Kansas City's
Overflow Control Program

ANNUAL REPORT

Reporting Period: January 1, 2012 through December 31, 2012

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Kansas City's Overflow Control Program

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March 29, 2013

To the reader:

Please find enclosed the second annual report related to Kansas City's Overflow Control Program. This report covers the annual period from January 1, 2012 to December 31, 2012. Pursuant to the Consent Decree, this report has a required submittal date no later than March 31, 2013.

Additionally, and as required by the Consent Decree, any report, plan, or other document that the City is required to submit, including reports, plans or other documents that the City is required to submit 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.

Thank you for your participation and cooperation in this important program. If you have any questions, please contact the undersigned at (816) 513-0203.

Sincerely,

Terry Leeds
Director, Water Services Department, City of Kansas City, Missouri

cc: Honorable Sly James, Mayor, City of Kansas City
Missouri Members of City Council, City of Kansas City, Missouri
Troy Schulte, City Manager, City of Kansas City, Missouri
Matthew J. Gigliotti, Assistant City Attorney, City of Kansas City, Missouri
Mark P. Jones, Assistant City Attorney, City of Kansas City, Missouri

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

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ANNUAL STATUS REPORT PURPOSE AND SCOPE

On September 27, 2010, the Consent Decree and its associated Appendices related to reducing overflows in Kansas City's sewer system came into effect. In accordance with Section IX.B. of the Consent Decree, this document constitutes the second annual report to be submitted to regulatory agencies and covers the reporting period between January 1, 2012, and December 31, 2012. The second semi-annual report, which covered the reporting period from January 1, 2012, through June 30, 2012, was submitted on September 19, 2012.

Pursuant to the Consent Decree, the semi-annual and annual reports differ in content. The semi-annual status report is used to update the regulatory agencies as to Kansas City's progress on implementing control measures defined in Appendix A of the Consent Decree, while the annual status report is used to update the regulatory agencies on all other Consent Decree activity.

KANSAS CITY'S SEWER SYSTEM

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 of both combined and separate sewer systems. A combined sewer system (CSS) is a single sewer system that carries both wastewater and stormwater. Kansas City has 58 square miles of combined sewers. Typically, these systems are in the oldest areas of the City and at times struggle to carry the large volumes of stormwater that now run off from our urban landscape. During moderate to heavy rainfall events, the system will reach capacity, overflow, and discharge a mixture of wastewater and stormwater directly to our streams and rivers. Although these overflows will be reduced over time, the discharge of combined sewer overflows (CSOs) is not uncommon in CSS and is allowed under a National Pollutant Discharge Elimination System (NPDES) permit issued to Kansas City's Water Services Department (WSD) by the Missouri Department of Natural Resources.

The remaining 260 square miles of Kansas City's sanitary sewer system are considered a separate system. A separate sanitary sewer system (SSS) is designed to collect only wastewater. However, groundwater can enter the system through joints, broken pipes, manholes and unpermitted direct connections causing the system to overload during rain events. When this system exceeds its capacity, it too overflows a mixture of wastewater and stormwater. Kansas City does have one constructed Sanitary Sewer Overflow (SSO), which will be eliminated as part of the Overflow Control Program.

KANSAS CITY'S OVERFLOW CONTROL PROGRAM

Individual elements of the Overflow Control Program (OCP) became part of an enforceable document on September 27, 2010, 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, the Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (MDNR) related to reducing overflows. The Consent Decree includes requirements targeted at capital construction, management, operations and maintenance of the City's sewer systems.

Kansas City's OCP was developed to meet regulatory requirements related to reducing overflows from the CSS and preventing overflows from the separate sewer system. The City and its regulatory partners have agreed to meet those objectives over a 25-year time period by completing a planned list of improvements targeted at capturing for treatment 88 percent of combined sewer flows and eliminating sanitary sewer overflows during a five-year rainfall event.

Consent Decree components include:

- Capital Projects targeted at reducing overflows through Combined Sewer Overflow (CSO) Control Measures and Separate Sewer Overflow (SSO) Control Measures;
- Nine Minimum Controls (NMC) Plan targeted at operationally reducing and addressing CSOs through a series of minimum control efforts;
- Capacity Management Operation and Maintenance Plan targeted at reducing overflows by adequately operating and maintaining the sewer system;
- Post Construction Monitoring Plan targeted at long-term monitoring and assessment of overflow reduction;
- Supplemental Environmental Project targeted at reducing septic system use in the sewered area;
- Installation of Disinfection Technology at Wastewater Treatment Plants.

REPORTING PERIOD ACTIVITY

The following specific scheduled milestones, as laid forth in Consent Decree Appendices A, D, and F, were met on schedule during the reporting period from January 1, 2012 through December 31, 2012. Annual activities associated with Appendices B, C and E that were met during the reporting period are discussed in the in their respective sections of the report.

Appendix A – Performance Measures

- Middle Blue River Basin
  - Distributed Storage: Outfall 069
    - Consent Decree Required Start Date- 2012
    - Actual Start Date- July 2011
  - Distributed Storage: Outfall 059
    - Consent Decree Required Start Date- 2012
    - Actual Start Date- July 2011
  - Small Sewer Rehabilitation: Middle Blue River (outside the Middle Blue River Basin Green Solutions Pilot Project area)
    - Consent Decree Required Start Date- 2014
    - Actual Start Date- July 2011
- Turkey Creek
  - Pump Station Improvements
    - Consent Decree Required Start Date- 2014
    - Actual Start Date- 2012

- South of the Missouri River Separate Sewer System
  - Inflow and Infiltration Reduction: South of the Missouri River
    - Consent Decree Required Start Date – 2012
    - Actual Start Date- September 2011
  - Storage: 87th Street Pump Station (Phase 1)
    - Consent Decree Required Start Date- 2012
    - Actual Start Date- August 2011
  - Force Main: Round Grove
    - Consent Decree Required Start Date- 2012
    - Actual Start Date- August 2011

Appendix D – Post Construction Monitoring Program

- Implement Flow Monitoring Program for Outfall BR061
  - Consent Decree Required Implementation Date – 2012
  - Actual Implementation Date – November 14, 2012
- Implement Flow Monitoring Program for Outfall BR062
  - Consent Decree Required Implementation Date – 2012
  - Actual Implementation Date – November 20, 2012
- Implement Flow Monitoring Program for Outfall BR064
  - Consent Decree Required Implementation Date – 2012
  - Actual Implementation Date – November 14, 2012

Appendix F – Disinfection Technology at Wastewater Treatment Plants

- Installation of Disinfection Technology at Birmingham Wastewater Treatment Plant
  - Consent Decree Required Installation Date – January 24, 2012
  - Disinfection On Line – January 19, 2012
- Installation of Disinfection Technology at Todd Creek Wastewater Treatment Plant
  - Consent Decree Required Installation Date – December 31, 2013
  - Disinfection On Line – August 16, 2012

DATA MANAGEMENT

Managing the large amount of data generated from the OCP program is a primary focus of WSD. In 2012, the program team worked with GIS and the City's IT department to develop protocols and initiate updates related to field information collected during OCP development and implementation. A database was used to capture OCP data management and field inspections from basin engineers during the plan development phase. The purpose of the transition is to organize all the data collected and then update, move, and transition this data from OCP to WSD production systems for their long term use in the GIS database. Over 30 data sets collected during the plan development phase are currently being transitioned, including:

- Flow metering catchment polygons and flow metering data
- Outfall, diversion structure and flow splitter locations and data
- Storm inlet inspections
- Consent decree related improvements
- Gauge and radar rainfall measurements
- SWMM modeling nodes and points
- Field photographs

In addition, WSD began initial implementation of a SharePoint dashboard and the PublicWay data management systems during the reporting period.

SharePoint

An internal SharePoint electronic dashboard strategy was developed and has been implemented for Consent Decree projects contained in WSD's 5-year Capital Improvements Program. This system was modeled after similar systems developed for Louisville's Metropolitan Sewer District and Cleveland's Northeast Ohio Regional Sewer District. It facilitates electronic file storage on an individual project basis and also serves as a hub for programmatic data storage elements. Training for WSD and program team staff was held during October 2012.

The program team has been working to upload OCP documents to the site and continue to add new documents as they are created. The site is intended to be used by all project managers and will most likely be expanded to include all WSD capital projects over time.

PublicWay

PublicWay, an interactive software system, has been developed to access information from Hansen, GIS, and 311 databases and display the information on a single Google Earth based platform. With the proof of concept completed in the fall of 2012, work shifted to building translations and reports focused on providing information to WSD operation staff related to planning and monitoring cleaning operations in WSD's wastewater system.

PublicWay will allow operations staff to see exactly where and when cleaning was previously completed, where cleaning needs to occur in advance of upcoming capital projects, and detailed work crew assignments associated with those operations. With the ability to overlay 311 citizen action reports, operations crews can also evaluate the effect of cleaning on customer satisfaction in areas such as basement backup reports. The system will also allow links to sewer video so that WSD engineering staff can quickly access information for system condition assessment.

In 2013, work will continue to provide better information to operations crews. Work on integrating capital planning efforts and utility coordination as part of WSD's expanding capital program is expected to begin.

PUBLIC PARTICIPATION

Several public involvement activities for the OCP have been undertaken during the reporting period. Presentations about the OCP made to various organizations include:

- American Council of Engineering Companies, Kansas City – February 14, 2012
- Environmental and Water Resources Institute, Kansas City – March 7, 2012
- Northland Regional Chamber of Commerce – March 8, 2012
- Middle Blue River Basin Green Solutions Pilot Project, Rain Barrel Workshop – April 28, 2012
- Middle Blue River Basin Green Solutions Pilot Project, Rain Barrel Workshop – May 3, 2012
- Southtown Council – May 17, 2012
- Shepherd's Center – May 18, 2012
- Dodson Industrial District – June 26, 2012
- Environmental Excellence Business Network – June 29, 2012
- South Kansas City Alliance – August 15, 2012
- Southern Communities Coalition – September 19, 2012
- Marlborough Coalition – September 25, 2012
- Blue River Wastewater Treatment Plant Groundbreaking Ceremony, October 5, 2012
- Center Planning and Development, October 30, 2012
- CityStat presentation, November 6, 2012
- Birchwood Homes Association, November 15, 2012
- Dodson Industrial District November 15, 2012
- International Erosion Control Association- Great Rivers Conference (IECA) presentation and bus tour, November 13-15, 2012
- In addition, representatives from Congressman Emanuel Cleaver have met twice with the WSD Director and program staff to receive updates about the program

As part of the OCP Assistance Contract with Burns & McDonnell, a review of the existing OCP website (www.kcmo.org/wetweather) and related websites was conducted during 2011. The purpose of the review was to identify needed updates, while also determining how the website should be organized when moving forward into plan implementation. During the 2012 reporting period, work continued on updating and combining related OCP websites. The revised website will act as the sole location of all information relating to the OCP. The new website is in development for WSD and roll out is expected in spring 2013.

Peer Exchange Program

In September, WSD hosted Mr. John Phillips, Water Quality Planner/Program Manager for King County, Washington, as part of The Conservation Fund's Green Infrastructure Peer Exchange Program. King County, Washington is a regional wastewater utility serving 17 cities in western Washington State, including the City of Seattle. The purpose of Mr. Phillips's visit was to share ideas and information between utilities regarding green infrastructure improvements, particularly in the combined sewer system area.

During his two-day visit, WSD conducted a variety of events including a session for regional water quality stakeholders held at Mid-America Regional Council (MARC). Mr. Phillips also toured the 18Broadway project in downtown Kansas City, green infrastructure improvements along the Troost Bus Rapid Transit line near 31st and Troost, the Middle Blue River Basin Green Solutions Pilot Project, and WSD's Birmingham Wastewater Treatment Plant Tree Farm. Additionally, WSD hosted three round table question and answer sessions with City staff related to green infrastructure programs in both cities.

The Conservation Fund's Peer Exchange Program provides grant funding to utilities to offset travel costs and encourages information exchange related to green infrastructure. As part of the Peer Exchange Program, Kansas City will now be eligible to travel to other peer cities in the program.

Middle Blue River Basin Green Solutions Pilot Project Video

In October, a video showcasing the Middle Blue River Basin Green Solutions Pilot Project was produced. Working with the city council and Mayor's office, the video includes testimonials from Mayor Sly James and Mayor Pro-Tem Cindy Circo. The video also features interviews with three neighborhood representatives and highlights work conducted in the pilot project area as part of U.S. EPA's grant work. The video was shown at two conferences held in October and November and is available online at http://youtube/1Sh2zC86qWE.

WEFTEC

WSD Director Terry Leeds was invited to present as a guest lecturer in a day long workshop as part of the Water Environment Federation's Annual Technical Exhibition and Conference (WEFTEC) fall conference in September. The lecture focused on programmatic issues and lessons learned from implementing green infrastructure stormwater solutions. Based on the work done in the Marlborough neighborhood, Mr. Leeds focused on green practices in rights-of-way, giving a candid and comprehensive look at the lessons learned while working on the Middle Blue River Basin Green Solutions Pilot Project.

Urban Water Sustainability Leadership Conference

Kansas City was selected as a Spotlight City by the U.S. Water Alliance and presented at the Urban Water Sustainability Leadership Conference held in Cincinnati October 15-17, 2012. As a Spotlight City, representatives from the City were invited to give a presentation that focused on Kansas City's OCP program, with emphasis on the Middle Blue River Basin Green Solutions Pilot Project. Six City representatives including Mayor Pro Tem Cindy Circo, and Kristin Riott, the executive director of Bridging the Gap, participated in the hour-long panel and presentation session that was well-rounded and highlighted the partnerships required to make Kansas City's OCP and green infrastructure programs successful.

National League of Cities

In November, the City of Kansas City was honored to participate in the National League of Cities Congress of Cities and Exposition in Boston. The Congress brings together mayors, council people, and other civic leaders from cities and counties across the country for learning and networking. OCP was highlighted in two ways at this prestigious conference.

Councilwoman Jan Marcason was selected to moderate a panel on "Integrating Green Infrastructure in Your Community" that included representatives from Philadelphia, PA; Milwaukee, WI; and Franklin, MA. The session highlighted the work large and small cities are doing to add green infrastructure components into their stormwater management planning programs. She opened the panel by highlighting the green infrastructure portions of the OCP.

From a nationwide selection process, The Middle Blue River Basin Green Solutions Pilot Project was selected as a City Showcase participant. As such, WSD was asked to host a display booth which had banners and informational flyers that highlighted the pilot project and OCP. The showcase highlights unique and creative programs from cities across the country and allows Congress participants to visit each booth and discuss successes, lessons learned, and implementation strategies to take back to their home towns.

Sustainability City Network

Kerry Herndon, U.S. EPA Region VII Sustainable Water Infrastructure Program Manager, gave a presentation about integrated water planning at the 5th annual Growing Sustainable Communities Conference in Dubuque, Iowa. A result of that presentation was an article written in the Sustainability City Network's November 2012 magazine about Kansas City's integrated planning process and green infrastructure installations associated with the Middle Blue River Basin Green Solutions Pilot Project. The primary audiences are city and county government professionals and elected officials, as well as academicians, business leaders and certain federal officials who play important roles in supporting sustainability. A link to the article can be found at: http://tinyurl.com/bcprst7.

CityAge Conference

December 3-4, 2012, Mayor Sly James hosted a conference new to Kansas City- the CityAge conference. According to the CityAge organization, they hold events across North America to explore and develop the partnerships between business, decision-makers and thought leaders who are building our urban future. Members of the OCP program assistance team made a presentation about PublicWay, which was developed for WSD.

International Erosion Control Association- Great Rivers Chapter Conference

From November 13-15, 2012, Kansas City hosted the Great Rivers Chapter of the International Erosion Control Association's annual conference. As part of the conference, Francis Reddy, a professional engineer from WSD, made a presentation about the Middle Blue River Basin Green Solutions Pilot Project with a focus on the structure of the green solutions. The presentation concluded with a tour of model green infrastructure programs, including the pilot project area.

MIDDLE BLUE RIVER BASIN GREEN SOLUTIONS PILOT PROJECT

The Middle Blue River Basin Green Solutions Pilot Project reached Achievement of Full Operation on November 19, 2012. The 100-acre pilot project is one of the largest green infrastructure projects underway in the United States to reduce combined sewer overflows as part of a Federal Consent Decree.

This pilot focuses on the use of green infrastructure to provide distributed storage of stormwater throughout a 100-acre area of the Marlborough neighborhood. The area is primarily residential, but does include commercial businesses. The project is generally bounded on the north by 73rd Street, on the south by 77th Terrace, on the east by Paseo Boulevard, and on the west by Holmes Road.

In addition to gaining valuable information about the effectiveness of green infrastructure in controlling combined sewer overflows, this initial pilot will also evaluate alternatives for achieving additional program objectives, including:

- Effectiveness of green infrastructure as a systematic solution;
- Codes and ordinances in conflict with green infrastructure utilization;
- Socio-economic benefits/change;
- Construction techniques and costs on a wide-scale programmatic level;
- Potential changes in City services in green infrastructure areas;
- Maintenance approaches and costs;
- Public/Private partnership opportunities; and
- Community interaction and support of green infrastructure practices.

Throughout design and construction, Mayor Pro Tem Circo organized monthly interdepartmental meetings with representatives from Parks & Recreation, Community Development, Neighborhood & Housing Services, Public Works and Water Services departments to ensure that the City had a coordinated effort in completing the project.

View of 75th Terrace after completion of the Middle Blue River Green Solutions Pilot Project

Construction Activities

Construction activities in the Middle Blue River Basin Green Solutions Pilot Project area (pilot area), conducted during the reporting period, included the installation of 159 Stormwater Best Management Practices (BMPs) to reduce flows in the collection system. Work accomplished during the reporting period is summarized as follows:

- Finalized installation of porous sidewalk in select areas. This application of porous sidewalk serves to simultaneously provide a new walking surface (where the preceding sidewalk was seriously deteriorated) and incorporate a method to minimize surface runoff, alllowing the rainfall to return to the natural environment.
- Finalized installation of curbs and sidewalks, where no sidewalks and curbs previously existed or existing curbs and sidewalks were in disrepair.
- Stormwater BMPs, of various designs, were completed by installing the following improvements:
    - Plant materials (grasses and perennials)
    - Street trees
    - Reflective markers along ribbon curbs and curb extension rain gardens
    - Pipe and inlet covers
- Installation of reflective markers in the curb extensions to guide traffic and snow plows away from the curbs.

Plantings were completed in 67 rain gardens, 5 bioretention cells, 24 curb extensions with below grade storage, 12 curb extensions with rain gardens, 2 cascades, 24 bioretention cells with below grade storage, and 1 bioswale. The following quantities of plants were installed within these improvements:

- 2,201 Native and Ornamental Shrubs (#5 container size)
- 6,360 Native and Ornamental Flowering Perennials (#1 container size)
- 7,290 Native and Ornamental Grasses, Sedges, and Rushes (#1 container size)

As an added benefit, 134 trees were planted within the right-of-way in the project area to replace the 50 trees removed during construction and help intercept stormwater. Of the trees removed for the project, the majority were mature Siberian Elms reaching the end of their lifespan and having significant missing branches.

Project hardscape areas (i.e. where concrete is needed) were completed during the reporting period. Due to warm winter and early spring conditions, landscaping of BMPs began in early March 2012.

Monitoring

The Advanced Drainage Concepts (ADC) Team comprised of partners from U.S. EPA, Mid-America Regional Council, University of Missouri- Kansas City (UMKC), University of Alabama, and Tetra Tech continued their work to monitor rain gardens in the pilot area. In late April and early May 2012, the team installed five monitoring boxes at different locations to gather quantitative and qualitative data. Different types of BMPs were selected for quality parameter analyses inclusive of bacteria, nutrients, metals and solids. Quality analysis is a volume constrained analysis and is conducted with the help of sample splitters installed in the stormwater BMPs. After a significant rain event these split samples are distributed for analysis to the following laboratories: UMKC, EPA Region 7 and University of Alabama. For quantitative analyses of a BMP, flow sensors were installed at the inlet weir for inflow rate and at the outlet weir for overflow rate. A flow sensor was also installed in the bed for retention rate. Data is expected to be received from the Advanced Drainage Concepts Team in early 2013.

Partnerships and Outreach

In partnership with Kansas City's Neighborhood and Community Services Department, a new code enforcement process was tested in the pilot area. Residents and property owners were invited to a public meeting prior to the code enforcement sweep. The meeting was held February 20, 2012, where attendees were informed about the types of violations the City would be citing. The attendees also received information about assistance programs to help pay for any needed improvements if they met eligibility requirements. In March, 341 properties were investigated. Of those properties, 97 were considered in violation of a nuisance or property maintenance code. Follow-up occurred, and as of June 27, only seven tickets were issued and abatement of over 90 percent of defects was observed.

Two rain barrel workshops were held for the pilot area on April 28 and May 3 to demonstrate how simple green solutions on private property can keep stormwater out of the wastewater system. Participants were given information about downspout disconnection, shown a demonstration on how to install a rain barrel, and given information about rain gardens. At the workshops, residents in the pilot area were encouraged to sign up to receive one or two of forty-eight free rain barrels that were made available courtesy of Coca-Cola Bottling Company. Workshop participants were provided with informational materials about how to disconnect a downspout, install a rain barrel, and how to plant a rain garden. They were also given information about the City's efforts to improve water quality and reduce sewer overflows through the installation of green solutions in the public right-of-way. Approximately 20 pilot area residents attended the two workshops, which were held at two different properties in the pilot area. After the workshops, workers from New Reflections KC installed the donated rain barrels for interested residents. Installation of the rain barrels was completed by June 1, 2012.

