Quarterly Progress Report

Volume 13

Second Quarter Report
April 1 through June 30, 2008

Submitted to EPA on July 28, 2008

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.

D. Wayne Loveday — July 28, 2008

D. Wayne Loveday — Date

KUB

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A 10-year Program to Improve Our Waterways

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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 following Quarterly Progress Report is submitted to fulfill the reporting requirements described in Section XIX of the Consent Decree.

Consent Decree language, pages 82-83: *"Beginning thirty (30) Days after the first Calendar Quarter following the Date of Entry, and thirty (30) Days after each Calendar Quarter thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, a Quarterly Progress Report. Quarterly Progress Reports shall not be subject to the Public Review Requirement of Section VI.A.2. However, KUB shall receive questions and comments from the public for KUB's review for a period of twenty (20) Days following placement in the PDR. Each Quarterly Progress Report shall contain:*

1. *A summary of compliance with and activities related to implementation of the Phase 1 CAP/ER and Phase 2 CAP/ER, including: the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during Calendar Quarter and expected during the next Calendar Quarter;*
2. *A summary of compliance with and activities related to implementation of the CPE and CCP;*
3. *A summary of implementation of and compliance with the Process Controls Program;*
4. *A summary of the implementation of the Capacity Assurance Program for the Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by Sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by Sewerbasin, and any exceptions granted for connections for essential services;*
5. *Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof.*
6. *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.*
7. *A spreadsheet and summary of all SSOs, Bypasses, Diversions and effluent limit violations that occurred during the previous Calendar Quarter. 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 reason for each SSO, the total SSO volume, the volume returned to the WCTS, and the volume not captured;*
    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.*
8. *The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v)."*

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KUB compiled this Quarterly Progress Report to detail the events that occurred during the second quarter of 2008 from April 1 through June 30. This is the thirteenth quarterly report required of KUB under this Consent Decree. The Consent Decree requirements pertaining to the Phase 2 CAP/ER will not be fulfilled in this report since it has not become due; rather, a description of the status of development for this program is given. The Consent Decree reporting requirements for this program will be met after EPA has provided approval.

Report Organization

Section 1: Phase 1 CAP/ER and Phase 2 CAP/ER – Summarizes the compliance with and activities related to implementation of the Phase 1 CAP/ER, including the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during the Calendar Quarter and expected during the next Calendar Quarter.

Section 2: Comprehensive Performance Evaluation and Composite Correction Plan – Summarizes the compliance with and activities related to the implementation of those deliverables.

Section 3: Process Controls Program – Summarizes the implementation of and compliance with the deliverable.

Section 4: Capacity Assurance Program – Summarizes the implementation of the Capacity Assurance Program for the Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by sewerbasin, and any exceptions granted for connections for essential services.

Section 5: Transfers of Ownership – Identifies any transfers of ownership interest, operation, management, or other control of the treatment works, or any portion thereof.

Section 6: Compliance and Non-Compliance with the Consent Decree – Describes the status of compliance or non-compliance with requirements of the Consent Decree.

Section 7: SSOs, Bypasses, Diversions, and Effluent Limit Violations – Provides a spreadsheet and summary of all SSOs, Bypasses, Diversions, and effluent limit violations.

Section 8: Water Quality Monitoring Data – Summarizes all sampling that was conducted, the results of the sampling, and the projected data collection for the reporting period.

Status of Deliverables

Below is a list of significant dates on which KUB submitted deliverables to EPA or received approval for deliverables. To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree.

<u>April 28, 2008</u>

- Submitted to EPA – 2001-2007 Sanitary Sewer Overflow Evaluation Report
- Submitted to EPA – Quarterly Progress Report 1st quarter 2008

Section 1 Phase 1 CAP/ER and Phase 2 CAP/ER

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… A summary of compliance with and activities related to implementation of the Phase 1 CAP/ER and Phase 2 CAP/ER, including the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during Calendar Quarter and expected during next Calendar Quarter."*

KUB began developing a Corrective Action Plan/Engineering Report (CAP/ER) in January 2004, following the completion of the Phase I Sanitary Sewer Overflow Evaluation Report (SSOER) required by the Agreed Order with the Tennessee Department of Environment and Conservation (TDEC) and, subsequently, the Consent Decree. The objective of the Phase I CAP/ER is to identify facility improvements needed to address the conditions causing SSOs occurring in the collection system during the period of 2001-2004 with the goal of eliminating the SSO locations on the Long-Term List and to support future growth needs. KUB submitted the Phase 1 CAP/ER to EPA on October 28, 2005. Comments were received from EPA on February 23, 2006. Per EPA's letter, KUB submitted a 30-day response to EPA's comments on March 27, 2006. The Revised Phase 1 CAP/ER was submitted to EPA on May 22, 2006, and subsequently approved by EPA on June 30, 2006. All work necessary to meet the objectives of the Phase 1 CAP/ER will be completed by June 30, 2013. The Phase 2 CAP/ER will be submitted to EPA within 12 months after EPA approval of the SSOER Annual Update submitted on April 30, 2008.

Requested Project Extensions and Changes

Project and Reason	Original Completion Date	Revised Completion Date
1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1) – End date was initially extended from FY 06/07 to FY 07/08. An additional extension is being requested to allow for moving up the investigative and rehab work in sub-basin 19 (Williams Creek), which involved over 100,000 feet of investigative (TV, smoke test, and manhole inspection) work. Design of corrective action projects are underway and construction will begin in FY 08/09. Sub-basin 19 was originally scheduled to be completed in FY 10/11. Approximately 55,000 feet of rehabilitation or replacement will be completed in this basin by March 2009. Acceleration of this project will have an immediate impact on peak flows at the Kuwahee WWTP in addition to local improvements in the collection system.	FY 06/07 EPA approved extension to FY 07/08	FY 08/09
2-1 Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction – Project is being redefined to include additional capacity created by CCP storage at Bernard Avenue, assuming CCP approval. Project will also include downstream rehab.	FY 08/09	FY 09/10
2-2 Lower Second Creek Replacement/Rehabilitation at Woodland – Preliminary phase was combined with project 2-1 to allow for inspection of entire Sub-basin 23.	FY 07/08	FY 08/09

The initial scope of projects 2-1 and 2-2 were isolated to a portion of the trunk sewers flowing through Sub-basin 23. We have expanded the preliminary engineering phase of these two projects to include characterization of the entire sub-basin. This scope increase required

additional time on both projects to complete the investigative work. Design of the 2-2 scope is nearing completion and construction will commence later this summer. The scope of the 2-2 project will be reevaluated in lieu of CCP storage placed immediate upstream of this section of trunk sewer, assuming the CCP is approved. We will submit additional information for your consideration in the quarterly report.

EPA Approved Project Extensions and Changes

All previously approved project extensions and changes are listed below.

- **1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1)** – End date extended from FY 06/07 to FY 07/08. Due to the expanded scope, an additional extension will be requested in the Phase I CAP/ER Annual Report 2008.
- **1-20 Vine Middle School Rehabilitation Project** – End date extended from FY 06/07 to FY 07/08 and was completed as scheduled.
- **2-4 Dutch Valley Collector Rehabilitation (Sewershed 10B1)** – End date was extended to September 2007 and was completed as scheduled.
- **2-5 Rickard and Wilson Collector Rehabilitation (Sewershed 10C1)** – End date was extended to September 2007 and was completed as scheduled.
- **S-1 Ginnbrook Pump Station Rehabilitation** – End date was extended from FY 06/07 to FY 08/09.
- **S-5 South Knoxville/Knob Creek Storage Facility** – Project was removed from CAP/ER and replaced with the project below.
- **Revised S-5 Neubert Springs Collector and West Ford Valley Trunk Rehabilitation** – End date scheduled as FY 08/09.

