



August 29, 2024

Branch Chief, Water Enforcement Branch
Enforcement and Compliance Assurance Division
Water Enforcement Section
U.S. Environmental Protection Agency

Manager – Surface Water Permits Branch
Kentucky Division of Water
Kentucky Department for Environmental Protection

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Reference DOJ Case No. 90-5-1-1-08591

Re: Amended Consent Decree Case No. 2:05-CV-199-(WOB)

To Whom It May Concern:

Pursuant to the above-referenced Amended Consent Decree, Sanitation District No. 1 (SD1) is required to submit an annual report that demonstrate SD1's compliance with the Amended Consent Decree:

Information contained within the enclosed Annual Report describes SD1's compliance with Amended Consent Decree Case No. 2:05-CV-199-(WOB) for the period of July 1, 2023, through June 30, 2024.

A certification, as required by the Amended Consent Decree (paragraph 70), is also attached.

To the best of my knowledge and belief, the enclosed report is true, accurate, and complete, and further demonstrates SD1's commitment to the mission of protecting and enhancing the water resources and quality of life in Northern Kentucky.

To Whom it May Concern
Page 2
August 29, 2024

If you have any questions or concerns, please contact Jason Burlage, Regulatory Compliance Manager, at 859-578-6892 or by e-mail at jburlage@sd1.org.

Best regards,


Adam Chaney
Executive Director

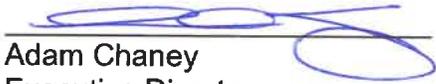
AC/jb
Enclosures

Cc: Maryjo Bragan
Dennis Sayre
Jason Hurt
Mark Absher
Mark Cleland

CERTIFICATION

Amended Consent Decree Annual Report No. 6
Consent Decree Case No. 2:05-CV-199-(WOB)

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


Adam Chaney
Executive Director

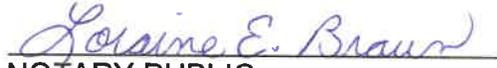
AUGUST 28, 2024
Date

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF KENTON

The foregoing instrument was acknowledged before me this 28th day of AUGUST, 2024 by Adam Chaney, Executive Director of Sanitation District No. 1.


NOTARY PUBLIC

KENTON County, Kentucky

My commission expires: 12/21/2027

LORAIN E. BRAUN
NOTARY PUBLIC
COMMONWEALTH OF KENTUCKY
ID # KYNP83287
MY COMMISSION EXPIRES DECEMBER 21, 2027

AMENDED CONSENT DECREE ANNUAL REPORT NO. 6

August 29, 2024



Sanitation District No. 1

1045 Eaton Drive
Ft. Wright, KY 41017

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|----------|---|
| ACD | Amended Consent Decree |
| Cabinet | Kentucky Energy and Environment Cabinet |
| CIPP | Cured In Place Pipe |
| CSAP | Continuous Sewer Assessment Program |
| CMOM | Capacity, Management, Operations, and Maintenance |
| CSO | Combined Sewer Overflow |
| CSS | Combined Sewer System |
| District | Sanitation District No. 1 |
| EPA | U.S. Environmental Protection Agency |
| EQ | Equalization |
| FOG | Fats, Oils, and Grease |
| FSE | Food Service Establishment |
| FY | Fiscal Year |
| GCE | Grease Control Equipment |
| I/I | Inflow and Infiltration |
| MG | Million Gallons |
| MGD | Million Gallons per Day |
| MH | Manhole |
| NOV | Notice of Violation |
| PM | Preventative Maintenance |
| PS | Pump Station |
| RTC | Real Time Control |
| SD1 | Sanitation District No. 1 |
| SL-RAT | Sewer Line Rapid Assessment Tool |
| SIU | Significant Industrial User |
| SSO | Sanitary Sewer Overflow |
| TCF | Total Combined Flow |
| TY | Typical Year |
| UWSP | Updated Watershed Plan |

SECTION 1. INTRODUCTION

This Annual Report fulfills the requirements of Sanitation District No. 1's (SD1) Amended Consent Decree, entered on May 22, 2019. This legal agreement with the U.S. Environmental Protection Agency (EPA) and the Kentucky Energy and Environment Cabinet (Cabinet) aims to address sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs) in SD1's service area, enhancing water quality.

Section V Reporting Requirements, state:

48. Annual Reports. The District shall submit each year to the Cabinet/EPA an Annual Report that describes the District's progress in complying with this Amended Consent Decree during the previous fiscal year ending June 30. The Annual Report shall be submitted no later than 60 days after the end of each fiscal year period.

This report covers SD1's compliance with the Amended Consent Decree (Case No. 2:05-CV-199 (WOB)) for Fiscal Year FY2024.

SECTION 2. UPDATED WATERSHED PLAN

The US Environmental Protection Agency (USEPA) and the Kentucky Division of Environmental Protection (KDEP) conducted a review of the Updated Watershed Plan (UWSP) initially submitted by SD1 on April 15, 2020, with revision dated May 13, 2021, and December 3, 2021, as required by Paragraph 41 of the Amended Consent Decree (ACD).

On June 15, 2022, SD1 received USEPA and KDEP approval of the UWSP. Per Paragraph 50 of the ACD, upon this approval the UWSP shall be incorporated into the ACD and shall become an enforceable requirement of the ACD.

The UWSP outlines SD1's program to comply with the CSO and SSO mitigation requirements by the four milestone dates in the ACD. In some cases, the UWSP identifies better alternatives than those in Appendix C of the ACD.

SECTION 3. COMPLETED PROJECTS IN FY2024

The first reporting requirement of the Annual Report per paragraph 48 of the Amended Consent Decree, is to provide:

48. (a) A description of the projects and activities conducted during the previous year to comply with the requirements of the Amended Consent Decree, in Gantt chart or similar format.

3.1 Completed Projects Listed in the Updated Watershed Plan / Amended Consent Decree

Table 3.1 details projects listed in the UWSP that were completed in the previous year.

NOTE: All project phase completion requirements listed in Appendix C of the Amended Consent Decree had been completed prior to FY2023. See Table 7.1 All subsequent projects and their respective due dates detailed in this report will be in reference to the Updated Watershed Plan.

Table 3.1 FY2024 Completed Projects Listed in the UWSP

| Project Title | Project Description | UWSP FY Completion Date | Completion Date |
|--|--|-------------------------|---------------------|
| COMBINED SEWER OVERFLOW PROJECTS | | | |
| Surface Storm Water Detention Basin 4 of 9 | Installation of dynamic coordinated controls on 9 detention basins in the Willow Run sewershed. Automated control logic will throttle an outlet valve by incorporating wet weather forecasting and downstream capacity sensors at the CSO regulators. | 9 of 9 2029 | 4 of 9 6/30/2024 |
| SEPARATE SEWER OVERFLOW PROJECTS | | | |
| LRS Conveyance Piping – Ph 1 | Ph 1 of 2 complete. Completion of both phases will result in 6,050 ft of 24-in through 48-in sanitary sewer upsizing which will convey additional flow to the LRS EQ Tank and is sized for additional upstream improvements to be constructed by 2040. | 2029 | 9/14/2023 |
| DC Conveyance - Fitzgerald Phase 1 | 18" Sanitary sewer upsizing between MH2130029 – 2130028 in the City of Erlanger. This project is one phase of the DC Conveyance project which once completed will address SSOs in they DC Sewershed by increased conveyance to the DCWWTP. | 2040 | 4/30/2024 |

SECTION 4. ACCOUNTING OF TYPICAL YEAR OVERFLOWS

The second reporting requirement of the Annual Report per paragraph 48 of the Amended Consent Decree, is to provide:

48. (b) An accounting, both for the current calendar year and cumulatively, of the reduction in volume and in number of occurrences of SSOs and unpermitted discharges and the volumes of combined sewage in the CSS, including the District's progress towards achieving the requirements for percentage of volumes of combined sewage in the CSS eliminated and/or captured for treatment and the percentage of capacity-related SSO volumes eliminated as set forth in Paragraph 43 of this Amended Consent Decree.

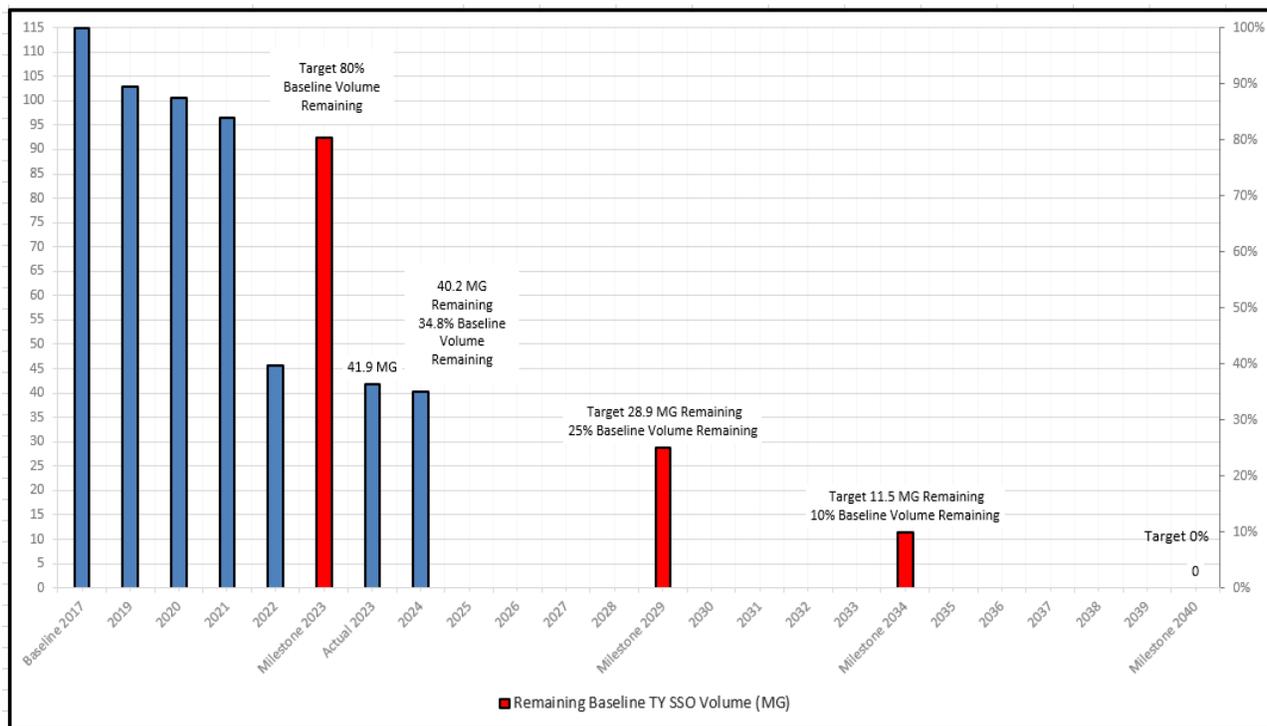
4.1 Typical Year SSOs

As described in the Amended Consent Decree (ACD), SD1's baseline SSO volume of 115.4 MG was established with the October 2017 hydraulic model and the 1970 typical year (TY) rainfall, adjusted with areal reduction factors.

