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January 30, 2019

Director
Division of Enforcement
Department for Environmental Protection
300 Sower Boulevard
Frankfort, KY 40601

Chief, NPDES Permitting & Enforcement Branch
Municipal & Industrial Enforcement Section
U.S. EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington, DC 20044-7611

Subject: Quarterly Report 53
Civil Action No. 3:08-cv-00608-CRS

Attention Director and Chiefs:

Please find attached our Quarterly Report, prepared in accordance with Paragraph 29 of our Amended Consent Decree. This report is for the period October 1, 2018 – December 31, 2018, pertaining to Consent Decree compliance activities. Included are sections on Project WIN activities related to: NMC, SORP, Discharge Abatement Plans, Public Outreach, Education, Notification and Participation, CMOM and Performance Overview.

I certify under penalty of law that this document and all attachments were prepared under our 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.

If you have questions or need additional information, please contact me at (502) 540-6136.

Sincerely,

Angela Akridge

Angela Akridge, PE
Louisville MSD Chief Engineer

cc: James A. Parrott
Paula Purifoy
File

Louisville and Jefferson County Wet Weather Consent Decree Quarterly Report #53

Reporting Period:
October 1, 2018 through December 31, 2018

Submitted To:
Kentucky Department of Environmental Protection
United States Environmental Protection Agency
United States Department of Justice

Submitted By:
Louisville and Jefferson County Metropolitan Sewer District
700 W. Liberty Street
Louisville, Kentucky 40203-1911

Submittal Date:
January 30, 2019

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INTRODUCTION

The Louisville and Jefferson County Metropolitan Sewer District (MSD) is currently under an Amended Consent Decree with the Kentucky Department of Environmental Protection (KDEP), the United States Environmental Protection Agency (EPA), and the United States Department of Justice. The Amended Consent Decree was signed by United States District Judge Simpson on April 10, 2009 and filed in United States District Court, Western Division of Kentucky, Louisville Division, on April 15, 2009.

Quarterly Reporting Period

This is the fifty-third Quarterly Report submitted in accordance with Paragraph 29 of the Amended Consent Decree. This report covers the time period from October 1, 2018, through December 31, 2018. The structure for this report is outlined as follows:

Section 1: Program Activities for Nine Minimum Controls (NMC) – This section describes the data collected for NMC 2 – Maximization of Storage in the Collection System, and NMC 4 – Maximization of Flow at the Morris Forman Water Quality Treatment Center (WQTC) that were active during the reporting period.

Section 2: Program Activities for Sewer Overflow Response Protocol (SORP) – This section describes the training attendance records, overflow data, and overflow reconnaissance inspection routes related to SORP that were active during the reporting period.

Section 3: Program Activities for Discharge Abatement Plans (DAP) – This section describes the schedule and status for projects related to the DAP by means of an updated Gantt chart for active DAP projects during the reporting period. This section also includes the anticipated projects and activities that are scheduled for continued compliance with the Amended Consent Decree.

Section 4: Program Activities for Public Outreach, Education, Notification and Participation – This section describes the activities related to public outreach that were active during the reporting period.

Section 5: Capacity Management Operations and Maintenance (CMOM) Report – The CMOM program activities and programmatic activities for WQTCs generating capital projects are reported in a Gantt chart for the reporting period. This section also includes the schedule for activities planned for the next reporting period for continued compliance with the Amended Consent Decree.

Section 6: Project Waterway Improvements Now (WIN) Performance Overview – This section provides an accounting of unauthorized discharges from the separate sanitary and combined sewer systems, and the estimated volumes along with performance information on bypasses at WQTCs. A discussion of the probable reductions in both unauthorized discharge points and the discharges from MSD's Combined Sewer Overflow (CSO) locations, identified in the Morris Forman Water Quality Treatment Center Kentucky Pollutant Discharge Elimination System (KPDES) permit, that are expected to result from MSD's projects and activities during the reporting period are also contained in this section.

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SECTION 1: PROGRAM ACTIVITIES FOR NINE MINIMUM CONTROLS (NMC)

1.1. NINE MINIMUM CONTROLS PROGRAM BACKGROUND

Per Paragraph 24.a. of the Amended Consent Decree, the Nine Minimum Controls (NMC) Compliance Report was initially submitted to EPA and KDEP on February 10, 2006. MSD received approval of the report on February 22, 2007. The approved NMC compliance document can be viewed on the MSD Project Waterway Improvements Now (WIN) website, available at **www.msdprojectwin.org**. Highlights of the NMC program implementation over this reporting period are outlined below.

1.2. NMC 2: MAXIMIZATION OF STORAGE IN THE COLLECTION SYSTEM

MSD has continued operation of Phase 1 and Phase 2 of the Real Time Control (RTC) system. During this reporting period, approximately 318 MG were stored in the system during rain events and routed to the Morris Forman WQTC once the system was able to handle the flow. See Table 1.2 at the end of this section for a detailed report.

The following identifies on-going activities; those completed during the current period; and those anticipated to be completed during the next period:

- RTC Integration – MSD and the RTC consultant continue to implement the wet weather standard operating procedures (SOPs) incrementally, starting with a period of manual operation to validate the control assumptions, followed by increasing levels of system automation as the automated controls for individual components are implemented, validated, and then incorporated into the overall RTC system.

  During this reporting period, MSD and the RTC consultant completed programming, local site startup, and commissioning of the Southern Outfall Retention 1 in-line storage facility and the Logan and Breckinridge off-line storage basin into the RTC system. MSD and the RTC consultant continue to monitor and evaluate the performance of the RTC system against operational objectives and issue updates to configurations and site tuning as necessary to improve performance of the recently integrated facilities and Csoft 4.

  MSD and the RTC consultant began developing RTC programming guidance for the Nightingale PS facility.

  During the next reporting period, MSD will continue implementing RTC SOPs and validating operations of the Southwestern PS (SWPS), Southwestern Sluice Gates (SWSG/SWOR1), Bells Lane Wet Weather Treatment Facility, Nightingale PS and the Clifton Heights Basin in preparation for commissioning these sites into RTC during 2019. In addition, MSD will begin developing the RTC SOP for the Portland Wharf Basin and evaluating and assessing the possibility of incorporating additional data points into the RTC system to improve flow prediction capabilities.

- RTC Performance Assessment and Improvements – The main objective of the RTC performance assessment is to determine whether the available flow and storage capacities within the system are utilized to their optimal potential. MSD staff continues to review and prioritize strategies for performance improvement. During the next reporting period, MSD staff and the RTC consultant will continue to implement hardware, software, and set-point changes as applicable on a site-by-site basis.

  MSD implemented an Open Platform Communications (OPC) protocol for the transfer of data to the RTC system, reducing scripting requirements and improving the reliability of data transfer to Csoft 4.

  The Ashland RTC Facility Upgrade project began and the contractor began making submittals to MSD for approval and began ordering equipment. The final design for the Ashland project provides for the replacement of the existing gate, check valves, and actuator, as well as installation of a backup generator. Construction of the Ashland RTC Facility Upgrades will begin during the next reporting period.

  MSD completed negotiations and contracting for 2019 with the RTC consultant. However, the Sneads Branch design which would eliminate the existing pump station by installing an actuated gate to enable the transfer of stored volumes to existing infrastructure and utilize the Logan CSO Basin pumps for dewatering the facility has been placed on hold.

  MSD will continue to monitor the RTC system to ensure proper operation under Csoft 4 and further refine operations of the RTC system. MSD and the RTC consultant will continue to refine the local site tuning of the SOR1 Facility, improve calibration of the Flow over the Weir equation at the Northern Ditch Diversion Structure, and continue to refine the operation of SWOR2 facility relative to downstream operations at the SWPS, SWSG/SWOR1, and the Bells Lane Facility.

1.3. NMC 4: MAXIMIZATION OF FLOW AT THE MORRIS FORMAN WATER QUALITY TREATMENT CENTER

Plant Outages

The East and West Headworks were in service during the reporting period. Channels were taken out of service due to low flow as appropriate. Channel Two of the East Headworks was taken out of service for the last month of the reporting period for contractor work. The Final Effluent Pump Station (FEPS) was in service 59 days of the reporting period limiting plant flow to 205 MGD. Flows at Morris Forman WQTC were sustained between 84 and 130 MGD, with some exceptions discussed below, before allowing flow to bypass secondary treatment during the reporting period. Flows are shown in Figures 1.1 through 1.3.

Morris Forman WQTC Projects

- Morris Forman WQTC Headworks Replacement – This project modified the existing preliminary treatment processes for screening, screenings conveyance, grit removal, and grit dewatering and conveyance processes along with the associated electrical, instrumentation and controls, and heating ventilation air condition (HVAC) modifications supporting the treatment equipment. The project is operational and achieved contractual final completion. Close out items will be completed in the next

reporting period. Improvements to the Main Diversion Structure, completed as a separate project, but combined into one IOAP project, also achieved substantial completion in this reporting period.

- Morris Forman WQTC High Yard Modifications – Project reached substantial completion May 9, 2018. Completion is projected for the third quarter of FY19.
- Morris Forman WQTC Oxygen Generation Plants 1 and 2 Replacement – System installation is substantially complete and providing 100% of the oxygen demand to the facility. Plant SCADA system programming and signal testing of instrumentation and controls are nearly complete. Piping modifications were complete in the last month of the reporting period.
- MCC Replacement for Batteries A & B Clarifiers – Preliminary Engineering Report was completed in the third quarter of FY19. Design is expected to be underway by the end of FY19.
- MFWQTC Truck Unloading station design is complete. Construction is expected to start by the fourth quarter FY19.
- MFWQTC Primary Sludge Line Replacement Project – Design of the project is underway and construction is expected to start within FY19.
- MFWQTC Cake Pump 2 and East Cake Truck Bay Recovery – The project was in the design phase during this reporting period as two separate projects, but will be combined into one project. It will continue in design the next reporting period. This project will add a larger cake pump to the existing screw and pump conveyance systems for additional cake solids conveyance to the cake truck load out for offsite disposal. The project will also provide modifications to the East Cake Truck Bay to allow this second truck bay to be available for cake solids load out for offsite disposal. The project will add a third means for cake solids transfer to the load out bay and allow two trucks to be loaded from the West and East truck bay areas.

Morris Forman WQTC Performance

Figures 1.1 through 1.3 located at the end of this section illustrate performance in maximizing flow during wet weather to the Morris Forman WQTC. The top of the chart shows rainfall in inches per day. The middle part of the chart shows Morris Forman WQTC effluent flow and secondary treatment flow. The difference between these flows is the secondary bypass flow. The bottom of the chart shows days with a CSO activation at the five CSOs in the vicinity of the Morris Forman WQTC (CSOs 015, 016, 191, 210, and 211).

Note that the flow meter downstream from CSO211 is known to be affected by Ohio River backwater effects and the ultrasonic signal is sometimes blocked by mist and condensation when air and sewage temperatures are significantly different. Therefore, CSO activations at CSO211 are keyed to water levels upstream and downstream of the inflatable dam in the Main Diversion Structure. The other CSO activations are tied to flow measurement downstream of the respective CSO. At times, “blips” representing very small volumes of overflow are indicated by flow meters even though an overflow cannot be verified by level measurements or other indicators. These blips are not reported as overflows, but are noted in the CSO monitoring data reported in Appendix B. In addition, indications of rainfall and CSO activations are shown on the day they happened, but are not aligned with the exact time, so the effluent flow graph (which is tied to actual time) may show peaks that are offset from the indicated rain or CSO events by as much as 24 hours.