Current Capital Improvement Plan for FY 04/05 - FY 08/09

The following is a list of facility improvement projects included in the Capital Improvement Plan for fiscal years 04/05 to 08/09. These projects were in various stages during the reporting period, including preliminary engineering, design, construction, and completion. Many of these projects are "find and fix" rehabilitation projects. Find work is defined as the inspection (i.e. flow monitoring, CCTV, manhole inspections, smoke testing, etc.) and design phase of the project. Fix is defined as the construction phase that may include manhole rehabilitation/replacement, main line rehabilitation/replacement, and lower lateral rehabilitation/replacement. Other projects are trunkline capacity improvements or wet-weather storage. Each of these projects is considered part of the overall Phase 1 CAP/ER.

Ongoing Projects

First Creek

1. **First Creek 8A1** - Find and design rehabilitation projects in First Creek sewer basin in the North Knoxville area around North Broadway and I-640. Project includes inspection (CCTV, smoke test, manhole inspections), design, rehabilitation of 21,067 ft, and replacement of 10,273 ft of sewer. Phases A and B are complete.
2. **1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1)** – Find and fix work to identify and address cause of overflow in the vicinity of 4811 Beverly Road, 4144 Oakland Drive, and 5511 Dogwood Road. Project scope was expanded to include comprehensive assessment of the entire sub-basin (approximately 105,000 ft). Assessment is complete and design is underway. Construction is scheduled to begin in July 2008. An extension for this project was approved in August 2006. Due to the

expanded scope, an additional extension will be requested in the Phase I CAP/ER Annual Report 2008.

Second Creek

1. **Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction** – Perform sewer system assessment and design rehabilitation and replacement of various trunk and collector lines located in sub-basin 23 near the intersection of interstates 40 and 275. Sewer assessment is underway. Design is underway. Project scope will be redefined in lieu of storage placement upstream of the Second Creek trunk sewer running from Dameron south to I40. Original scope was to upsize this portion of trunkline; however, peak shaving at the Bernard Avenue storage tank will offset the need for additional trunkline capacity. Construction of other rehabilitation is scheduled to begin immediately in FY 08/09. Schedule may be adjusted for new project definition.
2. **Lower Second Creek Replacement/Rehabilitation at Woodland** – Perform sewer system assessment and design rehabilitation and replacement of various trunk and collector lines located in sub-basin 23 near Woodland Avenue. Sewer assessment is underway. Design is underway. Construction is scheduled to begin immediately in FY 08/09.

Third Creek

1. **Third Creek Basin 9 Phase II** - Find and design rehabilitation methods for collectors in Sub-basin 9 (approximately 177,900 ft). Project includes inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair. Phase I rehabilitation of 9A1, 9A2, 9A4, and 9D1 (CAP/ER Scope) is complete. Additional rehabilitation in the sub-basin (Phase II) is underway and will be completed in FY 08/09.

South Knox

1. **Ginnbrook Pump Station** – Project will include evaluation of pump station and force main to ensure adequate capacity. It will also include improvements to wet-well, pump system, and valve vault. The force main will be re-routed as well. Construction on force main is complete, work on the pump station is scheduled to be complete in July 2008.
2. **Blount Avenue Trunkline (Goose Creek)** – Project will examine major trunkline along Blount Avenue in South Knoxville. It will include field survey, line cleaning, and CCTV inspection. Design report has been prepared and presents recommendation on needed improvements. Phase I construction is complete. Phase II construction has been initiated and will be completed in FY 08/09.
3. **Neubert Springs Collector and West Ford Valley Trunk Rehabilitation** – The project to rehabilitate 10000 ft of 15- to 18-inch trunk sewer along West Ford Valley Road is complete. Find work in sub-basins 41C1, 41C2, and 41A2 is complete and detailed design is underway. Phase I rehabilitation has begun and construction of planned rehabilitation will be completed in FY 08/09.

Williams Creek

1. **Williams Creek Sub-basin 10 Rehabilitation** – The project is to perform rehabilitation in sub-basin 19A2 to reduce R-value to 2%. Investigative work has been performed on the approximately 105,000 ft in the entire sub-basin 19 area. Rehabilitation projects in 19A1 and 19B1 are substantially complete. Rehabilitation in 19A2/A3 is underway and is projected to be complete in November 2008. The original CAP/ER completion date for the 19A2 project was in FY 10/11. This project was shifted to higher priority due to the large number of private lateral problems and CSSAP rating. Project also coincides with water quality monitoring program work in Williams Creek.

Completed Projects

First Creek

1. **Fountain Road -** Upsized 3700 ft of gravity sewer using open cut and pipe bursting methods. Replaced manholes and services.
2. **Fair Drive Phase II -** Rehabilitated 3691 ft and replaced 2458 ft of existing 8-12 inch gravity sewer along Fair Drive.
3. **Greenfield Lane -** Replaced approximately 3300 ft of existing sewer with 8-inch and 12-inch PVC and ductile iron pipe.
4. **Whites Creek Phase III -** Replaced 300 ft of 12-inch, 300 ft of 16-inch, 2700 ft of 24-inch, and 5000 ft of 36-inch sewer.
5. **First Creek Sub-basins 3 and 4 Rehabilitation** – Rehabilitated 26,500 ft of line and replaced 10,500 ft. Project included CCTV, smoke testing, and manhole inspections.
6. **Lower First Creek Storage -** Designed and built 5 million gallon (MG) wet-weather storage tank to control sewer overflows near North Hoitt Avenue during rain events.
7. **Upper First Creek Storage -** Designed and built 9 MG wet-weather storage tank to control sewer overflows near Old Broadway during rain events.
8. **Fountain City Trunkline Replacement** - Replaced and upgraded approximately 6000 ft of trunk sewer connecting lines in upper Fountain City to Upper First Creek storage tank. The project addressed SSOs along Broadway, Cedar Lane, and Fountain Road.
9. **Sub-Basin 8B2** – Characterized the condition of 24,900 ft of pipe to determine rehabilitation needs.
10. **1-20 Vine Middle School Rehabilitation Project** – Completed find and fix work to identify cause of overflow in the vicinity of 214 Bertrand Street.

Second Creek

1. **Second Creek Pilleaux PS Collector -** Rehabilitated 19,600 ft of collection system piping in mini-basin 05A4. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
2. **Second Creek Sub-basin 15 Rehabilitation -** Rehabilitated approximately 23,500 ft of pipe in mini-basin 15D2. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
3. **Second Creek 23E1 -** Inspected a total of 28,067 ft of pipe for find and design rehabilitation needs for Mini-basin 23E1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
4. **Dutch Valley Collector Rehab (Mini-basin 10B1) -** Assessed and rehabilitated, where needed, approximately 16,400 ft of collector pipe. This project was combined with the Rickard and Wilson Collector Rehab project below.
5. **Rickard and Wilson Collector Rehab (Mini-basin 10C1) -** Assessed and rehabilitated, where needed, approximately 19,000 ft of collector pipe. Project was combined with Mini-basin 10B1.

Third Creek

1. **Mynderse, Western, and Canna -** Replaced approximately 1700 ft of 8-inch sewer and pipe-burst approximately 3400 ft of 8-inch up to 10-inch and 12-inch pipe to address wet-weather capacity restrictions resulting in overflows near Pleasant Ridge Road.
2. **Third Creek 28B1* -** Investigated rehabilitation needs for collectors in mini-basin 28B1 (approximately 7900 ft of pipe). Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair. Plans are being developed for a future rehabilitation project. No construction is planned in the short-term.