As of August 2024, SD1's hydraulic model predicts a TY SSO volume of 40.2 MG, which is 34.8% of the established baseline. See Table 3.1 for completed projects in FY2024.

Figure 4.1 illustrates the current TY SSO volume, and the baseline volume reduction trend toward the milestones established in the ACD.

Figure 4.1 Remaining Baseline Typical Year SSO Volume



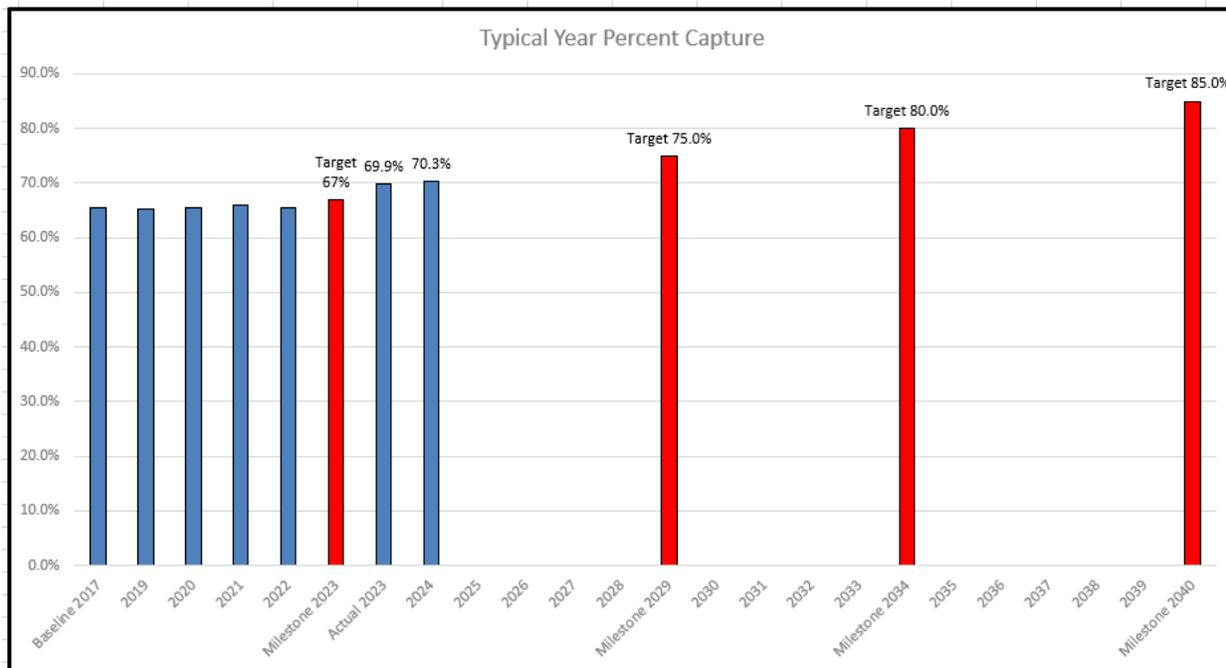
4.2 Typical Year CSOs

As described in the Amended Consent Decree (ACD), SD1’s baseline CSO volume of 1,516 MG was established with the October 2017 hydraulic model and the 1970 typical year rainfall, adjusted with areal reduction factors.

As of August 2024, SD1’s hydraulic model predicts a TY CSO volume of 1,463.7 MG, with a percent capture of 70.3. See Table 3.1 for completed projects in FY2024.

Figure 4.2 illustrates a timeline of the baseline and current TY percent capture, along with the milestone targets established in the ACD.

Figure 4.2 Increase in Percent Capture of Typical Year Total Combined Flow



SECTION 5. ANTICIPATED PROJECT ACTIVITY IN FY2025

The third reporting requirement of the Annual Report per paragraph 48 of the Amended Consent Decree, is to provide:

48. (c) The anticipated projects and activities that will be performed in the successive calendar year to comply with the requirements of this Amended Consent Decree, in Gantt chart or similar.

Table 5.1 provides updates for ongoing projects that are listed in the Updated Watershed Plan

Table 5.1 Projects Listed in the Updated Watershed Plan that are Under Construction or in Design in FY2025

| Project Title | Project Description | UWSP FY Completion Date |
|--|---|-------------------------|
| COMBINED SEWER OVERFLOW CONSTRUCTION PHASE PROJECT | | |
| Surface Storm Water Detention Basins | Installation of dynamic coordinated controls on 9 detentions basins in the Willow Run sewershed. Automated control logic will throttle an outlet valve by incorporating wet weather forecasting and downstream capacity sensors at the CSO regulators. | 2029 |
| Bromley Pump Station Upgrades | The UWSP revised the target pumping capacity to 45 MGD by making upgrades to allow for two large pumps to run concurrently, which would reduce TY CSO by 60 MG. After further alternative analysis in the planning of the upgrades described in the UWSP, it has been determined SD1 can instead upgrade the existing Bromley PS to increase capacity from 40 MGD to 45 MGD and build a diversion structure and second parallel pump station with an additional 30 MGD capacity. Each pump station will utilize the same force main. Therefore, when pumping together, there will be a combined 50 MGD pumping capacity. This major improvement will reduce TY CSO by 114 MG, provide greater operational resiliency in the event of failure, and will potentially allow for some smaller projects identified in the UWSP to be eliminated. | 2029 |
| SR9 Sewer Separation | This project includes sewer separation in Newport, KY along the State Route 9 corridor, separating a total of approximately 32 acres of pervious and impervious area and removing approximately 15 MGs of runoff from the combined system in the typical year. In conjunction with the KYTC State Route 9 Realignment project, approximately 9,700 feet of 15-inch through 66-inch separate storm sewer has already been installed, with the remaining work including installation of approximately 400 feet of 66-inch storm sewer through the earthen levee to discharge separated stormwater to the Licking River. | 2029 |
| Taylor Creek EQ Tank | The Taylor Creek EQ Tank is a major storage facility that effectively anchors the CSO control program along the upper Ohio River Interceptor. This EQ tank will reduce TY CSO volume of 29.4 MG. | 2034 |
| Taylor Creek Consolidation Piping – Newport Festival / Bellevue Riverfront | Consolidation piping along the Ohio River east of the Licking River to EQ. | 2034 |
| SEPARATE SEWER OVERFLOW CONSTRUCTION PHASE PROJECT | | |
| LRS Conveyance – Phase 3 | This portion of the LRS Conveyance Piping runs along Three Mile Rd and consists of the installation of 36-in through 48-in sanitary sewer that will convey additional flow to the LRS EQ Tank. Coupled with the already complete LRS Conveyance Ph 1, once Ph 3 is complete the SSOs addressed include 0150009, 0150061, 0150063, 0150064, 0150065, 0150198, and 0150399. | 2029 |

| Project Title | Project Description | UWSP FY Completion Date |
|---|---|-------------------------|
| Lakeview EQ | The Lakeview EQ tank is an 8.6 million gallon above ground tank designed to store flows exceeding the downstream Lakeview PS capacity. The tank is sized to accommodate additional flow from storage and conveyance projects upstream to be completed by 2040. Flow would be diverted from the Lakeview Interceptor near 1990005 to a 36 MDG wet weather PS, which would pump flow into the tank. This project will reduce TY SSO volume by 6.5 MG. | 2029 |
| W6 Pump Station & Force Main | New pump station & force main located in Southern Kenton County along the Banklick Creek. This project will remove approximately 4,000 acres of tributary area to the Lakeview Pump Station and redirect the flow to Western Regional. | 2029 |
| Bullittsville Pump Station Improvements – Phase 2, 3, and 4 | The Bullittsville PS improvements consist of upgrading the existing Bullittsville PS to a capacity of 3.0 MGD, and constructing 1.3 MGs of EQ storage upstream of the PS. The existing PS upgrade would include larger pumps to increase capacity, as well as new station piping, new valve vault, electrical improvements, additional air release valves, and force main piping. Flow would be diverted just upstream of manhole 2370005 to a 7.7 MGD wet weather pump station, which would pump flow into the tank. This project will eliminate SSO volume upstream of Bullittsville through 2040 and provide capacity to support future development. | 2029 |
| Waterworks Road Conveyance Phase 2 & 3 | This project consists of 11,020 feet of 10-inch through 24-inch and 1,450 feet of 42-inch sanitary sewer upsizing. This conveyance upsizing will convey additional flow to the combined system and the planned Taylor Creek EQ tank downstream. The downstream combined system solution has been configured to accommodate the additional flow. This project will reduce TY SSO by 1 MG and eliminate TY SSOs at 0370001, 0380005, 0400002, 0400034, 0410037, and 0410039. | 2029 |
| Brookwood SSO | Project consists of 4,200 L.F. of 12" pipe to replace the 8" existing line. The 12" will run from M.H. 2030144 to M.H. 2030034, then there will be 900 L.F. of 15" ran from M.H. 20230034 to M.H. 2030030. The last leg of pipe will follow from M.H. 2030030 to 2040006; this will be the remaining 8" pipe that would tie directly into the Trunk Line. Project completion will address TY SSO at 2030144 and 2030031 | 2029 |
| Lakeview EQ Tank 1 | Lakeview EQ 1 is a strategically located EQ facility to address remaining SSOs in the Lakeview Sewershed. Lakeview EQ Tank 1 will reduce TY SSOs by 3.7 MG. | 2034 |
| Lakeview EQ Tank 8 – KY17 Corridor Tunnel | 1 of several projects designed to address the SSOs in a typical year at the Lakeview PS drainage basin. Project is comprised of a new 7,300 ft micro-tunnel along KY17 from Howard Litzler to Lakeview PS. | 2034 |