Members of the Middle Blue River Basin consultant team conducted workforce training with a contractor from the Blue River Watershed Association (BRWA) and laborers with New Reflections KC so that they could conduct the workshops. The consultant team met with the workforce to discuss the purpose and goals of the project, including information about the Overflow Control Program and the pilot project. Before the two workshops were held, the project team facilitated a mock workshop at an actual location. Project team members focused training on assembling/installing rain barrels with some discussion on downspout disconnection. The workforce participants also learned how to conduct a workshop and assist with the two workshops that were planned.

A tour of the pilot area was organized along with a business networking event on June 29, 2012. The Environmental Excellence Business Network, in association with a local non-profit organization, Bridging the Gap, held their monthly meeting near the pilot area. After a presentation by WSD Overflow Control Program team members and a representative from the EPA regional office, a bus tour of the pilot area was given. Over 50 people attended the event which showcased the improvements and monitoring stations installed by EPA.

In September 2012, WSD installed six signs adjacent to BMPs in the pilot project area. These signs identify and define the BMP type and inform the public of expected drainage times after rain events. The signs were set up with QR codes and website information linking them to the KC Green project website. Upon completion of the WSD website upgrade, a link from the KC Green site to the WSD website will be put in place.

Curb extension with signage, Middle Blue River Green Solutions Pilot Project

In November, a tour of the pilot project area was organized as part of the International Erosion Control Association-Great Rivers Chapter conference. The pilot project was also highlighted at a WEFTEC conference, Urban Water Sustainability Leadership Conference, and the National League of Cities conference.

Completion Celebration

On July 16, 2012, Mayor James and Mayor Pro-Tem Circo along with along with Water Services Department Director, Terry Leeds, residents and invited guests participated in a press event to celebrate the completion of the Middle Blue River Basin Green Solutions Pilot Project. Kansas City hopes that the lessons learned from this important project will help define how green infrastructure improvements are applied in more of our neighborhoods and provide a model for communities across the nation facing similar challenges. At the event, the Mayor recognized this pilot project area as the first "KC Green Neighborhood" in the City. In early 2013, new street sign toppers will be installed throughout the neighborhood to recognize this designation.

Maintenance Approaches and Costs

The service contract for three years of maintenance officially began upon award of Achievement of Full Operation on November 19, 2012. The $143,000 contract will be performed by the same contractor involved during the construction phase. Maintenance performed between November 19 and the end of the 2012 calendar year included verification of open pathways for water to enter green infrastructure.

The contractor is required to submit pay applications quarterly. The first pay application will be due February 19, 2013. There were no expenditures for contractor maintenance in 2012 although some maintenance was performed.

A summary of the maintenance services that will be provided to the green infrastructure elements within the purview of the service agreement is below:

- **Trash Removal from Beds**
  - Weekly Service (March through November)
  - Monthly Service (December through February)
- **Year-round, Monthly Tasks:**
  - Remove weeds
  - Remove sediment
  - Clean openings to underground storage pipes
  - Stiff broom 20-foot length of uphill gutter for each bed
  - Stiff broom 100-foot long porous gutter on 75th Street
- **Year-round, Quarterly Tasks**
  - Refresh mulch as required to maintain a 3-inch layer
- **Year-round, Semi-annual Tasks**
  - Prune plants
  - Vacuum underground storage pipes
  - Vacuum porous sidewalks
  - Stiff broom pervious pavers, add gravel to paver joints as needed

The project contract documents include a special warranty on all plant materials that warrants against defects including death or unsatisfactory growth, except for defects resulting from abuse by Owner or incidents that are beyond the Contractor's control, for two years from the award of Achievement of Full Operation. The contractor is required to remove dead plants and replace immediately unless required to plant in the succeeding planting season. At the end of the two-year warranty period, the contractor shall replace plant materials that are more than 25 percent dead or in an unhealthy condition. However, there is a limit of one replacement for each plant, except for losses or replacements due to failure to comply with the following maintenance activities required by the 2-year warranty: pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, adjusting stakes, resetting to vertical, monitoring/treating for pests and disease, and replacing tree wrappings as required to establish healthy, viable plantings. The maintenance tasks required by the 2-year warranty are in addition to the requirements from those of the 3-year service agreement, though they will often be performed concurrently.

In addition, the Water Services Department (WSD) has formed a green solutions maintenance crew within the Wastewater Maintenance Division that will be maintaining items that are not included in the service agreement such as additional trash removal, straightening of curb markers that are hit by cars, replacing plants outside contractor warranty, mowing sod filter strips, and caring for the gravel parking space on Lydia Avenue. Their primary task is to maintain other green infrastructure owned and maintained by WSD, but they are also available on-call for the Middle Blue Pilot Project area.

COMPLIANCE WITH NPDES PERMITS

The City strives to maintain compliance at all times with its current NPDES permits as they relate to the capacity at the WWTPs and capacity, management, operation and maintenance of the collection system.

Municipal Separate Storm Sewer (MS4) Permit: Part IV.B of the Missouri State Operating Permit MO-0130516 requires the City of Kansas City, Missouri, provide written notice of compliance or non-compliance with the schedule for permit implementation. The City submits yearly reports, with the most recent report covering the period of May 1, 2011, through April 30, 2012. It documents the status of implementing the components of the stormwater management programs that are established as permit conditions, and addresses the progress of programs that were required. As detailed in that report, the City is in compliance with the schedule for all interim milestones and final deadlines as identified in the permit schedule (Permit Part IV.A). The most recent version of this report is included in Attachment B of this report.

Discharge Reports: A collection of all Discharge Reports submitted to MDNR during 2012 is included as Attachment A to this report. These reports are submitted by two separate departments within WSD: Wastewater Treatment and Wastewater Line Maintenance. These reports are associated with Missouri State Operating Permits MO-0024911, MO-0024929, MO-0024961, MO-0048305, and MO-0049531.

Monthly Operating Reports: The City's Monthly Operating Reports (MOR), submitted as part of the City's current NPDES permits, are included as Attachment B to this report.

SCHEDULED ACTIVITY FOR THE NEXT REPORTING PERIOD

From January 1, 2013, to June 30, 2013, the following activities are expected to take place. This list should not be construed as an explanation of all activities that will be occurring in the first half of 2013. Certain Consent Decree and OCP activities, such as NMC; Capacity, Management, Operations and Maintenance (CMOM); Public Participation; Project Planning; and Data Management, will continue for the duration of the Consent Decree and are therefore not specifically discussed below.

- Control Measures
  - Middle Blue River Basin Green Solutions Pilot Project – Maintenance efforts will continue in the 100 acre pilot area to ensure that newly constructed facilities are able to function as designed. Contracts are expected to be executed to extend short-term flow monitoring due to inadequate rainfall in 2012.
  - Distributed Storage Outfall BR069 and BR059 – A design competition for the next phases of green infrastructure project in the Middle Blue River Basin is expected to occur in early spring 2013. Based on the results of the design competition, up to four firms will be selected for the planning and design of the remaining 644 acres.
  - Neighborhood Sewer Rehabilitation, Middle Blue River – Contracts are expected to be executed for field investigations and engineering design phase services.
  - Force Main, Round Grove – Achievement of Full Operation will be issued for the Round Grove force main project.
  - Pump Station Upgrade, Turkey Creek – Pre-design/planning activities are expected to continue.
  - "KC Green Neighborhood" street topper signs will be installed at more than 20 intersections throughout the pilot project area. The area was deemed the first KC Green Neighborhood by Mayor Sly James in July 16, 2012, at the pilot project's celebration event. The street topper signs will be in addition to the educational signs that were placed throughout the pilot project area in the summer of 2012 to help identify key improvements.
  - Construction of inflow and infiltration in the Round Grove Creek basin is expected to be complete.
  - It is anticipated that initial site selection activities for the 87th Street Pump Station (Phase 1) will continue and preliminary design activities will begin.
  - Field investigation and design activities will begin for the Blue River South Inflow/ Infiltration Projects 1 and 2.
  - An information exchange trip to St. Louis will be made so that representatives of WSD can discuss capital program development with St. Louis Metropolitan Sewer District staff.
  - A tour of the Middle Blue River Basin Green Solutions Pilot Project will be conducted for the New Partners for Smart Growth conference scheduled for early February 2013. Presenters will include representatives from WSD, EPA Region VII and the Marlborough Community Coalition.
  - City-Wide Green Infrastructure Pilot Projects - Pre-design/planning activities are expected to start in 2013. These activities could include project definition, determination of project delivery method, scope of work development, pre-contracting activities, and development of a Request for Qualifications/ Proposal (RFQ/P) for design professional.

- Long-Term Flow Metering – It is anticipated that a contract for long-term flow metering for additional metering sites in the Northeast Industrial District will be executed in 2013. The scope of work will include multiple metering sites spanning a period of two to five years (as indicated in the Consent Decree Appendix D – Table 2.

CONSENT DECREE APPENDIX A: PERFORMANCE MEASURES

COMBINED SEWER OVERFLOW CONTROL MEASURES

About 58 square miles within Kansas City are served by combined sewers. This area is generally bounded by 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 seven principal basins: Gooseneck Creek, Lower Blue River, Town Fork Creek, Brush Creek, Middle Blue River, Northeast Industrial District and Turkey Creek/Central Industrial District. North of the river, the Charles B. Wheeler Municipal Airport is also served by combined sewers.

The Consent Decree defines improvements in the CSS estimated at approximately $1.4 billion in 2008 dollars. Repairs to the existing system are scheduled to occur early in the implementation of the OCP. The early years will also include aggressive pilot projects focused on developing 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 final years of the program will address necessary improvements to the City's wastewater treatment plants and construction of structural storage solutions, currently proposed as deep storage tunnels.

Middle Blue River Basin Distributed Storage: Outfalls 059 & 069

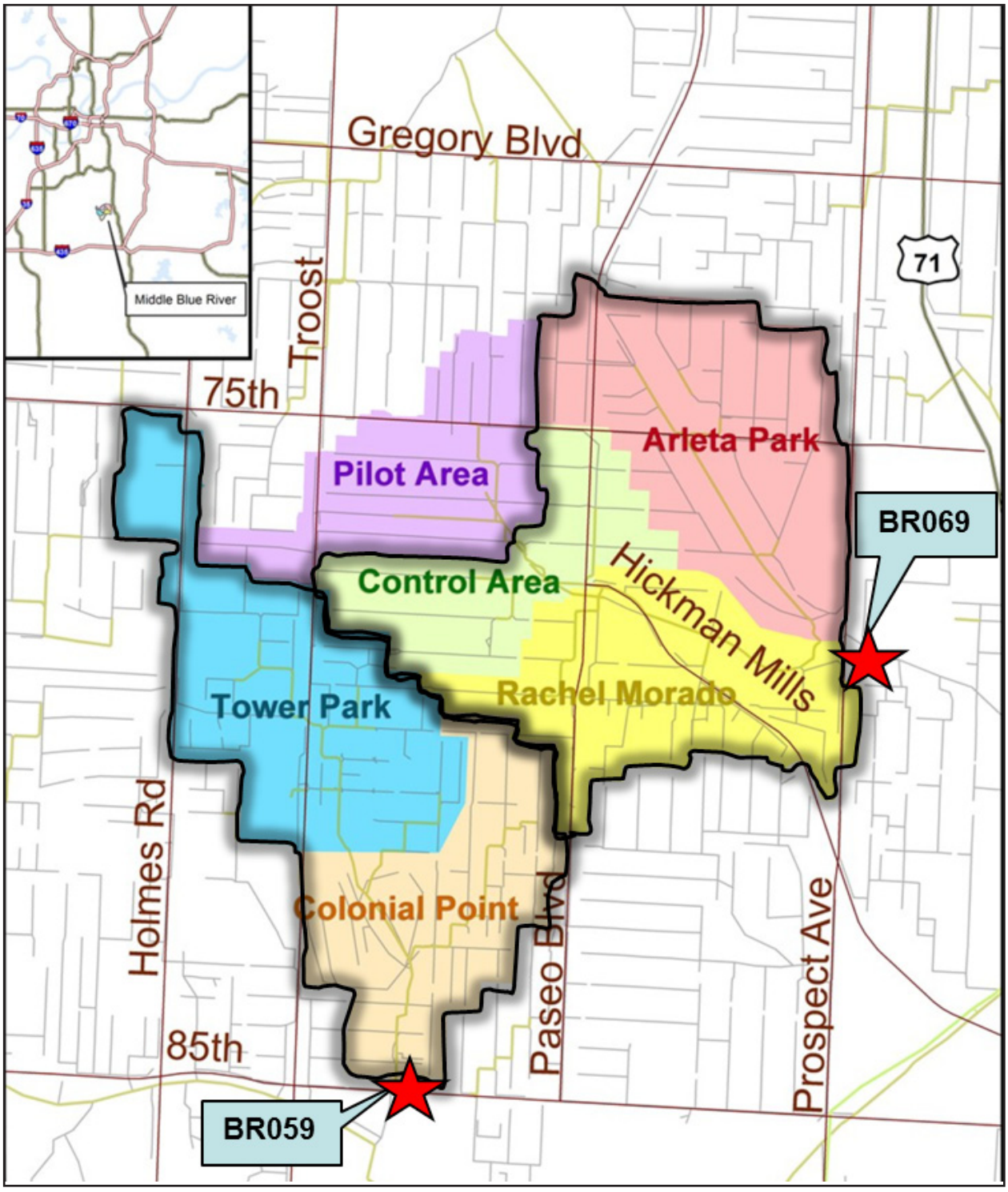
Construction of the Middle Blue River Basin Green Solutions Pilot Project began in 2011 and concluded with Achievement of Full Operation being formally issued on November 19, 2012. This pilot project encompasses the first 100 acres of distributed storage improvements planned for the 475-acre area contributing to combined sewer outfall 069.

Progress toward additional basin improvements outside the pilot area continued in 2012. Bids were solicited and received in December 2011 for two separate contracts to provide temporary flow monitoring and field investigation services for the project area contributing to combined sewer outfalls 059 and 069. Results obtained from the flow monitoring and field investigation will guide design efforts for future distributed storage improvements.

The contract for temporary flow monitoring was awarded to George Butler and Associates (GBA) with a notice-to-proceed date of February 28, 2012. The contracted flow monitoring period was from April 1, 2012 to December 31, 2012. As part of GBA's contract, 12 flow meters were installed at strategic locations throughout the areas tributary to Outfalls 059 and 069. In addition, rain gauges were installed to correlate rainfall intensity with flow. As drought conditions did not allow for adequate data gathering, the meters were disengaged in November 2012. The meters will be reinstalled in April 2013 through December 31, 2013, in order to accurately model existing combined sewer system conditions and correctly design green solutions/ distributed storage for the areas tributary to outfalls BR059 and BR069.

The contract for field investigations was awarded to ACE Pipe Cleaning (ACE) with a notice-to-proceed date of May 7, 2012. ACE was contracted to perform the following tasks: GPS survey of manholes and catch basins, catch basin cleaning, catch basin inspection, manhole inspection, smoke testing, sewer lateral inspection, pipe cleaning, CCTV inspection, and dyed water testing. Field investigations were completed on January 28, 2013 by using WSD standard protocols for inspection activities. In addition, ACE created a Geodatabase to store GIS data which includes feature classes such as manholes, sewer lines, catch basins/ inlets; and smoke defects from the inspection data and submitted it to WSD.

Green infrastructure improvements are now being planned for the remaining 644 acres in the Middle Blue River Basin. The improvements will utilize green infrastructure to capture stormwater and reduce the frequency of overflows from the combined sewer system. The remainder of the basin has been broken into four different project areas, shown below. In accordance with the Consent Decree, construction completion is required in all areas by December 31, 2017.



Middle Blue River Green Solution Project Areas

To complete this work, the City issued a Request for Qualifications/Proposals on September 5, 2012. Proposals were due September 28, 2012, with seven (7) qualifications being submitted for consideration. The City reviewed proposals from multiple consultant teams to provide design services for the next four (4) Middle Blue River Green Infrastructure projects. The short list, comprised of four (4) firms, was finalized in December 2012. These firms will be contracted to provide conceptual level designs for the project area(s). Notice to Proceed is anticipated to be issued for each firm in early 2013. Upon review of the conceptual design submittals, the City will decide which of the firms will be retained to provide final construction documents.

Neighborhood Sewer Rehabilitation: Middle Blue River

A Request for Qualifications/Proposal was advertised for design phase services for sewer rehabilitation in the Middle Blue River Basin. The project involves field investigation, data analysis, rehabilitation recommendations and design for the Middle Blue River. Seven proposals were submitted for this separate contract and design professional interviews will occur in early 2013. A Notice to Proceed is expected to be issued in the first half of 2013.

Pump Station Rehabilitation: Turkey Creek

A Design Professional Agreement is in route for execution. This agreement includes updating the original design phase, the bidding phase, construction phase services, and resident phase services.

SEPARATE SEWER OVERFLOW CONTROL MEASURES

Kansas City's SSS system is comprised of nine principal basins covering 260 square miles of the City. The four separate 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 North, Round Grove, Blue River Central, Blue River South and Little Blue basins.

As required by the Consent Decree, in the Basin, I/I removal is scheduled to occur within 5 watersheds, divided into distinct sub-basins that can be individually monitored for I/I removal effectiveness. The Overflow Control Plan (Plan) includes costs and a schedule for I/I removal in the Separate Sewer System basins. Equally-weighted phases were developed to spread costs over multiple years. The Consent Decree defines improvements in the SSS system estimated at approximately $1 billion in 2008 dollars. The Overflow Control Program is based on WSD being able to reduce inflow and infiltration (I/I) in separate sanitary sewer basins by as much as 45%. Without this reduction, structural controls and storage will have to be increased, thus increasing the cost of the program.

Much of the early projects and program strategy in the separate sanitary sewer area relates to reducing the problem, or reducing the amount of stormwater entering the sanitary sewer system, before we solve the problem, reducing overflows from the system. This reduction in stormwater entering the system is a combination of reducing or eliminating points of direct rainwater inflow into the system and reducing stormwater infiltration through system defects. A combination of wet weather storage and treatment will be utilized to address inflow and infiltration determined to be too expensive to keep out of the system.

With more than half of the sanitary sewer system contained on private property in the control of the property owner, WSD will have to develop and enact robust public and private side reduction programs to meet the high level of I/I reduction necessary to maintain program budgets. To help WSD meet these I/I removal levels, the department is updating and developing public I/I removal protocols and procedures, as well as approaches to private sector I/I removal that can be phased in over time.

The private sector I/I removal or "Private Side Program" will most likely include a tiered approach that addresses the easiest (least disruptive and most cost-effective) sources first. Current focus areas include the evaluation of voluntary, incentivized, utility-led, and mandatory initiatives related to downspout disconnects, sump pump and driveway drain disconnects, sewer lateral inspection and repairs, and on-site storage of rainfall. A draft sewer use ordinance will be developed and is expected to be presented to the City Council in early 2013 so that private side improvements can begin early in the program implementation.

South of the Missouri River Separate Sewer System

Based on information contained in the Plan, and aside from the Round Grove watershed, projects have been further delineated, given distinct names for tracking purposes, and linked to impacted projects downstream. A scope of work outline for performing investigations was developed. The objective of the investigations is to gather information on system defects to identify and quantify I/I sources, develop rehabilitation and I/I source removal recommendations, and develop construction plans and specifications. Assessment of the effectiveness of I/I removal will also be performed by conducting pre-rehabilitation and post-rehabilitation flow and rainfall monitoring and data analyses.

Inflow and Infiltration Reduction: Round Grove Basin

A Sanitary Sewer Evaluation Survey (SSES) was previously conducted for the Round Grove basin in 2007. Defects in the public and private system were identified and recommendations were made to remove both public and private inflow/infiltration (I/I) sources to achieve 29 percent I/I removal. This SSES provided information to begin construction activities related to reducing inflow and infiltration into the separate sanitary sewer system. Through the end of 2012, the contractor, Havens Construction Company, Inc., has completed 100% of the planned point repairs, 70% of the manhole castings, 88% of the cementitious lining was completed, and 90% of the needed cured-in-place pipe (CIPP). In addition, CIPP was installed in service laterals, which was 65% complete. The forecasted Achievement of Full Operation date is June 2013.

Inflow and Infiltration Reduction: Blue River South Basin

The I/I removal activity for the remaining basins south of the Missouri River is currently being divided into distinct sub-basins that can be individually monitored for I/I removal effectiveness. An RFQ/P was developed and advertised for design professional services for the first two project areas in the Blue River South Basin, consisting of approximately 296,000 linear feet of sewer lines. The contract activities are expected to include sewer repair and rehabilitation, manhole rehabilitation, and service line connection rehabilitation. Five proposals were received from design professional firms. Selection interviews will take place in early 2013. The forecasted Achievement of Full Operation date is for this project is 2017.

Force Main: Round Grove

In order to increase the capacity at the Round Grove Pump Station and provide additional protection with redundant force mains, the existing 24-inch force main that was previously abandoned will be rehabilitated and put back into service. The 24-inch force main will operate in tandem with the existing 30-inch force main. Once the 24-inch force main is put back into service, improvements at the Round Grove Pump Station will be completed to increase pumping capacity.

