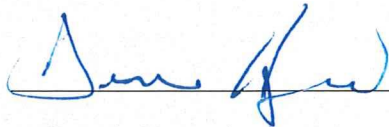


Annual Progress Report

2020

Submitted to EPA on February 24, 2021

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Derwin Hagood



Date



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Executive Summary

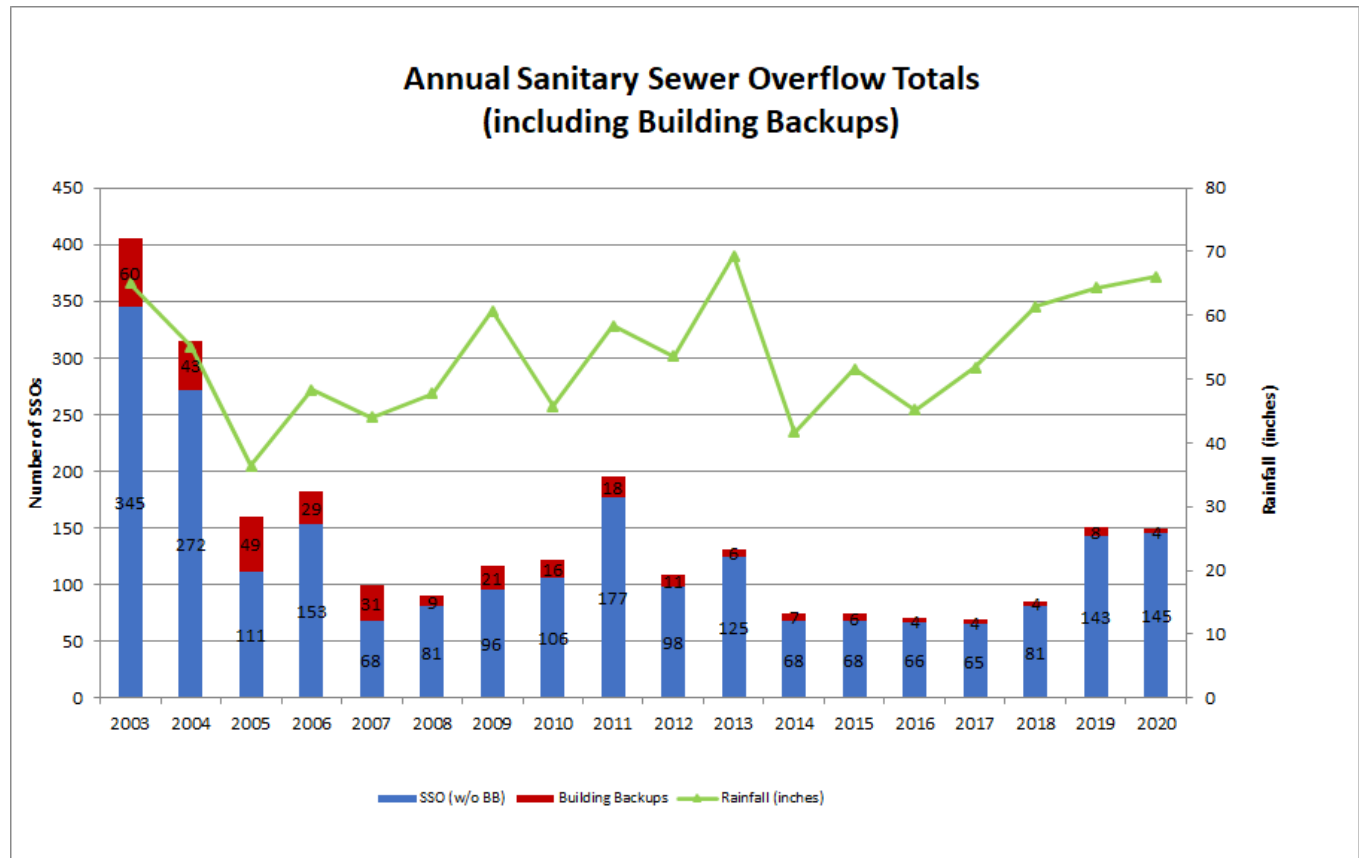
On February 11, 2005, the Knoxville Utilities Board (KUB) entered into a Consent Decree with the United States, the State of Tennessee, the Tennessee Clean Water Network, and the City of Knoxville. The Consent Decree and its First Amendment required KUB to achieve full Compliance with work required under Section VII *Performance of the Work* [except those obligations described in VIID.1.(a)(v)(Composite Correction Plan for WWTPs)] before December 31, 2016. KUB successfully completed all the required work described in Section VII *Performance of the Work* in addition to the work in Section VIII *Supplemental Environmental Project* ahead of the schedules outlined in the Consent Decree. This was communicated to the EPA on November 10, 2016. In this same communication, KUB requested a Non-Material Modification of the current reporting requirements, which is allowed under Section XIX.E and Section XXI, to report annually on the remaining Consent Decree work. After consultation with TDEC, the EPA agreed that less frequent reporting was now appropriate as a result of the narrower scope of remaining work to be performed. On December 13, 2016, EPA approved the revised Section XIX to the Consent Decree, authorizing the submittal of an Annual Progress Report incorporating all Section XIX reporting requirements into one annual report. Consent Decree revised Section XIX.B describes the required content of this report:

- B. *“Beginning on March 1, 2017, and every twelve (12) Months thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, an Annual Progress Report. The Annual Progress Report shall cover the most recent Calendar Year. The Annual Progress Report shall not be subject to the Public Review Requirement of Section VI.A.2. However, KUB shall accept questions and comments from the public for KUB’s review for a period of twenty (20) Days following placement in the PDR. Each Annual Progress Report shall contain:*
- 1. A summary of compliance with and activities related to implementation of the CCP;*
 - 2. A summary of implementation of and compliance with the Process Controls Program;*
 - 3. A total amount of banked credits available by Sewerbasin for use in future development if capacity cannot be certified and any exceptions granted for connections for essential services under the Capacity Assurance Program.*
 - 4. Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof.*
 - 5. A description of the status of compliance or non-compliance with the requirements of this Decree and, if applicable, the reasons for non-compliance, including a list of all violations that are subject to stipulated penalties under Section X of this Decree.*
 - 6. A spreadsheet and summary of all SSOs, Bypasses, Diversions and effluent limit violations that occurred during the previous Calendar Year. Information on Building Backups may be provided in separate spreadsheets and summaries from other SSOs. The spreadsheets and summaries shall identify:*
 - a. For all SSOs; the location, source, date, time, duration, pathway (if any), receiving water (if any), the identification of the treatment plant Sewerbasin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO (e.g, short term project, long term sewer basin project, blockage abatement, etc.);*
 - b. For all Bypasses and Diversions, the location, date, time, duration, volume and reason for each Bypass and Diversion; and the total Bypass and Diversion volumes;*
 - c. For all effluent limit violations, all information required to be reported on KUB’s Discharge Monitoring Reports.*
 - 7. The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v).*

8. *Grease-Related Information.*
 - a. *A summary table identifying for the reporting period: (i) A listing of the number of grease related blockages causing or relating to SSOs; and (ii) corrective actions to address such grease related blockages causing or relating to SSOs.*
 - b. *A narrative summary of grease program activities for the reporting period.*
9. *A summary of MOM program implementation for the following Work:*
 - a. *A summary of Continuing Sewer System Assessment Program activities undertaken to assess the condition of the WCTS during the reporting period, including information on assessment of manholes, gravity mains, force mains, pump stations and laterals;*
 - b. *A summary of Infrastructure Rehabilitation Program projects, including a spreadsheet listing of projects for the reporting period and projects continuing from previous reporting periods but not yet completed;*
 - c. *An update on procedures, response times and public reporting information associated with SSOs that demonstrate continued effectiveness of the Sewer Overflow Response Plan; and*
 - d. *A summary table of Gravity Line Preventative Maintenance Program activities conducted during the reporting period including information regarding the cleaning and maintenance of the gravity collection system.*
10. *A representation that the Other MOM Programs continue to be implemented in substantially the same manner as represented in Appendix A and the documents identified therein.*
11. *A summary of Private Lateral Program activities undertaken during the reporting period including the number of Private Laterals repaired."*

The following Annual Progress Report is submitted to fulfill the reporting requirements described in the revised Section XIX of the Consent Decree and demonstrate KUB's continued focus on MOM programs, Composite Correction Plan (CCP) plant upgrades, and system rehabilitation through its Century II program. As seen in Figure 1, system improvements have produced significant reductions in overflow frequencies and volumes since 2003. Significant rainfall in the KUB service area was the key contributing factor to the occurrence of SSO events experienced during this reporting period. Our data reflects this was the second wettest year since 2003, with rainfall about 18.25" greater than average. During this reporting period, KUB experienced a total of 149 SSOs, four of which were building backups.

Figure 1. Sanitary Sewer Overflow Trend: 2003 through 2020



* Seven SSOs also resulted in a BBU. This is noted on both the SSO and BBU appendices.

Section 1 Composite Correction Plan (CCP)

The CCP was submitted to the EPA on July 23, 2007. EPA rejected it on January 4, 2008. The Revised CCP was submitted to EPA on January 5, 2009, and subsequently approved on January 20, 2009. The CCP work is progressing and on schedule, meeting the implementation deadline of June 2018 at the Fourth Creek Wastewater Treatment Plant (WWTP) and on schedule to meet the June 2021 at the Kuwahee WWTP.

Fourth Creek WWTP Phase I

Work was completed prior to the December 30, 2013, deadline.

Fourth Creek WWTP Phase II

Work was completed prior to the June 30, 2018, deadline.

Kuwahee WWTP Phase I

Work was completed prior to the December 30, 2012, deadline.

Kuwahee WWTP Phase II

KUB's contractor mobilized to begin construction in September 2018 and is currently 75% complete with the project. Construction is currently on schedule to be complete by the June 30, 2021, deadline. Tasks included are construction of (2) biological contact tanks, pump station, BEHRC treatment trains, chemical and electrical control building, and associated yard piping.

Section 2 Process Controls Program (PCP)

KUB continues to follow its Process Controls Program (PCP) during wet-weather operating conditions. During this reporting period, the PCP was initiated 65 times. Eight Diversion events occurred. Please refer to Table 2 under Section 6 to view information related to these Diversion events.

Section 3 Capacity Assurance Program

The Capacity Assurance Program (CAP) was submitted to EPA for review on February 8, 2006. EPA reviewed and approved the program on April 7, 2006.

KUB manages its CAP using an Information Management System (IMS) that tracks rehabilitation credits earned through its Century II and Management, Operations, and Maintenance (MOM) program activities.

Table 1 below lists a total amount of banked credits available by sewerbasin for use in future development if capacity cannot be certified. There were no exceptions granted or needed for connections for essential services during this reporting period.

Table 1. CAP Banked Credits

Basin	Flow Credits (MGD)	Equivalent Homes
First Creek	18.93	28,513
Second Creek	12.50	18,820
Third Creek	13.81	20,802
Fourth Creek	4.96	7,468
South Knoxville	5.46	8,223
Loves Creek	2.89	4,354
Williams Creek	2.28	3,439
Eastbridge	0.12	175
TOTAL	60.95	91,794

Section 4 Transfers of Ownership

There has been no transfer of ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof, during this reporting period as defined by Section III, Part C of the Consent Decree.

Section 5 Compliance and Non-Compliance With the Consent Decree

5.1 Submission of Deliverables

To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree. After consultation with TDEC, the EPA agreed that less frequent reporting was now appropriate as a result of the narrower scope of remaining work to be performed. On December 13, 2016, EPA approved the revised Section XIX to the Consent Decree, authorizing the submittal of an Annual Progress Report incorporating all reporting requirements into one annual report. The following sections detail all activity related to deliverables that occurred during the past year.

5.1.1 Status of Deliverables

Below is a list of dates on which KUB submitted deliverables to EPA or received approval for deliverables in 2020. Each submittal was available for public comment in the Public Document Repository (PDR) for a period of twenty (20) days. No comments were received for any of the following deliverables.

February 26, 2020

- Submitted to EPA – Annual Progress Report 2019

5.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 87 Unpermitted Discharges. Appendix A lists any SSO that occurred during 2020 that resulted in an unpermitted discharge along with its cause, volume, one- and three-day rainfall totals, and rainfall intensity. Unpermitted discharges that were impacted by factors that were difficult to control or events that had minimal impact on the environment due to their low volume are also indicated in Appendix A.

Section 6 SSOs, Bypasses, Diversions, and Effluent Limit Violations

6.1 SSOs

Appendix B lists the location, source, date, time, duration, pathway (if any), receiving water (if any), the identification of the treatment plant sewer basin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO during this reporting period. During this period, there were 145 SSO events.

Of the 145 SSO events, 50 were in the 0 – 1,000 gallons volume range, 20 were in the 1,001 – 10,000 gallons volume range, 63 events totaled greater than 10,000 gallons, and the volume for 12 events were unknown. Durations for events during this period are as follows: 49 ranged from 0 – 2 hours, and 25 ranged from 2.1 – 5 hours, 59 were greater than five hours, and the duration of 12 events were unknown.

KUB experienced three separate rain events that qualified as greater than 2 year events. Twelve of the sewer overflows reported occurred in the greater than 2 year rain event that occurred on January 3rd, 2020. Forty of the sewer overflows reported occurred in the greater than 10 year rain event that occurred on February 5th and 6th, 2020. Seventeen of the sewer overflows reported occurred in the greater than 10 year rain event that occurred on April 13, 2020. KUB requests this storm be recognized as a Force Majeure event with regard to stipulated penalties, although we did not submit a letter per the guidance we received from EPA on March 3, 2020, regarding our previous two Force Majeure submission letters from 2020.

Two sites became chronic in calendar year 2020, after experiencing five SSO events in less than a 12-month period. The two sites are 4100 Central Ave Pike and 7308 Rising Rd. We completed an emergency repair that should lessen the frequency of events at 4100 Central Ave Pike in October 2020, and we are currently designing a project to increase capacity at this location. A project is under construction to address the 7308 Rising Rd events and is scheduled to be completed late Summer 2021. Chronic sites remaining from 2019 include 600 N Gallaher View Rd, 1408 Adair Dr, 1829 Wayland Rd, and 5100 W Martin Mill Pike. We updated the settings at our Neubert Springs pump station in April 2020, and we have not had any SSO events at 5100 W Martin Mill Pike since. We believe this location has been remedied. Projects are about to be bid to address 1408 Adair Dr and 1829 Wayland Rd; construction is anticipated to be completed by the end of 2021. We are kicking off the design process now for 600 N Gallaher View Rd, following a period of data gathering and analysis.

