

Clean Water 2020 Program

CONSENT DECREE QUARTERLY REPORT

October 1, 2016 – December 31, 2016

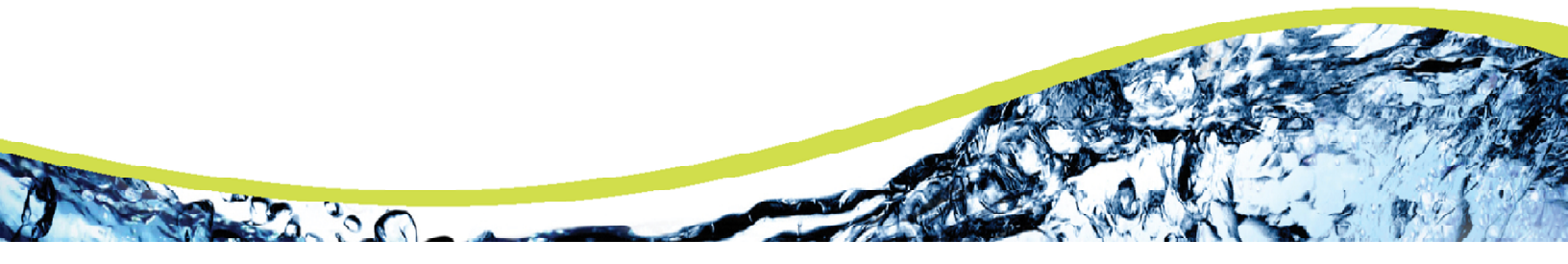


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Section 1 Introduction

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.

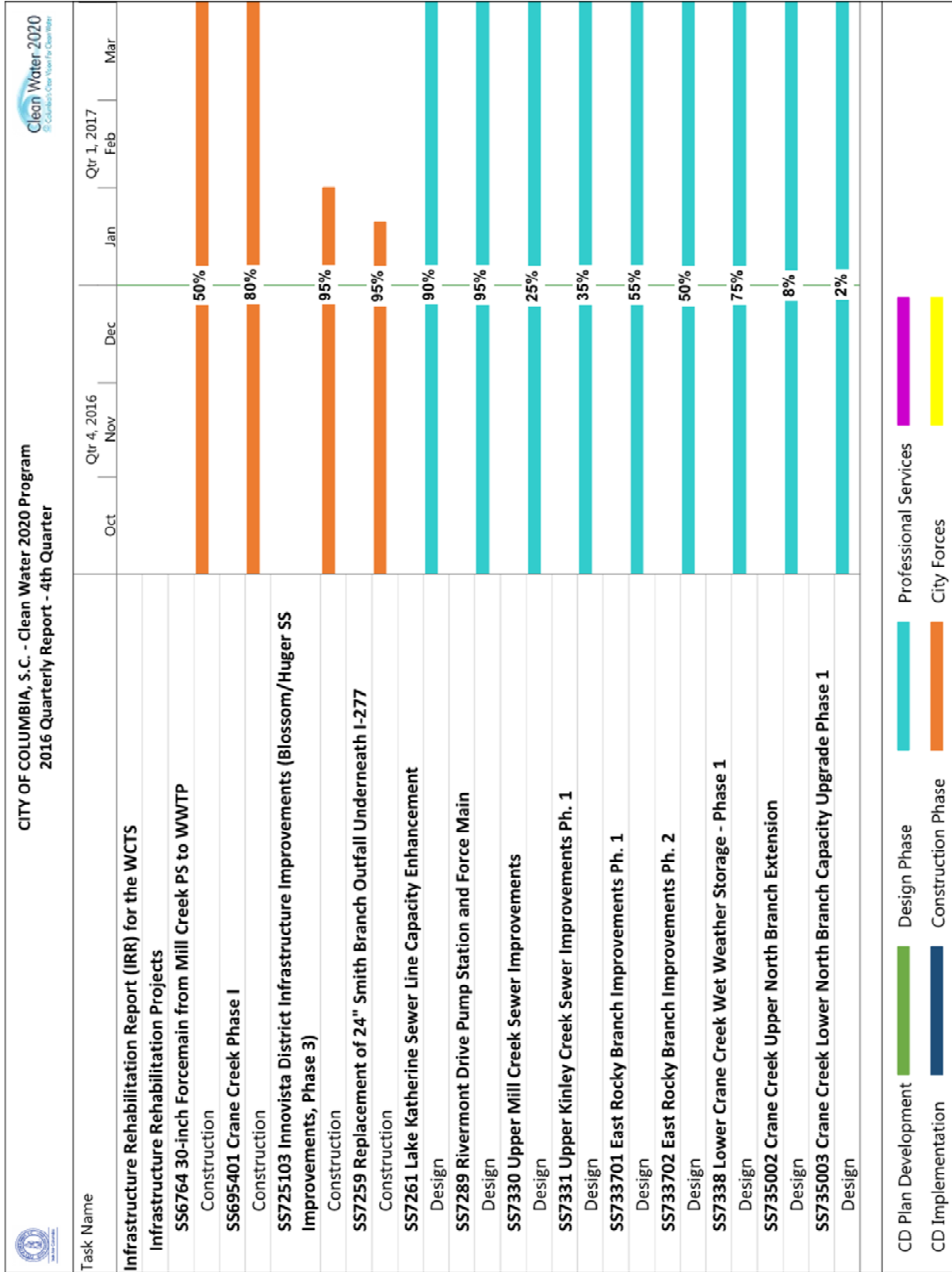
Section 5 – SEP Water Quality Monitoring Results

