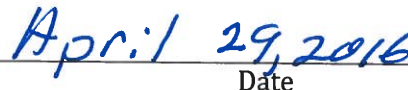


City of Memphis

Semi-Annual Report October 1, 2015 through March 31, 2016

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.


Bobby D. Allen, P.E.


Date

Section 1

Introduction

On September 20, 2012, the United States District Court for the Western District of Tennessee entered a Consent Decree between the City of Memphis (the City) and the United States, the State of Tennessee, and the Tennessee Clean Water Network.

To fulfill the reporting requirements defined in Paragraph VIII.25. of the Consent Decree, the City has prepared this Semi-Annual Report, which includes the following information:

- A description of projects and activities completed and milestones achieved during the previous six month period pursuant to the requirements of the Consent Decree.
- A summary of significant projects and activities anticipated to be performed, and milestones anticipated to be achieved, in the next six month period pursuant to the requirements of the Consent Decree.
- Any additional information determined to be appropriate to demonstrate implementation of the remedial actions required under the Consent Decree.

This report is organized into four sections:

- **Section 1** provides an introduction.
- **Section 2** documents recent progress and anticipated continuing activities related to development and implementation of the Management, Operations, and Maintenance (MOM) Programs noted in the Consent Decree.
- **Section 3** identifies recent progress and anticipated continuing activities related to the Priority Rehabilitation Projects noted in the Consent Decree.
- **Sections 4 and 5** provide a summary of additional actions that the City has recently completed and anticipates completing over the next six months to maintain compliance with the Consent Decree.
- **Sections 6** identifies past Consent Decree projects and non-CD projects performed.

Section 2

Management, Operations, and Maintenance

Programs

As defined in Paragraph V.10 of the Consent Decree, the City shall develop and implement specific Management, Operations, and Maintenance (MOM) Programs. These MOM Programs are listed below along with a summary of activities completed in the previous six months and activities anticipated to be performed during the upcoming six months. A chart showing the status of compliance is presented as **Figure 2-1**. All MOM Programs activities are currently in compliance.

2.1 Sewer Overflow Response Plan

Activities Completed During This Reporting Period

The City submitted a Sewer Overflow Response Plan (SORP) to the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) on March 11, 2011, before the Consent Decree was entered. A copy of the SORP is included in Appendix B of the Consent Decree. The City continued to operate under the processes described in the SORP during the reporting period. Additionally, the City updated Section 3 of the document and submitted to EPA on March 30, 2016. The City deemed these updates as “form” and not of “substance.” A copy of the document was submitted to the public document repository.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate under the approved SORP and respond to comments (if any) provided by the EPA in response to the City’s update to the document.

2.2 Fats, Oil, and Grease Management Program

Activities Completed During This Reporting Period

The City submitted a Fats, Oils and Grease (FOG) Management Program to the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) on March 11, 2011, before the Consent Decree was entered. A copy of the FOG Management Program is included in Appendix C of the Consent Decree. On April 22, 2014, EPA approved an updated FOG Management Program (Program) submitted by the City in October of 2013. During the current reporting period, the City continued to operate under the processes described in the Program updated October 2013. In addition to conducting the required inspection and reporting activities, the City has continued public outreach efforts, such as the use of billboard and bus stop advertising and the distribution of “Can the Grease” door hangers and can lids to discourage residents from discarding cooking oils and other FOG in the sewer system. As part of the workforce development aspect of the Consent Decree, the City has engaged the “Green Team” (Section 4.3) to distribute “Can the Grease” door hangers ahead of condition assessment work.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate under the approved updated FOG Management Program. The City anticipates that it will review the FOG Management Program during the next reporting period and will make revisions if deemed necessary.

2.3 Lift Station and Force Main O&M Program

Activities Completed During This Reporting Period

On February 5, 2015, the City received comments from EPA on the Lift Station and Force Main Operations and Maintenance (O&M) Program. The City revised the Lift Station and Force Main O&M Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will review the revised submittal dated April 8, 2015, and provide the City comments or approve the document as submitted. The City will respond to any additional comments received from EPA and will revise the Lift Station and Force Main O&M Program, as appropriate. Once approved, the City will implement the Lift Station and Force Main O&M Program.