6.2 Building Backups

Appendix C lists the location, source, date, time, duration, the identification of the treatment plant sewerbasin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO during this reporting period. During this period, there were 11 Building Backups including seven SSO events that also resulted in a BBU.

6.3 Bypasses

All Bypasses that occurred during this reporting period were in compliance with the Process Controls Program. For purposes of this report, any Bypass in compliance with the Process Controls Program shall be referred to as a “Diversion” (see below). All Bypasses not in compliance with the Process Controls Program shall be referred to as a “Bypass.”

Table 2 contains the location, date, time, duration, volume, and reason for each Bypass and Diversion event that occurred during the reporting period. For the year, there were eight Diversion events: five at Kuwahee WWTP and three at Loves Creek WWTP. There were no Diversion events at Fourth Creek or Eastbridge WWTPs. No Bypasses occurred during this reporting period.

6.4 Effluent Limit Violations

Table 3 contains all effluent limit violations that occurred during this reporting period. The table contains the information as it is reported in KUB’s Discharge Monitoring Reports. During this reporting period, there were 14 effluent limit violations at the Kuwahee WWTP, one at the Fourth Creek WWTP, three at Loves Creek WWTP, and none at Eastbridge WWTP.

Heavy rainfall experienced in the KUB service area during this reporting period produced an annual precipitation total approximately 18.25” greater than the typical yearly average. This increase in the amount of total rainfall was a significant contributing factor to the total number of effluent limit violations that occurred in 2020.

Table 2. Diversions

WWTP	Did a Diversion occur?	Date Diversion gate opened	Time Diversion gate opened	Date Diversion gate closed	Time Diversion gate closed	Date Diversion flow reported	Duration (hrs)	Volume (MG)	Total Event Duration (hrs)	Total Event Volume (MG)	Reason for Event
Kuwahee	Yes	1/2/2020	2326			1/2/2020	0.56	1.14	36.84	47.62	High flow event due to excess rainfall
						1/3/2020	24.00	42.57			
				1/4/2020	1217	1/4/2020	12.28	3.91			
Kuwahee	Yes	2/5/2020	1504			2/5/2020	8.93	18.12	70.76	132.38	High flow event due to excess rainfall
						2/6/2020	24.00	50.0			
						2/7/2020	24.00	50.0			
				2/8/2020	1350	2/8/2020	13.83	14.26			
Kuwahee	Yes	2/10/2020	1935			2/10/2020	4.42	1.8	29.87	33.62	High flow event due to excess rainfall. Diversion was stopped and started on 2/11/2020 by PCP guidance.
						2/11/2020	19.75	30.4			
				2/12/2020	0542	2/12/2020	5.7	1.42			
Kuwahee	Yes	2/13/2020	0131			2/13/2020	22.48	29.9	36.95	34.17	High flow event due to excess rainfall
				2/14/2020	1428	2/14/2020	14.47	4.27			
Kuwahee	Yes	4/13/2020	0047			4/13/2020	23.22	33.69	24.07	33.82	High flow event due to excess rainfall
				4/14/2020	0051	4/14/2020	0.85	0.13			

WWTP	Did a Diversion occur?	Date Diversion gate opened	Time Diversion gate opened	Date Diversion gate closed	Time Diversion gate closed	Date Diversion flow reported	Duration (hrs)	Volume (MG)	Total Event Duration (hrs)	Total Event Volume (MG)	Reason for Event
Loves Creek	Yes	1/3/2020	0420			1/3/2020			10.00	0.46	High flow event due to excess rainfall
				1/3/2020	1420	1/3/2020					
Loves Creek	Yes	2/5/2020	2315			2/5/2020	0.75	.14	28.8	3.99	High flow event due to excess rainfall
						2/6/2020	24.00	3.37			
				2/7/2020	0403	2/7/2020	4.05	.48			
Loves Creek	Yes	4/13/2020	0731			4/13/2020			2.82	0.16	High flow event due to excess rainfall
				4/13/2020	1020	4/13/2020					
Fourth Creek	No										
Eastbridge	No										

Table 3. Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	2/5/2020	Daily Maximum	Total Suspended Solids	45 mg/L	60 mg/L
Kuwahee	Yes	2/6/2020	Daily Maximum	Settleable Solids	1.0 mL/L	4.0 mL/L
Kuwahee	Yes	2/6/2020	Daily Maximum	Total Suspended Solids	45 mg/L	59 mg/L
Kuwahee	Yes	2/7/2020	Daily Minimum	TSS, % Removal	40%	10%
Kuwahee	Yes	2/2-8/2020	Weekly Average	TSS (lbs/d)	14,678 lbs/d	22,105 lbs/d
Kuwahee	Yes	2/9-15/2020	Weekly Average	TSS (lbs/d)	14,678 lbs/d	17,741 lbs/d
Kuwahee	Yes	February 2020	Monthly Average	TSS (lbs/d)	11,009 lbs/d	11,572 lbs/d
Kuwahee	Yes	7/7/2020	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	10.8 mg/L
Kuwahee	Yes	7/8/2020	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	10.9 mg/L
Kuwahee	Yes	7/11/2020	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	11.6 mg/L

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	7/5-11/2020	Weekly Average	Nitrogen, Ammonia total (as N)	7.5 mg/L	7.6 mg/L
Kuwahee	Yes	7/14/2020	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	13.9 mg/L
Kuwahee	Yes	7/15/2020	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	12.1 mg/L
Kuwahee	Yes	7/12-18/2020	Weekly Average	Nitrogen, Ammonia total (as N)	7.5 mg/L	7.7 mg/L
Fourth Creek	Yes	12/13/2020	Daily Maximum	<i>E. coli</i>	487 MPN/100 mL	610 MPN/100 mL
Loves Creek	Yes	4/13/2020	Daily Maximum	Settleable Solids	1.0 mL/L	1.5 mL/L
Loves Creek	Yes	4/13/2020	Daily Maximum	<i>E. coli</i>	487 MPN/100 mL	>2,400 MPN/100 mL
Loves Creek	Yes	5/7/2020	Daily Maximum	<i>E. coli</i>	487 MPN/100 mL	550 MPN/100 mL
Eastbridge	No					
SS - Settleable Solids	mg/l - milligrams per liter			MPN – Most Probable Number		
TSS - Total Suspended Solids	cfu –Colony Forming Unit					
ml/l – milliliters per liter	lbs - Pounds					

Section 7 Water Quality Monitoring Data

7.1 Sampling Conducted and Results

Appendix D lists all sampling that was conducted during this reporting period and the results thereof. This includes results associated with routine and investigative monitoring or unpermitted discharges that occurred in dry weather conditions.

7.2 Projected Data Collection

During 2021, KUB will continue to monitor 24 routine sampling locations in the sewerbasins of eight area creeks. KUB will collect samples from the following locations during 2021:

Sample Locations by Creek Mile or Site Number

Creek Name	Creek Mile #	Creek Mile #	Creek Mile #
First Creek	1.74	2.57	6.33
Second Creek	0.30	1.54	5.11
Third Creek	0.87	2.08E	4.80W
Fourth Creek	1.75	2.79	3.29
Baker Creek	0.36	1.45	2.00
Goose Creek	0.40	1.19E	1.80E
Loves Creek	0.85	1.89	3.45
Williams Creek	0.89	1.70	2.02

Section 8 Grease Control Program (GCP)

8.1 Food Service Facilities (FSFs) Compliance Activities

There are currently 910 permitted and active FSFs in KUB's service area that were inspected routinely in 2020 to assess compliance with KUB's Grease Control Program (GCP). KUB also inspected an additional 85 FSF locations at least once in 2020 that were inactive or closed to determine if food preparation had resumed or the facility had reopened under new ownership. During this reporting period, KUB conducted 1,010 inspections of all facilities combined to determine if their equipment was adequate and being maintained as required to prevent grease from entering the wastewater system. In addition, KUB required all newly constructed FSFs to submit a permit application to ensure their facilities would be equipped with appropriately sized grease control equipment (GCE) before opening.

KUB continues its emphasis on improving wastewater system performance and reducing grease related blockages by routinely inspecting FSFs and requiring them to replace aging and/or undersized GCE as needed. Traps and interceptors can develop cracks and corrosion over time, so their maintenance condition must be assessed during inspections. A total of 30 FSFs were required to submit a Corrective Action Plan (CAP) in 2020 demonstrating they would move forward with upgrading and/or installing GCE. There were 12 customers that actually installed GCE during the reporting period. A total of seven grease interceptors and five grease traps were added to control grease as a result of program efforts and customer compliance. Zero FSF's were published this year in the local newspaper for noncompliance for failure to install the required grease control equipment. Zero FSF's were placed under an Administrative Order in 2020.

8.2 Grease-Related Overflow Response

When a grease-related overflow occurs, KUB initiates an investigation to identify any customer that could have contributed grease to the wastewater system and caused the blockage. Using an electronic mapping tool, Geographic Information System (GIS), KUB identifies all potential contributors upstream from the site of where a grease-related SSO occurred. KUB then inspects all commercial customers in the area to verify their compliance with the GCP, and educational program information is mailed to all residential customers contributing to the SSO. In 2020, KUB mailed grease letters, educational brochures, and grease can liners to 1,521 customers and conducted 56 inspections on commercial customers as a result of 13 grease-related SSO/BBU investigations. Appendix E lists the number of grease-related blockages causing SSOs and the corrective actions that were used to address such blockages.

Information about the GCP is also made available to our customers on KUB's website. There, customers can view material discussing the environmental risks associated with grease-related overflows and receive instruction on proper grease disposal methods. When feasible, KUB also provides GCP educational materials through customer newsletters, event promotions of the residential Can the Grease program in the local newspaper, and community events.

Section 9 MOM Program Update

9.1 Continuing Sewer System Assessment Program (CSSAP)

The CSSAP is a systematic evaluation of the entire wastewater collection and transmission system (WCTS) that also assesses capacity to support prioritization of the Infrastructure Rehabilitation Program (IRP). The CSSAP was approved on July 28, 2005 and system assessments began that same year. In February 2016, KUB completed its first assessment of the entire WCTS one year ahead of the required 12-year cycle period.

The following table shows the elements of the CSSAP assessment tools and performance goal periods associated with the second assessment which began in March 2016. A comprehensive pump station assessment was last conducted in 2019 as required by the two-year assessment schedule:

Table 4. CSSAP Elements

Program Elements	Assessment Tools	Completed in 2020	Total Completed*	One Complete Cycle Period
Manhole Condition Assessment	Manhole Inspections Smoke Testing	6.8 percent	40.1 percent	12 Years
Gravity Sewer Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	15.1 percent	41.1 percent	12 Years
Private Lateral Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	8.3 percent	44.1 percent	12 Years
Force Main Performance Assessment	Corrosion Defect Identification	75 percent	75 percent**	2 Years
Pump Station Performance Assessment	Pump Station Performance and Adequacy	0 percent	0 percent**	2 Years

*Percentage completed in second 12-year cycle.

**Comprehensive inspections alternate each year between the Force Main Performance assessment and Pump Station Performance Assessment. 2020 Force Main Performance Assessment is being completed at the time this report is being submitted.

9.2 Infrastructure Rehabilitation Program (IRP)

In 2020, KUB's IRP rehabilitated or replaced more than 121,000 ft (22.9 miles) of sewer gravity mains and 614 manholes and 2,400 ft (0.5 miles) of force mains. Appendix F lists the IRP projects for the reporting period and projects continuing from previous reporting periods but not yet completed. All of these projects are in addition to the previously completed CAP/ER projects and are included in KUB's Century II Program.

9.3 Sewer Overflow Response Plan (SORP)

KUB continues to place a high priority on maintaining and executing a SORP to help protect our community and our environment. This progress report includes an update on implementation of SORP procedures, training, and other areas of interest related to the program.

KUB makes all reasonable efforts to respond to an SSO within 45 minutes, taking into consideration the safety of the responder and the public as the first priority. In 2020, we had 142 SSO events in which KUB's Underground Construction (UGC) department responded, and our average response time was 35 minutes. KUB's prompt response time to SSO events is an essential element to the success of our SORP. It enables responding personnel to quickly assess the cause and environmental impact of an SSO to establish the best containment and remediation procedures. Quick response times also enable KUB to classify the majority of SSOs as having a short duration with a minimal impact on the environment.

KUB continues to provide an initial notice to TDEC and make public the date, time, volume, and location of each SSO (excluding building backups) on an SSO log accessed through KUB's website within 24 hours of the event. The SSO log also contains a link to a permanent archive of SSOs by month. To access the SSO log, go to www.kub.org and type "SSO Log" in the search bar at the top of the webpage.

KUB uses a computerized SORP training tool that allows new employees, and those needing refresher training, to train at their own pace on a computer. Training is also given in a classroom setting with hands-on field training components when more appropriate. In addition, KUB relies on feedback from customers and other local organizations to help identify any instances when the quality of SSO response falters. Such feedback is directed to Engineering, who works with various departments to correct any concerns.

9.4 Gravity Line Preventative Maintenance Program (GLPMP)

The GLPMP is divided into the Comprehensive Hydraulic Cleaning Program (CHCP) and Blockage Abatement (BA). The CHCP is a systematic, planned cleaning of the system to reduce debris and grease buildup and root intrusion. The BA Program is also a preventative maintenance approach for addressing operational issues that uses event history and condition assessment information to implement activities that prevent or reduce system disruptions. Activities may include, but are not limited to, hydraulic flushing, mechanical and chemical root control, rodding, and televised inspections.

The following table documents program activities for the year.

Table 5. GLPMP Elements

Program Elements				
Comprehensive Hydraulic Cleaning Program (CHCP)	Cleaned and televised			
	425,000 ft (80.5 miles)			
Blockage Abatement (BA) Program	Sewer mains in BA	Sewer mains cleaned	Sewer mains televised	Sewer mains root cut
	1,535,500 ft (291 miles)	729,000 ft (138 miles)	180,000 ft (34 miles)	270,000 ft (51 miles)

Section 10 Other MOM Programs

KUB continues to implement and manage its Other MOM Programs as represented in Appendix A of the Consent Decree. There have been no substantial program changes made during this reporting period.