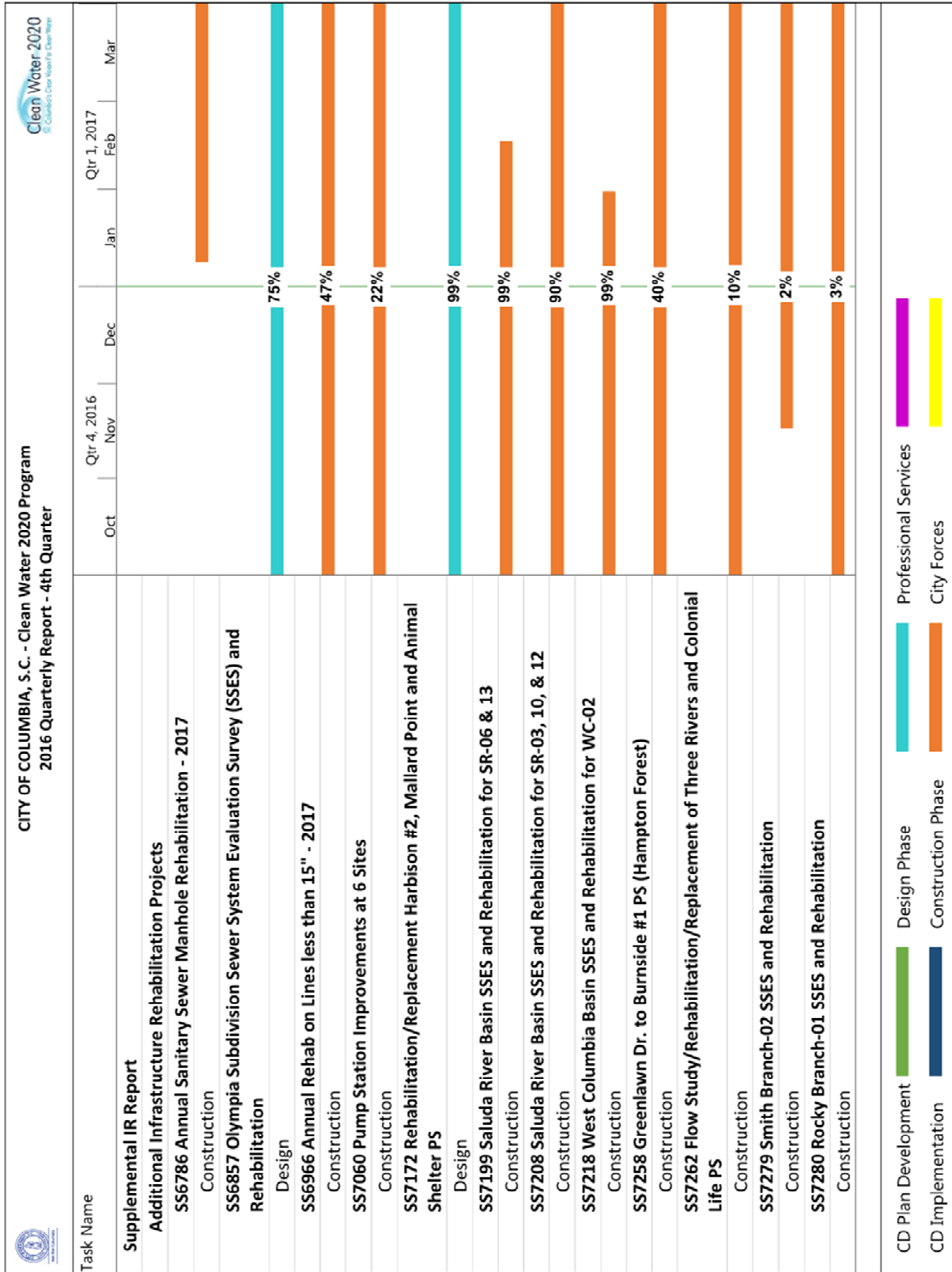
This section addresses the requirements of Section IX.39.a.(v) of the Consent Decree and provides the results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the CD.

