Annual Progress Report

2016

Submitted to EPA on February 24, 2017

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

2/21/17

Date

KUB

Century II

KUB Investing for Another 100 Years

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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:

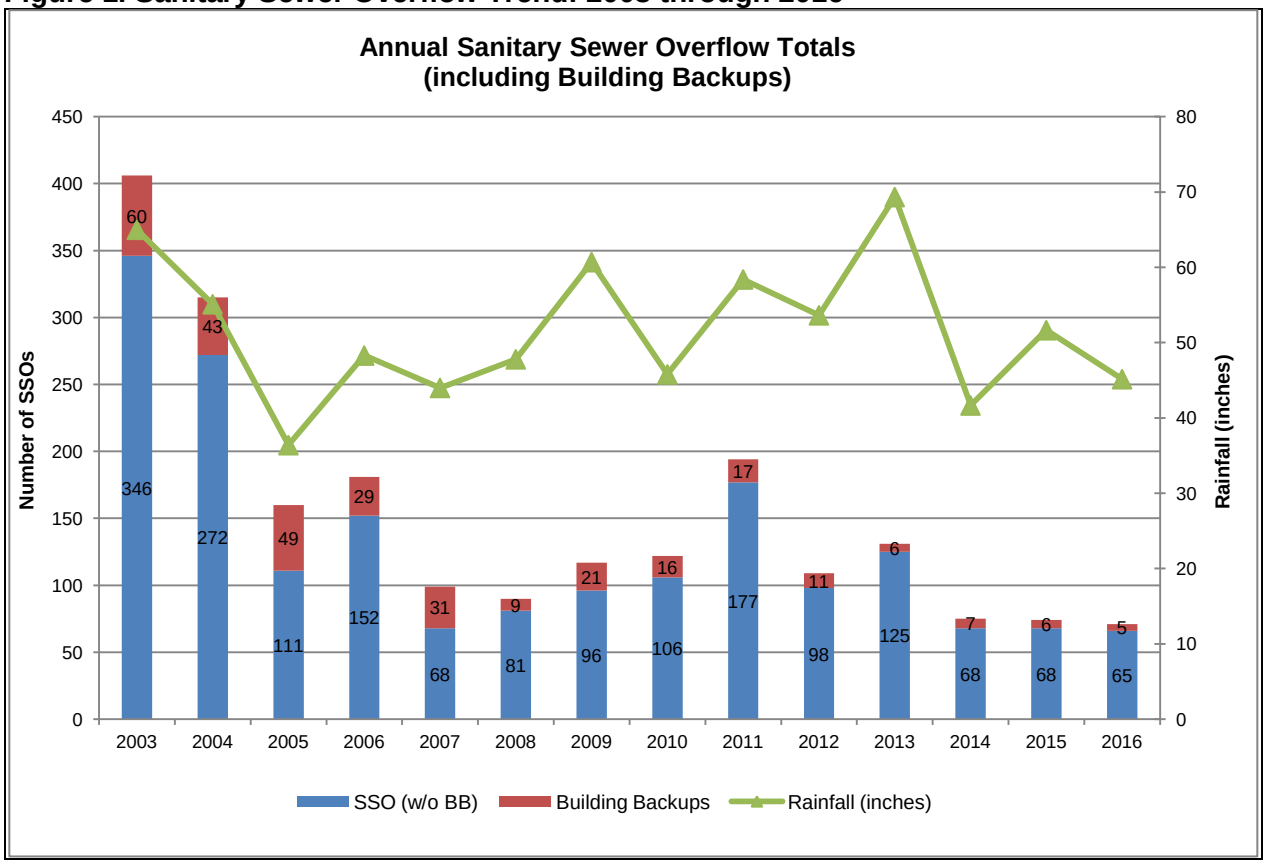
B. *"Beginning on March 1, 2017, and every twelve (12) Months thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, an Annual Progress Report. The Annual Progress Report shall cover the most recent Calendar Year. The Annual Progress 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. During this reporting period, KUB experienced a total of 70* SSOs, five of which were building backups.

Figure 1. Sanitary Sewer Overflow Trend: 2003 through 2016



* One SSO 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 to meet the implementation deadlines of June 2018 at the Fourth Creek Wastewater Treatment Plant (WWTP) and 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
Phase II expands design/construction completed in Phase I by adding the biological component of the Biologically Enhanced High Rate Clarification (BEHRC) process. Completion of this project will allow full biological secondary treatment of up to 34 MGD influent. Tasks included are installation of a biological contact tank, return sludge pump upgrades, associated electrical and automation upgrades, and yard piping. Final design and construction plans were submitted to TDEC in 2016, and a construction permit was issued in December 2016. KUB's contractor mobilized to begin construction in January 2017 and is 10% complete with the biological contact tank.

Kuwahee WWTP Phase I
Work was completed prior to the December 30, 2012, deadline.

Kuwahee WWTP Phase II
KUB's consultant began design on the Biologically Enhanced High Rate Clarification project in November 2016 and is currently 5% complete. The design intent is to allow full biological secondary treatment of up to 120 MGD influent with any flow above 70 MGD being treated by the BEHRC process.

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 46 times. No Diversion events occurred.

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	18.33	27,440
Second Creek	12.19	18,249
Third Creek	13.07	19,566
Fourth Creek	4.79	7,171
South Knoxville	6.79	10,165
Loves Creek	1.72	2,575
Williams Creek	2.19	3,278
TOTAL	**59.08**	**88,444**

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 2016. 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.

January 28, 2016

- Submitted to EPA – Quarterly Progress Report Fourth Quarter 2015

February 26, 2016

- Submitted to EPA – Annual MOM Progress Report 2015

March 29, 2016

- Submitted to EPA – 2003-2015 Sanitary Sewer Overflow Evaluation Report

April 29, 2016

- Submitted to EPA – Quarterly Progress Report First Quarter 2016

July 29, 2016

- Submitted to EPA – Quarterly Progress Report Second Quarter 2016

October 28, 2016

- Submitted to EPA – Quarterly Progress Report Third Quarter 2016

5.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 29 Unpermitted Discharges. Appendix A lists any SSO that occurred during 2016 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 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 66 SSO events.

Of the 66 SSO events, 51 were in the 0 – 1,000 gallons volume range, eight were in the 1,001 – 10,000 gallons volume range, six events totaled greater than 10,000 gallons, and the volume for one event was unknown. Durations for events during this period are as follows: 54 ranged from 0 – 2 hours, and seven ranged from 2.1 – 5 hours, four were greater than five hours, and the duration of one event was unknown.

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 five Building Backups including one SSO event 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 no Diversion events at Kuwahee, Loves Creek, 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 no effluent limit violations at the Kuwahee, Loves Creek, Fourth Creek, or Eastbridge WWTPs.

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	No										
Loves Creek	No										
Fourth Creek	No										
Eastbridge	No										

Table 3. Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	No					
Fourth Creek	No					
Loves Creek	No	-	-	-	-	-
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 2017, KUB will continue to monitor the 24 routine sampling locations in the sewer basins of eight area creeks. KUB will collect samples from the following locations during 2017:

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	0.53	1.45
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 936 permitted and active FSFs in KUB's service area that were inspected routinely in 2016 to assess compliance with KUB's Grease Control Program (GCP). KUB also inspected an additional 139 FSF locations at least once in 2016 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 2,652 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 101 FSFs were required to submit a Corrective Action Plan (CAP) in 2016 demonstrating they would move forward with upgrading and/or installing GCE. There were 118 customers that actually installed GCE during the reporting period. A total of 74 grease interceptors and 44 grease traps were added to control grease as a result of program efforts and customer compliance. Six FSFs were published this year in the local newspaper for continued noncompliance, in accordance with the GCP Enforcement Response Guide, for failure to install the required equipment. Two of those six facilities were also placed under an Administrative Order to move forward after continued failure to comply with the installations in 2016.

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 2016, KUB mailed grease letters, educational brochures, and grease can liners to 2,485 customers and conducted 126 inspections on commercial customers as a result of 16 grease-related SSO 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 2015 as required by the two-year assessment schedule:

Table 4. CSSAP Elements

Program Elements	Assessment Tools	Completed in 2016	Total Completed*	One Complete Cycle Period
Manhole Condition Assessment	Manhole Inspections Smoke Testing	10.3 percent	10.3 percent	12 Years
Gravity Sewer Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	9.8 percent	9.8 percent	12 Years
Private Lateral Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	8.8 percent	8.8 percent	12 Years
Force Main Performance Assessment	Corrosion Defect Identification	100 percent	100 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.

9.2 Infrastructure Rehabilitation Program (IRP)

In 2016, KUB's IRP rehabilitated or replaced more than 118,900 ft (22 miles) of sewer mains, 675 manholes, and 1,550 ft (0.3 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 2016, we had 63 SSO events in which KUB's Underground Construction (UGC) department responded, and our average response time was 19 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 in order 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			
	630,450 ft (119 miles)			
Blockage Abatement (BA) Program	Sewer mains in BA	Sewer mains cleaned	Sewer mains televised	Sewer mains root cut
	1,312,000 ft (248 miles)	1,069,000 ft (200 miles)	297,750 ft (56 miles)	206,750 ft (39 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. The statistics below include enforcement actions undertaken in the program from January 1, 2016, to December 31, 2016.

Total Private Lateral Enforcements	**2**
Repair	0
Replace	2
Total with Tenants	0

One of the two laterals under enforcement in 2016 completed their required replacement prior to December 31, 2016. The second lateral under enforcement came late in the year, and the customer will complete their replacement in early 2017. Additionally, there were seven properties that received reinstatements of water service after lateral work was completed. In these cases, the water service was terminated in previous years due to noncompliance with the PLP, but the required repairs were completed in 2016.