On multiple occasions shown in Figures 1.2 and 1.3, secondary effluent flow fell slightly below 120 MGD in November and December, when FEPS was in service. MSD is investigating options for more reliable plant telemetry to reduce these occurrences.

Morris Forman effluent compliance for the previous three months is summarized in Table 1.1, where a "✓" indicates compliance and an "X" indicates noncompliance. MSD continues to employ additional solids processing methods, including dewatered cake and an outside vendor to assist with solids handling in addition to purchasing additional liquid oxygen in an effort to meet permit requirements.

Table 1.1. Morris Forman WQTC Permit Compliance

PARAMETER	OCT	NOV	DEC
Ammonia Nitrogen, 30 Day Secondary Effluent	✓	✓	✓
Ammonia Nitrogen, 7 Day Secondary Effluent	✓	✓	✓
BOD, 30 Day Secondary Effluent	X	X	X
BOD, 7 Day Secondary Effluent	X	X	X
BOD, Percent Removal	X	✓	X
Chlorine, Residual	✓	✓	✓
Dissolved Oxygen	✓	✓	✓
Fecal Coliform, 30 Day Geomean	✓	✓	✓
Fecal Coliform, 7 Day Geomean	✓	✓	✓
pH	✓	✓	✓
TSS, 30 Day Secondary Effluent	X	X	X
TSS, 7 Day Effluent	X	X	X
TSS, Percent Removal	X	X	X

1.4. NMC ACTIVITY SCHEDULE

NMC capital project milestones for the current reporting period as well as a look-ahead for the upcoming reporting period are provided in Figure 1.4.

Table 1.2. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

Event Number	Wet Weather Event			Rainfall			CSO Saved Volume (MG)									High River Levels	Comments
	Start Date	End Date	Duration	Average*	Max**		SWPS SG Chamber (14.5)	SWOR2 (4.1)	Brady Lake and Executive Inn Storage (13.4)	Southern Outfall (3.5) or SOR1 (20.6)	Ashland (1.0)	Ohio River Interceptor (4.1)	Sneads Branch (2.5)	Logan (17)	Total (43.1)		
				TRFD (in)	TRFD (in)	Rain Gauge											
2018-082	10/10/18 15:45	10/11/18 1:30	9:45:00	0.18	0.65	TR04	0.70	0.60	0.30	0.90	0.15	2.20	0.00	-	4.85	0	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-083	10/12/18 21:10	10/13/18 6:05	8:55:00	0.13	0.15	TR12	0.00	0.20	0.25	0.00	0.10	0.90	0.00	-	1.45	0	Small back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-084	10/14/18 2:50	10/15/18 17:10	38:20:00	0.48	0.60	TR12	2.20	0.90	0.75	0.30	0.15	1.35	0.10	-	5.75	0	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-086	10/26/18 13:20	10/27/18 7:05	17:45:00	0.22	0.26	TR11	0.00	1.05	0.55	0.05	0.40	2.05	0.05	-	4.15	0	Small storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-087	10/31/18 10:55	11/3/18 6:00	67:05:00	2.23	2.42	TR11	22.65	6.40	14.65	7.40	1.55	8.70	2.50	-	63.85	0	Very Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-089	11/5/18 17:55	11/8/18 11:45	65:50:00	1.26	1.57	TR14	18.10	5.10	11.55	3.45	1.25	4.05	1.55	-	45.05	0	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-091	11/12/18 18:00	11/13/18 12:20	18:20:00	0.10	0.12	TR14	0.00	0.10	0.00	0.00	0.00	0.60	0.00	-	0.70	0	Small storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-092	11/14/18 20:45	11/16/18 18:10	45:25:00	0.43	0.87	TR05	11.85	3.55	5.50	3.15	0.85	3.70	0.70	-	29.30	0	Moderate back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-094	11/23/18 20:20	11/24/18 11:35	15:15:00	0.35	0.43	TR14	0.00	0.50	0.10	0.00	0.10	1.45	0.00	-	2.15	0	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-095	11/25/18 22:00	11/26/18 6:55	8:55:00	0.12	0.13	TR11	0.00	1.65	0.15	0.00	0.15	1.15	0.05	-	3.15	0	Small storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-097	12/1/18 1:25	12/3/18 21:30	68:05:00	1.59	1.72	TR12	13.05	3.85	8.50	3.05	0.95	3.60	1.75	-	34.75	0	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-098	12/14/18 12:05	12/17/18 10:20	70:15:00	1.53	1.72	TR12	19.95	5.65	11.60	16.30	1.40	3.50	2.25	16.65	77.30	0	The SOR1 RTC site replaces the MDS Southern Outfall RTC site and it will remain so for future events (events # 2018-098, 099 and 100 for this report). The Logan site is also add to the analysis and will remain so for future events. Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-099	12/20/18 11:00	12/21/18 14:20	27:20:00	0.60	0.65	TR12	7.05	3.85	1.45	0.00	0.85	1.95	0.05	3.50	18.70	0	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-100	12/27/18 8:50	12/28/18 14:55	30:05:00	0.41	0.49	TR11	8.90	2.75	1.85	3.90	0.80	3.55	0.45	4.60	26.80	1	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
TOTAL							**104.45**	**36.15**	**57.20**	**38.50**	**8.70**	**38.75**	**9.45**	**24.75**	**317.95**		

* Average total rainfall depth based on rain gauge TR04, TR05, TR11, TR12, TR13, TR14 and TR15
** Maximum total rainfall depth measurement and measurement location during the wet weather event
*** MDS is always controlled manually by operators

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Figure 1.1. Morris Forman WQTC – Plant Flows and Associated CSO Activations – October

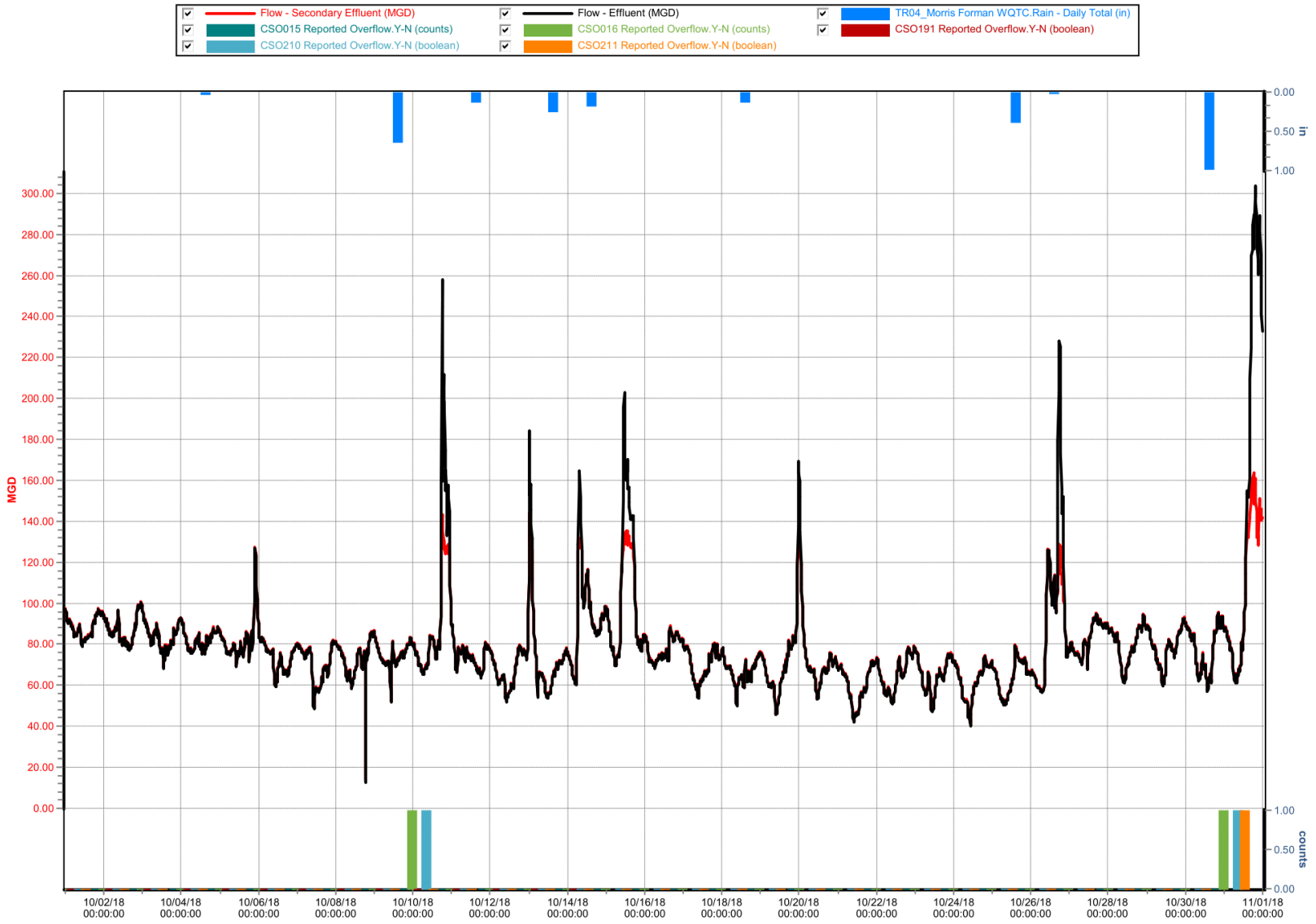


Figure 1.2. Morris Forman WQTC – Plant Flows and Associated CSO Activations – November