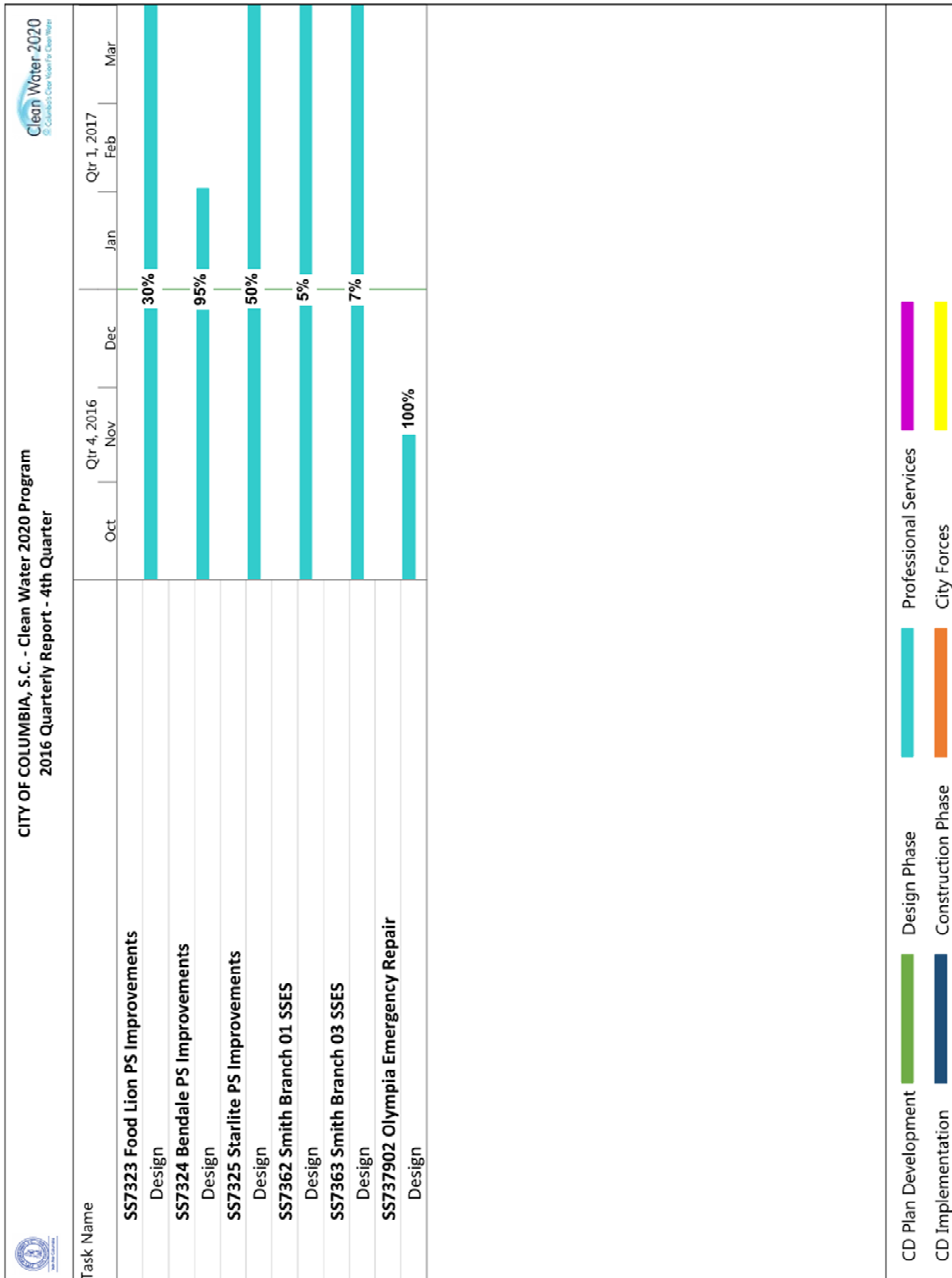
Section 2 Schedule of Projects and Activities