Total Repairs Completed	**8**
2016 Enforcements	1
Reinstatements	7
Terminations	0

Appendix A

Unpermitted Discharges

Appendix A

Unpermitted Discharges in 2016

	18	Overflow volume of 500 gallons or less			1-day rainfall greater than 3"					
	1	Overflow volume of 501 - 1000 gallons			3-day rainfall greater than 4"					
		Vandalism			Intensity > 0.84 in/hr					
	1	Electrical or mechanical failure								
Reporting				**Unrecovered**	**Receiving**		**Rainfall Totals**		**Peak Rainfall**	**Force Majeure**
Period	**Date**	**Location**	**Event**	**Volume (Gal.)**	**Stream**	**Cause**	**1-Day***	**3-Day****	**Intensity (in/hr)**	**event**
1st 2016	1/14/2016	840 Twentieth Street	Unpermitted Discharge	100	Third Creek	Construction Failure	0	0	0	
1st 2016	1/25/2016	2223 Cumberland Avenue	Unpermitted Discharge	130	Third Creek	Broken System - Broken Manhole Lid	0	0	0	
1st 2016	1/29/2016	3222 Kingston Pike	Unpermitted Discharge	50	TN River	Broken System - Broken Gravity Main	0	0	0	
1st 2016	2/3/2016	2706 Boright Drive	Unpermitted Discharge	200	First Creek	Heavy Rainfall	1.86	3.09	0.71	
1st 2016	2/3/2016	4100 Central Avenue Pike	Unpermitted Discharge	500	Second Creek	Heavy Rainfall	1.86	3.09	0.71	
1st 2016	2/3/2016	6803 Stockton Drive	Unpermitted Discharge	15,840	Fourth Creek	Heavy Rainfall	1.86	3.09	0.71	
1st 2016	2/3/2016	2004 Riverside Drive	Unpermitted Discharge	4,700	Williams Creek	Heavy Rainfall	1.86	3.09	0.71	
1st 2016	2/3/2016	7000 Rotherwood Drive	Unpermitted Discharge	350	Fourth Creek	Heavy Rainfall	1.86	3.09	0.71	
1st 2016	2/16/2016	6803 Stockton Drive	Unpermitted Discharge	3,400	Fourth Creek	Heavy Rainfall	0.75	1.78	0.25	
1st 2016	2/24/2016	6803 Stockton Drive	Unpermitted Discharge	500	Fourth Creek	Heavy Rainfall	0.28	1.93	0.66	
1st 2016	2/24/2016	517 Bernard Avenue	Unpermitted Discharge	860,000	Second Creek	WW Storage Facility Failure	0.28	1.93	0.66	
2nd 2016	4/14/2016	2625 Emoriland Boulevard	Unpermitted Discharge	50	First Creek	Blockage - Grease	0	0.25	0.12	
2nd 2016	4/17/2016	2916 Tazewell Pike	Unpermitted Discharge	1,700	First Creek	Blockage - Grease	0	0	0	
2nd 2016	4/25/2016	2900 Tazewell Pike	Unpermitted Discharge	25	First Creek	Blockage-Grease	0	0	0	
2nd 2016	4/27/2016	3908 West Bellemeade Avenue	Unpermitted Discharge	200	Third Creek	Broken System - Broken Gravity Main	0.06	0.06	0.59	
2nd 2016	5/1/2016	5906 Walden Drive	Unpermitted Discharge	20	Fourth Creek	Blockage - Debris	0.19	0.69	0.59	
2nd 2016	5/3/2016	1109 Mechanics Way	Unpermitted Discharge	500	Second Creek	Blockage - Grease	0.13	0.59	0.59	
2nd 2016	6/8/2016	1216 Old Weisgarber Road	Unpermitted Discharge	750	Fourth Creek	Construction Failure - Bypass Pumping Failure	0	0	0	
2nd 2016	6/24/2016	1916 Fenwood Drive	Unpermitted Discharge	2,000	First Creek	Blockage - Debris	0	0	0	
3rd 2016	7/22/2016	857 North Central Street	Unpermitted Discharge	500	Second Creek	Blockage - Grease and Debris	0	0	0	
3rd 2016	8/1/2016	5500 E Governor John Sevier Highway	Unpermitted Discharge	9,550	Holston River	Broken System - Broken Force Main Due to Water Main Break	0	0	0	
3rd 2016	8/10/2016	1620 Edgewood Avenue	Unpermitted Discharge	400	First Creek	Blockage - Grease and Debris	0.01	0.75	0.61	
3rd 2016	9/20/2016	2609 East Martin Mill Pike	Unpermitted Discharge	29,000	Tennessee River	Blockage - Grease	0	0.56	0.41	
4th 2016	10/7/2016	513 Stone Pony Lane	Unpermitted Discharge	175	Fourth Creek	Blockage - Grease and Debris	0	0	0	
4th 2016	10/18/2016	1807 Rocky View Way	Unpermitted Discharge	1,850	First Creek	Blockage - Grease and Debris	0	0	0	
4th 2016	11/1/2016	601 South Central Street	Unpermitted Discharge	200	First Creek	Blockage - Grease and Debris	0	0	0	
4th 2016	11/21/2016	5915 Neubert Springs Road	Unpermitted Discharge	57,800	Knob Creek	Pump Station Failure - Electrical	0	0.16	0	
4th 2016	12/28/2016	2015 Neyland Drive	Unpermitted Discharge	100	Third Creek	Waste Hauler Discharge Process Failure	0.34	0.36	0.41	
4th 2016	12/29/2016	2400 North Broadway	Unpermitted Discharge	175	First Creek	Blockage - Debris	0.76	1.43	0.41	

*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

Appendix B

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
1/7/2016	9:16 AM	3705	Decatur Drive	KUW	South Knox	40	Manhole 47-116	Pavement to Storm Drain to Ditch to Soil Saturation and Recovery		Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	320	20	300	3	No	Routine Blockage Abatement
1/14/2016	4:22 PM	840	Twentieth Street	KUW	Third Creek	35b	Storm Main	Storm Drain to Third Creek and Recovery	Third Creek	Construction Failure - Dig-in on Storm main during Sanitary Main Replacement and the strom main was repaired and the sewer was replaced.	500	400	100	0.5	Yes	System Repair Completed
1/14/2016	9:05 PM	7513	Granda Drive	FC	Fourth Creek	32a	Manhole 30-44	Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	14,500	0	14,500	2.5	No	Routine Blockage Abatement
1/25/2016	11:06 AM	2223	Cumberland Avenue	KUW	Third Creek	35b	Manhole 27	Pavement to Storm Drain to Third Creek	Third Creek	Broken System - Broken Manhole Lid. The broken lid was removed and the area was cleaned	130	0	130	0.5	Yes	System Repair Completed
1/29/2016	2:31 PM	3222	Kingston Pike	KUW	Third Creek	38	Gravity Main	Ground to Soil Saturation and TN River	Tennessee River	Broken System - Broken Gravity Main. The sewer main was repaired and the area was cleaned	50	0	50	1	Yes	System Repair Completed
2/3/2016	7:50 AM	6803	Stockton Drive	FC	Fourth Creek	27	Manholes 38, 39, & 40	Ground to Unnamed Tributary to Fourth Creek	Fourth Creek	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.	15,840	0	15,840	1	Yes	Construction Project Complete
2/3/2016	7:52 AM	217	Stratford Road	KUW	Knob Creek	41	Manhole 66-14	Soil Saturation		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.	3,600	0	3,600	40	No	System Assessment Underway
2/3/2016	8:06 AM	4100	Central Avenue Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Ditch 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 the high flows subsided. The area was cleaned.	500	0	500	1	Yes	System Assessment Underway
2/3/2016	8:40 AM	2706	Boright Drive	KUW	First Creek	8	Manhole 24 & 26	Pavement to Unnamed Tributary 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 the high flows subsided. The area was cleaned.	200	0	200	1	Yes	System Assessment Underway
2/3/2016	9:30 AM	2004	Riverside Drive	KUW	Williams Creek	25	Manhole 1-1	Ground to Williams Creek	Williams Creek	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.	4,700	0	4,700	1	Yes	Construction Project Underway
2/3/2016	11:10 AM	7000	Rotherwood Drive	FC	Fourth Creek	36	Manhole 30	Pavement to Unnamed Tributary to Fourth Creek	Fourth Creek	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	0	350	1.5	Yes	Future Construction Planned
2/3/2016	1:37 PM	3731	W Martin Mill Pike	KUW	South Knox	39	Building Exterior & BBU	Soil Saturation and BBU		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 by Disaster.	2,000	1,600	400	2	No	System Assessment Underway
2/8/2016	12:33 PM	7602	Bud Hawkins Road	EB	Eastbridge	109	Grinder Pump	Soil Saturation and Recovery		Grinder pump failure. The pump was repaired and the area was cleaned.	30	5	20	1	No	System Repair Completed
2/10/2016	10:37 AM	1829	Wayland Road	LC	Loves Creek	67	Manhole 40-2	Soil Saturation		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	Unknown	0	Unknown	Unknown	No	Future Construction Planned
2/16/2016	8:38 AM	6803	Stockton Drive	FC	Fourth Creek	27	Manholes 38 & 39	Ground to Unnamed Tributary to Fourth Creek	Fourth Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided and the area was cleaned.	3,400	0	3,400	24	Yes	Construction Project Complete
2/17/2016	11:28 AM	5246	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	35	25	10	1	No	System Repair Completed
2/17/2016	1:50 PM	4315	Rutledge Pike	LC	Loves Creek	20	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	15	10	5	0.5	No	System Repair Completed
2/24/2016	8:38 AM	6803	Stockton Drive	FC	Fourth Creek	27	Manholes 38 & 39	Ground to Unnamed Tributary to Fourth Creek	Fourth Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided and the area was cleaned.	500	0	500	1	Yes	Construction Project Complete
2/24/2016	6:00 PM	517	Bernard Avenue	KUW	Second Creek	23	WW Storage Facility	Pavement to Second Creek	Second Creek	WW Storage facility failure - process failure. The process was reinstated and the area was cleaned.	860,000	0	860,000	0.55	Yes	System Repair Completed
3/8/2016	8:10 AM	3336	Roberts Road	EB	Eastbridge	114	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	15	5	10	0.5	No	System Repair Completed
3/18/2016	8:22 PM	8835	Millertown Pike	EB	Eastbridge	114	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	7	2	5	1.5	No	System Repair Completed
3/31/2016	11:45 AM	7217	Washington Pike	EB	Eastbridge	113	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	18	3	15	0.25	No	System Repair Completed
4/2/2016	2:52 PM	904	E Inskip Drive	KUW	First Creek	7	Manhole 29-57	Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	15	0	15	2	No	Routine Blockage Abatement
4/6/2016	9:47 AM	2116	Houser Road	FC	Fourth Creek	43	Broken Force Main	Soil Saturation		Broken system - Broken Force Main. Force main was repaired and the area was cleaned.	375	0	375	2	No	System Repair Completed
4/6/2016	2:09 PM	5240	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	5	2	3	0.5	No	System Repair Completed
4/9/2016	3:28 PM	5713	Millertown Pike	LC	Loves Creek	6	Grinder Pump	Soil Saturation and Recovery		Grinder pump failure. The pump was repaired and the area was cleaned.	5	4	1	0.5	No	System Repair Completed
4/12/2016	11:25 AM	2315	Antietam Road	KUW	First Creek	18	Manhole 62	Broken Gravity Main to Manhole to Ground and Soil Saturation		Broken System - Broken Gravity Main. The sewer main was repaired and the area was cleaned	950	0	950	2	No	System Repair Completed
4/14/2016	4:42 PM	2625	Emoriland Boulevard	KUW	First Creek	8	Manhole 9-38	Ground to Unnamed Tributary to First Creek	First Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	50	0	50	1	Yes	Routine Blockage Abatement
4/17/2016	11:40 PM	2916	Tazewell Pike	KUW	First Creek	8	Lateral Cleanout	Lateral Cleanout to Ground to Unnamed Tributary to First Creek	First Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	1,700	0	1,700	2	Yes	Routine Blockage Abatement
4/18/2016	10:04 AM	2015	Neyland Drive	KUW	Second Creek	35b	Broken Force Main	Pavement to Storm Drain to Recovery		Broken system - Broken Force Main. Force main was repaired and the area was cleaned.	900	100	800	0.5	No	System Repair Completed
4/25/2016	9:36 AM	2900	Tazewell Pike	KUW	First Creek	8	Manhole 7-66	Pavement to Storm Drain to Unnamed Tributary to First Creek	First Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	30	5	25	1.5	Yes	Routine Blockage Abatement
4/27/2016	12:27 PM	3908	West Bellemeade Avenue	KUW	Third Creek	34	Broken Gravity Main	Unnamed Tributary to Third Creek	Third Creek	Broken System - Broken Gravity Main. The sewer main was repaired and the area was cleaned	200	0	200	1.5	Yes	System Repair Completed