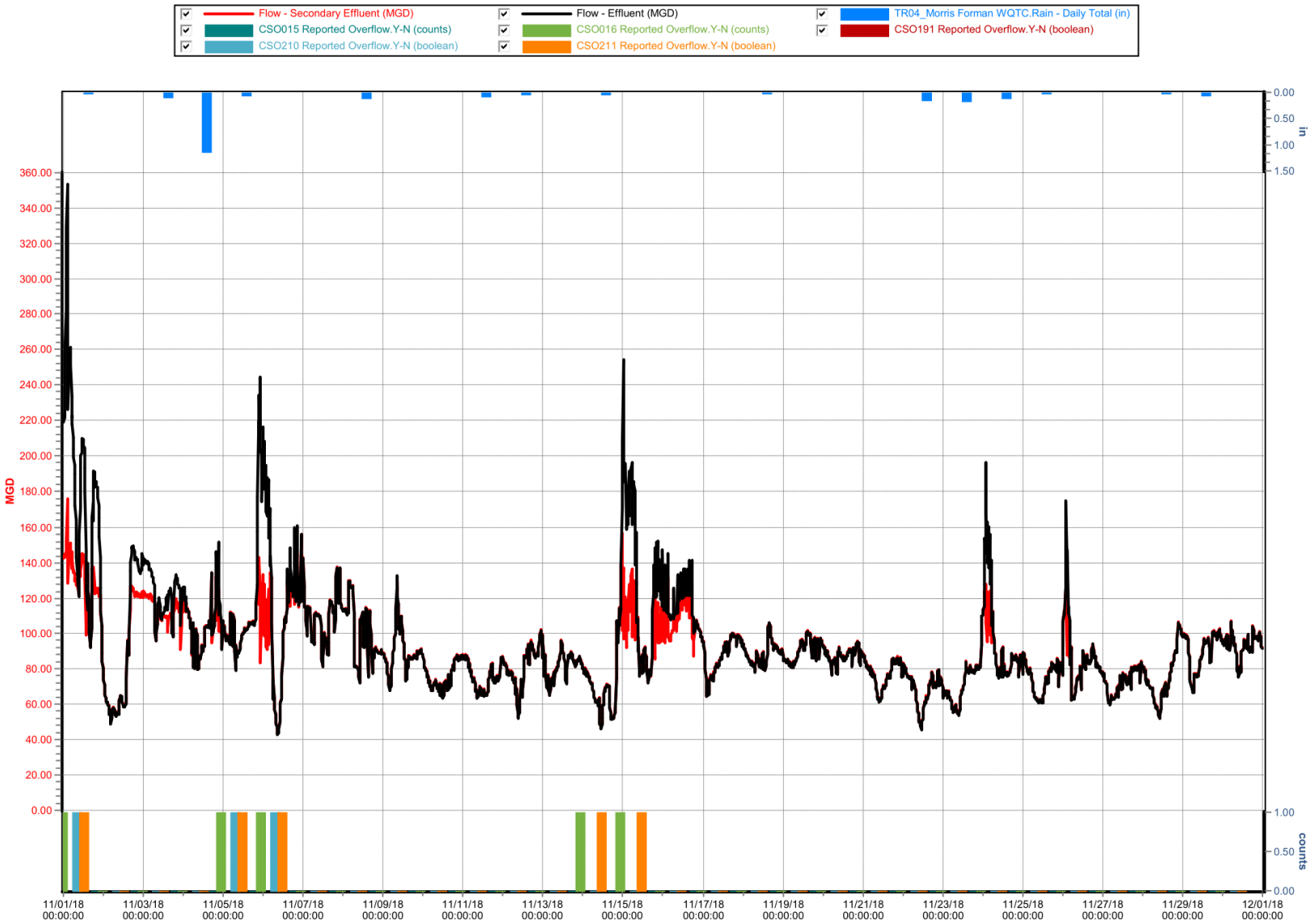


Figure 1.3. Morris Forman WQTC – Plant Flows and Associated CSO Activations – December

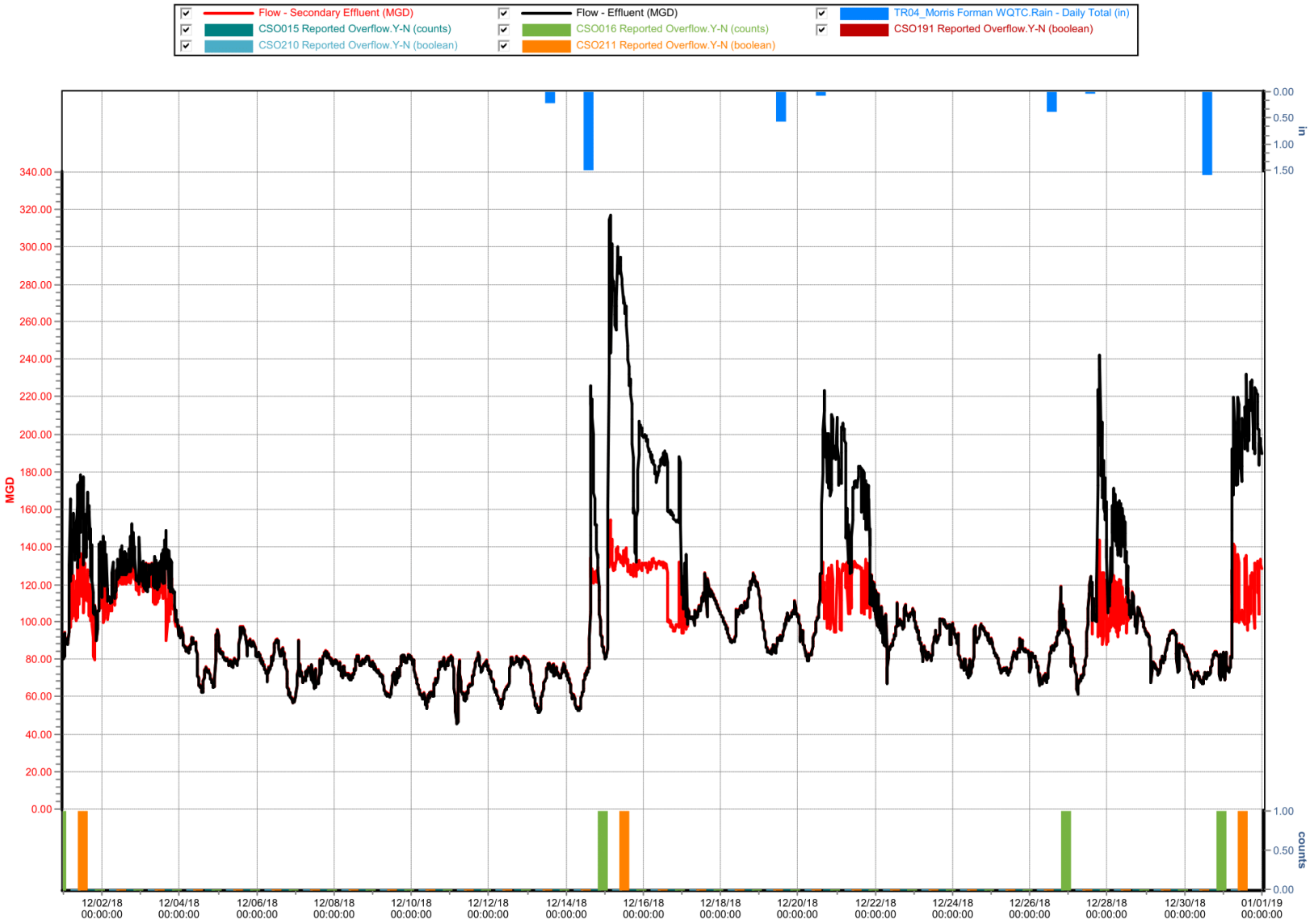
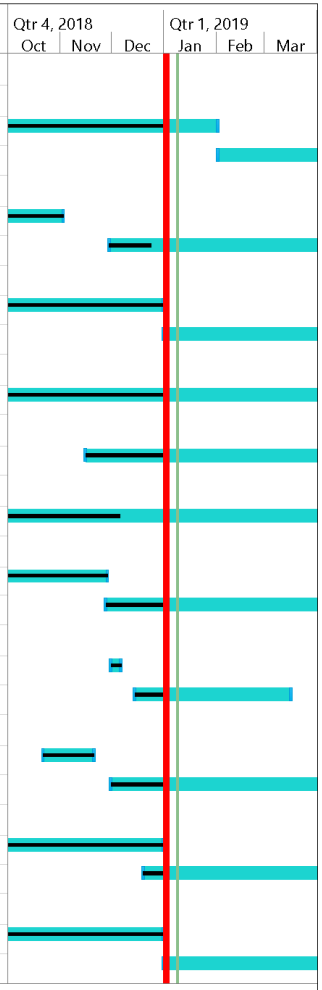


Figure 1.4. NMC Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
	MSD NMC Quarterly Commitments Schedule	**64%**	**Fri 8/15/14**	**Wed 6/9/21**
D18085	**MFWQTC Louisville Green Equipment Rebuild**	31%	Mon 7/2/18	Mon 1/25/21
D18085	**INITIATION & PROCUREMENT**	85%	Mon 7/2/18	Fri 2/1/19
D18085	**DESIGN**	0%	Fri 2/1/19	Thu 7/4/19
D19046	**MFWQTC Ground Water Well 10 Replacement**	20%	Mon 7/2/18	Fri 2/14/20
D19046	**INITIATION & PROCUREMENT**	100%	Mon 7/2/18	Fri 11/2/18
D19046	**CONSTRUCTION**	17%	Fri 11/30/18	Sat 4/20/19
H19264	**FY19 CSO_IOAP Support**	1%	Sun 7/1/18	Sun 6/30/19
H19264	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H19264	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H19259	**FY19 NMC No 3 Local Limits for Regional WQTCs**	46%	Sun 7/1/18	Sun 6/30/19
H19259	**CLOSEOUT**	46%	Wed 8/1/18	Sun 6/30/19
D19044	**MFWQTC Primary Sludge Pump Compressor**	22%	Sun 7/1/18	Tue 7/30/19
D19044	**CONSTRUCTION**	20%	Fri 11/16/18	Sun 6/30/19
F16003	**Ashland RTC Facility Upgrades**	72%	Fri 4/1/16	Mon 3/16/20
F16003	**CONSTRUCTION**	59%	Mon 4/16/18	Mon 5/20/19
H18333	**Bells Lane WWTF EQ Basin Modifications**	48%	Wed 4/18/18	Tue 9/24/19
H18333	**CONSTRUCTION**	100%	Fri 6/1/18	Wed 11/28/18
H18333	**CLOSEOUT**	12%	Wed 11/28/18	Tue 9/24/19
D18127	**DRGWQTC Hypo Containment**	9%	Sat 12/1/18	Tue 6/30/20
D18127	**INITIATION & PROCUREMENT**	100%	Sat 12/1/18	Thu 12/6/18
D18127	**DESIGN**	18%	Sat 12/15/18	Sat 3/16/19
D18118	**MFWQTC Truck Unloading Station Pavement Repair**	43%	Fri 4/27/18	Tue 2/11/20
D18118	**DESIGN**	100%	Mon 10/22/18	Wed 11/21/18
D18118	**CONSTRUCTION**	24%	Sat 12/1/18	Wed 4/17/19
D19049	**MFWQTC West Freight Elevators**	11%	Wed 5/9/18	Thu 10/22/20
D19049	**INITIATION & PROCUREMENT**	99%	Wed 5/9/18	Tue 1/1/19
D19049	**CONSTRUCTION**	3%	Thu 12/20/18	Fri 12/27/19
H19139	**NMC CSO Inspection Cameras**	1%	Sun 7/1/18	Sun 6/30/19
H19139	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H19139	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19



Data Date: 12/31/18

NMC Project

Project Progress

Percent complete is calculated based on phase duration.