Task Name	Qtr 4, 2016			Qtr 1, 2017		
	Oct	Nov	Dec	Jan	Feb	Mar
WWTP Programs						
Maintenance Management System (MMS)						
MMS Implementation			46%			
WWTP Operations Program						
WWTP Operations Program Implementation			25%			
MOM Programs						
Contingency and Emergency Response Plan (CERP)						
CERP Implementation			50%			
WCTS Training Program						
WCTS Training Program Implementation			40%			
Information Management System (IMS) Program						
IMS Program Implementation			64%			
Sewer Mapping Program (SMP)						
SMP Implementation			59%			
Transmission System Operations and Maintenance Program (TSOMP)						
TSOMP Implementation			45%			
Gravity Sewer System Operation and Maintenance Program Implementation						
GSOMP Implementation			23%			
Financial Analysis Program						
FAP Implementation			6%			
Continuing Sewer Assessment Program (CSAP) for the WCTS						
CSAP Implementation						
Assessment of Major Components of CSAP			35%			
Assessment of Minor Components of CSAP						
Infrastructure Rehabilitation Program (IRP) for the WCTS						
IRP CD Plan Development			100%			









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:

- Migration of Data and Maintenance Schedules into Cityworks – 75% Complete
- Cityworks Testing & Implementation – 50% Complete
- Inventory Management within Cityworks Storeroom – 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 – 25% Complete

3.1.3 WWTP Training Program

The WWTP Training Program was submitted to EPA and SCDHEC on May 20, 2016. The City is awaiting EPA and SCDHEC review and approval of the WWTP Training Program.

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 Contingency and Emergency Response Plan (CERP)

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

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

- Training Staff on the Activation of the CERP – 50% Complete
- Emergency Operation Training and Activation Procedures – 50% Complete
- Develop and Train Staff to Scenarios – 50% Complete

3.2.2 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) – 40% Complete

3.2.3 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 – 70% Complete
- Sewer Mapping Program – 59% Complete

3.2.4 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 – 80% complete
 - Smith Branch Basin – 67% complete
 - Saluda River Basin – 86% complete
 - Rocky Branch Basin – 33% 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 – 64% complete
 - Smith Branch Basin – 74% complete
 - Saluda River Basin – 65% complete
 - Rocky Branch Basin – 55% complete
 - Mill Creek Basin – 74% complete
 - Gills Creek Basin – 75% complete
 - Crane Creek Basin – 75% complete
 - Broad River Basin – 65% complete

3.2.5 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 – 45% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 20% Complete
- Corrosion Control – 2% Complete

3.2.6 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) – 15% Complete
- Evaluation of potential sulfide and corrosion control of the WCTS – 2% Complete
- Gravity Sewer Easement survey and marking and initial clearing to survey the limits, where practical – 20% Complete
- Evaluation of resource commitment as part of the implementation of the GSOMP – 50% Complete

3.2.7 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:

- Budgeting Process – 100% Complete
- Budget and Customer Rate Setting Analysis – the first rate study update was completed prior to June 2016; a second rate study update is in progress.

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 – 38% Complete
- Major Manhole Inspection – 70% Complete
- Major Pump Stations Condition Assessment – 20% 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 – 60% Complete
- Minor Gravity Sewer and Manholes Condition Assessment – 10% Complete
- Minor Pump Stations Condition Assessment – 10% Complete

3.4 Infrastructure Rehabilitation Program (IRP) for the WCTS

In accordance with Section V.15 of the CD, the City shall submit an Infrastructure Rehabilitation Program (IRP) to EPA and SCDHEC for review, comment, and approval. The IRP is to be submitted within six months after the date of EPA and SCDHEC approval of the CSAP. The deadline for submittal of the IRP to EPA and SCDHEC is November 23, 2016.

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

- The IRP was submitted to EPA and SCDHEC on November 22, 2016.