Section 11 Private Lateral Program (PLP)

KUB operates a Private Lateral Program (PLP), as required by the Consent Decree and KUB's Wastewater Rules and Regulations. The PLP helps protect our environment by ensuring that property owners repair their laterals and/or remove prohibited connections. Through the CSSAP, KUB has smoke tested and/or televised all laterals within the WCTS during one complete 12-year cycle period. In addition, KUB completed the Supplemental Environmental Project (SEP) and submitted the SEP Completion Report to the EPA on June 29, 2012. KUB continues to enforce on private sewer laterals through the PLP where defects are discovered in laterals when there is a problem on property (POP) reported and customers fail to correct the problem. The statistics below include enforcement actions undertaken in the program from January 1, 2020, to December 31, 2020.

Total Private Lateral Enforcements	0
Repair	0
Replace	0
Total with Tenants	0

Additionally, there was one property that received reinstatement of water service after lateral work was completed. In this case, the water service was terminated in previous years due to noncompliance with the PLP, but the required repairs were completed in 2020.

Total Repairs Completed	1
2019 Enforcements	0
Reinstatements	1
Terminations	0

Appendix A

Unpermitted Discharges

Appendix A
Unpermitted Discharges in 2020

10

Overflow volume of 500 gallons or less

1

Overflow volume of 501 - 1000 gallons

Vandalism

1

1-day rainfall greater than 3"

38

Intensity >= 0.84 in/hr

Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals 1-Day*	Rainfall Totals 3-Day**	Peak Rainfall Intensity (in/hr)	Force Majeure event
1st 2020	1/3/2020	2004 Riverside Dr	Unpermitted Discharge	41,000	Williams Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	1500 Lyons Bend Rd	Unpermitted Discharge	530,000	Fourth Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	2004 Neyland Dr	Unpermitted Discharge	450,000	Tennessee River	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	1221 Milam Cir	Unpermitted Discharge	200	Fourth Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	4100 Central Ave Pike	Unpermitted Discharge	300	Second Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	1829 Wayland Rd	Unpermitted Discharge	45,000	Swanpond Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	600 N Gallaher View Rd	Unpermitted Discharge	540,000	Ten Mile Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	5505 Dandyline Dr	Unpermitted Discharge	50	Loves Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/3/2020	2327 South Haven Rd	Unpermitted Discharge	Unknown	Baker Creek	Heavy Rainfall	1.33	2.89	0.47	Yes
1st 2020	1/6/2020	2739 Parkview Ave	Unpermitted Discharge	600	Williams Creek	Heavy Rainfall	0.00	0.17	0.09	Yes
1st 2020	1/13/2020	4200 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.01***	0.61***	0.27	Yes
1st 2020	1/13/2020	4923 Ball Rd	Unpermitted Discharge	500	Grassy Creek	Broken System	0.01	0.61	0.27	No
1st 2020	1/16/2020	9300 Johnson Rd	Unpermitted Discharge	Unknown	Lyons Creek	Heavy Rainfall	0.02***	0.98***	0.42	Yes
1st 2020	2/5/2020	4100 Central Ave Pike	Unpermitted Discharge	46,000	Second Creek	Heavy Rainfall	2.82	3.30	0.51	Yes
1st 2020	2/5/2020	1408 Adair Dr	Unpermitted Discharge	130,000	Lynnhurst Creek	Heavy Rainfall	2.82	3.30	0.51	Yes
1st 2020	2/5/2020	1829 Wayland Rd	Unpermitted Discharge	75,000	Swanpond Creek	Heavy Rainfall	2.82	3.30	0.51	Yes
1st 2020	2/5/2020	5600 Schenic Hills Rd	Unpermitted Discharge	25,000	Second Creek	Heavy Rainfall	2.82	3.30	0.51	Yes
1st 2020	2/5/2020	2700 Boright Dr	Unpermitted Discharge	43,000	First Creek	Heavy Rainfall	2.82	3.30	0.51	Yes
1st 2020	2/6/2020	2004 Riverside Dr	Unpermitted Discharge	2,400,000	Williams Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	1500 Lyons Bend Rd	Unpermitted Discharge	2,300,000	Fourth Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2544 Fair Dr	Unpermitted Discharge	20,000	First Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	4605 Webb Ln	Unpermitted Discharge	1,250,000	Third Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2004 Neyland Dr	Unpermitted Discharge	43,940,000	Tennessee River	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	5115 Clinton Hwy	Unpermitted Discharge	600	Second Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2523 Dayton St	Unpermitted Discharge	47,000	Third Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	3910 Papermill Dr	Unpermitted Discharge	37,000	Third Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2507 Fenwood Dr	Unpermitted Discharge	5,000	First Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	445 W Blount Ave	Unpermitted Discharge	54,000	Tennessee River	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	5227 McNutt Rd	Unpermitted Discharge	5,500	Toll Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2327 South Haven Rd	Unpermitted Discharge	425,000	Baker Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	915 Loves Creek Rd	Unpermitted Discharge	13,000	Loves Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	201 Hermitage Dr	Unpermitted Discharge	77,000	Pond	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2130 Adair Dr	Unpermitted Discharge	25,000	Lynnhurst Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	2739 Parkview Ave	Unpermitted Discharge	40,000	Williams Creek	Heavy Rainfall	2.33	5.63	0.51	Yes

Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals 1-Day*	Rainfall Totals 3-Day**	Peak Rainfall Intensity (in/hr)	Force Majeure event
1st 2020	2/6/2020	1716 N Sixth Ave	Unpermitted Discharge	2,500	First Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	1531 N Sixth Ave	Unpermitted Discharge	52,000	First Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	1221 Milam Cir	Unpermitted Discharge	10,000	Fourth Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	701 W Ford Valley Rd	Unpermitted Discharge	60,000	Knob Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	600 N Gallaher View Rd	Unpermitted Discharge	6,000,000	Ten Mile Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	8224 Landmark Dr	Unpermitted Discharge	55,000	Ten Mile Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/6/2020	6410 S Northshore Dr	Unpermitted Discharge	200,000	Fourth Creek	Heavy Rainfall	2.33	5.63	0.51	Yes
1st 2020	2/7/2020	4719 Old Broadway	Unpermitted Discharge	800,000	Lynnhurst Creek	Heavy Rainfall	0.04	5.19	0.51	Yes
1st 2020	2/7/2020	4513 Hinton Dr	Unpermitted Discharge	18,000	Third Creek	Heavy Rainfall	0.04	5.19	0.51	Yes
1st 2020	2/10/2020	4719 Old Broadway	Unpermitted Discharge	380,000	Lynnhurst Creek	Heavy Rainfall	0.92	1.08	0.10	No
1st 2020	2/11/2020	4605 Webb Ln	Unpermitted Discharge	160,000	Third Creek	Heavy Rainfall	1.24	2.16	0.22	No
1st 2020	2/11/2020	6201 Kingston Pike	Unpermitted Discharge	2,000	Fourth Creek	Blockage	1.24	2.16	0.22	No
1st 2020	2/11/2020	2701 Chukar Rd	Unpermitted Discharge	Unknown	Ten Mile Creek	Heavy Rainfall	1.24***	2.16***	0.22	Yes
1st 2020	2/11/2020	1408 Adair Dr	Unpermitted Discharge	6,000	Lynnhurst Creek	Heavy Rainfall	1.24	2.16	0.22	No
1st 2020	2/13/2020	4605 Webb Ln	Unpermitted Discharge	169,000	Third Creek	Heavy Rainfall	0.82	2.54	0.36	No
1st 2020	2/13/2020	2004 Riverside Dr	Unpermitted Discharge	Unknown	Williams Creek	Heavy Rainfall	0.82	2.54	0.36	No
1st 2020	2/13/2020	5800 Western Ave	Unpermitted Discharge	Unknown	Third Creek	Heavy Rainfall	0.82	2.54	0.36	Yes
1st 2020	2/13/2020	1408 Adair Dr	Unpermitted Discharge	52,000	Lynnhurst Creek	Heavy Rainfall	0.82	2.54	0.36	No
1st 2020	2/14/2020	1500 Hoitt Ave	Unpermitted Discharge	Unknown	First Creek	Heavy Rainfall	0.00***	1.30***	0.36	No
1st 2020	2/16/2020	4200 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.00***	0.00***	0.00	Yes
1st 2020	3/4/2020	3216 Mcpherson St	Unpermitted Discharge	5,000	Third Creek	Blockage	0.00	1.51	0.36	No
1st 2020	3/4/2020	4420 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.00***	1.51***	0.36	Yes
1st 2020	3/14/2020	2015 Neyland Dr	Unpermitted Discharge	485	Tennessee River	WWTP	0.00	0.30	0.13	No
2nd 2020	4/13/2020	1829 Wayland Rd	Unpermitted Discharge	240,000	Swanpond Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	2004 Riverside Dr	Unpermitted Discharge	5,000	Williams Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	155 Chamberlain Blvd	Unpermitted Discharge	200	Storm Drain	Blockage	0.70	4.84	0.66	No
2nd 2020	4/13/2020	2739 Parkview Ave	Unpermitted Discharge	23,000	Williams Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	4605 Webb Ln	Unpermitted Discharge	600	Third Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	600 N Gallaher View Rd	Unpermitted Discharge	350,000	Ten Mile Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	2700 Boright Dr	Unpermitted Discharge	12,500	First Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	2327 South Haven Rd	Unpermitted Discharge	22,000	Baker Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	2004 Neyland Dr	Unpermitted Discharge	300,000	Tennessee River	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	1500 Lyons Bend Rd	Unpermitted Discharge	380,000	Fourth Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	1408 Adair Dr	Unpermitted Discharge	168,000	Lynnhurst Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/13/2020	2541 Fair Dr	Unpermitted Discharge	6,000	First Creek	Heavy Rainfall	0.70	4.84	0.66	Yes
2nd 2020	4/14/2020	4100 Central Ave Pike	Unpermitted Discharge	13,000	Second Creek	Heavy Rainfall	0.00	4.84	0.66	Yes
2nd 2020	4/19/2020	4420 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.11***	0.58***	0.18	Yes
2nd 2020	4/22/2020	4200 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.00***	0.81***	0.21	Yes
2nd 2020	6/29/2020	1500 Lyons Bend Rd	Unpermitted Discharge	330,000	Fourth Creek	Heavy Rainfall	2.22	2.60	0.60	Yes
2nd 2020	6/30/2020	600 N Gallaher View Rd	Unpermitted Discharge	200,000	Ten Mile Creek	Heavy Rainfall	0.00	2.56	0.60	No
3rd 2020	7/9/2020	2523 Dayton St	Unpermitted Discharge	2,500	Third Creek	Heavy Rainfall	0.00	0.05	0.16	No
3rd 2020	8/15/2020	2015 Neyland Dr	Unpermitted Discharge	897,500	Tennessee River	Heavy Rainfall	2.32	2.32	0.77	No
3rd 2020	8/31/2020	4100 Central Ave Pike	Unpermitted Discharge	50	Second Creek	Heavy Rainfall	0.20	1.55	0.82	No
3rd 2020	9/8/2020	193 Kensi Dr	Unpermitted Discharge	30	Second Creek	Blockage	0.00	0.00	0.00	No
3rd 2020	9/15/2020	200 Kensi Dr	Unpermitted Discharge	60,000	Second Creek	Broken System	0.00	0.01	0.19	No

Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals 1-Day*	Rainfall Totals 3-Day**	Peak Rainfall Intensity (in/hr)	Force Majeure event
3rd 2020	9/21/2020	312 W Jackson Ave	Unpermitted Discharge	13,000	First Creek	Construction Failure	0.00	0.00	0.00	No
3rd 2020	9/21/2020	5072 South National Dr	Unpermitted Discharge	400	French Broad River	Broken System	0.00	0.00	0.00	No
3rd 2020	9/25/2020	5072 South National Dr	Unpermitted Discharge	45,000	French Broad River	Heavy Rainfall	0.79	2.83	0.30	No
3rd 2020	9/28/2020	1821 Andy Holt Ave	Unpermitted Discharge	290	Third Creek	Blockage	0.67	0.67	0.25	No
3rd 2020	9/30/2020	3930 Summercrest Way	Unpermitted Discharge	175	Second Creek	Blockage	0.00	0.83	0.25	No
4th 2020	10/29/2020	1829 Wayland Dr	Unpermitted Discharge	20,000	Swanpond Creek	Heavy Rainfall	1.02	1.94	0.45	No
4th 2020	12/7/2020	2306 Maryville Pike	Unpermitted Discharge	15,100	Tennessee River	Construction Failure	0.00	0.04	0.02	No
4th 2020	12/24/2020	5230 McNutt Rd	Unpermitted Discharge	20	Toll Creek	Pump Station Failure	1.45	1.45	0.21	No

*1-Day Rainfall Total is the rain that occurred on the day of the SSO

**3-Day Rainfall Total is the total amount of rain that occurred on the day of the SSO and the 2 days prior

***Evidence that these overflows occurred was found some time following the actual event. The rainfall shown for these events correlate to the amount received on the date the events were reported to KUB.