| Project Title | Project Description | UWSP FY Completion Date |
|--|--|-------------------------|
| Lakeview Conveyance – Madison Gravity Upsize | Construction of 7,800 ft of sanitary sewer south of the Lakeview PS consisting of 10 in through 54 in upsizing. This is one of multiple projects to address SSOs in the Lakeview sewershed. The completion of this project will eliminate future SSOs 1980001 and 1990032. | 2034 |
| Taylor Creek Rd Conveyance – Waterworks Rd Ph 4 | Construction of sanitary sewer from Marine to Mayfield consisting of 10 in through 15 in upsizing. This is one of multiple projects to address SSOs in the Taylor Creek sewershed. The completion of this project will eliminate SSOs 0410115, 0410019, 1010002, 1010025, 1010027, and 0410010. | 2034 |
| Taylor Creek Rd Conveyance – Monmouth St Newport Rd | Construction of sanitary sewer from Monmouth St to Newport Rd consisting of 10 in through 54 in upsizing. This is one of multiple projects to address SSOs in the Taylor Creek sewershed. The completion of this project will eliminate SSOs 0490035, 0490137, and 0500047. | 2034 |
| Taylor Creek Rd Conveyance – Newport Shopping Center Sewer | Construction of sanitary sewer at Newport Shopping Center consisting of 12 in upsizing. This is one of multiple projects to address SSOs in the Taylor Creek sewershed. | 2034 |
| Western Conveyance – W6 Gravity Sewer | Construction includes 15-in through 36-in gravity sewer to the W6 PS. Completion of the gravity lines will address future SSOs 2280004, 2280010, 2280011, 2280016, and 2280023 | 2034 |
| US 27/AA Highway PH II | 6,200' of 12" force main and New Rocky View PS. New gravity pipe from Cold Spring Crossing PS to the New Rocky View PS. | 2034 |
| Wolpert PS & FM Redirect | 3,900' of 12" force main, 3,400' of 12" gravity sewer, and upgrade Wolpert PS capacity and new force main and gravity pipe from the Wolpert PS to Cold Springs Crossing site. | 2034 |
| Banklick EQ / Conveyance | To address SSOs within Banklick sewershed, limited conveyance to a storage tank just upstream of the Banklick pump station was identified as the solution. A 2.6-million-gallon surface-storage tank is proposed to store flows above the pump station capacity. This facility has been sized to also receive flow from the Church Street combined system area and will reduce CSO volume at the Church Street CSO. SSOs addressed include 1850140, 1850141, 1870018, and 1860108. | 2034 |
| LRS Conveyance – Phase 2 | Construction of sanitary sewer from MH0150009 through 1930093 consisting of 10in through 24in upsizing. This is one of multiple projects to address SSOs in the Licking River Siphon sewershed. The completion of this project will eliminate SSOs 0150024, 1930008, 1930009, and 1930010. | 2040 |

| Project Title | Project Description | UWSP FY Completion Date |
|--|---|-------------------------|
| Dry Creek Conveyance – Interceptor | The project consists of conveyance improvements that include the construction of 3,580 feet of 48-in sewer that will replace the existing Dry Creek interceptor and will convey flow to the Dry Creek WWTP. This portion of conveyance will address SSO 2130027. | 2040 |
| Dry Creek Conveyance – Fitzgerald Ph 2 | Construction of sanitary sewer along MHs 1190023-1230034, 1230028-1260045, 1240013-1260044 consisting of 10-in through 18-in upsizing. This is one of multiple projects to address SSOs in the Dry Creek sewershed. This portion of conveyance will address SSOs 1190012, 1190001, 1230028, 1230019, and 1240008, | 2040 |

SECTION 6. FY2024 CMOM UPDATES

The fourth reporting requirement of the Annual Report per paragraph 48 of the Amended Consent Decree, is to provide:

48. (d) A summary of the CMOM and asset management program implementation shall be included in the fiscal year report, including a comparison of actual performance measures that have been established in those programs.

6.1 CMOM Introduction

SD1 received regulatory approval for its Capacity, Management, Operations, and Maintenance (CMOM) programs on May 14, 2008, and has provided annual reporting since 2009. This report covers significant CMOM activities related to capacity assurance and asset management for FY2024.

6.2 Major Components of SD1's Collection and Treatment Systems

SD1's service area spans approximately 200 square miles for sanitary services and 170 square miles for storm services, catering to around 105,585 sanitary accounts and 80,002 stormwater accounts. The system serves over 347,717 residents, comprising:

- 42,770 SD1 owned sanitary MHs

- 1,449 SD1 owned catch basins and inlets in the CSS
- 2,051 miles of SD1 owned and operated gravity sewer lines and force mains
- 133 miles of Florence owned sewer lines and force mains
- 506 miles of SD1 owned and operated separate storm water lines
- 129 (126 SD1 Owned 3 SD1 Maintained) pump stations
- 97 floodgate structures
- 16 flood pump stations
- 10 (SD1 owned 4 SD1 Maintained 6) small wastewater treatment plants
- 3 regional water reclamation facilities

In FY2024, SD1 acquired approximately 43,057 feet of privately developed sewer and 221 new MHs, all meeting SD1's technical specifications and construction standards.

6.3 Capacity Assessment & Assurance

SD1's Capacity Assessment and Assurance Program aims to understand the system's capacity and identify problem areas lacking adequate wet-weather capacity. This comprehensive understanding allows for better management and design of the systems.

6.3.1 Overflow Inspections and Hydraulic Modeling

CSO inspections are conducted after storms that produced more than half an inch of rain and dry-weather inspections at sites susceptible to blockages. SSO inspections and clean-ups are conducted after qualifying rain events at known recurring or suspected wet-weather SSO locations. These inspections help verify overflow activity, assess causes, and initiate proper containment and cleanup procedures. SD1 conducted approximately 3,607 CSO diversion inspections in FY2024. Approximately 2,058 of the wet-weather CSO inspections were performed within 48 hours of a storm that produced at least half an inch of rain, or after a high-river event. Approximately 755 routine dry-weather CSO inspections were also performed. Additionally, SD1 performed approximately 53 inspections following at least one inch of rain at known recurring SSO locations in FY2024.

6.3.2 Flow Monitoring and Hydraulic Modeling

SD1 utilizes remote-sensing devices, such as, flow meters, levels sensors, and rain gauges to collect data in targeted areas of the collection system. These data are used to understand wet weather impacts on the collection system, continuously improve model confidence, identify and confirm areas that are suspected of high inflow and infiltration (I/I), inform reservation of capacity decisions, and quantify the benefits of completed capital projects.

Flow meters are used to gather detailed information on system response to varying antecedent moisture conditions and weather patterns. The data collected with the flow meters address specific conveyance analyses related to the reservation of capacity and the construction of capital improvements, which may alter the system capacity enough to warrant calibration of the models. SD1's flow metering program ensures that SD1's collection system models are continuously verified and up to date.

Figure 6.1 identifies the locations that were monitored with flow meters and Figure 6.2 illustrates the related hydraulic model calibrations that were completed in FY2024.

Figure 6.1 Flow Monitoring Locations in FY2024

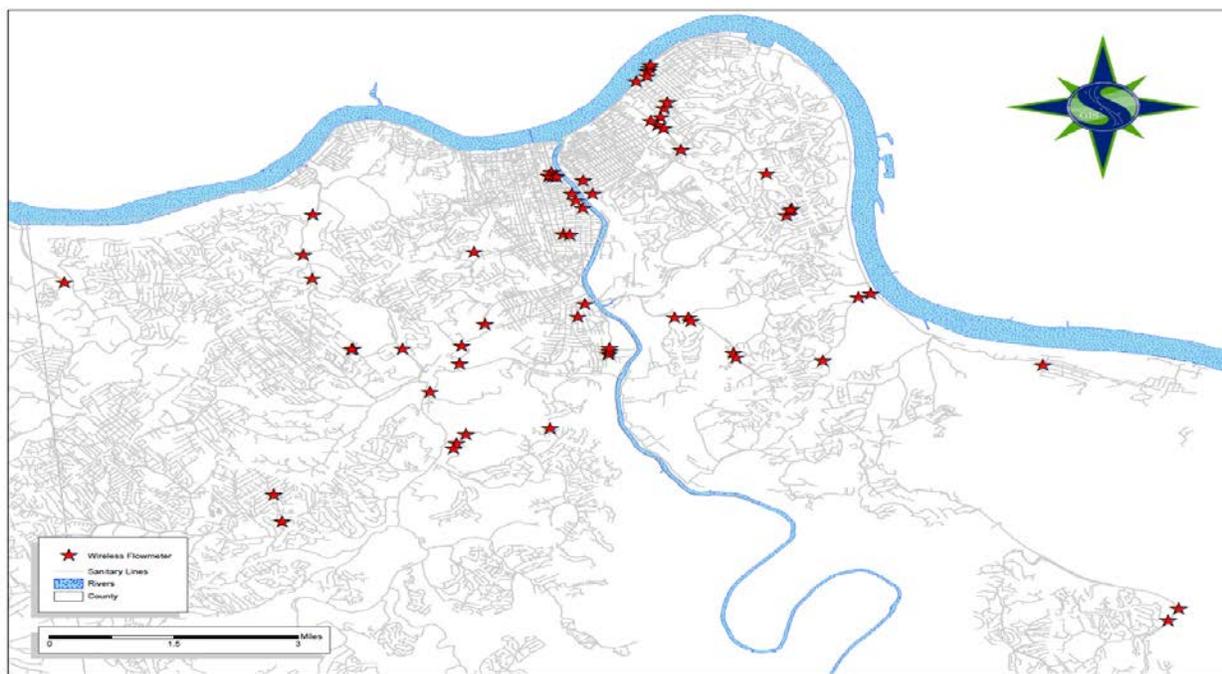
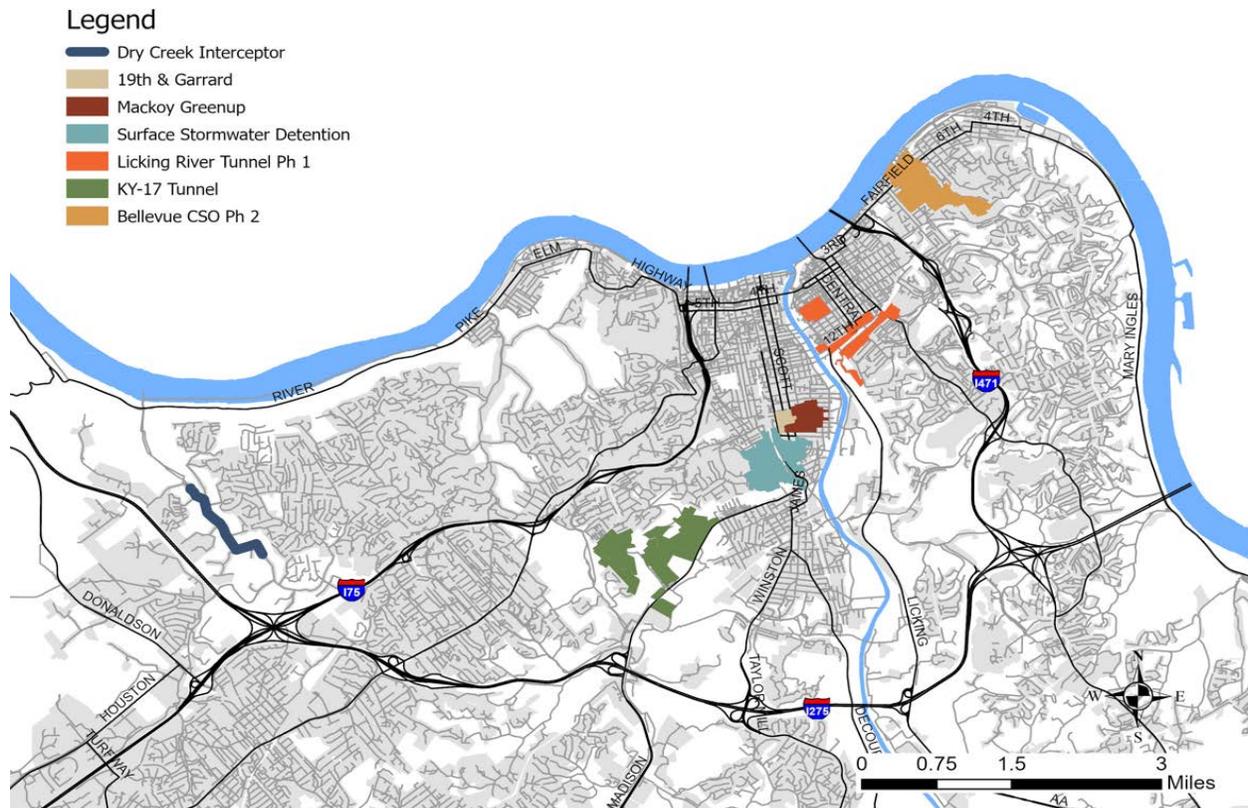