3.5 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 50% Complete
- SS695401 Crane Creek Phase I – Construction 80% Complete
- SS725103 Innovista District Infrastructure Improvements – Construction 95% Complete
- SS7259 Replacement of 24" Smith Branch Outfall Underneath I-277 – Construction 95% Complete
- SS7261 Lake Katherine Sewer Line Capacity Enhancement – Design 90% Complete
- SS7289 Rivermont Drive Pump Station and Force Main – Design 95% Complete
- SS7330 Upper Mill Creek Sewer Improvements – Design 25% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Ph. 1 – Design 35% Complete
- SS733701 East Rocky Branch Improvements Ph. 1 – Design 55% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 50% Complete
- SS7338 Lower Crane Creek Wet Weather Storage - Phase 1 – Design 75% Complete (decrease in completion % from previous report due to contract amendment)
- SS735002 Crane Creek Upper North Branch Extension – Design 8% Complete
- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 2% 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 – 2017 Construction 0% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation Design – Design 75% Complete
- SS6966 Annual Rehab on Manholes and Lines less than 15" – 2017 Construction 47% Complete
- SS7060 Pump Station Improvements at 6 Sites – Construction 22% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Design 99% Complete
- SS7199 Saluda River Basin SSES and Rehabilitation for SR-06 & 13 – Construction 99% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 90% Complete
- SS7218 West Columbia Basin SSES and Rehabilitation for WC-02 – Construction 99% Complete
- SS7258 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) – Construction 40% Complete
- SS7262 Flow Study/Rehabilitation/Replacement of Three Rivers and Colonial Life PS – Construction 10% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Construction 2% Complete

- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 3% Complete
- SS7323 Food Lion PS Improvements – Design 30% Complete
- SS7324 Bendale PS Improvements – Design 95% Complete
- SS7325 Starlite PS Improvements – Design 50% Complete
- SS7362 Smith Branch 01 SSES – Design 5% Complete
- SS7363 Smith Branch 03 SSES – Design 7% Complete
- SS737902 Olympia Emergency Repair – Design 100% Complete

3.6 Supplemental Environmental Project

In accordance with Section VIII and Appendix I of the CD, the City will perform a Supplemental Environmental Project (SEP). Within 24 months of the effective date of the CD, the City was to complete Phase I of the Rocky Branch, Smith Branch, and Gills Creek projects. 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 complete the Gills Creek Phase I project; this request was granted by EPA.

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

- The Gills Creek Project Phase I was completed on November 20, 2016, including implementation of the following projects.
 - Project #1 – Install a pocket wetland or other similar best management practice (BMP) at the end of Pelham Drive near where it meets Gills Creek Parkway – 100% Complete
 - Project #2 – Install a pocket wetland or other similar BMP at the end of Hampton Leas Lane where the road dead ends into the Gills Creek floodplain – 100% Complete
 - Project #3 – Install a pocket wetland or other similar BMP at the end of Tall Pines Circle where the road dead ends in the Gills Creek floodplain – 100% Complete
- Projects #4 through #6 were completed prior to the current reporting period.