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
5/1/2016	6:16 PM	2701	Mary Emily Lane	LC	Loves Creek	6	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	15	0	15	1	No	System Repair Completed
5/1/2016	9:30 PM	5906	Walden Drive	FC	Fourth Creek	37	Manhole 34-5	Pavement to Unnamed Tributary to Fourth Creek	Fourth Creek	Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	20	0	20	1	Yes	Routine Blockage Abatement
5/3/2016	1:30 PM	1109	Mechanics Way	KUW	Second Creek	23	Manhole 19-139	Pavement to Storm Drain to Second Creek	Second Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	500	0	500	2	Yes	Routine Blockage Abatement
5/27/2016	5:38 PM	7308	Rising Road	LC	Loves Creek	106	Manhole 27-20 & Facility Wetwell	Ground to Wet Weather Conveyance to Soil Saturation		Pump Station Failure - Mechanical Failure. The station was repaired and the area was cleaned.	69,000	0	69,000	1.5	No	System Repair Completed
6/8/2016	12:50 PM	1216	Old Weisgarber Road	FC	Fourth Creek	27	Manhole 27	Ground to Fourth Creek	Fourth Creek	Construction Failure - Bypass pumping failure. The process was reinstated and the area was cleaned.	750	0	750	0.25	Yes	System Repair Completed
6/10/2016	11:50 AM	5246	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder pump failure. The pump was repaired and the area was cleaned.	12	2	10	1	No	System Repair Completed
6/19/2016	6:45 PM	5316	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation and Recovery		Grinder pump failure. The pump was repaired and the area was cleaned.	15	10	5	1	No	System Repair Completed
6/24/2016	4:17 PM	1916	Fenwood Drive	KUW	First Creek	4	Manhole 22-107	Ground to Unnamed Tributary to First Creek	First Creek	Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	2,000	0	2,000	4	Yes	Routine Blockage Abatement
6/27/2016	11:16 AM	1705	Bragdon Lane	FC	Fourth Creek	37	Broken Force Main	Pavement to Soil Saturation		Construction Failure - Dig-in (Boring). The sewer main was repaired and the area was cleaned.	80	50	30	0.5	No	System Repair Completed
6/30/2016	4:45 PM	2001	Cumberland Ave W	KUW	Third Creek	35b	Lateral Cleanout	Pavement to Soil Saturation & Recovery		Blockage - Grease & Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	20	5	15	0.5	No	System Repair Completed
7/13/2016	12:15 PM	5360	North National Drive	KUW	Williams Creek	60	Lateral	Soil Saturation		Construction Failure - Unconnected Lateral. The sewer main was repaired and the area was cleaned.	62	0	62	1	No	System Repair Completed
7/22/2016	9:18 AM	857	North Central Street	KUW	Second Creek	23	Lateral Cleanout	Lateral Cleanout to Pavement to Storm Drain to Second Creek	Second Creek	Blockage - Grease and Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	500	0	500	2	Yes	Routine Blockage Abatement
7/29/2016	9:20 PM	2509	Vincinda Circle	LC	Loves Creek	105	Grinder Pump	Soil Saturation		Grinder Pump Failure. The pump was replaced and the area was cleaned.	11	1	10	1	No	System Repair Completed
8/1/2016	1:57 PM	5500	E Governor John Sevier Hwy	LC	Loves Creek	61	Broken Force Main	Broken Force Main to Soil Saturation to Ditch to Storm Drain to Holston River	Holston River	Broken System - Broken Force Main due to Water Main Break. The sewer and water mains were repaired and the area was cleaned.	9,550	0	9,550	6	Yes	System Repair Completed
8/8/2016	8:49 AM	4710	Murphy Road	KUW	First Creek	2	Grinder Pump	Soil Saturation		Grinder Pump Failure. The pump was replaced and the area was cleaned.	5	0	5	1	No	System Repair Completed
8/10/2016	7:55 PM	1620	Edgewood Avenue	KUW	First Creek	16	Lateral Cleanout	Lateral Cleanout to Pavement to Storm Drain to First Creek	First Creek	Blockage - Grease & Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	400	0	400	1	Yes	Routine Blockage Abatement
8/15/2016	7:15 PM	4800	Maloneyville Road	EB	Eastbridge	109	Pump Station	Soil Saturation		Pump Station Failure - Electrical. The pump station was reinstated and the area was cleaned.	675	0	675	0.25	No	System Repair Completed
8/17/2016	8:10 AM	811	Edwards Drive	KUW	Knob Creek	41	Manhole 107	Pavement to Soil Saturation		Blockage - Grease & Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	550	0	550	2.5	No	Routine Blockage Abatement
8/23/2016	3:37 PM	1003	Buff Avenue	KUW	First Creek	17	Manhole 4-38	Pavement to Soil Saturation and Recovery		Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	220	100	120	3.5	No	Routine Blockage Abatement
9/5/2016	11:38 AM	1300	Sharon Road	FC	Fourth Creek	33	Manhole 79-59	Pavement to Soil Saturation		Blockage - Grease and Roots. The sewer main was flushed to clear the blockage and the area was cleaned.	15	0	15	1	No	Routine Blockage Abatement
9/20/2016	9:36 PM	2609	East Martin Mill Pike	KUW	South Knox	39	Manhole 2-63	Pavement to Storm Drain to Tennessee River	Tennessee River	Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	30,000	1,000	29,000	2.25	Yes	Routine Blockage Abatement
10/7/2016	9:27 AM	513	Stone Pony Lane	FC	Fourth Creek	36	Manhole 3-142	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	Blockage - Grease and Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	175	0	175	1	Yes	Routine Blockage Abatement
10/18/2016	10:40 AM	1807	Rocky View Way	KUW	First Creek	8	Manhole 7-143	Soil Saturation to Wet Weather Conveyance to First Creek	First Creek	Blockage - Grease and Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	1,850	0	1,850	2	Yes	Routine Blockage Abatement
10/25/2016	12:28 PM	6313	Old Rutledge Pike	LC	Loves Creek	105	Broken Force Main	Ground to Soil Saturation		Construction Failure - Dig-In. The sewer main was repaired and the area was cleaned.	15	0	15	0.5	No	System Repair Completed
11/1/2016	1:30 PM	601	South Central Street	KUW	First Creek	23	Manhole 3-32	Pavement to Storm Drain to First Creek	First Creek	Blockage - Grease and Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	200	0	200	0.75	Yes	Routine Blockage Abatement
11/20/2016	7:51 PM	1106	Callaway Avenue	KUW	Second Creek	23	Manhole 19-147	Pavement to Storm Drain		Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	19	0	19	1	No	Routine Blockage Abatement
11/21/2016	8:31 AM	5915	Neubert Springs Road	KUW	Knob Creek	41	Manhole 132	Pavement to Storm Drain to Soil Saturation to Knob Creek	Knob Creek	Pump Station Failure - Electrical. The pump station was repaired and the area was cleaned.	57,800	0	57,800	36	Yes	System Repair Completed
11/21/2016	10:00 AM	5100	West Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation		Pump Station Failure - Electrical. The pump station was repaired and the area was cleaned.	47	0	47	1	No	System Repair Completed
11/26/2016	3:48 PM	115	Tillery Drive	KUW	Second Creek	10	Manhole 16-6	Ground to Pavement to Soil Saturation		Blockage - Grease. The sewer main was flushed to clear the blockage and the area was cleaned.	100	0	100	2	No	Routine Blockage Abatement
12/21/2016	11:00 AM	118	Oglewood Avenue	KUW	Second Creek	15	Lateral Cleanout	Lateral Cleanout to Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	130	30	100	1	No	Routine Blockage Abatement
12/28/2016	11:06 AM	2015	Neyland Drive	KUW	Third Creek	35b	Waste Hauler Discharge Station	Pavement to Storm Drain to Third Creek and Soil Saturation	Third Creek	Waste Hauler Discharge Process Failure. The sewer main was reinstated and the area was cleaned.	100	0	100	0.25	Yes	System Repair Completed
12/29/2016	10:46 AM	2400	North Broadway	KUW	First Creek	17	Manhole 4-154	Pavement to Storm Drain to First Creek and Recovery	First Creek	Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	225	50	175	3	Yes	Routine Blockage Abatement
12/30/2016	2:29 PM	1720	Polkwright Lane	FC	Fourth Creek	37	Grinder Pump	Soil Saturation		Grinder Pump Failure. The pump was repaired and the area was cleaned.	10	0	10	1.5	No	System Repair Completed
12/31/2016	12:55 PM	2116	Houser Road	FC	Fourth Creek	43	Pump Station	Soil Saturation		Pump Station Failure - Electrical. The pump station was reinstated and the area was cleaned.	2,000	0	2,000	1	No	System Repair Completed

