CITY OF KANSAS CITY, MISSOURI

National Pollutant Discharge Elimination System (NPDES)

Municipal Separate Storm Sewer System (MS4) Permit

MO-0130516

May 1, 2024 - April 30, 2025

KANSAS CITY
MISSOURI

October 2025

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ACRONYMS

APWA	American Public Works Association
ARAP	Assumptions & Attainment Plan
Cartegraph	Cartegraph Environmental & Risk Management System
BMPs	Best Management Practices for stormwater
BOD	Biochemical oxygen demand
CERC	Columbia Environmental Research Center
City	City of Kansas City, Missouri
COD	Chemical oxygen demand
EPA	U.S. Environmental Protection Agency
GIS	Geographical Information System
HHW	Household Hazardous Waste
KCEEN	Kansas City Environmental Education Network
MARC	Mid-America Regional Council
MCMs	Minimum Control Measures
MDNR	Missouri Department of Natural Resources
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollution Discharge Elimination System
Permit	MO State Operating Permit MO-0130516
PHFs	Pesticides, herbicides, and fertilizers
SPCC	Spill prevention control and countermeasures
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TSD	Treatment, storage and disposal
USACE	U.S. Army Corp of Engineers

CERTIFICATION

As required in Part H, Section 1 of Missouri State Operating Permit No. MO-0130516, annual reports shall be signed in accordance with 40 CFR 122.22 and 10 CSR 20-6.010(2)(B) and include the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Kenneth C. Morgan, P.E. 10/28/25

Kenneth C. Morgan, P.E. Date

Director, Water Services Department

City of Kansas City, Missouri

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INTRODUCTION

This report is submitted to the Missouri Department of Natural Resources (MDNR) by the City of Kansas City, Missouri (the City) pursuant to the conditions of the National Pollutant Discharge Elimination System (NPDES) Missouri State Operating Permit MO-0130516 (the Permit) for stormwater discharges from its municipal separate storm sewer system (MS4). The City continues to implement the 2022 Stormwater Management Program Plan (SWMP).

This report documents the City's effort during the reporting period May 1, 2024 through April 30, 2025. For each of the nine minimum control measures (MCMs) required in the Permit, relevant Best Management Practices (BMPs) are provided with a list of measurable goals, a self-evaluation of compliance status, a summary of implementation activities, assessment of BMP effectiveness, plans for the next reporting period, as well as a summary of monitoring results, where applicable.

SECTION 1. TOTAL MAXIMUM DAILY LOAD

Total Maximum Daily Load (TMDL) (Permit Ref. C.)

Status: Not applicable

MDNR developed a draft Total Maximum Daily Load (TMDL) for the Platte River. The City reviewed the draft and requested to be exempt from this TMDL, since (1) up to three percent of the Platte River watershed is within the City limits, and (2) the City has been developing and implementing a suite of projects and programs to address non-point source pollutants and to protect water quality of local streams and rivers. There has not been any update from MDNR about its final decision. There has been no other TMDL or any draft one issued yet.

SECTION 2. MINIMUM CONTROL MEASURES (MCMs)

1. Public Education and Outreach of Stormwater Impacts

The City has ongoing public education and outreach programs to inform the public about the impacts of stormwater discharges on waterbodies and steps the public can take to reduce pollutants in stormwater runoff as identified in the SWMP. The following are highlights of MCM 1 activities including BMPs.

1.1 Inform the public (Permit Ref. E.1-a.i.)

The City utilizes various established communication venues and social media to educate and reach out to the public for stormwater education. Contents are customized to suit different age groups. Delivery methods are selected to facilitate effective outreach.

BMP 1: Utilize established communication venues and social media to disseminate information

Measurable Goals:

- The stormwater-related education messages are disseminated through available resources. The messages will focus on the subject of potential pollutants from application of pesticides, herbicides, and fertilizers, as well as from management and disposal of used oil and toxic materials.
- A variety of audiences are targeted for stormwater education.

Status: Goals met.

City's *What's on Tap?* newsletter to its water customers every other month: The newsletter is a tool for wide-spread dissemination of educational messages and information. During the reporting period, the section, *KC Education Station*, in the newsletter continued to highlight outreach activities. The newsletters were delivered to approximately 170,000 owners that have water accounts with Water Services Department.

City's website to provide information on stormwater management and water quality matters. The City continued to improve its website, including its education page (https://www.kcwater.us/education/). The page currently lists various links and resources covering teacher resources, community outreach, water quality, tours, printed materials, videos, and water quality grants.

City's ongoing public water quality education program. During the reporting period, the City's public education and outreach program promoted concurrent curriculum with lessons provided along with national and state standard alignments in science. The program provided individual curricula for every grade from Pre-kindergarten through 12th grade. In addition, the education program initiated development of a school district partnering strategy.

Use of Social Media to promote and inform about stormwater activities and outreach. Water Services Department continued to inform citizens of stormwater runoff protection through social media including Twitter, Facebook, Instagram, YouTube and LinkedIn. During the reporting period, Water Services Department created 27 posts and ran them on each of the following: Twitter, Instagram, and Facebook to promote clean water messages.

Continuous Improvement: The City will continue to educate and reach out to the public by enhancing and improving its existing programs and exploring new opportunities and venues. The City will continue to evaluate the content of the messages to ensure complete information is provided to the public, track the number of messages delivered and the number of individuals or groups contacted.

1.2 Activities and materials specific to targeted audiences and pollutants (Permit Ref. E.1-a.ii & iii)

The City provides stormwater education and outreach to different age groups and addresses a number of pollutants commonly present in stormwater runoff, including pesticides and used-oil-related substances.

BMP 1: Provide water-quality-related curriculum to students and workshops to adults

Measurable Goals:

- Different grades from pre-kindergarten through 12th grade will be contacted;
- Track the number of students and adults, and number of classes and workshops; and
- Track the number of training sessions to address pesticides, herbicides, fertilizers, used oil, and toxic materials.

Status: Goals met.

Table 1. lists the achievements made through Water Services Department's Water Education for Kansas City (***WE KC***) Program.

Table 1. A list of water-quality related curriculum under *WE KC* program

Name	Content	Age group targeted	Achievement (numbers about teaching)
What is Water	Importance of water and pollution impact on streets to rivers, oceans, and the earth.	Pre-Kindergarten children	- 7 instances in person - A total of 339 participants - All instances at local districts and charter schools
Freddy the Fish	Various pollutants brought by human activities that *Freddy* will encounter during his adventure.	Kindergarten children	- 41 instances in person - 2 virtual presentations - A total of 1,812 participants - 25 instances at public schools - 3 instances at charter schools - 4 instances at private schools - 10 instances with non-profit groups - 1 instance at home learning
Ways of Water	The movement of stormwater down a watershed and the types of pollutants commonly traveling through a watershed in the runoff.	1st Graders	- 43 instances in-person - 1 virtual presentations - A total of 1,996 participants - 34 instances at Public schools - 4 instances at charter schools - 1 instance at private schools - 4 instances with non-profit groups
Clean Water Messages	Stormwater runoff and contaminants	2nd Graders	- 43 instances in-person - 1 virtual presentations - A total of 1996 participants, - 34 instances at public schools, - 4 instances at charter schools - 1 instance at private schools - 4 instances with non-profit groups.

Trash Tally	Cataloging trash in KC area, learning about runoff and solutions to pollution.	3rd Graders	- 33 instances in-person - 1 instance virtually - 1,845 participants - 29 instances at public schools - 2 instances at charter schools - 3 instances with a non-profit group
Hitchhiking with H2O	Water properties and a hands-on activity about pollutants in water	4th Graders	- 34 instances in-person - 2 virtual presentations - 1,774 participants - 27 instances at public schools - 3 instances at charter schools - 3 instances with non-profit groups
KC to the Sea	The role of stormwater management in protecting the water quality in local rivers, lakes, and streams.	5th Graders	- 51 instances in person - 1 virtual presentation - 2,240 participants - 32 instances at public schools - 6 instances at charter schools - 2 instances at private schools - 1 instance at a Montessori School - 11 instances with nonprofit groups
Force of Water	Erosion and flooding in a hands-on activity with sand tables, types of trash commonly found in the runoff	Middle School Students in Earth Science Class or 6th Grade	- 18 instances in-person - 1,249 participants - 17 instances at public schools - 1 instance at a charter school
Macro Monitoring	The movement of stormwater down towards storm drains and impact on macros in the water	Middle School Students in Life Science Class or 7th Grade as well as High school students	- 18 instances in-person - 582 participants - 10 instances at public schools - 1 instance at a charter school - 1 instance at a Montessori - 4 instances at private schools - 2 instances with non-profit groups
Water Testing	General testing methods, assessment tools, data collection and evaluation of water pollution	Middle School students in Physical science or 8th grade as well as High School students	- 8 instances in-person - 596 participants - 4 instances at public schools - 1 instances at a charter school - 2 instance at private schools - 1 instance with a non-profit group

Journey of Stormwater	A water frame and a hands-on activity regarding the volume of stormwater, and the types of trash commonly found in the runoff	High school students	- 15 instances in-person - 487 participants - 6 instances at public schools - 4 instances at private schools - 3 instances with non-profit groups - 1 instance with a college group - 1 instance with a business
KC Water Presentations	Stormwater runoff, the City's Consent Decree and wastewater infrastructure, and pollutants in runoff	Youth and adults	- 19 in-person presentations - 415 attendees - 14 instances at local schools - 3 instances at a charter school - 1 instance at a university - 4 nonprofit youth groups

Continuous Improvement: The City will continue to conduct various programs to educate both children and adults.

1.3 Additional public education activities (Permit Ref. E.1-a.iii.)

BMP 1. Implement programs through leadership, partnership, and supporting role

Measurable Goals:

- Water Services Department administers and completes at least two rounds of the Water-quality Education Small Grant program within the five-year permit term.
- The KC Green Team will continue to play a role in shaping the City's policies (Note: this and the next goal related to KC Green Team have been moved to ***Section 6.1. Employee training to prevent or reduce stormwater pollution*** for content appropriateness).
- The KC Green Team will organize at least three activities or events annually to educate and inspire staff on green solutions and sustainability with City operations.
- Water Services Department will continue to be a leading sponsor for MARC's water quality public education program by engaging in key decision-making processes and making significant contributions to program implementation.