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 2016

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2016									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
10/3/2016	10:30	4181 E Buchanan Dr, Columbia, SC 29206	Manhole	10/5/2016	18:00	1,082	Tributary To Penn Branch	Collapsed Line	Set Up Bypass Pump. Repaired Manhole.
10/6/2016	10:52	1721 Shivers Rd, Columbia, SC 29210	Manhole	10/6/2016	Unknown	1,435	Unnamed Tributary To Broad River	Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 250 Feet And Used Root Cutter To Remove Roots. Further Investigation Needed To Determine Best Way To Fix.
10/8/2016	08:23	900 Gracern Rd, Columbia, SC 29210	Forcemain	TBD		Unknown		Force Main	Adjusted Bypass Pump Speed. Contractor Will Be Repairing The Forcemain.
10/8/2016	08:37	1721 W Buchanan Dr, Columbia, SC 29206	Manhole	TBD		18,988	Penn Branch	Wet Weather	Wet Weather Observation Only. Engineering In Design Phase Of Line Replacement.
10/8/2016	08:40	1548 Kathwood Dr, Columbia, SC 29206	Manhole	TBD		18,975	Lake Katherine (Gills Creek)	Wet Weather	Wet Weather Observation Only. Engineering In Design Phase Of Line Replacement.
10/8/2016	08:50	4645 Pine Grove Ct, Columbia, SC 29206	Manhole	TBD		42,688	Lake Katherine (Gills Creek)	Wet Weather	Wet Weather Observation Only. Engineering In Design Phase Of Line Replacement.
10/8/2016	09:09	22 Thistle Ct, Irmo, SC 29063	Cleanout	10/8/2016	12:15	925		Wet Weather	Wet Weather Observation Only. Further Investigation To Be Conducted.
10/8/2016	10:25	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		205,500	Crane Creek	Wet Weather	Wet Weather Observation Only. Project Under Construction For Line Replacement.
10/8/2016	10:40	1400 Peebles St, Columbia, SC 29203	Manhole	TBD		132,750	Crane Creek	Wet Weather	Wet Weather Observation Only. CIP Project Line Replacement. Project Is Under Construction.
10/8/2016	11:13	4122 River Dr, Columbia, SC 29201	Manhole	10/8/2016	11:13	Unknown	Broad River Canal	Wet Weather	Not Observed Active, Evidence Of Overflow Only. Did Not Observe Overflow. Lid Of Manhole Was Off. Placed Manhole Lid Back Over Manhole.
10/8/2016	12:00	2221 Tuxedo Rd, Columbia, SC 29209	Manhole	10/8/2016	14:00	Unknown	Storm Drain	3rd Party Responsibility	Installed Temporary Portable Generator. Utility Power Restored.
10/8/2016	19:25	2537 Partridge Drive South, Hopkins, SC 29061	Pump Station	10/8/2016	10:53	46,440	Goose Branch	3rd Party Responsibility	Operate A Portable Bypass Pump. Utility Power Was Restored.
10/9/2016	12:00	100 E Exchange Blvd, Columbia, SC 29209	Manhole	10/10/2016	12:30	110		Roots	Washed Mainline 222 Ft To Remove Stoppage To Resume Normal Flow. Sawed Roots From Mainline.
10/10/2016	09:00	416 Lincolnshire Blvd, Columbia, SC 29203	Other	10/10/2016	10:40	100		Collapsed Line	Bypass Setup. Repaired Pipe.
10/9/2016	23:30	5200 Bluff Rd, Columbia, SC 29209	Manhole	10/10/2016	04:30	120,000	Reeder Point Branch	Pump Station Failure	Refueled Generator.
10/14/2016	14:30	214 Ts Martin Dr, Columbia, SC 29204	Manhole	10/19/2016	10:00	8,750	Pooled Up Behind Fence	Grease	Washed Mainline 200 Ft To Resume To Normal Flow. Washed & Degreased Mainline 2,983 Ft.
10/22/2016	09:00	204 Lincolnshire Blvd, Columbia, SC 29203	Manhole	10/22/2016	12:30	200		Collapsed Line	Washed Mainline 200 Ft To Remove Stoppage. Repaired Service Line.
10/24/2016	13:30	828 Laurel Hill Lane, Columbia, SC 29201	Manhole	TBD		1,200		Collapsed Line	Set Up Bypass Pump To Discharge In Downstream Manhole. Mainline To Be Repaired By Contractor.
10/27/2016	10:39	1600 Lorick Ave, Columbia, SC 29203	Manhole	TBD		1	Smith Branch	Roots	Washed Mainline 920 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
10/27/2016	15:41	1417 Waterhill Rd, Columbia, SC 29212	Manhole	TBD		727		Roots	Washed Mainline 100 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
10/31/2016	14:20	935 Vernon Ct, Columbia, SC 29203	Other	10/31/2016	18:30	1,250	Unnamed Trib. To Crane Creek	Collapsed Line	Repaired Mainline And Pumped Out Creek.
10/31/2016	09:00	6 Rocky Point Dr, Columbia, SC 29212	Forcemain	10/31/2016	17:00	449	Storm Drain, Sludge Stayed Contained In Ditch	3rd Party Responsibility	Water Plant Staff Shut Off Pump Station And Capped Forcemain Port. Forcemain Capped To Stop Overflow.