Figure 6.2 Completed Model Calibrations in FY2024

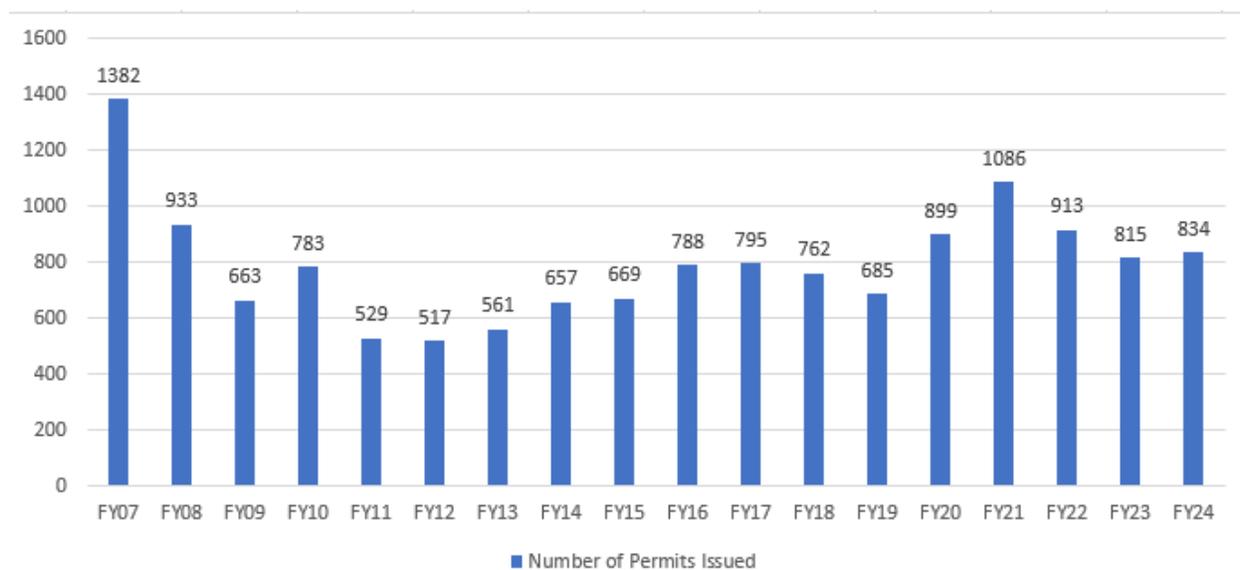
Model Calibration Projects - FY 2024



6.3.3 Reservation of Capacity

Developers must submit a formal request for the reservation of sanitary sewer capacity, reviewed and approved by SD1’s Board of Directors. A sewer capacity connection permit is then required before connecting to the system. Figure 6.3 shows the number of annual capacity connection permits issued by SD1 since entering into the original Consent Decree in 2007. In FY2024, SD1 issued 834 capacity connection permits.

Figure 6.3 Capacity Connection Permits Issued (FY2007 – FY2024)



6.4 Call Before You Dig

SD1’s Call Before You Dig Program protects underground assets by marking the location of SD1 lines before construction activities. In FY2024, SD1 responded to 2,966 external requests, generating 1,210 work orders and marking 4,490 sanitary assets.

Table 6.1 provides SD1 line location details since FY2011.

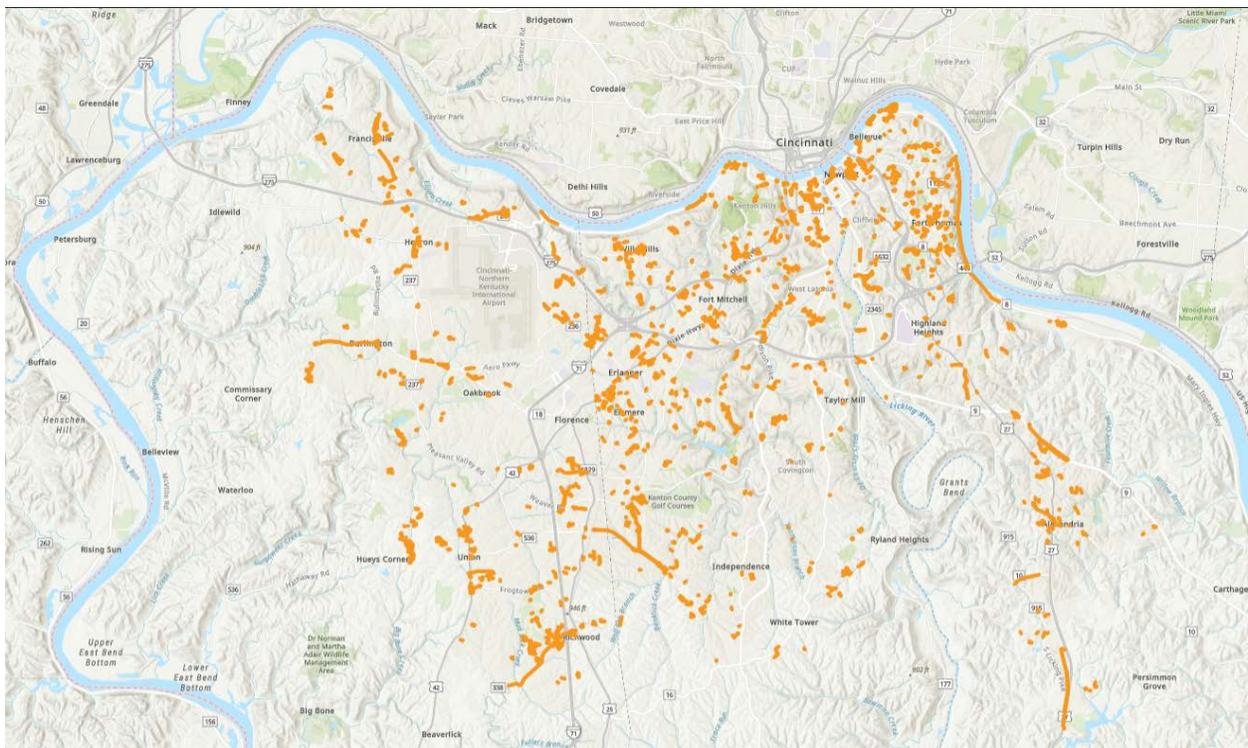
Figure 6.4 illustrates the sanitary assets, in orange, that were marked in FY2024.

Table 6.1 Line Locations

| Fiscal Year | Work Orders Completed | Assets Marked |
|-------------|-----------------------|---------------|
| FY2011 | 688 | 1,220 |
| FY2012 | 1,194 | 2,722 |
| FY2013 | 955 | 2,520 |
| FY2014 | 966 | 2,226 |
| FY2015 | 1,465 | 2,701 |
| FY2016 | 1,698 | 2,065 |

| Fiscal Year | Work Orders Completed | Assets Marked |
|--------------|-----------------------|---------------|
| FY2017 | 1,794 | 2,045 |
| FY2018 | 1,202 | 1,716 |
| FY2019 | 1,027 | 1,099 |
| FY2020 | 1,191 | 794 |
| FY2021 | 1,504 | 1,494 |
| FY2022 | 1,459 | 4,400 |
| FY2023 | 1,670 | 4,175 |
| FY2024 | 1,210 | 4,490 |
| Total | 14,894 | 25,667 |

Figure 6.4 Lines Located and Marked in FY2024



6.5 Connection Tap-In

SD1's Connection Tap-in Program is to ensure standard policies and procedures are in place to approve and perform connections to the sanitary and storm sewer systems. The objectives of this program are to:

- Accommodate economic development throughout the Northern Kentucky region.
- Eliminate the number of illegal and improper taps made throughout the collection system.
- Ensure all connection fees are paid, and all new connections are put on billing.
- Maintain the integrity of the sanitary sewer system by reducing the amount of I/I that can enter the system through bad taps or improper abandonment of service laterals.
- Protect the integrity of the sanitary and storm sewer systems by enforcing the use of proper materials.
- Provide an avenue for SD1 to keep certified tappers informed about changes to the Rules and Regulations or specifications for tapping the system.
- Provide supplemental training on other critical SD1 programs, such as FOG, illicit discharge and confined space entry safety.

6.5.1 Certified Tapper Program

SD1's formal Certified Tapper Program ensures that connections to the sanitary and storm sewer system are approved by SD1 personnel and are performed accurately based upon written specifications and procedures. Plumbers interested in becoming certified are required to attend training and pass an exam. In addition, Certified Tappers must complete a recertification class offered by SD1 every three years. SD1 currently has 185 Certified Tappers representing 129 plumbing companies.

6.5.2 Loss of Certification & Administrative Fine

When improper or illegal taps are installed and not corrected, certification may be revoked for a period of not less than one year and certification will only be reissued after successful completion of the training program.

Fines may be levied against individuals and/or companies that do not comply with SD1's Rules and Regulations and complete a sewer tap without the required

certification. Those responsible will be liable for resulting damages and fines shall be levied as detailed on the SD1 Fee Schedule.

SD1 issued 17 violations with fines totaling \$8,750 in FY2024.

Table 6.2 provides the total amount of documented violations and fines issued for unpermitted connections since FY2009.

Table 6.2 Capacity Connection Violations and Fines

| Fiscal Year | Total Violations | Total in Fines |
|--------------------|-------------------------|-----------------------|
| FY2009 | 6 | \$3,000 |
| FY2010 | 8 | \$5,250 |
| FY2011 | 9 | \$5,500 |
| FY2012 | 7 | \$2,000 |
| FY2013 | 19 | \$10,500 |
| FY2014 | 23 | \$15,250 |
| FY2015 | 3 | \$1,500 |
| FY2016 | 7 | \$3,500 |
| FY2017 | 14 | \$8,250 |
| FY2018 | 10 | \$5,000 |
| FY2019 | 0 | \$0 |
| FY2020 | 6 | \$3,000 |
| FY2021 | 4 | \$2,000 |
| FY2022 | 0 | \$0 |
| FY2023 | 15 | \$7,750 |
| FY2024 | 17 | \$8,750 |
| Total | 133 | \$81,250 |

6.6 Lateral Repair Program

Adopted in 2016, this program assists homeowners with rehabilitating failed service laterals in the public right-of-way. A full summary of the legal authority, the community's need for this program, and the program eligibility requirements was documented in the CMOM FY2016 Annual Report.