*The project named Third Creek 28B1 replaces Third Creek 28C1 that appeared in the Quarterly Progress Report for the Second Quarter 2005. After additional studies, it was determined that flows from 28B1 more likely contributed to overflows along Sutherland Avenue and North Bellemeade, as listed in the SSOER.

3. **Third Creek Storage** - Designed and constructed 4.5 MG wet-weather storage tank to control sewer overflows near Western Avenue and Third Creek Road during rain events.
4. **Upper McKamey Trunk Sewer Replacement** – Project replaced approximately 1600 ft of 12-inch and 15-inch trunk sewer. This project further enhanced improvements already made in Third Creek to address overflows along McKamey Road.
5. **Third Creek Basin 11** – Assessed and rehabilitated approximately 129,657 ft in sub-basin 11. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
6. **Third Creek Road Trunk Sewer Replacement** – Project included approximately 3100 ft of 24-inch and 30-inch trunkline. The project replaced and upgraded the trunkline from Western Avenue along Third Creek to the Third Creek storage facility. It addressed overflows occurring at 5600 Western Avenue. Project was extended approximately 2000 ft to reach the new location of the Third Creek Storage Facility at the KUB Hoskins Center.
7. **Third Creek Basin 9 Phase I** – Assessed and rehabilitated collector sewer in 9A1, 9A2, 9A4, and 9D1 (CAP/ER Scope).

Fourth Creek

1. **Pinebrook Drive Sewer Replacement** – Replaced 330 ft of 8-inch gravity sewer partially exposed by erosion of the bank of the adjacent drainage channel.
2. **Walker Springs Rehabilitation (Mini-Basin 32A4)** – Performed find, and design work in Mini-basin 32A4 in the Walker Springs area. Inspection included 43,000 ft of smoke testing, 43,000 ft of CCTV, and 228 manhole inspections. Plans will be developed for future rehabilitation work.
3. **Walker Springs Storage** – Designed and constructed 3.25 MG wet-weather storage tank to control sewer overflows near Walker Springs Pump Station during rain events.
4. **Papermill Drive Phases I, II, and III** – Designed and constructed replacement of approximately 4000 ft of 15-inch, 18-inch, and 2100 ft of 36-inch sewer in the Papermill Drive area to increase conveyance capacity and reduce sewer overflows.

South Knox

1. **Maryville Pike** – Designed and replaced 800–1,200 ft of 24-inch sewer located in Witherspoon Superfund site. Design rerouted sewer around site.
2. **South Haven Phase I and Phase II** – Relocated, rehabilitated, and upsized approximately 4700 ft of existing collector sewers to increase conveyance capacity and reduce inflow and infiltration (I/I).
3. **Island Home Rehabilitation** – Rehabilitated 9400 ft and replaced 1200 ft of collector sewers to reduce I/I.
4. **East Ford Valley Rehabilitation** – Rehabilitated approximately 16,000 ft of sewers in Mini-basin 41A4. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
5. **Stone Road Rehabilitation** – Rehabilitated approximately 13,500 ft of sewers in Mini-basin 41B1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
6. **South Haven Rehabilitation Phase III** – Rehabilitated approximately 21,700 ft of sewers in Mini-basin 40F1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.

Williams Creek

1. **Delrose Force Main Replacement** – Designed and replaced approximately 5,000 ft of 16-inch ductile iron pipe force main that had severe structural problems.
2. **Williams Creek Trunk Line Replacement** – Designed and replaced approximately 3,700 ft of 24-inch sewer to correct structural problems.

Section 2 Comprehensive Performance Evaluation Program (CPE) and Composite Correction Plan (CCP)

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… A summary of compliance with and activities related to implementation of the CPE and CCP."*

The CPE was submitted to EPA on February 24, 2006, and was approved on July 24, 2006.

The CCP was posted in the public document repository on June 19, 2007, and comments were accepted until July 18, 2007. The CCP was submitted to the EPA on July 23,2007.

On November 19, 2007, KUB received notice from EPA extending their review period of the CCP until December 22, 2007. On January 4, 2008, KUB received a letter from EPA disapproving the CCP. In a letter dated February 20, 2008, KUB requested to extend the deadline for responding to EPA's comments until March 25, 2008, which was approved by EPA.

KUB submitted the Revised CCP to EPA on March 21, 2008.

Section 3 Process Controls Program

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… A summary of implementation of and compliance with the Process Controls Program."*

The Process Controls Program (PCP) was not implemented during this reporting period because of low rainfall.

The Revised PCP was scheduled to be submitted by September 30, 2007. Due to an insufficient number of high-flow events, KUB submitted a request to EPA on August 8, 2007, to extend the deadline for submission of the Revised PCP. EPA approved the extension in a letter dated September 27, 2007. The Revised PCP will be submitted by September 30, 2008.

Section 4 Capacity Assurance Program

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… A summary of the implementation of the Capacity Assurance Program for that Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by Sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by Sewerbasin, and any exceptions granted for connections for essential services."*

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 started reviewing building permits based on the approved CAP on June 6, 2006, which was within the 60-day timeframe for implementing the program after receiving EPA approval.

To review building permits more efficiently using the CAP criteria agreed on with the EPA, KUB worked with a consultant, Camp, Dresser, & McKee, to develop an Information Management System (IMS). The IMS assists KUB in managing the CAP program by determining the amount of wastewater each proposed building would add to KUB's wastewater system based on its location. The IMS also helps track rehabilitation credits that KUB earns through its CAP/ER and MOM programs.

Appendix A includes a list of capital projects that KUB performed to gain rehabilitation credit in its sewer system. As stated in the Consent Decree, the list of authorized sewer connections was maintained and updated as necessary until full implementation of the CAP as approved by EPA. Therefore, the list will no longer be included as part of this quarterly report.

There were no exceptions granted for connections for essential services during this reporting period.

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Section 5 Transfers of Ownership

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof."*

There has been no transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof, during this reporting period.

Section 6 Compliance and Non-Compliance With the Consent Decree

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain…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 Consent Decree."*

6.1 Submission of Deliverables

To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree. The following sections detail all activity related to deliverables that occurred during the past quarter. Also noted are the dates each submittal was available for public comment in the Public Document Repository (PDR), when the deliverable was submitted to EPA, when EPA responded with comments, when KUB responded to those comments, and when EPA approval was received.

6.1.1 Quarterly Progress Report First Quarter 2008

Consent Decree language, pages 82-83: *"Beginning thirty (30) Days after the first Calendar Quarter following the Date of Entry, and thirty (30) Days after each Calendar Quarter thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, a Quarterly Progress Report.*

On April 28, 2008, KUB submitted to EPA and placed in the PDR the Quarterly Progress Report for the first quarter 2008. This deliverable was not subject to the Public Review Requirement of Section VI.A.2, but was available for public comment from April 28, 2008, until May 17, 2008. No comments were received during that period.

6.1.2 2001-2007 Sanitary Sewer Overflow Evaluation Report Annual Update

Consent Decree language, page 21: *"Beginning on April 30, 2005, and on an annual basis thereafter, until termination of this Consent Decree, KUB shall submit an update to the SSOER to address those conditions that caused the SSOs that occurred during the previous Calendar Year, in accordance with subparagraphs (b) through (e) below ("Annual SSOER Update")."*

On April 28, 2008, KUB submitted to EPA and placed in the PDR the 2001-2007 Sanitary Sewer Overflow Evaluation Report Annual Update. This Review Level 1 Deliverable was available for public comment from April 28, 2008 until May 17, 2008.