Appendix B

SSOs

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
1/3/2020	1:24am	2004	Riverside Dr	KUW	Williams Creek	25	Manhole 1-1	Ground to Williams Creek	Williams Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	41,000	0	41,000	14	Yes	Future Construction Planned
1/3/2020	10:15am	445	W Blount Ave	KUW	South Knox	39	BBU and Building Exterior	Soil Saturation		Blockage Debris The main was flushed to remove the blockage. The area was cleaned.	28,000	0	28,000	2	No	Routine Blockage Abatement
1/3/2020	10:35am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	45,000	0	45,000	11	Yes	Future Construction Planned
1/3/2020	11:15am	600	N Gallaheer View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	540,000	0	540,000	51	Yes	Future Construction Planned
1/3/2020	11:18am	5505	Dandyline Dr	LC	Loves Creek	20	Manhole 16-25	Ground to Loves Creek	Loves Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	50	0	50	6	Yes	System Assessment Underway
1/3/2020	2:15pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manholes 9 and 142	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	242,000	0	242,000	14	No	System Assessment Underway
1/3/2020	4:17am	1500	Lyons Bend Rd	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	530,000	0	530,000	1.5	Yes	System Assessment Underway
1/3/2020	4:39am	2004	Neyland Dr	KUW	Second Creek	35a	Manhole 1	Tennessee River	Tennessee River	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	450,000	0	450,000	1.5	Yes	System Assessment Underway
1/3/2020	6:28pm	2327	South Haven Rd	KUW	South Knox	40	Manhole 24-27	Ground to Baker Creek	Baker Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Construction Project Underway
1/3/2020	8:15am	1221	Milam Cir	FC	Fourth Creek	36	Manhole 12-173	Ground to Tributary to Fourth Creek	Fourth Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	200	0	200	5.5	Yes	Future Construction Planned
1/3/2020	8:43am	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	300	0	300	1	Yes	Future Construction Planned
1/3/2020	9:30am	1500	Lyons Bend Rd	FC	Fourth Creek	37	MLSS Wet Well	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	143,000	0	143,000	1	No	System Assessment Underway
1/6/2020	3:16pm	2739	Parkview Ave	KUW	Williams Creek	19	Manhole 5-15	Ground to Williams Creek	Williams Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	600	0	600	1	Yes	Future Construction Planned
1/13/2020	10:04am	4923	Ball Rd	FC	Fourth Creek	49	Force Main	Ground to Grassy Creek	Grassy Creek	Broken System Broken Force Main The force main was repaired. The area was cleaned.	500	0	500	4	Yes	System Repair Completed
1/13/2020	2:09pm	4200	Holston Hills Rd	LC	Loves Creek	26	Manhole 74-1	Ground to Beaman Branch to Holston River	Holston River	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
1/15/2020	1:44pm	4576	Holston Dr	LC	Loves Creek	20	Manhole 34-14	Soil Saturation		Construction Failure Third Party The area was cleaned.	400	360	40	1	No	System Repair Completed
1/16/2020	11:15am	9300	Johnson Rd	EB	Eastbridge	70	Manhole 77	Ground to Lyons Creek	Lyons Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/5/2020	1:11pm	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	46,000	0	46,000	11	Yes	Future Construction Planned
2/5/2020	1:14pm	1408	Adair Dr	KUW	First Creek	7	Manholes 72, 73, 1412 Adair Cleanout, Manhole 31 at Plummer	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	130,000	0	130,000	30	Yes	Future Construction Planned
2/5/2020	2:50pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	130,000	0	130,000	34	No	System Assessment Underway
2/5/2020	3:19pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	75,000	0	75,000	19	Yes	Future Construction Planned
2/5/2020	5:45pm	5600	Scenic Hills Rd	KUW	Second Creek	5	Manhole 8-47	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	25,000	0	25,000	42	Yes	System Assessment Underway
2/5/2020	6:27pm	2700	Boright Dr	KUW	First Creek	8	Manhole 26	Pavement to Storm Drain to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	43,000	0	43,000	9	Yes	Construction Project Underway
2/6/2020	1:00pm	1400	Ault Rd	LC	Loves Creek	6	Manhole 29-228	Pavement to Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	9,000	0	9,000	22	No	System Assessment Underway
2/6/2020	1:00pm	1716	N Sixth Ave	KUW	First Creek	18	Manholes 5, 38, and BBU	Storm Drain to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	2,520	20	2,500	12	Yes	System Assessment Underway
2/6/2020	1:10am	2544	Fair Dr	KUW	First Creek	4	Manholes 77 and 20-2	Ground to Wet Weather Conveyance to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	20,000	0	20,000	7	Yes	Future Construction Planned
2/6/2020	1:45pm	1531	N Sixth Ave	KUW	First Creek	18	Manhole 13-1 and 302 Sevent Ave Manhole 16	Storm Drain to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	52,000	0	52,000	12	Yes	System Assessment Underway
2/6/2020	10:05am	915	Loves Creek Rd	LC	Loves Creek	6	Manholes 30, 31, 32, 33, 29-539, and 915 Loves Creek Lateral Cleanout	Pavement to Ground to Loves Creek	Loves Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	135,000	0	13,000	11	Yes	Future Construction Planned
2/6/2020	10:09am	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	500	0	500	3	No	Construction Project Underway

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
2/6/2020	10:24am	201	Hermitage Dr	KUW	Knob Creek	41	Manholes 66-66 and 66-69	Ground to Pond	Pond	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	77,000	0	77,000	13	Yes	System Assessment Underway
2/6/2020	11:00am	2907	Ginnbrooke Ln	KUW	Knob Creek	47	Manholes 22 and 36	Soil Saturation		Pump Station Failure Electrical Failure The pump station was repaired. The area was cleaned	4,000	0	4,000	1	No	System Repair Completed
2/6/2020	11:30am	2130	Adair Dr	KUW	First Creek	7	Manhole 13	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	25,000	0	25,000	6	Yes	System Assessment Underway
2/6/2020	11:45am	2739	Parkview Ave	KUW	Williams Creek	19	Manhole 5-15	Ground to Williams Creek	Williams Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	40,000	0	40,000	10	Yes	Future Construction Planned
2/6/2020	12:27am	2004	Riverside Dr	KUW	Williams Creek	25	Manhole 1-1	Ground to Williams Creek	Williams Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	2,400,000	0	2,400,000	24	Yes	Future Construction Planned
2/6/2020	12:45am	1500	Lyons Bend Rd	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	2,300,000	0	2,300,000	13	Yes	System Assessment Underway
2/6/2020	2:03am	4605	Webb Ln	KUW	Third Creek	28	Manholes 27-56, 27-54, 1-1	Ground to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	1,250,000	0	1,250,000	10	Yes	System Assessment Underway
2/6/2020	2:16pm	1221	Milam Cir	FC	Fourth Creek	36	Manhole 12-173	Ground to Tributary to Fourth Creek	Fourth Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	10,000	0	10,000	17	Yes	Future Construction Planned
2/6/2020	2:35pm	701	W Ford Valley Rd	KUW	Knob Creek	41	Manholes 27, 35, and 35-1	Ground to Knob Creek	Knob Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	60,000	0	60,000	20	Yes	System Assessment Underway
2/6/2020	2:40pm	600	N Gallaheer View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	6,000,000	0	6,000,000	240	Yes	Future Construction Planned
2/6/2020	3:19pm	8224	Landmark Dr	FC	Fourth Creek	32a	Manholes 30, 32, and 33	Ground to Ten Mile Creek	Ten Mile Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	55,000	0	55,000	4	Yes	System Assessment Underway
2/6/2020	4:17am	2004	Neyland Dr	KUW	Second Creek	35a	Manhole 1	Tennessee River	Tennessee River	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	43,940,000	0	43,940,000	29	Yes	System Assessment Underway
2/6/2020	4:29pm	308	Hermitage Dr	KUW	Knob Creek	41	Manhole 66-105	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	13,000	0	13,000	13	No	System Assessment Underway
2/6/2020	5:27am	2300	Greenfield Ln	KUW	First Creek	18	Manholes 30-33, 2310 Greenfield Lateral Cleanout, BBU's at 2310 and 2316 Greenfield	Storm Drain to Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	5,000	0	5,000	8	No	System Assessment Underway
2/6/2020	6:30am	4225	Cruze Rd	KUW	South Knox	40	Manholes 71-9 and 72-5	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	70,000	0	70,000	12	No	Future Construction Planned
2/6/2020	7:55am	5115	Clinton Hwy	KUW	Second Creek	5	Manhole 4-44 and BBU at 1101 Orchid Dr	Ground to Storm Drain to Second Creek	Second Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	640	40	600	1	Yes	System Assessment Underway
2/6/2020	8:15am	2848	London Cir	KUW	First Creek	17	Manhole 40-2	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	32,000	0	32,000	12	No	System Assessment Underway
2/6/2020	8:20am	2523	Dayton St	KUW	Third Creek	22	Lateral Cleanout	Wet Weather Conveyance to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	47,000	0	47,000	25	Yes	Construction Project Underway
2/6/2020	8:30pm	6410	S Northshore Dr	FC	Fourth Creek	37	Manhole 8	Ground to Fourth Creek	Fourth Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	200,000	0	200,000	14	Yes	System Assessment Underway
2/6/2020	8:47am	3910	Papermill Dr	KUW	Third Creek	28	Manholes 21 and 22	Pavement to Storm Drain to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	37,000	0	37,000	12	Yes	System Assessment Underway
2/6/2020	9:13am	2507	Fenwood Dr	KUW	First Creek	4	Manhole 18-38 and BBU at 2411 Fenwood Dr	Pavement to Storm Drain to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	5,200	200	5,000	10	Yes	System Assessment Underway
2/6/2020	9:20am	445	W Blount Ave	KUW	South Knox	39	BBU and Building Exterior	Storm to Tennessee River	Tennessee River	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	54,000	0	54,000	6	Yes	Construction Project Underway
2/6/2020	9:23am	5917	Meadow Oaks Dr	KUW	Knob Creek	41	Manholes 67-111 and 67-113	Ground to Ditch to Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	150,000	0	150,000	10	No	System Assessment Underway
2/6/2020	9:39am	5227	McNutt Rd	KUW	Knob Creek	41	Manhole 96 and 96-1	Ground to Toll Creek	Toll Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	5,500	0	5,500	10	Yes	System Assessment Underway
2/6/2020	9:50am	2327	South Haven Rd	KUW	South Knox	40	Manholes 24-27, 24-136, 24-305	Wet Weather Conveyance to Baker Creek	Baker Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	425,000	0	425,000	12	Yes	Construction Project Underway
2/7/2020	3:39pm	4513	Hinton Dr	KUW	Third Creek	21	Manhole 16-5	Pavement to Ditch to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	18,000	0	18,000	12	Yes	System Assessment Underway
2/7/2020	4:19pm	4325	San Juan Dr	LC	Loves Creek	6	Manhole 29-255	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	3,000	0	3,000	12	No	System Assessment Underway
2/7/2020	9:40am	4719	Old Broadway	KUW	First Creek	7	Manholes 2, 62, 63, 88	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	800,000	0	800,000	15	Yes	Future Construction Planned

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
2/10/2020	7:45pm	4719	Old Broadway	KUW	First Creek	7	Manhole 2	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	380,000	0	380,000	17	Yes	Future Construction Planned
2/11/2020	1:43pm	6201	Kingston Pike	FC	Fourth Creek	33	Manhole 1-3	Pavement to Storm Drain to Fourth Creek	Fourth Creek	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	2,000	0	2,000	1	Yes	Routine Blockage Abatement
2/11/2020	2:53pm	114	Tillery Dr	KUW	Second Creek	10	Manhole 16-2	Pavement		Blockage Grease The sewer main was flushed to remove the blockage. The area was cleaned.	300	10	290	1	No	Routine Blockage Abatement
2/11/2020	3:00pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	12,000	0	12,000	3	No	System Assessment Underway
2/11/2020	4:31pm	2701	Chukar Rd	FC	Fourth Creek	32a	Lateral Cleanout	Ground to Wet Weather Conveyance to Ten Mile Creek	Ten Mile Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/11/2020	5:47pm	1408	Adair Dr	KUW	First Creek	7	Manholes 72 and 73	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	6,000	0	6,000	4	Yes	Future Construction Planned
2/11/2020	9:54am	4605	Webb Ln	KUW	Third Creek	28	Manholes 27-56 and 1-1	Ground to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	160,000	0	160,000	5	Yes	System Assessment Underway
2/13/2020	11:07am	4225	Cruze Rd	KUW	South Knox	40	Manhole 71-9	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	10,000	0	10,000	7	No	Future Construction Planned
2/13/2020	11:25am	5800	Western Ave	KUW	Third Creek	11	Manhole 11-310	Ground to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/13/2020	12:00pm	1408	Adair Dr	KUW	First Creek	7	Manhole 72	Ground to Lynnhurst Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	52,000	0	52,000	9	Yes	Future Construction Planned
2/13/2020	3:20pm	3148	Wilderness Dr	KUW	First Creek	18	Manholes 51, 52, and 53	Soil Saturation		I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	76,000	0	76,000	17	No	System Assessment Underway
2/13/2020	8:06am	4605	Webb Ln	KUW	Third Creek	28	Manholes 27-54, 27-56, and 1-1	Ground to Third Creek	Third Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	169,000	0	169,000	18	Yes	System Assessment Underway
2/13/2020	9:09am	2004	Riverside Dr	KUW	Williams Creek	25	Manhole 1-1	Ground to Williams Creek	Williams Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
2/14/2020	1:16pm	1500	Hoitt Ave	KUW	First Creek	18	Manhole 38	Ground to First Creek	First Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/15/2020	8:35pm	1625	McClain Rd	KUW	Third Creek	9	Gravity Main	Soil Saturation		Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	200	0	200	1	No	Routine Blockage Abatement
2/16/2020	6:33pm	4200	Holston Hills Rd	LC	Loves Creek	26	Manhole 74-1	Ground to Beaman Branch to Holston River	Holston River	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
3/4/2020	5:16pm	4420	Holston Hills Rd	LC	Loves Creek	26	Manhole 65	Ground to Holston River	Holston River	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
3/4/2020	8:26am	3216	Mcpherson St	KUW	Third Creek	22	Manhole 18-51	Pavement to Storm Drain to Wet Weather Conveyance to Third Creek	Third Creek	Blockage Grease The sewer main was flushed to removed the blockage. The area was cleaned.	5,000	0	5,000	1	Yes	Routine Blockage Abatement
3/4/2020	9:07am	5300	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Failure Mechanical Failure The pump was replaced and the area was cleaned	2	1	1	1	No	System Repair Completed
3/13/2020	2:35pm	2523	Adair Ave	KUW	First Creek	4	Manhole 2-86	Pavement to Soil Saturation		Blockage Grease The sewer main was flushed to removed the blockage. The area was cleaned.	600	0	600	1	No	Routine Blockage Abatement
3/14/2020	4:40pm	2015	Neyland Dr	KUW	Third Creek	35b	WWTP Digester	Storm Drain to Tennessee River	Tennessee River	WWTP Process Failure The area was cleaned.	500	15	485	1	Yes	System Assessment Underway
3/18/2020	2:25pm	1220	Whitower Dr	FC	Fourth Creek	36	Manhole 45-37	Soil Saturation		Blockage Roots The sewer main was flushed to removed the blockage. The area was cleaned.	20	0	20	1	No	Routine Blockage Abatement
3/19/2020	3:35pm	1900	Rosedale Ave	KUW	First Creek	24	Manhole 6-138	Ground to Catch Basin to Soil Saturation		Blockage Roots The sewer main was flushed to removed the blockage. The area was cleaned.	20	0	20	1	No	Routine Blockage Abatement
4/4/2020	1:30pm	2501	Keith Ave	KUW	Third Creek	22	Lateral Cleanout	Soil Saturation		Blockage Grease The sewer main was flushed to removed the blockage. The area was cleaned.	100	0	100	2	No	Routine Blockage Abatement
4/13/2020	1:16am	2327	South Haven Rd	KUW	South Knox	40	Manholes 24-27, 24-136, 24-305	Wet Weather Conveyance to Baker Creek	Baker Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	22,000	0	22,000	4	Yes	Construction Project Underway
4/13/2020	10:12am	155	Chamberlain Blvd	KUW	South Knox	39	Manhole 28-161	Pavement to Storm Drain	Storm Drain	Blockage Debris The sewer main was flushed to removed the blockage. The area was cleaned.	200	0	200	1	Yes	Routine Blockage Abatement
4/13/2020	11:29am	3148	Wilderness Dr	KUW	First Creek	18	Manholes 51, 52, and 55	Soil Saturation		I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	9,000	0	9,000	3	No	System Assessment Underway
4/13/2020	12:15am	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	350,000	0	350,000	11	Yes	Future Construction Planned
4/13/2020	12:39am	2541	Fair Dr	KUW	First Creek	4	Manhole 20-2	Ground to Wet Weather Conveyance to First Creek	First Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	6,000	0	6,000	4	Yes	Future Construction Planned
4/13/2020	2:38am	5100	W Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation		I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	200,000	0	200,000	12	No	System Assessment Underway