A notice-to-proceed for rehabilitating the Round Grove Force Main was granted in late summer 2012 to Pyramid Construction. The project involves rehabilitating an abandoned 24" force main that will help increase the capacity at the Round Grove Pump Station and provide additional protection with redundant force mains. Over the past few months, the contractor has reestablished 3,235 linear feet of 24-inch force main, including 1,720 linear feet of directional drilling under the Blue River. The forecasted Achievement of Full Operation for this project is spring 2013, ahead of the Consent Decree deadline of December 31, 2013.

87th Street (Phase I) Storage Project

Phase 1 of the 87th Street Storage Project kicked off in May 2012. This first phase of a two-phase storage project includes construction of 20 million gallons of storage capacity and rehabilitation/modification of existing pumps and equipment necessary to support wet weather pumping to the storage unit. Over the past few months the contractor, Black and Veatch, provided technical memoranda that detailed the four (4) storage alternatives currently being considered by the City: above ground tanks, below ground tanks, and two different tunnel alignments. WSD has reviewed these technical memoranda including the associated schedules and cost estimates. At the same time, WSD has continued to coordinate and attend meetings with business and community groups that have an interest in the project.

Prior to making a final selection between the various storage alternatives, the City has hired SCS Engineers to perform a site characterization study of the 87th Street site, which encompasses a former undocumented dump. In December, a Work Plan for 87th Street Landfill Characterization was submitted to MDNR. Upon approval from MDNR, SCS will proceed with site investigation and characterization. Once this study is complete, the City will have a better understanding of the materials likely to be encountered on site as well as the potential cost and risk impacts of disturbing the site during construction. A decision on the final storage alternative is anticipated in 2013. Phase I of this important storage project must be operational by December 31, 2016.

CONSENT DECREE APPENDIX B:
NINE MINIMUM CONTROL PLAN PERFORMANCE CRITERIA

NMC 1 – Proper Operation and Regular Maintenance Program

"The first minimum control should consist of a program that clearly establishes operation, maintenance, and inspection procedures to ensure that a CSS and treatment facility will function in a way to maximize treatment of combined sewage and still comply with NPDES permit limitations. Implementation of this minimum control will reduce the magnitude, frequency, and duration of CSOs by enabling existing facilities to perform as effectively as possible. Essential elements of a proper operation and maintenance (O&M) program include maintenance of suitable records and identification of O&M as a high management priority." USEPA, **CSO Guidance for Nine Minimum Controls**

Organization

Kansas City operates and maintains its wastewater systems through its Water Services Department (WSD). WSD is organized into eight functional groups. The Wastewater Line Maintenance Division and the Wastewater Treatment Division are primarily responsible for the O&M of the City's CSS. The Stormwater Maintenance Division is responsible for street cleaning activities in the CSS area. WSD organizational charts are maintained and updated by the Associate Resources & Development Division within WSD.

The Wastewater Treatment Division is responsible for the O&M of the two WWTPs within the CSS area (the Blue River Treatment Plant and the Westside Treatment Plant).

Several Line Maintenance sections are responsible for the O&M of the City's CSS including:

- The Sewer Investigation Section;
- The Sewer Cleaning Section;
- The Sewer Repair Section

Resources

WSD maintains adequate resources, in terms of personnel and capital, to maintain O&M activities throughout the CSS. In FY2011-2012, the operating expenses for sewer operations were as follows:

- Wastewater Treatment and Pumping $ 21,075,363
- Sewer Maintenance $ 18,440,854
- Administration and General $ 13,468,247
- Industrial and Household Hazardous Waste $ 1,268,901

List of Critical Facilities

WSD maintains a list of critical CSS facilities, including diversion structures, flow splitters and outfalls. Diversion structures divert excess wet weather flow to receiving streams. Often, several diversion structures direct excess wet weather flow to the same outfall. Flow splitters are structures that divide flows within the CSS but do not direct flow to receiving waters (one or more flow regulating structures are downstream of the structure, upstream of the receiving waters). Attachment C contains a list of critical facilities. Inspection intervals vary from 3 to 30 days depending on the history of required cleaning. If inspections reveal the interval is not adequate, it is adjusted accordingly.

CSS outfalls are points where combined flow discharges to a receiving stream. Attachment C lists the identification number, location, map number, and receiving stream of the CSOs. Any CSOs listed in the report that do not have an inspection interval have been eliminated from the system.

CSO Sewer Maintenance Manual

The Line Maintenance Division adheres to guidelines set forth in the CSO Operations and Maintenance Manual, which can be found in hard copy form at WSD offices. The manual is updated as needed and provides guidelines to personnel for the proper operation and maintenance of the CSS. Guidelines include:

- Schedules for routine inspections;
- Emergency response protocol;
- Dry weather overflow reporting procedures; and
- Training and safety practices.

Log of Maintenance Activities

WSD currently uses the Hansen computerized maintenance management system to log maintenance activities. The system tracks maintenance activities with work orders. Work orders are initiated from sources including customer complaints, 3-1-1 Action Center calls, and investigation activities. Work orders are prioritized using a code system that categorizes each work order into one of three levels based on the critical nature of the defect. Work orders are closed out upon completion of the work. Work orders track parameters, including:

- Date initiated;
- Who initiated;
- Date completed;
- Line segment;
- General supervisor;
- All costs, including materials;
- Labor hours including overtime;
- Permitting.

Table 1 shows a summary of the maintenance activities performed during the reporting period.

Table 1: 2012 Maintenance Activities

Activity (Maintenance Work Orders)	Quantity
Sewer- Main Stoppages Opened	179
Sewer- Main Repairs	168
Sewer- Manhole Repair/Resurfacing	141
Sewer- Water in the Basement	1,362
Sewer- Diversion Structure Modifications	1

Closed Circuit Television Inspection

The Wastewater Line Maintenance Division maintains a CCTV inspection program. The division utilizes both internal and subcontracted equipment. In 2012, 58 miles of CSS were televised per Consent Decree requirements. Documentation for mileage cleaned is stored in Hansen and verifiable utilizing Wincan software.

Sewer Cleaning

WSD maintains a fleet of sewer cleaning equipment with associated crews including:

- Jet trucks;
- Jet-Vac trucks;
- Bucket machines

Local contractors may be used for specialized cleaning services on large diameter sewers through contractual agreements maintained by WSD. In 2012, 208 miles of CSS were cleaned per Consent Decree requirements. This mileage is documented in Hansen.

Overflow and Bypass Response

The Line Maintenance Division has several procedures and a response checklist that guides actions following a dry weather overflow in both the combined and separate sanitary sewer systems. When an overflow is recognized, WSD responses have met the intent of the MDNR to respond quickly, control the release of wastewater, and perform appropriate cleanup tasks. This activity is documented by Wastewater Line Maintenance supervisors and reported to MDNR. Copies of overflows reported to MDNR are included in Attachment A.

Emergency Contact

The City maintains a 3-1-1 Action Center for reporting collection system problems. The emergency contact number is (816) 513-8000. The Action Center may also be reached by dialing 3-1-1 in the Kansas City area. The Action Center is staffed from 7 a.m. to 7 p.m. weekdays and from 8 a.m. to 5 p.m. weekends. Emergency conditions may be reported outside of these hours via 3-1-1 and reporting an emergency.

Signs have been installed at each of the system's 90 combined sewer outfalls. Each sign identifies the outfall by number and lists the emergency contact number. The signs solicit public reports of dry weather flow. The emergency contact number directs the caller to the City's 3-1-1 Action Center.

NMC 2 – Maximization of Storage in the Collection System

"The second minimum control consists of making relatively simple modifications to the lines to enable the system to store wet weather flows until downstream sewers and treatment facilities can handle them. More complex modifications should be evaluated as part of the LTCP." USEPA, **CSO Guidance for Nine Minimum Controls**

Measures described in this section consist of those that have been implemented without the need for a complex analysis of their system impacts and planned measures that will be implemented as part of the City's proposed OCP to maximize storage in the existing collection system.

Collection System Inspections

All CSO diversion structures and flow splitters are inspected and cleaned regularly to identify overflows, remove accumulated debris and blockages, assess operational status of the structure, and make needed repairs. Using a diversion structure inventory, inspection crews are able to readily view detailed structure information such as inspection log forms, inventory sheets, schematics, profiles, and sectional views. All structures are inspected on intervals ranging from 3 days to 30 days as indicated in Attachment C. CSS diversion structure inspection logs are tracked in a Microsoft Access Database.

Diversion Structure Modification

Diversion structures are modified as deemed necessary after inspections or maintenance activities. The modifications are tracked in Hansen.

Removal of Obstructions to Flow

Cleaning of existing interceptors to maintain available conveyance and storage capacity is a normal procedure performed by the City's Line Maintenance Division. The division utilizes its own crews and contract cleaning crews to remove and prevent accumulations of debris and sediment that restrict flow on an as-needed basis. This information is tracked in a Microsoft Access database (route cleaning as a result of inspections) or Hansen (if a work order is needed).

Upgrade/Adjust Pump Operations at Interceptor Lift Stations

Six pump stations are within the boundaries of Kansas City's CSS. Four pump stations (Turkey Creek, Santa Fe, Northeast industrial District (NEID), and Blue River) function as influent pump stations for the Blue River and Westside WWTPs. These pump stations are operated according to the Wet Weather Operating Plans defined in NMC 4. Flows reaching the pump stations greatly exceed capacity during wet weather and it is not possible to adjust the pump operations to store water in the upstream systems without increasing backwater conditions that would result in upstream overflows and basement back-ups. The OCP includes provisions for additional system storage and some sewer separation upstream of these stations to reduce overflow frequency.

Two very small stations in the CSS (12th and 15th Street stations) are operated to maximize storage in the upstream system during wet weather. Proposed improvements include either replacement of the 15th Street pump station or sewer separation in the area tributary to this station.

Pump operations at the interceptor lift stations will be upgraded or adjusted, as practical, and in accordance with the OCP and Consent Decree.

Retard Inflows and Encourage Localized Upstream Detention

Kansas City has adopted an "every drop counts" philosophy, meaning it is important to reduce stormwater entering the system wherever practicable. This will be accomplished through changing the way the community develops and redevelops; educating citizens regarding steps they can take to reduce the amount of stormwater entering the sewer system; enabling citizens to take those steps; incorporating green infrastructure in the design of public infrastructure; and making targeted public investments in green infrastructure projects early in the implementation of the OCP.

Kansas City has been actively identifying City-funded projects that have the opportunity to produce multiple benefits by integrating green solutions that retard inflows or provide localized detention. By integrating green infrastructure in these projects, opportunities, obstacles, and project development process recommendations will be identified so future projects can provide greater environmental benefit. One such example completed during the reporting period is identified below.

During the reporting period, WSD assumed maintenance responsibility for ten green infrastructure elements within the Kansas City Area Transportation Authority (KCATA) improvements on Troost Avenue. In order to build green infrastructure maintenance capacity in-house, WSD formed a new "green solutions" maintenance crew. This crew is housed in the Stormwater Maintenance Division and is led by a Landscape Technician skilled in plant material care and recognition. A Senior Landscape Architect was added to the OCP staff to guide the "green solutions" maintenance crew and be a resource to WSD staff regarding green infrastructure. These new staff members will continually monitor and maintain the green infrastructure improvements that are within the purview of WSD.

Concurrent with implementation of the OCP, the City is evaluating the feasibility to undertake the following measures to retard inflows and reduce overflows:

- Continue a review of Kansas City's municipal policies, codes and ordinances designed to identify gaps, obstacles and challenges to the implementation of green infrastructure approaches, and recommend changes;
- Other planned City actions:
    - Propose expediting the plan review process as incentive for private investment in green infrastructure;
    - Incorporate green strategies that reduce storm runoff and improve water quality in all planning documents and studies;
    - Partner with non-government entities to encourage green infrastructure on private property;
    - Partner with other government entities to encourage green infrastructure on public property;
    - Change street design standards to allow integration of green infrastructure including street retrofits, traffic calming strategies, minimizing impervious surfaces and allowing the use of pervious pavement, and incorporating rain gardens and BMPs in public right-of-way when possible.

Throughout the reporting period, and in a manner consistent with the OCP, inflows have been reduced through the continued implementation of the Middle Blue River Basin Green Solutions Pilot Project. Plantings were completed in 67 rain gardens, 5 bioretention cells, 24 curb extensions with below grade storage, 12 curb extensions with rain gardens, 2 cascades, 24 bioretention cells with below grade storage, and 1 bioswale. The following quantities of plants were installed within these improvements:

- 2,201 Native and Ornamental Shrubs (#5 container size)
- 6,360 Native and Ornamental Flowering Perennials (#1 container size)
- 7,290 Native and Ornamental Grasses, Sedges, and Rushes (#1 container size)

As an added benefit, 134 trees were planted within the right-of-way in the project area to replace the 50 trees removed during construction and help intercept stormwater. Of the trees removed for the project, the majority were mature Siberian Elms reaching the end of their lifespan and having significant missing branches.

Calculations from the i-Tree software developed by the United States Forestry Service show that the trees planted are capable of intercepting 3,785 total gallons of stormwater in the first year. Within five years, the trees will be capable of intercepting 24,445 gallons of stormwater per year. Within twenty years, the trees will be capable of intercepting 144,802 gallons of stormwater. The table below provides a detailed list specific tree quantities installed and values generated from the i-Tree software.

Botanical Name	Common Name	Equivalent Tree*	Quantity Planted	Gallons/year at install size**	Year 1 Total Gallons	Gallons/Year After 5 Years	Year 5 Total Gallons	Gallons/Year After 20 Years	Year 20 Total
Acer campestre	Hedge Maple	Amur Maple	8	18	141	79	635	509	4,072
Acer rubrum	Red Maple		9	33	293	283	2,546	1,846	16,613
Gleditsia triacanthos	Honeylocust		11	46	510	314	3,454	2,090	22,990
Nyssa sylvatica	Blackgum	Sweetgum	3	33	98	302	905	1,910	5,731
Quercus bicolor	Swamp White Oak		24	37	895	289	6,937	1,832	43,974
Quercus shumardii	Shurmard Oak	Northern Red Oak	6	44	263	187	1,123	970	5,817
Syringa reticulata	Japanese Tree Lilac		60	18	1,059	76	4,589	387	23,202
Ulmus parvifolia	Lacebark Elm	Siberian Elm	8	40	324	327	2,619	1,723	13,786
Zelkova serrata	Japanese Zelkova	Siberian Elm	5	40	202	327	1,637	1,723	8,616
				Year 1 TOTAL	**3,785**	**Year 5 TOTAL**	**24,445**	**Year 20 TOTAL**	**144,802**

*Equivalent Tree used when particular species was not available in software

** Install size for all trees was 2-inch caliper

WaterWorks!

Water Services Department (WSD) has been coordinating with the City's Office of Environmental Quality and its contractor to implement activities in accordance with WaterWorks!, a subset of the larger EnergyWorks KC grant program. The contractor, Bridging the Gap (BTG), was hired to conduct water and energy conservation activities in designated portions of the community as part of the grant. The program team has worked with BTG team to identify locations for downspout disconnection and rain barrel installation in the Middle Blue River basin. BTG is also working in six additional target areas (identified in the grant application) for downspout disconnection and rain barrel installation.

During the fourth quarter of 2012, BTG mailed a letter to 211 properties identified as having a connected downspout through canvassing efforts conducted by BTG earlier in 2012. An additional 46 households were contacted based on smoke testing results in the Middle Blue River basin, totaling 257 properties. The identified properties received an offer to have the downspout disconnected for free. The response rate has not been high therefore BTG is considering a second follow-up letter, offering the installation of a rain barrel as an additional incentive to disconnect.

Through the end of 2012, 92 downspouts have been formally assessed (26 properties); 23 were believed to be connected to the sewer system, and ten were eligible to be disconnected. Eligibility was determined by the property's slope, appropriate drainage (in relation to driveway, sidewalk, etc.), condition of existing gutters, and proximity of drainage to property lines (must be at least 5 feet).

BTG has had a positive response to the installation of rain barrels. An initial group of 60 rain barrels throughout the six target areas were quickly spoken for. Because of the high demand, WSD purchased a total of 375 rain barrels for BTG to distribute and install. Through the end of 2012, 108 rain barrels have been installed.

Future Projects

As the program continues, additional projects will be implemented that will aid in retarding inflows. These projects could include private inflow source reduction that may consist of downspout disconnects, sump pumps and other sources of stormwater inflow from private property.

NMC 3 – Review and Modification of Pretreatment Requirements

"Under the third minimum control, the municipality should determine whether non-domestic sources are contributing to CSO impacts and, if so, investigate ways to control them. Once implemented, this minimum control should not require additional effort unless CSS characterization and modeling indicate that a pollutant from a non-domestic source is causing a specific health, water quality, or environmental problem." USEPA, **CSO Guidance for Nine Minimum Controls**

The Wastewater Treatment Division regulates non-domestic discharges. The division is responsible for implementing and enforcing Chapter 60, Article IV of the Kansas City Code of Ordinances and several city-wide programs, including:

- The Federal Pretreatment Program
- The Surcharge Program for high strength wastewaters
- The Oil and Grease Management Program
- An annual review of pretreatment requirements
- The Inter-Jurisdictional Sewer Service Program

These activities incorporate the following control measures:

- Inventory non-domestic CSS discharges - Identification of significant industrial users (SIUs)
- Assess non-domestic CSO discharges - Implementation of the surcharge program to evaluate the impact of non-domestic wastewater
- Evaluate feasible modifications - Periodic review of pretreatment requirements as necessary

Federal Pretreatment Program

The Wastewater Treatment Division's administration of the Federal Pretreatment Program is subject to regular review by both the MDNR and the U.S. EPA Region VII. An annual report of the City's Pretreatment Program activities is filed with the MDNR in March of each year. The report includes the following information:

- Companies in significant non-compliance
- Inter-jurisdictional agreement status
- Permit activity
- Annual enforcement log
- Notices of violations (NOVs)

The Wastewater Treatment Division identifies the regulated discharge flow volume, potential pollutants of concern, drainage basins, and the pump station(s) serving each SIU. According to the 2011 Pretreatment Implementation Annual Report, there are 65 SIUs permitted under the program. Each SIU is inspected annually and monitored periodically for conformance with its wastewater discharge permit conditions.

Surcharge Program

The Surcharge Program involves sampling non-domestic wastewaters and applying a surcharge for biological oxygen demand (BOD), total suspended solids (TSS), or fat, oil and grease (FOG) concentrations above that in "normal domestic sewage" as defined in Chapter 60 of the City's Code of Ordinances. Food handling operations such as restaurants are most affected by this ordinance. The surcharge program makes SIUs aware of the effects their discharge has on the sewer system and is an incentive to reduce their waste discharge through modifications or improved housekeeping procedures.

Oil and Grease Management Program

The Oil and Grease Management Program objective is to encourage non-domestic sources to limit discharge of FOG. The primary non-domestic sources of FOG discharges are restaurants. The Oil and Grease Management Program encompasses outreach, inspections, and enforcement.

One segment of the Health Department's Food Handler Training Class is devoted to BMPs for FOG. During visits to the facility by the Wastewater Treatment Division, a handout describing suggested BMPs is provided in a format for easy posting. Facility personnel are informed about ordinance requirements regarding FOG discharges and about the potential for enforcement actions if these requirements are not met.

A renewed effort by WSD to inform and educate facility owners about the importance of grease-traps and the role they play in collection system performance began in summer 2011.

The Oil and Grease Manager inspects food facilities and imposes enforcement actions as required. In 2012, 860 food facility inspections were completed.

Review of Pretreatment Requirements

Every year the Wastewater Treatment Division reviews the pretreatment program to determine if changes are warranted. Considerations such as economic and environmental impacts are taken into account when evaluating potential changes. These include an assessment of the non-domestic discharges to the CSS, and the impact of non-domestic discharges on CSOs.

The 2011 Pretreatment Implementation Annual Report was submitted to the MDNR on March 27, 2012 and can be found in Attachment B.

NMC 4 – Maximization of Flow to the POTW for Treatment

"The fourth minimum control entails simple modifications to the CSS and treatment plants to enable as much wet weather flow as possible to reach the treatment plants. The objective of this minimum control is to reduce the magnitude, frequency, and duration of CSOs that flow untreated into receiving waters. Municipalities should identify and evaluate more complex CSS and publicly owned treatment works (POTWs) modifications as part of their LTCPs." USEPA, CSO Guidance for Nine Minimum Controls

Wastewater Treatment Plant (WWTP) Performance and Flow Capacities

Previously, capacity studies were performed for both the Blue River WWTP and Westside WWTP. The findings from the capacity studies are summarized in the Blue River Wastewater Treatment Plant Capacity Study dated March 2, 2006, and the Westside Wastewater Treatment Plant Capacity Study dated April 6, 2006. Plant stress tests were also performed on both plants. The findings of the stress tests are summarized in two technical memorandums titled Blue River Wastewater Treatment Plant Stress Test Report dated August 2008, and Westside Wastewater Treatment Plant Stress Test Report dated December 2007.

These studies compared flows processed during wet weather and dry periods to determine the relationship between performance and flow.