Status: Goals partially met.

The City continues to identify opportunities to reach out to the public for education on stormwater. A list of public education activities is listed in Table 2 below. The Water-quality Education Small Grant program was held off for issuing new grants during the reporting period. The remaining work for two previously awarded projects got completed:

- Heartland Conservation Alliance: *Green Guard Stewardship Training*
  - Completed two additional workshops, Kayaking and Macroinvertebrate Sampling, with a total attendance of 34.
  - Hosted two additional volunteer days with a total attendance of 12, collected 164 lbs. of trash, and had nearly 3,000 views on social media including Facebook, Twitter and Instagram.

- StoneLion Puppet Theatre: *Puppets for the Water*
  - Hosted multiple Handmade Parade workshops to help participants to create puppets with the theme of addressing nonpoint source pollution, with a total of 72 attendees.

- Hosted Blue Planet Handmade Parade for the Planet and Water Festival on August 14, 2024, with a total of 400 participants.

Continuous Improvement: The City will continue to lead, participate in and support various programs and activities.

Table 2. Additional public education activities

Programs/ Partnerships	Achievement During this Report Period
Green Infrastructure Tours	• Water Services Department hosted 13 tours of the Green Infrastructures sites, reaching 408 people.
Stormwater Table Events	Stormwater table events are community outreach at tabling events with informative posters on stormwater runoff and stormwater mitigation. There were 12 outreach events, reaching about 1,090 people.
Storm drain Marking	25 students and adults participated in marking drains over 32 storm drains.
Community Litter Pickups	• Water Services Department works with all age groups to provide an educational litter pickup. • These events feature a talk on watersheds, pollution, and stormwater runoff along with safety instructions for proper trash collection. • 17 events, 422 participants, over 73 bags of trash: - 16 youth groups and schools, 416 participants, over 73 bags of trash - 1 business, 6 participants, 15 bags of trash
The Mid America Regional Council (MARC) Water Quality Public Education Program 	Water Services Department continues to be a leading stakeholder for this program. • Conducted the 3rd metro-wide virtual Plog-a-thon throughout October 2024. MARC organized six county-wide Plogs on regional trails to get residents outdoors and engage them in a socially responsible activity that reduce the impact of trash and litter on regional water quality. Forty-one people participated in the event with 114 bags of trash collected. • Ran the 20-second video of Dewy, the mascot for the Water Quality Education Committee on social media showing on feeds 534,484 times reaching 235,206 individuals with 1,030 clicks at the Cleanwaterkcmetro.org website (alongside 419,623 streams on Youtube). • Developed the Mid-America Green Stormwater Infrastructure (GSI) Maintenance Certificate Program. The program is intended to verify the skills and knowledge of maintenance professionals. • Awarded three organizations for their proposed water-quality public education projects. These organizations include Heartland Conservation Alliance, Little Blue River Watershed Coalition and StoneLion Puppet Theater. • Replaced the physical distribution of hard copies of education and outreach materials with digital release using online posting as well as QR codes. The topics included Build Your Own Rain Garden, Know your Roots, Pick Up After Your Pet, Making and Using Compost etc.

1.4 Public reporting of illicit discharges or water quality impacts (Permit Ref. E.1.a.iv.)

BMP 1: Promote, publicize, and facilitate public reporting of illicit discharges

Measurable Goal: Ongoing use of the resources to provide relevant information.

Status: Goal met.

The City uses a centralized system – 311 to provide a hotline for residents to report a problem, request a service, or track a City service, including addressing illicit discharges. The app – myKCMO is implemented to make the 311 system readily accessible for different communication devices. Residents can download the app through App Store, Google Play, or web app, or simply call 311 or (816)513-1313 to ask for services. The twitter account is Follow@KCMO311.

https://www.kcmo.gov/city-hall/311

Each request is assigned a case number, logged by category and routed to the appropriate City department for follow-up and resolution.

The system includes a sub-category, I16-Illicit Discharge to facility public reporting, expediate internal handling, and providing a simple and direct means for public sharing and internal tracking of the cases.

Continuous Improvement: Continue to use these resources to address this requirement and seek opportunities to increase effectiveness.

2. Public Involvement and Participation

The City developed and implemented several public involvement/participation programs to connect public with the SWMP. These efforts include providing online access for the public to review the SWMP.

2.1 Public involvement in the development of the SWMP (Permit Ref. E.2.a.i.)

BMP 1. Involve the public in the development of the SWMP.

Measurable Goal: Public participation in the development of the SWMP.

Status: Goal met.

The City continued to implement the SWMP submitted to MDNR in August 2022.

Continuous Improvement: Continue to implement the 2022 SWMP and seek improvement.

2.2 Public participation in implementation activities (Permit Ref. E.2.a.ii.)

Note: the content to address this requirement has been moved under Section 1.5 in the next annual report to be consistent with the latest permit terms.

BMP 1. Involve the public in the cleanup events.

Measurable Goals:

- Track the annual number of events that occurred
- Track the number of volunteers

Status: Goals met.

Water Services Department hosted 17 community cleanup events with 422 volunteers. See Table 2. for additional public education activities. There were also two major cleanup efforts, one in October 2024 and the other in April 2025 to bring neighbors, volunteers and City departments together in a shared effort to keep Kansas City clean, green, and beautiful. The total numbers of volunteers were 255 for the October 2024 event and 963 for the April 2025 event, respectively.

Figure 3. Oct. 5, 2024 Great Kansas City Cleanup

Continuous Improvement: The City will continue the above practices for public involvement and participation.

3. Illicit Discharge Detection and Elimination

The City's efforts include implementing and enforcing a program that detects and eliminates illicit discharge to the MS4 system. A key aspect of the efforts is maintaining the system mapping in the geographic information systems (GIS). The City is making progress in implementing procedures to manage stormwater-related information from various sources.

3.1 Maintain and update a storm sewer map (Ref. E.3.a.i.)

BMP 1: Maintain and update storm sewer geographical information system (GIS).

Measurable Goals:

- Add to the Water Services Department GIS all known stormwater components including outfalls and newly replaced or constructed on public properties.
- If information is available, add to the Water Services Department GIS all outfalls on large commercial or industrial properties; review historical As-builts for gaps to improve the database.

Status: Goals met.

The City continues to maintain the GIS that maps those known constructed outfalls and all receiving waterbodies. The City's data sources for the updates on the outfalls information include the result of the ongoing outfall field screening and construction As-builts drawings. Water Services Department has also been reviewing its stormwater outfall data to improve its accuracy.

BMP 2: Enhance the storm sewer GIS.

Measurable Goal: Complete the database of the stormwater BMPs that have been constructed on the City's properties, and keep the database updated.

Status: Ongoing progress.

Water Services Department continues to update its stormwater BMP mapping in the GIS. BMPs are tracked separately: As-builts for private development are collected by the City Planning Department; As-builts for capital projects are collected by the City's Green Team. As-builts from both sources are sent to the GIS Division with Water Services Department, which extracts the stormwater BMP info. and registers in the GIS

Continuous Improvement: Water Services Department will continue to use the current approaches to update and maintain the GIS for storm sewer system mapping and seek improvement. In addition, Water Services Department will use the updated aerial photos, As-builts, and ancillary data to review the outfall inventory, and improve the data quality as needed.

3.2 Prohibit illicit discharges and implement enforcement actions (Permit Ref. E.3.a.ii. & iii.)

BMP 1: Follow the established procedure for illicit discharge investigation and enforcement

Measurable Goals:

- Conduct investigations in a timely manner; reduce and minimize the impact, if possible; stop and eliminate sources, if feasible.
- Take enforcement action when needed.

Status: Goals met.

Water Services Department is responsible for investigating the incidence of illicit discharges following the updated investigation procedure. During the reporting period, Water Services Department received 59 reports of suspicious illicit discharges, investigated 44 of them, and transferred the 15 non-illicit-discharge-related

cases to other appropriate City departments for handling. All the 44 illicit-discharge-related cases were resolved in a timely manner.

Continuous Improvement: Water Services Department will continue to investigate any reported incidents per the established procedure and implement enforcement procedures and actions as specified in the ordinance.

3.3 Conduct a field screening program (Permit Ref. E.3.a.iv.)

BMP 1. Follow the established procedure for outfall field screening

Measurable Goals:

- Inspect 150 outfalls or other stormwater discharge points annually.
- Follow up on the issues identified during the screening and have them resolved in a timely manner, if feasible.

Status: Goals met.

The outfalls located within the industrial areas were targeted for screening during the reporting period. A total of 150 outfalls of various sizes including 36" or larger were inspected. The field inspector utilized the City's GIS to identify the sites for screening and followed the established procedure.

Continuous Improvement: Continue implementing the established program. We will make improvements to our current field recording and database management.

3.4 Procedures to minimize, contain, and respond to spills (Permit Ref. E.3.a.v.)

BMP 1: Follow the established guidelines to address spills

Measurable Goals:

- Implement the guidelines to address spills.
- Track the number of the spills that discharge or have potential to discharge to the MS4.

Status: Goals met.

The Fire Department implements the following guidelines that address the potential impact on stormwater from a spill:

- HazMat Response General Operational Guideline for Fuel Spills. The Guideline encourages using dry absorption as the preferred method to clear a spill and taking measures to protect stormwater drains. It also provides directions on how to properly dispose of water and avoid discharge into storm drains if flushing is the option.
- HazMat response General Operational Guideline for First Responders. The Guideline requires the flush water must be confined after it has been used and then disposed of properly.

The Fire Department responded to a total of 152 incidents, of which 56 are fluid-related. No spills or leaks reached to storm drains or streams. Hazardous material-related incidents referred to here may not necessarily be about liquid spills (e.g., chemical odors emitted from structures). Also note the total number does not include incidents that may have fluids spilled but were classified as a higher level of calls (i.e., emergency calls for injuries in vehicular accidents, etc.). Of all the 363 incidents, there was no spill that discharged or had potential to discharge into the MS4.