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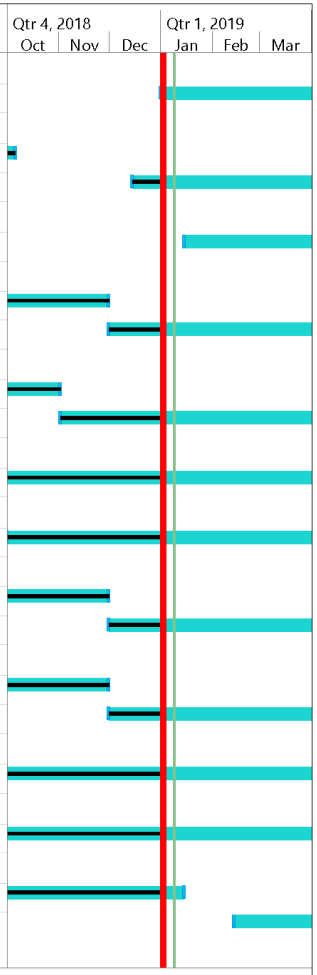
Figure 1.4. NMC Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H16076	**Sneads Branch Pump Replacement**	15%	Thu 1/11/18	Tue 11/24/20
H16076	**DESIGN**	0%	Tue 1/1/19	Mon 6/3/19
F18322	**Southwestern Gates Chamber Support Wall**	56%	Thu 3/1/18	Fri 4/10/20
F18322	**DESIGN**	100%	Wed 4/11/18	Fri 10/5/18
F18322	**CONSTRUCTION**	11%	Sat 12/15/18	Sat 6/15/19
F17079	**Southwestern Sluice Gate Replacement**	99%	Mon 10/3/16	Fri 6/28/19
F17079	**CLOSEOUT**	0%	Tue 1/15/19	Fri 6/28/19
D19242	**FY19 Hazen DRGWQTC Engineering Support**	15%	Sun 7/1/18	Sun 6/30/19
D19242	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
D19242	**CLOSEOUT**	14%	Sat 12/1/18	Sun 6/30/19
D19241	**FY19 HDR MFWQTC Engineering Support**	25%	Sun 7/1/18	Sun 6/30/19
D19241	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Fri 11/2/18
D19241	**CLOSEOUT**	25%	Fri 11/2/18	Sun 6/30/19
D19243	**FY19 Jacobs MFWQTC Engineering Support**	43%	Sun 7/1/18	Sun 6/30/19
D19243	**CLOSEOUT**	43%	Fri 8/17/18	Sun 6/30/19
D18122	**FY19 MFWQTC Upgrade PLCs**	35%	Wed 1/31/18	Mon 8/5/19
D18122	**EQUIPMENT PROCUREMENT**	34%	Mon 10/1/18	Sun 6/30/19
H19063	**FY19 NMC No 3 Support**	15%	Sun 7/1/18	Sun 6/30/19
H19063	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
H19063	**CLOSEOUT**	14%	Sat 12/1/18	Sun 6/30/19
H16039	**FY19 NMC RTC**	11%	Sun 7/1/18	Mon 9/30/19
H16039	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
H16039	**CLOSEOUT**	10%	Sat 12/1/18	Mon 9/30/19
D19228	**FY19 Strand CCWQTC Engineering Support**	50%	Sun 7/1/18	Sun 6/30/19
D19228	**CLOSEOUT**	50%	Fri 7/6/18	Sun 6/30/19
D15020	**MFWQTC Cake Pump Phase II**	27%	Mon 3/12/18	Wed 6/9/21
D15020	**DESIGN**	62%	Tue 8/7/18	Wed 4/3/19
D18315	**MFWQTC East Cake Truck Bay Recovery**	58%	Wed 1/31/18	Mon 4/20/20
D18315	**DESIGN**	90%	Mon 8/20/18	Mon 1/14/19
D18315	**CONSTRUCTION**	0%	Wed 2/13/19	Sat 6/22/19



Data Date: 12/31/18

NMC Project

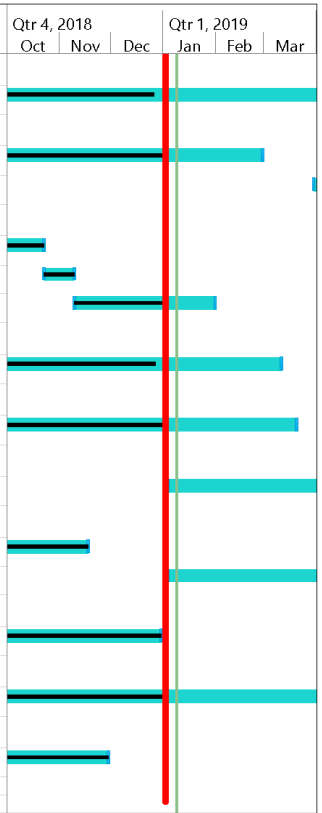
Project Progress

Percent complete is calculated based on phase duration.

Page 2

Figure 1.4. NMC Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
F14182	**MFWQTC FEPS Pump Repair and Motor**	56%	Wed 1/31/18	Thu 8/22/19
F14182	**EQUIPMENT AND SERVICES PROCUREMENT**	55%	Tue 3/6/18	Thu 8/22/19
D19227	**MFWQTC Primary Sludge Line Replacement**	43%	Sun 7/1/18	Mon 8/24/20
D19227	**DESIGN**	76%	Sun 7/1/18	Thu 2/28/19
D19227	**CONSTRUCTION**	0%	Sat 3/30/19	Sat 10/26/19
D18129	**MFWQTC Secondary Electrical MCC Upgrade**	83%	Wed 1/31/18	Thu 1/31/19
D18129	**INITIATION & PROCUREMENT**	100%	Wed 1/31/18	Mon 10/22/18
D18129	**DESIGN**	100%	Mon 10/22/18	Fri 11/9/18
D18129	**CLOSEOUT**	63%	Fri 11/9/18	Thu 1/31/19
D15017	**MFWQTC Centrifuge Electrical Controls**	95%	Wed 11/12/14	Mon 3/11/19
D15017	**CLOSEOUT**	84%	Wed 12/6/17	Mon 3/11/19
F14183	**MFWQTC FEPS Generator**	94%	Fri 6/5/15	Thu 3/21/19
F14183	**CLOSEOUT**	74%	Fri 5/25/18	Thu 3/21/19
F13016	**MF High Yard Modification**	99%	Thu 7/2/15	Thu 6/27/19
F13016	**CLOSEOUT**	0%	Fri 1/4/19	Thu 6/27/19
F09510	**MF OGA Plants 1 and 2 Replacement**	99%	Mon 9/14/15	Fri 9/13/19
F09510	**CONSTRUCTION**	100%	Tue 12/1/15	Sat 11/17/18
F09510	**CLOSEOUT**	0%	Fri 1/4/19	Fri 9/13/19
H17005	**RTC Support**	100%	Fri 7/1/16	Mon 12/31/18
H17005	**CLOSEOUT**	100%	Fri 7/1/16	Mon 12/31/18
D17047	**MF Brady Lake and Executive Inn Gate Study**	62%	Fri 9/1/17	Thu 7/25/19
D17047	**CLOSEOUT**	48%	Mon 6/25/18	Thu 7/25/19
H16357	**SWOR2 Generator**	100%	Fri 4/1/16	Fri 11/30/18
H16357	**CLOSEOUT**	100%	Fri 10/20/17	Fri 11/30/18



Data Date: 12/31/18

NMC Project

Project Progress

Percent complete is calculated based on phase duration.

Page 3

SECTION 2: PROGRAM ACTIVITIES FOR SEWER OVERFLOW RESPONSE PROTOCOL (SORP)

2.1. PROGRAM BACKGROUND

Per Paragraph 24.d. of the Amended Consent Decree, MSD initially submitted the Sewer Overflow Response Protocol (SORP) to EPA and KDEP on February 10, 2006, and received comments on March 13, 2006.

MSD completely revised the SORP documentation in 2011. The draft of this revised document was submitted for comment on August 22, 2011. Comments from EPA and KDEP were received and addressed, and the document was resubmitted October 28, 2011. Final approval of the updated SORP document was received February 21, 2012. Modifications were made to the document in 2016 to reflect the elimination of the Jeffersontown WQTC, and were approved on July 21, 2017. A hard copy of the approved document has been distributed to each division throughout MSD and a viewable, downloadable electronic version has been posted to the MSD Project WIN website, available at **www.msdprojectwin.org**. The following activities were performed during this reporting period.

2.2. OVERFLOW MANAGEMENT AND FIELD DOCUMENTATION

MSD monitored approximately 156 sanitary sewer overflow (SSO) sites, which have been grouped into routes based on the range of rainfall rates necessary to cause a SSO. These routes are monitored during rain events depending on the magnitude and location of the storm. If an overflow is observed, a Discharge Work Order is created to document the event. During this quarter, 35 unauthorized discharges were identified through route reconnaissance. Inspection routes were run during rain events, as described in Table 2.1.

MSD Operations staff hauled 108,400 gallons due to capacity-related issues during this reporting period. Hauling was also initiated due to other issues as indicated in Table 2.2.

Table 2.1. Rain Event Inspection Routes

DATE	ENGINEERING	HIKES POINT	JTOWN	JTOWN & FERN CREEK	MIDDLE FORK & MUDDY FORK	WEST COUNTY
November 1, 2018	X	X	X	X	X	X
November 5, 2018		X	X	X	X	X
November 6, 2018	X					

Table 2.2. Hauled Volumes in Gallons

PROBLEM	OCT	NOV	DEC
LACK OF SYSTEM CAPACITY	0	43,200	64,500
POWER OUTAGE (LGE)	0	38,700	0
STRUCTURAL FAILURE	0	40,000	0

2.3. STAFF TRAINING AND COMMUNICATION

MSD continued training through the online training delivery system, which allows more flexibility for employees to complete training at convenient times during the quarter and to integrate SORP training with new employee and contractor orientation.

Four modules were delivered under Reporting & Follow-up:

- Reporting Basics
- Hansen Reporting
- Paper-Based & Contingency Reporting
- Regulatory Reporting & Data Quality

A fifth module was delivered that included updates related to progress under the IOAP and projects under the CMOM and NMC programs. The content was delivered to 255 staff in Operations and Engineering.

Annual training was also delivered using the online format, and included modules on the SORP Overview and SORP Process, as well as a module that included updates related to progress under the IOAP and projects under the CMOM and NMC programs. The content was delivered to 360 staff across the organization.

First quarter training also utilizes the online format, and includes three modules under Preparing for Overflows, Monitoring & Mobilization:

- SORP Overview
- SORP Process
- Monitoring & Mobilization

These modules will be reviewed and updated as needed for delivery during the fourth quarter. A fourth module provides continued updates related to progress under the IOAP and projects under the CMOM and NMC programs and will also be updated for delivery.

SECTION 3: PROGRAM ACTIVITIES FOR DISCHARGE ABATEMENT PLANS (DAP)

3.1. INTEGRATED OVERFLOW ABATEMENT PLAN (IOAP)

As a requirement of the Amended Consent Decree, per Paragraph 25, MSD is to prepare and submit for review and approval discharge abatement plans for the elimination of unauthorized discharges from the separate sanitary and the combined sewer systems, the reduction and control of discharges from the CSO locations identified in the Morris Forman WQTC KPDES permit, and the improvement of water quality in the receiving waters.

The Final Sanitary Sewer Discharge Plan (SSDP) and the Final CSO Long Term Control Plan (LTCP) were submitted concurrently and certified on December 19, 2008, under the title of the Integrated Overflow Abatement Plan (IOAP). The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by a Federal Order signed February 12, 2010, and was entered into public record on February 15, 2010.