Unused On-Site Facilities

Blue River WWTP

There are no facilities that could be used for storage to increase treatment capacity during wet weather event flows. However, it is anticipated that additional wet weather flows will receive primary treatment under the OCP. Solids handling and equipment rehabilitation limit the current process capacity of the primary clarifiers. Solids from Westside, Birmingham and Blue River Secondary plant and various smaller plants in the northland are consolidated at the Blue River Primary Plant. Options for biosolids handling include separate handling of these solids or providing separate solids storage facilities or the use of four of the unused grit chambers to hold solids (each chamber has a volumetric capacity of 51,000 cubic feet) to reduce the solids loading on primary clarifiers to increase wet weather capacity of the primary clarifiers. A feasibility study for cost-effective handling of biosolids was performed, and the main recommendation was to install additional digesters. Once the biosolids handling at the plant is addressed, the practice of holding solids in the primary clarifiers can be eliminated, reducing solids loading on primary clarifiers and increasing wet weather capacity of the primary clarifiers by approximately 80 million gallons per day (MGD) with discharge to secondary treatment.

Westside WWTP

There are no identified facilities that could be used for storage to increase treatment capacity during wet weather flows. Current facilities operations treat flows at design capacity of the WWTP.

Wet Weather Operating Guidelines for WWTPs

Blue River WWTP

The Wet Weather Operating Guidelines for the Blue River WWTP summarize the operating procedures for operations at the facility during wet weather events. The guidelines specify that the Blue River WWTP processes combined (primary plus secondary) treat wastewater only to the maximum capacity of the secondary treatment plant. The operating guidelines indicate that the secondary treatment plant has a firm capacity of 104 MGD and a total capacity of 138 MGD. The primary treatment capacity of 225 MGD is not achieved due to capacity limitation of secondary treatment.

Field stress testing results indicate the maximum wet weather plant capacity is limited by secondary treatment capacity at 156 MGD. This whole plant theoretical capacity assumes all equipment is on-line and operating as designed.

Additional information in the Wet Weather Operating Guidelines addresses the control room, diversion chamber, rock box, screen house, NEID pumping station, Blue River pumping station, grit removal system, distribution box and primary clarifiers, primary junction box, secondary pumping, trickling filters, and effluent pump station.

Westside WWTP

The Wet Weather Operating Guidelines summarize the procedure for operations at the facility during wet weather events. The operating guidelines provide the following recommended wet weather pump station conveyance rates:

- Turkey Creek PS-11.4 MGD
- Santa Fe PS-4.5 MGD
- Line Creek PS-8 MGD

WSD is initiating operating guideline revisions to increase the pumping rate of these stations during wet weather to fully utilize the plant treatment capacity. The current plant operating procedure is to treat a greater volume of wet weather flow than is recommended in the Wet Weather Operating Guidelines.

Stress testing identified that 40 MGD is the peak capacity this WWTP can process without affecting process performance. There is opportunity to increase the treatment capacity at this plant with current process facilities.

Additional information in the Wet Weather Operating Guidelines relates to the Turkey Creek pump station, Santa Fe pump station, Line Creek pump station, grit chambers, primary clarifiers, aeration basins, final clarifiers, and the effluent pump station.

NMC 5 – Elimination of CSOs during Dry Weather

"The fifth minimum control, elimination of CSOs during dry weather, includes any measures taken to ensure that the CSS does not overflow during dry weather flow conditions. Since the NPDES program prohibits dry weather overflows (DWOs), the requirement for DWO elimination is enforceable independent of any programs for the control of CSOs. DWO control measures include improved O&M, as well as physical changes to regulator and overflow devices..." U.S. EPA, **CSO Guidance for Nine Minimum Controls**

The Line Maintenance Division actively works to eliminate DWOs. The measures taken include:

- Routine preventative cleaning of system
- Inspection to identify DWOs
- Correct primary causes of DWOs
- Notification to MDNR when a DWO occurs

Flow Regulating Structure Inspection

The CSS contains flow regulating structures that include diversion structures and flow splitters. These structures are inspected on a routine basis to verify proper functioning. Diversion structures direct excess wet weather flows to receiving waters. The inspection interval varies for each structure and is based on historical records of performance and the sensitivity of the area surrounding the structure. Attachment C of this report lists inspection intervals for each diversion structure in the system. Flow splitters are structures that divide flows within the CSS but do not direct flow to receiving waters. Attachment C of this report lists the inspection intervals for flow splitters in the CSS.

Dry Weather Overflow Corrective Action

WSD implements DWO corrective actions aimed at correcting operational problems believed to be the cause of the overflows. The corrective actions include:

- Interceptor cleaning
- Sewer repair

The Line Maintenance Division's sewer cleaning program relies on jetters and bucket machines to remove materials that may restrict flow leading to blockages and DWOs at upstream locations. The Line Maintenance Division's sewer repair program is responsible for repairing localized sewer defects linked to the occurrence of DWOs. These steps are taken immediately (as practical) upon notification that a DWO has occurred.

Dry Weather Overflow Notification

The Line Maintenance Division notifies MDNR when a DWO occurs within 24 hours of discovery. Follow-up written reports are made within five days of the original notification. In all occurrences, the area around the overflow is cleaned and inspected for any debris or contaminants. In the case of DWOs caused by vandalism, the standard manhole covers are replaced with bolt-down covers to deter future vandalism.

The Wastewater Treatment Division notifies MDNR when DWOs at either pump stations or WWTPs within 24 hours of discovery. A follow-up written report is submitted to the MDNR within 5 days of the occurrence. Copies of these reports submitted in 2012 are included in Attachment A of this report.

NMC 6 – Control of Solids and Floatable Material in CSOs

"The sixth minimum control is intended to reduce, if not eliminate, visible floatables and solids using relatively simple measures. Simple devices including baffles, screens, and racks can be used to remove coarse solids and floatables from combined sewage . . ." U.S. EPA, **CSO Guidance for Nine Minimum Controls**

Preventing Extraneous Solids and Floatables from Entering the CSS

WSD and other City departments employ various measures that minimize extraneous solids and floatables from entering the CSS, including:

- Repair and Clean Catch Basins – WSD is responsible for the proper functioning of catch basins city-wide. The Stormwater Line Maintenance Division performs catch basin cleaning and repairs. This information is stored and tracked in Hansen. In 2012, 17,734 catch basins were cleaned and 557 catch basins were repaired or replaced.

- Street Sweeping – WSD sweeps streets on a routine schedule to reduce trash, silt and other debris on the streets. In 2012, street sweeping was conducted four times on all streets with curbs within the CSS area. This exceeded the Consent Decree requirement of sweeping all streets with curbs within the CSS area twice annually.

- Construction Site Erosion Control – Soil erosion from construction activity can increase the quantity of turbidity, nutrients, metals and sediment in the receiving sewer and waters. Sedimentation problems can potentially reduce the hydraulic capacity of sewer lines, leading to overflows. The implementation and enforcement of erosion control regulations can be an extremely effective method of reducing these constituents in the flow in the CSS. In 2012, the Stormwater Utility Division inspected 57 City contracted construction sites which were one acre or larger in size.

  Construction work is required to conform to City engineering and construction standards for all public or private work. The following standards were made effective in October 2007:

  - Section 2100 – Grading and Site Preparation, May 2008
  - Section 5100 – Site Work and Erosion and Sediment Control, August 2003
  - Section 5600 – Storm Drainage Systems and Facilities, February 2006
  - Manual of Best Management Practices for Stormwater Quality, March 2008

NMC 7 – Pollution Prevention Programs to Reduce Contaminants in CSOs

"The seventh minimum control, pollution prevention, is intended to keep contaminants from entering the CSS and thus receiving waters via CSOs. Most of the suggested measures involve behavioral change rather than construction of storage or treatment devices." - U.S. EPA, **CSO Guidance for Nine Minimum Controls**

The pollution prevention measures covered in this minimum control have been implemented by the City to encourage residents and business owners to minimize or eliminate their contaminants from entering the combined sewers and, in turn, the rivers and streams. The measures include:

- Street sweeping (see NMC 6)
- Household Hazardous Waste Program
- Keep Kansas City Beautiful Campaign
- Food handler training classes
- Public participation and outreach.

Household Hazardous Waste Program

The household hazardous waste (HHW) program is hosted by WSD and consists of two subprograms: HHW drop-off and HHW mobile collection events. The program serves 58 communities from five counties in the region. The program continues its success in collecting, recovering and recycling hazardous materials and producing reusable chemicals for the public.

The HHW facility serves as a core location for providing a cooperative regional collection system for the Missouri portion of the metropolitan area. The facility accepts residential hazardous wastes including pesticides, herbicides, and fertilizers. The permanent facility is open to the public on Thursdays, Fridays and Saturdays year-round, with the exception of City observed holidays. Mobile events throughout the City and the region provide convenient opportunities for proper disposal. These mobile events typically occur on Saturdays from April 1 through October 31 and can be held in any city or county participating in the regional HHW program. The program provides a viable alternative to improper disposal in landfills, storm sewers, or sanitary sewer facilities. Public education is a significant component of the program and provides a significant opportunity for enhancing public awareness. In 2012, the program collected 1,306,000 pounds of HHW.

Public Participation and Outreach Activities

Since 2003, extensive public participation efforts have been organized for the OCP to educate the public about sewer overflows and to provide the citizens of Kansas City with a comprehensive and consolidated opportunity to participate in the development of solutions for all wet weather issues facing the City. Between 2003 and 2009, the public participation efforts evolved to become not just a component of the OCP, but involved the Stormwater Management Division and Waterways Division within WSD. Activities with all three divisions were coordinated to create a consolidated public participation effort, called the Wet Weather Solutions Program.

Certain components of the public participation program are ongoing and are intended to educate and involve the public on pollution prevention activities and to secure support for the OCP. Existing stakeholder groups consist of the public and interested stakeholders, officials of all levels from many city departments, and WSD staff. The following provides a description of active public participation activities.

Overflow Control Program Outreach

WSD's public education/outreach programs allow for both direct and indirect involvement of the public. WSD maintains a section on the City's website that provides information explaining water and sewer service setup and billing procedures. They also provide information about the OCP, backflow prevention, news releases, water rates, contact information, and design professional services information. WSD also distributes information at public and cultural events. WSD publishes a bi-monthly Waterlines newsletter that informs the public about the activities underway at WSD, including how to improve water quality. Presentations on the OCP and the challenges facing Kansas City have been held with neighborhood associations and similar groups, other City departments, and elected officials. These efforts have been enhanced with an extensive, more general public education and awareness effort. Finally, outreach has occurred at the project level with public and neighborhood meetings.

Citizen Action Kit: In 2006, a Citizen Action Kit was developed to provide informational fact sheets about WSD activities and to educate citizens about CSOs, SSOs and what they can do to prevent pollution. The kit is intended to help build a partnership between WSD and citizens while working toward a common set of goals. The kits have been distributed at public meetings and at road show presentations. Residents and interested stakeholders can request additional copies.

Newsletters and Fact Sheets: Articles on various wet weather-related topics are distributed in existing City publications such, including *Waterlines*. Fact sheets are also developed on various topics as needed. Some fact sheets have become a part of the Citizen Action Kit and are distributed at Road Show presentations. *Waterlines* is distributed bi¬monthly in the water bills of all water customers. In 2012, five of the Waterlines publications included information about wet weather related activities.

Public and Neighborhood Meetings: WSD staff members and OCP program team members have made presentations over the past year to various organizations about the OCP. The tools include a PowerPoint presentation with details on the OCP that is often tailored to fit the audience. A list of presentations given in 2012 is included in the Public Participation section of this report. Additional presentations are prepared based on specific conferences and events at which WSD staff is presenting.

Meetings with the public and with neighborhood residents have also taken place on a project-specific basis over the past year. For the Middle Blue River Basin Green Solutions Pilot Project, two rain barrel workshops were held for the pilot area on April 28 and May 3 to demonstrate how simple green solutions on private property can keep stormwater out of the wastewater system. In partnership with Kansas City's Neighborhood and Community Services Department, a new code enforcement process was tested in the pilot area as well. The meeting was held February 20, 2012, where attendees were informed about the types of violations the City would be citing.

Website: WSD created a website (www.kcmo.org/wetweather) in 2004 to highlight the planning process, problems, and projects in both the OCP and the KC-One Stormwater Management Plan. A full WSD website revision is currently underway, with an expected completion date in the spring of 2013. After the new website is completed, it will be updated to reflect the implementation activities of the OCP.

Channel 2 Programming: KCCG Channel 2, the City's local access cable channel is available to cable subscribers in the City or online through the city website or Facebook (Kansas City, Missouri- Water Services). Videos created by WSD related to wet weather issues continue to air periodically on channel to and are available for viewing through the Video on Demand option on the city website.

Partnerships and Collaboration

KC Green Team: The KC Green Team was created under Administrative Regulation 5-5 Green Solutions and Sustainability. City staff, from various departments, volunteers to effectively execute its mission. The KC Green Education & Outreach Team organized a variety of events and activities to educate City staff across all City departments about green solutions and sustainability within City operations and the City as a whole. In March 2012, this team, with assistance of more than a dozen City staff volunteers, shared various green solutions at Kansas City's Flower, Lawn, and Garden Show held at Bartle Hall. On Earth Day, April 22, 2012, a plastic bag recycling event, open to both citizens and City staff, was held at seven sites across the metro, four of which were City facilities. A Transportation Fair was held on Friday, July 27, 2012, serving as an introduction and opportunity for City staff to participate in the Green Commute Challenge (encouraging greener transportation methods—walking, biking, carpooling, the bus, etc.). America Recycles Day was observed on Thursday, November 15, 2012, with a paper collection, recycling and shredding competition with Jackson County where nearly 9,500 pounds of paper was recycled.

The Regional Water Quality Public Education Program hosted by MARC: WSD continued to contribute funding and staff time to this MARC sponsored program. The program provides a comprehensive approach to raising public awareness about watershed issues and water quality in order to change household behaviors that impact water quality in the Kansas City region. In addition, the education program allows local governments to have a cooperative approach to meet federal regulatory requirements and support community actions to reduce non-point source water pollution. The program used multiple communication venues to reach residents, commercial businesses, nonprofit organizations, municipalities, and state and federal agencies. The past year's effort involved media campaigns focusing on two major topics – storm drain awareness and healthy lawn care. They disseminated education through hosted webinars, awarding seven proposals for education and outreach events related to reducing non-point source pollution, housing a library of training videos for local communities' use, and continuing to produce and distribute educational materials for the program outreach strategy.

Blue River Watershed Association (BRWA): BRWA is a nonprofit, grassroots community organization that engages Kansas City in protecting and restoring the area watersheds. The organization focuses its efforts on community education, environmental stewardship and strategic partnerships. WSD continued to provide staff to support the T.R.U.E(Teaching Rivers in an Urban Environment) Blue Program, which trains and equips area teachers, students, and community members to establish school-based "stream teams to monitor water quality throughout the Blue River Watershed and nearby streams. WSD staff continued to volunteer their time in 2012 to mentor small groups of students as they collected water quality data in local streams. In addition, BRWA has been contracted to continue their work with WSD to implement the *Journey of Stormwater:* KC to the Sea curriculum for 4th through 6th grade students in Kansas City schools.

Brush Creek Basin Feasibility Plan and Regional Watershed Partnerships: The City continues to sponsor the activities of the Brush Creek Coordinating Committee, an organized stakeholder group with a mission of developing and implementing an integrated, regional watershed management plan for the Brush Creek Basin. This group, which is made of up water resources and engineering experts, local not-for-profit groups, regulators, and municipal partners from both Kansas and Missouri, is broken into four action teams that meet on an as-needed basis to carry out their goals.

Various environmental programs hosted by Bridging the Gap: The City continued to sponsor the organization with a focus on sustainability education and outreach. Bridging the Gap used its programs as venues to promote the sustainability message. The programs include Keep Kansas City Beautiful Program, Five Green Things, Heartland Tree Alliance, By-Product Synergy Initiative, Environmental Excellence Business Network, Kansas City Earth Walk, Kansas City Earth Fest, Community Recycling, and Kansas City Wildlands.

Missouri River Cleanup: The 8th annual Missouri River Cleanup, organized by Missouri River Relief, was held October 20, 2012 at Kaw Point Park. The event provided the City an opportunity to support this massive River Relief effort and to partner with other local agencies to demonstrate environmental stewardship. This year, 13 river miles were cleaned by 303 volunteers. A total of 12.9 tons of litter and debris was collected.

Project Blue River Rescue: The event is an outreach of the Friends of Lakeside Nature Center operated by the City's Parks & Recreation Department. The event is sponsored by the Missouri Department of Natural Resources and is supported by many governmental entities and businesses. The City's Parks and Recreation, Public Works and WSD continue to provided facilities, equipment, expertise and assistance with program coordination. Approximately 900 volunteers participated in this event on March 31, 2012. Nearly 70 tons of trash and about 650 used tires were collected and disposed of. The project provided both an economic and environmental benefit to the City by removing debris, refurbishing the flood plain and river banks, and safeguarding habitats along the river.

NMC 8 – Public Notification

"The intent of the eighth minimum control is to inform the public of the location of CSO outfalls, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities curtailed as a result of CSOs. The measure selected should be the most cost-effective measure that provides reasonable assurance that the affected public is informed in a timely manner." USEPA, **CSO Guidance for Nine Minimum Controls**

Combined Sewer Overflow Public Notification Plan

The City recognizes the need to notify the public of CSOs. The purpose of the City's notification plan is to inform and educate the public of potential overflows in the urban waterways during and following storm events. The goals of the public notification program are to:

- Notify citizens when overflows are likely to occur;
- Educate the public about the potential health impacts associated with overflows in waterways;
- Educate the public about the potential danger and health impacts of high waters in waterways during heavy rainstorms;
- Enable citizens to take appropriate steps to protect themselves and their families from such hazards.

WSD utilizes these methods to inform the public of the potential for CSOs:

- **Telephone Hotline** –The telephone number to report an overflow is 816-513-8000, which rolls directly to Kansas City's 3-1-1 Action Center. The telephone voicemail number is also on the CSO public access signs and on the Channel 2 bulletin board described below.
- **Signs** – Two types of warning signs have been installed to notify citizens of the hazards of CSOs. The first sign type has been posted at public access points to streams and notifies citizens that the streams receive CSOs and to avoid contact with the water during and 72 hours after rainfall. The second sign type has been posted at all outfall locations and notifies citizens to avoid contact with water and displays the phone number listed above for reporting of DWOs. Both signs are printed in English and Spanish and are readable from a distance of about 20 feet. The Line Maintenance Division is responsible for inspecting and maintaining the signs.
- **Channel 2 Message Board** – Information regarding CSOs is posted on the City's public service TV channel, KCCG Channel 2. A CSO notification message has been posted on the electronic message board that runs from April to October. The message contains English and Spanish text and warns people to avoid contact with streams in the CSS area and gives the boundaries of that area.
- **Water Bill Insert** – WSD publishes a bi-monthly Waterlines newsletter that informs the public about the activities underway at WSD. Information on OCP projects and CSOs are periodically included in the newsletter.

NMC 9 – Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls

"The ninth minimum control involves visual inspections and other simple methods to determine the occurrence and apparent impacts of CSOs. This minimum control is an initial characterization of the CSS to collect and document information on overflow occurrences and known water quality problems and incidents that reflect use impairments by CSOs. Changes in the occurrences of such incidents can provide a preliminary indication of the effectiveness of the NMC" - USEPA, **CSO Guidance for Nine Minimum Controls**

The City completed a thorough characterization of the CSS as part of the development of the OCP. The following sections summarize what has been completed or will be implemented to aid the City with assessing the effectiveness of the NMCs and the control measures described in the OCP.

Mapping CSS Drainage Area Diversion Structures and Outfalls

WSD has completed mapping of the CSS drainage areas and has located and inspected all diversion structures and outfalls. The CSS drainage areas were verified during the development of the OCP. Diversion structures have been inspected and have been maintained by the Line Maintenance Division according to the maintenance schedules presented in NMC-1. Figure 5-3, as originally included in the October 2008 report "Capacity, Management, Operations and Maintenance Plan (CMOM) & Nine Minimum Controls" and referenced herein, shows the locations of diversion structures, flow splitters and outfalls.

Designated Uses, Applicable Water Quality Criteria, and Actual Uses for Receiving Waters

Receiving water bodies and designated uses - Kansas City's combined sewers overflow to numerous receiving streams. Principal receiving streams include the Kansas River, the Missouri River, the Blue River and Brush Creek. Brush Creek is tributary to the Blue River, which is tributary to the Missouri River. The Missouri River at the Broadway Bridge in Kansas City drains a total of 484,100 square miles. That area includes 59,756 square miles tributary to the Kansas River at De Soto, Kan. (approximately 30 miles upstream from the confluence of the Missouri River and Kansas River). All of Kansas City's CSS basins are eventually tributary to the Missouri River. They represent only 0.01 percent of the total Missouri River tributary area at Kansas City. The Downtown Airport, Central Industrial District and the Northeast Industrial District are each directly tributary to the Missouri River. The Turkey Creek basin is the only Kansas City CSS basin tributary to the Kansas River. The remaining CSS basins in Kansas City (Gooseneck Creek; Lower Blue River; Brush Creek; Town Fork Creek; and the Middle Blue River) are tributary to the Blue River.

