

SEMI-ANNUAL REPORT

# KANSAS CITY'S OVERFLOW CONTROL PROGRAM

REPORTING PERIOD: JANUARY 1, 2017 TO JUNE 30, 2017



KANSAS CITY  
MISSOURI

# Office of the City Manager

CITY OF FOUNTAINS  
HEART OF THE NATION



KANSAS CITY  
MISSOURI

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September 30, 2017

Greetings,

Please find enclosed the seventh semi-annual report related to Kansas City's overflow control program. This report covers the semi-annual period from January 1, 2017, to June 30, 2017. Pursuant to the Consent Decree, this report has a required submittal date of no later than September 30, 2017.

Additionally, and as required by the Consent Decree, any report, plan, or other submission that the City is required to submit, including documents as required by its current NPDES Permits, shall be signed and certified by an official or authorized agent of the City.

By signing below, I certify under penalty of law that the document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted, and that 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.

Please contact me if you have questions.

Best regards,



Andy Shively, P.E.  
Special Assistant City Manager

cc: Troy Schulte, City Manager, City of Kansas City, Missouri  
Matthew J. Gigliotti, Assistant City Attorney, City of Kansas City, Missouri  
Terry Leeds, Director of Water Services, City of Kansas City, Missouri

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## I. SEMI-ANNUAL REPORT PURPOSE AND SCOPE

On September 27, 2010, The United States District Court for the Western District of Missouri entered a Consent Decree in the case *U.S. vs. The City of Kansas City, Missouri*. The Consent Decree was amended by the parties and approved by the court on January 9, 2015 (Civil Action No. 4:10-cv-0497-GAF).

In accordance with the Consent Decree's Section IX.A, this Semi-Annual Report provides an update on the City of Kansas City, Missouri (City's), efforts to implement control measures defined in Section VII and Appendix A of the Consent Decree. The report reflects the status of program implementation that occurred between January 1 and June 30, 2017.

## II. KANSAS CITY'S OVERFLOW CONTROL PROGRAM

Individual elements of the City's Overflow Control Plan (Plan) became part of an enforceable document with the entry of a Consent Decree in United States District Court. The Consent Decree is a culmination of nearly a decade of negotiation between the City, U.S. Environmental Protection Agency (USEPA) and the Missouri Department of Natural Resources (MDNR) related to reducing overflows. The Consent Decree includes requirements for:

- Capital projects targeted at reducing overflows through Combined Sewer Overflow (CSO) Control Measures and Separate Sewer Overflow (SSO) Control Measures;
- Nine Minimum Controls (NMCs) Plan targeted at operationally reducing and addressing combined sewer overflows through a series of minimum control efforts;
- Capacity, Management, Operation and Maintenance (CMOM) Plan targeted at reducing separate sewer system overflows by adequately operating and maintaining the sewer system;
- Post-Construction Monitoring Plan aimed at long-term monitoring and assessment of overflow reduction;
- Supplemental Environmental Project (SEP) Plan which includes the incorporation of best management practices and green infrastructure at two project locations, along with the initial SEP to reduce septic tank use in sewered areas; and
- Implementation of disinfection at all six wastewater treatment plants.

The City and its regulatory partners have agreed to meet the objectives over a 25-year period from 2010 through 2035. The Plan involves a list of improvements that are structured to eliminate, or capture for treatment, approximately 88 percent of total wet weather flow in the combined sewer system and sanitary sewer overflows during a five-year, 24-hour rainfall event. This implementation is referred to as the Overflow Control Program (OCP).

The occurrence of overflows is not uncommon in combined sewer systems and is authorized in Kansas City pursuant to the terms of two of the City's National Pollutant Discharge Elimination System (NPDES) permits (Westside WWTP and Blue River WWTP). NPDES permits are issued by MDNR to Kansas City and implemented by the Water Services Department (Water Services) at each treatment facility.

### III. KANSAS CITY'S SEWER SYSTEM OVERVIEW

Kansas City began building the basic sewer infrastructure that would allow the city to grow and prosper more than 150 years ago. Some of that infrastructure is still in use today.