MSD submitted an IOAP modification request to EPA/KDEP on September 20, 2012, with partial approval granted via certified letter on October 25, 2012. The modified project package, including program descriptions, progress, and updated supporting text, was submitted to EPA/KDEP for approval on June 14, 2013. On June 19, 2014, MSD received approval of the 2012 IOAP Modification from EPA/KDEP. The project and program modifications proposed within this submittal resulted from additional information gathered from ongoing system monitoring, hydraulic modeling and best professional judgment. MSD's adaptive management approach to overflow abatement has justified modifications which provide a higher level of overflow control. These modifications will be completed faster than originally proposed for approximately the same overall budget.

Since the June 19, 2014, approval of the 2012 IOAP Modification, minor project modification requests have been submitted and approved on an individual project basis.

3.2. SANITARY SEWER DISCHARGE PLAN (SSDP)

The Sanitary Sewer Discharge Plan (SSDP) addresses the overflows and unauthorized discharges from the separate sanitary sewer system. Three separate plans have been submitted under this program as described below and outlined in Paragraph 25.a. of the Amended Consent Decree.

3.2.1. UPDATED SANITARY SEWER OVERFLOW PLAN (SSOP) IMPLEMENTATION

MSD prepared and submitted the Updated Sanitary Sewer Overflow Plan (SSOP) on February 10, 2006. This plan included an overview of the MSD sanitary sewer overflow abatement program and specific actions taken to reduce/eliminate overflows from the sanitary sewer system. This document included a list of the proposed improvements to be accomplished by December 31, 2008. Activities required under the Updated SSOP have been completed.

3.2.2. INTERIM SANITARY SEWER DISCHARGE PLAN (ISSDP)

MSD submitted an Interim Sanitary Sewer Discharge Plan (ISSDP) for approval on September 30, 2007. Comments were received on January 8, 2008. MSD resubmitted the revised ISSDP on March 7, 2008, and received an approval letter for the ISSDP on July 24, 2008. The approved document can be viewed on the MSD Project WIN website, available at **www.msdprojectwin.org**.

All projects required by the ISSDP have been completed and certified. The Derek R. Guthrie WQTC Project's completion was delayed in accordance with the construction contract documents due to existing litigation and performance by the general contractor. However, the full functionality and capacity of the plant upgrades under this project met the demands of the service area. With this understanding, a revised certification letter dated October 19, 2015, was submitted certifying that the Derek R. Guthrie WQTC Project is performing in accordance with its stated intent and purpose, and is in compliance with the Consent Decree requirements.

3.2.3. FINAL SANITARY SEWER DISCHARGE PLAN (SSDP)

MSD submitted for approval a Final SSDP on December 19, 2008, as Volume 3 of the IOAP. The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by a Federal Order signed February 12, 2010, and was entered into public record on February 15, 2010. A revised SSDP was included in the 2012 IOAP Modification, submitted on June 14, 2013. On June 19, 2014, MSD received approval of the 2012 IOAP Modification from EPA/KDEP. The approved document can be viewed on the MSD Project WIN website, available at **www.msdprojectwin.org**.

3.3. CSO LONG TERM CONTROL PLAN (LTCP)

The CSO Long Term Control Plan (LTCP) addresses the overflows and unauthorized discharges from the Combined Sewer System (CSS). Two separate plans have been submitted under this program as described below and outlined in Paragraph 25.b. of the Amended Consent Decree.

3.3.1. INTERIM CSO LONG TERM CONTROL PLAN (LTCP)

The Interim CSO LTCP was initially submitted to EPA and KDEP on February 10, 2006, and MSD received an approval letter dated February 22, 2007. The approved Interim LTCP can be viewed on the MSD Project WIN website, available at **www.msdprojectwin.org**. This plan includes an overview of the MSD program, efforts taken to reduce/eliminate discharges from the CSS, and the list of proposed improvements to be accomplished by December 31, 2008. All projects associated with this plan have been completed.

3.3.2. FINAL CSO LONG TERM CONTROL PLAN (LTCP)

MSD submitted for approval the Final CSO LTCP on December 19, 2008, as Volume 2 of the Integrated Overflow Abatement Plan. The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by an Order signed February 12, 2010, and was entered into public record on February 15, 2010. A revised LTCP was included in the 2012 IOAP Modification, submitted June 14, 2013. On June 19, 2014, MSD received approval of the 2012 IOAP Modification from EPA/KDEP. The approved document can be viewed on the MSD Project WIN website, available at **www.msdprojectwin.org**.

3.3.3. GREEN INFRASTRUCTURE PROGRAM UPDATE

The intent of the Green Infrastructure Program is to provide additional overflow volume reduction benefits to complement LTCP projects. Projects are selected for incentive by providing high value for residual average annual overflow volume (AAOV) reduction based on the latest modeling results.

Green Infrastructure Program projects approved by the MSD Board are included in Table 3.1, including status during the current reporting period. While all projects listed in the table have been approved for construction, projects may not be completed due to individual project circumstances.

Table 3.1. Green Program Projects – Current Reporting Period

PROJECT NAME	SEWERSHED	EST. AAOV REDUCTION (GAL)	INCENTIVE VALUE	STATUS
Brown Forman Distillery	CSO015	2,910,000	$1,248,964	Pending
Passport Healthcare Campus	CSO105	645,780	$351,780	Construction
CMF Parking Lot	CSO015	670,594	$230,650	Design
Nativity Academy	CSO058	67,760	$30,240	Design
Advanced Distribution	CSO015	1,3437,10	$100,000	Complete
Urban Government Center Separation	CSO084	387,335	$245,853	Design
JCTC Advanced Manufacturing Facility	CSO118	31,902	$27,425	Design

3.4. DISCHARGE ABATEMENT PLAN PROJECT STATUS

3.4.1. SANITARY SEWER DISCHARGE PLAN (SSDP)

Per the current approved schedule, no SSDP projects were completed during the reporting period. Per the current approved schedule, no SSDP projects are anticipated to be completed or certified during the next reporting period.

3.4.2. COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN (LTCP)

Per the current approved schedule, four CSO LTCP projects were completed during the current reporting period, as shown in Table 3.2. Per the current approved schedule, no CSO LTCP projects are anticipated to be completed or certified during the next reporting period.

Table 3.2. IOAP Project Completion Dates – CSO LTCP – Current Reporting Period

BUDGET ID	ACD PROJECT NUMBER	PROJECT NAME	ASSOCIATED CSOs	LEVEL OF CONTROL (TYPICAL YEAR)	ACD DATE	CERTIFIED COMPLETION DATE
H12155	L_OR_MF_155_M_09B_B_B_4	Central Relief Drain CSO In-Line Storage, Green Infrastructure & Distributed Storage	CSO028 CSO029 CSO034 CSO036 CSO178 CSO181 CSO193 CSO195 CSO196 CSO197 CSO199 CSO200 CSO202	8	December 31, 2018	December 20, 2018
H09123	L_MU_MF_154_M_09B_B_A_8	Clifton Heights Storage Basin	CSO088 CSO131 CSO132 CSO154 CSO167	4	December 31, 2018	December 21, 2018
F13023 D17046	L_OR_MF_211_M_13_B_A_8	Morris Forman WQTC Headworks	CSO016 CSO210 CSO211	8	December 31, 2018	December 17, 2018
H12158	L_OR_MF_211_M_13_B_A_8	Southern Outfall In-Line Storage at 43rd St (SOR1)	CSO016 CSO210	8	December 31, 2018	November 30, 2018

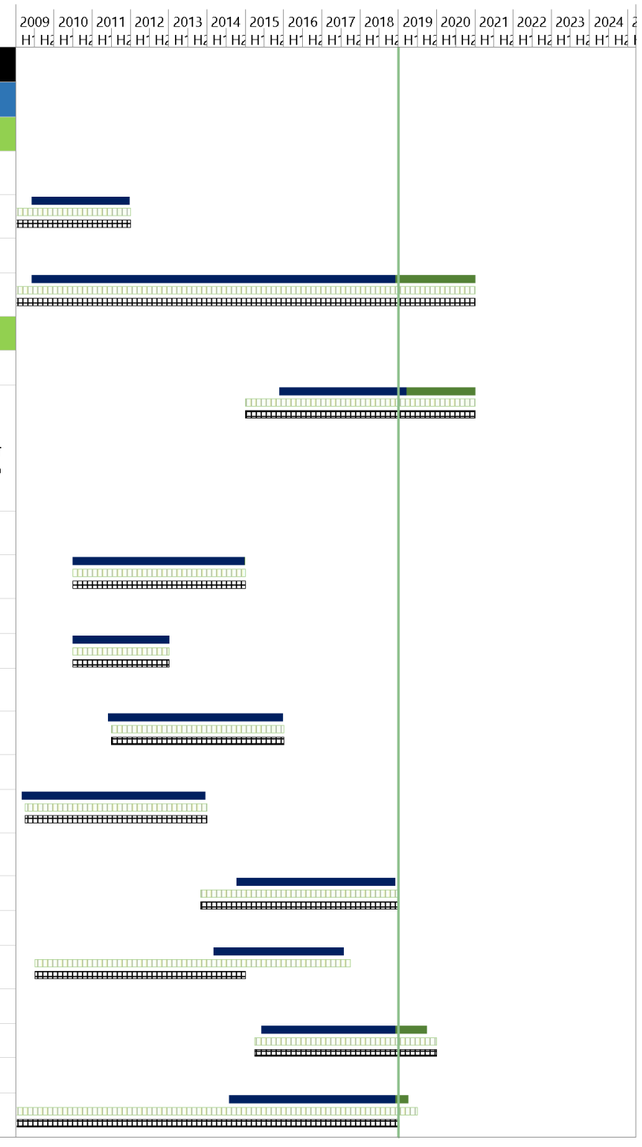
3.4.3. ACTIVITY PROGRESS CHART

A Gantt chart showing the 2012 IOAP Modification project schedules and subsequent approved minor modifications for the entire program is provided in Figure 3.1. Refer to IOAP, Volume 1 – Figure 6.3.1 for the previous chart. A crosswalk of projects and associated overflows is provided in Appendix E.

Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
MSD IOAP ANNUAL SCHEDULE							
LONG TERM CONTROL PLAN	100%	Fri 1/1/21	Wed 7/1/09	Thu 12/31/20	Thu 12/31/20		
GREEN DEMONSTRATION PROJECTS	**85%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Green Infrastructure Demonstration Projects	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 12/31/11**	**Sat 12/31/11**		
Green Infrastructure Demonstration Projects	100%	Mon 12/19/11	Mon 12/19/11	Sat 12/31/11	Sat 12/31/11		
Green Infrastructure Program	**82%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Green Infrastructure Program	82%	Thu 12/31/20	NA	Thu 12/31/20	Thu 12/31/20		
GRAY INFRASTRUCTURE PROJECTS	**83%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Waterway Protection Tunnel	**73%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Waterway Protection Tunnel	73%	Thu 12/31/20	NA	Thu 12/31/20	Thu 12/31/20	L_OR_MF_155_M_09B_B_B_4 L_OR_MF_020_S_09B_B_A_8 L_OR_MF_083_M_09B_B_A_8 L_MI_MF_127_M_09B_B_A_8	13TH STREET AND ROWAN STREET STORAGE BASIN, STORY AVENUE AND MAIN STREET STORAGE BASIN, LEXINGTON ROAD AND PAYNE STREET STORAGE BASIN, I-64 AND GRINSTEAD CSO BASIN
CSO058 In-Line Storage and Green Infrastructure	**100%**	**Tue 12/23/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
CSO058 In-Line Storage and Green Infrastructure	100%	Tue 12/23/14	Thu 12/18/14	Wed 12/31/14	Wed 12/31/14	L_OR_MF_058_S_08_A_A_0	
CSO123 Downspout Disconnection	**100%**	**Sun 12/30/12**	**Sun 12/30/12**	**Mon 12/31/12**	**Mon 12/31/12**		
CSO123 Downspout Disconnection	100%	Sun 12/30/12	Sun 12/30/12	Mon 12/31/12	Mon 12/31/12	L_MI_MF_123_S_08_A_A_0	
CSO140 In-Line Storage & Green Infrastructure Controls	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO140 In-Line Storage & Green Infrastructure Controls	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	L_MI_MF_140_S_08_A_A_0	CSO140 SEWER SEPARATION
CSO206 Sewer Separation	**100%**	**Thu 12/12/13**	**Thu 12/12/13**	**Tue 12/31/13**	**Mon 12/30/13**		
CSO206 Sewer Separation	100%	Thu 12/12/13	Thu 12/12/13	Tue 12/31/13	Mon 12/30/13	L_MI_MF_206_S_08_A_A_0	
Clifton Heights Storage Basin	**100%**	**Sat 12/1/18**	**Sat 12/1/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Clifton Heights Storage Basin	100%	Sat 12/1/18	Sat 12/1/18	Mon 12/31/18	Mon 12/31/18	L_MU_MF_154_M_09B_B_A_8	
Bells Lane Wet Weather Treatment Facility	**100%**	**Mon 7/24/17**	**Mon 7/24/17**	**Wed 12/31/14**	**Sat 9/30/17**		
Bells Lane Wet Weather Treatment Facility	100%	Mon 7/24/17	Mon 7/24/17	Wed 12/31/14	Sat 9/30/17	L_OR_MF_015_M_13_B_B_8	PADDY'S RUN WET WEATHER TREATMENT FACILITY
Portland CSO Basin	**87%**	**Wed 9/25/19**	**NA**	**Tue 12/31/19**	**Tue 12/31/19**		
Portland CSO Basin	87%	Wed 9/25/19	NA	Tue 12/31/19	Tue 12/31/19	L_OR_MF_019_S_13_B_A_8	PORTLAND WHARF STORAGE BASIN
Southwestern Parkway Storage Basin	**100%**	**Sun 3/31/19**	**Fri 11/30/18**	**Mon 12/31/18**	**Sun 6/30/19**		
Southwestern Parkway Storage Basin	100%	Sun 3/31/19	Fri 11/30/18	Mon 12/31/18	Sun 6/30/19	L_OR_MF_105_M_13_B_A_0	SOUTHWESTERN PARKWAY STORAGE BASIN



Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

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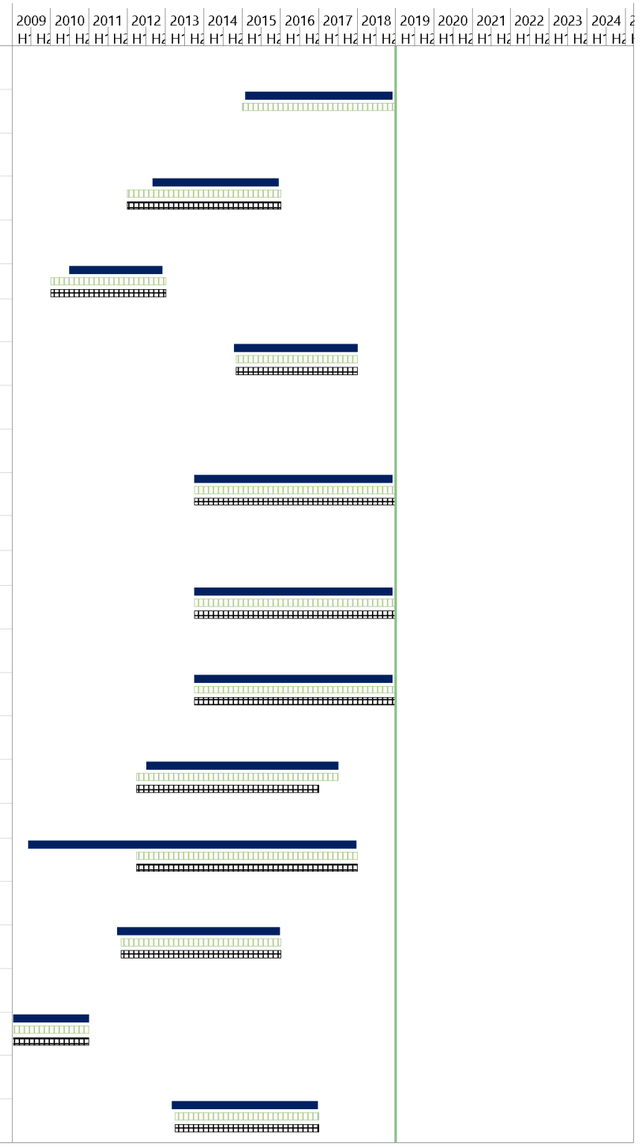
Date: 12/31/18

Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Central Relief Drain CSO In-Line Storage, Green Infrastructure & Distributed Storage	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**NA**	**Mon 12/31/18**		
Central Relief Drain CSO In-Line Storage, Green Infrastructure & Distributed Storage	100%	Fri 11/30/18	Fri 11/30/18	NA	Mon 12/31/18	L_OR_MF_155_M_09B_B_B_4	
CSO160 In-Line Storage & Green Infrastructure Controls	**100%**	**Thu 12/10/15**	**Thu 12/10/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO160 In-Line Storage & Green Infrastructure Controls	100%	Thu 12/10/15	Thu 12/10/15	Thu 12/31/15	Thu 12/31/15	L_OR_MF_160_S_08_A_A_0	CSO160 SEWER SEPARATION
Adams Street Sewer Separation	**100%**	**Wed 11/28/12**	**Wed 11/28/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Adams Street Sewer Separation	100%	Wed 11/28/12	Wed 11/28/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_172_S_09B_B_A_0	ADAMS STREET STORAGE BASIN
CSO190 Green Infrastructure Solution	**100%**	**Sun 12/31/17**	**Fri 12/29/17**	**Sun 12/31/17**	**Sun 12/31/17**		
CSO190 Green Infrastructure Solution	100%	Sun 12/31/17	Fri 12/29/17	Sun 12/31/17	Sun 12/31/17	L_OR_MF_190_S_09B_B_A_8	18TH AND NORTHWESTERN PKY. STORAGE BASIN
Southern Outfall Inline Storage at 43rd St (SOR1) & Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Southern Outfall In-Line Storage at 43rd St (SOR 1)	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Southern Outfall In-Line Storage at 43rd St (SOR 1)	100%	Fri 11/30/18	Fri 11/30/18	Mon 12/31/18	Mon 12/31/18	L_OR_MF_211_M_13_B_A_8	
Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Morris Forman WQTC Headworks	100%	Fri 11/30/18	Fri 11/30/18	Mon 12/31/18	Mon 12/31/18		
MF Main Diversion Structure	**100%**	**Wed 11/28/18**	**Wed 11/28/18**	**Mon 12/31/18**	**Mon 12/31/18**		
MF Main Diversion Structure	100%	Wed 11/28/18	Wed 11/28/18	Mon 12/31/18	Mon 12/31/18		
Nightingale Pump Station Replacement & Storage	**100%**	**Thu 6/29/17**	**Thu 6/29/17**	**Sat 12/31/16**	**Fri 6/30/17**		
Nightingale Pump Station Replacement & Storage	100%	Thu 6/29/17	Thu 6/29/17	Sat 12/31/16	Fri 6/30/17	L_SO_MF_018_S_03_A_A	NIGHTINGALE PUMP STATION REPLACEMENT
Logan and Breckenridge Street Storage Basin	**100%**	**Wed 10/18/17**	**Wed 12/20/17**	**Sun 12/31/17**	**Sun 12/31/17**		
Logan and Breckenridge Street Storage Basin	100%	Wed 10/18/17	Wed 12/20/17	Sun 12/31/17	Sun 12/31/17	L_SO_MF_092_M_09B_B_D_8	CALVARY CREEKSIDE BASIN
CSO093 Structural Modifications & Green Infrastructure	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO093 Structural Modifications & Green Infrastructure	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	L_SO_MF_093_S_08_A_A_0	CSO093 SEWER SEPARATION
CSO108 Dam Modifications	**100%**	**Thu 12/30/10**	**Thu 12/30/10**	**Fri 12/31/10**	**Fri 12/31/10**		
CSO108 Dam Modifications	100%	Thu 12/30/10	Thu 12/30/10	Fri 12/31/10	Fri 12/31/10	L_SO_MF_108_S_09A_B_A_4	
Story Avenue and Spring Street Green Infrastructure	**100%**	**Tue 12/20/16**	**Tue 12/20/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Story Avenue and Spring Street Green Infrastructure	100%	Tue 12/20/16	Tue 12/20/16	Sat 12/31/16	Sat 12/31/16	L_SO_MF_130_S_09B_B_A_8	STORY AVENUE AND SPRING STREET STORAGE BASIN



Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

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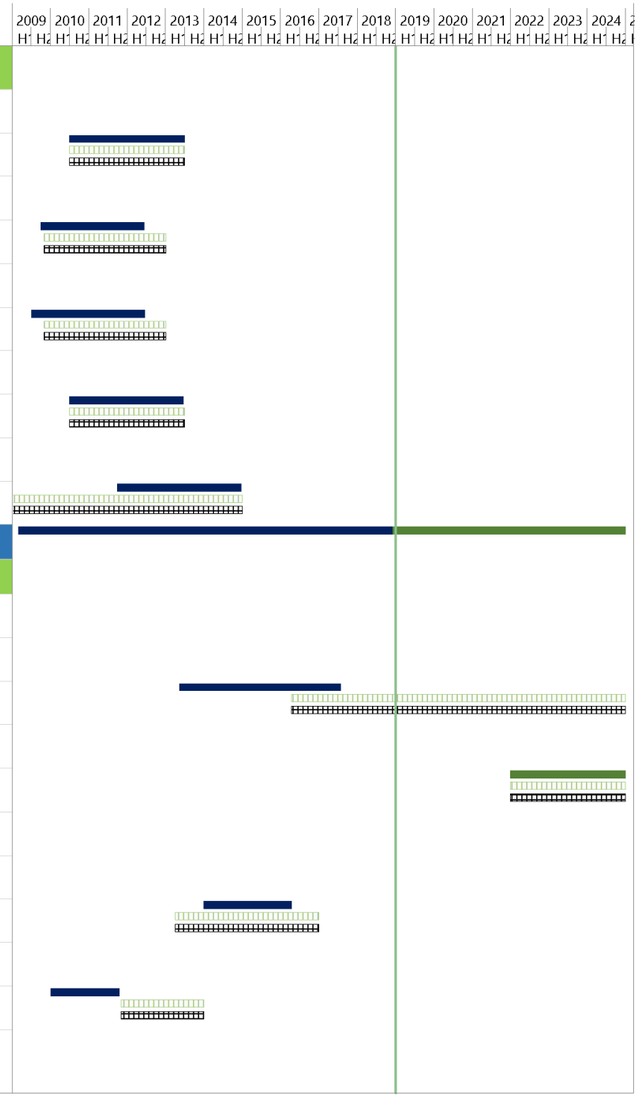
Date: 12/31/18

Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
FLOOD PUMP STATION PROJECTS	**100%**	**Wed 12/31/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
27th Street Flood Pump Station DWO Elimination	**100%**	**Fri 6/28/13**	**Fri 6/28/13**	**Sun 6/30/13**	**Sun 6/30/13**		
27th Street Flood Pump Station DWO Elimination	100%	Fri 6/28/13	Fri 6/28/13	Sun 6/30/13	Sun 6/30/13	L_OR_MF_019_S_03_A_A	
34th Street Flood Pump Station DWO Elimination	**100%**	**Mon 6/11/12**	**Mon 6/11/12**	**Mon 12/31/12**	**Mon 12/31/12**		
34th Street Flood Pump Station DWO Elimination	100%	Mon 6/11/12	Mon 6/11/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_019_S_03_A_B	
4th Street Flood Pump Station DWO Elimination	**100%**	**Fri 6/15/12**	**Fri 6/15/12**	**Mon 12/31/12**	**Mon 12/31/12**		
4th Street Flood Pump Station DWO Elimination	100%	Fri 6/15/12	Fri 6/15/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_022_M_03_A_A	
Shawnee Flood Pump Station DWO Elimination	**100%**	**Tue 6/18/13**	**Tue 6/18/13**	**Sun 6/30/13**	**Sun 6/30/13**		
Shawnee Flood Pump Station DWO Elimination	100%	Tue 6/18/13	Tue 6/18/13	Sun 6/30/13	Sun 6/30/13	L_OR_MF_189_M_03_A_A	
17th Street Flood Pump Station DWO Elimination	**100%**	**Thu 12/18/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
17th Street Flood Pump Station DWO Elimination	100%	Thu 12/18/14	Thu 12/18/14	Wed 12/31/14	Wed 12/31/14	L_OR_MF_190_S_03_A_A	
SANITARY SEWER DISCHARGE PLAN	**62%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
BEARGRASS CREEK MIDDLE FORK AREA	**66%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements and Wet Weather Storage	**58%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale PS and	**100%**	**Thu 6/29/17**	**Tue 7/25/17**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale PS and	100%	Thu 6/29/17	Tue 7/25/17	Tue 12/31/24	Tue 12/31/24	S_MI_MF_NB04_M_03_B	
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	**0%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM	0%	Tue 12/31/24	NA	Tue 12/31/24	Tue 12/31/24	S_MI_MF_NB04_M_03_B	
Anchor Estates Pump Station Elimination	**100%**	**Fri 4/15/16**	**Fri 4/15/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	**100%**	**Fri 4/15/16**	**Fri 4/15/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	100%	Fri 4/15/16	Fri 4/15/16	Sat 12/31/16	Sat 12/31/16	S_MI_MF_NB06_M_01_A_A - 1	
Anchor Estates PS Elimination 1 - Vannah PS Elimination	**100%**	**Sat 10/15/11**	**Sat 10/15/11**	**Tue 12/31/13**	**Tue 12/31/13**		
Anchor Estates PS Elimination 1 - Vannah PS Elimination	100%	Sat 10/15/11	Sat 10/15/11	Tue 12/31/13	Tue 12/31/13	S_MI_MF_NB06_M_01_A_A - 2	
Hurstbourne I/I Investigation & Rehabilitation	**100%**	**Tue 12/27/11**	**Tue 12/27/11**	**Sat 12/31/11**	**Sat 12/31/11**		



Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

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Date: 12/31/18

Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Hurstbourne I/I Investigation & Rehabilitation	100%	Tue 12/27/11	Tue 12/27/11	Sat 12/31/11	Sat 12/31/11	S_MI_MF_NB07_S_07_C	
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion	**49%**	**Sun 12/31/23**	**NA**	**Sun 12/31/23**	**Tue 12/31/13**		
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1	**100%**	**Fri 12/27/13**	**Fri 12/27/13**	**Tue 12/31/13**	**Tue 12/31/13**		
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion	100%	Fri 12/27/13	Fri 12/27/13	Tue 12/31/13	Tue 12/31/13	S_MISF_MF_NB01_M_01_C_A1	
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2	**2%**	**Sun 12/31/23**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion	2%	Sun 12/31/23	NA	Sun 12/31/23	Sun 12/31/23	S_MISF_MF_NB01_M_01_C_A1	
CEDAR CREEK AREA	**52%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Little Cedar Creek Interceptor Improvements	**0%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Little Cedar Creek Interceptor Improvements	0%	Tue 12/31/24	NA	Tue 12/31/24	Tue 12/31/24	S_CC_CC_67997_M_01_C	
Idlewood Inline Storage	**0%**	**Wed 6/30/21**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Idlewood Inline Storage	0%	Wed 6/30/21	NA	Sun 12/31/23	Sun 12/31/23	S_CC_CC_70158_M_09A_C	
Bardstown Rd. PS Improvements	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Bardstown Rd. PS Improvements	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_CC_CC_MSD1025_S_03_B	
Running Fox PS Elimination	**100%**	**Wed 3/10/10**	**Wed 3/10/10**	**Fri 12/31/10**	**Fri 12/31/10**		
Running Fox PS Elimination	100%	Wed 3/10/10	Wed 3/10/10	Fri 12/31/10	Fri 12/31/10	S_CC_CC_MSD1080_S_01_C	
Fairmount Road Pump Station	**100%**	**Wed 3/30/16**	**Thu 3/31/16**	**Sun 12/31/23**	**Sun 12/31/23**		
Fairmount Rd PS Improvements	**100%**	**Tue 4/24/12**	**Tue 4/24/12**	**Sun 12/31/23**	**Sun 12/31/23**		
Fairmount Rd PS Improvements	100%	Tue 4/24/12	Tue 4/24/12	Sun 12/31/23	Sun 12/31/23	S_FF_CC_81316_M_03_C_A	
Fairmount PS Offline Storage Basin	**100%**	**Thu 3/31/16**	**Thu 3/31/16**	**Sun 12/31/23**	**Thu 3/31/16**		
Fairmount PS Offline Storage Basin	100%	Thu 3/31/16	Thu 3/31/16	Sun 12/31/23	Thu 3/31/16	S_FF_CC_81316_M_03_C_A	
COMBINED SEWER SYSTEM AREA	**100%**	**Fri 12/15/23**	**Fri 12/15/17**	**Thu 6/30/11**	**Thu 6/30/11**		
Hazelwood PS I/I Investigation & Rehabilitation	**100%**	**Thu 6/30/11**	**Thu 6/30/11**	**Thu 6/30/11**	**Thu 6/30/11**		
Hazelwood PS I/I Investigation & Rehabilitation	100%	Thu 6/30/11	Thu 6/30/11	Thu 6/30/11	Thu 6/30/11	S_MC_MF_55665_S_07_C	
Sonne Pump Station I/I Investigation & Rehabilitation	**100%**	**Thu 6/30/11**	**Thu 6/30/11**	**Thu 6/30/11**	**Thu 6/30/11**		
Sonne Pump Station I/I Investigation & Rehabilitation	100%	Thu 6/30/11	Thu 6/30/11	Thu 6/30/11	Thu 6/30/11	S_OR_MF_42007_S_07_C	