Continuous Improvement: The Fire Department will continue to follow the established guidelines to address spill incidents.

3.5 Maintain the City's sanitary sewer system (Permit Ref. E.3.a.vi.)

BMP 1: Limit exfiltration from municipal sanitary sewers

Measurable Goal: Maintain 140 miles of sewer lines annually.

Status: Goal met.

Wastewater Maintenance Division

137.3	miles of sewers televised
NA	miles of sewers cleaned
0.31	miles of public sewers repaired
0	miles of private sewers repaired
183	manholes repaired

Smart Sewer Program

86.3	miles of sewers televised
487	miles of sewers cleaned
1.21	miles of public sewer repaired
0.69	miles of lateral repaired, replaced/rehabilitated
23.8	miles of public sewer repaired/replaced/rehabilitated
788	inlets repaired/replaced/rehabilitated

Collection System

3.2	miles of sewers televised
NA	miles of sewers cleaned
0.49	miles of public sewer repaired
NA	miles of lateral replaced
0.68	miles of public sewer repaired/replaced/rehabilitated
15	manholes repaired

Continuous Improvement: The City will continue to implement the above programs to limit exfiltration and overflows from sanitary sewers and will improve the data tracking through GIS tools in development.

3.6 Proper management of materials or wastes (Permit Ref. E.3.a.)

BMP 1. Implement programs for solid wastes and household hazardous waste management

Measurable Goals:

- Maintain all the established programs.
- Host one or more rounds of city-wide curbside waste collection events.
- Maintain the operation of the three community recycling drop-off centers.
- Maintain the operation of the two yard-waste drop-off centers.
- Maintain the operation of household hazardous waste collection.

Status: Goals met.

The City operates multiple programs that encourage proper disposal, as well as preventing and addressing illegal dumping. See Table 5, Figures 1 and 2 for details.

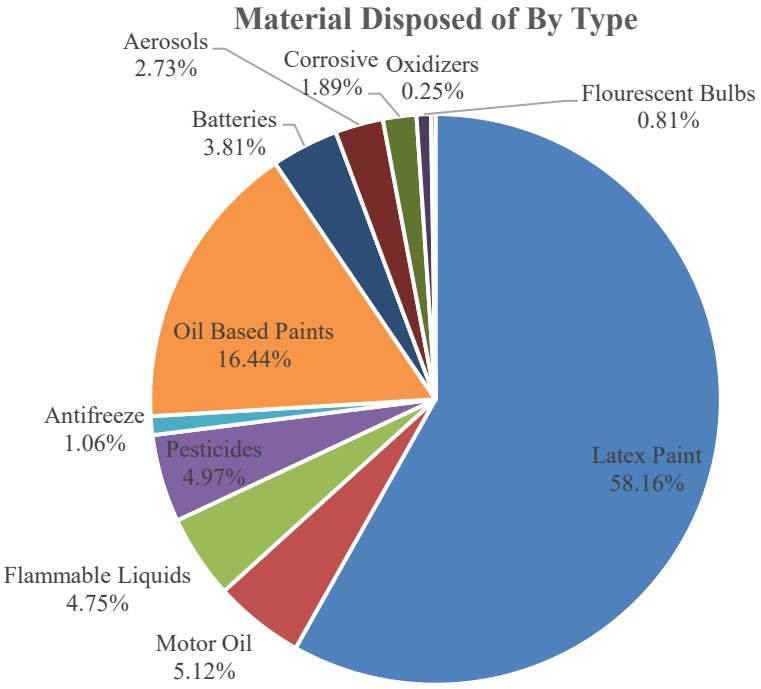
Table 4. Comprehensive solid waste management program achievements

Quantity (in Ton)	Programs
	KC Recycles
595.9	Community recycling drop-off centers (3)
55.5	Hard to Recycle (electronic appliance)
	Bulky Items Collection
5,478	Bulky items
	Leaf and Brush Collection
1,430	Curbside
NA	Drop-off centers (3)
	Illegal Dumping Cleanup
1,990	Material collected
	31 cameras placed at 22 locations
	Neighborhood Cleanup Assistance
192	Tires received at drop-off centers
	Number of dumpsters placed: 830
	Number of trucks for Neighborhood Clean-up: 187 trucks in 19 weekends

Quantity	Household Hazardous Waste (HHW) (Calendar Year 2024)	
588 tons	Total weight collected at HHW Facility	11,393 vehicles participated
192 tons	Total weight collected at Mobile Outreach	3,250 vehicles participated
11 tons	Total materials reused in Swap Shop	
83 tons	Total materials recycled	
613 tons	Total materials sent for energy recovery	
37 tons	Total materials incinerated	

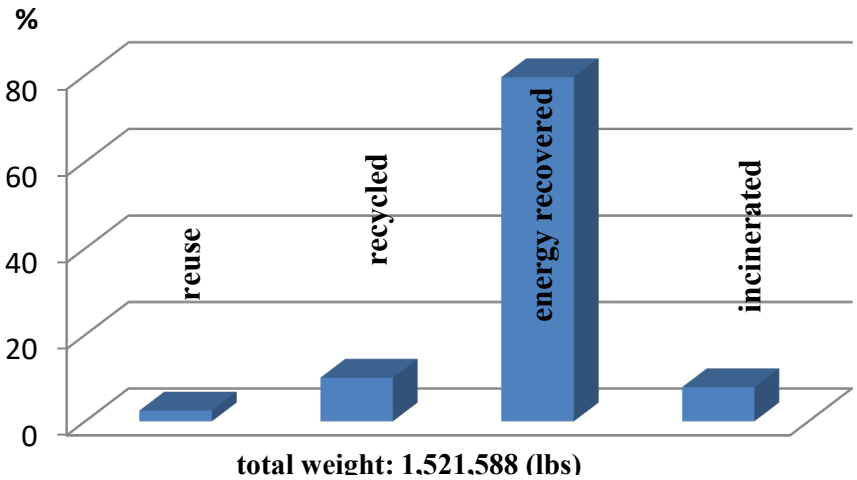
Continuous Improvement: The Solid Waste Division of Public Works will continue to operate its various solid waste management programs. For the Household Hazardous Waste Facility, Water Services Department has been conducting a study for management of and physical updates to the existing facility. The current finding is that the facility may need to be relocated such that the City can continue its current service while the new site is in construction. The new site will be sized to accommodate the forecasted household hazardous waste received over the next 50 years.

Figure 1. Material by type disposed of by Household Hazardous Waste (HHW) facility in 2024



- Total weight of the materials disposed of (not collected) was 1,494,109 pounds, or about 747 tons.
- Total weights are only for materials that were reused, recycled, used for energy recovery, or material incinerated.
- Percentages reflect the HHW numbers associated with Kansas City, Independence, Lee's Summit and the MARC participating communities.

Figure 2. Distribution of material managed by HHW facility in 2024



4. Construction Site Runoff Control

The City's efforts include conducting inspections, adopting the Stormwater Pollution Prevention Plan (SWPPP) template for City capital improvement projects, and taking enforcement actions to reduce pollutants in stormwater runoff to the MS4 system, from construction activities on land disturbances sites that disturb one or more acres or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project. The City's SWMP addressed this control measure and the efforts made during the reporting period are documented below.

4.1 Ordinances to require erosion and sediment control BMPs (Permit Ref. 4.a.i.)

BMP 1: Continue to implement City ordinance

Measurable Goal: Ongoing implementation of City ordinance as any development occurs.

Status: Goal met.

The City implements the City Code Chapter 63 Erosion and Sediment Control. Division 4 of this chapter is about enforcement which includes enforcement activities, suspension or revocation of permit, action against the security, as well as fines and penalties. See the link below.

https://library.municode.com/mo/kansas_city/codes/code_of_ordinances?nodeId=COORKAMIVOII_CH63ERSECO

Continuous Improvement: The City will continue its current practice.

4.2 Implement and enforce erosion and sediment control for City capital projects (Permit Ref. 4.a.ii. iii, v. vi & vii)

BMP 1. Addressing site wastes

Measurable Goals: Not applicable.

Status: Requirement addressed.

The City continues to use its template of Stormwater Pollution Prevention Plan (SWPPP) to address sediment and erosion controls. The Plan contains requirements to manage construction site-related wastes, including but not limited to, solid waste, liquid waste, concrete waste (washout area), hazardous waste, etc.

BMP 2. SWPPP review, site inspection and enforcement action

Measurable Goals: Track annual numbers of construction sites, submitted SWPPPs and reviews, inspections conducted by the City inspector, enforcement actions, and employees who receive relevant training.

Status: Goals met.

The SWPPP is submitted to and stored in the e-Builder system. Water Services Department, as well as project managers, reviews each SWPPP. During the reporting period, Water Services Department reviewed 29 SWPPPs submitted by project managers from different City Departments.

Water Services Department provided monthly oversight inspection. The inspector identifies the status of the project through the City's e-Builder system and/or receives the notice from a project manager. Inspection starts the 1st month when the inspector is aware of the project and does not stop until three months after 100% of the construction. Each project manager carries the responsibility for keeping the e-Builder system updated. During

the reporting period, Water Services Department conducted 328 inspections for 31 sites. Issues identified during the inspection were all resolved in time.

If there are any issues identified during the inspection, the inspector sends notification to the relevant project manager, who subsequently will inform the contracted construction manager. If the issue does not get resolved within a reasonable timeframe, the project manager can withhold the payment to the contractor until the issue is resolved.

4.3 Implement and enforce erosion and sediment control for private projects (Permit Ref. 4.a.ii. iii, v. vi & vii)

BMP 1: Addressing site wastes

Measurable Goal: Not applicable.

Status: Requirement addressed.

For private construction projects (≥1 acre), the Permitting and Development Division with Water Services Department (used to be the Land Development Division of City Planning & Development Department) requires that construction site operators comply with the City's erosion control requirements as well as the requirements of the Missouri Department of Natural Resources. Both regulations require management of site waste.

BMP 2; SWPPP review, site inspection and enforcement action

Measurable Goal: Track annual numbers of construction sites, submitted SWPPPs and reviews, inspections conducted by the City inspector, enforcement actions, and employees who receive relevant training.