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2016									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
11/4/2016	09:00	3900 Bentley Dr, Columbia, SC 29210	Cleanout	11/4/2016	09:20	55		Equipment Failure	Fixed Bypass Pump. Spread Lime Around The Cleanout.
11/6/2016	01:30	3900 Bentley Dr, Columbia, SC 29210	Other	11/6/2016	02:00	9,000	Tributary To The Broad River	Equipment Failure	Fixed Bypass Pump. Flushed The Creek For 5.5 Hours. No Lime Was Applied Due To Proximity Of River.
11/7/2016	20:08	352 Jadetree Dr, Hopkins, SC 29061	Forcemain	TBD		18,650		Force Main	Shut Off ARV. Replace Air Release Valve.
11/9/2016	16:00	1213 Flora St, Columbia, SC 29201	Manhole	TBD		30		Collapsed Line	Washed Mainline 50 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled, When Ownership Is Determined.
11/10/2016	17:52	5418 Mauldin Ave, Columbia, SC 29203	Manhole	11/11/2016	11:00	3,000		Debris	Washed Mainline 52 Ft To Resume To Normal Flow. Washed, Degreased, And Vacuumed Mainline 350 Ft. Rocks And Sand Found In Mainline.
11/11/2016	16:00	2708 Ansel St, Columbia, SC 29204	Cleanout	TBD		130		Collapsed Line	Washed Mainline To Resume Normal Flow. Contractor Will Relocate The Mainline.
11/15/2016	12:15	1510 Saint Andrews Rd, Columbia, SC 29210	Manhole	11/17/2016	TBD	1,750		Grease	Washed Mainline To Resume Normal Flow. Washed And Degreased Mainline 610 Ft.
11/26/2016	12:00	516 Meadowlake Dr, Columbia, SC 29203	Manhole	TBD		3,000		Collapsed Line	Washed Mainline 200 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
11/26/2016	20:30	288 Outrigger Lane, Columbia, SC 29212	Cleanout	TBD		75		Collapsed Line	Washed Mainline 300 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
11/29/2016	14:35	1013 Rockyknoll Dr, Columbia, SC 29203	Manhole	TBD		50		Roots	Washed Mainline 400 Ft To Resume Normal Flow. Line Segment Liner To Be Installed Manhole To Manhole.
12/1/2016	09:30	618 River Rd, Columbia, SC 29212	Forcemain	12/1/2016	12:15	750		3rd Party Responsibility	Shutdown Lift Station. Repaired Forcemain Caused By Contractor Boring Thru.
12/1/2016	08:30	1510 Carter St, Columbia, SC 29204	Manhole	12/6/2016	02:29	1		Roots	Washed Mainline 100 Ft To Resume Normal Flow. Washed Mainline 350 Ft.
12/7/2016	14:44	303 Regatta Rd, Columbia, SC 29212	Forcemain	12/7/2016	15:15	260	Lake Murray	3rd Party Responsibility	Turned Off Gate Valve Of Forcemain Ceasing Flow. Contractor Severed 2" Service Line For New Home. Crews Replaced Dresser Coupler To Repair 2" Service Line.
12/7/2016	14:30	715 Gervais St, Columbia, SC 29201	Cleanout	12/9/2016	17:00	125		Debris	Washed Mainline 22 Ft To Resume Normal Flow. Televised Mainline Upstream 509 Ft Manhole To Manhole.
12/11/2016	12:30	600 Greenlawn Dr, Columbia, SC 29209	Manhole	TBD		324		Grease	Washed Mainline 546 Ft To Resume Normal Flow. Mainline Is Scheduled To Be Degreased.
12/15/2016	09:15	341 Powell Rd, Columbia, SC 29203	Cleanout	TBD		45		Roots	Washed Mainline 75 Ft To Resume Normal Flow. Manhole Cleaning To Be Scheduled.
12/16/2016	11:30	715 Gervais St, Columbia, SC 29201	Cleanout	12/16/2016	11:30	125		Debris	Washed Service Line 35 Ft To Resume Normal Flow.
12/17/2016	12:00	4600 Fort Jackson Blvd, Columbia, SC 29209	Manhole	12/19/2016	11:48	2,724		Collapsed Line	Washed Mainline 150 Ft To Remove Stoppage. Washed, Vacuumed And Degreased Mainline 171 Ft (4) Times (Grade To Be Investigated).
12/20/2016	09:45	201 Park St, Columbia, SC 29201	Other	12/20/2016	09:50	100	Storm Drain	Equipment Failure	Turned Off Bypass Pump For Repairs. Repaired Bypass Pump.
12/26/2016	15:20	1726 Roslyn Dr, Columbia, SC 29206	Cleanout	TBD		15		3rd Party Responsibility	Washed Service Line To Resume Normal Flow. Service Line Repair To Be Scheduled.
12/26/2016	15:20	1801 N Woodstream Rd, Columbia, SC 29212	Cleanout	TBD		13		Roots	Washed Service Line To Resume Normal Flow. Service Line Repair Scheduled (Roots Confirmed Via Push Camera).
12/28/2016	15:45	715 Gervais St, Columbia, SC 29201	Cleanout	12/28/2016	15:45	15		Collapsed Line	Washed Service Line 25 Feet. Removed Stoppage To Resume Normal Flow. Push Camera Identified A Protruding Tap In The Service Line. Repair To Be Scheduled.
12/29/2016	14:45	1047 Gardendale Dr, Columbia, SC 29210	Cleanout	12/30/2016	12:00	2,700		Roots	Washed Mainline 100 Ft To Resume Normal Flow. CCTV Confirmed Cause In Line Segment 18005MH_18006MH. Mainline Repair.
12/31/2016	10:30	225 Sheringham Rd, Columbia, SC 29212	Manhole	12/31/2016	13:18	382	Pond	Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 10 Feet To Clear Any Potential Future Blockage.