2.4 Gravity Sewer System O&M Program

Activities Completed During This Reporting Period

During a previous reporting period, on February 4, 2015, the City received comments from EPA on the Gravity Sewer Operations and Maintenance (O&M) Program. The City revised the Gravity Sewer O&M Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will approve the resubmitted Gravity Sewer System O&M Program dated April 8, 2015, or provide additional comments. The City will respond to additional comments received from EPA, if any, and will revise the Gravity Sewer System O&M Program, as appropriate. Once approved, the City will implement the Gravity Sewer System O&M Program.

2.5 Inter-Jurisdictional Agreement Program

Activities Completed During This Reporting Period

During a previous reporting period, on February 5, 2015, the City received comments from EPA on the Inter-Jurisdictional Agreement Program. The City revised the Inter-Jurisdictional Agreement Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will approve the IJAP submitted on April 8, 2015, or provide additional comments. The City will respond to additional comments received from EPA, if any, and will revise the IJAP, as appropriate. Once approved, the City will follow the IJAP for new agreements and renewal of existing agreements

related to the collection, conveyance, and treatment of sewage by the City from municipal satellite sewer systems.

2.6 Continuing Sewer Assessment Program

Activities Completed During This Reporting Period

The Continuing Sewer Assessment Program was approved on September 10, 2014, and outlined priority areas to receive condition assessment in Year 1 and Year 2 after CSAP approval. The Year 1 area received condition assessment beginning with the Cane Creek Pilot Assessment area (Section 4.5) before the CSAP approval. The Year 1 area has been completed in compliance with the CSAP Year 1 deadline, and the Year 2 condition assessment continued.

Activities Anticipated to be Performed During the Next Reporting Period

During the next reporting period, the City will continue implementation of the CSAP in accordance with the timeframes presented in the Consent Decree. This includes completing the Year 2 priority area condition assessment by September 8, 2016. This is further described in Section 3.1.

2.7 Infrastructure Rehabilitation Program

Activities Completed During This Reporting Period

The City completed the development of the Infrastructure Rehabilitation Program (IRP), as required in Paragraph V.10.g of the Consent Decree, and submitted the document to EPA and TDEC for review on February 25, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will provide the City comments on the IRP or approve the IRP as submitted. The City will respond to comments received from EPA, if any, and will revise the IRP, as appropriate. Once approved, the City will implement the IRP.

**Figure 2-1
MOM Programs Progress**

Program	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months					
			Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sewer Overflow Response Program	V.10.a	-	Continuing to implement program. Updated Section 3 and submitted to EPA on March 30, 2016.						Continue to implement program. City will respond to any comments provided by EPA in response to updates.					
Fats, Oils, and Grease Management Program	V.10.b	-	Continuing to implement program						Continue to implement program. FOG Management Plan may be reviewed to determine if changes are necessary.					
Lift Station & Force Main O&M Program	V.10.c	9/19/2013	Received comments from EPA on Feb. 5, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.						Respond to any further comments received, revise program as appropriate, and implement approved program.					
SCADA Installation at lift stations	V.10.c.iii	3/19/2013	Previously completed.						SCADA is operational.					
Gravity Sewer System O&M Program	V.10.d	9/19/2013	Previously received comments from EPA on Feb. 4, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.						Respond to any further comments received, revise program as appropriate, and implement approved program.					
Inter-jurisdictional Agreement Program	V.10.e	3/19/2013	Previously received comments from EPA on Feb. 5, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.						Respond to any further comments received, revise program as appropriate, and implement approved program.					
Continuing Sewer Assessment Program	V.10.f	9/19/2013	Continued Year 2 condition assessment areas as outlined in the Consent Decree.						Complete Year 2 condition assessment compliance by Sep. 8, 2016.					
Infrastructure Rehabilitation Program	V.10.g	3/9/2015	Submitted to EPA and TDEC on February 25, 2015.						Respond to comments received, revise program as appropriate, and implement approved program.					

Section 3

Priority Rehabilitation Projects

As defined in Paragraph V.11 of the Consent Decree, the City shall complete various Priority Rehabilitation Projects. These projects are listed below along with a summary of activities completed in the previous six months and activities anticipated to be performed during the upcoming six months. A chart showing the status of compliance is presented as **Figure 3-1**. All Priority Rehabilitation Project activities are currently in compliance.