Status: Goals met.

For privately funded construction projects (≥1 acre), the Permitting and Development Division with Water Services Department reviews the Site Disturbance Plans that are submitted as part of the construction plans for the proposed development. Developers are required to obtain land disturbance permits from MDNR and to develop and implement a SWPPP per their permit requirement. The Permitting and Development Division requires that the SWPPP be kept available and current on site for City inspectors to view during inspections.

No change related to site inspection or enforcement procedure was made. The Permitting and Development Division provides a minimum of two inspections; additional inspections are as needed, depending on the scope and scale of the project. A total of 1,083 inspections were conducted.

4.4 Procedures to address public reporting of the discharge of pollutants (Permit Ref. 4.a.iv.)

BMP 1. City's MyKCMO System for Centralized Reporting

Measurable Goal: Keep track of public reporting of the discharge of pollutants from construction sites.

Status: Goal met.

The City has a centralized MyKCMO (used to be 311) system to provide residents with access to report problems, and request and track City services, including addressing illicit discharges from construction sites. Once the report is logged into the system, the appropriate department or division will be assigned to investigate the issue. The department or division will close the issue in the system after the issue is resolved. The public can track the status online. See 1.4 BMP 1. for more details.

During the report period, 1,097 cases related to sediment or erosion control were entered in the MyKCMO database and 997 cases were closed. Note the numbers include sites of various sizes including single properties.

Continuous Improvement: The City will continue the current practice to address all public reporting.

4.5 Education and training for site operators (Permit Ref. 4.a.vii.)

BMP 1: Provided city-wide online training

Measurable Goal: Provide training and/or education opportunities to project managers.

Status: Goal met.

During the reporting period, seven newly hired engineers and project managers took online training for the topic of sediment and erosion control. Here is a summary of the training:

- The training targeted City project managers/engineers that oversee capital construction projects, as well as construction inspectors and environmental officers with responsibility for inspecting construction sites that involves City land disturbance activities.
- The content covers a review of the City's Land Disturbance Permit requirements, stormwater best management practices at construction sites, a review of EPA's expedited settlement agreement and recent enforcement actions.

In addition, the inspector overseeing all City projects completed the EPA's Construction General Permit Site Inspector Training Course. The Permitting and Development Division in the Water Services Department hosted a training for five staff in February 2025. The training was about applying appropriate BMPs for construction sites.

Continuous Improvement: The City will continue to provide training to both project managers from multiple departments that are responsible for managing capital construction projects, and inspectors that are responsible for inspecting construction sites involving land disturbance activities.

5. Post-Construction Stormwater Management in New Development and Redevelopment

The City developed, implemented, and enforced programs to address the quality of long-term stormwater runoff from new development and re-development projects that disturb one or more acres or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project. The programs ensured that stormwater controls are in place that have been designed, developed, and implemented to minimize water quality impacts.

5.1 Ordinances to address post-construction runoff and strategies to minimize water quality impacts (Permit Ref. 5.a.i. ii. & iii)

BMP 1: Implement and enforce all relevant City ordinances

Measurable Goal: Track the annual numbers of reviews of development applications, review of construction projects, pre-application development assistance sessions with development stakeholders, review of covenants for Maintenance, and review of stormwater BMP easements.

Status: Goals met.

Existing City regulations that address post-construction stormwater management and minimize water quality impact include the following:

Stream Buffer Regulations and Conservation and Open Space Development Regulations: City Code Chapter 88, the Zoning and Development code, promotes more open space and greater natural resource protection by incorporating the Stream Buffer Regulations and Conservation and Open Space Development Regulations. Both regulations apply to new development, redevelopment, and construction and infrastructure projects near streams.

Provisions for Flood Hazard Reduction: City Code Chapter 28 addresses floodplain management. In November 2023, the City repealed the old version and enacted an entire new version of like number and subject matter. The new version was modeled after the Federal Emergency Management (FEMA)'s model ordinance and adopted new updated FEMA rate maps. Article IV Provisions for flood hazard reduction specify permitting conditions for floodplain development, and standards for land usage, construction and post-construction management regarding storage of hazardous and non-hazardous material and equipment. In comparison to the requirements in the old version, the new one has reduced substantial improvement percentages from 50% to 49 percent of a structure's market value for better protection.

APWA 5600 design criteria for *Storm Drainage Systems & Facilities*, APWA 2600 Specifications for Storm Sewers, and BMP manual: City Code Chapter 88 Series 400 and 500 require a macro/micro stormwater drainage study for development or re-development, and adherence to APWA 5600 design criteria for *Storm Drainage Systems & Facilities* and APWA 2600 Specifications for Storm Sewers, as well as the Manual of Best Management Practices.

During the reporting period, the City continued to be one of the lead sponsors and participate in a regional effort that was guided by the APWA-Kansas City Executive Committee and 23 participating local governments and coordinated by the Mid America Regional Council (MARC) to update the regional APWA Stormwater Standards. A draft Stormwater Standards Manual, which includes both the Stormwater Design Criteria Section 5600 and BMP manual, was developed and a public feedback meeting was hosted in February 2025.

Covenants for stormwater BMP maintenance: CP&D uses three types of covenants applicable to different stormwater BMP maintenance scenarios for new development and re-development. These covenants include *Stormwater Detention Covenant for Maintenance*; *Stormwater Detention & BMP Covenant for Maintenance*; and *Conveyance of Easement for BMPs*. These documents require developers or property owners to take responsibility for maintenance, repair, and restoration of detention basins or BMP structures.

During the reporting period, CP & D reviewed 170 plans for public infrastructure construction; had an average of seven consultation meetings for pre-application development plan for 49 weeks, and reviewed 115 stormwater covenant agreements, 118 BMP easements, and 207 storm drainage studies.

Continuous Improvement: The City will continue to require developers to comply with all the relevant City codes for new development and re-development.

BMP 2. Enhance regulatory mechanisms to support post-construction stormwater management

Measurable Goal:

- Complete the development of the Tree Preservation and Enhancement ordinance; and
- Track the annual numbers: stormwater BMPs installed, and trees on City right-of-way and City parks removed, pruned, planted, and damaged.

Status: Goals partially met.

During the reporting period, progress was made to update the following ordinances:

Tree Preservation and Protection: The City adopted the Urban Forest Master Plan in May 2020. The Plan established a goal of 35 percent tree canopy cover for the City. On Mar. 16th, 2023, the City amended City Chapter 88 through Ordinance No. 220961 by enacting new section 88-424-01 through 88-424-13, Tree Preservation and Protection. The intent of the amendment is to preserve and advance the aesthetic, economic, and environmental benefits of a high-quality urban forest, by protecting trees and mitigating any unnecessary removal of trees. The ordinance helps with better stormwater management and runoff infiltration. The City also approved ordinance added section for alternative compliance, which allows the option to pay into the Tree Fund as a means of alternative compliance landscaping when planting standards cannot be met. Three projects contributed to the Tree Fund.

During the reporting period, City Planning & Development Department reviewed 23 development cases for tree preservation plans with some of the project reviewed at multiple steps in accordance with the "controlling" development plans, such as building plans and grading plans. In addition, Parks & Recreation Department planted 1,500 trees on Parks' Department properties.

Updated Green Stormwater Green Infrastructure Manual: Water Services Department completed updates to the Kansas City Missouri Green Stormwater Infrastructure Manual (GSI) in October 2022. The updated version adds two new sections: Design Guidance for GSI practices (e.g., storage & sizing calculations, bioretention, rain garden, etc.), and Design Deliverable Expectations for GSI Projects. These additions are intended to make the manual a better guidance and resources for the users or City project managers by providing a standard calculation method for estimating the storage and sizing of each major GSI type and specifying the standard for design deliverable to facilitate City review of each project.

Water Services Department continues to coordinate with other City departments to keep track of the green infrastructure installations on private and public properties, and to ensure the information is timely incorporated in the City's GIS database for green infrastructures. In addition, Water Services Department is compiling an central database for green infrastructures owned and/or maintained by different City departments to support better management of these assets.

Continuous Improvement: The City will continue to enforce the tree ordinance for both private development and capital improvement projects and make progress towards 10,000 trees in three years. The City will continue

to use the GSI manual on capital improvement projects and encourage its use for private development. The City will continue to work with MARC and other local municipalities to finalize the APWA 5600 and the BMP Manual.

5.2 Ensure long-term operation and maintenance of post-construction BMPs (Permit Ref. 5.a.ii. & iv.)

BMP 1. Inspect post-construction BMPs

Measurable Goal: Inspect an average of 20 detention/retention basins per year (**Note:** this is the goal set up newly to replace the old one, which is Inspect stormwater BMPs constructed through PIAC projects and have them maintained based on the agreement for maintenance responsibility set prior to construction. The original goal is covered in Section 6.2)

Status: Goal partially met.

The private detention/retention basins and other stormwater BMPs inspected by the City: Water Services Department continues to administer the Detention Basin Credit Program. Due to staff health issues, inspection of the basins listed in the stormwater credit program was not done. Since the goal for the basins receiving credit is set for an average of 20 annually, the department will get the task completed in 2026.

During the reporting period, Water Services Department inspected six detention/retention basins outside of the Detention Basin Credit Program. For one of the inspected basins, the department was working with the Neighborhood and Community Services Department to take enforcement action against the party that has the responsibility of maintenance. For another basin, the department worked with multiple property owners to address the potential dam failure due to toe erosion over time. For the third basin, the department was working with the responsible party to address significant sedimentation and excessive vegetation growth. The remaining two basins did not present issues.

The Regional Green Infrastructure Maintenance Program: Water Services Department continues to work with MARC and Center for Watershed Protection, as well as multiple local cities, on a regional training program that supports the continued expansion of green workforce skills. The program is the first of its kind in the region, establishing the structure, tools, and continuous workload pipeline to support the viability of green infrastructure and to make our contracting partners successful in the long-term.

During the reporting period, the training content was finalized and tested with 37 staff from nine local cities and one county. The training was promoted among local municipalities and also in the regional Climate Fair on April 19, 2025.

