stoppage To Resume Normal Flow. Repaired Service Line.
7/6/2018	11:00	5525 Broad River Rd, Columbia, SC 29210	Pump Station	7/6/2018	21:00	485		Pump Station Failure	Started Bypass Pump. Had Bypass Pumps Serviced.
7/9/2018	14:35	2631 Devine St, Columbia, SC 29205	Cleanout	7/9/2018	14:48	13	Storm Drain	Debris	Washed Service Line 35 Feet. Removed Stoppage.
7/10/2018	13:00	322 Spartan Dr, Columbia, SC 29212	Cleanout	7/10/2018	13:45	45		Debris	Washed Service Line 45 Feet To Resume Normal Flow. Service Line Wash, Blockage Removed.
7/12/2018	12:10	709 Carty Dr, Columbia, SC 29203	Cleanout	7/20/2018	TBD	100	Unnamed Conveyance	Roots	Washed Main Line 140 Feet. Main Line Repair.
7/12/2018	18:30	1931 Bull St, Columbia, SC 29201	Cleanout	7/13/2018	TBD	82		3rd Party Responsibility	Determined That The Contractor Did Not Reinstate Service During Construction. Contractor Will Cut Out Tap And Reinstate Service.
7/23/2018	12:00	101 S Bull St, Columbia, SC 29205	Cleanout	7/23/2018	TBD	90		3rd Party Responsibility	Washed Service Line 50 Feet. Tap Not Cut Out After Main Line Was Relined. Tap Will Be Cut Out By Contractor To Reinstate Service.
7/20/2018	11:30	4355 Chicora St, Columbia, SC 29206	Cleanout	7/20/2018	11:50	30	Storm Drain	Debris	Washed Service Line 35 Feet. Washed Service Line To Remove Stoppage.
7/26/2018	20:00	2508 Windsor Rd, Columbia, SC 29204	Cleanout	7/27/2018	TBD	38		3rd Party Responsibility	Determined That The Contractor Did Not Reinstate The Tap. Contacted Contractor To Reinstate Tap.
8/4/2018	10:30	1900 Kennedy St, Columbia, SC 29205	Manhole	8/6/2018	TBD	3,625	Storm Drain	Debris	Setup Bypass Pump To 05796MH. Washed Main Line 450 Feet To Resume Normal Flow.
8/7/2018	10:45	1100 College St, Columbia, SC 29201	Other	TBD		187	Storm Drain	Collapsed Line	Washed Main Line 500 Feet. Main Line Repair To Be Done By Contractor.
8/7/2018	14:35	4400 Argent Ct, Columbia, SC 29203	Manhole	TBD		30	Pond	Collapsed Line	Washed Main Line And Removed Stoppage To Resume Normal Flow. Main Line Repair.
8/7/2018	20:11	408 Foxfire Dr, Columbia, SC 29212	Manhole	8/7/2018	22:11	4,500	Tributary To Kinley Creek	Debris	Washed Main Line 100 Feet To Remove Stoppage.
8/8/2018	02:11	5205 Spaulding Ave, Columbia, SC 29203	Cleanout	8/8/2018	02:20	23		Roots	Washed Service Line 35 Feet. Service Line Wash To Remove Roots.
8/8/2018	22:00	2 Gibbes Ct, Columbia, SC 29201	Cleanout	8/8/2018	22:10	12		Collapsed Line	Washed Service Line 40 Feet. Service Line Repair.
8/10/2018	11:50	337 Shellnut Ave, Columbia, SC 29209	Cleanout	8/10/2018	12:10	20		Roots	Washed Service Line 35 Feet. Service Line Wash To Remove Roots.
8/27/2018	07:50	1200 Simmon Tree Lane, Columbia, SC 29201	Other	8/28/2018	10:30	186		Treatment Plant	Train 1 & Train 2 DAFS Were Shutdown Temporarily To Immediately Stop The Overflow. The Foam That Had Overflowed On The Roof Was Hosed Back Into The Digester. A Small Amount That Overflowed The Lid Onto The Grass Was Vacumed Up. Lime Was Applied To The Effected Area.
8/27/2018	19:25	340 Greybark Dr, Columbia, SC 29209	Cleanout	TBD		6		Roots	Washed Service Line 15 To Remove Stoppage And Resume Normal Flow. Service Line Repair.