3.1 Priority Areas Projects

Paragraphs V.10.f and V.11.a of the Consent Decree identify several areas of the City's wastewater collection and transmission system (WCTS) that are to be assessed during the first and second years following approval of the CSAP. These areas are shown in Appendix E and F of the Consent Decree, respectively. Additionally, a subset of the first year priority area (Appendix E), as shown in Appendix G of the Consent Decree, is identified as a priority during implementation of the IRP. Rehabilitation projects within this area (Appendix G) are to be completed within six years and seven months after EPA's approval of the IRP.

Activities Completed During This Reporting Period

Condition assessment work in the Year 1 and Year 2 priority areas was tied to the approval of the CSAP, which occurred on September 10, 2014. Condition assessment on the Cane Creek and Hickory Hill Pilot Assessment Areas (Section 4.5) actually began before approval of the CSAP and included portions of the Year 1 and Year 2 priority areas. These areas were assessed using the methods identified in the CSAP which was subsequently approved by EPA. Additionally, Phase 1 and Phase 2 Condition Assessment areas had previously been procured to perform field testing (i.e., manhole inspections, smoke testing, sewer cleaning, and CCTV inspections, etc.). These areas encompass and actually extend beyond the entirety of the Consent Decree defined Year 1 and Year 2 areas to be assessed following EPA approval of the CSAP. In other words, some of the area assessed in Year 1 and Year 2 will include some additional areas that the City was not required to assess, as of yet, under the Consent Decree. However, it made sense for the City to include these additional areas to be able to complete sewersheds in their entirety.

Year 1

Condition assessment for the Year 1 area was completed before September 9, 2015, in accordance with the CSAP and Consent Decree Appendix E. Additionally, 362 manholes were raised and 41 point repairs were completed in the Year 1 area to address accessibility issues and potential causes of SSOs. For additional details about Year 1 activities, refer to the previous Semi-Annual Report.

Year 2

All Year 2 assets for condition assessment are to be completed by September 8, 2016. At the end of this semi-annual reporting period, approximately 543,000 LF or 87% of gravity mains and associated manholes of Year 2 assets have already been assessed. The Year 2 area consists of 626,000 LF of sewer gravity mains (this number decreased from the previous Semi-Annual Report because some sewers were determined to be private).

All 38 identified siphons within the Year 2 area were cleaned and assessed during this reporting period.

The Year 2 area contains 1 lift station and associated force main, 1043 Wilson St., which was assessed using the methods described in the CSAP as part of the Year 1 lift station assessments because the force main overlaps the Year 1 and 2 boundaries. To date, 12 lift stations have been assessed throughout the City.

As with the Year 1 condition assessment field testing efforts, critical sewer line defects (i.e., those determined to have high risk factors for contributing to or causing SSO events), as well as buried manholes (for accessibility to perform condition assessment work), were addressed on a real-time basis under four construction contracts. To date, 39 manholes have been raised and 21 point repairs have been completed in the Year 2 area.

Activities Anticipated to be Performed During the Next Reporting Period

All of the remaining Year 2 condition assessment work will be completed by the September 8, 2016, deadline in accordance with the Consent Decree.

3.2 Critical Infrastructure Areas Projects

Activities Completed During This Reporting Period

As discussed in Paragraph V.11.b of the Consent Decree, three areas within the WCTS were identified to receive prioritized rehabilitation due to the critical nature of the infrastructure and the potential consequences of large sanitary sewer overflows volumes in the event of a failure. A map showing the locations of these areas is included as Appendix H of the Consent Decree. These three projects are to be completed within five years after the Effective Date of the Consent Decree (September 20, 2012).²⁰ As stated in previous Semi-Annual Reports, the first critical area on the 42-inch through 48-inch Wolf River Interceptor and the third critical area on the 84-inch interceptor located where McLean Boulevard crosses the Wolf River and Interstate 40 have already been completed.