Kansas City's overall sanitary sewer system comprises both combined and separate sewer systems totaling approximately 320 square miles. The combined sewer system consists of 58 square miles, primarily located in the oldest areas of the City. During moderate to heavy rainfall events, the system will reach capacity, overflow, and discharge a mixture of wastewater and rainwater directly to receiving streams and rivers. By implementing control measures in accordance with Kansas City's Consent Decree, the occurrence of overflows will be reduced over time.

The remaining 260 square miles of Kansas City's sanitary sewer system are a separate system. A separate sanitary sewer system is only intended to collect and convey wastewater. Rainwater can enter the system, however, through leaky sewer pipe joints, broken sewer pipes, manholes, and illicit stormwater direct connections, causing the system to overload during rainfall events. When this system exceeds its capacity, it too overflows a mixture of wastewater and rainwater. Kansas City does have four constructed sanitary sewer overflows (SSO) which are being eliminated as part of the Overflow Control Program.

### IV. REPORTING PERIOD ACTIVITY

The following specific milestones, as laid forth in Consent Decree Appendices A and D, were met during the reporting period between January 1 and June 30, 2017. In addition to these milestones, the City submitted the 2016 Annual Report to USEPA and MDNR on March 31, 2017.

Work has continued on several other projects that began in previous reporting periods, including the continuation of inflow/infiltration reduction activities in areas north and south of the Missouri River. To date, all Consent Decree schedule milestone dates have been met.

## 1. Appendix A – Performance Measures

### **Middle Blue River Basin**

- Diversion Structures 065 and 073 Consolidation
  - Consent Decree Required Start Date – 2017
  - Actual Start Date – January 2017
- Raise Manhole Rim Elevations
  - Consent Decree Required Start Date – 2017
  - Actual Start Date – May 2017
- Neighborhood Sewer Rehabilitation
  - Consent Decree Required Completion Date – 2017
  - Actual Completion Date – December 2016

### **Lower Blue River Basin**

- Neighborhood Sewer Rehabilitation
  - Consent Decree Required Start Date – 2018
  - Actual Start Date - 2017

### **Brush Creek Basin**

- Neighborhood Sewer Rehabilitation
  - Consent Decree Required Start Date – 2017
  - Actual Start Date – January 2016

## 2. Appendix D – Post-Construction Monitoring Program

Flow monitoring was performed in accordance with the revised CSS Metering Plan approved by USEPA in December 2016.

- Outfall BR056 (partially performed, suspended and will reinstall upon Achievement of Full Operation)
- Outfall BR039 (commenced and ongoing)
- Outfall BR040 (commenced and ongoing)

## V. IMPLEMENTATION OF SEWER SYSTEM REMEDIAL MEASURES AND POST-CONSTRUCTION MONITORING

### a. Post-Construction Monitoring Program

#### i. WATER QUALITY TESTING

The 2017 reporting period is the seventh year of monitoring conducted under the Integrated Water Quality Monitoring Program (IWQMP). Since April 2011, City staff members have conducted sampling and field measurements at 20 smaller wastewater locations. A City contractor has conducted sampling and field measurements at three locations on each the Kansas River and Missouri River. The Kansas City Water Services Department laboratory conducted analysis of the samples. Sampling and analyses were conducted according to the methods prescribed in the Integrated Water Quality Monitoring Program and the associated Quality Assurance Project Plan.

#### ii. FLOW MONITORING PROGRAM

Short-term flow monitoring was conducted by the City's OCP Program Management team at 96 locations for multiple projects, including those listed below, beginning in April 2017. Flow metering durations varied from 90 days to 12 months. Flow monitoring was performed for the following I/I reduction project areas:

- Blue River South Projects 1 and 2 (post construction)
- Round Grove Project
- Line Creek/Rock Creek Basins Area 3 Project
- Birmingham Area 1 Project
- Buckeye Creek
- Private I/I Reduction Program Project Areas

Multiple rain gauges were also installed in the project areas to supplement coverage provided by the City's existing ALERT gauging system.

In addition, flow and rainfall monitoring was performed for 90 days at eight locations in the Brush Creek and Middle Blue River Neighborhood Sewer Rehabilitation Project areas to provide quantification of system flows prior to rehabilitation and after rehabilitation, respectively.