Figure 5-4, as originally included in the October 2008 report "Capacity, Management, Operations, and Maintenance Plan (CMOM) & Nine Minimum Controls" and referenced herein, shows streams that receive overflows from Kansas City's CSS, and indicates the current recreational water quality standard designated by the State of Missouri (or by the State of Kansas, for the Kansas River). This figure defines (in blue) the CSS area directly tributary to the Missouri River (including those areas tributary via the Kansas River). It also shows all areas tributary to the Blue River. The map distinguishes between those tributary areas upstream of Kansas City's CSOs (e.g., upstream of the points marked with red stars), and areas directly tributary to those stream reaches that receive CSOs. Within the Blue River basin, areas directly tributary to those stream reaches that receive CSOs include both CSS (shown in yellow) and SSS (shown in green).

Of the total area tributary to the Blue River, 74 percent is located upstream of those reaches of the Blue River and its tributaries that are impacted by overflows from Kansas City's CSS. Kansas City's CSS serves 10 percent of the total area tributary to the Blue River. The remaining 16 percent of the Blue River tributary area is served by separate storm and sanitary sewer systems in Kansas City.

Development of Overflow Occurrence Estimates

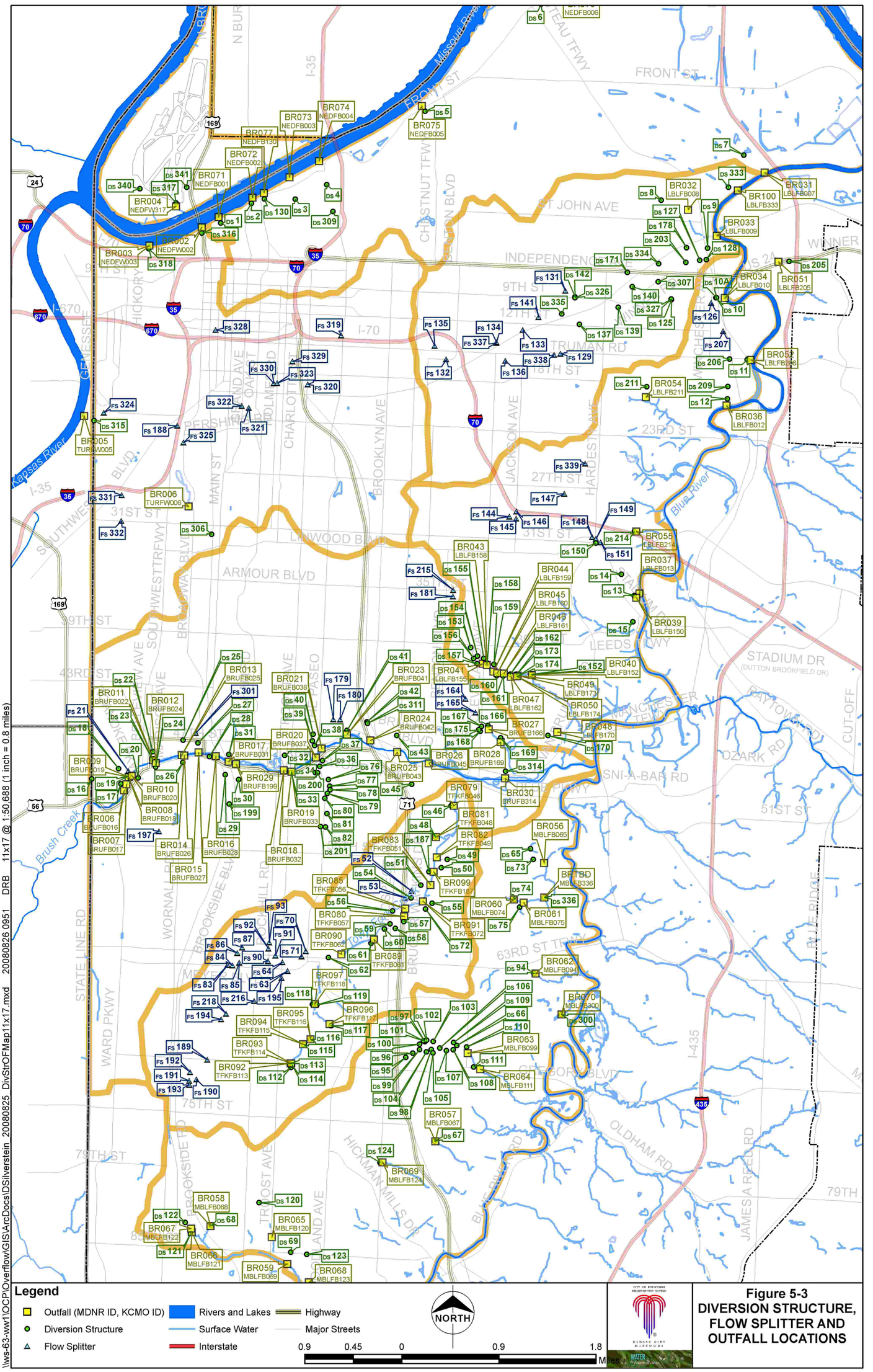
The current performance of the CSS was estimated using computer models developed as part of the OCP. The models were calibrated to sewer flow meter and rainfall data. The estimated overflow volume from Kansas City's CSS in a typical year is just over 6 billion gallons.

Overflow frequency varies significantly, both within the individual basins and across the City. The estimated average overflow frequency at the 89 outfalls south of the Missouri River is more than 20 times in a typical year. A complete summary of the overflow frequency, volume and duration for each outfall can be found in the supporting documentation included in Kansas City's OCP. As control projects are implemented, estimates of overflow volume and frequency will be compared to these baseline values.

Development of a Long-Term Monitoring Plan for the Overflow Control Program

The City is implementing an Integrated Water Quality Monitoring Program (WQMP) prepared by LimnoTech for WSD (LimnoTech, December 28, 2010). This plan was developed to address the requirements of Section II, Water Quality Monitoring Plan, of the Post-Construction Monitoring Program Performance Criteria included as Appendix D of the Consent Decree. The WQMP is being implemented city-wide and addresses water quality in both the CSS and SSS areas. A summary of the results from the WQMP for 2012 is presented in the section of this report that discusses Appendix D of the Consent Decree.

Given the dynamic nature of assessment of water quality standards and evolution of regulations, during the course of the program, the data collected will be periodically evaluated for usefulness in serving WSD's needs. Based on such evaluations, WSD will propose modification of the program to the regulatory agencies, and will make such modifications as have been accepted by the regulatory agencies. Modifications may include the addition, elimination or relocation of monitoring stations; the addition or elimination of pollutant parameters; modification of data collection techniques; and modification of data evaluation methods.



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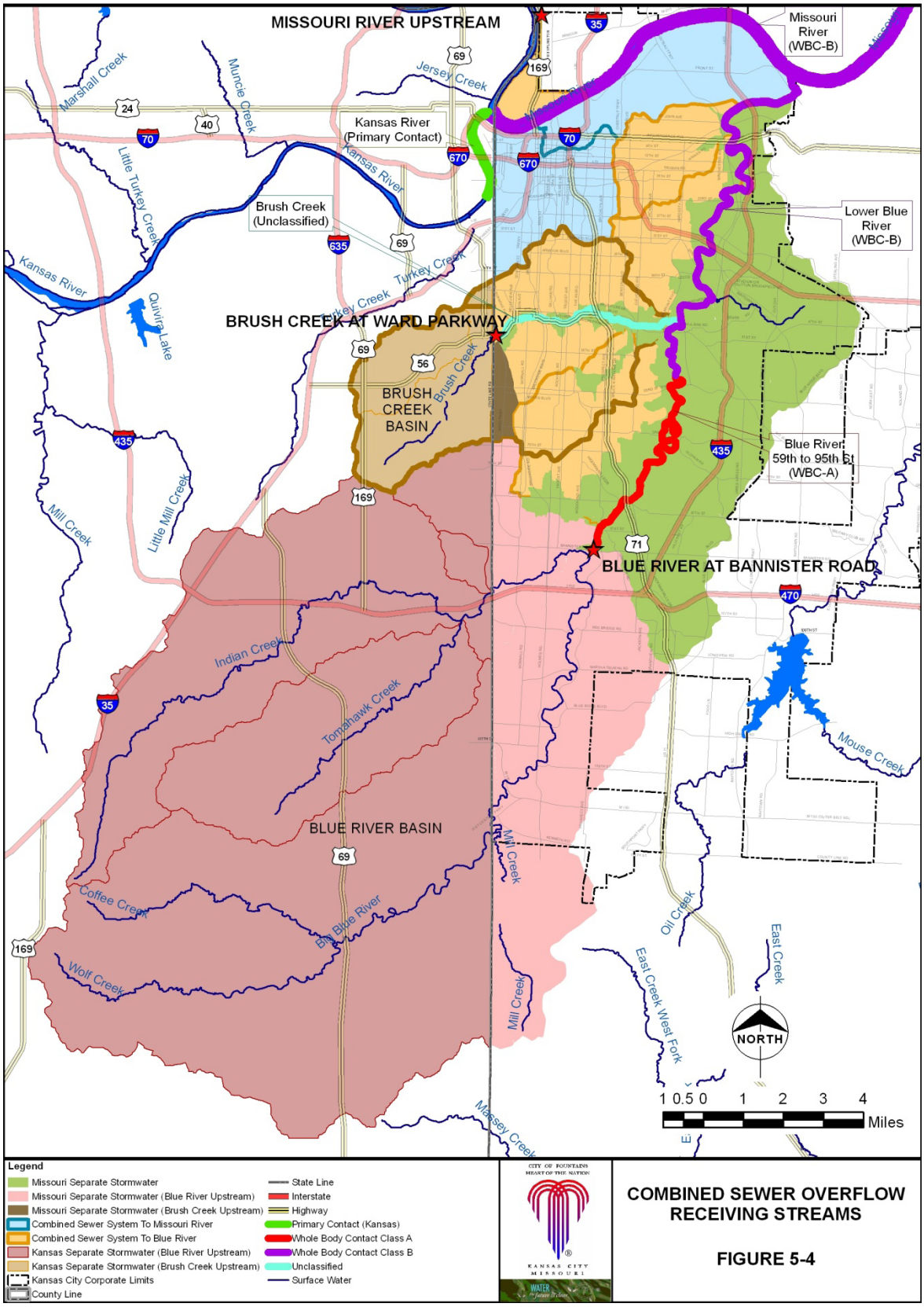


COMBINED SEWER OVERFLOW RECEIVING STREAMS

FIGURE 5-4

CONSENT DECREE APPENDIX C:

CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE PLAN PERFORMANCE CRITERIA

WSD has developed a comprehensive CMOM program aimed at improving the ability of the utility to manage its system and ultimately reduce the occurrence of sewer overflows and maintain compliance.

Collection System Management

Organizational Structure

WSD's organizational structure provides delineated job responsibilities, outlines opportunities for advancement, ensures effective employee to supervisor ratios, and guarantees adequate staff is in place to accomplish the mission and vision of the department. This structure is used during the annual budget process to determine staffing needs and allocate operational expenses appropriately.

WSD's organizational structure chart outlines functional groups and classifications. It is utilized as a planning tool when evaluating staffing needs. In addition, the organizational chart visually demonstrates hierarchy and reporting structures, as well as career opportunities. Updated organizational charts are distributed to the management team on an as-needed basis. Written job descriptions are on file for all employees within WSD. Job descriptions contain the following information:

- Nature of work to be performed
- List of the essential functions of the position
- Special qualifications (certifications, licenses, etc.)
- Physical expectations
- Educational qualifications
- Supervisory responsibilities (when appropriate)
- Minimum qualifications (when appropriate)

All open positions are handled through the City's Associate Resources & Development Division and are posted internally to allow advancement opportunities for existing staff members. Vacancies are filled once the appropriate level of talent is found. Although this selective process may require the vacancy to remain open for a time, the payoff in skills and abilities is beneficial.

The organizational structure is evaluated during the annual budget process and through frequent communication between Human Resources personnel and all operating divisions of WSD. In addition, members of the management team evaluate staffing needs throughout the year as needs arise that may not have been considered while formulating budget projections. The performance of our workforce is evaluated using a formal performance review process for all employees.

WSD's Director and the Human Resources Manager are responsible for assuring that WSD's organizational structure and staffing meets WSD's needs and conforms to City requirements. In October 2012, WSD went through a reorganization of the executive leadership team to include Utility Officer Positions that will lead six critical areas. Three of these positions, the Customer Service Officer, Chief Financial Officer, and Chief Engineering Officer will lead critical functions that have a direct impact on the success of WSD by supporting the goals and objectives of the three utilities. The other three positions the Water Utility Officer, Wastewater Utility Officer, and Stormwater Utility Officer, provide the direct leadership for each of the three utilities.

In addition to the utility officer positions WSD has also increased staffing in its Communications Department, and added two critical positions to the OCP Program; an Education and Outreach Coordinator to oversee program specific public outreach activities, and a Landscape Architect to direct planning, operations, and maintenance of green infrastructure projects.

Communications and Customer Service

Over the past year, WSD has increased its communications staff in order to meet the unique needs of the many audiences the department serves. The positions include Communications Manager, Media Liaison, Internal Communications Coordinator, and Public Relations Coordinator. These audiences encompass:

- approximately 850 employees
- 170,000 retail customers
- 33 wholesale customers
- local and national media outlets
- neighborhood and civic groups
- the Mayor, City Council, City Manager, and City Departments
- State and Federal elected officials and governmental entities

In the coming year, WSD will complete a number of measureable communications goals, including a comprehensive communications audit, implementation of consistent and customer-focused messaging, development and launch of a customer-focused website, and delivery of multiple internal and external communications mediums.

Inquiries, Requests and Complaints

The primary point of contact for members of the public with complaints is Kansas City's 3-1-1 Action Center. Calls to the center are logged into a computer data base with problem description and location plus caller identification and contact data, and a ticket is printed for routing to the appropriate City department. Complaints related to sanitary sewer or stormwater issues are routed to the Wastewater Line Maintenance staff. Each complaint is scanned by a supervisor and assigned to an investigator to determine the nature of the problem.

If the Wastewater Line Maintenance inspector finds that the problem is with a facility for which WSD is responsible, a work order is initiated. Once the work has been completed, the customer service ticket is closed out. In situations where WSD repair activities require the involvement of other City departments, the appropriate departments can be called in and the associated costs are charged back to the Line Maintenance Division for work completed on their behalf.

Occasionally, a member of the public will call WSD directly. If the call is related to an ongoing customer service ticket, the operator accesses the customer service data base, looks up the matter, and routes the call to the appropriate Wastewater Line Maintenance supervisor.

Legal Authority

The legal authority of WSD rests in the City Charter of Kansas City, Missouri (KCMO), which sets forth each of the City departments and defines their responsibilities. Chapter 60 of the City Municipal Code defines the specific authority and responsibilities of WSD regarding the sewer system. Specifically, Chapter 60 of the Municipal Code provides the Department authority to do the following:

- Charge fees to all users of the sanitary sewer system, whether or not they are located within the KCMO city limits
- Set rates for different classifications of sanitary system users
- Enter into agreements with communities outside the KCMO city limits for wastewater services
- Describe methods for measuring the volumes from customers outside of the KCMO city limits
- Let bids, select contractors, and construct public sewers.
- Set standards for the use of private septic tanks, including the cleaning of the tanks and the disposal of collected materials.
- Control discharges into the system by industrial or commercial users by prohibiting the release of any materials that may damage the system, pose a health risk to City workers, or pass through the treatment plants.
- Prohibit the discharge of flammable or other hazardous materials into the sewer system.
- Regulate the release of oil and grease into the sewer system by setting acceptable discharge concentrations and setting surcharge rates for higher concentrations of discharged oil and grease.
- Require the pretreatment of waste from industrial or commercial users in order to protect the sewer system.
- Require industrial or commercial users to report on their releases into the system.
- Inspect the facilities of industrial or commercial users to determine the types and quantities of materials being released into the system.
- Assess penalties against any industrial or commercial users who violate the terms of the ordinance or permits issued

Coordination between the Department of Public Works and WSD is required to regulate the connection of private sewers to the public system by entering into contracts, assessing fees, requiring adherence to the City's Standard Specifications, and requiring bonds.

In addition, Section 60-346 of the City's sewer user ordinance gives the City the authority to deny a building permit or sewer connection permit if it is determined the receiving sewers have inadequate capacity. The City has also adopted Standard Specifications for the design and construction of new or upgraded sanitary sewers.

An established Enforcement Program provides the City with the support needed to interpret, adapt, and enforce the Rules and Regulations as needed, which helps control root causes of SSOs such as I/I, corrosion and blockage due to industrial waste, and FOG. The Enforcement Program also provides the City with the resources necessary to effectively manage and implement the requirements set forth in OCP, which will ultimately minimize overflows in the City's service area.

The following statutes, ordinances, policies, agreements, documents and legal support areas are relevant to SSO minimization:

- Missouri Administrative Regulations
- Water Services Rules and Regulations
- Contractual Agreements with Satellite Communities
- Pretreatment Program Legal Support and Enforcement Response Plan
- FOG Control Legal Support
- Research, draft and review correspondence, meeting minutes, memoranda, agreements, contracts, and other legal documents
- Provide legal representation and counsel on a wide range of real estate, compliance and financial matters
- Assist with the resolution of disputes or conflicts in matters that could involve the City's customers, suppliers, consultants, contractors, employees, or any local governmental agencies
- Assist with securing permits from state and federal agencies
- Perform all required actions in regards to litigation, from initiation to final disposition
- Coordinate necessary legal or enforcement action against individuals or entities alleged to be in violation of City's Rules and Regulations
- Participate in City Board meetings
- Advise on records retention issues and assist with responses to Open Records Requests

The following is an overview of the general activities associated with implementation of the City's Legal Authority Program: The program is regularly monitored by the City Council. There is constant collaboration between the management team and legal counsel.

Acquisition Considerations

The purpose of the City's Acquisition Considerations Program is to ensure the design and construction of infrastructure that is acquired into the Sanitary Sewer System complies with the City's technical specifications and construction standards. This program applies to prospective infrastructure from both new construction and privately-owned systems being considered for a transfer of ownership to the City.

The Acquisition Considerations Program includes proactive measures to prevent the occurrence of I/I caused overflows by inspecting new infrastructure to determine if it is properly designed, constructed, and installed, and that private sewers connecting to the public system are water tight.

This program is largely implemented and enforced through standard evaluation and inspection procedures. Located on the City's website, the City's standards (Design Criteria and Construction Specifications) are given as a source of information for contractors and developers. City inspectors monitor new construction activities for compliance with City standards and specifications. Prior to accepting new infrastructure, City inspectors witness post-construction performance tests to assess the integrity of the infrastructure. The City's in-house inspectors are dedicated full-time to monitoring construction activities of infrastructure to be dedicated to the City. This team of inspectors is within the City Planning and Development Department. WSD continues to work with City Planning and Development to assure better coordination procedures.

The Land Development Permits staff (located under the City Planning and Development Department) is responsible for issuance of private-development funded project permits for construction of public infrastructure including storm and sanitary sewer improvements. The group, working under City ordinance, will issue permits to those individuals and companies who have obtained the necessary insurance, bonds and construction plan approvals. The group also maintains the public infrastructure record, required to be maintained by the Public Works Department in accordance with the City Code of General Ordinances and revised Missouri Municipal Record Manual in 1999. All public infrastructure construction plans, permits and other pertinent records are identified with a unique file number, scanned, and permanently stored on a regular basis.

The Plans Management staff provides a service for those customers seeking permits that require submittal of detailed plans for review and approval prior to issuance. Upon submittal, the plans are reviewed for completeness and then routed to the appropriate City departments for technical review and approval. Once all required approvals have been received, the permits are issued.

As of December 31, 2012, there are no formal procedures for inspecting existing infrastructure considered for acquisition, which may include privately owned pump stations and sewer lines. It should be noted that such acquisitions are extremely rare and will most likely require custom procedures. However, the City has begun taking steps to formalize such a procedure. The formal procedure may include the following components:

- City assigns a project manager to oversee potential acquisition activities
- The owner of the infrastructure (owner) shall obtain and deliver to the City historical information on the infrastructure including proof of ownership, design guidelines, design calculations, as-built plans, specifications, rights-of-way, and any other information of interest
- Owner shall obtain/perform a condition assessment (to be witnessed by the City)
- Owner shall test the performance (to be witnessed by the City)
- City may determine effectiveness of the infrastructure in meeting the desired conveyance need
- If improvements are required, the City may require the owner to make necessary improvements before assuming ownership.

Information Management System

The purpose of an Information Management System (IMS) Program is to provide tools that track collection systems' performance, costs, and work orders, and measure the effectiveness and efficiency of O&M activities. The IMS programs and software maximize accessibility to a wide range of data that are pertinent to the decision making process.

Collectively, IMS tools give staff a well-defined, detailed understanding of how the collection system performs through the monitoring and analysis of their respective performance measures. This helps categorize and prioritize problems throughout the system and helps staff make well-informed decisions as to where to allocate resources and implement maintenance and rehabilitation activities that can result in the minimization of overflows.

WSD has an extensive IMS to share data among each division in several locations around the City. For the wastewater treatment and collection system, the primary data systems used include the Hansen Computerized Maintenance Management System (CMMS), geographic information system (GIS) mapping with attribute tables, WinCan CCTV data management system, and Computer Aided Dispatch (CAD) to assign work crews, plus other software applications to help manage the large quantity of data processed on a daily basis. The following is a list of the relevant systems in use during the reporting period:

- GIS – ESRI ArcGIS
- WinCan CCTV data management system
- CMMS – Hansen
- CIS/Utility Billing – BANNER
- SCADA
- Inventory Data Management – STOREROOM (custom application)
- Payroll/Purchasing – PeopleSoft

GIS - During the reporting period, WSD used the ESRI ArcGIS 10 suite of products. Within ArcGIS, ArcInfo is used for maintaining spatial data. In WSD there are a moderate number of users of ArcInfo (split between water distribution, sewer collection, and stormwater collection) that create and maintain GIS data. A small number of people are using ArcView to view the GIS and perform some analysis. The remaining people that use the GIS are using ArcReader, a free product used for viewing and plotting GIS data. This product has no editing capabilities and has limited analysis tools but it meets the needs of some GIS end users.