Preliminary work associated with the second critical area, which is a portion of the 96-inch interceptor at the entrance/exit ramp located at mile 51 of Interstate 240, continued through this reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that work associated with the second critical area will continue through the next reporting period and will be completed within the timeframe established in the Consent Decree. Inasmuch as the first and third critical infrastructure areas projects have been completed, the Final Critical Areas Project Report is anticipated to be submitted within six months of completion of the second critical area, consistent with the terms of the Consent Decree.

3.3 Prior Assessment Areas Projects

As discussed in Paragraph V.11.c of the Consent Decree, four additional rehabilitation projects have been identified based on previous inspection and assessment activities. These projects are to all be completed four years after the Effective Date of the Consent Decree (September 20, 2012).

3.3.1 Cured-in-Place Pipe (CIPP) lining of the Nonconnah Interceptor Between Manholes Numbered N06-119 and N06-127

Activities Completed During This Reporting Period

As stated in previous Semi-Annual Reports, the CIPP lining of the Nonconnah Interceptor between manholes N06-119 and N06-127 has already been completed.

Activities Anticipated to be Performed During the Next Reporting Period

Not applicable.

3.3.2 Rehabilitation or Replacement of Manholes on Mud Island

Activities Completed During This Reporting Period

During this reporting period, the Mud Island manholes and associated pipes were assessed in accordance with Paragraph V.11.c.(ii) of the Consent Decree. A rehabilitation contract which includes the referenced manholes and lines has been procured and awarded and rehabilitation construction is anticipated to be completed by the September 20, 2016, completion deadline.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that during the next reporting period, the rehabilitation work on the manholes and lines will begin and will be completed by September 19, 2016.

3.3.3 Rehabilitation of Approximately 64 Manholes Identified in Buchart-Horn Report

Activities Completed During This Reporting Period

Paragraph V.11.c.(iii) of the Consent Decree requires the rehabilitation of 64 manholes identified in the June 6, 2006, Buchart-Horn study report. Sixty-one of these manholes had previously been rehabilitated. A rehabilitation contract has been procured and awarded for the three remaining manholes.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that the rehabilitation of the remaining three manholes from the Buchart Horn report discussed in Paragraph V.11.c.(iii) will begin during the next reporting period and will be completed by the September 20, 2016, Consent Decree deadline.

3.1.4 Cured-in-Place Pipe (CIPP) Lining of the Wolf River Interceptor Between Demarcation Points W05-120 and W05-130

Activities Completed During This Reporting Period

As stated in previous Semi-Annual Reports, the CIPP lining of the Wolf River Interceptor between manholes WS05-120 and WS05-130 has already been completed.

Activities Anticipated to be Performed During the Next Reporting Period

Not applicable.

Figure 3-1
Priority Rehabilitation Projects Progress

Project	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months								
			Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
Priority Area Projects	V.11.a	9/9/2015	Completed all Year 1 (Appendix E) assessment by Sep. 9, 2015.														
Assess areas identified in Appendix E		9/9/2016	Continued assessment of Year 2 area (including Appendix F)														Will complete all required Year 2 area (Appendix F) by Sep. 9, 2016
Prioritize areas identified in Appendix G		Via implementation of IRP	No work this period														No work anticipated until approval of the IRP
Complete Appendix G rehabilitation projects		Six years and seven months after EPA approval of IRP	No work this period														No work anticipated until approval of the IRP
Interim Priority Areas Project Report		Within 27 months of EPA approval of IRP	No work this period														No work anticipated until IRP has been approved and rehabilitation projects are underway
Final Priority Areas Project Report		Within six months of rehabilitation projects completion	No work this period														No work anticipated until rehabilitation projects are complete
Critical Infrastructure Areas Projects	V.11.b	9/19/2017	Preliminary work associated with the second critical area continued. The first and third critical areas were previously completed.														
Complete Appendix H rehabilitation projects		Within six months of rehabilitation projects completion	No work this period														Continued evaluation and design of work for the second area.
Final Critical Areas Project Report																	Final Critical Areas Project Report will be prepared after the second area is complete.
Priority Assessment Area Projects																	
Nonconnah Interceptor	V.11.c.(i)	9/19/2016	Previously completed.														
Mud Island Manholes	V.11.c.(ii)	9/19/2016	Condition assessment of all manholes and associated gravity mains was completed and a rehabilitation contract was procured.														Rehabilitation of the manholes and associated gravity mains will be rehabilitated by September 20, 2016.
Burchart-Horn Manholes	V.11.c.(iii)	9/19/2016	Completed rehabilitation of 61 of 64 of the manholes. Procured rehabilitation contract for rehabilitation of the remaining 3 manholes.														The remaining three manholes will be rehabilitated by September 20, 2016.
Wolf River Interceptor	V.11.c.(iv)	9/19/2016	Previously completed.														