Flow and rainfall monitoring was performed at approximately 58 locations to support project design and hydraulic model recalibration efforts.

## b. Green Infrastructure

### i. ADDITIONAL GREEN INFRASTRUCTURE PILOT PROJECT

Additional green infrastructure pilot projects are in the Lower Blue River (LBR) Basin and the Northeast Industrial District/Gooseneck Creek Basin (NEID/GN) basins. Overall these pilot projects will demonstrate collaboration achieved through public-private partnerships. The projects selected for final design of green infrastructure improvements were at these three locations:

- East High School (NEID/GN Basins)
- Veterans Hospital and Linwood Green Park (LBR Basin)
- Avenues of Life Mattress Recycling Center (LBR Basin)

The development of construction contract documents for three projects is scheduled to be completed by September 2017.

### ii. CONSENT DECREE GREEN INFRASTRUCTURE PROJECTS

For the Turkey Creek/Central Industrial District basins, the concept and preliminary green infrastructure designs were completed during the reporting period and final design commenced. Construction contract documents are scheduled to be completed January 2018.

For the Northeast Industrial District basin, the concept design phase was completed at two of the three sites during the reporting period and are currently in final design phase. One of the concept design site was eliminated because of limited stormwater capture, higher costs, and public opposition. A new third site in downtown Kansas City was selected for concept design. This new site is currently in the concept design phase.

See *Table 1* that starts on page 9 for more information about these two projects.

## VI. COMBINED SEWER OVERFLOW CONTROL MEASURES

The combined sewer system (CSS) makes up approximately 58 square miles of the city's sewer system running from the Missouri/Kansas state line on the west, 85th Street on the south, the Blue River on the east, and the Missouri River on the north. The area served by the CSS is subdivided into six principal basins: Brush Creek, Lower Blue River, Middle Blue River, Northeast Industrial District, Town Fork Creek, and Turkey Creek/Central Industrial District.

Field investigation activities for neighborhood sewer rehabilitation projects are being completed through a City OCP Program Management contract and a city-wide sewer cleaning and closed circuit television (CCTV) inspection contract. The work consists of sewer system network characterization and manhole inspections, sewer cleaning, and CCTV inspection of sewers in the Lower Blue River basin.

The City's 25-year Overflow Control Program is being implemented in three phases, each with a primary control strategy. The early years of the program include repairs to the existing sewer

systems and pilot projects with a focus on developing and evaluating green infrastructure solutions. The middle years of the program will focus on maximizing the capacity within the existing system and analyzing the results of source volume reductions and pilot projects. The later years of the program will address necessary improvements to the City's wastewater treatment plants and construction of structural storage solutions which are currently planned as deep storage tunnels.

The status of the projects in the combined sewer system basins is summarized in *Table 1*. During the reporting period, the combined sewer system had 19 active projects. Two (2) projects completed pre-design during this reporting period, meaning that the Request for Proposal/Qualification was completed and contracts with Design Professionals were negotiated and approved. Eight (8) projects were under design, and nine (9) projects were either advertising for construction bids, or under construction during the reporting period.

Table 1: Project Status - Combined Sewer System Basin (through June 30, 2017)

\*Included in a request for modification sent to the Federal Government on November 14, 2016, to extend the completion date for 6 projects in order to coordinate construction sequencing of projects, integrate other public infrastructure improvements, select preferred project sites and adjust scope of projects to optimize public benefits.

| COMBINED SEWER SYSTEM             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Pre-Design                                                     | Design                  | Construction                                      | CD Due Date |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|---------------------------------------------------|-------------|
| Project Name                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                                                   |             |
| Brush Creek Basin                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                         |                                                   |             |
| Neighborhood Sewer Rehabilitation | Neighborhood sewer rehabilitation work in the Brush Creek Basin has been split into two projects due to the size of the basin. These projects are being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. The projects involve identification of sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes that are 12-inches and smaller in diameter within the collection system. Work also includes the rehabilitation of sewer pipes and manholes in a separate sewer system area located within the Brush Creek basin to reduce I/I flows contributing to SSOs. | 100%                                                           | <u>90%</u><br>Oct. 2017 | Area 1:<br>April 2019<br><br>Area 2:<br>July 2019 | 12/31/2020  |
| Lower Blue River Basin            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                         |                                                   |             |
| Neighborhood Sewer Rehabilitation | Neighborhood sewer rehabilitation work in the Lower Blue River Basin is being implemented to improve the reliability and performance of the combined sewer collection system and reduce basement backups. The projects involve identification of sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes that are 12-inches and smaller in diameter within the collection system.                                                                                                                                                                                                                                                 | 100%                                                           | <u>0%</u><br>Mar. 2017  | October 2021                                      | 12/31/2021  |