Table 6.3 lists the reviewed and repaired laterals since the program's inception.

Table 6.3 SD1 Repairs of Failed Private Laterals in the Public Right-of-Way

| Fiscal Year | Lateral Failures Reviewed | Lateral Repairs Approved |
|--------------------|----------------------------------|---------------------------------|
| FY2016 | 114 | 94 |
| FY2017 | 92 | 45 |
| FY2017 | 69 | 61 |
| FY2017 | 68 | 55 |
| FY2017 | 65 | 53 |
| FY2017 | 82 | 67 |
| FY2017 | 78 | 62 |
| FY2017 | 71 | 55 |
| FY2017 | 54 | 54 |
| Total | 622 | 491 |

6.6.1 Continuous Sewer Assessment

The Continuous Sewer Assessment Program (CSAP) aims to provide a proactive and coordinated approach to managing SD1's infrastructure. This program focuses on assessing the condition and life cycle of the sewer system, ensuring cost-effective rehabilitation and replacement.

By implementing CSAP, SD1 can prioritize and carry out system inspections, cleanings, and necessary repairs or replacements more effectively and proactively.

CSAP uses the Sewer Condition Risk Evaluation Analysis Model™ (SCREAM) to classify pipes, generating structural and maintenance scores for each inspected pipe. These scores help determine appropriate schedules for next actions, such as re-inspection, cleaning, repair, rehabilitation, or replacement.

The following sections summarize the progress of various SD1 operations and maintenance programs in achieving the performance goals and projected targets of the CSAP.

6.6.2 Collection System Condition Assessment

Sewer Inspections

Table 6.4 details the extent of the collection system assessed since the implementation of the Continuous Sewer Assessment Program (CSAP) through the end of the current reporting period. It shows the footage of pipes inspected, both initially and in follow-up inspections, during the consent decree period. Initial inspections represent the amount of the system inspected for the first time. Follow-up inspections cover pipes that have already undergone initial inspection and were identified as needing maintenance, requiring subsequent inspections to assess post-maintenance conditions.

Table 6.4 Sewer Inspection Footage

| Fiscal Year | Initial Inspection Footage | Follow-Up Inspection Footage | Total Cumulative Footage |
|--------------------|-----------------------------------|-------------------------------------|---------------------------------|
| FY2008 | 374,068 | 46,898 | 420,966 |
| FY2009 | 1,340,874 | 498,113 | 1,838,987 |
| FY2010 | 421,130 | 589,519 | 1,010,649 |
| FY2011 | 600,306 | 583,389 | 1,183,695 |
| FY2012 | 501,160 | 483,494 | 984,654 |
| FY2013 | 622,585 | 788,311 | 1,410,896 |
| FY2014 | 716,278 | 629,179 | 1,345,457 |
| FY2015 | 1,070,089 | 623,860 | 1,693,949 |
| FY2016 | 1,304,103 | 450,934 | 1,755,037 |
| FY2017 | 475,850 | 654,491 | 1,130,341 |
| FY2018 | 53,048 | 813,171 | 866,219 |
| FY2019 | 56,132 | 995,717 | 1,051,848 |
| FY2020 | 49,660 | 816,250 | 865,910 |
| FY2021 | 104,362 | 832,881 | 937,243 |
| FY2022 | 52,164 | 575,660 | 627,825 |
| FY2023 | 56,701 | 591,114 | 647,815 |
| FY2024 | 73,454 | 765,353 | 838,808 |
| Total | 7,871,964 | 10,738,334 | 18,610,299 |

Sewer Line Rapid Assessment Tool (SL-RAT)

The Sewer Line Rapid Assessment Tool (SL-RAT) is a portable, efficient device used for assessing pipes 12 inches or less in diameter. It consists of a transmitter and a receiver that send, receive, and interpret acoustic signals to detect blockages. Each assessment typically takes less than three minutes.

In FY2016, SD1 started using the SL-RAT to manually adjust the automated maintenance schedules determined by the CSAP. This method is more efficient than using conventional, resource-intensive, and time-consuming CCTV crews. Since FY2018, SL-RAT inspection records have been incorporated into the CSAP logic to enhance the automation of maintenance scheduling based on acoustic scores

Table 6.5 provides approximate annual footages of the acoustic inspections that are used to confirm or adjust CSAP next actions.

Table 6.5 SL-RAT Inspections

| Fiscal Year | Footage of SL-RAT Acoustic Inspections |
|--------------------|---|
| FY2016 | 290,000 |
| FY2017 | 267,087 |
| FY2018 | 256,570 |
| FY2019 | 312,032 |
| FY2020 | 681,957 |
| FY2021 | 349,100 |
| FY2022 | 496,618 |
| FY2023 | 358,942 |
| FY2024 | 262,906 |
| Total | 3,275,212 |

Catch Basin and Manhole Inspections

SD1 continually reviews its collected inspection data to adjust maintenance strategies. In the past, SD1 aimed to inspect all public CSS catch basins at least once per year, as recommended in the Nine Minimum Controls Guidance. With continuous data analysis,

SD1 can now confidently target catch basins for inspections and cleanings where there are known recurring maintenance issues, without performing annual inspections of all catch basins. Catch basins that are known to not experience recurring maintenance issues are now inspected on a less frequent schedule.

Table 6.6 summarizes the number of catch basins and MHs inspected since the onset of CSAP.

Table 6.6 Catch Basin & Manhole Inspections

| Fiscal Year | Number of Catch Basin Inspections | Number of Manhole Inspections |
|--------------------------|--|--------------------------------------|
| FY2008 | 986 | 2,050 |
| FY2009 | 1,774 | 7,238 |
| FY2010 | 4,168 | 1,933 |
| FY2011 | 3,401 | 1,783 |
| FY2012 | 4,019 | 901 |
| FY2013 | 4,247 | 889 |
| FY2014 | 3,745 | 824 |
| FY2015 | 3,569 | 208 |
| FY2016 | 986 | 0 |
| FY2017 | 1,937 | 0 |
| FY2018 | 1,103 | 0 |
| FY2019 | 1,160 | 59 |
| FY2020 | 25 | 0 |
| FY2021 | 1 | 918 |
| FY2022 | 14 | 794 |
| FY2023 | 4 | 1,241 |
| FY2024 | 4 | 2,017 |
| Total Inspections | 31,129 | 18,044 |

6.6.3 Collection System Maintenance

Cleaning is essential for maintaining the sewer system's capacity and preventing overflows. SD1's prioritization process ensures cleaning activities are carried out cost-

effectively and only on pipes that need it. The cleaning program uses SCREAM™ maintenance scores to classify pipes and determine appropriate schedules for re-inspections, cleaning, and evaluating the need for permanent solutions to recurring maintenance issues.

Table 6.7 provides an overview of the total length of pipe cleaned, in accordance with the CSAP cleaning program logic.

Table 6.7 Sewer Cleaning Footage

| Fiscal Year | Footage of Pipe Cleaned |
|---------------------------|--------------------------------|
| FY2008 | 113,695 |
| FY2009 | 439,191 |
| FY2010 | 737,613 |
| FY2011 | 382,352 |
| FY2012 | 370,296 |
| FY2013 | 632,825 |
| FY2014 | 568,551 |
| FY2015 | 600,302 |
| FY2016 | 325,798 |
| FY2017 | 347,030 |
| FY2018 | 368,108 |
| FY2019 | 364,570 |
| FY2020 | 298,795 |
| FY2021 | 405,011 |
| FY2022 | 283,890 |
| FY2023 | 309,199 |
| FY2024 | 319,378 |
| Total Feet Cleaned | 6,866,604 |

Catch Basin and Grit Pit Cleaning

In January 2009 SD1 began tracking the amount of debris removed during catch basin and grit pit cleanings. In FY2024, SD1 removed approximately 10 cubic yards of debris from catch basins and 185 cubic yards of debris from grit pits.

Table 6.8 provides the estimated total cubic yards of debris removed from the collection system since 2009.

Table 6.8 Cubic Yards of Debris Removed from Catch Basin & Grit Pit Cleanings

| Fiscal Year | Cubic Yards Removed from Catch Basins | Cubic Yards Removed from Grit Pits | Total Cubic Yards of Grit Removed |
|--------------------|--|---|--|
| FY2009 | 149 | 237 | 386 |
| FY2010 | 433 | 362 | 795 |
| FY2011 | 629 | 330 | 959 |
| FY2012 | 527 | 400 | 927 |
| FY2013 | 367 | 468 | 835 |
| FY2014 | 455 | 355 | 810 |
| FY2015 | 486 | 210 | 696 |
| FY2016 | 985 | 33 | 1,018 |
| FY2017 | 315 | 20 | 335 |
| FY2018 | 246 | 94 | 340 |
| FY2019 | 93 | 225 | 318 |
| FY2020 | 585 | 86 | 671 |
| FY2021 | 112 | 147 | 259 |
| FY2022 | 6* | 92 | 98 |
| FY2023 | 10 | 185 | 195 |
| FY2024 | 4 | 150 | 154 |
| Total | 5,402 | 3,394 | 8,796 |

6.7 Rehabilitation and Replacement

The Asset Renewal group within the SD1 Collection Systems Department oversees internal construction crews and external maintenance contractors responsible for repair, replacement, and rehabilitation work. The work schedule is determined based on various criticality factors and asset scoring procedures. Pipes needing emergency work are prioritized for immediate repairs upon discovery. Other considerations that may accelerate the rehabilitation schedule include:

- Proximity to known building backups
- Proximity to recurring overflows

- Lack of hydraulic capacity
- Proximity to other assets in need of repair
- High consequence of failure

Table 6.9 outlines the rehabilitation and replacement activities carried out by SD1's internal construction crews and contractors from the start of the CSAP through the end of FY2024. These activities exclude capital improvements managed by SD1's Engineering Division and O/M activities related to MS4 assets.