Section 4

Additional Measures to Maintain Compliance

In addition to the projects and activities described in the previous sections, the measures described below are related to the City's ongoing Consent Decree compliance.

4.1 M.C. Stiles WWTP Foam Study and Outfall Improvements

As described in Paragraph V.12 of the Consent Decree, the City is required to implement the M.C. Stiles Wastewater Treatment Plant (WWTP) Foam Study and Outfall Improvements Work Plan that was included as Appendix I of the Consent Decree. On May 19, 2014, the first amendment of the Consent Decree, which identified a preferred alternative design consisting of a vortex structure and which included a revised construction schedule, was approved and filed with the court.

Activities Completed During This Reporting Period

During this reporting period, the contractor continued construction on the Stiles outfall improvements which included jet grouting the coffer dam and excavating for the vortex structure.

A flood event occurred in Memphis in December 2015/January 2016 which flooded the vortex job site. This resulted in an 18 day delay in construction activity. In addition unforeseen subsoil conditions were encountered during installation of the vortex structure which required additional soil stabilization. This resulted in a delay in completion of the project. The City has submitted a force majeure time extension request to EPA for each of these incidents.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that the City will receive responses from EPA on the force majeure time extension request. It is also anticipated that the project will be completed during the next reporting period.

4.2 State Projects

As outlined in Appendix J of the Consent Decree, the City agreed to spend \$645,000 to implement two state projects. The initial project is the color study which was implemented at a cost of \$290,900 and subsequently a color study report was submitted to TDEC. The City received approval of the Color Study report during this reporting period. The remaining funds, or \$354,100, were spent in accordance with Appendix J on converting the City's sanitary sewer drawings into a GIS format. Moreover, through the end of this reporting period, the City has expended funds significantly beyond the Appendix J \$645,000 requirement. In accordance with the schedule outlined in Appendix J, the City submitted a State Project Completion Report to TDEC summarizing activities associated with the two state projects on March 17, 2016.

4.2.1 State Project A – Color Study

As described in Appendix J of the Consent Decree, the City is required to undertake a color study to assist TDEC in the development of a numerical color permit limit.

Activities Completed During This Reporting Period

In accordance with Appendix J of the Consent Decree, the City of Memphis submitted the finalized Color Study report entitled, *Perception studies to determine receiving-stream color objectionability due to effluent discharge*, to TDEC on October 29, 2014 following its review of the initial study results with TDEC personnel during a meeting held at TDEC's office in Nashville, Tennessee, on July 10, 2014. In light of TDEC's May 19, 2015 letter to the City regarding the Color Study, further discussion with TDEC was necessary regarding the finality of the study and the trigger for submission of the State Project Completion Report. As a result, the City received final approval of the study on March 3, 2016.

Activities Anticipated to be Performed During the Next Reporting Period

With approval of the Color Study report by TDEC, no further action is required and this item is considered to be complete in accordance with the Consent Decree.

4.2.2 State Project B – Geographic Information System

As provided by Appendix J of the Consent Decree, the City continued the transition of its sanitary sewer record information, primarily on paper maps, into an electronic Geographic Information System (GIS). As the City undertook work beyond the State Project \$645,000 commitment, the City has already fulfilled its financial obligations under Appendix J. This work was undertaken by the University of Memphis Center for Applied Earth Science and Engineering Research (CAESER), formerly the Center for Partnerships in Geographic Information Systems (CPGIS) and the Sewer Assessment and Rehabilitation (SARP10) team, the City's consultant Consent Decree Program Management team. CAESER began by converting the paper maps into the electronic format which was then given to SARP10 for further refinement. CAESER also geo-located plan and profile documents based on the area mapped. SARP10 performs a quality control (QC) check on the data received from CAESER and assigned unique asset ID's to facilities based on sewershed boundaries. Sewersheds were grouped into phases for field condition assessment contracts issued by SARP10, and the results from the field were delivered to the SARP10 data team for final review and approval. These field inspections, which contain assessment and GPS locations of the assets, then replaced the original digitized facilities and assessment of the particular asset is considered complete.