| COMBINED SEWER SYSTEM                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Pre-Design                                                     | Design                 | Construction                                                                   | CD Due Date     |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------|-----------------|
| Project Name                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Percent Complete through 06/30/2017<br>Planned Completion Date |                        |                                                                                |                 |
| Middle Blue River Basin                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                |                        |                                                                                |                 |
| Distributed Storage: Outfall 059       | Green infrastructure solutions are being implemented to reduce combined sewer overflows at Outfall 059. Three construction contracts have been issued for completion of the work.<br><i>(1) Construction for Phase 1 and 2 is 100% complete and Phase 3 is 85% complete.</i>                                                                                                                                                                                                                                                                                                                                               | 100%                                                           | 100%                   | <u>(1) 85%</u><br>Nov. 2017                                                    | 12/31/2017      |
| Distributed Storage: Outfall 069       | Green infrastructure solutions are being implemented to reduce combined sewer overflows at Outfall 069. Three construction contracts have been issued for completion of the work.<br><i>(2) Construction for Phase 1 and 2 is 100% complete and Phase 3 is 90% complete.</i>                                                                                                                                                                                                                                                                                                                                               | 100%                                                           | 100%                   | <u>(2) 90%</u><br>Nov. 2017                                                    | 12/31/2017      |
| Sewer Consolidation: Outfall 063       | The project involves the consolidation of piping, disconnection of inlets from the combined sewer system, and elimination of 15 of 18 diversion structures. The overall goal is to eliminate typical year overflows at Outfall 063 and reduce the number of overflows at Outfall 064.The project scope has been expanded to achieve full separation of storm inlets and sanitary sewers and integration of water main replacement work. Due to the size of the project, it has been broken into two phases to facilitate construction. For both Phase 1 and Phase 2, design work is complete and construction has started. | 100%                                                           | 100%                   | Phase 1:<br><u>40%</u><br>June 2018<br><br>Phase 2:<br><u>20%</u><br>June 2018 | *<br>12/31/2019 |
| Sewer Separation: Outfalls 066 and 067 | Design documents are being prepared for separation of approximately 270 acres of the combined system. The Consent Decree does not mandate separation of combined sewers upstream of Outfall 066; however, this 10-acre area was added to the Project because of its proximity to Outfall 067, its small size, and the relatively small number of known stormwater inflow connections. Upon completion of this separation work, both outfalls will become stormwater outfalls only.                                                                                                                                         | 100%                                                           | <u>80%</u><br>Aug 2017 | <u>0%</u><br>Nov 2017                                                          | 12/31/2019      |

| COMBINED SEWER SYSTEM                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pre-Design                                                     | Design                  | Construction            | CD Due Date     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|-------------------------|-----------------|
| Project Name                                                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                         |                 |
| Middle Blue River Basin, continued                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                |                         |                         |                 |
| Sewer Separation: Diversion Structure 099                            | Design documents were prepared for the separation of 50-acres of combined sewers upstream of Diversion Structure 099. Green infrastructure best management practices (BMPs) have been incorporated to improve water quality of the separated stormwater flows. As a result of this project, Diversion Structure 099 will be eliminated. This project was combined with the adjacent Sewer Consolidation: Outfall 063 project into a single construction project. | 100%                                                           | 100%                    | <u>40%</u><br>Dec. 2017 | *<br>12/31/2017 |
| Blue River Trailhead at Blue Parkway – Alternate SEP 3 – SLBE-WSDEPS | The Blue River Trailhead at Blue Parkway is an alternate Supplemental Environmental Project (SEP) that fulfills the requirements for the Supplemental Environmental Project as required by the Federal Consent Decree. The project consists of a new trailhead that will include tree plantings along the Blue River, stormwater BMPs to treat runoff from the bridge and road, and a small parking lot area.                                                    | 100%                                                           | <u>50%</u><br>Sept 2017 | <u>0%</u><br>May 2018   | 9/27/2018       |
| Relief Sewer: Diversion Structure 068 to Blue River                  | The project is being designed to reduce combined sewer overflows by eliminating typical year overflows at Outfall 068. A conceptual alternatives evaluation was completed. A new open storage basin will be constructed in lieu of a sewer relief.                                                                                                                                                                                                               | 100%                                                           | <u>50%</u><br>Mar. 2018 | <u>0%</u><br>Mar. 2020  | 12/31/2020      |