Field crews can access GIS data that are stored on their laptops but they cannot access live GIS data. The version of the GIS data that they can access is refreshed on a monthly basis by the GIS group. However, it is up to the field personnel to make sure that they have the latest data on their laptops. There was some previous consideration given to implementing ArcMobile so that field crews could access real-time GIS data but it was abandoned due to its cost and response time. WSD may reconsider this decision as it moves forward with the Asset Management Program.

While the GIS contains a comprehensive list of assets, it does not contain the level of asset data that Hansen contains. This is because Hansen is seen as the source database for assets. It is unnecessary to replicate all data in both locations. This is especially true because integration between the two has been established. If staff wants to spatially analyze data that only exists in Hansen, then the data can be loaded temporarily into the GIS or join tables through open database connectivity. The GIS does permanently contain asset type, material, size, install date, pipe elevation, and address information although not all fields are complete. These data fields also exist in Hansen.

WinCan CCTV – During the reporting period, WSD's Line Maintenance Division utilized WinCan software to organize and store CCTV investigation information. WinCan stores digital video, still images, and text data in a database format. The database can be sorted and queried to produce customized inspection reports. The Division utilizes WinCan V8.24 with PAPC coding. This version has several enhanced capabilities including an ability to establish a link with the Hansen database so that data can be exchanged between the two. The enhancement enables Hansen work order data to be exported into WinCan and also enables WinCan inspection data to be exported into Hansen.

CMMS – WSD is currently using Hansen version 7.7 releases 4.1.1 for the CMMS system. Hansen has been used throughout the wastewater organization since the Line Maintenance Division parted from its old mainframe system in 1999 and joined the Treatment Division in using Hansen. Treatment has been using Hansen since the early 1990's. WSD's experience and familiarity with the system is significant, utilizing the system to both plan and document maintenance activities.

Customer Information System/Billing - Banner is the Customer Information System (CIS) used for Water, Wastewater, and Stormwater utility billing. Ventyx Customer Suite is the new name for Banner, however; the old name is still used to reference the system. Banner is used to manage and bill approximately 170,000 customer accounts. It has been in use since 2004, but there is consumption and work history that was carried over from the previous mainframe system.

SCADA - Within the Wastewater Utility only the Wastewater Treatment Division uses supervisory control and data acquisition (SCADA). The SCADA system in place is only used for data acquisition and for signaling alarms. It is not used for control purposes.

Inventory Management - Seven store rooms located throughout WSD provide parts, materials, and consumables. Each location is responsible for a selected set of inventory and has its own silo in the warehouse database. The inventory includes treatment chemicals, cleaning supplies, safety equipment, safety apparel, pipe and pipe fittings for both potable and sewer (at separate locations), manhole corbels, manhole barrels, valves, and other commonly used materials.

To manage these supplies, a custom inventory management system (STOREROOM) was implemented. The system is used to track the quantity, cost, and physical location of spare equipment, parts, and material. A bar code reading system, included in STOREROOM, relays information from the seven locations to a central database where all inventory is recorded. Each location records the receipt of materials and the issuing of materials.

WSD's Information Technology Division manages the PC network and integrates various application programs to facilitate user and work needs at each location. The IMS is continuously being enhanced to support a growing set of applications and provide better access to data. Each user and work process serves to test the IMS capability and new requirements are identified almost daily. These needs are evaluated and new services developed to address user needs. However, the goal of the IMS is to enable displaying available data from various maintenance activities.

The IMS is evaluated periodically through IT staff meetings, user feedback and other sources. The effectiveness of this program is also continuously evaluated through the routine use of IMS tools and through quality assurance and quality control measures performed by both WSD staff and outside consultants.

Geographic Information System Mapping

The purpose of WSD's GIS Mapping Program is to ensure that an accurate and comprehensive inventory of the collection and transmission systems is maintained, that it is assembled and presented in a manner conducive for use, and that it is easily accessible by WSD personnel that depend on the data for both performance and planning purposes. WSD's mapping software identifies several collection system components and attributes, including:

- Gravity sewer/force mains/ pipe attributes:

  Property lines/parcels

  Pipe attributes

  Manholes and other access points

  Diversion structures/flow splitters and outfalls

  Ownership of infrastructure

  Sewer easements

  Stormwater inlets

  Septic tanks

  Impervious surfaces

  Aerial photography

- Wastewater facilities (including pump stations, flood pump stations, and wastewater treatment plants)
- New construction locations
- Planimetric features (including contours, roads, surface water and land use)

WSD's system mapping tools provide a visual representation of the collection system and enable staff to look at issues on a larger scale. These tools increase staff's knowledge of the collection system and enhance the ability to recognize relationships between system components, their performance, and trace flow through the system. This visual display of components and problem areas helps WSD determine the most effective solutions to minimize overflows.

Existing Infrastructure

WSD collection system has been mapped on sewer atlas maps representative of one square mile grid maps of the service area. The map squares often were annotated with contractor data that may not reflect actual as-built conditions.

WSD has a systematic numbering system for manholes, sewer lines and pump stations based on designated mapping units. Planimetric features are updated periodically based on aerial photography from partnering agencies.

All known structures are mapped in the GIS layer. An ongoing goal of this program is to continuously obtain more comprehensive, accurate data and input this data into the mapping system. Updates to existing infrastructure are submitted by both internal crews and external consultants when routine field inspections or work in special project areas reveal changes or additions to system mapping data.

New Development

WSD collection system maps are the result of several attempts to consolidate available information. Currently, the existing sewer area is mapped by the Engineering Division from markups provided by Wastewater Line Maintenance crews. New sewer extensions plus recent sewer additions installed by contractors or identified by crews are marked on the sewer map and forwarded to engineering for inclusion on the GIS map.

Mapping data and attributes for new infrastructure are entered into the GIS layer through as-built plans and maps required for all new development. Service laterals for new sewers are also mapped in GIS. Hard copies of as-builts are submitted by developers to WSD's Plan Review group for approval.

Program Data Management

The mapping system used is ESRI's ArcGIS desktop product, which interfaces with Hansen to enable staff to spatially associate structures and pipes with their attributes, repair history, and relevant asset management information. This interface is still in the development phase. WSD's GIS staff also inputs system mapping data from new development and capital improvement projects through the use of digital AutoCAD files.

Digital maps generated from ArcGIS are available to field crews both in the office and hard copies in the field. Field crews and CCTV crew record changes and inaccuracies by submitting hard copy revisions to WSD's GIS staff. This data is transferred into the GIS as it is submitted, and monthly files are maintained by a GIS technician.

There are several employees throughout WSD that utilize system mapping tools and provide updates to inventory data. In addition to internal staff, WSD obtains planimetric data and aerial photography from partnering GIS organizations. All applicable staff members receive training from IT personnel on ArcGIS and ArcPad. The method of training for these applications ranges from formal classroom instruction to informal reference sheets that are developed and distributed. Personnel who utilize system mapping tools also attend relevant workshops and other GIS events.

The GIS Mapping Program is evaluated on a continuous basis through monthly team meetings and frequent communication between GIS administrators and users throughout WSD. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process.

Sanitary Sewer Overflow Reporting and Notification

The purpose of WSD's SSO Reporting and Notification Program is to ensure that discharges from WSD's sewer collection systems are properly documented, stored in a data management system, and properly reported to appropriate regulatory authorities and affected publics. A reportable discharge includes any SSO or other discharge to waters of the United States that are not specified in a NPDES permit.

Adherence to and compliance with the SSO Reporting and Notification Program plays a vital role in minimizing SSOs, supporting the City's community values, and minimizing WSD's compliance and legal risks. Properly tracking and reporting SSOs provides staff with a better understanding of release points trends and root causes throughout the collection systems and enables decision makers to prioritize resources to cost effectively minimize SSOs. Continuous tracking of overflow occurrences leads to proactive prevention of SSO events.

The primary point of contact for members of the public with complaints is Kansas City's 3-1-1 Action Center Center. Details of the 311 Center are discussed above under "Inquiries, Requests and Complaints." The 3-1-1 Center is the principal method in which SSO overflows are reported to WSD. If, upon receipt and investigation of a 3-1-1 service call a problem with a WSD facility is identified, a work order is initiated.

The Line Maintenance Division notifies the MDNR when a DWO occurs within 24 hours of discovery. Follow-up written reports are made within five days of the original notification. In all occurrences, the area around the overflow is cleaned and inspected for any debris or contaminants. In the case of DWOs caused by vandalism, the standard manhole covers are replaced with bolt-down covers to deter future vandalism.

The Wastewater Treatment Division notifies the MDNR when dry weather overflows occur at either pump stations or WWTPs within 24 hours of discovery. A follow-up written report is submitted to the MDNR within five days of the occurrence. See Attachment A for copies of all dry weather overflow reports submitted in 2012.

Crews generate a SSO response data sheet for each overflow. The data sheet tracks such information as:

- Address
- Date
- Time of day
- Zoning
- Pipe size
- Pipe material
- Hansen number
- Cause

Historically, SSO responses have been designed to occur quickly, control the release of wastewater, and perform appropriate cleanup tasks. This activity is documented by Wastewater Line Maintenance supervisors and reported to regulators.

A variety of WSD employees are involved in the SSO notification and documentation process such as WWTP personnel, public relations personnel, field crews, and regulatory compliance personnel. Training is conducted regularly; however, a recognized need for increased training has been identified with the intent of ensuring competency in evaluating SSO source and location, estimating SSO volumes, identifying defects, and determining preventive and reactive maintenance.

The SSO Reporting and Notification Program is evaluated continually. This review process helps WSD determine how the program goals are being accomplished, and whether or not the program is being implemented in the most efficient manner.

In the event of a building/private property backup that resulted in the owner/tenant (consumer) of the property calling 3-1-1 (between 7 a.m. and 7 p.m. weekdays) or calling Water Services Central Dispatch (afterhours, weekends or holidays), the City's Building and Private Property Response Plan comes into effect. At the onset of the call, the consumer is asked a series of questions to determine the appropriate cleaning response to a back-up complaint. If the call-taker and consumer cannot determine what the problem is, Wastewater Maintenance Crew will be dispatched to verify the condition of the appropriate section of the City's sewer main and to clean that section of the City's sewer main to ensure the main is functioning properly. If, as a result of the call, it is agreed upon that City involvement is necessary, a Hansen Service Request will result. Either a Code 2(Urgent) or a Code 3 (Emergency) prioritization will be given. In the event of a Code 2 (Urgent) event, a maintenance crew will respond as soon as crews are available. In the event of a Code 3 (Emergency) event, a maintenance crew will be dispatched on an emergency basis and will respond as soon as possible. There is a certain amount of interpretation associated with the decision to label an event a Code 2 or a Code 3. As a general rule of thumb, if there is water coming into the house from an outside source, the event would be categorized as a Code 3. If water is slowly draining, then it would most likely be a Code 2. If water comes up in the basement after using the facilities in the residence, it would most likely be a Code 2 event.

"Dry weather" backup complaints will be documented as a "W" in the problem field on the Hansen Caller Log. Wastewater Maintenance Crews will respond based on the Code 2 or Code 3 priority.

"Wet weather" backup complaints will be documented as a "WR" in the problem field on the Hansen Caller Log. Wastewater Maintenance Crews will respond to all Wet Weather backup complaints as a Code 3 priority. Crews will respond to inspect the city manholes for surcharge conditions. If a stoppage is found within the system the crews will open the stoppage. If the sewer system is surcharging, a door tag will be given to the property owner to inform them of the surcharge event and that it is recommended that the owner contact a private plumbing company to install a backflow preventer at the property owner's expense.

All basement backup complaints are tracked in the CMMS (Hansen Data System) as dry weather – "W" and wet weather "WR" events. The Cleaning Work Order will be tracked by the following maintenance codes:

- C42 – (WIB – No Stoppage – Private Problem)
- C43 – (WIB – Open Stoppage – Debris)
- C44 – (WIB – Open Stoppage – Roots)
- C45 – (WIB – Open Stoppage – Grease)
- C46 – (WIB – Unable to Open Stoppage)

Collection Systems Operation

Budgeting

The budgeting process is intended to provide adequate fiscal resources to the operating Divisions to carry out their responsibilities. The Department's division managers identify recommended staffing and funding levels, which are then adjusted based on City priorities.

Proper funding, budgeting, and planning are necessary for the Line Maintenance and Wastewater Treatment divisions to provide sufficient capital, labor, and equipment to complete CMOM activities as needed to ensure the minimization of overflows.

Budgets are created by division managers on an annual basis. The budget process projects costs and revenue sources out to five years. The managers submit their budget requests to Accounting. Accounting reviews the requests, compiles the budget and submits it to the director of Water Services for review and approval. The director then presents it to the city manager who, in turn, presents it to the mayor and City Council for review and approval. Ultimately, the City Council approves the budget, which takes effect at the beginning of each fiscal year.

The budget includes line item detail for the following expenditure categories:

- Labor
- Contracted services
- Commodities
- Capital outlay for equipment

Engineering

The purpose of engineering within WSD is multi-faceted, as it encompasses several functional business units:

- Utility Planning
- Energy Management
- Stormwater Management
- Systems Engineering
- Safety Management
- Facilities Plant Engineering
- OCP
- Waterways

The overall purpose of these functional areas in regards to the sanitary sewer collection system is to:

- Maintain the design conveyance and integrity of the collection system
- Remove I/I from the system
- Eliminate SSOs
- Control wet weather CSOs

The business units achieve these critical collection system goals through a number of efforts including:

- Assessing and monitoring the collection system infrastructure
- Assessing the collection system capacity
- Identifying, planning, designing, and managing the construction of improvements

The business units are the coordinating entities behind many collection system activities such as new construction, construction inspections, rehabilitation and replacement, and capacity assessment and assurance. The Engineering Program confirms that new facilities are constructed according to standard construction specifications and do not contribute to future I/I problems. The program also provides inspection and oversight on rehabilitative work to assure proper execution.

Overflows are minimized by assuring system capacity and maintaining system integrity through assessment, rehabilitation, and new improvement construction activities.

The various engineering business units have unique areas of collection system responsibility including:

- Planning is responsible for GIS mapping
- Energy Management is responsible for negotiating utility contracts for pump station and treatment plant operations
- Stormwater Management is responsible for design of stormwater projects
- Systems Engineering is responsible for design of gravity sewer system improvements and general collection system planning
- Facilities Plant Engineering is responsible for the management of all above ground structures including pump stations and wastewater treatment plants
- OCP is responsible for development and implementation of the City's Overflow Control Program
- Waterways is responsible for stormwater management projects that are funded jointly with other government agencies such as the Corps of Engineers

The business units are the coordinating entities behind many collection system activities such as new construction, construction inspections, rehabilitation and replacement, and capacity assessment and assurance. The Engineering Program confirms that new facilities are constructed according to standard construction specifications and do not contribute to future I/I problems. The program also provides inspection and oversight on rehabilitative work to assure proper execution.

WSD Engineering is responsible for design review, approval and inspection of new sanitary sewers and pump stations installed by private developers. This work is also closely inspected to ensure it meets the City's construction standards and technical specifications. The City takes ownership of these assets once construction is complete.

All engineering activities are performed under the supervision and direction of registered professional engineers. Staff members in the Engineering Department receive continuing education and training through industry seminars and workshops, as well as classes required to maintain PE licensure.

In addition, the City uses several engineering consulting firms and outside contractors for planning, design, and construction activities.

Water Quality Monitoring

WSD has developed an integrated monitoring program intended to meet all water quality related objectives in a cost-effective manner. The Water Quality Monitoring Plan is divided into five sections:

- Objectives and Rationale
- Water Quality Monitoring Plan
- Field Methods and Procedures
- Quality Control
- Resource Assessment

Sampling and analysis efforts for the Integrated Water Quality Monitoring Program are conducted in accordance with the OCP Quality Assurance Project Plan (LimnoTech, 2005, revised 2010), WSD Laboratory's Quality Assurance Manual, and Health and Safety Plan.

More information on the Water Quality Monitoring Program can be found in the discussion related to an update of Consent Decree Appendix D: Post Construction Monitoring Program Performance Criteria in this Annual Report.

Pretreatment Program

The City continues to implement its approved pretreatment program pursuant to 40 C.F.R. Part 403 and the current NPDES permits. Information on the pretreatment program may be found in NMC 3. Submittals to MDNR associated with the pretreatment program can be found in Attachment B.

Pump Station Operations

The purpose of the Pump Station Operations Program is to ensure reliable operations of the pump stations. The Department assures reliable operations by:

- Conducting routine inspections
- Troubleshooting when situations arise
- Retaining appropriate records of pump station performance
- Remotely monitoring of pump station operations through the use of remote dialers and a SCADA system

This program is executed in conjunction with the Pump Station Maintenance Program (see below), as routine inspections typically generate work orders for the maintenance crew, and pump station operators are responsible for performing light maintenance work as needed.

Monitoring the reliability of pump stations through routine inspections, troubleshooting, and remote supervision helps to decrease the chance of pump station failure that could potentially cause an overflow. Proper pump station operation also maximizes storage and assures adequate capacity throughout the collection system, which may consequently prevent an overflow from occurring.

Wastewater Treatment Division operators visit each wastewater pump station (WWPS), flood pump station, and headworks pump station at WWTP sites on a regular basis. WWPS maintenance visits occur at varying frequencies ranging from daily to three times per week for larger stations, to once per week for small stations. Visit frequency is based on a number of factors including manpower availability, facility size, complexity, criticality, reliability and past maintenance history. Maintenance staff performs tasks needed to keep WWPS equipment in serviceable condition, perform preventive and emergency maintenance, plus other tasks needed to maintain the overall wastewater treatment system.

The pump stations include remote monitoring using telephone dialers and SCADA. WSD has been implementing a SCADA system program for the wastewater system for several years. Pump station inspections are recorded in log book and inspection forms and the data is archived by WSD. There are pump station inspection data on record for all stations. The data entered into standard inspection forms varies according to the size of the pump station, and includes fields such as:

- Date
- Operator performing inspection
- Pump status, run time, and difference since last run time
- Level control status
- Wet well status
- Signs of station releasing (yes or no)
- Amount of overflow (if applicable)
- Amount of rainfall (if applicable)
- Flow totalizer
- Alarms and action taken to correct
- Comments

At some of the larger stations, more extensive data are collected and filled out on worksheets, which are kept on clipboards at the site so that operators can easily scan the data for trends during their inspections. In addition, there are written standard operating procedures (SOPs) in place for pump station operations.

WSD has assigned both operations crews and maintenance crews to pump station O&M activities. Seven operators are assigned to pump station rounds and station monitoring. Maintenance has two supervisors and 12 associates assigned full-time to mechanical investigation and repair activities at the stations. Maintenance also has crews available for electrical, instrument and controls, and HVAC repairs as needed.

The majority of training for pump station operators occurs through on-the-job experience. However, WSD provides considerable training through an in-house program where staff is eligible to obtain continuing education credits required for certification.

Pump Station Maintenance

The purpose of the Pump Station Maintenance Program is to perform the necessary predictive, preventive, and corrective maintenance required to sustain the reliability of wastewater and flood pump stations and ensure that all pump stations throughout the service area are operating at maximum efficiency. This program is executed in conjunction with the Pump Station Operations Program to complete work orders generated from routine inspections, trouble calls, and preventive maintenance schedules.

Maintaining the reliability of pump stations helps to decrease the chance of pump station failure that could potentially cause an overflow. Pump station reliability is increased by performing predictive and preventive maintenance, which help to correct problems before they become an emergency situation in which sewage is released from the system.

Crews perform regular maintenance at each of the pump stations. All pump station maintenance is performed based on planned weekly maintenance schedules or when an emergency occurs. Typical tasks include verifying normal operation of pumps and equipment, checking for sewage leaks, servicing equipment for proper overall operation, and other corrective and preventive maintenance. Each location has a logbook and work orders are recorded in the Hansen system.

Maintenance supervisors produce a weekly maintenance schedule and select specific projects based on crew availability, parts availability and the urgency of a particular repair. Plans are updated during a weekly meeting between the pump station maintenance planners, operators, and maintenance supervisors to facilitate coordination. As a result, 90 percent of all work performed consists of scheduled maintenance. This process has been used for about four years. Control of backlog has also improved since this planning was initiated.

Hansen administration, procurement, and coordination consume the majority of the planner's time. Daily meetings with maintenance supervisors are conducted to communicate and coordinate the activities that need to be performed. In addition, maintenance supervisors email Daily Maintenance Activity reports.

This program is evaluated consistently through daily team meetings and regular tracking of work orders. Tracking work orders in Hansen enables staff to identify patterns that may require further evaluation. All flood pump stations are inspected by the department quarterly and annual audits are conducted by the Army Corps of Engineers.