Continuous Improvement: Water Services Department will continue to inspect private detention/retention basins and stormwater BMPs; continue to address the issues identified through inspection and continue to play a role in developing the regional training program. The Regional Green Infrastructure training will be provided to staff whose job functions are related to green stormwater infrastructure management.

6. Pollution Prevention and Good Housekeeping for Municipal Operations

The City currently has multiple efforts to practice pollution prevention and good housekeeping for City's municipal operations.

6.1 Employee training to prevent or reduce stormwater pollution (Permit Ref. 6.a.i.)

Measurable Goals:

- Track the annual numbers of relevant presentations made in the monthly stormwater coordinating committee meetings, employees who receive online training on stormwater pollution prevention in

municipal operations, employees who receive training on SPCC, Parts Washer and HAZWOPER, and views of the relevant YouTube Videos.
- Complete employee training on sediment and erosion control for land disturbance activities.
- The KC Green Team will continue to play a role in shaping the City's policies.
- The KC Green Team will organize at least three activities or events annually to educate and inspire staff on green solutions and sustainability with City operations (Note: the last two goals were originally listed under Section 1.4 – BMP 1. Implement Programs through Leadership, Partnership, and Supporting Role. They are moved here for content appropriateness.).

Status: Goals partially met.

BMP 1: Using webinars as training resources. To keep staff abreast with the current advancement in stormwater management and watershed planning, Water Services Department enrolled a group membership with the Center for Watershed Protection to access training resources, in lieu of having presentations in internal meetings. Twenty city staff, across different City departments and with job responsibilities that can impact City's stormwater and watershed management policies and practices, were provided the access to the Center's member services, which included webinars. During the reporting period, twenty employees attended the webinars on Agriculture and Watershed Management, New Tools for Watershed Management, Green Infrastructures, Behavior Change at the Local Level: a Case Study, and Stormwater Funding: Finding Money for Implementation.

BMP 2: Employee training related to sediment and erosion control at construction sites. For employee training related to sediment and erosion control at construction sites, refer to Section 4.5 for details. Six city employees received the training on the new land disturbance permit requirement and sediment and erosion control measures.

BMP 3: Employee training related to municipal operations. The City's Office of Environmental Quality provided City employees with training on Parts Washer; Spill Prevention, Control and Countermeasure (SPCC), and HAZWOPER requirements. During the reporting period, the numbers of employees that received training on Parts Washer, SPCC and HAZWOPER-related were: 11, 82 and 32, respectively.

Water Services Department continues to use online accesses to three videos for stormwater pollution prevention education. These videos are produced by Excal Visual, and the titles are: *Stormwatch; A Drop in the Bucket,* and *Rain Check.* Each video is designed for stormwater pollution prevention education for employees working outdoors with materials, wastes and operational activities that could potentially impact the quality of the stormwater runoff. Water Services Department uses these videos to target employees from both City operations and private industries. During the reporting period, Water Services Department focused the training on private industries. See Section **7.2. Inspections and enforcement control measures** – BMP 2 for details.

BMP 4: Other relevant employee training. The Water Services Department staff were participating in the development of the Regional Green Stormwater Infrastructure Maintenance training program. See details in Section 5.2 BMP 1.

BMP 4: KC Green Team's effort. This effort was stopped during the reporting period. Instead, the City has established an Employee Resource Group (REG) focused on all sustainability-related things for employees, including but beyond green infrastructures. The City also continues to participate in the Center for Regenerative Solutions' Green Infrastructure Accelerator.

Continuous Improvement: The City will continue to provide training and education to its employees based on their job responsibilities.

6.2 BMP maintenance to reduce floatable and other pollutants (Permit Ref. 6.a.ii.)

Measurable Goals:

- Inspect and maintain BMPs that were constructed on City's properties through its Smart Sewer Program or on private properties but with an easement for City Maintenance (**Note:** this is a newly added goal, which also incorporates the goal originally listed in Section 5.2. Inspect stormwater BMPs constructed through PIAC projects and have the maintained based on the agreement for maintenance responsibility set prior to construction.).
- Inspect and maintain the listed public detention/retention basins; and
- Inspect an average of 20 detention/retention basins per year (**Note:** this measurable goal has been moved to Section 5.2).

Status: Goals met.

BMP 1: City departments continued to maintain stormwater green infrastructure constructed on City properties or on properties that City has maintenance easements. Continuing maintenance allows the established green infrastructure to function at an optimal level. Water Services Department keeps an inventory of all green infrastructure facilities constructed and/or maintained by the City. The inventory is mapped in the City's Geographic Information System (GIS) for tracking and for facilitation of operation and maintenance.

Water Services Department maintains the green infrastructure using three venues: Green Solution Team which is composed of in-house staff dedicated to maintaining green infrastructure, and contractor companies.

- Green Solution Team: maintained 445 individual infrastructures of 44 sites; completed 3,905 tasks of various types, which include 1,315 tasks of cleaning concrete structures and drainage paths, as well as 1,044 tasks of trash and debris removal.
- Contractors: maintained 103 individual infrastructures of 14 sites.

Other City departments maintain the green infrastructure that they build unless specific arrangements are made for another City department including the Water Department to assist.

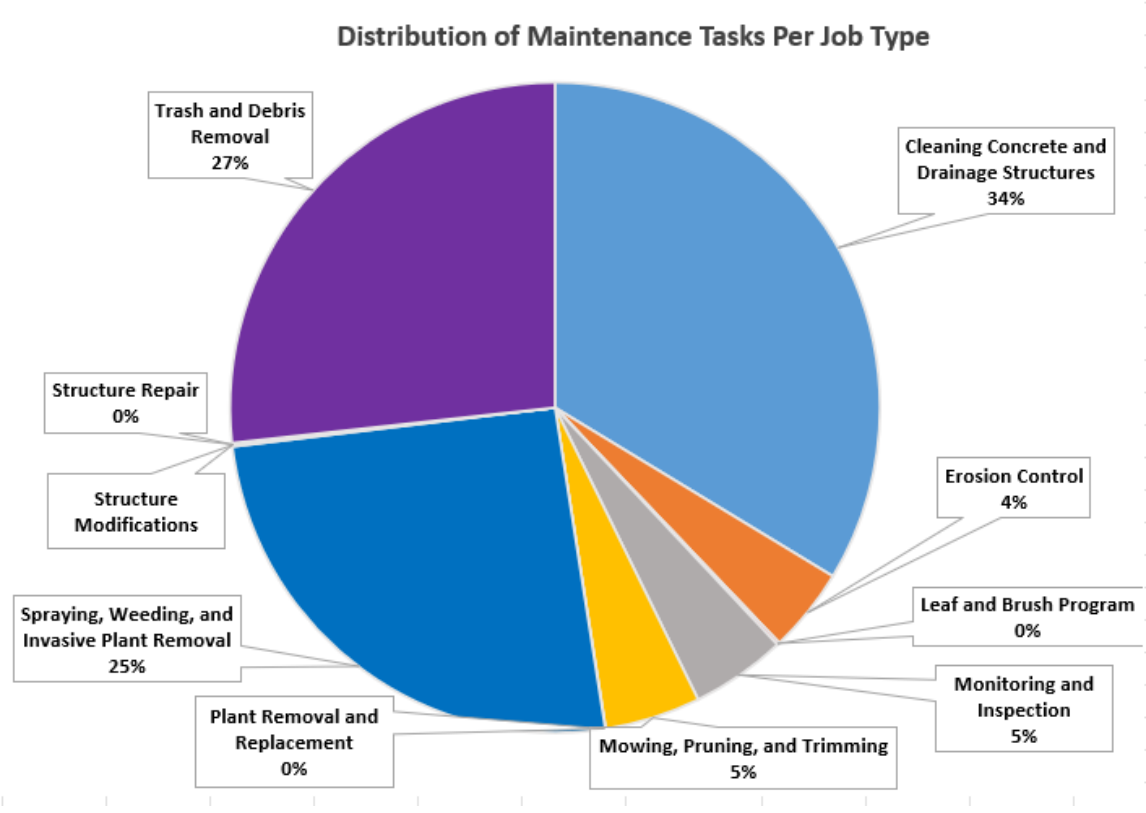
The interdepartmental KC Green Infrastructure Team has shifted from adopting a maintenance proposal to developing a funding strategy to help different City Departments, who, other than Water Services Department, own GSIs on their properties, to have maintenance and repair responsibilities consistently defined and fulfilled. The purpose is to ensure long-term effective function of these infrastructures.

BMP 2: Inspected and maintained the public detention basins. Water Services Department's Preventative Maintenance Division inspected and maintained the public detention basins. These public basins include the ones at 8801 James A Reed Rd., 6013 North Strathbury Road, 300 Chestnut Trafficway, 3913 North Kensington Road, Stillwell Avenue, and Gardner Avenue (now a retention basin). The City owns multiple detention basins at several police department patrol stations that include North Patrol, Central Patrol, Metro Patrol, South Patrol, East Patrol, and Shoal Creek Patrol stations. Police Department maintains these basins.

BMP 3; Water Services Department maintains an inventory of BMP facilities constructed on City owned properties. The inventory is mapped in the City's Geographic Information System (GIS) for tracking and for facilitation of operation and maintenance of green infrastructure facilities constructed and/or maintained by Water Services Department.

Continuous Improvement: The City will continue its commitment to long-term maintenance of the BMPs constructed on City properties. Water Services Department will continue to lead to keep the GIS database for BMPs updated.

Figure 3. Green Stormwater Infrastructures maintained by Water Services Department – distribution of maintenance tasks



6.3 Controls for reducing or eliminating the discharge of pollutants (Permit Ref. 6.a.iii.)

City implemented measures for reducing or eliminating the discharge of pollutants from street, roads, municipal parking lots, maintenance and storage yards, waste transfer station, fleet or maintenance shops with outdoor storage areas, and salt/sand storage locations and snow disposal areas the City operates.

6.3.1 Management of deicing chemicals (Permit Ref. 6.a.iii.1.)

Measurable Goal: Amount of deicing materials used annually.

Status: Goal met.