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 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 2016 Q4 was completed on November 2, 2016. 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: 11/2/2016

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

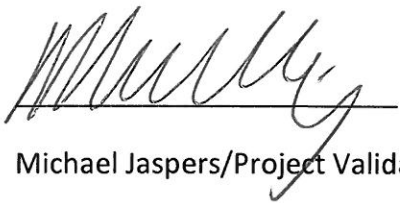


Andrew T. Stroud/QA Manager

11/2/2016

Date

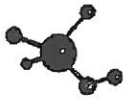
The undersigned validates the data in the above referenced report, per the QAPP requirements.



Michael Jaspers/Project Validator

11/2/2016

Date



DATE: 11/02/2016

SCDHEC #32571

CLIENT: City of Columbia
Attn: Andrew Stroud
1136 Washington Street
Columbia SC 29201

PROJECT: WATER QUALITY MONITORING

ID#: 159562 Sample Name: C-017 Sampled on 10/28/2016 at 0952 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	5.7	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	195.6	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM45000G-2011	5.9	mg/L	10/28/2016	0952	JS
Temperature (SM)	SM 2550 B-2010	18	Deg. C	10/28/2016	0952	JS

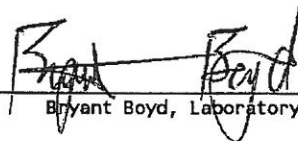
ID#: 159563 Sample Name: C-001 Sampled on 10/28/2016 at 1031 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	17	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	261.3	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM45000G-2011	5.8	mg/L	10/28/2016	1031	JS
Temperature (SM)	SM 2550 B-2010	17	Deg. C	10/28/2016	1031	JS

ID#: 159564 Sample Name: B-280 Sampled on 10/28/2016 at 1058 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	13	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	344.8	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM45000G-2011	6.3	mg/L	10/28/2016	1058	JS
Temperature (SM)	SM 2550 B-2010	19	Deg. C	10/28/2016	1058	JS

Report Released by: _____


Bryant Boyd, Laboratory Director

ON LINE ENVIRONMENTAL, INC

Chain of Custody Record

SCDHEC LAB ID# 32571/25003

Client: City of Columbia

Attn: Andrew Stroud

Address: 1136 Washington Street

Phone: 803-545-4001

City, State, Zip: Columbia, SC 29201

Email: atsfroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	19952	C-017	10-28-195	G	A/P	1	TSS
WW	↓	C-017	" / "	G	GF/P	1	E. Coli MPN
WW	↓	C-017	" / "	G	Field An.	NA	D.O. (mg/L) = 5.9 Temp. (°C) = 18
WW	563	C-001	10-31	G	A/P	1	TSS
WW	↓	C-001	" / "	G	GF/P	1	E. Coli MPN 5.8
WW	↓	C-001	" / "	G	Field An.	NA	D.O. (mg/L) = 5.8 Temp. (°C) = 17
WW	564	B-280	" / 10-28	G	A/P	1	TSS
WW	↓	B-280	" / "	G	GF/P	1	E. Coli MPN
WW	↓	B-280	" / "	G	Field An.	NA	D.O. (mg/L) = 6.3 Temp. (°C) = 19

G=grab C=composite

Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature: *[Signature]*

Auto Sampler Data

Date/Time Set On: / /
by whom: / /
Date/Time Off: / /
by whom: / / (factor):

Meter Reading After: /
Meter Reading Before: /
Difference: / x (factor):

Special Instructions:
Received in lab @ 1 °C
Project: Water Quality Monitoring
(Sample Jan, April, July, Oct)
[Signature]
Preservation Codes: A=s6°C, B=H₂SO₄, C=HNO₃, D=HCl, E=NaOH, F=Na₂S₂O₃, G=≤10°C, O=Other (describe) Bottle Type: Glass = G, Plastic = P

Relinquished by	Date	Time	Received by	Date	Time

Received in lab by: *[Signature]* Date: 10-28-16 Time: 11:37

Sample Rod. On Ice: Yes No