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

Appendix C

Building Backups

BBUs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Corrective Action
2/3/2016	1:37 PM	3731	W. Martin Mill Pike	KUW	South Knox	39	Building Exterior & BBU	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 by Disaster Cleaning and Restoration.	2,000	1,600	400	2	System Assessment Underway
4/1/2016	4:17 PM	3923	Lilac Avenue	LC	Loves Creek	20	BBU	Constructuion Failure - Testing Process Failure. The process was reinstated and the building was cleaned by Disaster Cleaning and Restoration.	5	5	0	0	System Repair Completed
6/2/2016	7:45 PM	500	West Church Avenue	KUW	Second Creek	23	BBU	Blockage - Debris. The sewer main was flushed to clear the blockage and the area was cleaned.	500	500	0	12	Routine Blockage Abatement
10/4/2016	8:15 PM	5831	Pepperhill Road	KUW	Third Creek	11	BBU	Blockage - Roots. The sewer main was flushed to clear the blockage. The building was cleaned by Disaster Cleaning and Restoration.	20	20	0	5	Routine Blockage Abatement
10/6/2016	10:37 AM	7100	Shadyland Drive	FC	Fourth Creek	36	BBU	Blockage - Roots. The sewer main was flushed to clear the blockage. The building was cleaned by Serv-Pro.	850	850	0	1	Routine Blockage Abatement

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

Appendix D

Water Quality Monitoring Program Sampling Results

Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
First Creek										
	1.74	1/25/2016	10:52	7.9	8	11	50	36	Wet	R
	2.57	1/25/2016	10:39	7.5	8	11	9	33	Wet	R
	6.33	1/25/2016	10:26	6.9	10	9.9	210	170	Wet	R
	1.74	2/16/2016	11:41	7.5	6	11	2200	2000	Wet	R
	2.57	2/16/2016	11:30	6.5	6	11	2000	2000	Wet	R
	6.33	2/16/2016	10:00	6.6	10	9.4	3300	820	Wet	R
	1.74	3/28/2016	10:03	7.3	15	9.3	520	650	Wet	R
	2.57	3/28/2016	09:50	7.6	15	9.8	190	180	Wet	R
	6.33	3/28/2016	09:40	6.7	15	7.9	500	460	Wet	R
	1.74	4/12/2016	09:45	7.2	14	9.2	540	490	Wet	R
	2.57	4/12/2016	09:33	7.1	14	9.6	2400	1100	Wet	R
	6.33	4/12/2016	09:21	6.4	15	7.4	1100	2000	Wet	I
	1.74	5/19/2016	10:05	7.3	17	8.4	910	490	Wet	R
	2.57	5/19/2016	09:46	7.2	16	8.8	640	520	Wet	R
	6.33	5/19/2016	09:12	6.7	16	7.6	4200	2400	Wet	I
	1.74	6/27/2016	12:01	7.9	23	7.6	4600	980	Wet	R
	2.57	6/27/2016	11:46	7.8	22	7.6	1400	360	Wet	R
	6.33	6/27/2016	10:16	7.2	21	6.6	730	440	Wet	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

1/1/2016 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
First Creek										
	1.74	7/26/2016	10:45	7.8	24	7.1	1400	520	Wet	R
	2.57	7/26/2016	10:30	7.4	23	7.3	5300	250	Wet	R
	6.33	7/26/2016	09:20	7.2	21	6.5	730	360	Wet	R
	1.74	8/10/2016	10:10	7.9	23	7.2	1000	220	Wet	R
	2.57	8/10/2016	10:23	8.0	23	7.5	1000	390	Wet	R
	6.33	8/10/2016	09:00	7.1	21	6.6	1100	270	Wet	R
	1.74	9/15/2016	11:05	7.8	22	7.1	1300	490	Dry	R
	2.57	9/15/2016	10:36	7.8	22	7.7	1000	490	Dry	R
	6.33	9/15/2016	09:25	7.3	20	6.5	1400	1100	Dry	R
	1.74	10/13/2016	12:07	7.8	16	8.8	2200	520	Dry	R
	2.57	10/13/2016	11:09	7.7	16	9.2	540	730	Dry	R
	6.33	10/13/2016	10:45	7.5	16	7.9	2400	1600	Dry	R
	1.74	11/9/2016	10:52	7.9	14	8.8	410	330	Dry	R
	2.57	11/9/2016	10:37	8.0	13	9.6	350	360	Dry	R
	6.33	11/9/2016	09:27	7.3	15	7.5	280	180	Dry	R
	1.74	12/14/2016	12:35	7.6	10	11	340	410	Wet	R
	2.57	12/14/2016	12:20	7.8	11	10	340	460	Wet	R
	6.33	12/14/2016	09:00	6.9	13	8.6	440	390	Wet	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.

006560

Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Second Creek										
	0.30	1/25/2016	11:14	7.4	9	11	330	330	Wet	R
	1.54	1/25/2016	12:06	7.5	10	11	200	160	Wet	R
	5.11	1/25/2016	10:10	6.6	12	8.6	200	260	Wet	R
	0.30	2/16/2016	11:16	6.9	8	11	2000	1000	Wet	R
	1.54	2/16/2016	10:28	7.2	10	8.0	1400	770	Wet	R
	5.11	2/16/2016	10:12	7.1	10	9.2	1100	980	Wet	R
	0.30	3/28/2016	10:55	7.2	15	8.1	9000	820	Wet	R
	1.54	3/28/2016	10:25	7.3	15	8.7	2400	1100	Wet	R
	5.11	3/28/2016	09:26	6.3	16	6.2	440	580	Wet	R
	0.30	4/18/2016	11:08	7.3	16	9.6	2400	2000	Dry	I
	1.54	4/18/2016	10:50	7.3	16	9.7	340	360	Dry	R
	5.11	4/18/2016	10:38	6.7	16	6.9	110	180	Dry	R
	0.30	5/19/2016	11:05	7.3	17	9.2	5700	> 2400	Wet	I
	1.54	5/19/2016	10:42	7.6	17	7.7	1400	410	Wet	R
	5.11	5/19/2016	09:26	6.4	16	6.2	1700	310	Wet	R
	0.30	6/27/2016	11:06	7.5	23	7.8	6000	1200	Wet	I
	1.54	6/27/2016	10:58	7.6	23	6.7	3200	980	Wet	R
	5.11	6/27/2016	11:15	7.5	20	6.0	1000	690	Wet	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

1/1/2016 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Second Creek										
	0.30	7/26/2016	10:12	7.9	23	8.2	10000	2400	Wet	R
	1.54	7/26/2016	10:00	7.4	23	7.2	4700	170	Wet	R
	5.11	7/26/2016	09:33	7.2	21	6.0	640	330	Wet	R
	0.30	8/10/2016	09:56	7.9	23	8.0	1300	280	Wet	R
	1.54	8/10/2016	09:33	7.4	22	7.1	1000	610	Wet	R
	5.11	8/10/2016	09:21	7.4	19	6.1	1000	440	Wet	R
	0.30	9/15/2016	10:15	7.9	20	7.9	1400	410	Dry	R
	1.54	9/15/2016	09:55	7.6	21	7.5	330	100	Dry	R
	5.11	9/15/2016	09:41	7.1	19	6.0	380	250	Dry	R
	0.30	10/24/2016	12:32	7.9	17	9.2	3700	2000	Wet	I
	1.54	10/24/2016	11:17	7.3	16	8.4	190	130	Wet	R
	5.11	10/24/2016	11:01	7.1	17	6.4	460	340	Wet	R
	0.30	11/9/2016	10:13	7.7	15	9.4	21000	> 2400	Dry	I
	1.54	11/9/2016	10:00	7.5	14	8.1	520	410	Dry	R
	5.11	11/9/2016	09:42	7.4	15	6.4	270	330	Dry	R
	0.30	11/14/2016	11:54	7.5	14	10	1700	> 2400	Dry	I
	0.30	12/14/2016	09:50	7.7	12	10	570	650	Wet	R
	1.54	12/14/2016	09:35	7.4	12	9.5	540	870	Wet	R
	5.11	12/14/2016	09:15	6.7	13	7.8	910	980	Wet	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