6.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred two Unpermitted Discharges. Table 1 below lists all violations subject to stipulated penalties as outlined in the Consent Decree.

Table 1. Violations Subject to Stipulated Penalties

Violation	Date	Address	Cause
Unpermitted Discharge	4/14/08	3913 Roberts Road	Broken pipe
Unpermitted Discharge	5/28/08	4144 Oakland Drive	Heavy rainfall

Section 7 SSOs, Bypasses, Diversions, and Effluent Limit Violations

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… A spreadsheet and summary of all SSOs, Bypasses, Diversions, and effluent limit violations that occurred during the previous Calendar Quarter. 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 reason for each SSO, the total SSO volume, the volume returned to the WCTS, and the volume not captured;*
b. *For all Bypasses and Diversions, the location, date, time, duration, volume and reason for each Bypass and Diversion; and the total Bypass or Diversion volumes;*
c. *For all effluent limit violations, all information required to be reported on KUB's Discharge Monitoring Reports."*

7.1 SSOs

Appendix B lists all SSOs that occurred during this reporting period. During this period, there were 14 SSO events. Of that number, four were due to blockages by either grease, debris, roots, or a combination thereof; three were due to broken pipe; two were due to mechanical failure; two were due to heavy rainfall; two were due to construction failure; and one was due to electrical failure. Of the 14 SSO events, 13 were in the 0 – 1000 gallons volume range, none were in the 1001 – 10,000 range, and one event totaled greater than 10,000 gallons. Durations for events during this period are as follows: 11 ranged from 0 – 2 hours, three ranged from 2.1 - 5 hours, and none were greater than 5 hours.

This is the first time in 18 consecutive months that KUB has reported wet-weather SSOs. These two events were the result of a localized heavy storm cell that caused between 1.79" and 3.29" of rainfall during a 10-hour period between midnight and 10:00 AM on May 28, 2008. The totals were measured by three KUB rain gauges located between N. Broadway and the John Sevier Pump Station. The highest total was recorded on the gauge at Central High School and included 2.42" that fell during a 45-minute period beginning at midnight. The monthly rainfall totals recorded by the NWS/NOAA do not reflect the impact of this localized storm.

7.2 Building Backups

Appendix C lists all Building Backups that occurred during this reporting period. During this period, there were no Building Backups.

7.3 Bypasses

No Bypasses occurred during this reporting period.

7.4 Diversions

Table 2 contains all Diversion event information that occurred during this reporting period. During this reporting period, there were no Diversions at Kuwahee, Fourth Creek, Loves Creek, or Eastbridge WWTPs.

7.5 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 Kuwahee, Fourth Creek, Loves Creek, or Eastbridge WWTPs.

Table 2: Bypasses and Diversions

WWTP	Did an event occur?	Type of Event	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 (MG)	Total Event Volume (MG)	Reason for Event
Kuwahee	No											
Fourth Creek	No											
Loves 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
TSS - Total Suspended Solids	cfu –Colony Forming Unit
ml/l – milliliters per liter	lbs - Pounds

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Section 8 Water Quality Monitoring Data

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain… The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v)."*

8.1 Sampling Conducted and Results

Appendix D lists all sampling that was conducted during the reporting period and the results thereof. In addition to routine monitoring in all creeks, and responding to Sanitary Sewer Overflows, KUB Water Quality personnel conducted Location of Source Testing on Baker Creek.

During Routine Monitoring of First Creek in April, Water Quality personnel were unable to collect a sample in the lowest portion of the creek. Water Quality personnel did not feel a sample taken at that time would be representative of the water in First Creek. The City of Knoxville was alerted to a homeless encampment located at that routine site. Samples were subsequently collected at that site for the months of May and June after the problem was resolved.

In June, Water Quality personnel were called to First Creek downstream from routine site 6.33 to investigate suspected gray water reported by a resident in the area. Water Quality personnel collected sample on the creek where the water was suspect as well as water that appeared clear for bacteriological testing. Bacteriological analysis of the samples did not show elevated counts in that area and the customer was notified of the results.

KUB is using RT-PCR source testing more as one of the tools to investigate high bacteria counts in the stream. This report includes results obtained with this tool in an effort to identify the source of high bacteriological counts. The RT-PCR methodology does not use fecal coliform bacteria as a source indicator because of its genetic diversity. Bacteria belonging to the genus Bacteriodes are used due to their higher degree of host specificity and abundance in the total fecal bacteria population. Thus, high fecal coliform counts do not necessarily correlate with high fecal concentrations obtained for fecal bacteriodes, whether those bacteriodes are specific to humans or a larger population of mammals. Lab results have been provided with an error or standard deviation measurement that also provides some gauge to the confidence of numbers. Confidence in the source identification improves as the total fecal bacteria concentration increases. It is evident that this tool is very useful, but also requires repeat analyses to confirm the suspicion of the source if the total fecal concentrations are not substantial. One of the advantages of this technique is that samples collected for RT-PCR analysis can be frozen until fecal counts are determined to be of interest and high enough to indicate that this testing would be beneficial. During Spill Impact sampling in April, Water Quality personnel collected additional RT-PCR samples from the upstream and downstream locations on Roberts Road. The purpose of this analysis was to obtain example total and human fecal concentrations associated with a known SSO. This analysis was done to help put other RT-PCR data into perspective with regards to total and human fecal concentrations, since the source of the bacterial contamination in the creek was known. These results reveal that significant levels of fecal coliform counts are necessary to confirm the presence of human fecal bacteria in the stream with confidence.

Samples taken from previous Baker Creek Location of Source testing (September 2007) were also analyzed via RT-PCR. Those samples were taken during a round of testing that ultimately discovered a disconnected sewer lateral originating from a local school. (This was reported in previous quarterly report.) The most upstream sample, stream mile 2.08

was where the sewer lateral was discovered. KUB was interested in this analysis to aide in putting other RT-PCR data from Baker Creek in perspective. The elevated fecal counts yielded elevated total fecal concentrations, however the human content of that sample was relatively low. This is especially interesting because we know the source of the contamination. One might have expected a higher human concentration since the contamination was in fact coming from a sewer lateral. It is quite possible that the elevations in fecal coliform were associated with increased run-off or increased sediment disturbance caused by the influx of additional water from the sewer lateral. KUB will continue to submit samples similar to the samples taken during this instance as well as during Spill Impact sampling for RT-PCR testing to get a better idea of what total and human fecal concentrations are during different circumstances.