Table 6.9 Rehabilitation & Replacement Activities

| Fiscal Year | Feet of Sewer Lines Repaired or Replaced | Feet of Sewer Lines Rehabbed (CIPP) | Number of Manhole Repairs | Number of Manhole Replacements | Number of New Manhole Installations | Number of CSS Catch Basin Repairs | Number of CSS Catch Basin Replacements | Number of New CSS Catch Basin Installs |
|--------------|--|-------------------------------------|---------------------------|--------------------------------|-------------------------------------|-----------------------------------|--|--|
| FY2008 | 11,608 | 1,081 | 548 | 35 | 16 | 68 | 81 | 0 |
| FY2009 | 17,944 | 3,204 | 370 | 63 | 53 | 115 | 209 | 4 |
| FY2010 | 29,239 | 12,872 | 317 | 80 | 40 | 71 | 203 | 2 |
| FY2011 | 19,500 | 64,715 | 321 | 60 | 36 | 209 | 116 | 3 |
| FY2012 | 18,508 | 65,757 | 774 | 89 | 57 | 292 | 100 | 3 |
| FY2013 | 21,051 | 38,129 | 299 | 33 | 34 | 21 | 54 | 3 |
| FY2014 | 6,122 | 43,026 | 258 | 19 | 14 | 56 | 28 | 6 |
| FY2015 | 6,371 | 28,237 | 154 | 10 | 9 | 63 | 23 | 0 |
| FY2016 | 6,893 | 41,185 | 277 | 22 | 30 | 65 | 13 | 0 |
| FY2017 | 7,168 | 58,232 | 263 | 10 | 21 | 84 | 15 | 2 |
| FY2018 | 9,877 | 44,788 | 241 | 15 | 21 | 35 | 9 | 1 |
| FY2019 | 8,383 | 49,078 | 206 | 6 | 29 | 21 | 20 | 0 |
| FY2020 | 6,052 | 29,077 | 224 | 15 | 23 | 23 | 15 | 3 |
| FY2021 | 4,331 | 30,139 | 206 | 21 | 10 | 16 | 7 | 0 |
| FY2022 | 1,823 | 38,312 | 355 | 4 | 9 | 5 | 11 | 0 |
| FY2023 | 1,031 | 10,129 | 198 | 6 | 5 | 3 | 22 | 0 |
| FY2024 | 965 | 30,822 | 189 | 5 | 12 | 5 | 6 | 0 |
| Total | 176,866 | 588,783 | 5,200 | 493 | 419 | 1,152 | 932 | 27 |

6.8 Pump Station Operations

The purpose of SD1's Pump Station Operations program is to ensure reliable operations of pump stations across the service area. Routine inspections and preventative maintenance are conducted to maximize efficiency at all stations.

SD1 regularly performs operational inspections and preventative maintenance at all pump stations, flood stations, and associated facilities within the service area.

6.8.1 Pump Station Inspections

In FY2024, SD1 completed approximately 4,501 pump station operational inspections and 99 flood station operational inspections. The frequency of these inspections can vary based on the station's size, odor control chemical feed systems, and backup power plans. Operational inspections include the following tasks:

- **Data Collection:** Inspect and record information on inspection forms for equipment, pumps, and facilities. This includes pump run time, flow meter readings, chemicals remaining, and amp and voltage readings.
- **Building, Grounds, and Security:** Conduct general inspections and cleaning of facilities and grounds, including valve pits, vactor pits, and wet wells.
- **Critical Systems Checks:** Perform physical inspections of equipment such as valves, bar screens, gates, motors, level control, trash baskets, HVAC systems, and telemetry systems.
- **Backup Power:** Inspect and record information on inspection forms for generators and backup pumps, including fuel gauges, coolant, and oil levels, as well as the condition of belts, cables, and batteries.
- **Odor Control:** Inspect the odor control chemical feed system to ensure proper operation

6.8.2 Pump Station Preventative Maintenance

In FY2024, SD1 completed approximately 4,080 mechanical and electrical preventative maintenance work orders on pumps and equipment. These work orders follow the manufacturer's recommended maintenance guidelines. Pump station preventative maintenance includes, but is not limited to:

- Generator assessments
- Stand-by pumps
- Heating, ventilation, air conditioning
- Electrical components
- Air release valves, gate valves, plug valves
- Motors and motor controls

- Wet wells
- Pneumatics and bubblers
- Float switches for level control
- Telemetry equipment associated with SCADA

6.9 Compliance

The purpose of SD1's Compliance Program is to identify and manage residential, commercial, and industrial sources of flow that could negatively impact the collection system. This program includes both the Industrial Pretreatment Program and the Grease Control Program. It ensures adherence to Clean Water Act pretreatment regulations and complies with the National Pollution Discharge Elimination System (NPDES) permit

6.9.1 Permitting

The Compliance Program implements the necessary measures to permit and monitor discharges from commercial and industrial users that may cause corrosion or blockages in the collection system. At the end of FY2024, SD1 had a total of 55 permitted Significant Industrial Users (SIU) in its collection system.

6.9.2 SIU Monitoring & Enforcement

The purpose of the Industrial Pretreatment Monitoring Program is to oversee discharges from industrial users within the service area to ensure compliance with Section 500 of SD1's Sanitary Rules and Regulations. This program aims to protect SD1's sanitary sewer system, treatment plants, employees, and receiving waters. All permitted industries undergo annual inspections and semi-annual monitoring, with additional inspections and sampling as necessary. In FY2024, a total of 65 annual inspections were conducted.

SD1 has an Enforcement Response Plan to address violations. The first Notice of Violation (NOV) is typically verbal, followed by a written notice for the second NOV. Subsequent NOVs include fines ranging from \$500 to \$1,000, depending on the violation. Persistent problems result in placing the industry on a compliance schedule. In

FY2024, SD1 issued 65 NOVs with fines totaling \$13,250, and one Consent Agreement fee of \$615,000.

6.9.3 Food Service Establishments and Grease Control Equipment

The purpose of SD1's Grease Control Program is to prevent the introduction of fats, oils, and grease (FOG) into the sanitary sewer system thereby reducing sewer overflows, maximizing sewer capacity and decreasing sewer maintenance costs. In addition, this program is intended to increase awareness of operators of local food service establishments (FSE) and homeowners about measures they can take to limit or prevent the introduction of FOG into the drains and sanitary sewer system.

SD1's permit requires that all discharges containing grease & oil pass through Grease Control Equipment (GCE) before entering the sanitary sewer. GCE refers to any equipment that removes FOG from wastewater, such as a grease trap which is installed inside the building, or a grease interceptor which is usually installed outside the building and is larger in size. GCE must be well-maintained and in proper operating condition at all times. GCE sizing determination will be made by FSE's engineer, architect or contractor based on criteria such as, but not limited to, flow rate, discharge rate, fixture ratings and wastewater retention time. The design criteria for approved devices are defined in SD1's FOG Management Policy and are enforced with deadlines for installation with SD1's Sanitary Rules and Regulations, which were updated on July 19, 2022.

54 plans for GCE installations were reviewed and 51 new permits were issued by SD1 in FY2024.

Table 6.10 provides an annual summary of plans reviewed and permits issued, since the effective date of the FOG Management Policy.

Table 6.10 GCE Plans Reviewed & Permits Issued

| Fiscal Year | Plans Reviewed | Permits Issued |
|--------------------|-----------------------|-----------------------|
| FY2012 | 10 | 23 |
| FY2013 | 53 | 52 |

| Fiscal Year | Plans Reviewed | Permits Issued |
|--------------------|-----------------------|-----------------------|
| FY2014 | 45 | 58 |
| FY2015 | 36 | 50 |
| FY2016 | 29 | 30 |
| FY2017 | 26 | 4 |
| FY2018 | 9 | 15 |
| FY2019 | 46 | 11 |
| FY2020 | 41 | 0 |
| FY2021 | 37 | 24 |
| FY2022 | 44 | 1 |
| FY2023 | 36 | 28 |
| FY2024 | 54 | 51 |
| Total | 466 | 347 |

6.9.4 Grease Trap Disposal

All individuals or companies hauling waste to the Dry Creek Wastewater Treatment Plant must apply for and obtain a Domestic Holding Tank Waste Hauler Discharge Permit. These permits are issued annually and must be adhered to at all times. Mobile waste haulers disposing Grease Control Equipment (GCE) waste at the treatment plant are required to submit a Domestic Holding Tank Waste Hauler Manifest, detailing each load on their truck. Additionally, all Food Service Establishments (FSEs) within SD1's jurisdiction must have a certified grease waste hauler complete a grease interceptor certification annually. SD1 monitors the disposal method and location of grease removed from approved grease control devices through the grease hauler manifest.

In FY2024, SD1 received and disposed of 23,100 gallons of grease. The significant grease disposal difference between FY24 and previous years is attributed to more haulers discharging their grease waste at Cincinnati MSD disposal facility.

Table 6.11 Grease Disposed at Dry Creek Wastewater Treatment Plant

| Fiscal Year | Gallons of Grease |
|--------------------|--------------------------|
| FY 2008 | 555,833 |
| FY 2009 | 43,649 |
| FY 2010 | 108,300 |

| Fiscal Year | Gallons of Grease |
|--------------------|--------------------------|
| FY 2011 | 161,150 |
| FY 2012 | 234,210 |
| FY 2013 | 185,575 |
| FY 2014 | 194,325 |
| FY 2015 | 163,645 |
| FY 2016 | 203,400 |
| FY 2017 | 171,250 |
| FY 2018 | 158,105 |
| FY 2019 | 183,005 |
| FY 2020 | 388,795 |
| FY 2021 | 228,304 |
| FY 2022 | 127,985 |
| FY 2023 | 105,370 |
| FY2024 | 23,100 |
| Total | 3,235,901 |

6.9.5 FSE Compliance Inspections

SD1 conducts an annual inspection of any Food Service Establishments (FSEs) that may contribute to the buildup of fats, oils, and grease (FOG) in the collection system. These inspections are conducted randomly to ensure compliance with both the permit and SD1's Rules and Regulations. Additionally, SD1 requires permitted FSEs to report proof of service or cleaning of their Grease Control Equipment (GCE). All documentation must be submitted within 30 days of the actual cleaning and hauling of grease.

In FY2024, SD1 issued permits to 51 new FSEs, while 3 existing FSEs closed, bringing the total number of permitted FSEs to 264. No violations for non-compliance were issued in FY2024.

6.9.6 Public Communication

SD1 uses various communication methods throughout the year to inform and educate private residences and commercial customers about the harmful effects of FOG on sewers and the proper techniques for handling grease. This information is distributed

through direct mailings, bill inserts, SD1's website, community newsletters, and newspapers. Using observations from CCTV inspections and overflow responses, SD1 targets its public education efforts in areas showing signs of grease problems and tailors the communication strategy to fit each situation.

FOG Letters

In FY2024, no residential grease-related overflows were reported eliminating the need for residential FOG correspondence.

6.9.7 Grease Control Performance Indicators

Table 6.12 provides a summary of the performance indicators that SD1 has been tracking in relation to its implementation of its formal Grease Control Program.