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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Third Creek										
	0.87	1/27/2016	11:16	7.8	10	8.2	1500	580	Wet	R
	2.08E	1/27/2016	11:03	7.9	10	11	310	190	Wet	R
	4.80W	1/27/2016	10:46	7.6	11	10	250	200	Wet	R
	0.87	2/25/2016	10:47	7.8	13	10	4100	820	Wet	R
	2.08E	2/25/2016	10:36	7.2	11	9.8	140	150	Wet	R
	4.80W	2/25/2016	10:11	7.0	11	9.7	2400	690	Wet	R
	0.87	3/21/2016	10:50	7.9	11	11	340	170	Wet	R
	2.08E	3/21/2016	10:40	7.2	11	10	140	100	Wet	R
	4.80W	3/21/2016	10:26	7.6	11	9.8	1300	490	Wet	R
	0.87	4/28/2016	10:50	7.3	18	7.3	18000	> 2400	Dry	R
	2.08E	4/28/2016	10:41	7.1	18	6.6	4000	1600	Dry	I
	4.80W	4/28/2016	10:26	7.2	16	8.2	200	160	Dry	R
	0.87	5/16/2016	13:45	7.8	16	10	620	290	Dry	R
	2.08E	5/16/2016	13:27	7.2	16	8.7	1100	400	Dry	R
	4.80w	5/16/2016	13:15	7.3	15	9.5	250	170	Dry	R
	0.87	6/16/2016	09:57	8.0	20	7.9	1700	770	Wet	R
	2.08E	6/16/2016	09:41	7.5	19	5.5	4100	980	Wet	I
	4.80W	6/16/2016	08:40	7.5	18	7.7	730	> 2400	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)	E. Coli (MPN)	Precipitation Event	Status
Third Creek										
	0.87	7/27/2016	10:57	7.8	24	7.3	3400	1300	Wet	R
	2.08E	7/27/2016	10:46	7.4	25	6.0	34000	> 2400	Wet	R
	4.80W	7/27/2016	10:21	7.6	20	7.3	540	440	Wet	R
	0.87	8/24/2016	13:11	8.1	21	8.8	1200	280	Dry	R
	2.08E	8/24/2016	12:51	7.3	22	6.6	1600	410	Dry	R
	4.80W	8/24/2016	12:17	7.6	19	8.4	730	410	Dry	R
	0.87	9/28/2016	13:08	7.9	19	8.3	380	190	Wet	R
	2.08E	9/28/2016	12:55	7.3	20	6.5	390	190	Wet	R
	4.80W	9/28/2016	12:02	7.5	17	8.4	230	100	Wet	R
	0.87	10/24/2016	12:16	7.9	15	8.7	350	330	Wet	R
	2.08E	10/24/2016	12:02	7.5	16	7.0	18	43	Wet	R
	4.80W	10/24/2016	11:38	7.7	15	8.8	250	220	Wet	R
	0.87	11/10/2016	11:00	7.6	12	9.4	370	280	Dry	R
	2.08E	11/10/2016	10:42	7.3	12	5.7	180	460	Dry	R
	4.80W	11/10/2016	10:26	7.4	12	9.2	270	490	Dry	R
	0.87	12/20/2016	11:07	8.4	10	10	29000	1300	Wet	R
	2.08E	12/20/2016	10:55	7.9	9	10	370	200	Wet	R
	4.80W	12/20/2016	09:56	7.0	12	9.7	240	250	Wet	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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Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2016

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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Fourth Creek										
	1.75	1/27/2016	10:21	7.3	11	11	500	270	Wet	R
	2.79	1/27/2016	10:10	7.1	11	10	340	260	Wet	R
	3.29	1/27/2016	10:32	7.7	11	11	300	220	Wet	R
	1.75	2/25/2016	09:35	6.4	12	9.8	570	440	Wet	R
	2.79	2/25/2016	09:48	7.0	12	9.4	440	230	Wet	R
	3.29	2/25/2016	09:58	7.0	12	9.7	420	240	Wet	R
	1.75	3/21/2016	09:55	7.2	12	10	290	330	Wet	R
	2.79	3/21/2016	09:41	7.3	13	9.3	110	170	Wet	R
	3.29	3/21/2016	10:12	7.7	13	11	63	79	Wet	R
	1.75	4/28/2016	10:14	7.2	18	8.0	5500	2400	Dry	I
	2.79	4/28/2016	09:51	6.8	17	7.5	1900	550	Dry	R
	3.29	4/28/2016	10:00	7.3	17	8.8	540	520	Dry	R
	1.75	5/16/2016	12:40	7.3	16	11	320	170	Dry	R
	2.79	5/16/2016	12:50	7.2	16	9.9	400	460	Dry	R
	3.29	5/16/2016	13:00	7.5	16	10	220	160	Dry	R
	1.75	6/16/2016	09:24	7.8	19	8.3	6000	1200	Wet	I
	2.79	6/16/2016	09:12	7.9	18	7.8	2500	610	Wet	R
	3.29	6/16/2016	09:04	7.9	17	8.7	560	260	Wet	R

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Water Quality Monitoring Report

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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Fourth Creek										
	1.75	7/27/2016	09:30	7.3	23	5.0	50000	2400	Wet	R
	2.79	7/27/2016	09:39	7.3	21	7.0	18000	2400	Wet	R
	3.29	7/27/2016	09:51	7.8	20	8.4	10000	920	Wet	R
	1.75	8/24/2016	10:36	7.4	19	7.4	1600	440	Dry	R
	2.79	8/24/2016	11:00	7.7	18	8.4	320	96	Dry	R
	3.29	8/24/2016	11:40	7.9	18	9.1	310	84	Dry	R
	1.75	9/28/2016	12:39	7.9	19	9.3	3200	690	Wet	R
	2.79	9/28/2016	12:26	7.6	18	8.3	2500	210	Wet	R
	3.29	9/28/2016	12:14	7.9	17	9.4	270	200	Wet	R
	1.75	10/12/2016	09:46	7.8	14	9.7	820	460	Dry	R
	2.79	10/12/2016	10:00	7.9	14	8.8	200	130	Dry	R
	3.29	10/12/2016	10:12	7.8	14	9.8	230	180	Dry	R
	1.75	11/10/2016	10:10	7.6	13	10	190	110	Dry	R
	2.79	11/10/2016	09:57	7.6	12	8.4	210	200	Dry	R
	3.29	11/10/2016	09:45	7.8	13	10	170	180	Dry	R
	1.75	12/20/2016	10:38	7.7	11	11	510	260	Wet	R
	2.79	12/20/2016	10:26	7.5	12	10	300	240	Wet	R
	3.29	12/20/2016	10:16	7.3	12	10	350	240	Wet	R

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Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2016

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Knoxville, Tennessee 37915
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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Baker Creek										
	0.36	1/12/2016	10:09	6.7	9	11	1400	870	Wet	R
	0.53	1/12/2016	10:19	7.4	9	11	820	1400	Wet	R
	1.45	1/12/2016	09:56	7.0	10	10	1600	1200	Wet	R
	0.36	2/17/2016	10:35	7.4	9.5	10	360	870	Wet	R
	0.53	2/17/2016	10:42	7.5	10	10	820	690	Wet	R
	1.45	2/17/2016	10:56	7.4	9.5	9.9	640	440	Wet	R
	0.36	3/14/2016	11:05	6.7	15	9.3	730	610	Wet	R
	0.53	3/14/2016	11:17	7.3	15	9.5	510	580	Wet	R
	1.45	3/14/2016	11:29	7.4	15	9.5	400	550	Wet	R
	0.36	4/14/2016	10:06	7.1	14	9.4	2700	> 2400	Wet	I
	0.53	4/14/2016	10:17	7.5	14	9.6	4200	> 2400	Wet	I
	1.45	4/14/2016	10:30	7.5	14	9.3	150	150	Wet	R
	0.36	5/23/2016	11:02	6.2	16	8.4	1900	1300	Wet	I
	0.53	5/23/2016	11:12	6.4	16	9.0	1600	1200	Wet	I
	1.45	5/23/2016	11:31	7.1	16	8.6	2600	2400	Wet	I
	0.36	6/20/2016	08:56	7.3	18	7.9	4000	> 2400	Wet	I
	0.53	6/20/2016	09:06	7.6	18	8.7	2100	2400	Wet	I
	1.45	6/20/2016	09:17	7.5	17	8.4	1900	1600	Wet	I

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Water Quality Monitoring Report

Routine Water Quality Monitoring Report

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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Baker Creek										
	0.36	7/28/2016	09:52	7.1	21	7.1	1600	1700	Wet	I
	0.53	7/28/2016	10:01	7.6	21	7.8	1100	1200	Wet	I
	1.45	7/28/2016	10:12	7.7	19	7.9	730	690	Wet	R
	0.36	8/29/2016	12:36	7.3	20	7.1	2000	820	Dry	R
	0.53	8/29/2016	12:55	7.8	21	7.9	5200	2400	Dry	I
	1.45	8/29/2016	11:55	7.5	19	7.9	1600	490	Dry	R
	0.36	9/12/2016	10:21	7.3	17	7.4	3600	> 2400	Wet	I
	0.53	9/12/2016	10:30	7.7	18	8.0	3400	> 2400	Wet	I
	1.45	9/12/2016	10:42	7.6	18	8.1	1300	820	Wet	R
	0.36	10/18/2016	10:40	7.5	18	7.5	2100	2400	Dry	I
	0.53	10/18/2016	10:05	7.5	17	8.1	1400	1600	Dry	I
	1.45	10/18/2016	10:18	7.5	16	7.0	1800	1200	Dry	I
	0.36	11/29/2016	12:10	7.0	14	7.6	22000	> 2400	Wet	I
	0.53	11/29/2016	11:58	7.2	14	7.6	17000	> 2400	Wet	I
	1.45	11/29/2016	11:06	7.0	14	7.7	5400	> 2400	Wet	I
	0.36	12/28/2016	10:02	7.0	8	9.2	950	870	Wet	R
	0.53	12/28/2016	10:14	7.2	10	9.7	180	920	Wet	R
	1.45	12/28/2016	10:51	7.4	11	10	320	440	Wet	R