KUB received RT-PCR results from samples taken during the first Wet Weather Investigation on Baker Creek. Although the data did show expected elevations in total fecal coliform counts as well as elevations in some human fecal concentrations, one can not conclude at these concentrations that the source of fecal contamination on Baker Creek was indeed from surcharging or leaking sewers, especially since visual inspection of sewers showed they were not at capacity. Tracking the actual source of contamination is also confounded because these samples were also taken during a wet weather event, where runoff is a definite contributor. Still, leaking sewers could not be eliminated. For this reason KUB initially decided to perform Location of Source testing on the upper most part of Baker Creek, around routine site 1.45. Although the fecal coliform and E. coli counts at those two sites were elevated, the total fecal concentration obtained from RT-PCR analysis was quite small. After discussion with personnel at the University of Tennessee's Center for Environmental Biotechnology, KUB decided to conduct Location of Source testing at the four sites on Baker Creek that were investigated during wet weather to determine what the total fecal concentrations were during dry weather. If elevations of fecal coliform counts in wet weather was due to a leaking sewer, those elevations should be apparent during dry weather also. Water Quality personnel sampled Baker Creek at those four sites for three consecutive days. All samples were submitted for RT-PCR analysis. Field personnel did observe that the routine site located at the lowest point in the creek was in confluence with the river. Originally, the high elevations of fecal coliform counts in the area were thought to be caused by the confluence. RT-PCR results in the area show a high concentration of both total fecal bacteria as well as human fecal bacteria, suggesting a possible sewer leak. KUB will investigate the elevation of fecal coliform counts in that area as well as subsequent elevation upstream in Baker Creek. KUB will continue to use RT-PCR sample analysis, although we plan to analyze multiple samples from one site of concern and make conclusions based on all sample analyses as well as consider environmental and sewer rehabilitation factors as well.

8.2 Projected Data Collection

During the third quarter of 2008, 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 the third quarter of 2008:

Sample Locations by Creek Mile or Site Number

Creek Name	*Creek Mile #*	*Creek Mile #*	*Creek Mile #*
First Creek	0.45	2.57	6.33
Second Creek	0.36	1.54	5.76
Third Creek	0.87	2.08E	4.80W
Fourth Creek	0.55	1.33	1.78

Baker Creek	0.36	0.53	1.45
Goose Creek	0.55	1.19E	1.80E
Loves Creek	0.85	1.89	3.45
Williams Creek	0.89	1.70	2.02

KUB has updated routine sampling site numbers to reflect more accurate data from dry weather walking surveys on Williams, Baker and Goose Creek. These changes are reflected in this quarterly report.

In the third quarter of 2008, KUB will conduct a second Wet Weather Monitoring event on Baker Creek, as well as conduct further Location of Source testing on Baker and Goose Creek. KUB will also conduct a Dry Weather Walk on Loves Creek in the third quarter.

Appendix A

Capital Projects and Rehabilitation Credits

Capital Projects and Rehabilitation Credits

	Project Name	Credit Type	Basin	WWTP	Credits Banked (gpd)	Status
1	Comprehensive Rehab 03B1a	Comprehensive Rehabilitation	1st Creek	Kuwahee	321,030	Project Complete
2	Comprehensive Rehab 03B2a	Comprehensive Rehabilitation	1st Creek	Kuwahee	302,366	Project Complete
3	Comprehensive Rehab 04B1a	Comprehensive Rehabilitation	1st Creek	Kuwahee	334,626	Project Complete
4	Comprehensive Rehab 08A1	Comprehensive Rehabilitation	1st Creek	Kuwahee	1,589,952	Project Complete
5	McCampbell Lane Sewer Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	25,543	Project Complete
6	Knox Road Trunkline Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	36,728	Project Complete
7	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
8	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
9	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
10	Comprehensive Rehab 15D2	Comprehensive Rehabilitation	2nd Creek	Kuwahee	1,450,008	Project Complete
11	Comprehensive Rehab 05A4 & 05A3	Comprehensive Rehabilitation	2nd Creek	Kuwahee	43,904	Project Complete
12	Comprehensive Rehab 09A2	Comprehensive Rehabilitation	3rd Creek	Kuwahee	296,664	Project Complete
13	Comprehensive Rehab 09A1	Comprehensive Rehabilitation	3rd Creek	Kuwahee	219,345	Project Complete
14	Walker Springs Storage Tank	Storage Tank	4th Creek	Fourth Creek	3,250,000	Project Complete
15	Comprehensive Rehab 40F1	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	83,600	Project Complete
16	Comprehensive Rehab 41A4	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	371,994	Project Complete
17	Comprehensive Rehab 41B1	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	152,958	Project Complete
18	Wilson Ave, Chesnut St., Donnell St. (Asset Replacement)	Find & Fix Gravity Main	Williams Creek	Kuwahee	28	Project Complete
19	Williams Creek Trunkline Replacement	Find & Fix Gravity Main	Williams Creek	Kuwahee	168,667	Project Complete
20	Rushland Park Off Site Sewer Rehabilitation	Find & Fix Gravity Main	Loves Creek	Loves Creek	3,803	Project Complete
21	Emily Avenue Pump Station Abandonment	Find & Fix Gravity Main	Loves Creek	Loves Creek	141,600	Project Complete
22	Fair Drive - Phase I	Find & Fix Gravity Main	1st Creek	Kuwahee	130,928	Project Complete
23	Comprehensive Rehab 23E1	Comprehensive Rehabilitation	2nd Creek	Kuwahee	4,215,003	Project Complete
24	vented manhole cover replacements (08B2)	Manhole Cover	1st Creek	Kuwahee	4,669	Project Complete
25	vented manhole cover replacement (16B1)	Manhole Cover	1st Creek	Kuwahee	667	Project Complete
26	vented manhole cover replacements (28C1)	Manhole Cover	3rd Creek	Kuwahee	1,334	Project Complete
27	10" mainline replacement (33A2)	Find & Fix Gravity Main	4th Creek	Fourth Creek	5,409	Project Complete
28	vented manhole cover replacements (22C2)	Manhole Cover	3rd Creek	Kuwahee	16,002	Project Complete
29	vented manhole cover replacements (63)	Manhole Cover	Sinking Creek	Loves Creek	66,665	Project Complete
30	10" mainline replacement (6C1)	Find & Fix Gravity Main	Loves Creek	Loves Creek	24,620	Project Complete
31	Comprehensive Rehab 06A5	Comprehensive Rehabilitation	Loves Creek	Loves Creek	263,358	Project Complete
32	Comprehensive Rehab 06A4	Comprehensive Rehabilitation	Loves Creek	Loves Creek	386,304	Project Complete
33	vented manhole cover replacement (39D2)	Manhole Cover	South Knox / Knob Creek	Kuwahee	667	Project Complete
34	vented manhole cover replacement (39D4)	Manhole Cover	South Knox / Knob Creek	Kuwahee	667	Project Complete
35	vented manhole cover replacement (39D3)	Manhole Cover	South Knox / Knob Creek	Kuwahee	2,668	Project Complete
36	vented manhole cover replacement (20A6)	Manhole Cover	Loves Creek	Loves Creek	1,334	Project Complete
37	vented manhole cover replacement (20A7)	Manhole Cover	Loves Creek	Loves Creek	667	Project Complete
38	vented manhole cover replacement (13A2)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
39	vented manhole cover replacement (13B1)	Manhole Cover	3rd Creek	Kuwahee	13,335	Project Complete
40	vented manhole cover replacement (28B1)	Manhole Cover	3rd Creek	Kuwahee	1,334	Project Complete
41	12" mainline replacement (44)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	4,278	Project Complete
42	manhole frame seal repair (67)	Manhole Repair	Loves Creek	Loves Creek	2,304	Project Complete
43	Whites Creek Trunk Line Replacement (02)	Find & Fix Gravity Main	1st Creek	Kuwahee	50,106	Project Complete
44	Comprehensive Rehab 09D1	Comprehensive Rehabilitation	3rd Creek	Kuwahee	381,376	Project Complete
45	Comprehensive Rehab 09A4	Comprehensive Rehabilitation	3rd Creek	Kuwahee	408,317	Project Complete
46	Lower First Creek Storage Tank	Storage Tank	1st Creek	Kuwahee	5,000,000	Project Complete
47	vented manhole cover replacement (11B2)	Manhole Cover	3rd Creek	Kuwahee	13,333	Project Complete
48	vented manhole cover replacement (13C1)	Manhole Cover	3rd Creek	Kuwahee	2,667	Project Complete
49	vented manhole cover replacement (22A2)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
50	vented manhole cover replacement (22B1)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
51	Creek Head Drive sewer line replacement (32A4)	Find & Fix Gravity Main	4th Creek	Fourth Creek	11,132	Project Complete
52	Manhole replacement (19A3)	Find & Fix Gravity Main	Williams Creek	Kuwahee	207	Project Complete
53	Papermill drive sewer line replacement (33A2)	Find & Fix Gravity Main	4th Creek	Fourth Creek	103,769	Project Complete
54	Wells Rd sewer line replacement (39C2)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	1,728	Project Complete
55	Power Park Manhole Rehab (45)	Find & Fix Gravity Main	Knob Creek	Kuwahee	3,596	Project Complete
56	Blount Ave abandoned lateral (39A1)	Disconnect abandoned lateral	South Knox / Knob Creek	Kuwahee	2,000	Project Complete
57	Woodbine Ave sewerline Rehab (19A2)	Find & Fix Gravity Main	Williams Creek	Kuwahee	2,683	Project Complete
58	Pleasant Ridge Rd Sewer line improvements (09A1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	207	Project Complete