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
4/13/2020	2:42am	1500	Lyons Bend Rd	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	380,000	0	380,000	1	Yes	System Assessment Underway
4/13/2020	3:13am	1408	Adair Dr	KUW	First Creek	7	Manholes 31, 71,72, 73	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	168,000	0	168,000	9	Yes	Future Construction Planned
4/13/2020	4:00am	2700	Boright Dr	KUW	First Creek	8	Manhole 26	Pavement to Storm Drain to First Creek	First Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	12,500	0	12,500	6	Yes	Construction Project Underway
4/13/2020	4:00am	2739	Parkview Ave	KUW	Williams Creek	19	Manhole 5-15	Ground to Williams Creek	Williams Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	23,000	0	23,000	5	Yes	Future Construction Planned
4/13/2020	4:00am	2004	Riverside Dr	KUW	Williams Creek	31	Manhole 1-1	Ground to Williams Creek	Williams Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	5,000	0	5,000	4	Yes	Future Construction Planned
4/13/2020	6:02am	2004	Neyland Dr	KUW	Second Creek	35a	Manhole 1	Tennessee River	Tennessee River	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	300,000	0	300,000	3	Yes	System Assessment Underway
4/13/2020	8:37am	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Soil Saturation		I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The pump station was checked until the high flows subsided. The area was cleaned.	100	0	100	1	No	Construction Project Underway
4/13/2020	9:20am	4605	Webb Ln	KUW	Third Creek	28	Manhole 27-56	Ground to Third Creek	Third Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	600	0	600	4	Yes	System Assessment Underway
4/13/2020	9:59am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	240,000	0	240,000	7	Yes	Future Construction Planned
4/14/2020	10:25pm	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Soil Saturation		Pump Station Failure Mechanical Failure The pump station was repaired. The area was cleaned.	900	0	900	5	No	Construction Project Underway
4/14/2020	4:00am	4100	Central Ave Pike	KUW	Second Creek	5	Manhole 17-9	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	13,000	0	13,000	3	Yes	Future Construction Planned
4/16/2020	1/0/1900	4659	Topsail Way	KUW	First Creek	2	Manhole 43-79	Soil Saturation		Blockage Roots The sewer main was flushed to removed the blockage. The area was cleaned.	100	0	100	1	No	Routine Blockage Abatement
4/19/2020	8:19pm	4420	Holston Hills Rd	LC	Loves Creek	26	Manhole 65	Ground to Holston River	Holston River	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
4/22/2020	12:50pm	4111	Garnet Dr	KUW	Third Creek	28	Manhole 3-83	Soil Saturation		Blockage Debris The sewer main was flushed to removed the blockage. The area was cleaned.	500	0	500	1	No	Routine Blockage Abatement
4/22/2020	5:45pm	4200	Holston Hills Rd	LC	Loves Creek	26	Manhole 74-1	Ground to Beaman Branch to Holston River	Holston River	I/I Heavy Rainfall - Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
4/24/2020	5:00pm	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Soil Saturation		Pump Station Failure Mechanical Failure The pump station was repaired. The area was cleaned.	100	0	100	1	No	Construction Project Underway
5/12/2020	2:15pm	4409	Cypress Ln	KUW	South Knox	39	Manhole 62-21	Soil Saturation		Blockage Roots The sewer main was flushed to removed the blockage. The area was cleaned.	500	0	500	1	No	Routine Blockage Abatement
5/15/2020	8:45am	5240	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Mechanical Failure. The pump was replaced and the area was cleaned.	4.5	3.5	1	3	No	System Repair Completed
6/12/2020	9:54am	2563	Wilson Ave	KUW	Williams Creek	19	Manhole 14-16	Soil Saturation		Blockage Debris The sewer main was flushed to removed the blockage. The area was cleaned.	50	0	50	1	No	Routine Blockage Abatement
6/16/2020	8:49am	5240	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Debris- Rags The pump was replaced and the area was cleaned.	10	0	10	1	No	System Repair Completed
6/18/2020	5:33pm	1955	Woodbine Ave	KUW	First Creek	24	Broken Gravity Main	Soil Saturation and Recovery		Broken System Broken Gravity Main The sewer main was repaired. The area was cleaned.	1,000	600	400	6	No	System Repair Completed
6/22/2020	2:13pm	3315	Island Home Ave	KUW	South Knox	40	Broken Force Main	Soil Saturation		Broken System Broken Force Main The force main was repaired. The area was cleaned.	5	0	5	1	No	System Repair Completed
6/25/2020	9:30am	6110	Creekhead Dr	FC	Fourth Creek	32a	Lateral Cleanout	Wet Weather Conveyance to Soil Saturation		Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	220	20	200	2	No	Routine Blockage Abatement
6/27/2020	11:28am	5660	Colonial Cir	KUW	First Creek	3	Manhole 14-2	Pavement to Storm Drain to Ditch to Recovery		Blockage Grease and Debris The sewer main was flushed to remove the blockage. The area was cleaned.	1,500	850	650	2	No	Routine Blockage Abatement
6/29/2020	9:49pm	1500	Lyons Bend Rd	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	330,000	0	330,000	3	Yes	System Assessment Underway
6/30/2020	8:00am	600	N Gallaheer View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	200,000	0	200,000	17	Yes	Future Construction Planned
7/3/2020	5:40pm	8724	Tigris Pointe Ln	EB	Eastbridge	72	Manhole 20-39 and Lateral Cleanout	Soil Saturation		Blockage Grease The sewer main was flushed to removed the blockage. The area was cleaned.	10	0	10	3	No	Routine Blockage Abatement
7/5/2020	8:55am	5240	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Debris- Rags The pump was replaced and the area was cleaned.	1	0	1	1	No	System Repair Completed
7/9/2020	5:38pm	2523	Dayton St	KUW	Third Creek	22	Lateral Cleanout	Wet Weather Conveyance to Third Creek		I/I Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	2,500	0	2,500	2	Yes	Construction Project Underway

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
7/14/2020	9:51am	6101	Old Rutledge Pike	LC	Loves Creek	105	Broken Force Main	Soil Saturation		Broken System Broken Force Main The force main was repaired. The area was cleaned.	10	0	10	1	No	System Repair Completed
8/12/2020	3:20pm	3621	Pleasant Ridge Rd	KUW	Third Creek	22	Manhole 18-124	Soil Saturation		Construction Failure - Blockage by Construction Debris. The sewer main was repaired to remove the blockage. The area was cleaned.	100	0	100	2	No	System Repair Completed
8/15/2020	10:30am	2015	Neyland Dr	KUW	Third Creek	35b	Primary Clarifier	Storm Drain to Tennessee River	Tennessee River	I&I - Rainfall in the area produced I&I and high flows in the sewer mains. The Primary Clarifier was checked until the high flows subsided. The area was cleaned.	900,000	2500	897,500	2	Yes	System Assessment Underway
8/18/2020	2:36pm	5324	Bend River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Failure - Pump was replaced. Area was cleaned	Unknown	0	Unknown	Unknown	No	System Repair Completed
8/19/2020	9:07am	4503	McGinnis Rd	EB	Eastbridge	113	Grinder Pump	Soil Saturation		Grinder Pump Failure - Pump was replaced. Area was cleaned	5	0	5	1	No	System Repair Completed
8/20/2020	3:49pm	400	Harriet Tubman St	KUW	First Creek	24	Bypass Pump Discharge Pipe	Soil Saturation		Construction Failure - Bypass Pumping. Contractor repaired pipe and cleaned area.	50	0	50	1	No	System Repair Completed
8/31/2020	1:35am	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Second Creek	Second Creek	I&I - Rainfall in the area produced I&I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	50	0	50	2	Yes	Future Construction Planned
9/8/2020	9:50am	193	Kensi Dr	KUW	Second Creek	10	Manhole 16-22	Ground to Second Creek	Second Creek	Blockage - Grease and Debris. The sewer main was flushed to remove the blockage. The area was cleaned.	30	0	30	2	Yes	Routine Blockage Abatement
9/9/2020	11:30am	7330	Friendly Way	EB	Eastbridge	113	Grinder Pump	Soil Saturation		Grinder Pump Failure - Pump was replaced. Area was cleaned	1	0	1	1	No	System Repair Completed
9/15/2020	3:57pm	200	Kensi Dr	KUW	Second Creek	10	Broken Gravity Main	Second Creek	Second Creek	Broken System - Broken Gravity Main. The sewer main was repaired. The area was cleaned.	60,000	0	60,000	170	Yes	System Repair Completed
9/19/2020	11:45am	5241	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Failure - Pump was replaced. Area was cleaned	5	2	3	1	No	System Repair Completed
9/21/2020	5:10pm	5072	South National Dr	KUW	Williams Creek	60	Broken Force Main	Pavement to Ditch to French Broad River	French Broad River	Broken System - Broken Force Main. Force main was repaired and the area cleaned.	500	100	400	4	Yes	System Repair Completed
9/21/2020	9:29am	312	W Jackson Ave	KUW	First Creek	30	Broken Gravity Main	Ditch to Storm Drain to First Creek	First Creek	Construction Failure - Dig-In. The sewer main was repaired.	13,000	0	13,000	1	Yes	System Repair Completed
9/25/2020	11:00am	5072	South National Dr	KUW	Williams Creek	60	Manhole 102	French Broad River	French Broad River	I/I - Rainfall in the area produced I&I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	45,000	0	45,000	22	Yes	Construction Project Underway
9/28/2020	8:53am	1821	Andy Holt Ave	KUW	Third Creek	35b	Manhole 12-26	Ground to Storm Sewer to Third Creek	Third Creek	Blockage - Debris. The sewer main was flushed to remove the blockage. The area was cleaned.	300	10	290	1	Yes	Routine Blockage Abatement
9/30/2020	1:50pm	3930	Summercrest Way	KUW	Second Creek	10	Manhole 17-100	Ditch to Storm Drain to Unnamed Tributary to Second Creek	Second Creek	Blockage - Grease. The sewer main was flushed to remove the blockage. The area was cleaned.	200	25	175	2	Yes	Routine Blockage Abatement
10/5/2020	1:36pm	1017	Valley Ave	KUW	South Knox	40	Manhole 3-99	Pavement to Storm Drain to Wet Weather Conveyance to Soil Saturation		Blockage - Debris. The sewer main was flushed to remove the blockage. The area was cleaned.	75	0	75	2	No	Routine Blockage Abatement
10/24/2020	2:36pm	518 and 62	Watauga Ave	KUW	First Creek	16	Lateral Cleanout and BBU	Soil Saturation		Blockage - Grease. The sewer main was flushed to remove the blockage. The building was cleaned by Restoration 101. The area was cleaned.	6,000	5595	5	4	No	Routine Blockage Abatement
10/29/2020	1:31pm	1829	Wayland Dr	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I - Rainfall in the area produced I&I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. Area was cleaned.	20,000	0	20,000	4	Yes	Future Construction Planned
10/29/2020	11:00am	3719	Oakland Dr	KUW	First Creek	2	Lateral Cleanout and BBU	Soil Saturation		Blockage - Rainfall in the area produced I&I and high flows in the sewer mains.. The sewer main was flushed to remove the blockage. The area was cleaned.	30	10	20	1	No	Routine Blockage Abatement
10/29/2020	12:10pm	7308	Rising Rd	LC	Loves Creek	106	Pump Station Wet Well	Soil Saturation		I/I - Rainfall in the area produced I&I and high flows in the sewer mains.. The sewer main was checked until the high flows subsided. Area was cleaned.	500	0	500	12	No	Construction Project Underway
11/25/2020	11:38am	725	Sevier Ave	KUW	South Knox	40	Manhole 1-147	Pavement		Blockage - Grease. The sewer main was flushed to remove the blockage. The area was cleaned.	10	0	10	1	No	Routine Blockage Abatement
12/2/2020	12:20pm	1540	Amherst Rd	FC	Fourth Creek	27	Manhole 22-73	Wet Weather Conveyance to Soil Saturation		Blockage - Roots and Grease. The sewer main was flushed to remove the blockage. The area was cleaned.	7,200	0	7,200	2	No	Routine Blockage Abatement
12/3/2020	3:42pm	2600	Holbrook Dr	KUW	First Creek	4	Manhole 18-24	Soil Saturation		Blockage - Grease. The sewer main was flushed to remove the blockage. The area was cleaned.	90,400	0	90,400	18	No	Routine Blockage Abatement
12/7/2020	7:05pm	2645	Chukar Rd	FC	Fourth Creek	32a	Manhole 70-15	Pavement to Wet Weather Conveyance to Soil Saturation		Blockage - Grease. The sewer main was flushed to remove the blockage. The area was cleaned.	75	0	75	3	No	Routine Blockage Abatement
12/7/2020	9:54am	2306	Maryville Pike	KUW	South Knox	40	Manhole 44	Ground to Flenniken Branch to Tennessee River	Tennessee River	Construction Failure - Blockage by Construction Debris. Manhole was repaired. Area was cleaned.	15,400	300	15,100	4	Yes	System Repair Completed
12/18/2020	1:05pm	3910	Western Ave	KUW	Third Creek	22	Lateral Cleanout	Pavement to Catch Basin to Ground to Soil Saturation		Construction Failure - Unconnected Lateral. The lateral was reinstated. Area was Cleaned.	950	300	650	4	No	System Repair Completed
12/24/2020	12:15pm	5230	McNutt Rd	KUW	Knob Creek	41	Manhole 9601 and Lateral Cleanout	Ground to Toll Creek	Toll Creek	Pump Station Failure - Electrical Failure. The power was restored. The area was cleaned.	20	0	20	3	Yes	System Repair Completed
12/27/2020	4:01pm	6201	Kingston Pike	FC	Fourth Creek	33	Gravity Main and Cleanout	Pavement to Storm Drain		Broken System - Broken Gravity Main. The sewer main was repaired. The area was cleaned.	1,125	500	625	7	No	System Repair Completed