Table 6.12 Grease Control Program Performance Indicators

| Performance Indicator | Pipe Footage on PM Cleaning List due to Grease | Number of SSOs due to Grease | Number of Building Backups due to Grease |
|-----------------------|--|------------------------------|--|
| FY2008 | 82,000 | 4 | 2 |
| FY2009 | 4,326 | 17 | 5 |
| FY2010 | 4,336 | 10 | 7 |
| FY2011 | 4,892 | 7 | 7 |
| FY2012 | 4,945 | 5 | 7 |
| FY2013 | 5,465 | 4 | 6 |
| FY2014 | 7,656 | 6 | 4 |
| FY2015 | 13,721 | 12 | 8 |
| FY2016 | 7,958 | 7 | 6 |
| FY2017 | 3,981 | 7 | 1 |
| FY2018 | 6,554 | 8 | 1 |
| FY2019 | 0 | 2 | 1 |
| FY2020 | 0 | 2 | 1 |
| FY2021 | 10,851 | 0 | 3 |
| FY2022 | 12,972 | 3 | 5 |
| FY2023 | 13,552 | 4 | 0 |
| FY2024 | 7,853 | 0 | 3 |
| Total | 183,209 | 98 | 67 |

SD1 has routinely cleaned pipes prone to grease buildup with targeted PM cleanings on set schedules less than or equal to 1 year. In 2018, significant updates were made to the CSAP logic, automating prescribed maintenance actions for collection system assets based on their historical performance. This enhancement utilized extensive condition assessment data and work order history, refining the automated logic to determine appropriate maintenance actions and schedules for each assessed sewer. New technologies, such as SL-RAT acoustic inspections, were fully integrated into the automated CSAP logic, improving maintenance scheduling's effectiveness and efficiency.

In FY2024, SD1 recorded 0 SSOs due to grease blockages. CSAP logic implemented in 2018 aids in predicting where maintenance is needed before most blockages form. Pipes susceptible to grease blockage requiring cleaning less than or equal to 1-year intervals are placed on a PM schedule, while the CSAP database produces pipe inspection frequencies greater than one-year intervals. This performance indicator will continue to evaluate the CSAP's ability to identify blockage risks and achieve the desired results of predictive maintenance

SECTION 7. COMPLETED PROJECTS

The fifth reporting requirement of the Annual Report per paragraph 48 of the Amended Consent Decree, is to provide:

48. (e) Any additional information necessary to demonstrate that the District is adequately implementing its Updated Watershed Plans.

SD1 began completing projects included in the original Watershed Plan in 2005, well before formal Watershed Plan approval in 2014. As a result, SD1 has over 10 years of targeted improvements already completed, with an associated reduction in CSO and SSO overflow volume. Completed improvements, prior to the Updated Watershed Plan (UWSP), had focused on initial high-impact projects such as:

- Initial Watershed Program projects as set out in Exhibit D of the original CD.
- System-wide projects from the IWSP (i.e. original WSP) Five-Year Program
- Specific basin projects from the IWSP Five-Year Program.

- Pump station upgrades as set out in Exhibit E of the original CD.
- CSO Diversion adjustments associated with the Inline Storage Program and the Solids and Floatables Control Program.
- Additional Projects for CSO and SSO Control

Many of the completed improvements described above were an important commitment of the original WSP, and as intended their results have informed selection of projects in the UWSP.

The result of the improvements through 2017 is that SD1 has eliminated approximately 155 MG of typical year CSO discharges and approximately 124 MG of typical year SSO volume, relative to overflow levels that existed before the original CD.

In addition to the eliminated discharges described above, completed projects from 2017 through FY2024 have resulted in further elimination of approximately 52 MG of typical year CSO discharges and approximately 75 MG of typical year SSO volume relative to the established 2017 baseline volume established in the ACD.

7.1 Completed Project Summary

On the following pages, Table 7.1 details the completed projects from the ACD and Table 7.2 details the completed projects from the UWSP as of end of FY2024.

Table 7.1 Amended Consent Decree Appendix C Completed Projects

| Project Title | Project Description | ACD Completion Date | Completion Date |
|---------------------------------------|--|---------------------|-----------------|
| River Water Intrusion Program Phase I | Outfall flap gates or gated chambers at 7 locations. This project will reduce CSOs on the Ohio River west of the Licking River. CSO diversions to receive RWI protection are: 1730008,1730029, 1710084, 1710098, 1490027, 1470052, and 1440053. | 12/31/20 | 12/31/20 |
| Jacob Price Sewer Separation | 2,700' of 12" thru 30" pipe. This project will install new pipe on 9th and 10th Streets in Covington from Greenup to the Licking River. This project will reduce CSOs along the Licking River by approximately 8 million gallons (MG) in the typical year. | 12/31/19 | 06/30/19 |

| Project Title | Project Description | ACD Completion Date | Completion Date |
|---|---|---------------------|-----------------|
| Aqua on the Levee Sewer Separation | 1,500' of 48" and 30" pipe sewer separation and direct flow to the Ohio River. Pipe installation is primarily on Washington Street. This project will reduce CSOs on the Ohio River east of the Licking River by approximately 5 MG in the typical year. | 12/31/20 | 1/15/19 |
| Church Street Sewer Separation | Approximately 2,000' sewer separation. New pipe on Gail, Janet, Valley View, Primrose, and sunset Streets. This project will reduce CSOs along the Banklick Creek near the Licking River, by approximately 5 MG in the typical year. | 03/31/19 | 10/25/18 |
| Lakeside Park Sewer Capacity Upgrade | 2,500' of 24" and 18" pipe installation on Hudson Ave from Dixie Hwy to the dead end of Hudson. Improvement is expected to address deteriorated infrastructure. | 06/30/19 | 04/30/19 |
| Bullitsville Force Main Capacity Upgrade Phase I & II | 2000' of existing 12" force main will be replaced (PH I) and 10,000' of existing force main will be cleaned on the interior (PH II) to increase flow capacity. Improvements address deteriorated infrastructure. | 12/31/19 | PH I: 07/05/19 |
| Elsmere Corridor Capacity Upgrade | 8,700' of 30", 24", and 18" pipe installation. This project is located in Kenton County upstream of the Narrows Rd Pump Station. Gravity upgrade of existing infrastructure will eliminate 3.41 MG of TY SSO and multiple Recurring SSO locations: 2100106, 2100129, 2100002, 2070019, 2090063, 2090008, and 2110001. | 12/31/20 | 6/1/20 |
| Wilder Pump Station Upgrade | Increase capacity of existing pump station and replace deteriorated infrastructure. Replace pumps to increase total pumping capacity from 1.1 MGD to 1.7 MGD. | 12/31/20 | 6/30/19 |
| Allen Fork Pump Station Upgrade | Increase capacity of existing pump station. Replace pumps to increase total pumping capacity from 3.2 MGD to 4 MGD. Project impacts MH 2390002. Reduction of TY SSO volume of 0.01MG. | 12/31/20 | 10/1/18 |
| US 27/AA Highway PH I | 9,600' of 12" and 14" force main, 7,000' of 18" gravity sewer, Centerplex PS capacity upgrade. Initial phase along AA Hwy from Centerplex PS to the Riley Rd PS. | 12/31/20 | 6/21/21 |

Table 7.2 Updated Watershed Plan Completed Projects

| Project Title | Project Description | 2040 Overflow Eliminated (MG) | Overflows Addressed |
|--|---|-------------------------------|--|
| COMBINED SEWER OVERFLOW SOLUTIONS | | | |
| Targeted Sewer Separation | SD1 completed six opportunistic sewer separation projects in the combined system as part of the 2023 improvements. Jacob Price Phase 2, Church Street Phase 2, Water's Edge, Aqua on the Levee and RiverCenter separation projects separated approximately 65 acres of pervious and impervious area. The Washington/Saratoga will separate approximately 6 acres of pervious. | 7 | 0610071, 0620077, 0640090, 0770096, 1420142, 1470093, 1850158, 1870193, 1880090, 1880091 |
| Ash Street EQ Tank | Construction of a 0.41 MG buried tank and gravity diversion in the City of Silver Grove to store CSO exceeding the downstream sewer capacity. The tank dewater through a controlled drain vault at a rate of 0.25 MGD. | 1.5 | 0010220 |
| River Water Intrusion Program Phase I & II | Outfall flap gates or gated chambers at 21 locations. This project will reduce CSOs on the Ohio River west of the Licking River. CSO diversions to receive RWI protection are: 1480103, 1480097, 1480108, 1480012, 1480116, 0910064, 1420028, 0880017, 0930041, 0930014, 0930075, 0980036, 0880004, 1420032, 0910005, 0930026, 0960032, 1720005, 1710003, 1710068, 1440156. | 116 | 0880081, 0880082, 0910065, 0910068, 0930105, 0960063, 1420142, 1440206, 1440209, 1470093, 1480187, 1490132, 1710116, 1710119, 1710121, 1710124, 1720109, 1730259 |
| River Water Intrusion Program Phase III | Outfall flap gates or gated chambers at 21 locations. This project will reduce CSOs on the Ohio River east of the Licking River. CSO diversions to receive RWI protection are: 0820001, 0820001, 0640081, 0790015, 0650084, 0620031, 0770006, 0610006, 0630001 | 107 | 0790086, 0570089, 1480187, 1440206, 1470093, 1710116, 1710119, 1710121, 1710124, 1720109, 0610071, 0620075, 0640090, 0650090, 0790084, 0840112 |
| Ohio River Gray Components - Diversion Weir Adjustment | Strategic diversion weir adjustments at several diversions consisting of raising the overflow elevation to provide CSO volume reduction. | 6.2 | 0960064, 0980081, 1440206, 1490132, 1870193 |

| Project Title | Project Description | 2040 Overflow Eliminated (MG) | Overflows Addressed |
|--|---|------------------------------------|---|
| Willow Run Detention Basin 5 of 9 | Installation of dynamic coordinated controls on 9 detentions basins 9 in the Willow Run sewershed. Automated control logic will throttle an outlet valve by incorporating wet weather forecasting and downstream capacity sensors at the CSO regulators. | 154 Upon Completion of Final Basin | 1480187 |
| SEPARATE SEWER OVERFLOW SOLUTIONS | | | |
| Vernon Lane RDII Removal | Vernon Lane II Removal is located in the upstream portion of the Licking River Siphon sewershed. This project included both public and private source RDII removal over a 67-acre area and included removal of numerous direct connections from downspouts and area drains. The project included the installation of approximately 2,600 feet of 8-inch to 18-inch sanitary sewer, approximately 650 feet of 6-inch lateral piping, and approximately 1,300 feet of 12-inch to 24-inch storm sewer. | 4.4 | 260002 |
| Elsmere Corridor Capacity Upgrade | Gravity upgrade of existing infrastructure includes 8,700' of 30", 24", and 18" pipe installation. This project is located in Kenton County upstream of the Narrows Rd Pump Station. | 3.5 | 2070019, 2090008, 2090063, 2100002, 2100036, 2100106, 2100129, 2110001, 2110002 |
| Richwood Pump Station & Force Main | Richwood pump station and force main redirects flows away from the capacity limited Southern Kenton Interceptor and towards the Western Regional Union Sewer. This project was designed to maximize the investment SD1 made in the Western Regional WRF and associated conveyance tunnel which was designed to accommodate these diverted flows. The project consisted of a new 7.5 mgd (firm-capacity) pump station and approximately 18,600 feet of 20-inch through 24-inch force main. | 3.6 | 2280023 |
| Allen Fork Pump Station Upgrade | Allen Fork pump station upgrades were completed to address persistent maintenance issues and provide additional capacity. The pump replacements were designed to increase the station's firm capacity from 2.5 mgd to 3.4 mgd. | 0.01 | 2390002 |