| COMBINED SEWER SYSTEM                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pre-Design                                                     | Design                  | Construction             | CD Due Date     |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|--------------------------|-----------------|
| Project Name                                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                          |                 |
| Northeast Industrial District Basin                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                |                         |                          |                 |
| Sewer Separation: Diversion Structure 006                | The project involves separation of 260 acres of combined sewer system by constructing approx. 12,600 feet of new sanitary sewers and eliminating Diversion Structure 006. It will eliminate typical year overflows at Outfall 006. The project now requires the inclusion of a pump station and force main and has been separated into three (3) construction projects: 1) Sewer Separation; 2) Private Sewer Separation; and 3) Pump Station and Force Main. | 100%                                                           | <u>100%</u>             | <u>85%</u><br>Sept. 2017 | *<br>12/31/2017 |
| NEID Green Infrastructure Pilot Project                  | This project is being designed to reduce combined sewer overflows and provide aesthetic, social and economic enhancements within the Northeast Industrial District. The design will include a tiered extended detention facility with wetland vegetation, permeable pavement, bioswales and an open channel for conveyance.                                                                                                                                   | 100%                                                           | <u>20%</u><br>June 2018 | <u>0%</u><br>May 2020    | 12/31/2020      |
| Gooseneck Arch Sewer Gates and Pump Station Improvements | The project consists of the design of an adjustable crest gate inside a new gate structure situated over the 18 ft. by 21 ft. arch sewer to provide in-line storage of a combined sewer flow utilizing a real-time control (RTC) system and a new 4-MGD submersible pump station. The pump station will deliver the stored volume to the Blue River Interceptor through a new force main.                                                                     | 100%                                                           | <u>100%</u>             | <u>0%</u><br>May 2019    | *<br>12/31/2019 |
| Neighborhood Sewer Rehabilitation                        | This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. This project involves field investigations to identify and quantify sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes 12-inch and smaller in diameter within the collection system.                                                                              | 100%                                                           | <u>30%</u><br>Mar. 2018 | <u>0%</u>                | 12/31/2020      |

| COMBINED SEWER SYSTEM                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Pre-Design                                                     | Design                  | Construction             | CD Due Date |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|--------------------------|-------------|
| Project Name                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                          |             |
| Town Fork Creek Basin                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                |                         |                          |             |
| Neighborhood Sewer Rehabilitation              | This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. This project involves identification of sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes 12-inch and smaller in diameter within the collection system.                                                                                                                                           | 100%                                                           | <u>100%</u>             | <u>60%</u><br>Mar. 2018  | 12/31/2018  |
| Turkey Creek/Central Industrial District Basin |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                |                         |                          |             |
| CID In-Line Gates at Santa Fe Pump Station     | The project is being performed to modify existing sluice gates at the Santa Fe Pump Station as necessary to facilitate the storage of wet weather flows in the existing upstream combined sewer system and to reduce the number of combined sewer overflows from Outfall 003 to the Missouri River. Construction documents were prepared for modification of the in-line gates, including the addition of real-time SCADA control capabilities and establishment of gate operational criteria. | 100%                                                           | <u>100%</u>             | <u>80%</u><br>Sept. 2017 | 12/31/2017  |
| Green Infrastructure Pilot Project             | This green infrastructure pilot project is being designed to reduce combined sewer overflows and to provide aesthetic, social and economic enhancements within the Central Industrial District. The design work includes the conceptual, preliminary, and final design; preparation of construction contract documents; bid phase services; and the preparation of opinions of probable cost.                                                                                                  | 100%                                                           | <u>50%</u><br>Jan. 2018 | <u>0%</u><br>April 2020  | 12/31/2020  |
| Neighborhood Sewer Rehabilitation              | This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. Two construction contracts will be issued for rehabilitation of manholes and sewer pipes that are 12-inches and smaller in diameter.                                                                                                                                                                                                                    | 100%                                                           | <u>0%</u><br>June 2018  | <u>0%</u><br>Aug. 2020   | 12/31/2021  |
| In-Line Storage: OK Creek Gates                | This project involves the construction of a new sluice gate structure, with automatic control from water-level sensors upstream of the structure, to store up to 20 million gallons of combined sewer flow in the existing 17 ft. high x 18 ft. wide double-box culvert.                                                                                                                                                                                                                       | 100%                                                           | <u>100%</u>             | <u>5%</u><br>July 2018   | 12/31/2018  |