Pump Station Emergencies

WSD has emergency response procedures that crews follow for pump station emergencies. The basic operations status is monitored via the SCADA alarm reporting system and telephone dial-out system, each used as appropriate to the pump station location and equipment type. The SCADA system is monitored 24 hours a day, seven days a week by a certified plant operator (CPO) at the Blue River WWTP. The alarms received by the CPO indicate the type of equipment problem and permit the CPO to tailor responses to the type of alarm. The CPO has guidelines that specify who to call and when to call them based on the time of day, weather conditions, and nature of the issue. WSD also receives notification of trouble in the collection system from the public. External constituencies can hear an audible alarm or see a flashing red light at one of the pump stations and call WSD's 24-hour response line to report trouble.

Emergency response is provided by WSD staff. The CPO has the authority to call in additional resources as needed, including either staff with electrical and mechanical expertise or a contract hauler. This system ensures that quick response is available 24 hours a day and improves employee accountability.

Additional assistance for pump station trouble calls may be summoned by the CPO. Skilled and/or general labor is available, as well as equipment operators and their respective equipment. The responder will determine labor and equipment needs during the initial assessment of the issue. Equipment available for pump station emergencies includes:

- Stationary and portable diesel generators
- Portable diesel and gasoline powered pumps
- Service trucks with crane bodies
- 25-ton crane truck
- Sludge hauling trucks
- Hand and portable power tools
- Heavy equipment
- Dump trucks
- Spare parts (limited)
- Vactor and camera trucks (provided by Line Maintenance)

Work orders associated with pump station emergencies are completed and documented in Hansen. The success and effectiveness of WSD's efforts are measured through a variety of performance indicators, including response time to trouble calls, effectiveness of remedies implemented during trouble call response procedures, and the number of well-trained personnel available to monitor and respond to pump station emergencies. The formal Emergency Response Plan is included as part of the City's Sewer Overflow Response Plan (SORP).

Force Mains

In October 2011, the City issued SOPs for a Force Main Maintenance Program. The purpose of the document was to establish a uniform process for the implementation of a force main and air relief valve (ARV) maintenance program. The force main and ARV maintenance program consists of five elements: GIS, condition assessment, corrosion investigation, preventative maintenance, and documenting of maintenance activities.

Smoke Testing

The purpose of the Smoke Testing Program is to identify specific public and private sources of stormwater I/I into the SSS and CSS that can be eliminated or reduced through rehabilitation or repair. Smoke testing along with CCTV inspection and flow monitoring comprise the Sanitary Sewer Evaluation Survey (SSES) program elements. Smoke testing helps to identify significant sources of stormwater I/I, including private service laterals and illegal connections such as downspouts and area drains. Smoke testing can also be used to determine the location of sewer main defects likely contributing I/I to the system.

The City has developed a standard protocol for smoke testing. A hard copy of this protocol is kept at WSD, and electronic copies are also available. This document accompanies all smoke testing based RFPs. Smoke testing is performed by outside firms as dictated by specific projects.

In the reporting period, smoke testing was performed as part of the Distributed Storage and Small Sewer Rehabilitation Projects in the Middle Blue River Basin. All line segments within the study area totaling 105,581 linear feet of sewer were smoke tested to detect I & I sources in the public and private sectors. Each positively identified source was photographically documented and located using a global positioning system (GPS) device. A defect feature class was created and is included in the geodatabase.

Flow Monitoring

Flow monitoring is being performed in conjunction with Appendix D of the Consent Decree. Additional flow monitoring will be performed in individual sub-basins to aid in the design of proposed improvements.

The City has developed a standard protocol for flow metering. A hard copy of this protocol is kept at WSD, and electronic copies are also available. This document accompanies all flow monitoring based RFPs. The flow monitoring program is described in more detail later in this report.

CCTV Inspection

The purpose of the City's CCTV Inspection Program is to visually assess the condition inside of the collection system. The Program relies on use of National Association of Sewer Service Companies (NASSCO) standardized ratings to characterize conditions. Currently, CCTV inspections are conducted to investigate a known trouble area and as a follow-up to line cleaning.

The City has developed a standard protocol for CCTV inspections. A hard copy of this protocol is kept at WSD, and electronic copies are also available. This document accompanies all CCTV inspection based RFPs.

The City televised 117 miles of sewer lines in 2012, thereby meeting the Consent Decree requirements. CCTV inspection information is tracked in Hansen with information available in Wincan.

Remote Sewer Inspection Program

The purpose of the Remote Sewer Inspection Program is to inspect remote portions of the sanitary sewer system in an economical and efficient manner to identify anomalies warranting further inspection.

Remote sewer inspections rely on use of an aircraft and infrared technology to detect temperature anomalies along remotely located portions of the collection system. The temperature anomalies indicate flow may be either exfiltrating or overflowing from the collection system and that further investigation is necessary. The City relies on contract services to implement this program.

After the flyover is performed, the infrared footage is analyzed and adjusted to remove any known anomalies such as lights, animals or other obvious heat sources. For those heat sources that cannot be characterized and that may be resulting from sewer system leaks, WSD staff visually inspects those areas. If a leak is discovered, a work order is issued for repair.

A flyover was performed in March 2012. As a result of that activity, 85 anomalies were discovered. Using the supplied GPS coordinates, the Line Maintenance Division visually inspected the anomalies. One anomaly was sewer related. The remaining anomalies were the results of small ponds, dried up creeks with small pools of water, natural groundwater seepage, storm drainage pipes, excessive dog waste, animal carcasses, and other similar items.

Collection Systems Maintenance

Manhole Repairs

The purpose of the Manhole Repair Program is to assure the structural integrity of manholes in the system, to reduce infiltration into manholes, to control odor problems at manholes, to increase accessibility to buried manholes, and to prevent public harm due to structural failures.

Manhole repairs often reduce infiltration into manholes. This helps assure capacity exists for conveyance of sanitary sewer flows. The Manhole Repair Program also addresses the structural integrity of manholes. This reduces the likelihood a manhole would structurally fail causing blockage in the system that may trigger either SSOs or CSOs. The Manhole Repair Program also helps to minimize overflows by increasing the accessibility of buried manholes. Greater accessibility for inspection and maintenance activities will minimize overflows with maintenance related causes.

Activities associated with this program include the repair or replacement of manhole components in the upper three feet of the structure by the Line Maintenance Division manhole repair crew or manhole replacement by a heavy repair crew. The division's manhole repair crew implements various types of repairs, including:

- Lid and ring replacement
- Lid grade adjustment
- Brick replacement

The manhole repair crew does not repair manholes suffering severe structural failure. These manholes are typically removed and replaced. This work is conducted by a heavy repair crew in the Line Maintenance Division.

Mainline Sewer Repairs

Actual physical repairs are made to the gravity sewer lines by the Line Maintenance Division. The repairs are performed to make upgrades and improvements to mainline sewers as needed to assure adequate capacity, to keep flow in pipes, to reduce and eliminate I/I, and to maintain the design conveyance of the pipes in the system.

Overflows are minimized by reducing the levels of I/I entering the system and by fixing deteriorating pipes which keeps the flow in the collection system. A reduction in I/I levels leaves more system capacity available for conveyance of sanitary sewer flow, eliminating one significant cause of overflows. Maintaining the pipe also removes restrictions that could potentially cause blockages and overflows and further helps assure capacity.

The type of repair method used is dependent upon several factors including;

- Pipe size
- Pipe type
- Pipe location
- Flow
- Surface conditions
- Severity of I/I

The City utilizes several repair technologies, including:

- Open cut
- Cured in place lining
- Horizontal directional drilling
- Boring and jacking
- Tunneling
- Pipe bursting
- Sliplining
- Grouting of joints
- Point repairs

Historically, work orders have been prioritized based on available assessment information and sound judgment. Work orders associated with mainline sewer repairs are tracked and stored in Hansen. Repair work performed by in-house construction crews is entered into Hansen by Collection Systems personnel, and repair work performed by outside contractors is entered into Hansen by Engineering personnel.

WSD employs repair crews. However, there is also a significant amount of mainline sewer repair work completed by outside contractors. WSD also relies on outside contractors for construction work that requires either special equipment or expertise to perform. Work conducted by subcontractors is monitored by in-house inspectors. Specifications for construction work are included in formal contracts used to manage outside firms.

Sewer Cleaning

The two purposes of the Sewer Cleaning Program are to perform preventive maintenance cleaning on the gravity sewer system and to clean trouble or emergency areas. The preventive maintenance cleaning is intended to assure the system design capacity is available and to prevent non-structural blockages caused by either root intrusion or buildup of grease or debris. A large percentage of annual sewer cleaning is on lines that are part of a routine preventative maintenance schedule. The trouble or emergency cleaning is a reactive maintenance measure that is typically an initial response to many emergency calls. The remaining cleaning activities are unscheduled trouble or emergency.

City crews also perform corrective cleaning in response to stoppages, trouble calls and city requests. If repeated trouble calls are made for a line segment then the line segment will likely be placed on a frequent interval preventative cleaning cycle. CCTV inspection typically follows all sewer cleanings. All sewer cleaning originates with a Hansen generated work order. Completed work is also tracked on Hansen.

The City performs both hydraulic and mechanical cleaning. Mechanical cleaning is performed using either a rod machine or a bucket machine. Hydraulic cleaning is performed using jetters. The following types of equipment are used by the Sewer Cleaning Program:

- Jet-Vac trucks
- Jet-CCTV trucks
- Jetters
- Easement reeling trucks
- Bucket machine sets
- Dump trucks

All data related to the Sewer Cleaning Program are stored in Hansen. Cleaning records include information such as the date, time and location of the cleaning, the method of cleaning used, the names of staff members who performed the cleaning, and any further actions that were initiated from the cleaning.

In 2012, the City cleaned 458 miles of sewer lines as part of a preventative maintenance plan. This meets the goal set forth in the Consent Decree. Information on miles of lines cleaned is tracked in Hansen.

Response Plan

The City's Building and Private Property Backup Response Plan was developed in order to provide procedures for response and preventative maintenance. The response plan is employed to restore the public sewer line to a functioning condition and perform any cleanup that may be required while working within the applicable laws of the City.

The preventative maintenance aspect of this plan includes the installation of systems or devices to prevent future basement backups in those eligible properties experiencing the backup of wastewater into buildings due to inadequate capacity, where applicable.

Collection System Capacity

Capacity Assessment and Assurance

The City's current procedure for capacity assurance is generally as follows:

- New development additions are reviewed by City Planning – Land Development Division. The developer's engineering consultant is responsible for certifying the proposed development will not overload the receiving sanitary sewer system. This includes 1) verifying the receiving trunk sewer was sized adequately according to the American Public Works Association standards, and 2) verifying any receiving pump station has sufficient capacity to handle the additional flows.
- For single taps, Public Works grants the connection permits, but has authority to refuse a connection if there is a history of capacity issues or there is a moratorium on new connections issued by the City for a specific area.
- City Planning is responsible for reviewing plans and inspecting connections into the existing the sewer system, while Water Services is responsible for the maintenance of the sewer system and the treatment of wastewater flows. WSD supports City Planning – Land Development when requested, generally on larger proposed developments.

CONSENT DECREE APPENDIX D:

POST CONSTRUCTION MONITORING PROGRAM PERFORMANCE CRITERIA

Water Quality Testing

Water quality monitoring objectives and activities are outlined in the Integrated Water Quality Monitoring Program (WQMP) prepared by LimnoTech for WSD (LimnoTech, December 28, 2010). This plan was developed to address the requirements of Section II, Water Quality Monitoring Plan, of the Post-Construction Monitoring Program Performance Criteria included as Appendix D of the Consent Decree.

Year 2012 is the second year of monitoring conducted under the WQMP. As projects are implemented to reduce CSOs, continued water quality monitoring will be used to assess the effectiveness of those controls at improving water quality.

Sampling and field measurements were conducted by WSD staff at 20 locations on the smaller waters, including Brush Creek, Town Fork Creek, Blue River, Penn Valley Lake, Mill Creek, and Indian Creek. A contractor, Seagull Environmental Technologies, conducted sampling and field measurements at three locations on the large rivers, including the Kansas River and Missouri River. Laboratory analyses were conducted by the WSD laboratory. Sampling and analyses were conducted according to the methods in the WQMP and the associated Quality Assurance Project Plan (QAPP), prepared by LimnoTech for WSD (LimnoTech, December 28, 2010). An audit of the implementation of the monitoring program was conducted by LimnoTech on December 10 and 11, 2012. Observations confirmed that the procedures and quality assurance systems employed by sampling and laboratory personnel during WQMP implementation activities were in accordance with the WQMP and the QAPP. No deficiencies were identified by LimnoTech and no corrective actions were required.

The details of the monitoring program including locations, frequency of monitoring, and water quality parameters are presented in the WQMP. The WQMP specifies monitoring to be conducted every other week. Field measurements include temperature, pH, dissolved oxygen, and aesthetic observations. Samples are collected and sent to WSD laboratory for analysis of E. coli, TSS, and conductivity. Monitoring is to be conducted during the recreation season, which extends from April 1 through October 31.

The implementation of the WQMP was successful in obtaining 96 percent of the planned samples during the recreation season. For the small stream sites alone, 95 percent of the planned samples were collected. The lower percent of samples collected in the small stream sites was a result of the Penn Valley Lake Beautification Project, during which the lake was drained. For the large river sites alone, 100 percent of the planned samples were collected. Monitoring was also conducted outside the recreation season as weather conditions permitted.

A brief summary of the 2012 water quality monitoring results is presented for E. coli, dissolved oxygen, and TSS in Table 2. Further analysis of water quality monitoring results will be conducted as the OCP moves forward.

The current scope of the WQMP has been reviewed for potential modification within an adaptive management framework. No modifications to the WQMP have been identified at this time; the current scope of the WQMP will be continued in 2013.

Table 2. Summary of 2012 OCP Water Quality Monitoring.

		E. Coli (Count/100ml)			Dissolved Oxygen (mg/L)		TSS (mg/L)	
Site		#Samples	Geometric Mean	Geometric Mean- Recreational Season	#Samples	Average	#Samples	Average
Small River/ Stream Sites	BC-01	26	716	497	26	8.6	26	20
	BC-02	25	401	610	25	7.4	25	13
	BC-03	26	2484	2863	26	10.7	26	20
	BC-04	24	779	929	24	7.2	24	12
	BC-05	25	507	421	25	9.6	25	18
	BC-06	26	642	619	26	9.9	26	16
	BC-07	26	395	284	26	8.1	26	20
	BR-01	26	179	244	26	9.9	26	19
	BR-02	26	450	575	26	9.5	26	35
	BR-03	26	153	212	26	9.1	26	28
	BR-04	26	154	151	26	9.0	26	27
	BR-05	26	230	201	26	8.6	26	27
	BR-06	26	1042	721	26	9.0	26	33
	BR-07	26	1015	700	26	8.7	26	40
	BR-08	26	1195	1076	26	8.8	26	39
	BR-09	26	80	87	26	10.9	26	12
	IC-01	26	253	353	26	9.3	26	23
	PV-01	11	148	8664	11	12.4	12	20
	TF-01	25	6966	6270	25	7.2	25	28
	MC-01	26	135	115	26	8.5	26	9
Large River Sites	MR-01-R	16	130	130	16	7.1	16	275
	MR-01-C	16	123	123	16	7.4	16	310
	MR-01-L	16	115	115	16	7.5	16	218
	MR-02-R	17	224	224	16	7.4	17	190
	MR-02-C	17	603	603	16	7.4	17	159
	MR-02-L	17	1599	1599	16	7.2	17	177
	KR-01-R	18	68	68	16	6.7	18	74
	KR-01-C	16	82	82	16	6.5	16	66
	KR-01-L	16	90	90	16	6.3	16	73

Note: Three locations were monitored at each of the large river sites, one each in the right channel (R), the center channel (C), and the left channel (L).

Flow Monitoring Program

The Consent Decree states that, "Short-term flow monitoring of approximately one to two years' duration before and after project completion and activation will be performed to measure and evaluate the performance of green solutions, programmatic elements and sewer system improvement for the reduction of wet weather flow volumes and peak flow rates." Further it states that "Long-term monitoring of the performance of major constructed facilities will be initiated upon the completion of construction and activation of such facilities." Table 2 in Appendix D of the Consent Decree presents the initially planned suite of flow monitoring locations for selected CSO outfalls and CSS collection system locations, along with their required installation schedule.

On April 1, 2011, a contract was in place to begin the flow monitoring at Outfalls BR059 and BR069. Per Appendix D Table 2, by 2011, these were the only two outfalls that were required to start being monitored as per the Standard Flow Metering protocol. Along with these two sites, flow meters on three additional outfalls in the Middle Blue River Basin were installed in August 2012; before the end of 2012 as mandated by the Consent Decree. The flow service provider, ADS Environmental Services coordinated the purchase of flow monitoring equipment which included cellular communication capabilities. ADS installed all equipment and conducts monthly maintenance site visits. Additional site visits are made following significant storm events to verify the equipment is working properly. The flow meters were programmed to alarm WSD personnel when overflow events occur. The flow service provider reports the data to WSD.

The contract for temporary flow monitoring was awarded to George Butler and Associates (GBA) with a notice-to-proceed date of February 28, 2012. The contracted flow monitoring period was from April 1, 2012 to December 31, 2012. As part of GBA's contract, 12 flow meters were installed at strategic locations throughout the areas tributary to Outfalls 059 and 069. In addition, rain gauges were installed to correlate rainfall intensity with flow. As drought conditions did not allow for adequate data gathering, the meters were disengaged in November 2012. The meters will be reinstalled in April 2013 through December 31, 2013, in order to accurately model existing combined sewer system conditions and correctly design green infrastructure solutions for the area.

CONSENT DECREE APPENDIX E:

SUPPLEMENTAL ENVIRONMENTAL PROJECT PLAN

As described in Appendix E of the Consent Decree, the Supplemental Environmental Project (SEP) Plan includes the implementation of a Sewer Connection and Septic Tank Closure Program. The Consent Decree addresses the federal SEP Program. However, WSD's federal SEP is essentially an extension of the Missouri SEP Program (MO SEP) completed in 2011. Each program includes the installation of a sewer service line (i.e. lateral) to the homes of participating property owners, closure of their septic tank from operation by capping, filling, or other means as determined and approved by the City and consistent with City ordinances. This program provides grant funding assistance on a sliding scale to households at or below 100 percent of the area median income. The grant amounts range from $2,000 to $4,000 and are based on family income and size. SEP funds are not be used for City administrative expenses. The City is required to spend at least $1,600,000 implementing the federal SEP. At an average subsidy level of $3,000 per home, the program anticipates assisting approximately 533 residents. However, this number will vary depending on the subsidy level. The federal SEP Program is to be completed no later than five years from the date of execution of the Consent Decree.

WSD provides sanitary sewer service to nearly 135,000 homes, while approximately 6,700 homes are on a septic system. Some of the septic systems, particularly in the older developed areas, are near or exceeding their intended period of operation which can be a cause for environmental and public health concerns.

The City has made an effort to provide sanitary sewers in non-sewered areas by implementing sewer assessment districts. The sewer assessment district approach has extended public sewers to many septic system users, but not all properties within the districts have connected. It has been found that property owners who have functioning septic systems or who cannot afford the connection costs typically do not connect their homes to the public system.

The SEP targets septic system users with access to public sewer systems nearby but have not connected. WSD directed mailings to households in infill sewer assessment districts that were recently completed or under construction. Applications were accepted city-wide from property owners of single-family homes adjacent to existing public sewers. Upon approval to the program, owners were required to get bids from three licensed plumbers. Upon project completion, a special program voucher was used to assure that all permits, lien waivers and other program requirements were met prior to WSD's final payment to the plumber.

On September 16, 2011, WSD completed the MOSEP. The program completed a total of 43 jobs. The average cost of the sewer connection and septic tank removal per property was $3,397.62. The average WSD expenditure per property was $3,152.74.

Since the beginning of 2012, 41 properties have applied for the SEP. Of those 41 properties, 25 projects were completed or underway in 2012. The program involved the installation of a new sewer service line and closure of septic tank from operation. The goal of the program was to assist 533 properties over a four-year period; however, due to low response rates, WSD will most likely request a change in the program.

CONSENT DECREE APPENDIX F:

SCHEDULE FOR IMPLEMENTATION OF DISINFECTION TECHNOLOGY AT WASTEWATER TREATMENT PLANTS

Over the last two years, the City has been hard at work completing disinfection improvements at each of the City's seven wastewater treatment plants. Nearly all disinfection improvements have been completed. However, additional improvements and upgrades required at some of the treatment plants are currently underway.

Birmingham WWTP

Construction of a sodium hypochlorite disinfection facility at the Birmingham Wastewater Treatment Plant was completed on-time in January 2012. Additional work involving rehabilitation of the clarifiers began in June. Upon completion of work on the west clarifier, expected to be completed in January 2013, work will begin on the east clarifier. Overall construction began at the plant on June 22, 2011 and is scheduled to be complete in summer 2013.

Blue River WWTP

Improvements at the Blue River Wastewater Treatment Plant are occurring in two different sections, a Chemical Treatment Facility and a Chemical Feed Facility. The Notice to Proceed for design occurred in September, 2010, with construction of both Sections beginning in 2012.