City of Columbia, SC Quarterly SSO Listing 3rd Quarter 2018									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
8/29/2018	21:23	2801 Blossom St, Columbia, SC 29205	Other	9/5/2018	TBD	1,458	Storm Drain	3rd Party Responsibility	Water Department Turned Off Water. Contractor Will Reinstate The Tap For This Service Line.
8/30/2018	10:00	5618 Colonial Dr, Columbia, SC 29203	Manhole	TBD		45		Roots	Removed Stoppage To Resume Normal Flow. Install Kit To Repair Main Line.
9/3/2018	13:00	112 Saint Stephens St W, Irmo, SC 29063	Manhole	TBD		450	Conveyance Ditch	Roots	Washed Main Line 250 Feet. Main Line Repair/Service Line Tap Renewals.
9/5/2018	10:10	2801 Blossom St, Columbia, SC 29205	Cleanout	9/5/2018	10:30	17	Storm Drain	3rd Party Responsibility	Washed Service Line 45 Feet, Tap Was Lined Over By Contractor. Contractor Reinstated The Tap On 9/5/18.
9/5/2018	18:00	525 Calvary Dr, Columbia, SC 29203	Manhole	9/5/2018	17:00	840		Collapsed Line	Washed Main Line 225 Feet. Added To Preventive Mainenance Wash List.
9/5/2018	17:01	914 Pulaski St, Columbia, SC 29201	Cleanout	TBD		247		Roots	Washed City Clean Out 15 Feet, Removed Stoppage To Resume Normal Flow. Service Line Repair.
9/12/2018	12:30	3609 Padgett Rd, Columbia, SC 29209	Manhole	TBD		164	Conveyance Ditch	Collapsed Line	Washed Main Line 300 Feet. Main Line Repair (Tap Renewal).
9/16/2018	14:30	217 Meadow Creek Dr, Columbia, SC 29203	Manhole	9/18/2018	TBD	1,000		Roots	Removed Stoppage To Resume Normal Flow. Main Line Repair.
9/18/2018	11:30	7932 Teague Rd, Columbia, SC 29209	Manhole	9/18/2018	12:10	120	Storm Drain	Roots	Removed Stoppage To Resume Normal Flow. Washed Line 70 Feet To Remove Stoppage.
9/19/2018	14:52	4645 Pine Grove Ct, Columbia, SC 29206	Manhole	TBD		450	Lake Katherine (Gills Creek)	Wet Weather	Overflow Stopped Prior To Arrival. Engineering Line Replacement Project In Design.
9/24/2018	11:20	1843 Devine St, Columbia, SC 29201	Other	9/25/2018	TBD	60		Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.
9/25/2018	12:00	1726 Hampton St, Columbia, SC 29201	Other	9/26/2018	12:52	450	Storm Drain	Collapsed Line	Emergency Service Line Repair.
9/26/2018	17:00	112 Tekesbury Ct, Columbia, SC 29212	Manhole	TBD		1,227		Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.
9/27/2018	11:30	4622 Oxford Rd, Columbia, SC 29209	Cleanout	9/27/2018	11:30	60	Storm Drain	Debris	Washed Service Line To Remove Stoppage And Resume Normal Flow.

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.

No building backups were identified within the City's system for the current reporting period.

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 2018 Q3 was completed on August 1, 2018. 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: 8/1/18

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

Ralana Wilson/QA Manager — Date: 8/10/18

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

Michael Jaspers/Project Validator — Date: 8/10/18

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

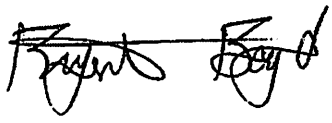
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

08.01.18

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

ACCESS
ANALYTICAL, INC.

Report of Analysis

Lab ID #: 13147-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 14:11
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	4.50	None	mg/L	SM 4500-O G-2011		7/24/2018 14:11	JRS
E. Coli (MPN)	1553.1	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	25.5	None	oC	SM 2550B-2010		7/24/2018 14:11	JRS
TSS	10.0	1	mg/L	SM 2540 D-2011		7/26/2018 13:30	JRS

ACCESS
ANALYTICAL, INC.

Report of Analysis

Lab ID #: 13147-002
Project: WATER QUALITY MONITORING
Sample Name: C-001
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 14:45
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	4.88	None	mg/L	SM 4500-O G-2011		7/24/2018 14:45	JRS
E. Coli (MPN)	727.0	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	29.4	None	oC	SM 2550B-2010		7/24/2018 14:45	JRS
TSS	18.2	1	mg/L	SM 2540 D-2011		7/26/2018 13:30	JRS

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Report of Analysis

Lab ID #: 13147-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 15:14
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.98	None	mg/L	SM 4500-O G-2011		7/24/2018 15:14	JRS
E. Coli (MPN)	517.2	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	26.1	None	oC	SM 2550B-2010		7/24/2018 15:14	JRS
TSS	5.0	1	mg/L	SM 2540 D-2011		7/30/2018 14:25	RDA

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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:

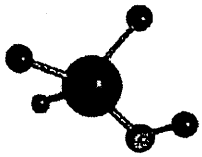
ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates 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.



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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

ACCESS ANALYTICAL, INC.

Chain of Custody

Access Lab Report #: 13147

Sub Lab (if applicable): ________ / Sub Report #: ________

Access Analytical, Inc. – Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client:	City of Columbia
Attn:	Mike Jaspers
Address:	1136 Washington Street
City:	Columbia
State:	SC
Zip Code:	29201
Phone:	803-545-0076
Fax:	
Email:	mjjaspers@columbiasc.net
Project Name:	Water Quality Monitoring
Sampled By (Signature):	[signature]

Preservatives (see codes): 9 | 5 | NA
Bottle Types (see codes): P | P | NA

Requested Lab Analysis:

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers		TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017	7-24-18	1411	G	WW	CWA	2		1	1	NA	DO (mg/L)= 4.50 Temperature (°C)= 25.5
002	C-001	〃	1445	G	WW	CWA	2		1	1	NA	DO (mg/L)= 1.86 Temperature (°C)= 24.4
003	B-280	〃	1514	G	WW	CWA	2		1	1	NA	DO (mg/L)= 6.88 Temperature (°C)= 26.1
												**Sample the last week of Jan, April, July & October
												Ph-

Preservation Codes / Bottle Types:

*Preservative Codes: 0 = None, 1 = HCL, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = $Amm.Cl$, 12 = Ascorbic Acid / HCL, 13 = EDA

*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 = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = 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)= ________

Date/Time Set On: ________ by whom: ________

Date/Time Off: ________ by whom: ________

Meter Reading After: ________

Meter Reading Before: ________

Difference: ________

X ________ (factor): ________

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC						___Y ___N ___N/A
Rush *		NC						___Y ___N ___N/A
*Date Required		Other (Specify):						___Y ___N ___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days				Received in lab by: [signature]		7-24-18	1549	✓Y ___N ___N/A
Chain of Custody Page ____ of ____						Sample Temp. Upon Receipt in Lab: 0.1 (°C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

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