Activities Completed During This Reporting Period

Through this reporting period, CAESER finished digitizing the City's WCTS. Digitized assets have been assigned a unique asset ID and uploaded into the master GIS database used by the SARP10 team.

As condition assessment and GPS data is collected in the field, SARP10 replaces the digitized data developed by CAESER with the field verified data. Based on work completed to date, it is estimated that there are approximately 2,800 miles of gravity sewer located within the City limits. In addition, there are approximately 400 miles of tributary areas located outside the City limits. However, the majority of these lines do not service the City and thus by definition are not part of the waste collection and transport system and are not required to be assessed under the CD.

Activities Anticipated to be Performed During the Next Reporting Period

With the City's expenditure of the remaining required funds (\$354,100) no further action is required and this item is considered to be complete in accordance with the Consent Decree. However, it should be noted that the City has expended significantly more than required by

Appendix J for the GIS project. To date, approximately \$1,000,000 has been spent on the GIS project. In addition, while not required by the Consent Decree, at the City's sole discretion it is expending additional funds undertaking additional GIS work beyond the minimum required amount.

4.3 Program Administration Activities

Since entering into the Consent Decree, the City has conducted several administrative activities for the implementation of the Consent Decree program, known as SARP10.

Activities Completed During This Reporting Period

- **Coordination with Emergency Personnel:** Through the condition assessment process, the City and SARP10 staff coordinated weekly with fire and police departments' leadership to keep them abreast of on-going activities and work locations.
- **Coordination with Special Projects:** The SARP10 Team has been working closely with City personnel to identify upcoming City special projects that may require coordination with future sewer improvements. The sewer lines associated with the projects are assessed in advance using CCTV inspection to identify areas in need of repair. The repairs are subsequently conducted to avoid disrupting future construction activities and to avoid patching associated paved areas.
- **Street Paving Projects:** The SARP10 Team has been working closely with City and State personnel to identify upcoming street paving projects. The sewer lines associated with these streets are assessed in advance using CCTV inspection to identify areas in need of repair, and required repairs are subsequently made to avoid patching newly paved areas.
- **Workforce Development:** The City continued to implement its workforce development program. The program is comprised of five-stages: assess, recruit, train, place, and retain. The assessment phase identifies the types of jobs that will be needed to complete the Consent Decree-related work and that could be filled by local personnel. Subsequently, potential candidates are identified and screened. These personnel are provided training as necessary to avail them for potential employment by contractors working on Consent Decree-related projects. As candidates are placed, their progress is monitored.

During this reporting period, 12 new candidates were provided public engagement training as part of the "Green Team," previously mentioned in Section 2.2. As members of the Green Team, the individuals provided a key piece of the SARP10 public engagement project by going door-to-door in the neighborhoods scheduled for condition assessment work to be completed. The Green Team distributed door hangers providing information about smoke testing and proper grease disposal as well as interacted with homeowners whenever possible. The team provided information to over 17,800 homes during this reporting period, bringing the total homes to date to 58,800 that have been visited.

Also as a result of this program and other initiatives, a total of 63 local personnel have obtained full-time employment with SARP10 program companies or assessment and rehabilitation contractors working on the program for the City.

- **Public Relations:** The program continued to conduct public meetings in the assessment areas and will continue these efforts in the future. SARP10 continues to utilize a website to provide

current information, tentative schedules for work, and all assessment and rehabilitation contracts.

- Point repair and manhole raising contracts are ongoing and are detailed in Section 5: Infrastructure and Rehabilitation Projects.

Activities Anticipated to be Performed During the Next Reporting Period

Implementation of the activities described above will continue through the upcoming reporting period.