| COMBINED SEWER SYSTEM               |                                                                                                                                                                                  | Pre-Design                                                            | Design           | Construction    | CD Due Date |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------|-----------------|-------------|
| Project Name                        | Description                                                                                                                                                                      | <u>Percent Complete through 06/30/2017</u><br>Planned Completion Date |                  |                 |             |
| Westside WWTP                       |                                                                                                                                                                                  |                                                                       |                  |                 |             |
| Westside Wastewater Treatment Plant | This project involves wet weather treatment and disinfection sized for 32 MGD. A facility plan for non-OCP work will also be completed. Conceptual design is currently underway. | 100%                                                                  | 10%<br>June 2018 | 0%<br>Oct. 2020 | 12/31/2020  |

## VII. SEPARATE SEWER OVERFLOW CONTROL MEASURES

Kansas City's Separate Sewer System (SSS) comprises nine drainage basins covering 260 square miles of service area. The four SSS basins north of the Missouri River are the Northern and Northwestern watersheds and the Line Creek/Rock Creek and Birmingham/Shoal Creek basins. The five SSS system basins south of the Missouri River are the Blue River Central, Blue River North, Blue River South, Little Blue River, and Round Grove basins.

Much of the early projects and program strategy in the separate sewer basins involve reducing the amount of inflow and infiltration (I/I) entering the SSS to reduce overflows from the system. This reduction in I/I is achieved by reducing or eliminating points of direct inflow into the system and reducing infiltration through collection system defects. A combination of wet weather storage and treatment will be utilized to address system needs as outlined in the Plan.

Field investigation activities for the I/I reduction projects are being completed through a City OCP Program Management contract and city-wide Sewer Cleaning and Closed-Circuit Television (CCTV) Inspection contracts. The work consists of sewer system network characterization and manhole inspections, sewer cleaning, and CCTV inspection of sanitary sewers in the Blue River Central, Blue River North, Blue River South, Line Creek/Rock Creek, Round Grove, and Little Blue River separate sewer system basins.

The status of the projects in the SSS basins is summarized in *Table 2*. The separate sewer system has 13 active projects. Two (2) projects completed pre-design during the reporting period, meaning that the Request for Proposals/Qualifications was completed and the contract with Design Professional was negotiated and approved. Two (2) projects are currently in design, and nine (9) projects are currently advertising for construction bids, or construction was underway, during the reporting period.

Table 2: Project Status – Separate Sanitary Sewer System Basin (through June 30, 2017)

\*Included in a request for modification sent to the Federal Government on November 14, 2016, to extend the completion date for 6 projects in order to coordinate construction sequencing of projects, integrate other public infrastructure improvements, select preferred project sites and adjust scope of projects to optimize public benefits.