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Capital Projects and Rehabilitation Credits

59	Papermill drive sewer line replacement (27A1)	Find & Fix Gravity Main	Fourth Creek	Fourth Creek	18,211	Project Complete
60	Wilson Rd Manhole Rehab (10C1)	Find & Fix Gravity Main	2nd Creek	Kuwahee	831	Project Complete
61	Maryville Pike Trunk Replacement (39C1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	72,880	Project Complete
62	Upper McKamey Trunk Replacement (11B1 11B2)	Find & Fix Gravity Main	3rd Creek	Kuwahee	64,324	Project Complete
63	Fox Manor Blvd sewer line replacement (32A4)	Find & Fix Gravity Main	4th Creek	Fourth Creek	31,510	Project Complete
64	Power Park Manhole Rehab (47)	Manhole Repair	South Knox / Knob Creek	Kuwahee	7,700	Project Complete
65	Sutherland Ave Sewer Line Replacement (28B1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	20,383	Project Complete
66	Fountain City Trunkline Replacement (03B1 03B2)	Find & Fix Gravity Main	1st Creek	Kuwahee	72,512	Project Complete
67	vented manhole cover replacement (11B2)	Manhole Cover	4th Creek	Fourth Creek	13,333	Project Complete
68	vented manhole cover replacement (39D2)	Manhole Cover	South Knox / Knob Creek	Kuwahee	13,333	Project Complete
69	Comprehensive Rehabilitation 19A2	Comprehensive Rehabilitation	Williams Creek	Kuwahee	521,631	Project Complete
70	17B1 Manhole Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	1,803	Project Complete
71	Vine Middle School sewerline Rehab (24D1)	Find & Fix Gravity Main	1st Creek	Kuwahee	23,491	Project Complete
72	Comprehensive Rehabilitation (08B2)	Comprehensive Rehabilitation	1st Creek	Kuwahee	841,370	Project Complete
73	Third Creek Storage Tank (21A1)	Storage Tank	3rd Creek	Kuwahee	4,000,000	Project Complete
74	Comprehensive Rehabiliation (19A1)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	313,938	Project Complete
75	Comprehensive Rehabiliation (19B1)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	328,300	Project Complete
76	Comprehensive Rehabiliation (10B1)	Comprehensive Rehabilitation	2nd Creek	Kuwahee	191,698	Project Complete
77	Comprehensive Rehabiliation (10C1)	Comprehensive Rehabilitation	2nd Creek	Kuwahee	67,840	Project Complete
78	Disconnected Stormwater Detention Pond Sevier Ave (40C1)	Disconnect Storm Sewer	South Knox / Knob Creek	Kuwahee	97,333	Project Complete
79	Sub Basin 63 Sinking Creek Drainage rehabilitation (63)	Comprehensive Rehabilitation	South Knox / Knob Creek	Loves Creek	72,110	Project Complete
80	West Ford Valley Trunkline replacement (41A1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	236,704	Project Complete
81	Blount Avenue Trunkline Replacement (39A1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	225,376	Project Complete
82	Broookvale Point Repairs (02A3)	Find & Fix Gravity Main	1st Creek	Kuwahee	52,079	Project Complete
83	Park Pump Point Repairs (45)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	11,522	Project Complete
84	Wayland Road Storage Tank (67)	Storage Tank	Loves Creek	Loves Creek	20,000	Project Complete
85	Comprehensive Rehab (19A3)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	162,545	Project 50% complete
86	Comprehensive Rehab (41A2)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	39,330	Project Complete
87	Comprehensive Rehab (41A5)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	119,327	Project Complete
88	Jersey Ave sewer rehabilitation (SubBasin 23)	Find & Fix Gravity Main	1st Creek	Kuwahee	419	Project Complete
89	East Magnolia sewer rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	846	Project Complete
90	Walker Blvd Sewer Rehabilitation (SubBasin 16)	Find & Fix Gravity Main	1st Creek	Kuwahee	1086	Project Complete
91	Kingston Court Sewer Rehabilitation (SubBasin 29)	Find & Fix Gravity Main	3rd Creek	Kuwahee	3727	Project Complete
92	Clinch Ave Sewer Rehabilitation (SubBasin 30)	Find & Fix Gravity Main	1st Creek	Kuwahee	442	Project Complete
93	Badgett Drive Sewer Rehabilitation (SubBasin 22)	Find & Fix Gravity Main	3rd Creek	Kuwahee	214	Project Complete
94	Dickson Street Sewer Rehabilitation (SubBasin 20)	Find & Fix Gravity Main	Loves Creek	Loves Creek	417	Project Complete
95	W New Street Sewer Rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	2844	Project Complete
96	Rennoc Rd Sewer Rehabilitation (SubBasin 4)	Find & Fix Gravity Main	1st Creek	Kuwahee	2853	Project Complete
97	Spicewood Lane Sewer Rehabilitation (SubBasin 13)	Find & Fix Gravity Main	3rd Creek	Kuwahee	216	Project Complete
98	Chapman Highway Sewer Rehabilitation (SubBasin 39)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	212	Project Complete
99	McCroskey Ave Sewer Rehabilitation (SubBasin 17)	Find & Fix Gravity Main	1st Creek	Kuwahee	1076	Project Complete
100	East 5th Ave Sewer Rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	447	Project Complete
101	Simms Rd Sewer Rehabilitation (SubBasin 39)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	2955	Project Complete
102	Maynard Ave Sewer Rehabilitation (SubBasin 16)	Find & Fix Gravity Main	1st Creek	Kuwahee	423	Project Complete