4.4 Snowden Assessment and Rehabilitation

Although not required at the time by the Consent Decree (except to the extent that there is some minor overlap with the Appendix E and Appendix F areas), the City is undertaking assessment and rehabilitation work in the Snowden area. The assessment area included approximately 87,400 linear feet of pipe and 251 manholes.

Activities Completed During This Reporting Period

During this reporting period, the contractor completed 2,240' of CIPP.

Activities Anticipated to be Performed During the Next Reporting Period

Rehabilitation work in the Snowden area is anticipated to be completed during the next reporting period.

4.5 Loosahatchie Interceptor Assessment

The City is undertaking condition assessment and survey of approximately 48,000 linear feet of the Old Loosahatchie Interceptor and 61,600 linear feet of the New Loosahatchie Interceptor to further understand its structural condition, causes and contributions to SSOs, and to evaluate the need for cleaning and rehabilitation.

Activities Completed During This Reporting Period

The City had previously identified 22,000 linear feet of the Old Loosahatchie Interceptor for CCTV and sonar inspections to assess the condition of this interceptor but has expanded the project to include both the Old and New Loosahatchie Interceptors. The expanded project includes the assessment of 109,600 linear feet of interceptor and surveying manhole rim and pipe invert elevations. During this reporting period, all remaining assessment on the Old Loosahatchie interceptor was completed. In addition to completing the assessment, approximately 9,700 linear feet was cleaned. Additional survey work was also completed during this reporting period to confirm survey data obtained in a previous reporting period to supplement the model currently being calibrated.

Activities Anticipated to be Performed During the Next Reporting Period

The data collected will be used to identify the amount of cleaning necessary on the areas that have been assessed, and to document the condition of both interceptors for further rehabilitation considerations, and explore any capacity alternatives that may be warranted. Additionally, a new series of flow monitors will be installed to supplement the interceptor modeling being conducted.

4.6 Ongoing CSAP Activities

As per the Consent Decree, the CSAP schedule and priority provided for the assessment of approximately 10% of the WCTS on average per year following EPA approval of the CSAP.

Activities Completed During This Reporting Period

Condition assessment work continued on the Phase 3 area consisting of approximately 1.2 million linear feet of gravity mains and associated manholes. During this reporting period, approximately 944,300 LF was assessed. This includes assessment completed towards the Year 2 Priority Area Project (see Section 3.1). The Phase 4 area contracts were procured and consist of approximately 2.14 million linear feet of gravity mains and associated manholes.

Activities Anticipated to be Performed During the Next Reporting Period

Phase 3 area condition assessment is anticipated to be completed during the next reporting period, and Phase 4 area work will begin.

Section 5

Infrastructure Rehabilitation Projects

5.1 Priority Rehabilitation Areas

Pursuant to the Consent Decree and IRP requirements, the City shall complete the rehabilitation projects within the priority areas identified in Appendix G of the Consent Decree within six years and seven months after EPA's approval of the IRP.

Activities Completed During This Reporting Period

The City has continued rehabilitation projects by completing an additional 9 manhole adjustments for buried or inaccessible manholes, bringing the total to 174 and 2 additional point repairs for critical sewer defects (i.e., those determined to have high risk factors for contributing to or causing SSO events) for a total of 12.

Activities Anticipated to be Performed During the Next Reporting Period

Subject to EPA approval of the IRP, it is anticipated that the City will begin undertaking rehabilitation projects in the priority rehabilitation areas of those defects considered the highest priority for causing or that are likely to cause SSOs due to conveyance capacity concerns or structural failures.

5.2 Other Rehabilitation Projects

Although not required by the Consent Decree, the City has started rehabilitation projects in areas of the WCTS outside of the Priority Rehabilitation Areas.

5.2.1 Point Repairs and Manhole Adjustments

Point repair and manhole adjustment contracts have been procured in order for the City to address critical sewer line defects and buried manholes in real-time so as to address defects that could be causing or that are likely to cause SSOs and to also facilitate access for condition assessment field testing activities.

Activities Completed During This Reporting Period

- **Point Repair Contract:** During the current reporting period, a third point repair contract was awarded to complete high priority point repairs identified as part of the condition assessment program. All three point repair contracts are currently ongoing. During this reporting period, approximately 62 point repairs have been completed.
- **Manhole Adjustment Contract:** Two construction contracts have been procured to raise buried manholes to grade so that they can be accessed and assessed. Both manhole adjustment contracts are currently ongoing. During this report period, approximately 213 manholes have been raised.