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Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2016

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Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Goose Creek										
	0.40	1/12/2016	11:00	8.0	8	11	460	440	Wet	R
	1.19E	1/12/2016	10:42	7.4	9	11	520	240	Wet	R
	1.80E	1/12/2016	10:32	7.3	9	11	170	220	Wet	R
	0.40	2/17/2016	10:22	7.8	9.5	10	560	460	Wet	R
	1.19e	2/17/2016	10:13	7.2	10	9.9	280	290	Wet	R
	1.80e	2/17/2016	09:59	6.9	11	9.8	160	86	Wet	R
	0.40	3/14/2016	11:50	7.4	15	9.6	640	920	Wet	R
	1.19E	3/14/2016	12:13	7.6	16	9.9	600	650	Wet	R
	1.80E	3/14/2016	12:03	7.7	15	9.2	230	330	Wet	R
	0.40	4/14/2016	09:50	7.2	14	8.9	820	650	Wet	R
	1.19e	4/14/2016	09:30	6.4	15	9.0	1100	1400	Wet	I
	1.80e	4/14/2016	09:41	7.1	14	9.4	36	45	Wet	R
	0.40	5/23/2016	10:31	6.8	16	8.0	1400	2400	Wet	I
	1.19E	5/23/2016	10:10	7.2	16	8.4	2600	920	Wet	R
	1.80E	5/23/2016	10:21	7.0	16	8.8	140	50	Wet	R
	0.40	6/20/2016	09:45	7.9	18	7.9	4800	> 2400	Wet	I
	1.19e	6/20/2016	09:35	7.9	18	8.4	4000	> 2400	Wet	I
	1.80e	6/20/2016	09:26	7.8	17	8.8	200	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)	E. Coli (MPN)	Precipitation Event	Status
Goose Creek										
	0.40	7/28/2016	10:57	7.7	21	6.8	2100	550	Wet	R
	1.19E	7/28/2016	10:49	7.8	21	7.3	1800	1100	Wet	I
	1.80E	7/28/2016	10:30	7.9	20	8.0	150	160	Wet	R
	0.40	8/29/2016	13:26	7.6	23	6.9	1300	520	Dry	R
	1.19E	8/29/2016	14:10	7.7	23	7.2	1400	730	Dry	R
	1.80E	8/29/2016	13:48	7.8	22	7.7	520	340	Dry	R
	0.40	9/12/2016	10:01	7.4	19	6.6	3100	1400	Wet	R
	1.19E	9/12/2016	09:50	7.4	19	7.6	5900	> 2400	Wet	I
	1.80E	9/12/2016	09:41	7.7	17	8.3	550	410	Wet	R
	0.40	10/18/2016	09:46	7.6	17	7.0	2000	1300	Dry	I
	1.19E	10/18/2016	09:35	7.4	17	7.6	1400	920	Dry	R
	1.80E	10/18/2016	09:23	7.4	17	8.4	1300	730	Dry	R
	0.40	11/29/2016	10:41	6.3	13	7.3	19000	> 2400	Wet	I
	1.19E	11/29/2016	10:32	7.1	13	7.5	14000	> 2400	Wet	R
	1.80E	11/29/2016	10:19	6.9	13	7.6	1400	870	Wet	R
	0.40	12/19/2016	10:21	7.6	9	11	580	650	Wet	R
	1.19E	12/19/2016	09:54	6.9	10	11	180	150	Wet	R
	1.80E	12/19/2016	09:41	7.0	11	9.5	250	310	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)	E. Coli (MPN)	Precipitation Event	Status
Loves Creek										
	0.85	1/13/2016	10:35	7.1	7	11	130	100	Dry	R
	1.89	1/13/2016	10:11	6.6	9	9.7	99	64	Dry	R
	3.45	1/13/2016	10:19	6.8	6	11	18	40	Dry	R
	0.85	2/22/2016	10:10	7.2	13	9.4	370	290	Wet	R
	1.89	2/22/2016	09:56	7.0	14	9.0	260	120	Wet	R
	3.45	2/22/2016	09:43	7.1	13	9.2	210	89	Wet	R
	0.85	3/15/2016	10:11	6.8	14	9.3	1400	980	Wet	R
	1.89	3/15/2016	10:00	6.8	14	8.7	1100	690	Wet	R
	3.45	3/15/2016	09:45	7.1	15	8.8	1100	190	Wet	R
	0.85	4/6/2016	10:16	7.2	12	10	130	91	Wet	R
	1.89	4/6/2016	09:46	6.9	13	9.1	27	39	Wet	R
	3.45	4/6/2016	10:03	7.1	13	10	63	34	Wet	R
	0.85	5/25/2016	10:40	7.5	18	8.5	260	220	Dry	R
	1.89	5/25/2016	10:03	6.8	18	8.6	110	100	Dry	R
	3.45	5/25/2016	10:16	7.5	19	8.1	27	41	Dry	R
	0.85	6/21/2016	09:56	7.1	20	7.7	420	200	Dry	R
	1.89	6/21/2016	10:16	7.3	19	7.7	150	200	Dry	R
	3.45	6/21/2016	10:30	7.6	21	7.4	390	550	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

1/1/2016 Through 12/31/2016

Knoxville Utilities Board
Water Quality Laboratory
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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Loves Creek										
	0.85	7/20/2016	10:50	7.5	21	6.5	730	230	Dry	R
	1.89	7/20/2016	10:10	7.2	20	7.3	2100	140	Dry	R
	3.45	7/20/2016	10:21	7.5	23	6.9	310	190	Dry	R
	0.85	8/22/2016	09:46	7.3	20	7.8	2700	1300	Wet	R
	1.89	8/22/2016	09:29	7.1	20	7.4	3200	920	Wet	R
	3.45	8/22/2016	09:17	7.3	21	7.3	2900	490	Wet	R
	0.85	9/21/2016	11:25	7.2	21	7.2	440	120	Wet	R
	1.89	9/21/2016	11:50	7.1	20	7.9	510	86	Wet	R
	3.45	9/21/2016	12:15	7.3	23	7.2	200	96	Wet	R
	0.85	10/4/2016	08:55	7.2	17	7.8	1400	130	Dry	R
	1.89	10/4/2016	09:07	7.1	17	7.8	480	130	Dry	R
	3.45	10/4/2016	09:16	7.4	18	8.0	72	36	Dry	R
	0.85	11/8/2016	11:23	7.3	13	9.6	260	100	Dry	R
	1.89	11/8/2016	11:07	7.1	14	8.8	220	160	Dry	R
	3.45	11/8/2016	10:59	7.3	15	8.4	< 9	< 1	Dry	R
	0.85	12/15/2016	12:01	6.9	9	11	130	96	Wet	R
	1.89	12/15/2016	12:16	7.0	10	10	63	69	Wet	R
	3.45	12/15/2016	12:30	6.9	9	11	140	170	Wet	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)	E. Coli (MPN)	Precipitation Event	Status
Williams Creek										
	0.89	1/13/2016	11:12	8.0	9	11	150	120	Dry	R
	1.70	1/13/2016	10:58	7.2	10	9.5	140	130	Dry	R
	2.02	1/13/2016	10:50	7.3	9	11	370	360	Dry	R
	0.89	2/22/2016	10:35	7.4	13	10	200	150	Wet	R
	1.70	2/22/2016	11:01	7.4	14	8.9	130	170	Wet	R
	2.02	2/22/2016	10:48	7.4	13	9.6	99	50	Wet	R
	0.89	3/15/2016	10:56	7.2	15	9.7	370	310	Wet	R
	1.70	3/15/2016	10:25	7.2	15	8.6	520	310	Wet	R
	2.02	3/15/2016	10:34	7.3	15	9.1	360	180	Wet	R
	0.89	4/12/2016	10:46	7.2	14	9.6	1100	500	Wet	R
	1.70	4/12/2016	10:32	7.0	15	8.2	280	460	Wet	R
	2.02	4/12/2016	10:22	6.9	14	8.3	310	340	Wet	R
	0.89	5/25/2016	11:40	7.5	18	9.1	280	150	Dry	R
	1.70	5/25/2016	11:31	7.1	18	7.9	820	280	Dry	R
	2.02	5/25/2016	11:20	7.3	20	8.7	2300	980	Dry	I
	0.89	6/21/2016	12:32	7.3	20	7.5	1000	920	Dry	R
	1.70	6/21/2016	11:20	7.5	21	7.0	2400	730	Dry	R
	2.02	6/21/2016	12:05	7.7	21	7.5	4800	1600	Dry	I

*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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Water Quality Monitoring Report