BMP 1: Management and improvements to the City's deicing storage facilities. The City's Public Works Department maintains the deicing chemical and material storage facilities. There are three districts and two outlying salt storage facilities. The facilities vary in size, and their storage capacities range from 6,000-12,000 tons of materials. Rock salt is stored in dome structures at two locations. The domes were constructed on asphalt slabs and consist of wooden and concrete structural materials, capable of containing deicing chemicals during periods of extended storage. The three additional salt storage facilities are **Cover-All** buildings with ten-foot-high concrete walls constructed on an asphalt slab. Salt brine and calcium chloride solutions are also used as deicing agents for the public streets, and both are stored in tanks. During the reporting period, the City used a total of 800 gallons of liquid calcium chloride, and 39,706 tons of salt to keep the City streets safe for cars and passengers.

Continuous Improvement: The Public Works Department will replace one existing dome with a Cover-All building and may add an additional cover-all building north of the river in the future when funding is available. The Department is planning to apply a product called Ice Ban in the upcoming winter months. The product is a deicing additive to salt to increase salt effectiveness and allows equipment to be better utilized on priority routes during winter events.

BMP 2: General Services Department's practice. The City's General Services Department, which manages about 160 City sites, used deicing material mostly sourced from the Public Works Department (the amount was included in the above 6.3 BMP 1). In addition, it applied about one ton of ice-melt, sourced from a retail vendor, on the sidewalks of the buildings for pedestrians' safety.

Continuous Improvement: The departments will continue the practice to ensure pedestrians' safety.

6.3.2 Maintain roadways and stormwater inlets (Permit Ref. 6.a.iii.2 & 4)

Measurable Goals:

- For the combined-sewer-system-service area, street sweeping is conducted at least twice annually on all streets with curbs.
- For the MS4 area, street sweeping is conducted the same day for emergency requests and within 48 hours for non-emergency sweeping requests.
- Public Works provides one or more rounds of leaf and brush curbside collection services.
- Public Works maintains the three Lead & Brush Drop-off sites.
- Water Services Department inspects and cleans 15,000 stormwater inlets annually.

Status: Goals met

BMP 1: Street sweeping and MyKCMO app. The City provides myKCMO app for residents to request cleaning. The app is free and available on Google Play and Apple App stores. If anyone notices a location in need of a spot cleanup, they can snap a photo and upload it to the myKCMO app to request the City service. This allows the City's street sweeping service to be used more effectively. The City uses Elgin Eagles and Curb Tender's mechanic sweepers. Here is a summary of the program achievement:

- For the combined sewer area, street sweeping was done exceeding what was planned amounting to 4,798 miles of streets. In addition, 2,808 miles of streets were cleaned per residents' requests through myKCMO app.
- For areas outside of the combined sewer system service, 2,533 miles of streets were swept as planned and 894 miles of streets were swept per residents' request through myKCMO app.
- In total, the City swept 11,078 miles of streets with a collection of 1,868 tons of debris.

BMP 2: Stormwater inlet cleaning program. Here is a summary of the program achievement:

- Inspected and cleaned 21,720 stormwater inlets, exceeding the goal for 15,000.
- Completed repairing 193 inlets, with 113 repairs requested through MyKCMOapp.
- Completed 89 work orders for storm line repair.

BMP 3: Leaf and Brush Collection. The City collected 1,430 tons of leaf and brush through its curbside collection.

Continuous Improvement: The city will continue to implement the programs for street sweeping, inlets cleaning and leaf & brush collection.

6.3.3 Incorporate BMPs in street design and construction (Permit Ref. 6.a.iii.3.)

BMP 1: Follow the adopted standards and regulations.

Measurable Goals: Follow the City's adopted standards and comply with City's effective regulations relevant to the reduction or elimination of pollutant discharge from the City's trafficways.

Status: Goal met.

For street design, construction and maintenance, the City follows the following standards, ordinances, manuals as well as relevant permit requirements:

- The Kansas City Metropolitan Chapter of the APWA standards with the supplements:

https://www.kcmo.gov/city-hall/departments/public-works/public-works-design-construction-standards

- Stream Buffers regulation – City Code Chapter 88. Zoning and Development Code, Section 415. Stream Buffers;
- Tree Preservation and Protection – City Code Chapter 88. Zoning and Development Code, Section 424. Tree Preservation and Protection;
- 2022 Green Stormwater Infrastructure (GSI) Manual (published in October 2022, an updated version of the 2020 GSI manual); and
- Land Disturbance Permit – MO-R100000 issued by the State in July 2022, and Kansas City MO Stormwater Pollution Prevention Plan template generated by the City to comply with the permit.

During the reporting period, the City continued to work with the Mid-America Regional Council (MARC) and other local communities on a regional scale to update both the stormwater design criteria currently defined in APWA Section 5600, Stormwater Drainage Systems and Facilities as well as the MARC Manual of Best Management Practices for Stormwater Quality. A final manual was completed by the end of the reporting period.

BMP 2: Incorporate BMPs in street design and construction.

Measurable Goals:

- Track the annual number of BMPs constructed through street projects

(Note: the previous goal was set for tracking the annual number of BMPs included in street design. After a re-evaluation of the permit implementation, the City recognizes that tracking the number of BMP construction has practical benefits and more value.)

Status: Goal met

The Public Works Department follows the City's adopted BMP Manual in the street design. During the reporting period, stormwater BMPs were constructed through two roadway projects. The BMPs installed included bioretention cells and rain gardens.

Continuous Improvement: The City will continue to comply with relevant standards, regulations and manuals in its street design. The City will continue to work with MARC and other municipalities to solicit public feedback on the regional stormwater-related standards and stormwater BMP Manual and proceed with adoption by APWA.

6.4 Storage of paints and petroleum products; spill prevention and management (Permit Ref. 6.a.iv.)

Measurable Goals:

- Inspect all City sites on an annual basis following the effective Environmental Management System (EMS) and track the inspection result in Cartegraph; and
- Follow up with each department about its site management and keep track of the follow-up on monthly basis.

Status: Goals met.

BMP 1: Implement and enforce the Environmental Management System (EMS) for City operations. The City implements the EMS for City operations. The EMS was updated in 2020, as good environmental stewardship for all of its organizational activities. Chapter 5. Chemical Management specifically addresses management of chemicals, including storage of paints, solvents, petroleum-related products, petroleum tank management, and spills and overfill prevention. Chapter 6 Waste Management addresses specific requirements for latex paint, used oil contaminated materials, as well as used oil. Chapter 7 addresses spill prevention and response.

BMP 2: The City's Office of Environmental Quality's annual inspections. The Office of Environmental Quality conducted annual inspection at 325 sites that are either owned or operated by the City. The inspection was done in compliance with the EMS and tracked in the Cartegraph Task Management System (Cartegraph). An automated report is generated on a monthly basis to provide a summary of environmental compliance recommendations for each department.

Continuous Improvement: The City continues to implement the EMS and use the Cartegraph for tracking.

6.5 Reduce pollutants related to pesticides, herbicides, and fertilizers (PHFs) (Permit Ref. 6.a.v.)

Measurable Goals:

- Ensure that crew engaged in applying pesticides at City sites are certified;
- Ensure that PHFs are not used or used sparingly and only as needed at various City sites including those managed by the General Services Department, Parks & Recreation Department and Water Services Department;
- Ensure that City golf courses are managed with an approach of responsible land management and conservation of natural resources; and
- Identify opportunities to adopt BMPs or use environmentally friendly products in lieu of conventional pesticides.

Status: Goals met.

BMP 1: City's EMS. There are multiple chapters in the City's EMS that address the application of pesticides, herbicides, or fertilizers (PHFs). Chapter 2. section 2.05.01 states that pesticides, used throughout City facilities and its landscapes, are regulated by the Missouri Department of Agriculture, which certifies commercial, noncommercial, and public pesticide applicators. Chapter 5. section 5.07.06 specifies persons engaged to apply pesticides for commercial, noncommercial, private, and public entities are certified. It states that City departments that apply or utilize the services of those who apply PHFs should put into place BMPs to reduce their run-off before and after the products have been applied. Chapter 9 section 9.03.03 lists chemicals that are not allowed in the storm water system. The list includes herbicides and pesticides.

BMP 3: City's Parks & Recreation Department parkway maintenance activities. The Parks & Recreation Department crew maintain over 40 miles of park roads; hundreds of parking lots; 12,000 acres of parkland in 220 parks; 135 miles of boulevards, parkways, and streets, and over 100 miles of trails and bikeways. Herbicides and fertilizers are used sparingly and only as needed to specific areas which require a higher level of maintenance.

BMP 4: Parks & Recreation Department's maintenance of park lands. The Parks & Recreation Department crew continue to maintain, improve, and protect thousands of acres of land that provide wildlife habitat and contribute to reducing stormwater runoff and water pollution throughout the City. These properties include:

- More than 6,500 acres protected as woodlands throughout the park system
- More than 165 acres in the reduced mowing program

- More than 290 acres of natural areas on 36 sites, consisting of restored and remnant prairies, glades, butterfly gardens, bio-swales, and rain gardens

In addition, the Parks & Recreation Department conducted the following tasks:

- Planted 1,500 trees
- Maintained more than 400,000 trees on the City's owned land
- Maintained 45 perennial native plant beds

BMP 5: The Parks & Recreation Department's maintenance of golf courses. The Parks & Recreation Department crew and contractors continue to use environmental BMPs and procedures to manage its five golf courses: Hodge Park, Shoal Creek, Swope Memorial, Minor Park, and Heart of America. They are required to have commercial applicator license. The contracted management teams from Orion Management Solutions continue to reduce pesticide and fertilizer usage at the above courses by:

- Maintaining a native buffer near water bodies and sensitive areas wherever possible; and
- Allowing the outer rough areas that were once mowed and irrigated at each course to return to their native habitats (approximately 15 to 20 acres)

BMP 6: Certification requirement for pesticide/herbicide/fertilizer application.

- For more than 30 acres of BMP sites that Water Services Department maintains, staff or contractors are required to have a Missouri Public Operator License.
- For maintenance of Parks & Recreation Department's properties, the Department requires its general supervisors, landscape technicians, and one of its Conservation Corps maintenance workers to have Pesticide/Herbicide Applicator licenses.
- For maintenance of the levee systems, Water Services Department required the contractors to have a certified Public Operators License.
- The General Services Department manages about 160 City sites. It does not use PHFs to maintain lawn or other landscape areas.