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Appendix B

SSOs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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
4/8/2008	10:38 PM	2201	LAKE AVENUE	KUW	Third Creek	35B	MH 27-14	Pavement to Storm Drain to Soil Saturation		The sewer main was flushed to remove the blockage caused by grease.	110	0	110	1	No
4/14/2008	2:08 PM	3913	ROBERTS ROAD	EB	Eastbridge	113	Leaking Force Main	Roseberry Creek	Roseberry Creek	The force main was repaired.	783	0	783	0.05	Yes
4/22/2008	1:40 PM	1713	DONNINGHAM DRIVE	KUW	First Creek	4	MH 22-211	Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	35	0	35	3	No
4/23/2008	10:44 AM	5300	AZINGER LANE	EB	Eastbridge	109	Leaking Force Main	Soil Saturation		The force main was repaired.	47	0	47	2	No
5/6/2008	10:05 AM	2052	DANDRIDGE AVENUE	KUW	Williams Creek	25	MH 4-103	Pavement to Catch Basin to Soil Saturation		The sewer main was flushed to remove the blockage caused by debris.	115	0	115	0.25	No
5/8/2008	5:31 PM	2113	MARTHA BERRY DRIVE	KUW	First Creek	4	MH 18-116	Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	230	0	230	1	No
5/9/2008	10:08 PM	2907	GINNBROOKE LANE	KUW	Knob Creek	47	Wetwell	Soil Saturation		Electrical power was restored after an outage caused by a strong storm.	1,000	950	50	0.33	No
5/28/2008	1:45 AM	4144	OAKLAND DRIVE	KUW	First Creek	2	MHs 39-4,39-44&39-45 and Lateral CO	Swale to Whites Creek	Whites Creek	Heavy rainfall in the area resulted in high flows in the collection system.	45,655	0	45,655	2	Yes
5/28/2008	11:22 AM	203	S. CHILHOWEE DRIVE	LC	Loves Creek	20	MH 25	Soil Saturation		Heavy rainfall in the area resulted in high flows in the collection system.	16	0	16	0.5	No
5/30/2008	1:22 PM	5700	MELSTONE DRIVE	KUW	Third Creek	9	3 Lateral Cleanouts	Soil Saturation		A contractor-owned sewer plug was removed from the sewer main.	150	0	150	1	No
6/11/2008	2:31 PM	2015	NEYLAND DRIVE	KUW	Third Creek	35B	MH 4-51	Recovery and Soil Saturation		Line capacity was exceeded by a waste hauler.	50	45	5	0.02	No
6/12/2008	12:15 PM	5246	BENT RIVER BOULEVARD	FC	Fourth Creek	43	Residential Grinder Pump	Soil Saturation		There was a mechanical failure of the residential grinder pump.	25	0	25	3	No
6/16/2008	9:39 AM	4107	ROBERTS ROAD	EB	Eastbridge	113	Residential Grinder Pump	Soil Saturation		There was a mechanical failure of the residential grinder pump.	6	0	6	1	No
6/18/2008	11:25 AM	1721	IROQUOIS STREET	KUW	Williams Creek	25	Leaking Pipe	Catch Basin to Soil Saturation		There was a leak in the sewer main.	5	0	5	3	No

Appendix C

Building Backups

1	2	3	4	5	6	7	8	9	10	11	12	13
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)

Appendix D

Water Quality Monitoring Program
Sampling Results

Water Quality Monitoring Report

Routine Water Quality Monitoring Report

4/1/2008 Through 6/30/2008

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										
	2.57	4/29/2008	10:24	7.9	13	9.5	460	690	Wet	R
	6.33	4/29/2008	10:09	7.8	13	8.2	110	190	Wet	R
	0.45	5/29/2008	09:45	7.3	19	8.7	1400	1000	Wet	R
	2.57	5/29/2008	09:05	7.2	18	8.1	3200	> 2400	Wet	R
	6.33	5/29/2008	08:50	6.8	18	6.6	2600	> 2400	Wet	R
	0.45	6/27/2008	10:02	7.0	20	6.1	4500	380	Dry	R
	2.57	6/27/2008	09:45	7.1	21	7.2	360	420	Dry	R
	6.33	6/27/2008	09:32	7.2	22	8.9	540	280	Dry	R
Second Creek										
	0.30	4/24/2008	10:12	7.9	17	9.0	180	71	Dry	R
	1.54	4/24/2008	09:56	7.8	17	9.4	60	77	Dry	R
	5.76	4/24/2008	09:39	7.1	16	6.4	10	7	Dry	R
	0.30	5/21/2008	09:31	7.4	17	8.8	< 10	16	Wet	R
	1.54	5/21/2008	09:16	7.2	16	8.3	310	220	Wet	R
	5.76	5/21/2008	08:59	6.7	16	5.9	99	27	Wet	R
	0.30	6/24/2008	09:29	7.4	18	8.1	990	490	Wet	R
	1.54	6/24/2008	09:15	7.5	20	7.5	990	690	Wet	R
	5.76	6/24/2008	08:59	6.8	17	5.5	72	70	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

4/1/2008 Through 6/30/2008

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
Third Creek										
	0.87	4/21/2008	09:21	8.0	14	8.9	300	340	Wet	R
	2.08E	4/21/2008	09:09	7.8	14	8.4	380	340	Wet	R
	4.80W	4/21/2008	08:57	7.4	14	8.3	350	520	Wet	R
	0.87	5/19/2008	08:37	7.1	16	8.2	1400	1400	Wet	R
	2.08E	5/19/2008	08:54	7.3	15	7.5	360	770	Wet	R
	4.80W	5/19/2008	09:07	7.3	14	8.4	260	340	Wet	R
	0.87	6/16/2008	10:24	7.7	20	7.7	1300	730	Wet	R
	2.08E	6/16/2008	10:15	7.4	21	5.7	2300	1700	Wet	R
	4.80W	6/16/2008	09:59	7.1	17	7.9	450	410	Wet	R
Fourth Creek										
	0.55	4/23/2008	10:09	7.7	16	9.3	460	580	Wet	R
	1.33	4/23/2008	09:43	7.7	16	8.7	290	410	Wet	R
	1.78	4/23/2008	09:58	7.8	15	9.7	72	71	Wet	R
	0.55	5/19/2008	09:34	7.5	16	8.6	1200	1700	Wet	I
	1.33	5/19/2008	09:24	7.2	15	8.5	1100	2000	Wet	R
	1.78	5/19/2008	09:16	7.5	15	9.4	340	390	Wet	R
	0.55	6/26/2008	09:50	7.1	19	8.0	3200	> 2400	Wet	I
	1.33	6/26/2008	10:03	7.2	18	7.9	220	490	Wet	R
	1.78	6/26/2008	10:12	7.8	18	9.0	480	610	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.

00033773

Water Quality Monitoring Report

Routine Water Quality Monitoring Report

4/1/2008 Through 6/30/2008

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
Baker Creek										
	0.36	4/22/2008	10:23	7.7	15	8.9	230	260	Wet	R
	0.53	4/22/2008	10:01	7.8	14	9.2	430	390	Wet	R
	1.45	4/22/2008	09:50	7.5	15	8.8	2700	> 2400	Wet	I
	0.36	5/20/2008	11:58	7.1	17	7.0	4900	> 2400	Wet	I
	0.53	5/20/2008	13:21	7.2	18	7.7	450	730	Wet	R
	1.45	5/20/2008	13:45	7.2	18	7.5	2100	> 2400	Wet	I
	0.36	6/11/2008	12:10	7.1	20	6.8	14000	> 2400	Dry	I
	0.53	6/11/2008	12:01	7.5	20	7.4	2400	1700	Dry	R
	1.45	6/11/2008	11:50	7.2	19	7.8	2700	> 2400	Dry	I
Goose Creek										
	0.55	4/10/2008	08:55	7.7	14	7.8	360	280	Dry	R
	1.19E	4/10/2008	08:46	7.7	14	8.0	610	330	Dry	R
	1.80E	4/10/2008	08:37	7.6	14	8.6	200	540	Dry	R
	0.55	5/5/2008	09:53	7.2	14	7.0	2400	1700	Dry	I
	1.19E	5/5/2008	10:01	7.4	14	8.8	330	520	Dry	R
	1.80E	5/5/2008	10:14	7.2	14	7.5	99	110	Dry	R
	0.55	6/9/2008	08:50	6.9	20	4.8	5800	> 2400	Dry	I
	1.19E	6/9/2008	08:40	6.7	20	7.1	6400	> 2400	Dry	R
	1.80E	6/9/2008	08:25	6.9	19	7.5	810	520	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.