Routine Water Quality Monitoring Report

1/1/2016 Through 12/31/2016

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	Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Williams Creek										
	0.89	7/20/2016	11:45	7.3	23	7.2	1300	310	Dry	R
	1.70	7/20/2016	12:07	7.2	24	6.4	2600	330	Dry	R
	2.02	7/20/2016	12:18	7.1	24	8.0	2100	980	Dry	R
	0.89	8/11/2016	09:45	7.4	21	7.6	2400	550	Wet	R
	1.70	8/11/2016	09:01	7.3	19	6.7	1400	360	Wet	R
	2.02	8/11/2016	09:31	7.5	21	7.1	2000	200	Wet	R
	0.89	9/26/2016	12:56	7.5	20	7.8	480	340	Wet	R
	1.70	9/26/2016	12:41	7.4	19	7.1	450	440	Wet	R
	2.02	9/26/2016	12:30	7.3	23	7.2	3700	460	Wet	R
	0.89	10/4/2016	10:03	7.8	17	8.6	3200	250	Dry	R
	1.70	10/4/2016	09:35	7.3	17	7.4	1600	1100	Dry	I
	2.02	10/4/2016	09:48	7.5	18	7.9	3500	2400	Dry	I
	0.89	11/8/2016	12:08	7.8	13	9.6	160	98	Dry	R
	1.70	11/8/2016	11:51	7.4	15	7.8	580	520	Dry	R
	2.02	11/8/2016	11:43	7.6	15	7.9	410	260	Dry	R
	0.89	12/19/2016	12:11	7.0	9	11	1600	730	Wet	R
	1.70	12/19/2016	11:56	7.4	10	10	2300	1100	Wet	I
	2.02	12/19/2016	12:26	7.4	9.3	11	7000	> 2400	Wet	I

*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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Water Quality Monitoring Report

Spill Impact Sampling Results
Water Quality Monitoring Program

Knoxville Utilities Board
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Event Date 1/14/2016
Street Address 840 Twentieth St.
Description Construction failure

Estimated unrecovered volume 100 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)

Date	Total - Day of Event	Total - Prior 4 Days
1/14/2016	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	1/15/2016	08:36	10	9	7.6	300	270
Downstream of SSO Discharge	1/15/2016	08:20	10	9	7.6	280	360

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Event Date 1/25/2016
Street Address 2223 Cumberland Avenue
Description Broken System - Manhole Lid

Estimated unrecovered volume 130 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	1/25/2016	0	1

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	1/25/2016	11:52	9.5	11	8.2	36	64
Downstream of SSO Discharge	1/25/2016	11:42	9.0	11	7.5	110	170

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Event Date 4/14/2016
Street Address 2625 Emoriland Ave.
Description Blockage - Grease

Tributary to First Creek

Estimated unrecovered volume 50 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	4/14/2016	0	0.26

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	4/15/2016	09:00	7.5	15	6.2	3800	> 2400
Downstream of SSO Discharge	4/15/2016	09:30	8.2	15	6.8	5900	> 2400
Upstream of SSO Discharge	4/25/2016	09:59	6.8	16	6.7	2300	2400
Downstream of SSO Discharge	4/25/2016	10:08	7.8	16	6.8	2400	> 2400
Upstream of SSO Discharge	5/9/2016	12:55	6.2	17	6.8	2100	2400
Downstream of SSO Discharge	5/9/2016	13:07	7.5	17	7.1	9000	> 2400
Upstream of SSO Discharge	5/16/2016	14:15	6.8	15	7.0	1400	> 2400
Downstream of SSO Discharge	5/16/2016	14:25	7.9	15	7.0	4000	> 2400

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Event Date 4/17/2016
Street Address 2916 Tazewell Pike
Description Grease- Blockage

Tributary to First Creek

Estimated unrecovered volume 1700 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	4/17/2016	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	4/18/2016	08:14	8.0	15	6.5	280	310
Downstream of SSO Discharge	4/18/2016	08:30	8.3	14	7.0	2100	1000

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Event Date 4/25/2016
Street Address 2900 Tazewell Pike
Description Blockage - Grease

Tributary to First Creek

Estimated unrecovered volume 25 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	4/25/2016	0	0.37

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	4/25/2016	09:27	7.6	16	6.6	240	290
Downstream of SSO Discharge	4/25/2016	09:38	8.2	16	6.9	10000	> 2400
Upstream of SSO Discharge	5/9/2016	12:25	7.2	19	7.1	320	330
Downstream of SSO Discharge	5/9/2016	12:38	8.3	18	7.3	410	460

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Event Date 4/27/2016
Street Address 3908 West Bellemeade Avenue
Description Broken System - Broken Gravity Main

Tributary to Third Creek

Estimated unrecovered volume 200 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	4/27/2016	0.06	0.06

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	4/27/2016	14:20	8.3	22	7.0	400	250
Downstream of SSO Discharge	4/27/2016	14:37	6.2	21	6.9	> 60000	> 2400
Upstream of SSO Discharge	5/9/2016	10:10	8.3	18	7.3	340	96
Downstream of SSO Discharge	5/9/2016	09:58	6.1	17	7.2	1600	980
Upstream of SSO Discharge	5/18/2016	09:26	7.7	18	7.4	460	410
Downstream of SSO Discharge	5/18/2016	09:41	5.6	17	7.3	500	520

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Event Date 5/1/2016
Street Address 5906 Walden Drive
Description Blockage - Debris

Tributary to Fourth Creek

Estimated unrecovered volume 20 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	5/1/2016	0.19	0.73

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	5/2/2016	08:23	7.7	17	7.1	820	550
Downstream of SSO Discharge	5/2/2016	09:03	8.0	17	7.1	2200	1400
Upstream of SSO Discharge	5/9/2016	09:38	8.2	17	7.1	1300	870
Downstream of SSO Discharge	5/9/2016	09:25	8.4	16	7.0	910	650

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Event Date 5/3/2016
Street Address 1109 Mechanics Way
Description Blockage- Grease

Storm Drain to Second Creek

Estimated unrecovered volume 500 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	5/3/2016	0.13	1.09

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	5/3/2016	15:30	8.1	19	7.0	2400	770
Downstream of SSO Discharge	5/3/2016	15:15	7.7	19	6.7	12000	> 2400
Upstream of SSO Discharge	5/18/2016	10:25	8.0	18	7.3	1300	340
Downstream of SSO Discharge	5/18/2016	10:37	8.2	18	7.4	2100	520
Upstream of SSO Discharge	6/8/2016	11:07	7.6	19	7.7	1400	460
Downstream of SSO Discharge	6/8/2016	11:19	7.8	20	7.8	1500	440
Upstream of SSO Discharge	6/14/2016	10:26	7.5	21	7.8	2700	490
Downstream of SSO Discharge	6/14/2016	10:36	7.9	21	7.9	640	460

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Event Date 6/8/2016
Street Address 1216 Old Weisgarber Rd.
Description Construction Failure

Ground to Fourth Creek

Estimated unrecovered volume 750 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	6/8/2016	0	0.94

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	6/8/2016	14:36	7.3	18	7.8	360	240
Downstream of SSO Discharge	6/8/2016	14:06	7.4	18	7.7	5300	> 2400
Upstream of SSO Discharge	6/14/2016	09:39	7.5	17	7.6	180	89
Downstream of SSO Discharge	6/14/2016	09:56	7.9	17	7.8	180	200

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Event Date 6/24/2016
Street Address 1916 Fenwood Drive
Description Blockage-Debris

Tributary to First Creek

Estimated unrecovered volume 2000 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	6/24/2016	0.65	0.65

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	6/25/2016	08:05	7.0	18	7.6	1100	770
Downstream of SSO Discharge	6/25/2016	07:50	7.3	18	7.6	4500	2000
Upstream of SSO Discharge	7/5/2016	10:06	6.7	20	7.0	9000	980
Downstream of SSO Discharge	7/5/2016	10:26	7.0	20	7.1	6000	1200
Upstream of SSO Discharge	7/12/2016	12:14	8.5	22	6.5	910	490
Downstream of SSO Discharge	7/12/2016	12:05	7.8	22	6.9	820	390

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Event Date 8/1/2016
Street Address 5500 E. Governor John Sevier Hwy.
Description Broken Force Main

Soil Saturation to ditch to storm drain to Holston River.

Estimated unrecovered volume 9,550 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	8/1/2016	0	0.43

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	8/2/2016	08:10	7.5	16	7.1	300	78
Downstream of SSO Discharge	8/2/2016	07:50	7.5	16	6.9	160	81

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Event Date 8/10/2016
Street Address 1620 Edgewood Avenue
Description Blockage - Grease & Debris

Cleanout to pavement to storm drain to First Creek.

Estimated unrecovered volume 400 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	8/10/2016	0.01	0.77

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	8/11/2016	08:03	6.9	23	7.7	1300	580
Downstream of SSO Discharge	8/11/2016	08:41	7.6	23	7.7	1100	440

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Event Date 9/20/2016
Street Address 2609 East Martin Mill Pk.
Description Blockage- Grease

Pavement to storm drain to Tennessee River.

Estimated unrecovered volume 29,000 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	9/20/2016	0	0.56

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	9/22/2016	14:09	7.4	27	7.3	63	5
Downstream of SSO Discharge	9/22/2016	14:25	8.0	27	7.3	99	20

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Spill Impact Sampling Results
Water Quality Monitoring Program

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

Event Date 10/7/2016
Street Address 513 Stone Pony Ln.
Description Blockage - Grease & Debris

Ground to Wet Weather Conveyance to Fourth Creek

Estimated unrecovered volume 175 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	10/7/2016	0.05	0.05

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	10/7/2016	12:11	7.8	19	7.3	450	550
Downstream of SSO Discharge	10/7/2016	12:19	6.6	19	7.5	38000	> 2400
Upstream of SSO Discharge	10/12/2016	09:10	8.4	14	7.2	550	460
Downstream of SSO Discharge	10/12/2016	09:17	8.9	13	7.4	500	390

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Event Date 10/18/2016
Street Address 1807 Rocky View Way
Description Blockage - Grease & Debris

Soil Saturation to Wet Weather Conveyance to First Creek

Estimated unrecovered volume 1,850 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	10/18/2016	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	10/18/2016	12:56	7.7	20	7.6	430	340
Downstream of SSO Discharge	10/18/2016	13:12	7.7	19	8.2	520	410

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Event Date 11/1/2016
Street Address 601 South Central Street
Description Blockage - Grease & Debris

Pavement to storm drain to First Creek.