Continuous Improvement: The City will continue to improve current practices regarding pesticide, herbicide, and fertilizer management.

7. Industrial and High-Risk Runoff

The City implements programs to monitor and control pollutants in stormwater discharges to the MS4 from industrial and high-risk runoff facilities.

7.1 Identify municipal waste sites that discharge into the MS4 (Permit Ref. 7.a.i.)

BMP 1: Conduct periodic site inspection.

Measurable Goal: Continue periodic site inspections; consider remedial options and determine a course of action, if necessary; continue to implement the maintenance plans based on the result of the inspections.

Status: Goals met.

The City ceased operations of all solid waste dump sites by 1974. The closed sites were operated by the City during various periods from 1950 to 1974. The 87th Street site is within the boundary of the MS4-served area and is thus subject to the MS4 permit. The site has been closed from dumping since 1972. The Office of Environmental Quality continues to monitor this inactive site for compliance with the MS4 Permit and in general for issues that may pose a threat to public health or safety, threaten environmental protection, or that may create a nuisance condition.

The Office of Environmental Quality performs periodic walk-through inspections for 87th Street site. Visual observations during the inspection include evaluations for: (1) cap integrity and vegetative cover; (2) water ponding on the cap surface of the site; (3) fill material exposure; and (4) evaluate for continued active seepage or leachate at this site. The inspection results are documented, and further investigations undertaken if warranted.

The Office of Environmental Quality established a maintenance program for the City's dump sites. All maintenance activities are geared toward maintaining the integrity of the site cap and minimizing the infiltration of water into the interred waste. The program may include surface waste removal and cap maintenance.

Continuous Improvement: The Office of Environmental Quality will continue periodic site inspections, consider remedial options and determine a course of action (if necessary), and implement the maintenance plans based on the results of the inspections.

7.2 Identify facilities that discharge into the MS4 (Permit Ref. 7.a.i.)

BMP 1: Maintain the inventory of high-risk-runoff sites.

Measurable Goal: Keep the inventory updated.

Status: Goal met.

During the reporting period, Water Services Department continued to maintain the inventory by consulting the list of MDNR's Hazardous Waste Program and the list of EPA's EPCRA (Emergency Planning and Community Right-to-Know Act) Section 313 program, communicating directly with facilities, doing online search and/or using other applicable methods.

The current inventory of the facilities includes 58 municipal-owned or operated facilities, 136 non-municipal industrial facilities and 36 commercial sites. For the municipal facilities, ten of them have a State permit. Among the non-municipal facilities, there were 11 hazardous waste treatment, storage and disposal (TSD) facilities and 25 Title III Section 313 facilities with one falling into both categories.

Continuous Improvement: Water Services Department will continue to update the inventory as needed.

7.2 Inspections and enforcement control measures (Permit Ref. 7.a.ii.)

BMP 1: Conduct the inspection program.

Measurable Goals: Inspect a minimum of 30 sites annually, follow up and have identified issues resolved timely, and conduct enforcement as necessary.

Status: Goals met.

Water Services Department inspected a total of 33 private, municipal and commercial sites following the established procedure. Inspection priority was given to the facilities depending on:

- Time elapsed since last inspection
- A history of stormwater issues
- The nature of the site operation
- Public complaints

Water Services Department continues to use its updated standard operation procedure for inspection. When needed, it uses the established procedure for enforcement to address any potential violations of stormwater regulations by industrial or business operations.

The Office of Environmental Quality conducted a total of 325 environmental inspections at municipal owned or operated sites. The Office worked closely with Water Services Department to address stormwater requirements for each individual site.

BMP 2: Reaching out to the industrial communities.

Measurable Goals: Track the annual numbers of municipal and non-municipal employees that receive the City's stormwater training.

Status: Goals met.

During the reporting period, Water Services Department provided the video - *A Drop in the Bucket* to a total of 117 employees from four companies. The video was produced by Excal Visual for stormwater pollution prevention education. The content was applicable to employees working outdoors with materials, wastes and operational activities that could potentially impact the quality of the stormwater runoff.

Continuous Improvement: Water Services Department will continue to evaluate the inventory for inspection priority, conduct the inspections based on the evaluation result for continuous practices. Enforcement action will be taken where necessary. Education and outreach will continue to be provided.

7.3 Monitor high risk-runoff Facilities (Permit Ref. 7.a.iii.)

Measurable Goals: Track the annual numbers of: the sites and the rain events that are monitored; the facilities from which stormwater monitoring data are collected; the facilities that are certified for Stormwater No-exposure Certificate and those that have the certificates, and the facilities that have the Stormwater Self-assessment program newly in place, and the facilities that maintains the program.

Status: Goals met.

BMP 1: Water Services Department continued to implement the Stormwater Self-assessment Program. The program was created in 2008 with the intent to help high-risk industrial operations to take preventive measures, improve housekeeping practices, and utilize BMPs to minimize stormwater pollution. Water Services Department continued to implement the Stormwater Self-assessment Program with seven confirmed participating facilities.

BMP 2: Stormwater sampling program: During the reporting period, Water Services Department attempted multiple times to collect stormwater runoff samples at the designated sites; but was unable to collect samples due to the timing of rain events.

Water Services Department collected stormwater monitoring data from three companies that are required to conduct the monitoring per their NPDES permits.

Continuous Improvement: Water Services Department will continue to implement the Stormwater Self-assessment Program and continue the monitoring.

7.4 Municipal operations (Permit Ref. 7.b.)

BMP 1: Maintain a list of municipal operations.

Measurable Goal: Maintain the existing inventory of facilities.

Status: Goal met.

The inventory of the industrial and high-risk runoff facility includes a list of 58 municipal operations. Of those, ten carry State NPDES permits.

Pollution prevention and good housekeeping measures will continue to be monitored at all municipal owned or operated sites. Water Services Department created a Stormwater Self-assessment Program in 2008. The program requires City facilities to establish good housekeeping measures and take steps to prevent pollution. Water Services Department continues to work with the Office of Environmental Quality to address pollution prevention and good housekeeping measures at all City facilities every year.

Continuous Improvement: Water Services Department will update the list as needed.

8. Flood Control Projects and Devices

The City through Water Services Department assesses the impacts that new flood control projects have on water quality in relation to MS4 activities. The City evaluates existing flood control devices to determine potential improvements. The City also implements retrofits of flood control devices owned and operated by the City that have been determined to be feasible.

8.1 Assess the water-quality impacts in the design of new flood control projects (Permit Ref. 8.a.)

BMP 1: New flood control projects.

Measurable Goal: Maintain the vegetation in both Dodson Flood Risk Reduction Project and Swope Park Industrial Park Levee Project.

Status: Ongoing.

The Dodson Flood Risk Reduction Project was officially turned over to the City by U.S. Army Corps of Engineers (USACE) during the reporting period, although a final Operation and Maintenance Manual has not been provided. The City mowed the levee twice but no spraying for weeds was done.

USACE completed the Semi-Quantitative Risk Assessment, which was required by Federal Emergency Management Agency (FEMA) for levee accreditation. Additional tasks may need to be performed and document needs to be provided for the accreditation.

The Swope Park Industrial Park Levee/Floodwall project is a flood damage reduction project located on the left descending bank of the Blue River. The scope of the project included design and construction of a 7,000-ft-long floodwall and levee system, critical bank stabilization and installation and vegetation of a detention basin. The Water Services Department maintains the vegetated areas by using a mowing contract, which specifies mowing schedule, ground maintenance details, and conditions for herbicide application. During the reporting period, installation and testing of the new lift station and associated controls were completed; relocation and backfill of utilities going over the levee was also completed.

In addition to the above projects, the City has also been working on the following project:

Little Blue River Basin – Flood Risk Management & Ecosystem Restoration: Water Services Department, along with the Mid-America Regional Council, Jackson County and the Cities of Blue Sprins, Grandview, Lee Summit, Independence and Raytown have entered into an agreement with the USACE for a feasibility study in November 2021. USACE has been authorized to conduct a General Investigation Study to analyze whether changing conditions within the Little Blue River basin are increasing the flood risk. The objective of this study is to create a plan to address flood risk management and ecosystem restoration. The study will assess current conditions using hydraulic modeling to develop planning assumptions for a 50-yr time projection model.

During the reporting period, the partners continued to have monthly project meetings. A Tentatively Selected Plan was prepared for an extensive review and local informing. The Plan included both the selected flood risk management and ecosystem restoration alternatives, as well as associated cost estimates. Flood risk management alternatives across three reaches include commercial and residential buyouts and the construction of dry dams at an estimated cost of $286.5 M. The ecosystem alternatives include restoration of the riparian corridor, bank stabilization, wetland restoration, grade control structures and adding meanders to the channel. The estimated cost is $61.3 M. The total cost of the project is $347.8 M with the Federal cost share at 65% and local share at 35%, or $121.7 million to be split among the seven participating municipalities.

Continuous Improvement: Water Services Department will continue to work with USACE and to ensure a thorough and successful transfer of long-term maintenance responsibilities for the Dodson Levee. WSD will continue to work with USACE and other partners for the Little Blue River project. The Tentatively Selected Plan will be released to the decision makers and elected officials within each participating community for planning purposes in terms of costs and long-term operations and maintenance.

8.2 Retrofit existing flood control devices to reduce stormwater pollutants (Permit Ref. 8.b.)

BMP 1. Existing flood control projects.

Measurable Goals:

- Brush Creek: Complete the Lower Brush Creek Ecosystem Restoration Feasibility study and seek funding for design and construction.
- Indian Creek: Complete the Indian Creek BMP Feasibility study and seek funding for design and construction.

Status: In progress.