| Project Title | Project Description | 2040 Overflow Eliminated (MG) | Overflows Addressed |
|--|--|-------------------------------|------------------------------------|
| Highland Heights -Silver Grove EQ Tanks | Construction of an above ground 1.4 MG EQ tank at the Highland Heights PS and an above ground 1.6 MG EQ tank at the Silver Grove PS to contain typical year SSOs that are a result of flows that exceed the pumping capacity of the stations. Each facility utilizes a wet weather pump station to pump excess flows to the EQ tanks, which have controlled gravity lines back to the collection system. | 22 | 0020006, 0020007, 0020008, 0020032 |
| Licking River Double Siphon | Construction of a second 12-inch siphon under the Licking River to the combined system with horizontal directional drilling. The parallel siphon is required to accommodate future conveyance improvements in the Licking River Siphon sewershed and will work in conjunction with the Licking River Siphon EQ tank. | 42 | 860001 |
| Licking River Siphon EQ Tank | Construction of an above ground 7.3 MG EQ tank near Andrews Way and Three Mile Creek to store flows in excess of the Licking River Siphon downstream. The project works with the Licking River double siphon project by lowering the hydraulic grade line in the existing sewers, mitigating CSO impacts, and eliminating the LRS SSO. The tank is sized to accommodate additional flow from conveyance projects upstream to be completed by 2040. | 5 | 860001 |
| Bromley Crescent Springs Conveyance | This conveyance upsizing is a multi-phase project that addresses ongoing maintenance and safety issues by preventing displacement of manhole covers in the roadway due to system surcharge. The project consists of 6,050 feet of 30-inch through 42-inch sanitary sewer upsizing. The upsizing would begin at manhole 1730027 and would extend upstream to manhole 1790092. | 1.3 | 1730084, 1730085, 1730086 |
| <ul style="list-style-type: none"> BCSC Phase 1 | The completed BCSC Phase 1 of this project includes upsizing from MH1730087 – MH1730027. | | |

| Project Title | Project Description | 2040 Overflow Eliminated (MG) | Overflows Addressed |
|---|---|-------------------------------|---|
| Waterworks Road Conveyance Phase II | This multi-phase project consists of 11,020 feet of 10-inch through 24-inch and 1,450 feet of 42-inch sanitary sewer upsizing. The 10-inch through 24-inch upsizing would begin at manhole 0530121 and would extend upstream to manholes 0380005 and 0400034. The 42-inch upsizing extends between manhole 0650097 and 0650022 and discharges to the recently constructed 54-inch sewer along Riveria Drive. This conveyance upsizing will convey additional flow to the combined system and the planned Taylor Creek EQ tank downstream. The downstream combined system solution has been configured to accommodate the additional flow. | 3.0 | See Phase Breakdown Below |
| <ul style="list-style-type: none"> WRC Phase 1 | The completed WRC Phase 1 of this project includes upsizing from MH0410115 – MH0400034. | | 0370001, 0400002, 0400034, 0410037, 0410039 |
| <ul style="list-style-type: none"> Strathmore / Memorial Parkway | This completed phase consisted of conveyance upsizing to 30-inch sewers at Strathmore & Rosemont, as well as, conveyance upsizing along Memorial Parkway. | | 0380005 |
| 2034 Lakeview Conveyance | The Lakeview 2034 solution includes the impact of redirected flow to Western Regional from the Richwood PS/FM project and the W6 pump station to be constructed by 2029. These projects relieve significant flows to the Lakeview system. | 1.3 | See Phase Breakdown Below |
| <ul style="list-style-type: none"> Highland Pike HDD Gravity | This completed project consisted of the installation of approximately 2,300 feet to 20-inch HDD gravity sewer along Highland Pike from MH1940039 – MH1940263. | | 1940038, 1940039 |
| 2029 LRS Conveyance Piping | 6,050 ft of 24-in through 48-in sanitary sewer upsizing which will convey additional flow to the LRS EQ Tank and is sized for additional upstream improvements to be constructed by 2040. | 5 | See Phase Breakdown Below |
| <ul style="list-style-type: none"> Phase 1 | Completion of Phase 1 includes the portion consisting of MHs 0860110-0150066 & 0150319-0150009 | | NA |

| Project Title | Project Description | 2040 Overflow Eliminated (MG) | Overflows Addressed |
|--|--|-------------------------------|---------------------------|
| 2040 Dry Creek Conveyance | Current and projected SSO locations in the Dry Creek sewershed are proposed to be addressed via conveyance improvements and targeted I/I removal to address SSOs in upstream portions of the system | 1.4 | See Phase Breakdown Below |
| <ul style="list-style-type: none"> Fitzgerald Phase 1 | 18" Sanitary sewer upsizing between MH2130029 – 2130028 in the City of Erlanger. This project is one phase of the DC Conveyance project which once completed will address SSOs in they DC Sewershed by increased conveyance to the DCWWTP. | | NA |

SECTION 8. PROJECT SPOTLIGHT – SURFACE STORM WATER DETENTION BASINS

The UWSP alternative evaluation process placed special emphasis on the potential for using surface stormwater detention basins as part of the CSO solution. Surface detention basins were proposed in the original watershed plan as part of the green infrastructure component, but at that time were subject to additional evaluation and pilot testing prior to decisions on degree of implementation. Since that time, SD1 has recognized that while explicit green infrastructure applications remain an option for any installed basin, these basins also provide two independent benefits – detention of stormwater with subsequent delayed release into the CSS (reducing CSO volume) and surface flooding mitigation by detaining peak flows. These two benefits alone warrant inclusion of selected surface detention basins in the solution.

With these benefits in mind, SD1 conducted a full evaluation of candidate surface detention basin sites in the combined sewer area. Based on the results of that evaluation, SD1 began implementing the Willow Run Detention Basin Pilot Project. This project includes the installation of controls on 9 detention basins in the Willow Run sewershed. This project has a total drainage area of approximately 717 acres which represents approximately 38 percent of the entire Willow Run drainage area and has a total storage capacity of approximately 43.4 million gallons. Each of these detention basins have enough capacity to completely store and detain a significant amount of runoff volume corresponding with the typical year rainfall events that currently contribute to CSO discharges.

This project incorporates dynamic coordinated controls on these basins to reduce CSO volume. Discharge from each completed basin will be controlled based on detention basin level and available capacity at the downstream Willow Run regulator. Controls then throttle an outlet valve to store as much stormwater as possible just prior to a CSO overflow event at the regulator and drain each basin as capacity becomes available at the regulator. For large storm events, predictive weather capabilities can be employed to actively drain each basin prior to the storm event, to maximize flooding reduction benefit.

At the end of FY2024, SD1 has completed 5 of the 9 basins detailed within this project eliminating an estimated typical year runoff volume of 47.9 MG. The locations of these completed detention basins are shown in Figure 8-1. Figure 8-2 is a photograph of the RTCs located at the Monte Lane / Benton Road basin and Figure 8-3 shows the operational functionality of the Highland Avenue basin during a storm event.

Figure 8.1 Completed Surface Water Detention Basins

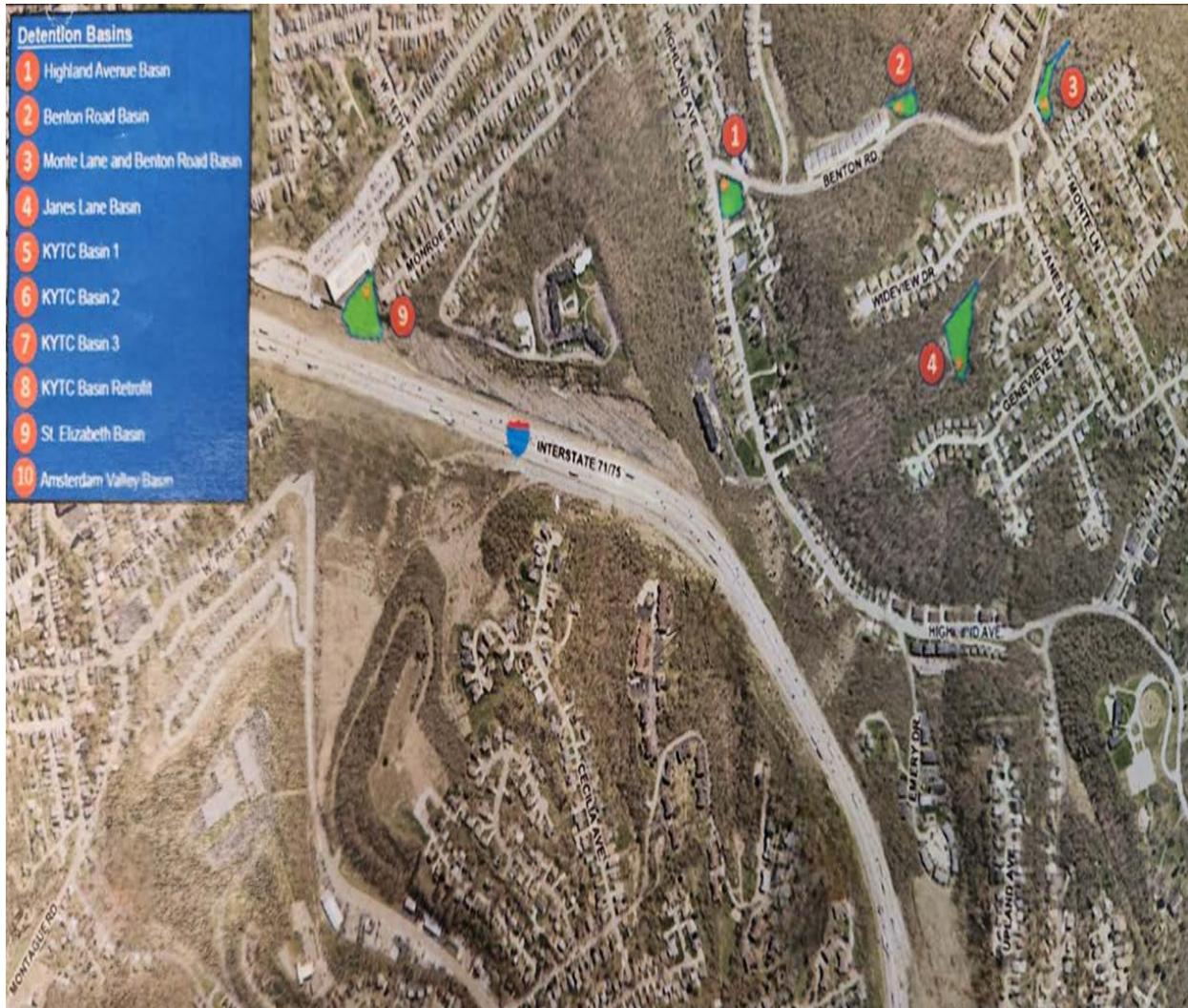


Figure 8.2 Monte Lane / Benton Road Basin - Real Time Controls



Figure 8.2 Highland Avenue Basin - Operational Functionality