Estimated unrecovered volume 200 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	11/1/2016	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	11/1/2016	16:00	7.9	19	7.6	370	330
Downstream of SSO Discharge	11/1/2016	15:30	7.7	21	7.4	130	46

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Event Date 11/21/2016
Street Address 5915 Neubert Springs Rd
Description Pumpstation failure - Electrical

Pavement to storm drain to soil saturation to Knob Creek.

Estimated unrecovered volume 57,800 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	11/21/2016	0	0.09

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	11/21/2016	10:30	10	6	7.2	2700	> 2400
Downstream of SSO Discharge	11/21/2016	10:40	8.3	6	6.9	> 60000	> 2400
Upstream of SSO Discharge	12/9/2016	08:56	11	6	7.2	390	460
Downstream of SSO Discharge	12/9/2016	08:45	11	6	7.3	320	550

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Event Date 12/28/2016
Street Address 2015 Neyland Drive
Description Waste hauler discharge failure.

Pavement to storm drain to Third Creek and soil saturation.

Estimated unrecovered volume 100 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	12/28/2016	0.34	0.7

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	12/28/2016	13:23	11	12	7.8	45	60
Downstream of SSO Discharge	12/28/2016	13:37	9.2	13	7.2	81	64

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Event Date 12/29/2016
Street Address 2400 North Broadway
Description Blockage - Debris

Pavement to storm drain to First Creek.

Estimated unrecovered volume 175 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	**Date**	**Total - Day of Event**	**Total - Prior 4 Days**
	12/29/2016	0.76	1.43

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	12/29/2016	12:40	9.7	10	6.5	17000	> 2400
Downstream of SSO Discharge	12/29/2016	13:15	10	10	6.8	5600	> 2400
Upstream of SSO Discharge	1/5/2017	09:58	10	9.0	7.0	360	360
Downstream of SSO Discharge	1/5/2017	09:45	10	10	7.0	520	490

Knoxville Utilities Board

Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

10/1/16 - 12/31/16

Table 1: Second Creek Investigative Sampling

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	Water pH	Fecal Coliform	E. coli
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Second Creek at Cumberland Ave.	11/14/2016	Dry	9.4	14	7.2	270	120
	12/14/2016	Wet	8.7	13	7.4	820	650
Second Creek at McGhee Ave.	11/14/2016	Dry	9.7	14	7.3	280	230

Table 2: Baker Creek Investigative Sampling

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	Water pH	Fecal Coliform	E. coli
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Baker Creek Stream Mile 2.00 at School	10/18/2016	Dry	8.6	16	7.8	390	520
	11/29/2016	Wet	8.4	14	7.1	5600	> 2400
	12/28/2016	Wet	10	10	7.7	210	360
Baker Creek Stream Mile 1.10	11/29/2016	Wet	7.2	14	7.0	22000	> 2400
	12/28/2016	Wet	9.5	11	7.1	480	360

Appendix E

Grease-Related SSO Summary Table

Grease-Related SSOs

	Date of SSO	Address	SSO	Building Backup	Grease Only	Grease & Roots	Grease & Debris	Grease, Roots & Debris	Grease & I & I	Customers Contributing to SSO	Residential Letters Mailed	Cans, Bags, and Spatulas Mailed	Commercial Inspections	# of Feet Cleaned	Blockage Abatement* Frequency
1	1/7/2016	3709 Decatur Drive MH 47-116	Yes	-	Yes	-	-	-	-	140	135	135	5	63	12 Month
2	4/14/2016	2626 Emoriland Blvd. MH 9-38	Yes	-	Yes	-	-	-	-	53	53	53	N/A	375	6 Month
3	4/17/2016	2916 Tazewell Pike Cleanout	Yes	-	Yes	-	-	-	-	287	246	246	41	211	12 Month
4	4/25/2016	2900 Tazewell Pike MH 7-66	Yes	-	Yes	-	-	-	-	2	0	0	2	324	12 Month
5	5/3/2016	1109 Mechanics Way MH 19-139	Yes	-	Yes	-	-	-	-	211	199	199	12	86	6 Month
6	6/30/2016	2001 Cumberland Ave. Cleanout	Yes	-	-	-	Yes	-	-	7	0	0	7	N/A	N/A - Primarily Debris
7	7/22/2016	857 Central Street NE Cleanout	Yes	-	-	-	Yes	-	-	6	0	0	6	318	12 Month
8	8/10/2016	1620 NE Edgewood Ave Cleanout	Yes	-	-	-	Yes	-	-	443	433	433	10	308	6 Month
9	8/17/2016	811 Edwards Drive MH 107-163	Yes	-	-	-	Yes	-	-	75	75	75	N/A	164	12 Month
10	9/5/2016	1300 Sharon Road MH 79-59	Yes	-	-	Yes	-	-	-	80	80	80	N/A	182	24 Month
11	9/20/2016	2609 E. Martin Mill Pike MH 2-63	Yes	-	Yes	-	-	-	-	183	176	176	7	89	6 Month
12	10/7/2016	513 Stone Pony Lane MH 3-142	Yes	-	-	-	Yes	-	-	729	726	726	3	185	24 Month
13	10/18/2016	1807 Rocky View Way MH 7-143	Yes	-	-	-	Yes	-	-	165	165	165	N/A	300	6 Month
14	11/1/2016	601 S. Central Street MH 3-32	Yes	-	-	-	Yes		-	38	13	13	25	316	6 Month
15	11/20/2016	1106 Callaway Avenue MH 19-147	Yes	-	Yes	-	-	-	-	171	163	163	8	140	48 Month
16	11/26/2016	115 Tillery Drive MH 16-6	Yes	-	Yes	-	-	-	-	21	21	21	N/A	152	12 Month
										2611	**2485**	**2485**	**126**		

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

Appendix F

Infrastructure Rehabilitation Projects

Project	Plant	Watershed	Basin	Description	Status
Beaumont Avenue, Ridge Run Drive, Division Street, and Cary Street Shortline Sewer Replacement Project	Kuwahee	Third Creek	50, 22, 34,	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Complete
Brown Moutain Loop Road, Clinch Avenue, Cruze Road, Hermitage Road, Maloneyville Road, Oaklett Drive, and Scottish Pike Shortline Sewer Replacement Project	Kuwahee / Eastbridge	South Knox, Third Creek, Eastbridge, Second Creek	41, 29, 109, 5, 39	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Complete
Burlington Pump Station & Force Main	Loves	Loves	20	Pump station and appropriate force main upgrade.	Construction Project Complete
Cheowa Pump Station	Kuwahee	Third Creek	38	Pump station and appropriate force main upgrade.	Construction Project Complete
Downtown Phase 2	Kuwahee	First Creek	30	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Downtown Phase 3	Kuwahee	Second Creek	23	Rehab/Replace in project area.	Construction Project Complete
First Creek SSO	Kuwahee	First Creek, Williams Creek	3, 24, 25	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Complete
Forks of the River	Kuwahee	Williams Creek	60	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Fountain Road, Amber Street and Strawberry Plains Pike Sewer Rehabilitation Project	Kuwahee, Loves Creek	First Creek, Riverdale, Loves Creek	3, 18, 67	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Underway
Lakeshore Trunkline	Fourth Creek	Fourth Creek	37	Trunkline Rehabilitation/Replacement.	Construction Project Complete
Longview Road, Kenesaw Avenue, N Bellemeade Avenue, 17th Street, Central Avenue Pike, Highland Avenue, Maynard Avenue, Schaad Road and Dale Avenue Shortline Sewer Replacement	Kuwahee	Third Creek, Second Creek	34, 23, 29 , 15, 50, 5, 38	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Underway
Lyons View Pump Station & Forcemain	Fourth Creek	Fourth Creek	37	Pump station and appropriate force main upgrade.	Construction Project Complete
Mini-Basin 01A1	Kuwahee	First Creek	1	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway
Mini-Basin 01B1	Kuwahee	First Creek	1	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Mini-Basin 15A1	Kuwahee	Second Creek	15	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Mini-Basin 20A6	Loves	Loves	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Mini-Basin 20A7	Loves	Loves	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway
Mini-Basin 23A1	Kuwahee	Second Creek	23	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete

Project	Plant	Watershed	Basin	Description	Status
Mini-Basins 03B2A & 03D1	Kuwahee	First Creek	3	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Complete
Mini-Basins 04A1a & 04C1	Kuwahee	First Creek	4	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway
Mitchell Street Trunkline	Kuwahee	First Creek	18	Trunkline Rehabilitation/Replacement.	Construction Project Complete
Phillips Avenue Area Utility Improvements	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 Complete
Second Creek Trunkline	Kuwahee	Second Creek	23	Trunkline Rehabilitation/Replacement.	Construction Project Complete
Smithland Pump Station	Kuwahee	Williams Creek	60	Pump station and appropriate force main upgrade.	Construction Project Complete
South Haven Road Shortline	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 Complete
Weaver Street, Fremont Place, Seahorn Avenue, Rivers Run Road, North Sixth Avenue, Luttrell Street, Dandridge Avenue Shortline Sewer Replacement	First Creek, Loves Creek	First Creek, Loves Creek	16, 17, 20, 61, 24, 30	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Complete
Wesley Hills Trunkline	Fourth Creek	Fourth Creek	27	Trunkline Rehabilitation/Replacement.	Construction Project Complete
West Bellemeade Emergency Repair	Kuwahee	Third Creek	34	Emergency Repair of sanitary sewer.	Construction Project Complete
Williams Creek Trunkline	Kuwahee	Williams Creek	31	Trunkline Rehabilitation/Replacement.	Construction Project Underway