Section I of this project involves the construction of a chemical storage and reception facility to store, load, and unload bulk chemicals (sodium hypochlorite and sodium bisulfate) for use at the Blue River Secondary Wastewater Treatment Plant, and a terminal facility for the reception and distribution of those same chemicals for the Birmingham and Westside wastewater treatment plants. An existing rail spur is being extended to the facility and two railcar unloading facilities are being constructed. A Chemical Terminal Building will be used to store the bulk chemicals in separate tankage and containment areas. In addition, the truck loading and unloading facilities will be housed in this structure. The Chemical Transfer Building will house the transfer pumps that will be used to transfer chemicals to the Blue River disinfection facilities and to trucks for transport to the other two plants. A chemical duct bank will also be constructed for the transfer building to just north of Front Street. The design of Section I was completed November 8, 2011. Notice to Proceed for construction was given on March 23, 2012. Work is about 20% complete as of December 31, 2012.

Section II of this project involves the construction of Chemical Feed Facility which consists of a chemical duct bank from the end of the Section I duct bank to the Secondary Plant, and a Chemical Feed Building that will house day tanks and chemical feed pump, along with polymer storage and feed equipment. The chemicals will be pumped to the discharge well at each clarifier and mixers will be installed to ensure complete mixing. Finally, a second 96-inch discharge line will be constructed from the clarifiers to the Effluent Pump Station to provide sufficient contact time for disinfection along with a splitter box and a junction box to connect the two discharge lines. Section II design work was completed January 26, 2012 and the Notice to Proceed for construction was issued August 3, 2012. Work is about 8% complete as of December 31, 2012. The anticipated completion for both sections is December 2013.

Other work not directly related to disinfection will include a header pipe to connect all of the trickling filters with all of the clarifiers, four new clarifier mechanisms, and two new pumps in the Effluent Pump Station to add flexibility to the plant and prevent flooding due to new stormwater flows being diverted to the plant from the new interchange at Interstate 435 and Front Street.

Blue River Wastewater Treatment Plant Groundbreaking Ceremony

On October 5, 2012, WSD conducted a groundbreaking for the effluent disinfection improvements project at the Blue River Wastewater Treatment Plant, Kansas City's largest wastewater treatment facility. Water Services Director Terry Leeds presided over the groundbreaking, which included remarks from Mayor Sly James and Councilwoman Jan Marcason. The $48 million project is one component of a $96 million overall investment by Water Services to improve the quality of the water returned to area waterways.

"We continue to keep faith with the voters of Kansas City by moving forward with projects they have overwhelmingly approved. This project, backed by voter approved bonds, will increase our capacity to treat wastewater, put our citizens to work, and make the Missouri River safer for our children. It is a smart project, a sound project and a project that solves an immediate problem. Cities are America's economic engine, and we are proving we are a city on the move. This may not be the sexiest project, but it shows that in Kansas City we take our responsibility to the future seriously and are making the investments needed to be a world class city," said Mayor Sly James.

Blue River Wastewater Treatment Plant Groundbreaking Ceremony

Project plans include the construction of three chemical terminal facilities. Combined, these facilities will store, distribute and move necessary supplies for wastewater treatment at Blue River and at two additional treatment plants in Kansas City. The project will meet heightened state requirements for wastewater disinfection, and is part of Water Services' 25-year federally-mandated Overflow Control Program.

"Water Services is excited to kick off this important project at the Blue River Wastewater Treatment Plant," said Terry Leeds, Water Services director. "This project maximizes the efficiencies of department operations, decreases long-term operational and maintenance costs, and will enhance the quality of water returned to the environment.

Fishing River WWTP

The improvements at the Fishing River Wastewater Treatment Plant involve a new pump station, expansion of the facility to handle 2 million gallons per day (MGD), and installation of ultraviolet (UV) disinfection on the effluent. Currently, 60% of the project is complete and all major structures have been finished. Work will start in early 2013 on electrical and instrumentation improvements. Construction began on November 1, 2011 and is expected to be operational in May 2013.

Northland Mobile Home Park WWTP

The improvements at the Northland Mobile Home Park Wastewater Treatment Plant involved the decommissioning of the treatment plant and converting the facility to a pump station. The project also involved the construction of a force main and reuse of an aeration basin as wet weather flow holding basin. The pump station is on a site within a residential housing development located north of Northeast Cookingham Drive and between North Agnes Avenue and North College Avenue. The force main was routed south of the development where it connected to the existing interceptor sewer. The project began in May 2011 and was completed October 19, 2012.

Rocky Branch WWTP

This project involves construction of an ultraviolet (UV) disinfection facility for the effluent from the Rocky Branch WWTP to treat up to 9.2 MGD. The UV system was completed and became operational on September 22, 2011, ahead of the Consent Decree required implementation date of October 11, 2011. Other work not directly related to disinfection continued until the Achievement of Full Operation Inspection was conducted on November 17, 2011. WSD is negotiating a small change order to add some programming in the plants SCADA system to allow remote monitoring of the UV system before the project is closed. Emergency repairs to another portion of the plant have extended the contract and are underway.

Todd Creek WWTP

Construction at the Todd Creek WWTP began on August 18, 2011 and consists of the construction of a new ultraviolet light (UV) disinfection facility. The UV lights have been installed and are currently in service. Construction is substantially complete and the contractor is continuing to complete punch list items from the final inspection walk-thru. Achievement of Full Operation occured on August 16, 2012.

Westside WWTP

The Westside WWTP project entails the construction of a new facility that will house sodium hypochlorite tanks, pump, miscellaneous equipment, and auxiliary electrical and mechanical systems and associated yard piping. The construction of a new chlorine contact chamber is also included in the project. The contract also includes electrical and control system improvements and integration of new control system hardware and software into the existing SCADA system.

Notice to proceed for construction occurred on November 2, 2011, and construction is 90% complete as of December 31, 2012. It is anticipated that the improvements will be substantially complete in March 2013.

ATTACHMENT A - TAB

Discharge Reports

ANNUAL REPORT
Reporting Period: January 1, 2012 through December 31, 2012

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

ATTACHMENT A: DISCHARGE REPORTS

Following is an example of a Discharge Report as submitted by the Kansas City Water Services Department to the Missouri Department of Natural Resources (MDNR). In order to conserve resources, electronic copies of all reports submitted to the MDNR are included on the attached disc.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FIVE – DAY DRY WEATHER SELF-REPORTING FOR SANITARY SEWER OVERFLOWS OR WASTEWATER TREATMENT FACILITY BYPASSES

Notice: Under the Missouri Secretary of State's Code of State Regulations 10 CSR 20-7.015(9)(E), Effluent Regulations, Standard Conditions, Bypassing, and in accordance with reporting requirements listed in your Missouri State Operating Permit, or MSOP, all permittees shall provide the following notice(s) if an unscheduled Sanitary Sewer Overflow, or SSO, or Wastewater Treatment Facility Bypass occurs:

NOTIFICATION INFORMATION

PERMITTEE (MUNICIPALITY OR FACILITY NAME)	PERMIT NUMBER	DATE	TIME
WASTEWATER MAINTENANCE	MO-0024911	1/4/2012	8:46 AM

COUNTY	AUTHORIZED REPRESENTATIVE REPORTING	CELL AND BUISNESS TELEPHONE NUMBER WITH AREA CODE	DNR OFFICE AND PERSON CONTACTED
Jackson	Ronnie L. Biggins	816-564-5421,816-513-8010	Steve Krabbe

SANITARY SEWER OVERFLOW OR WASTEWATER TREATMENT FACILITY BYPASS DETAILS

☒ Sanitary Sewer Overflow or ☐ Wastewater Treatment Facility Bypass
DEFINITION OF BOTH

Date discovered	Time (to nearest 15 minutes)	End Date	Time (to nearest 15 minutes)
1/3/2012	5:20 PM	1/3/2012	8:47 PM

Estimated volume of wastewater discharged (gallons)
1035 Total Gallons Discharged

Location of the Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (complete a separate form for each discharge location and complete all that apply)

a. Street Location: 3120 Stadium Dr.
b. Manhole #: S058-078
c. Directions to the site from nearest highway:
d. Location defined by GPS: 94.52068000,39.06799000
e. Physical Address:
f. Location determined by Map Search Tool:

Circumstances Causing Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (check all that apply):

☐ Power Outage
☐ Equipment Failure
☐ Snow Melt
☒ Plugged Sewer
☐ Widespread Flooding
☐ Vandalism
☐ Broken Sewer
☐ Other (describe):

See "Narrative Description" on back page to add additional details.

Type of Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (check all that apply):

☐ Pipe Break
☐ Lagoon/Basin Overflow
☐ Digester/ Solids handling
☒ Manhole
☐ Head Works
☐ Drying Beds
☐ Lift Station
☐ Clarifier/Filter/Batch Reactor
☐ Service Line (Grinder Pump, Basement Back-up, Clean out etc.
☐ Effluent Weir/Flume
☐ CSO Outfall (Dry Weather)
☐ Aeration/Biological Treatment
☐ Construction SSO
☐ Other (describe):

Strength of Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass: ☒ Raw ☐ Partially Treated ☐ Diluted

WATERCOURSE INFORMATION

Discharge Course

☐ Absorbed into the soil
☐ Ditch. Name of surface water it drained to:
☐ Storm sewer. Name of surface water it drained to:
☐ Surface water direct discharge (Name of stream):
☐ Was contained on private property: Address
☐ Discharge entered losing stream or sinkhole
☐ Nearby public drinking water intake
☒ Other, describe:
Name of public drinking water intake:
Distance to public drinking water intake (feet): ft.

Impacts

Length of impact downstream:
☐ Fish kill or other impacted species
☐ Nearby beach or other public area
Name of beach or public area:
Distance to a beach or public area (feet): ft.

RESPONSE/CLEANUP

Were samples taken? ☐ Yes ☒ No

Type of Samples Taken: ☐ BOD ☐ TSS ☐ E.Coli ☐ Fecal Coliform ☐ Ammonia ☐ Dissolved Oxygen ☐ None ☐ Other (describe):

Submit copies of any analytical results with next Discharge Monitoring Report (DMR).

Any corrective action taken? ☐ Yes ☐ No
Describe the action:

Clean up activity: ☐ Flushing ☐ Removing ☐ Chemical Application ☐ Damming ☐ Other (describe):
See "Narrative Description" on back page to add additional details.

Clean up performed by

NARRATIVE DESCRIPTION

Provide a narrative description to further explain why the Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass occurred. For example, describe what equipment failed, what caused the power outage, or what plugged the sewer. Flooding should only be indicated as a cause if there is significant flooding caused by high river, stream or lake water levels (not just localized high water in the street).

Wastewater Maintenance crews responded to a report of sewage surfacing from a manhole structure at the rear of 3120 Stadium Dr. A grease blockage was opened in the City sewer before containment or bypass pumping could be implemented. The sewage did not reach the State's waters. The sewage entered a storm catch basin and returned to the collection system. Normal flow has been restored to the collection system. The area around the manhole has been cleaned. Directions: I-470N/MO-291N ramp- merge onto I-470E- take exit 16C to merge onto I-70W- take exit 6 for Van Brunt Blvd- tun left on Van Brunt Blvd- slight right on Emanuel Cleaver II Blvd- turn left onto Van Brunt crossing- turn left onto Stadium Dr.

ACTIONS TO CORRECT THIS OCCURRENCE AND PREVENT FUTURE OVERFLOWS OR BYPASSES

Describe what actions were taken to minimize the volume of wastewater discharged from the overflow or bypass reported on this form. The MSOP permit prohibits bypasses, unless certain specified conditions are met. If the permittee fails to operate and maintain the sewage collection system to prevent overflows and bypasses, they are subject to enforcement action.

PUBLIC NOTIFICATION

☒ Do you have a public notice protocol in place for Sanitary Sewer Overflows and Bypasses?
☐ Was the public notified of the Sanitary Sewer Overflow or Bypass?

REPORT COMPLETED BY

Authorized representative name (Please type or print)	Title
Ronnie L. Biggins	Maintenance Superintendent
Authorized representative signature	Date
	1/4/2012 8:46:00 AM

ATTACHMENT B - TAB

Reports Submitted Under Current NPDES Permits

ANNUAL REPORT
Reporting Period: January 1, 2012 through December 31, 2012

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

ATTACHMENT B:
REPORTS SUBMITTED UNDER CURRENT NPDES PERMITS

Following is an excerpt from the Industrial Pretreatment Program Annual report as submitted by the Kansas City Water Services Department to the MDNR. In order to conserve resources, electronic copies of all reports submitted to the MDNR are included in the attached disc.

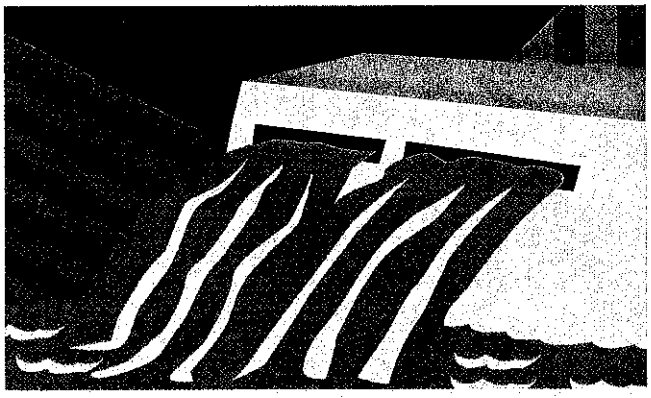
Attachment B includes the following documents:

- Monthly Operating Reports
- Industrial Pretreatment Program Annual Report – 2011
- Municipal Separate Storm Sewer System Permit Annual Report – May 1, 2011 – April 30, 2012

CITY OF KANSAS CITY, MISSOURI
WATER SERVICES DEPARTMENT
WASTEWATER TREATMENT DIVISION

KCMO
WATER SERVICES
DEPARTMENT

Calendar Year 2011
Industrial Pretreatment Program
Annual Report



Submitted to:
State of Missouri
Department of Natural Resources
Division of Environmental Quality
Water Pollution Control Program

March 2012

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

Water Services Department

Industrial Waste Control

1001 Harrison Street
Kansas City, Missouri 64106-3044

(816) 513-0600
Fax: (816) 513-1456

March 27, 2012

Mr. Walther Fett
Pretreatment Coordinator
Missouri Department of Natural Resources
PO Box 176
Jefferson City, Missouri 65102

REF: KCMO IPP Annual Report for calendar year 2011

Dear Mr. Fett:

Enclosed is Kansas City's Pretreatment Implementation Report for 2011. If you have any questions, please do not hesitate to call me at (816) 513-7241 or e-mail me at kurt.bordewick@kcmo.org.

Sincerely,

Steve Sukka for

Kurt Bordewick
Wastewater Treatment Division Manager

Enclosures

CITY OF KANSAS CITY, MISSOURI
INDUSTRIAL WASTE CONTROL DIVISION
WATER SERVICES DEPARTMENT

Pretreatment Implementation Annual Report
2011

1. All sixty-five Significant Industrial User's (SIU's) had a valid Wastewater Discharge Permit issued by the Industrial Waste Control Division during the 2011 calendar year.
The pretreatment program currently operated by the KCMO Industrial Waste Department, which was approved by the EPA and adopted by the City of Kansas City, Missouri, requires the issuance of Wastewater Discharge permits which are renewed on a 2-5 year cycle.

   During the 2011 first reporting period, fifty-four SIU's (54) were in full compliance, nine (9) were determined infrequently non-compliant, and one (1) SIU was significantly non-compliant for submitting required report late more than 30 days.

   During the 2011 second reporting period Sixty (60) SIU's were in full compliance, four (4) were determined infrequently non-compliant , and one (1) SIU was significantly non-compliant for submitting required report late more than 30 days.

   This information can be found in the "2011 SIU Chart" Attachment A.

2. The following SIU's were not sampled during the 2011 year because they are non-dischargers and show no potential to cause harm to the Kansas City, Missouri sewer systems, Treatment Plants, or other Missouri waterways:

   ACME Brass Custom Plating, Incorporated
   Amerex Waste Express
   Artcraft Nameplate and Engraving
   Environmental Specialist, Inc
   Jet Midwest
   KCMO Regional HHW Facility
   LPF High Performance Coatings
   North American Galvanizing

   However, Jet Midwest will be sampled during the 2012 calendar year. Jet Midwest was added as an SIU in October 2011 and was in the process of constructing their wastewater pretreatment system as well as their discharge location. When construction is complete, the KCMO Water Services Laboratory will begin collecting samples.

   This information can be found in the "2011 SIU Chart" Attachment A.

3. There were two SIU's under a compliance schedule during the 2011 reporting period.

   Cargill was issued a compliance schedule to monitor the pH of its discharge to ensure its range is between 6-11 s.u. The compliance schedule was issued during the period of January 1, 2011 – November 1, 2011. During that time period of daily pH monitoring, Cargill consistently had a pH within an allowable range.

Boyles Famous Corned Beef was issued a compliance schedule to monitor its pH, oil and grease, and to ensure that reports are submitted in a timely fashion. The compliance schedule began January 1, 2011 and has not ended. During the 2011 year, Boyles Famous Corned Beef had several pH and oil and grease violations and was determined to be infrequently noncompliant because the number of violations did not meet the TRC (technical review criteria), or the SNC criteria.

The compliance schedules are included on Attachment C.

4. There were no SIU's that the Industrial Waste Control Division pursued criminal or civil actions against as of December 31, 2011.

5. The industries that were issued Notice of Violations (NOV's) can be found on the "2011 Notice of Violations" Attachment D. Attachment E will also provide information regarding type of violation and amount of penalties assessed. There were no Industries that were issued Administrative Orders during 2011.

6. The required publication of Significantly Non-compliant SIU's will be printed in the Kansas City Star on March 31, 2012. The companies that are to be published are as followed:

   KCMO Regional HHW SNC-R 1st and 2nd reporting period(s)

7. There were no spills, or discharges reported by any SIU's during the 2011 calendar year.

8. During the 2011 calendar year three (3) of the seven (7) Kansas City Missouri Water Treatment Plants experienced exceedance violations. The plants that had violations were Blue River, Fishing River, and Rocky Branch.

   The violations at the three Treatment Plants were determined to be caused by mechanical or equipment error, and also due to changes in processes at the Water Treatment Plants.

   There were no SIU's that were known to cause any violations experienced at the KCMO Waste Water Treatment Plants.

9. The following attachments are being included in this 2011 Pretreatment Program Report:

2011 SIU Chart	Attachment A
2011 Permit Activity	Attachment B
2011 Compliance Schedule	Attachment C
2011 Spills and Discharges	Attachment D
2011 Notice of Violations	Attachment E
2011 NPDES Compliance	Attachment F

Information contained in report compiled by Natalie McKinney.

ATTACHMENT C - TAB

List of Critical Facilities and Inspection Frequency

ATTACHMENT C:
LIST OF CRITICAL FACILITIES AND INSPECTION FREQUENCY

Following is page 1 of the list of critical facilities and associated inspection frequencies. In order to conserve resources, an electronic copy of the full list is included on the attached disc.

CSO INVENTORY - KANSAS CITY, MO.

CSO NUMBER	LOCATION	MAP NUMBER	MH NUMBER	FILE NUMBER	RECEIVING STREAM	INSPECTION INTERVAL
1	100 DELAWARE DIVERSION	S028	35		MISSOURI RIVER	7
2	100 MAIN STREET DIVERSION	S028	302		MISSOURI RIVER	30
3	100 GILLIS AVE DIVERSION 600FT W	S028	954		MISSOURI RIVER	7
4	100 LYDIA AVE DIVERSION	S027	860		MISSOURI RIVER	30
5	* 101 PROSPECT AVE PUMP STATION	S009	800		MISSOURI RIVER	30
6	* MILWAUKEE PUMP STATION	S006	801		MISSOURI RIVER	30
7	7300 HAWTHORNE DIVERSION	S012	47		BLUE RIVER	30
8	320 BELMONT AVE	S024	209		BLUE RIVER	14
9	WILSON & CAMBRIDGE	S024	87		BLUE RIVER	30
10	801 E 9TH ST, IN PARKING LOT	S035	435		BLUE RIVER	7
11	7601 TRUMAN RD	S036	18		BLUE RIVER	14
12	1800 CRYSTAL AVE	S048	210		BLUE RIVER	14
13	3557 STADIUM DRIVE	S059	9		BLUE RIVER	14
14	3333 STADIUM DRIVE	S059	1		BLUE RIVER	14
15	3620 WHITE AVE ELIMINATED	S072	123		BLUE RIVER	
16	5015 STATE LINE RD	S078	629		BRUSH CREEK	7
17	1308 W 50TH TER	S078	22		BRUSH CREEK	3
18	4941 WESTWOOD RD	S078	174		BRUSH CREEK	7
19	1204 W 50th St	S078	186		BRUSH CREEK	7
20	4979 WARD PARKWAY	S078	323		BRUSH CREEK	7
21	4938 HOLLY ST	S078	190		BRUSH CREEK	7
22	807 W 48TH ST	S078	354		BRUSH CREEK	14
23	4821 ROANOKE PWKY	S078	344		BRUSH CREEK	30
24	523 WARD PARKWAY	S078	340		BRUSH CREEK	7
25	4700 BROADWAY	S078	488		BRUSH CREEK	3
26	4849 WORNALL RD	S079	134		BRUSH CREEK	7
27	111 NICHOLS RD	S079	232		BRUSH CREEK	7
28	1 WARD PARKWAY	S079	159		BRUSH CREEK	14
29	4908 BROOKSIDE BLVD	S079	93		BRUSH CREEK	14

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ANNUAL REPORT
Reporting Period: January 1, 2012 through December 31, 2012

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

Burns & McDonnell
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