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix C

Building Backups

BBUs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
1/3/2020	10:15am	445	W Blount Avenue	KUW	South Knox	39	Building Backup and Building Exterior	Soil Saturation		Blockage - Debris. The sewer main was flushed to remove the blockage. The area was cleaned.	28,000	0	28,000	2	No	Construction Project Underway
2/6/2020	5:27am	2300	Greenfield Lane	KUW	First Creek	39	Manhole 30-33, 2310 Cleanout, BBUs @ 2310 and 2316	Storm Drain to Soil Saturation		Rainfall in the area produced I & I and high flows in the sewer mains. The BBU was cleaned by the customer. The exterior was cleaned.	5,000	0	5,000	8	No	System Assessment Underway
2/6/2020	7:55am	4315	Clinton Hwy	KUW	Second Creek	5	Manhole 4-44 and BBU at 1101 Orchid Dr	Ground to Storm Drain to Second Creek	Second Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until high flows subsided. The area was cleaned. BBU was cleaned by the customer.	640	40	600	1	Yes	System Assessment Underway
2/6/2020	9:13am	2507	Ferwood Drive	KUW	First Creek	4	Manhole 18-38 and BBU at 2411 Fenwood Dr	Pavement to Storm Drain to First Creek	First Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until high flows subsided. The area was cleaned. BBU was cleaned by the customer.	5,200	200	5,000	10	Yes	System Assessment Underway
2/6/2020	9:20am	445	W Blount Avenue	KUW	South Knox	39	Building Backup and Building Exterior	Storm to Tennessee River	Tennessee River	Rainfall in the area produced I & I and high flows in the sewer mains. The BBU was cleaned by the customer. The exterior was cleaned.	54,000	0	54,000	6	Yes	Construction Project Underway
7/13/2020	2:28pm	4930	Lyons View Pike	KUW	Third Creek	34	BBU			Grinder Pump Failure. The grinder pump was replaced. The building was cleaned by Restoration 101.	800	0	800	1	No	System Repair Completed
10/24/2020	2:36pm	618 & 622	Watauga Avenue	KUW	Second Creek	15	Lateral Cleanout and BBU	BBU & Soil Satuation		Blockage - Grease. The sewer main was flushed to remove the blockage. The building was cleaned by Restoration 101. Area around cleanout was cleaned.	6,000	5,595	5	4	No	Routine Blockage Abatement
10/29/2020	11:00am	3719	Oakland Drive	KUW	First Creek	2	Lateral Cleanout and BBU	Soil Saturation		Blockage - Roots. The sewer main was flushed to remove the blockage. The area around cleanout was cleaned.	30	10	20	1	No	Routine Blockage Abatement
10/30/2020	8:58pm	1625	Forest Avenue	KUW	Second Creek	23	BBU			Blockage - Debris. The sewer main was flushed to remove the blockage. The building was cleaned by Restoration 101.	100	100	0	1	No	Routine Blockage Abatement
11/4/2020	12:30pm	101	E Blount Avenue	KUW	South Knox	40	BBU			Blockage - Debris. The sewer main was flushed to remove the blockage. The building was cleaned by Servpro Rocky Hill.	10	10	0	1	No	Routine Blockage Abatement
11/24/2020	12:55pm	2720	Dayton Street	KUW	Third Creek	22	BBU			Construction Failure - Pressure Testing Failure. The plug was removed. The building was cleaned by Restoration 101.	10	10	0	1	No	System Repair Completed

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix D

Water Quality Monitoring Program Sampling Results



Water Quality Monitoring
Report

Routine Water Quality Monitoring Report

1/1/2020 Through 12/31/2020

Knoxville Utilities Board

Water Quality Laboratory
Whitney Durfee, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8296 Fax: (865) 594-8245

Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
First Creek									
1.74	1/17/2020	09:26	8.0	12	10	200	180	Wet	R
2.57	1/17/2020	09:45	8.2	10	11	170	220	Wet	R
6.33	1/17/2020	10:05	7.9	12	10	54	74	Wet	R
1.74	2/26/2020	10:00	7.9	13	10	240	180	Wet	R
2.57	2/26/2020	10:12	8.0	12	10	200	210	Wet	R
6.33	2/26/2020	10:31	7.0	13	10	99	130	Wet	R
1.74	3/18/2020	09:00	8.4	14	9.5	320	440	Wet	R
2.57	3/18/2020	08:50	8.4	14	9.6	350	520	Wet	R
6.33	3/18/2020	08:30	7.7	14	8.8	370	170	Wet	R
1.74	4/1/2020	09:45	7.9	13	9.7	2100	1300	Wet	I
2.57	4/1/2020	10:00	7.4	12	10	1000	820	Wet	R
6.33	4/1/2020	10:15	7.5	12	9.7	270	370	Wet	R
1.74	5/4/2020	09:55	8.2	18	8.7	1100	770	Dry	R
2.57	5/4/2020	09:40	8.0	17	9.1	430	520	Dry	R
6.33	5/4/2020	09:15	7.6	17	8.0	380	360	Dry	R
1.74	6/12/2020	08:38	8.1	20	7.9	1800	1100	Dry	I
2.57	6/12/2020	08:59	8.2	20	8.5	1200	650	Dry	R
6.33	6/12/2020	09:19	7.8	19	7.3	820	730	Dry	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>First Creek</u>									
1.74	7/10/2020	09:46	8.1	22	7.3	1500	820	Wet	R
2.57	7/10/2020	09:28	8.2	22	8.0	2000	550	Wet	R
6.33	7/10/2020	08:59	7.7	22	6.9	530	460	Wet	R
1.74	8/14/2020	09:46	7.9	22	7.2	1700	580	Wet	R
2.57	8/14/2020	09:22	8.2	22	7.8	730	310	Wet	R
6.33	8/14/2020	09:00	7.7	21	6.8	1600	390	Wet	R
1.74	9/11/2020	09:07	8.1	21	7.6	1600	330	Dry	R
2.57	9/11/2020	08:46	8.3	21	8.2	910	370	Dry	R
6.33	9/11/2020	08:26	7.7	20	7.1	2000	1000	Dry	R
1.74	10/2/2020	09:34	8.1	16	8.8	560	280	Wet	R
2.57	10/2/2020	09:17	8.4	15	9.4	560	390	Wet	R
6.33	10/2/2020	08:57	7.8	16	8.1	540	330	Wet	R
1.74	11/6/2020	09:30	8.0	13	10	140	150	Dry	R
2.57	11/6/2020	09:08	8.0	13	10	180	80	Dry	R
6.33	11/6/2020	08:44	7.6	15	8.1	240	180	Dry	R
1.74	12/11/2020	09:13	7.6	11	10	140	200	Dry	R
2.57	12/11/2020	08:52	7.8	8	11	54	100	Dry	R
6.33	12/11/2020	08:28	7.7	11	8.9	81	120	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Second Creek</u>									
0.30	1/28/2020	10:55	8.2	11	11	150	110	Wet	R
1.54	1/28/2020	10:14	8.2	11	10	640	1600	Wet	R
5.11	1/28/2020	09:53	7.7	12	8.1	140	110	Wet	R
0.30	2/26/2020	12:30	7.9	14	9.7	360	490	Wet	R
1.54	2/26/2020	11:04	7.4	14	9.8	470	610	Wet	R
5.11	2/26/2020	10:47	7.5	14	7.9	1100	59	Wet	R
0.30	3/18/2020	10:05	8.2	14	9.9	210	180	Wet	R
1.54	3/18/2020	09:45	8.3	14	9.2	210	210	Wet	R
5.11	3/18/2020	09:25	7.7	15	7.0	140	140	Wet	R
0.30	4/1/2020	11:10	8.0	14	10	180	150	Wet	R
1.54	4/1/2020	10:55	7.9	14	10	36	180	Wet	R
5.11	4/1/2020	10:30	7.7	13	8.6	210	190	Wet	R
0.30	5/5/2020	10:40	8	18	8.6	1500	1700	Dry	I
1.54	5/5/2020	10:15	7.8	18	8.6	2600	> 2400	Dry	I
5.11	5/5/2020	09:45	7.2	18	6.4	390	580	Dry	R
0.30	6/17/2020	00:00	6.0	20	8.7	3900	2000	Wet	I
1.54	6/17/2020	00:00	7.8	18	7.9	2100	1300	Wet	I
5.11	6/17/2020	00:00	7.1	17	5.6	820	610	Wet	R

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Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Second Creek</u>									
0.30	7/27/2020	10:30	7.9	22	8.0	3800	600	Wet	R
1.54	7/27/2020	10:12	7.7	21	6.7	4200	730	Wet	R
5.11	7/27/2020	09:51	7.5	19	5.5	450	160	Wet	R
0.30	8/28/2020	09:58	8.1	22	8.2	2700	240	Dry	R
1.54	8/28/2020	09:34	7.9	21	7.1	2600	1300	Dry	R
5.11	8/28/2020	09:03	7.6	20	5.9	480	460	Dry	R
0.30	9/3/2020	08:57	8.1	21	8.1	1900	920	Wet	R
1.54	9/3/2020	09:21	7.9	22	7.0	2100	730	Wet	R
5.11	9/3/2020	09:43	7.7	21	5.6	640	440	Wet	R
0.30	10/22/2020	09:30	8.1	18	8.7	330	210	Dry	R
1.54	10/22/2020	09:51	7.9	17	9.2	380	310	Dry	R
5.11	10/22/2020	10:13	7.6	17	6.1	460	390	Dry	R
0.30	11/13/2020	09:25	8.3	15	9.5	910	550	Wet	R
1.54	11/13/2020	09:02	8.0	15	8.8	1500	650	Wet	R
5.11	11/13/2020	08:38	7.5	15	6.4	1000	490	Wet	R
0.30	12/28/2020	10:54	8.3	11	10	410	550	Wet	R
1.54	12/28/2020	11:37	8.0	11	11	640	980	Wet	R
5.11	12/28/2020	11:20	7.7	12	7.8	540	610	Wet	R

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Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Third Creek</u>									
0.87	1/23/2020	10:08	8.0	10	11	1200	1100	Wet	I
2.08E	1/23/2020	09:54	7.8	10	10	1200	2400	Wet	R
4.80W	1/23/2020	09:05	7.5	12	9.6	99	75	Wet	R
0.87	2/24/2020	11:10	8.1	12	10	230	190	Wet	R
2.08E	2/24/2020	11:21	7.8	13	9.7	220	260	Wet	R
4.80W	2/24/2020	09:28	7.6	13	9.0	120	88	Wet	R
0.87	3/17/2020	09:10	8.3	14	9.5	5300	> 2400	Wet	I
2.08E	3/17/2020	08:45	8.1	14	8.7	2700	730	Wet	R
4.80W	3/17/2020	08:33	7.7	14	8.8	230	240	Wet	R
0.87	4/2/2020	09:25	8.0	12	9.9	390	440	Wet	R
2.08E	4/2/2020	09:10	7.7	12	9.3	340	330	Wet	R
4.80W	4/2/2020	08:50	7.4	12	9.5	200	180	Wet	R
0.87	5/26/2020	08:32	8.1	18	8.4	910	610	Wet	R
2.08E	5/26/2020	08:20	7.9	18	8.1	1400	1000	Wet	I
4.80W	5/26/2020	08:10	7.6	16	8.1	320	290	Wet	R
0.87	6/19/2020	08:50	8.0	19	7.9	300	160	Dry	R
2.08E	6/19/2020	09:16	8.0	19	8.0	2000	1400	Dry	I
4.80W	6/19/2020	09:34	7.8	17	8.1	160	86	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Third Creek</u>									
0.87	7/24/2020	08:52	7.9	21	7.4	1900	440	Wet	R
2.08E	7/24/2020	09:12	7.8	23	6.6	3200	870	Wet	R
4.80W	7/24/2020	09:33	7.8	19	7.5	950	99	Wet	R
0.87	8/13/2020	09:14	8.1	20	7.9	820	260	Wet	R
2.08E	8/13/2020	09:01	7.9	22	7.2	2100	420	Wet	R
4.80W	8/13/2020	08:40	7.9	18	7.8	450	250	Wet	R
0.87	9/18/2020	08:35	7.9	20	7.6	1300	360	Wet	R
2.08E	9/18/2020	09:01	7.9	20	7.2	2500	920	Wet	R
4.80W	9/18/2020	09:18	7.9	18	7.9	210	110	Wet	R
0.87	10/30/2020	09:26	7.9	15	8.7	2400	770	Wet	R
2.08E	10/30/2020	08:10	7.6	17	7.9	4000	2400	Wet	R
4.80W	10/30/2020	08:26	7.4	16	8.3	1500	920	Wet	R
0.87	11/4/2020	09:37	8.0	12	9.8	330	160	Dry	R
2.08E	11/4/2020	09:20	7.7	13	9.5	2300	580	Dry	R
4.80W	11/4/2020	08:21	7.5	14	8.9	180	200	Dry	R
0.87	12/28/2020	10:11	8.4	10	10	360	610	Wet	R
2.08E	12/28/2020	09:55	8.2	9.2	10	90	120	Wet	R
4.80W	12/28/2020	08:45	7.8	9.3	12	1400	1200	Wet	R