00033374

Water Quality Monitoring Report

Routine Water Quality Monitoring Report

4/1/2008 Through 6/30/2008

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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
Loves Creek										
	0.85	4/8/2008	06:06	7.2	15	7.8	91	56	Wet	R
	1.89	4/8/2008	05:50	7.3	16	7.1	30	46	Wet	R
	3.45	4/8/2008	05:40	7.5	17	7.4	30	96	Wet	R
	0.85	5/6/2008	09:15	7.2	15	8.2	170	170	Dry	R
	1.89	5/6/2008	09:00	6.9	14	7.5	54	53	Dry	R
	3.45	5/6/2008	08:47	7.2	15	7.9	63	46	Dry	R
	0.85	6/12/2008	11:00	7.4	21	6.8	3600	1300	Wet	R
	1.89	6/12/2008	10:36	6.8	20	6.7	990	820	Wet	R
	3.45	6/12/2008	10:25	6.9	22	6.5	720	550	Wet	R
Williams Creek										
	0.89	4/9/2008	08:38	7.5	15	9.1	64	40	Wet	R
	1.70	4/9/2008	08:16	7.4	15	7.5	270	143	Wet	R
	2.02	4/9/2008	08:27	7.6	15	8.1	1800	1700	Wet	I
	0.89	5/15/2008	12:13	7.3	16	8.8	330	220	Wet	R
	1.70	5/15/2008	11:59	7.2	16	7.6	240	500	Wet	R
	2.02	5/15/2008	11:47	7.1	17	7.3	2200	> 2400	Wet	I
	0.89	6/24/2008	10:06	7.5	18	8.1	570	610	Wet	R
	1.70	6/24/2008	09:55	7.2	17	7.6	630	460	Wet	R
	2.02	6/24/2008	09:46	7.1	19	7.3	1100	730	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.

00033275

Water Quality Monitoring Report

Investigative Water Quality Monitoring Report

4/1/2008 Through 6/30/2008

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

First Creek **Customer Complaint**

Sample Location	Date	Time	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E-Coli (MPNI)	pH	Silt level	Water Temperature (C)
First Creek: Clear Fork	6/20/2008	9:27 AM	7.1	120	73	7.1	N/A	18
First Creek: Suspect Fork	6/20/2008	9:23 AM	6.2	81	35	7.3	N/A	19

00033376

Water Quality Monitoring Report

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 4/14/2008
Street Address 3913 Roberts Rd.
Description The SSO was cased by a rupture in a force main during construction. The force main was temporarily inactivated, but contained some residual wastewater. The SSO flowed into Roseberry Creek.

Estimated unrecovered volume 783 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
	4/14/2008	0.15	0.18

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	4/14/2008	15:36	11	12	7.8	210	110
Downstream of SSO Discharge	4/14/2008	15:26	10	12	7.7	12000	> 2400
Upstream of SSO Discharge	4/21/2008	13:01	11	16	7.9	140	190
Downstream of SSO Discharge	4/21/2008	13:07	11	15	7.9	120	150

0003377

Creek Monitoring Report

Location of Source Water Quality Monitoring Report

4/1/2008 Through 6/30/2008

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

Baker Creek

Location Description	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	pH	Water Temperature (C)	Fecal Coliform (CFU/100mL)	E-Coli (MPN)
Routine Site 1.45	5/7/2008	11:40	8.6	7.5	16	1400	2400
Upstream from Site 1.45, Behind Tennis Courts	5/7/2008	11:57	8.2	7.3	16	1500	> 2400
Routine Site 0.36	5/20/2008	11:58	7.0	7.1	17	4900	> 2400
Routine Site 0.53	5/20/2008	13:21	7.7	7.2	18	450	730
Routine Site 1.45	5/20/2008	13:45	7.5	7.2	18	2100	> 2400
Talyor Rd. at Cruze	5/20/2008	10:35	8.7	7.3	16	860	980
Routine Site 0.36	5/21/2008	11:45	7.6	7.1	16	11000	> 2400
Routine Site 0.53	5/21/2008	11:31	8.2	7.3	16	990	730
Routine Site 1.45	5/21/2008	11:18	8.5	7.2	15	2000	1700
Taylor Rd. at Cruze	5/21/2008	11:04	8.9	7.3	15	180	160
Routine Site 0.36	5/22/2008	09:46	7.5	7.0	16	4900	> 2400
Routine Site 0.53	5/22/2008	10:10	8.2	7.2	16	900	1300
Routine Site 1.45	5/22/2008	10:26	8.5	7.2	15	2200	1700
Taylor Rd. at Cruze	5/22/2008	10:41	8.9	7.2	15	160	120

0003378

Baker Creek: Location of Source
Real Time - PCR Results

	Stream Mile	Collection Date	Collection Time	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Concentration (mg/L) (mean±SD)	Human Fecal Concentration (mg/L) (mean±SD)
Taylor Rd. (between Cruze and Barclay)	2.08	9/18/2007	9:25	59000	> 2400	1352.5 (±565.4)	29.9 (± 3.9)
Taylor Rd. (between Cruze and Tilson)	1.93	9/18/2007	9:40	35000	> 2400	266.6 (± 37.0)	24.8 (±14.6)
Sevierville Pike	1.47	9/18/2007	9:52	2600	> 2400	10.7 (±0.9)	2.3 (±1.6)
Sevier Ave.	0.93	9/18/2007	10:10	2400	1600	4.5 (±1.9)	0.9 (±1.0)
Lenland Ave.		9/18/2007	10:20	1300	1100	6.8 (±5.3)	2.3 (±2.0)
Routine Site 1.45	1.45	5/7/2008	11:40	1400	2400	6.3 (± 1.8)	0.6 (±0.2)
Upstream from site 1.45, behind tennis courts		5/7/2008	11:40	1500	>2400	5.5 (±1.2)	BDL
Routine Site 0.36	0.36	5/20/2008	11:58	4900	> 2400	260.7 (±190.0)	189.4 (±47.1)
		5/21/2008	11:45	11000	> 2400	44.6 (± 10.4)	22.8 (±6.3)
		5/22/2008	9:46	4900	> 2400	42.3 (± 3.7)	28.1 (± 8.6)
Routine Site 0.53	0.53	5/20/2008	13:21	450	730	15.2 (±2.8)	BDL
		5/21/2008	11:31	990	730	6.3 (±2.4)	1.2 (± 1.2)
		5/22/2008	10:10	900	1300	7.7 (± 2.6)	0.8 (± 1.0)
Routine Site 1.45	1.45	5/20/2008	13:45	2100	> 2400	12.5 (±1.4)	3.4 (± 3.2)
		5/21/2008	11:18	2000	1700	7.8 (±3.9)	0.7 (±0.7)
		5/22/2008	10:26	2200	1700	4.4 (±0.5)	1.1 (± 1.0)
Taylor Rd. at Cruze	1.93	5/20/2008	10:35	860	980	8.2 (± 5.4)	3.1(±2.3)
		5/21/2008	11:04	180	160	1.1 (±0.3)	1.5 (± 1.2)
		5/22/2008	10:41	160	120	2.5 (± 0.8)	BDL

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