Activities Anticipated to be Performed During the Next Reporting Period

The three point repair contracts and two manhole adjustment contracts will continue in the next reporting period. No new contracts are anticipated to be awarded in the next reporting period.

5.2.2 Woodview Subdivision

Although not required by the Consent Decree, SARP10 conducted an assessment and rehabilitated a portion of the sanitary sewer system in the Woodview Subdivision northeast of the City's corporate limits. Although this area is outside of the Memphis city limits, its sewer system is connected to the City of Memphis system and has experienced sanitary sewer overflow issues in the past.

A SmartCover monitoring system was installed on one of the manholes susceptible to past surcharges to monitor the water level in the sewer. Since the completion of the rehabilitation, the SmartCover has only recorded one surcharge event and no overflows despite record wet weather events in the months of January and March.

5.2.3 Lick Creek Interceptor CIPP

After condition assessment of the area was completed, the City and the SARP10 team reviewed the findings and determined that the Lick Creek Interceptor from the Overton Square parking garage to Bellevue Blvd. was in need of cured-in-place pipe (CIPP) and manhole coating rehabilitation. While not required at this time by the Consent Decree, the Lick Creek Interceptor CIPP project aids in fulfilling the goals set forth in the document. The interceptor rehabilitation consists of approximately 10,000 LF of 18" - 36" diameter sewer mains and 47 manholes. This project does not include the portion of the interceptor that runs through Overton Park and the Memphis Zoo which is being handled by a separate contract procured by the City.

Activities Completed During This Reporting Period

During this reporting period, the majority of the CIPP lining and manhole cementitious coating was completed. Testing of the rehabilitated assets began. The SARP10 team is actively working with the City of Memphis to coordinate this project with the City's CIPP project through Overton Park and the Memphis Zoo.

Activities Anticipated to be Performed During the Next Reporting Period

SARP10 anticipates that the rehabilitation, testing, and post-construction CCTV and manhole assessments will be completed during the next reporting period.

5.2.4 Loosahatchie Interceptor Rehabilitation

Because of the structural issues and SSO's encountered along a portion of the Old Loosahatchie, the City and SARP10 opted to undertake a rehabilitation project on a 6,000 LF section of the interceptor near Highway 51 and Watkins Street.

Activities Completed During This Reporting Period

A construction contract has been ongoing for the replacement of approximately 6,000 linear feet of pipe on the Old Loosahatchie Interceptor with glass reinforced fiberglass pipe. This project is currently under construction.

Activities Anticipated to be Performed During the Next Reporting Period

Rehabilitation on the Old Loosahatchie interceptor is anticipated to be completed during the next reporting period.

5.2.5 St. Elmo Ave. Pipe Bursting

Through the Phase 3 condition assessment, the sewer downstream of a force main discharge on St. Elmo Ave. was discovered to be in need of repair. Alternatives for rehabilitation were considered and because of site characteristics, pipe bursting was determined to be the best solution. The work consists of six gravity main segments totaling approximately 2,000 linear feet.

Activities Completed During This Reporting Period

During this reporting period, the pipe bursting began on the six segments being rehabilitated.

Activities Anticipated to be Performed During the Next Reporting Period

Pipe bursting is anticipated to be completed during the next reporting period.

Section 6

Past CD Projects and Non-CD Projects

6.1 Projects Completed in Previous Reporting Periods

The following projects have been completed during previous reporting periods and included in previous Semi-Annual Reports:

- Cane Creek and Hickory Hill Pilot Assessment Area (last included in April 2015 – Sept 2015 Semi-Annual Report)

6.2 Other Rehabilitation Projects Completed by City of Memphis

The City routinely completes improvement projects to the WCTS. During the previous reporting period, the City estimates that it has rehabbed 7,580 linear feet of pipe with CIPP and rehabbed 1 lift station. Since September 2012 (effective date of CD), the City has installed 61,300 linear feet of CIPP and rehabbed 5 lift stations.