| SEPARATE SANITARY SEWER SYSTEM |                                                                                                                                                                                                                                               | Pre-Design                                                     | Design | Construction            | CD Due Date |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------|-------------------------|-------------|
| Project Name                   | Description                                                                                                                                                                                                                                   | Percent Complete through 06/30/2017<br>Planned Completion Date |        |                         |             |
| Blue River Central Basin       |                                                                                                                                                                                                                                               |                                                                |        |                         |             |
| I/I Reduction Area 1           | The project consists of field investigations, data analysis, preparation of construction contract documents, and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.    | 100%                                                           | 100%   | <u>5%</u><br>Sept. 2018 | 12/31/2018  |
| I/I Reduction Area 2           | The project consists of field investigations, data analysis, preparation of construction contract documents, and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.    | 100%                                                           | 100%   | <u>5%</u><br>Sept. 2018 | 12/31/2018  |
| Blue River North Basin         |                                                                                                                                                                                                                                               |                                                                |        |                         |             |
| I/I Reduction                  | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction. | 100%                                                           | 100%   | <u>15%</u><br>Feb. 2018 | 12/31/2018  |

| SEPARATE SANITARY SEWER SYSTEM          |                                                                                                                                                                                                                                                                                                                                                      | Pre-Design                                                     | Design                  | Construction            | CD Due Date |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|-------------------------|-------------|
| Project Name                            | Description                                                                                                                                                                                                                                                                                                                                          | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                         |             |
| Blue River South Basin                  |                                                                                                                                                                                                                                                                                                                                                      |                                                                |                         |                         |             |
| 87th Street Pump Station Rehabilitation | The project consists of rehabilitation of the pump station to restore capacity to 85 MGD. Work being performed includes replacement of bar screens; duty pumps and motors; controls; and multiple structural, mechanical, and electrical modifications to the pump station.                                                                          | 100%                                                           | 100%                    | <u>95%</u><br>Aug. 2017 | 12/31/2017  |
| I/I Reduction - Areas 1 and 2           | The project consists of the construction of approximately 5,000 feet of sewer replacement, installation of approximately 45,000 linear feet of CIPP, 800 feet of point repairs, 750 service lateral connections, 16,000 feet of service line CIPP, 2 new manholes, and manhole rehabilitation to achieve targeted infiltration and inflow reduction. | 100%                                                           | 100%                    | <u>90%</u><br>Apr. 2018 | 12/31/2021  |
| I/I Reduction Area 3                    | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.                                                                                                        | 100%                                                           | 100%                    | <u>5%</u><br>May 2018   | 12/31/2021  |
| I/I Reduction Area 4                    | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.                                                                                                        | 100%                                                           | <u>80%</u><br>Nov. 2017 | <u>0%</u><br>Nov. 2019  | 12/31/2021  |
| I/I Reduction Area 5                    | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.                                                                                                        | 100%                                                           | 100%                    | <u>0%</u><br>Nov. 2018  | 12/31/2021  |

| SEPARATE SANITARY SEWER SYSTEM                    |                                                                                                                                                                                                                                                                                                                                                                  | Pre-Design                                                     | Design                  | Construction           | CD Due Date     |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|------------------------|-----------------|
| Project Name                                      | Description                                                                                                                                                                                                                                                                                                                                                      | Percent Complete through 06/30/2017<br>Planned Completion Date |                         |                        |                 |
| Line Creek/Rock Creek                             |                                                                                                                                                                                                                                                                                                                                                                  |                                                                |                         |                        |                 |
| I/I Reduction Area 1                              | The project consists of the field investigations (smoke testing and CCTV for 148,200 LF, dyed water testing for up to 50 locations, and analysis of 680 manholes), data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.   | 100%                                                           | 100%                    | <u>0%</u><br>Feb. 2018 | 12/31/2023      |
| I/I Reduction Area 2                              | The project consists of the field investigations (smoke testing and CCTV for 227,780 LF, dyed water testing for up to 20 locations, and analysis of 1,180 manholes), data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction. | 100%                                                           | 100%                    | <u>0%</u><br>Nov. 2018 | 12/31/2023      |
| I/I Reduction Area 3                              | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.                                                                                                                    | 100%                                                           | <u>0%</u><br>Oct. 2018  | <u>0%</u><br>Jan. 2022 | 12/31/2023      |
| Round Grove                                       |                                                                                                                                                                                                                                                                                                                                                                  |                                                                |                         |                        |                 |
| Round Grove Pumping Station Capacity Improvements | This project involves expansion of the Round Grove Pump Station to provide wet weather capacity. The design phase will determine how best to expand the pump station capacity to meet the requirements of the Consent Decree. *                                                                                                                                  | 100%                                                           | <u>10%</u><br>Jan. 2019 | <u>0%</u><br>Aug. 2021 | *<br>12/31/2018 |
| Little Blue River                                 |                                                                                                                                                                                                                                                                                                                                                                  |                                                                |                         |                        |                 |
| I/I Reduction Area 1                              | The project consists of the field investigations, data analysis, preparation of construction contract documents and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction.                                                                                                                    | 100%                                                           | <u>0%</u><br>June 2018  | <u>0%</u><br>July 2021 | 12/31/2021      |