Brush Creek Lower Reach – Section 1135 Ecosystem Restoration: Water Services Department entered into an agreement with the USACE for the Feasibility Study in February 2019. Through Section 1135 of the **Water Resources Development Act**, USACE reviewed the need to modify any portions of Brush Creek between the Paseo Blvd. bridge and the confluence with the Blue River (inclusive of Lake of the Enshriners) in order to improve environmental quality and provide ecosystem restoration. During the reporting period, Water Services Department partnered with USACE and a consulting contractor and completed a Master Planning Study for this reach. This Master Planning Study, along with the existing condition analysis from the Ecosystem Restoration project, resulted in the decision to terminate the Section 1135 project – the Feasibility Study, along with the Upper Reach's 1135 project, and convert them to a General Investigation Study. During the reporting period, USACE requested initial funds to begin the study.

Continuous Improvement: Water Services Department will continue to partner with USACE to begin a new General Investigation Study.

Indian Creek Watershed Study: In the previous years, Water Services Department had secured the 3.1 acre flood-damaged commercial properties (400-600 W 103rd St.) abutting Indian Creek. Building structures had been demolished, and the asphalt surface had been removed. Stormwater BMP options had been evaluated in the past. In addition, Water Services Department also had a project with ACE to use 2D Hydrology & Hydraulic, Physical Models to assess flood risk in the area. Since 2022, Water Services Department had been working on the Indian Creek Watershed BLE (base level engineering) project, funded by Federal Emergency Management Agency (FEMA) to derive a draft FIRM (Flood Insurance Mapping) product. The project was completed during the reporting period. The result improves our knowledge about floodplain zones in the study area, which can help us with locating BMP sites effectively.

Continuous Improvement: Water Services Department will continue to seek opportunities to protect water quality in association with flood control projects.

The projects listed below are newly added and were not included in the current SWMP:

Buckeye Creek Section 14 Streambank Stabilization. The purpose of this project is to address the eroding banks of Buckeye Creek and potential impacts on sanitary sewer mains. During the reporting

period, the final feasibility study report was approved and the project partnership agreement (PPA) between KCMO and USACE was finalized.

Continuous Improvement: Entering the project design and implementation phases.

Shawnee Mission Parkway/Brush Creek Section 14 Streambank Stabilization. The purpose of this project is to address the eroding banks of a segment along Brush Creek, which crosses two cities and two States, and to seek measures to protect roadways and other infrastructures. The general concept for the design and construction is to strategically place stone structures and plant natural vegetation to stabilize the bank erosion and protect nearby infrastructure. During the reporting period, funding required to complete project design and construction was approved and received. A kickoff meeting was conducted and the project team revisited the site to start design work.

Continuous Improvement: The project design will be completed and construction will be initiated.

85th St. and Holmes Rd. Stream Daylight and Flood Risk Study. The purposes of this project are to lower flood profiles of Boone Creek at the intersection of 85th St. and Holmes Rd. and adjacent commercial and residential structures, as well as to reduce the risk of life safety due to flooding at the intersection.

The scope is to examine potential alternatives for expanding the daylighting of SW Boone Creek near 85th Street & Holmes Road. Alternatives for addressing the flood risk and infrastructure problems will be formulated and compared to include rough order magnitude construction and maintenance costs. During the reporting period, USACE presented alternatives to KCMO for discussion and further development. Work was continued on the draft study report.

Continuous Improvement: After further consideration and cost/benefit analysis, USACE will present the draft report with alternatives.

Lower Brush Creek Stream Corridor Master Plan. The purpose is to examine options for the enhancement of the urbanized and highly altered Lower Brush Creek. Focus will be given to potential recreational and cultural enhancement opportunities that can work with current or potential future ecosystem restoration effort. Additionally, a public involvement process that will include stakeholders and community input will help inform the plan recommendations. During the reporting period, workshops have been held to engage and inform the public of this project and to solicit input. The master plan report was finalized and this project has been completed.

Renewing the Blue: Restoring Land, Water, and Community Canopy. This project is funded by American Rescue Plan Act. It aims to revitalize the Blue River and its corridor ecosystem by restoring ~250 acres of riparian habitat along the Blue River, restore green infrastructure in three nodes along the Blue River corridor (Blue River Park, Blue Valley Park, and the Municipal Farm, as well as the restoration of a 9-acre wetland in Alex George Wetland Park), and plant 2,000 trees in neighborhoods and business districts adjacent to the corridor. The restoration efforts will enhance biodiversity, improve the water quality of the Blue River, reduce stormwater pollution, mitigate flood risks, and increase channel stability.

Continuous Improvement: The Renewing the Blue project will continue its Phase 2 activities which include removing invasive vegetation, spot treatment of invasives, native planting and improving wetlands.

9. Monitoring

Water Services Department conducts monitoring on the quality of representative stormwater discharges, evaluate ambient water quality and conduct biological assessment at selected stream sites. The purpose of these monitoring efforts are to assess the MS4 impact.

9.1 Stormwater Discharge Representative Monitoring (Permit Ref. 9.a.i, ii & iii.)

BMP 1: Implement the Stormwater Discharge Monitoring Program.

Measurable Goals: Conduct field sampling at a minimum of three separate locations during two separate storm events annually occurring at least one month apart; take field measurement and laboratory testing of the collected field samples for 9 parameters specified in the Permit; field sampling and measurement and laboratory testing shall follow the established sampling plan and the Quality Control Manual; keep record of all analytical results, and information of the rainfalls during which samples are taken, and observation; compile the data and conduct analysis on annual basis.

Status: Goals met.

The three designated sites are listed in Table 6. For each of the three sites, monitoring was done for two storm events at least one month apart. Monitoring included field measurements and sample collection. Samples were analyzed by Water Services Department Laboratory for physicochemical and microbiological parameters.

All field sampling, measurements, sample handling, laboratory analysis, and data validation, as well as a quality assurance and quality control, follow the updated sampling plan for the MS4 stormwater discharge monitoring program and Standard Operational Procedures developed by Water Services Department Laboratory.

The data results and a summary are shown in Table 6 and Table 7, respectively. Storm event data records are maintained and include all analytical results, the date and duration (in hours) of the storm event(s), rainfall measurements or estimates (in inches) of the storm event that generated the runoff that was sampled, and the duration (in hours) between the storm event sampled and the end of the previous measurable (> 0.1-inch rainfall) storm event.

Continuous Improvement: The City will continue to implement the program.

Table 5. Stormwater runoff monitoring data

Location (land use represented)	Parameter (unit)	pH (SU)	Cond (µs/cm)	BOD (mg/L)	COD (mg/L)	*E. coli.* (MPN/100mL)	TSS (mg/L)	NO2+NO3 (mg/L)	TKN (mg/L)	Diss-P (mg/L)	TP (mg/L)
	Detection limit	NA	3	2	5	1	2.5	0.043	0.45	0.016	0.02
	Sampling Date										
210 Hwy & Randolph Rd. (industrial)	11/13/2024	8.5	97	5.3	ND	905	46	ND	ND	0.53	ND
	3/4/2025	9.2	1,679	7.7	115	364	179	>0.216	ND	0.04	0.29
Gambril Park (residential)	8/8/2024	8.4	239	24.9	93	290,900	68	>0.733	1.65	0.2	ND
	3/4/2025	9.2	1,211	9.8	112	2098	148	0.711	ND	0.75	1.03
NW Barry Rd. & NW Barrybroke Dr. (commercial)	8/8/2024	7.4	490	11.9	70	7701	13	ND	ND	ND	ND
	12/22/2023	8.8	190	9.3	41	573	21	ND	0.94	0.230	0.33

Table 6. A summary of stormwater runoff monitoring data

Data summary	Parameter (unit)									
	pH (SU)	Cond (µs/cm)	BOD (mg/L)	COD (mg/L)	*E. coli.* (MPN/100mL)	TSS (mg/L)	NO2+NO3 (mg/L)	TKN (mg/L)	Diss-P (mg/L)	TP (mg/L)
	Detection limit									
	NA	3	2	5	1	2.5	0.043	0.45	0.016	0.02
	Result									
Sample count	6	6	6	6	6	6	6	6	6	6
Minimum	7.4	97	5.3	70	160	13	0.216	1.65	0.04	0.29
Maximum	9.2	1679	24.9	115	290900	179	0.733	1.65	0.75	1.03
Average (Geometric	8.43	857.83	11.48	83.25	2,506	98.73	0.34	0.46	0.27	0.28
ABBREVIATIONS Cond-conductivity; BOD-biochemical oxygen demand; COD-chemical oxygen demand; O&G-oil & grease; TSS-total suspended solids; NO2+NO3 -nitrate and nitrite; TKN-total Kjeldahl nitrogen; Diss-P - phosphorus, dissolved; TP-phosphorus, total NT: not tested; NA: not applicable; ND: below detection limit										
For NDs, average is computed with half value of the method detection limit.										
[M]Estimated value, matrix interference										
[J]Estimated value, value may not be accurate										

9.2 Biological assessments (Permit Ref. 9.b.)

BMP 1: Conduct biological assessments at selected streams.

Measurable Goals: Once in the spring and once in the fall during the five-year permit cycle

Status: Ongoing effort.

Water Services Department completed the biological assessment project, which started in 2021 and got completed in the spring of 2024. That project ran across two permit cycles: Sept. 2018 – Aug. 2023 and Sept. 2023 – Aug. 2028. The department is preparing for a similar project to start in 2026.

Continuous Improvement: Water Services Department will start a similar project in 2026.

9.3 Methodology of sample collection analysis (Permit Ref. 9.c.)

BMP 1: Using required methods for sample collection and analysis.

Measurable Goal: Utilize the sample analytical methods specified in 40 Codes of Feder Regulation (CFR) 136.

Status: Goal met.

The analytic methods utilized in sample testing are consistent with the methods specified in 40 CRF 136. Below is a list of the parameters and corresponding testing methods.

- Total suspended solids: SM 2540 D
- Specific conductivity: SM 2510 B
- Chemical oxygen demand: SM 5220 D
- Biochemical oxygen demand: SM5210 B
- Oil & grease: SM 5520 F
- *E. coli*. SM 9223 B
- Total Kjeldahl nitrogen: SM 4500-Norg B and EPA 351.2
- Nitrate + nitrite: EPA 300.0
- Dissolved phosphorus, total phosphorus: SM 4500-P

Continuous Improvement: Water Services Department will continue using the standard methods for sample collection and analysis.