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Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Fourth Creek</u>									
1.75	1/23/2020	09:37	7.9	11	10	220	250	Wet	R
2.79	1/23/2020	09:28	7.7	11	9.5	180	340	Wet	R
3.29	1/23/2020	09:17	7.8	12	10	120	120	Wet	R
1.75	2/24/2020	10:12	7.9	13	9.7	820	490	Wet	R
2.79	2/24/2020	09:59	7.8	14	9.3	54	160	Wet	R
3.29	2/24/2020	09:50	7.8	13	9.7	320	390	Wet	R
1.75	3/17/2020	10:25	8.3	13	9.7	3900	> 2400	Wet	R
2.79	3/17/2020	10:05	8.5	13	9.8	2600	1700	Wet	R
3.29	3/17/2020	09:50	8.2	13	9.6	2200	2000	Wet	R
1.75	4/2/2020	10:30	7.9	13	10	820	1100	Wet	I
2.79	4/2/2020	10:15	7.6	14	9.3	140	66	Wet	R
3.29	4/2/2020	09:55	7.9	14	9.9	72	73	Wet	R
1.75	5/6/2020	10:53	8.0	16	9.8	860	730	Dry	R
2.79	5/6/2020	10:22	7.8	16	9.0	250	110	Dry	R
3.29	5/6/2020	10:05	7.8	16	9.4	220	210	Dry	R
1.75	6/23/2020	08:47	7.7	20	7.8	14000	2000	Wet	I
2.79	6/23/2020	08:35	7.7	19	7.3	2000	1200	Wet	R
3.29	6/23/2020	09:07	7.9	18	8.6	4700	770	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
Fourth Creek									
1.75	7/27/2020	08:17	7.9	19	8.1	2800	980	Wet	R
2.79	7/27/2020	08:26	7.7	18	7.6	3300	730	Wet	R
3.29	7/27/2020	08:39	8.0	18	8.1	460	84	Wet	R
1.75	8/20/2020	09:01	8.0	18	8.8	1700	520	Dry	R
2.79	8/20/2020	08:12	7.7	18	7.9	1500	870	Dry	R
3.29	8/20/2020	08:37	8.0	17	8.9	540	340	Dry	R
1.75	9/28/2020	10:20	7.9	19	9.0	1900	480	Wet	R
2.79	9/28/2020	11:10	7.8	18	8.3	2200	500	Wet	R
3.29	9/28/2020	11:23	7.9	18	9.2	1100	390	Wet	R
1.75	10/30/2020	08:49	7.8	16	8.6	1200	580	Wet	R
2.79	10/30/2020	08:37	7.7	16	8.2	730	550	Wet	R
3.29	10/30/2020	09:03	7.7	16	8.1	1500	770	Wet	R
1.75	11/4/2020	09:03	7.9	13	10	220	140	Dry	R
2.79	11/4/2020	08:47	7.8	13	9.1	500	290	Dry	R
3.29	11/4/2020	08:37	8.0	13	9.8	340	160	Dry	R
1.75	12/28/2020	09:30	8.3	11	10	370	370	Wet	R
2.79	12/28/2020	09:16	8.1	12	9.6	230	180	Wet	R
3.29	12/28/2020	09:07	8.3	12	9.8	180	91	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Baker Creek</u>									
0.36	1/22/2020	09:54	7.9	8	10	120	150	Dry	R
1.45	1/22/2020	10:20	7.7	9	11	99	88	Dry	R
2.00	1/22/2020	10:03	7.6	9	9.7	120	120	Dry	R
0.36	2/19/2020	10:11	7.9	12	9.5	1500	1200	Wet	R
1.45	2/19/2020	10:36	7.8	12	9.6	290	490	Wet	R
2.00	2/19/2020	10:55	7.8	12	9.4	360	280	Wet	R
0.36	3/16/2020	08:53	7.7	14	8.4	170	93	Wet	R
1.45	3/16/2020	09:16	7.9	12	9.2	320	110	Wet	R
2.00	3/16/2020	09:05	8.0	13	9.0	310	110	Wet	R
0.36	4/9/2020	09:10	7.4	16	7.7	1000	1200	Wet	I
1.45	4/9/2020	09:45	7.7	16	9.0	140	160	Wet	R
2.00	4/9/2020	10:10	8.0	16	8.9	72	86	Wet	R
0.36	5/14/2020	09:00	7.8	13	9.0	370	310	Dry	R
1.45	5/14/2020	08:50	7.8	14	9.4	460	390	Dry	R
2.00	5/14/2020	09:15	8.0	14	9.4	310	330	Dry	R
0.36	6/15/2020	08:29	7.7	18	8.0	2100	1400	Wet	I
1.45	6/15/2020	09:00	7.2	17	8.3	1100	550	Wet	R
2.00	6/15/2020	08:41	8.0	16	8.9	2200	410	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Baker Creek</u>									
0.36	7/23/2020	07:49	7.2	20	7.8	2100	200	Wet	R
1.45	7/23/2020	08:16	7.8	18	7.9	910	370	Wet	R
2.00	7/23/2020	08:03	7.9	18	8.2	570	280	Wet	R
0.36	8/20/2020	09:50	7.8	19	7.5	1800	460	Dry	R
1.45	8/20/2020	10:36	7.8	19	8.0	490	310	Dry	R
2.00	8/20/2020	10:15	8.0	18	8.4	280	86	Dry	R
0.36	9/25/2020	09:14	8.0	18	7.9	1600	> 2400	Wet	R
1.45	9/25/2020	08:33	7.9	18	7.7	16000	> 2400	Wet	R
2.00	9/25/2020	08:54	8.1	17	8.1	14000	> 2400	Wet	R
0.36	10/22/2020	10:48	7.8	17	7.1	1000	1400	Dry	I
1.45	10/22/2020	11:15	7.8	17	7.7	280	180	Dry	R
2.00	10/22/2020	11:03	8.1	16	8.3	140	96	Dry	R
0.36	11/12/2020	09:21	7.7	17	6.5	2300	1600	Wet	I
1.45	11/12/2020	10:03	7.7	16	7.6	1200	440	Wet	R
2.00	11/12/2020	09:47	7.9	15	8.1	540	410	Wet	R
0.36	12/9/2020	10:55	7.9	8	10	340	490	Dry	R
1.45	12/9/2020	11:49	7.7	11	9.5	370	250	Dry	R
2.00	12/9/2020	11:35	8.0	9	10	210	120	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Goose Creek</u>									
0.40	1/24/2020	09:51	7.7	9	10	4000	> 2400	Wet	R
1.19E	1/24/2020	10:04	7.7	9	10	3700	> 2400	Wet	R
1.80E	1/24/2020	09:32	7.7	12	9.5	3900	> 2400	Wet	R
0.40	2/19/2020	09:49	7.8	12	9.6	440	650	Wet	R
1.19E	2/19/2020	09:35	7.9	13	9.7	370	460	Wet	R
1.80E	2/19/2020	09:25	7.8	13	9.4	220	99	Wet	R
0.40	3/16/2020	09:30	9.0	12	7.8	450	340	Wet	R
1.19E	3/16/2020	09:37	8.0	12	9.2	290	260	Wet	R
1.80E	3/16/2020	09:47	7.9	12	9.8	110	130	Wet	R
0.40	4/17/2020	08:57	7.7	14	8.9	540	440	Dry	R
1.19E	4/17/2020	09:10	8.0	13	9.7	1600	870	Dry	R
1.80E	4/17/2020	09:33	7.8	13	9.5	330	130	Dry	R
0.40	5/14/2020	08:36	7.7	14	8.7	1500	1100	Dry	I
1.19E	5/14/2020	08:12	7.9	14	9.0	1700	1100	Dry	I
1.80E	5/14/2020	08:25	7.9	14	9.4	140	250	Dry	R
0.40	6/15/2020	10:19	7.9	17	8.5	4000	2000	Wet	I
1.19E	6/15/2020	10:30	7.7	18	8.0	2100	1100	Wet	I
1.80E	6/15/2020	09:50	7.8	16	8.8	420	340	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Goose Creek</u>									
0.40	7/23/2020	08:46	7.7	21	6.8	2000	870	Wet	R
1.19E	7/23/2020	08:36	7.9	21	7.6	4400	2400	Wet	I
1.80E	7/23/2020	08:53	7.9	18	8.0	1400	1000	Wet	R
0.40	8/7/2020	08:47	7.7	20	7.1	5000	1400	Wet	R
1.19E	8/7/2020	08:58	8.1	20	7.8	3800	920	Wet	R
1.80E	8/7/2020	09:15	8.0	18	8.1	1600	820	Wet	R
0.40	9/10/2020	09:39	7.7	19	7.1	1400	820	Dry	R
1.19E	9/10/2020	08:50	6.7	21	8.7	2200	2400	Dry	I
1.80E	9/10/2020	09:21	7.9	18	8.0	2800	550	Dry	R
0.40	10/26/2020	13:10	7.6	18	7.5	420	440	Wet	R
1.19E	10/26/2020	12:59	7.8	18	7.7	380	520	Wet	R
1.80E	10/26/2020	12:48	7.7	18	7.4	140	70	Wet	R
0.40	11/12/2020	10:33	7.8	16	7.1	2500	2400	Wet	R
1.19E	11/12/2020	10:23	7.9	16	7.7	1000	1200	Wet	R
1.80E	11/12/2020	10:47	7.9	16	7.7	580	440	Wet	R
0.40	12/18/2020	08:42	8.1	9	9.6	140	290	Wet	R
1.19E	12/18/2020	09:08	8.2	8	10	290	410	Wet	R
1.80E	12/18/2020	09:29	8.2	9	10	120	140	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Loves Creek</u>									
0.85	1/21/2020	10:06	7.8	8	11	310	85	Wet	R
1.89	1/21/2020	09:56	7.6	9	9.5	81	70	Wet	R
3.45	1/21/2020	09:43	8.0	6	11	36	56	Wet	R
0.85	2/21/2020	09:57	7.7	7	10	200	150	Wet	R
1.89	2/21/2020	09:45	7.4	11	8.9	150	150	Wet	R
3.45	2/21/2020	09:05	7.8	7	11	640	870	Wet	R
0.85	3/11/2020	09:21	7.4	14	8.6	120	210	Wet	R
1.89	3/11/2020	09:08	7.4	14	7.6	63	32	Wet	R
3.45	3/11/2020	08:57	7.6	15	8.4	45	50	Wet	R
0.85	4/7/2020	10:20	7.8	17	8.4	280	310	Dry	R
1.89	4/7/2020	09:45	7.5	16	7.8	280	410	Dry	R
3.45	4/7/2020	09:30	7.6	16	8.0	160	86	Dry	R
0.85	5/8/2020	09:38	7.8	14	8.9	220	770	Wet	R
1.89	5/8/2020	09:18	7.4	15	7.5	99	190	Wet	R
3.45	5/8/2020	08:59	7.6	16	8.0	81	270	Wet	R
0.85	6/9/2020	08:53	7.8	20	7.5	1100	1100	Dry	R
1.89	6/9/2020	08:40	7.5	19	7.0	600	190	Dry	R
3.45	6/9/2020	08:20	7.7	23	6.7	350	290	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Loves Creek</u>									
0.85	7/2/2020	09:27	7.9	20	7.7	540	260	Wet	R
1.89	7/2/2020	09:08	7.6	20	7.2	320	580	Wet	R
3.45	7/2/2020	08:53	7.7	21	7.0	100	32	Wet	R
0.85	8/11/2020	08:56	7.8	21	7.6	1500	550	Wet	R
1.89	8/11/2020	09:10	7.5	20	7.3	450	250	Wet	R
3.45	8/11/2020	09:23	7.8	22	7.1	360	160	Wet	R
0.85	9/4/2020	09:06	7.9	21	7.3	1700	580	Wet	R
1.89	9/4/2020	08:50	7.6	20	6.7	2100	270	Wet	R
3.45	9/4/2020	08:32	7.8	21	7.0	2200	2400	Wet	R
0.85	10/23/2020	08:54	8.0	16	7.8	150	100	Dry	R
1.89	10/23/2020	08:37	7.5	16	7.3	27	29	Dry	R
3.45	10/23/2020	08:19	7.7	17	7.4	36	40	Dry	R
0.85	11/3/2020	10:15	7.7	12	9.5	90	82	Dry	R
1.89	11/3/2020	10:31	7.3	13	8.5	81	44	Dry	R
3.45	11/3/2020	10:42	7.6	11	9.5	140	55	Dry	R
0.85	12/9/2020	09:52	7.8	8	11	72	77	Dry	R
1.89	12/9/2020	09:43	7.4	9	9.5	27	10	Dry	R
3.45	12/9/2020	09:30	7.7	9	9.9	120	22	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Williams Creek</u>									
0.89	1/21/2020	10:45	8.0	8	11	220	67	Wet	R
1.70	1/21/2020	10:32	8.0	9	10	340	180	Wet	R
2.02	1/21/2020	10:23	8.2	9	11	240	200	Wet	R
0.89	2/14/2020	09:52	7.8	11	10	240	210	Wet	R
1.70	2/14/2020	09:29	7.7	12	9.9	460	580	Wet	R
2.02	2/14/2020	09:13	7.7	12	9.7	460	650	Wet	R
0.89	3/11/2020	11:06	8.0	15	9.4	81	120	Wet	R
1.70	3/11/2020	10:12	7.7	15	8.7	160	88	Wet	R
2.02	3/11/2020	10:49	8.0	15	9.0	99	93	Wet	R
0.89	4/8/2020	09:35	7.9	17	8.7	63	69	Dry	R
1.70	4/8/2020	10:15	7.2	17	8.1	170	130	Dry	R
2.02	4/8/2020	10:45	7.9	17	8.5	45	45	Dry	R
0.89	5/26/2020	09:10	8.0	18	8.6	540	260	Wet	R
1.70	5/26/2020	09:16	7.6	18	7.3	510	150	Wet	R
2.02	5/26/2020	09:30	7.7	18	7.5	910	210	Wet	R
0.89	6/9/2020	10:00	7.8	20	8.3	480	330	Dry	R
1.70	6/9/2020	09:51	7.5	19	7.0	1900	820	Dry	R
2.02	6/9/2020	09:40	7.7	20	7.0	1500	1400	Dry	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



Water Quality Monitoring
Report

Routine Water Quality Monitoring Report

1/1/2020 Through 12/31/2020

Knoxville Utilities Board

Water Quality Laboratory
Whitney Durfee, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8296 Fax: (865) 594-8245

Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status*
<u>Williams Creek</u>									
0.89	7/17/2020	09:39	8.0	21	8.1	450	220	Dry	R
1.70	7/17/2020	09:19	7.6	20	6.8	2000	1200	Dry	R
2.02	7/17/2020	09:05	7.9	22	6.9	4100	> 2400	Dry	R
0.89	8/11/2020	10:10	8.1	21	8.1	2300	410	Wet	R
1.70	8/11/2020	09:56	7.7	21	6.8	3700	550	Wet	R
2.02	8/11/2020	09:45	7.8	22	6.7	10000	550	Wet	R
0.89	9/15/2020	09:05	8.0	19	8.3	4600	230	Wet	R
1.70	9/15/2020	08:30	7.5	19	7.0	1200	460	Wet	R
2.02	9/15/2020	08:39	7.8	20	7.3	3700	440	Wet	R
0.89	10/23/2020	09:17	8.1	16	8.5	280	200	Dry	R
1.70	10/23/2020	09:34	7.7	17	7.3	140	110	Dry	R
2.02	10/23/2020	09:46	8.0	18	7.2	380	580	Dry	R
0.89	11/3/2020	09:42	7.9	13	9.8	390	130	Dry	R
1.70	11/3/2020	09:50	7.7	14	8.7	820	730	Dry	R
2.02	11/3/2020	10:02	7.9	15	8.5	1600	300	Dry	R
0.89	12/9/2020	10:30	7.8	8	11	410	370	Dry	R
1.70	12/9/2020	10:15	7.6	11	8.8	240	270	Dry	R
2.02	12/9/2020	10:07	7.7	11	9.3	90	120	Dry	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



Water Quality Monitoring
Report

Spill Impact Sampling Results
Water Quality Monitoring Program

Knoxville Utilities Board
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Event Date 1/13/2020
Street Address 4923 Ball Rd
Description Broken System - Broken Force Main

Ground to Grassy Creek to Fourth Creek

Estimated unrecovered volume 500 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	1/13/2020	0.01	0.61

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	1/13/2020	12:30	10	13	7.6	200	180
Downstream of SSO Discharge	1/13/2020	12:46	10	12	7.8	10000	> 2400
Upstream of SSO Discharge	1/21/2020	09:06	11	6	7.6	150	140
Downstream of SSO Discharge	1/21/2020	08:55	11	7	7.8	140	120



Water Quality Monitoring
Report

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Event Date 3/4/2020
Street Address 3216 McPherson St
Description Blockage - Grease

Pavement to Storm Drain to Wet Weather Conveyance to Third Creek

Estimated unrecovered volume 5000 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/4/2020	0	1.51

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/4/2020	09:40	10	11	7.4	99	100
Downstream of SSO Discharge	3/4/2020	09:45	10	10	7.6	820	920



Water Quality Monitoring
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Spill Impact Sampling Results Water Quality Monitoring Program

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Event Date 9/8/2020
Street Address 193 Kensi Drive
Description Blockage - Grease and Debris

Ground to Second Creek

Estimated unrecovered volume 30 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	9/8/2020	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	9/8/2020	13:55	5.6	20	7.3	4100	> 2400
Downstream of SSO Discharge	9/8/2020	13:30	2.2	21	7.5	> 60000	> 2400

Followed up on 9/15/20, the same day as Unpermitted Discharge at 200 Kensi Drive; used the same locations for both events.



Water Quality Monitoring
Report

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Event Date 9/15/2020
Street Address 200 Kensi Drive
Description Broken Gravity Main

Second Creek

Estimated unrecovered volume 60000 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	9/15/2020	0	0.18

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	9/15/2020	10:00	5.6	18	7.3	540	440
Downstream of SSO Discharge	9/15/2020	10:47	2.2	20	7.5	> 60000	> 2400
Upstream of SSO Discharge	10/5/2020	10:20	5.8	16	7.4	1600	610
Downstream of SSO Discharge	10/5/2020	10:56	8.5	16	8.2	580	410



Water Quality Monitoring
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Event Date 9/21/2020
Street Address 312 W Jackson Ave
Description Construction Failure - Dig In

Ditch to Storm Drain to First Creek

Estimated unrecovered volume 13000 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	9/21/2020	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	9/21/2020	12:20	9.1	17	8.4	480	390
Downstream of SSO Discharge	9/21/2020	12:55	7.4	24	7.7	150	71



Water Quality Monitoring
Report

Spill Impact Sampling Results
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Event Date 9/21/2020
Street Address 5072 South National Drive
Description Broken System - Broken Force Main

Pavement to Ditch to Tennessee River

Estimated unrecovered volume 400 gallons

Sampling Notes: Industrial users upstream of the spill were identified and samples for the applicable priority pollutants were collected. All downstream priority pollutant results were typical of the receiving water with no significant amount of any contaminant being detected.

Precipitation	Date	Total - Day of Event	Total - Prior 4 Days
(McGhee-Tyson Airport)	9/21/2020	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	9/21/2020	19:50	8.6	24	7.7	9500	1600
Downstream of SSO Discharge	9/21/2020	20:04	8.7	24	7.5	36	14
Upstream of SSO Discharge	9/30/2020	11:27	6.7	21	7.9	1300	520
Downstream of SSO Discharge	9/30/2020	11:38	6.7	21	7.5	1700	650



Water Quality Monitoring
Report

Spill Impact Sampling Results Water Quality Monitoring Program

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Event Date 9/30/2020
Street Address 3930 Summercrest Way
Description Blockage - Grease

Ditch to Storm Drain to Unnamed Tributary to Second Creek

Estimated unrecovered volume 175 gallons

Sampling Notes: No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	9/30/2020	0	0.83

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	9/30/2020	15:45	5.2	17	7.0	140	130
Downstream of SSO Discharge	9/30/2020	16:10	8.6	17	8.0	570	300

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
1/1/20 - 12/31/20

Table 1: Investigative Sampling near New Gray Cemetery

Samples collected following a concern from the City of Knoxville; findings were shared with WW engineering and collection system rehabilitation occurred in the area. SRS conducted followup sampling after work had been completed.

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	pH	Fecal Coliform	<i>E. coli</i>
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Third Creek Upstream of Source Tributary	1/22/2020	Dry	11	6	8.1	3900	> 2400
Suspected Source Tributary in Cemetery	1/22/2020	Dry	9.7	10	7.6	> 60000	> 2400
Third Creek Downstream of Source Tributary	1/22/2020	Dry	6.7	9	5.4	13000	> 2400
Suspected Source Tributary in Cemetery	7/8/2020	Dry	7.3	21	8.1	2000	690
Third Creek Downstream of Source Tributary	7/8/2020	Dry	6.0	22	7.8	1100	650

Table 2: Other Investigative Sampling

City of Knoxville concern

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	pH	Fecal Coliform	<i>E. coli</i>
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Second Creek at Family Inn Dr.	7/8/2020	Dry	4.9	19	7.2	1300	690

Appendix E

Grease-Related SSO Summary Table

Grease-Related SSOs

	Date			Building	Grease	Grease	Grease	Grease, Roots	Grease &	Customers	Residential Letters	Cans, Bags, or	Commercial	# of Feet	Blockage Abatement*
	of SSO or BBU	Address	SSO	Backup	Only	& Roots	& Debris	& Debris	I & I	Contributing to SSO	Mailed	Spatulas Mailed	Inspections	Cleaned	Frequency
1	2/11/2020	114 Tillery Drive - MH 16-2 (org. reported as 115 Tillery)	Yes	-	Yes	-	-	-	-	52	52	52	0	238	12 Month
2	3/4/2020	3216 Mcpherson Street - MH 18-51	Yes	-	Yes	-	-	-	-	72	58	58	14	147	48 Month
3	3/13/2020	2523 Adair Avenue - Manholes 2-86	Yes	-	Yes	-	-	-	-	24	24	24	0	282	12 Month
4	4/4/2020	2501 Keith Avenue - Sewer Lateral / Clean out	Yes	-	Yes	-	-	-	-	113	113	113	0	276	48 Month
5	6/27/2020	5660 Colonial Circle - MH 14-2	Yes	-	-	-	Yes	-	-	222	217	217	5	105	24 Month
6	7/3/2020	8724 Tigris Point Lane - Lateral C/O & MH 20-39	Yes	-	Yes	-	-	-	-	102	102	102	0	192	24 Month
7	9/8/2020	193 Kensi Drive - MH 16-22	Yes	-	-	-	Yes	-	-	60	60	60	0	130	12 Month
8	9/30/2020	3930 Summercrest Way - MH 17-100	Yes	-	Yes	-	-	-	-	86	79	79	7	752	24 Month
9	10/24/2020	618 Watauga Avenue SSO/BBU, cleanout	Yes	Yes	Yes	-	-	-	-	53	53	53	0	201	48 Month
10	11/25/2020	725 Sevier Avenue - MH 1-147	Yes	-	Yes	-	-	-	-	135	124	124	11	37	24 Month
11	12/2/2020	1540 Amherst Road - MH 22-73	Yes	-	-	Yes	-	-	-	127	120	120	7	189	3 Month
12	12/3/2020	2600 Holbrook Drive - MH 18-24	Yes	-	Yes	-	-	-	-	385	373	373	12	169	12 Month
13	12/7/2020	2645 Chukar - MH 70-15	Yes	-	Yes	-	-	-	-	146	146	146	0	140	3 Month
										1577	1521	1521	56		

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix F

Infrastructure Rehabilitation Projects

IRP Projects

Project	Plant	Watershed	Basin	Description	Status
2020 Sewer Shortline CN 2105	Kuwahee, Loves Creek	First Creek, Second Creek, Williams Creek, South Knox, Loves Creek	15, 20, 24, 25, 31, 40	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 10/21/20
Atchley St/MB 40C1 Sewer Abatement & Water Repl CN 1946	Kuwahee	South Knox	40	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 04/01/21
Brunswick St Shortline CN 2126	Kuwahee	First Creek	8	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 10/02/20
Burlington Storm Drain Repair CIPP Bid # 1942 & CN 2050	Loves Creek	Loves Creek	20	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 03/19/20
Concord Street Sewer Repl CN 1933	Kuwahee	Third Creek	29	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/06/20
Davanna St Emergency	Kuwahee	Second Creek	15	Emergency Repair of sanitary sewer.	Construction Project Completed 12/01/20
Forks of the River Pump Station CN 954	Kuwahee	Williams Creek	60	Pump station and appropriate force main upgrade.	Construction Project Underway - Estimated Completion 08/31/21
Fourth Creek - West Knoxville Shortline Sewer Rehab CN 2094	Fourth Creek	Fourth Creek	27, 32, 36	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/14/20
Fresenius WW Flow Meter CN 1134	Kuwahee	Williams Creek	60	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/08/20
I-275 Business Park - Marion Street Utilities Relocation -Design Phase	Kuwahee	Second Creek	23	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Underway - Estimated Completion 12/31/21
Jones St Pump Station & Forcemain CN 1931A	Kuwahee	South Knox	40	Pump station and appropriate force main upgrade.	Construction Project Underway - Estimated Completion 07/31/22
Kerns Bakery CN 1442	Kuwahee	South Knox	39	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/26/20
LC SB 20 Sewer Trunk Rehab CN 934	Loves Creek	Loves Creek	20	Trunkline Rehabilitation/Replacement.	Construction Project Completed 01/22/20
Leonard Pl Sewer Rehab CN 2027	Kuwahee	First Creek	18	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/19/20
Loves Creek Eastwood Trunkline Repl Ph 3 CN 1892	Loves Creek	Loves Creek	63	Trunkline Rehabilitation/Replacement.	Construction Project Completed 07/27/20
Loves Creek MB 20A3 Sewer Rehab CN 1829	Loves Creek	Loves Creek	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 03/31/21
Loves Creek MB 20A5 Ph 1 CN 1782	Loves Creek	Loves Creek	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 06/23/20
Loves Creek MB 20A5 Sewer & Water Ph 2 CN 1244	Loves Creek	Loves Creek	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 10/16/20
Lyons Creek PS CN 1926	Eastbridge	Eastbridge	70	Pump station and appropriate force main upgrade.	Construction Project Completed 09/16/20
Old Kingston Pike Rehab CN 1923	Kuwahee	Third Creek	34	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/10/20
Pelham Pump Station CN 546	Kuwahee	Williams Creek	19	Pump station and appropriate force main upgrade.	Construction Project Completed 01/06/20
Ritta School - Washington Pk FM CN 1785	Loves Creek	Loves Creek	118	Force main upgrade	Construction Project Completed 06/02/20
Rutledge Pike Force Main CN 1634	Loves Creek	Loves Creek	105	Force main upgrade	Construction Project Underway - Estimated Completion 08/31/21
Second Creek James Agee St and Clinch Ave Sewer Rehab CN 2434	Kuwahee	Second Creek	35	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 12/31/20
Second Creek Trunkline Armoring CN 2010	Kuwahee	Second Creek	23	Trunkline Rehabilitation/Replacement.	Construction Project Completed 11/16/20
Second Creek Trunkline at I-75 Trunkline Emergency Repair CN 2399	Kuwahee	Second Creek	10	Emergency Repair of sanitary sewer.	Construction Project Completed 11/17/20
Sequoyah Hills Phase 2 CN 1431	Kuwahee	Third Creek	38	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 04/14/20
Sevier Avenue Streetscapes Sewer Replacement CN 2247	Kuwahee	South Knox	40	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Underway - Estimated Completion 03/02/21
South Knoxville Shortline Sewer Rehab CN 2094	Kuwahee	South Knox	39, 40	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/14/20
Sub-Basin 22, MB 22C1 Sewer Rehab Phase 1 CN 2083	Kuwahee	Third Creek	22	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 12/15/20
Third Creek 22nd St Sewer Repair CN 2415	Kuwahee	Third Creek	35	Emergency Repair of sanitary sewer.	Construction Project Completed 11/10/20
Third Creek MB 13A1 Phase 2 CN 2013	Kuwahee	Third Creek	13	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 08/29/20
Wilson Ave Sewer Reloc for Sidewalk Addition Ph 1 CN 2052	Kuwahee	Williams Creek	19	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 02/21/20
Wm Creek MB 25A3 Sewer Rehab CN 1518	Kuwahee	Williams Creek	25	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 12/04/20