#### a. Private Inflow/Infiltration Reduction Program

The City currently has a private I/I reduction program in conjunction with public sewer I/I reduction projects. The focus of the program is to disconnect illicit private I/I sources where it is cost effective to remove the excessive I/I flows into the separate sewer system. Approximately 70,000 properties are targeted for private I/I evaluation in the City's SSS area.

Through June 2017 three design professional firms continued to perform private I/I reduction in the following SSS basins: Birmingham, Blue River Central, Blue River South, Line Creek/Rock Creek, Middle Blue River (small pilot area), and Round Grove (small pilot area). They also continued to perform private I/I reduction in Brush Creek in a separate sewer area upstream of Mission Hills. In May 2017, each of the three design professional firms received their notice to proceed on contract renewal and in June 2017 staff members attended customer service training. Through June 2017 each of the design professional firms continued to perform building evaluations, identify illicit connections and coordinate disconnections.

Significant public outreach efforts have continued to educate residents about the voluntary program and encourage eligible property owners to participate in building plumbing evaluations. Public meetings were held and project team members have made presentations at neighborhood association meetings. In addition, door-to-door outreach was conducted along with personal phone calls. Through June 30, 2017, approximately four public meetings and neighborhood association presentations have taken place and more than 4,400 properties have received door-to-door outreach or a phone call.

Currently the program has 10 plumbers under "indefinite delivery/indefinite quantities (ID/IQ) facility maintenance" contracts. In March, another RFQ was issued to bring additional plumber contractors on board. Ten new plumbers submitted qualifications and are in the process of executing contracts with the City. Through June 30th, 2017 the ten existing plumbers performed disconnections on over 450 parcels.

## VIII. SCHEDULED ACTIVITIES FOR THE NEXT REPORTING PERIOD

The activities listed below are expected to occur during the next reporting period between July 1 and December 31, 2017. This list, however, should not be interpreted as a complete description of all activities that will occur in the second half of 2017. Certain Consent Decree and OCP activities (e.g., program management, NMC, CMOM, public participation, project planning, and data management) will continue for the duration of the Consent Decree, but are not explicitly discussed in this section.

- Requests for Qualifications/Proposals for the following OCP projects are scheduled to be developed and advertised for selection of design professionals:
  - I/I Reduction: Birmingham Project Area 2
  - I/I Reduction: Line Creek/Rock Creek Project Area 4
  - I/I Reduction: Little Blue River Basin Project Area 2
- Requests for bid proposals will be advertised for selection of construction contractors for the following OCP projects:
  - NEID and Lower Blue River Additional Green Infrastructure Demonstration Projects
  - SEP 3 Blue River Trailhead Parking Lot
  - Sewer Separation: Outfalls 066 & 067
  - In-Line Storage: Gooseneck Arch Sewer Gate and Pump Station
  - Neighborhood Sewer Rehabilitation: Brush Creek
  - I/I Reduction: Blue River South Basin Project Areas 4 and 5
- The City will issue a Notice to Proceed to Design Professionals or Construction Contractors for the following OCP projects:
  - Diversion Structures 065 and 073 Consolidation (Formally Outfall 056; design)
  - Neighborhood Sewer Rehabilitation: Turkey Creek/CID (design)
  - Green Collar Jobs & Workforce Development
  - Round Grove Pump Station Improvements (design)
  - Neighborhood Sewer Rehabilitation: Brush Creek (construction)
- Work will continue on implementing the City's Private Inflow/Infiltration Reduction Program in conjunction with other I/I reduction projects in the SSS.
- Work will continue on the active OCP projects shown in Table 1 and Table 2 that were not completed in 2017.
- Flow monitoring will continue in accordance with the CSS Metering Plan approved by USEPA in December 2016.



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