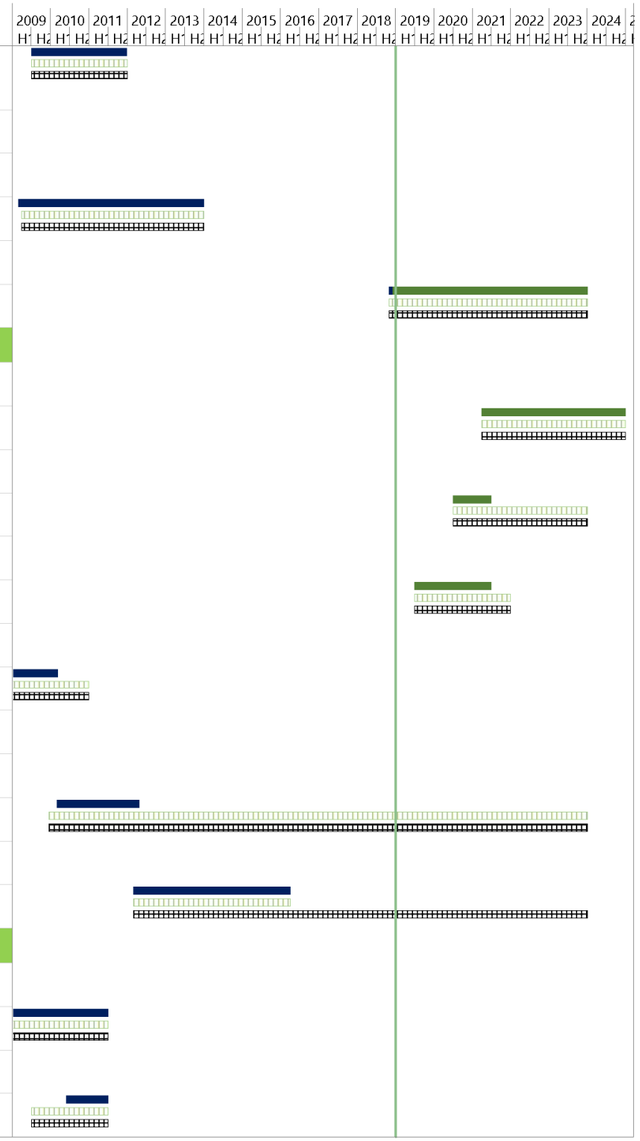

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Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Camp Taylor	**100%**	**Fri 12/15/23**	**Fri 12/15/17**	**Sun 12/31/17**	**Sun 12/31/17**		
Camp Taylor Phase 1 - SSES	**100%**	**Fri 7/8/11**	**Fri 7/8/11**	**Sat 12/31/11**	**Tue 12/31/13**		
Camp Taylor Phase 1 - SSES	100%	Fri 7/8/11	Fri 7/8/11	Sat 12/31/11	Tue 12/31/13	S_SF_MF_30917_M_09_A	CAMP TAYLOR SYSTEM IMPROVEMENTS PHASE 1 - SSES
Camp Taylor Phase 2 - Sewer Replacement and Rehabilitation	**100%**	**Fri 12/20/13**	**Fri 12/20/13**	**Tue 12/31/13**	**Sun 12/31/17**		
Camp Taylor Phase 2 - Sewer Replacement and Rehabilitation	100%	Fri 12/20/13	Fri 12/20/13	Tue 12/31/13	Sun 12/31/17	S_SF_MF_30917_M_09_A	CAMP TAYLOR SYSTEM IMPROVEMENTS PHASE 2 - SEWER REPLACEMENT AND REHABILITATION
Camp Taylor Phase 3 - Sewer Replacement and Rehabilitation	**100%**	**Sun 12/31/17**	**Fri 12/15/17**	**Sun 12/31/17**	**Sun 12/31/17**		
Camp Taylor Phase 3 - Sewer Replacement and Rehabilitation	100%	Fri 12/15/17	Fri 12/15/17	Sun 12/31/17	Sun 12/31/17	S_SF_MF_30917_M_09_A	CAMP TAYLOR SYSTEM IMPROVEMENTS 3 - SEWER REPLACEMENT & SEWER REHABILITATION
FLOYDS FORK AREA	**100%**	**Thu 3/4/10**	**Thu 3/4/10**	**Fri 12/31/21**	**Thu 4/1/10**		
Woodland Hill PS Diversion	**100%**	**Thu 3/4/10**	**Thu 3/4/10**	**Thu 6/30/11**	**Thu 4/1/10**		
Woodland Hill PS Diversion	100%	Thu 3/4/10	Thu 3/4/10	Thu 6/30/11	Thu 4/1/10	S_FF_FF_NB01_S_01_C_A	
Ashburton PS Improvements & Diversion	**100%**	**Wed 12/30/09**	**Wed 12/30/09**	**Fri 12/31/21**	**Fri 1/22/10**		
Ashburton PS Improvements & Diversion	100%	Wed 12/30/09	Wed 12/30/09	Fri 12/31/21	Fri 1/22/10	S_FF_FF_NB03_M_01_C_A	
HITE CREEK AREA	**62%**	**Tue 11/26/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Meadow Stream Pump Station & Force Main Upgrade	**100%**	**Tue 12/18/12**	**Tue 12/18/12**	**Sat 12/31/16**	**Sat 12/31/16**		
Meadow Stream Pump Station & Force Main Upgrade	100%	Tue 12/18/12	Tue 12/18/12	Sat 12/31/16	Sat 12/31/16	S_HC_HC_MSD1082_S_09A_C	MEADOW STREAM PUMP STATION IN-LINE STORAGE
Kavanaugh Rd. PS Improvements	**0%**	**Tue 11/26/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Kavanaugh Rd. PS Improvements	0%	Tue 11/26/24	NA	Tue 12/31/24	Tue 12/31/24	S_HC_HC_MSD1085_S_03_A	
Floydsburg Rd. I/I Investigation & Rehabilitation	**100%**	**Fri 12/17/10**	**Fri 12/17/10**	**Fri 12/31/10**	**Fri 12/31/10**		
Floydsburg Rd. I/I Investigation & Rehabilitation	100%	Fri 12/17/10	Fri 12/17/10	Fri 12/31/10	Fri 12/31/10	S_HC_HC_MSD1086_M_07_C_A	
INTERIM SSP PROJECTS	**100%**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**		
Beechwood Village Sanitary Sewer Replacement	**100%**	**Wed 9/29/10**	**Wed 9/29/10**	**Wed 4/27/11**	**Wed 4/27/11**		
Beechwood Village Sanitary Sewer Replacement	100%	Wed 9/29/10	Wed 9/29/10	Wed 4/27/11	Wed 4/27/11		
Sinking Fork Relief Sewer	**100%**	**Mon 11/30/09**	**Mon 11/30/09**	**Thu 12/30/10**	**Wed 12/23/09**		

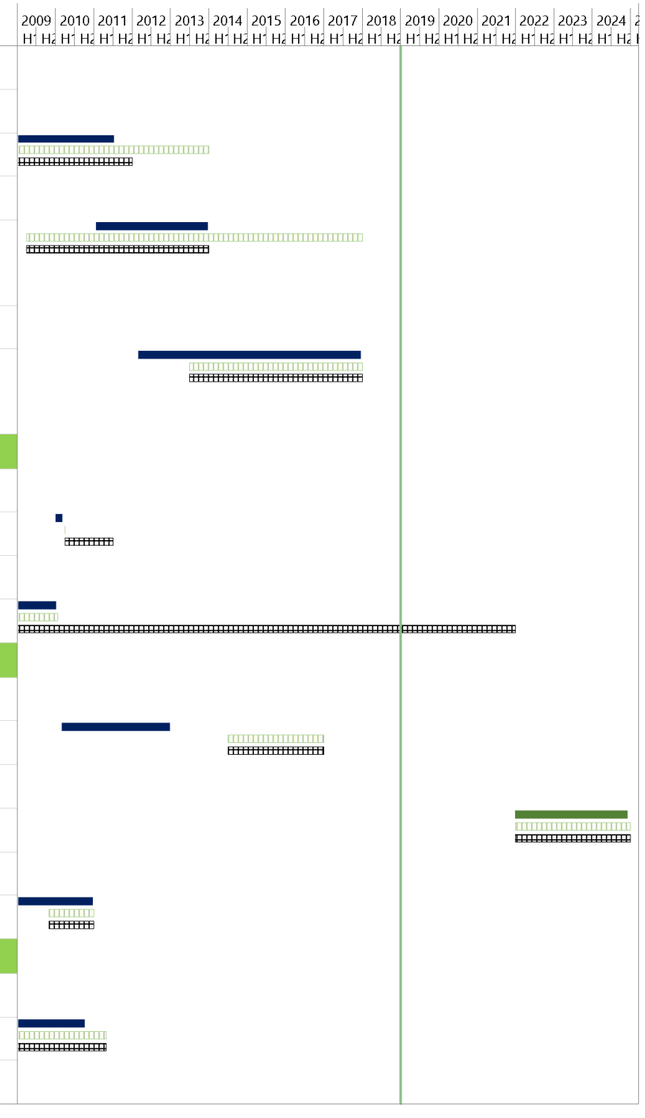

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Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

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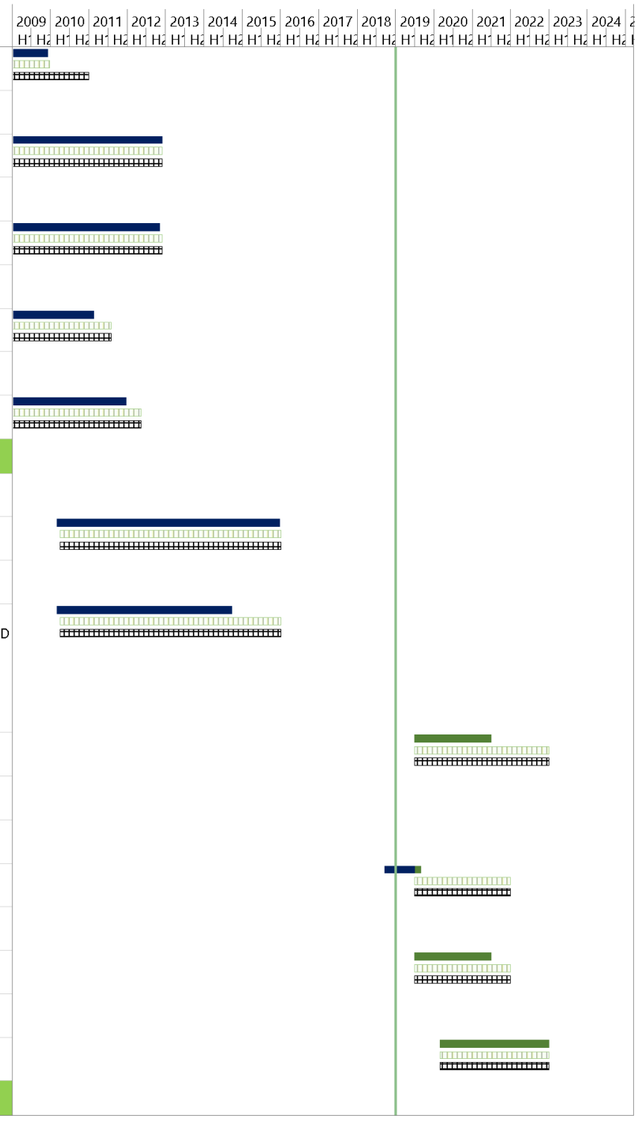
Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Sinking Fork Relief Sewer	100%	Mon 11/30/09	Mon 11/30/09	Thu 12/30/10	Wed 12/23/09		
Derek R. Guthrie Water Quality Treatment Center	**100%**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**		
Derek R. Guthrie Water Quality Treatment Center	100%	Tue 11/27/12	Tue 11/27/12	Tue 11/27/12	Tue 11/27/12		
Hikes Lane Interceptor and Highgate Springs PS	**100%**	**Fri 11/2/12**	**Fri 11/2/12**	**Tue 11/27/12**	**Tue 11/27/12**		
Hikes Lane Interceptor and Highgate Springs PS	100%	Fri 11/2/12	Fri 11/2/12	Tue 11/27/12	Tue 11/27/12		
Northern Ditch Diversion Interceptor	**100%**	**Wed 2/16/11**	**Wed 2/16/11**	**Sun 7/31/11**	**Sun 7/31/11**		
Northern Ditch Diversion Interceptor	100%	Wed 2/16/11	Wed 2/16/11	Sun 7/31/11	Sun 7/31/11		
Southeastern Diversion Structure and Interceptor	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 5/12/12**	**Sat 5/12/12**		
Southeastern Diversion Structure and Interceptor	100%	Mon 12/19/11	Mon 12/19/11	Sat 5/12/12	Sat 5/12/12		
JEFFERSONTOWN AREA	**58%**	**Sat 12/31/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Jeffersontown WQTC Elimination	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Jeffersontown WQTC Elimination	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	S_JT_JT_NB01_M_01_C_A	
Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	**100%**	**Mon 9/22/14**	**Mon 9/22/14**	**Thu 12/31/15**	**Thu 12/31/15**		
Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	100%	Mon 9/22/14	Mon 9/22/14	Thu 12/31/15	Thu 12/31/15	S_JT_JT_NB01A_M_03_C	CHENOWETH HILLS WATER QUALITY TREATMENT CENTER ELIMINATION AND PS IMPROVEMENTS PROJECT
Dell Rd and Charlane Pkwy Interceptor Improvements	**0%**	**Wed 6/30/21**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Dell Rd and Charlane Pkwy Interceptor Improvements	0%	Wed 6/30/21	NA	Sat 12/31/22	Sat 12/31/22	S_JT_JT_NB02_M_01_C	
Raintree and Marian Ct 1	**20%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 1 - PS Elimination	**39%**	**Fri 8/30/19**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 1 - PS Elimination	39%	Fri 8/30/19	NA	Fri 12/31/21	Fri 12/31/21	S_JT_JT_NB03_M_01_C	
Raintree and Marian Ct 2 - Pipe Upgrades	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 2 - Pipe Upgrades	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_JT_JT_NB03_M_01_C	
Monticello PS Elimination	**0%**	**Sat 12/31/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Monticello PS Elimination	0%	Sat 12/31/22	NA	Sat 12/31/22	Sat 12/31/22	S_JT_JT_NB04_M_01_A	
MILL CREEK AREA	**100%**	**Fri 4/13/12**	**Fri 4/13/12**	**Fri 12/31/21**	**Fri 12/31/21**		



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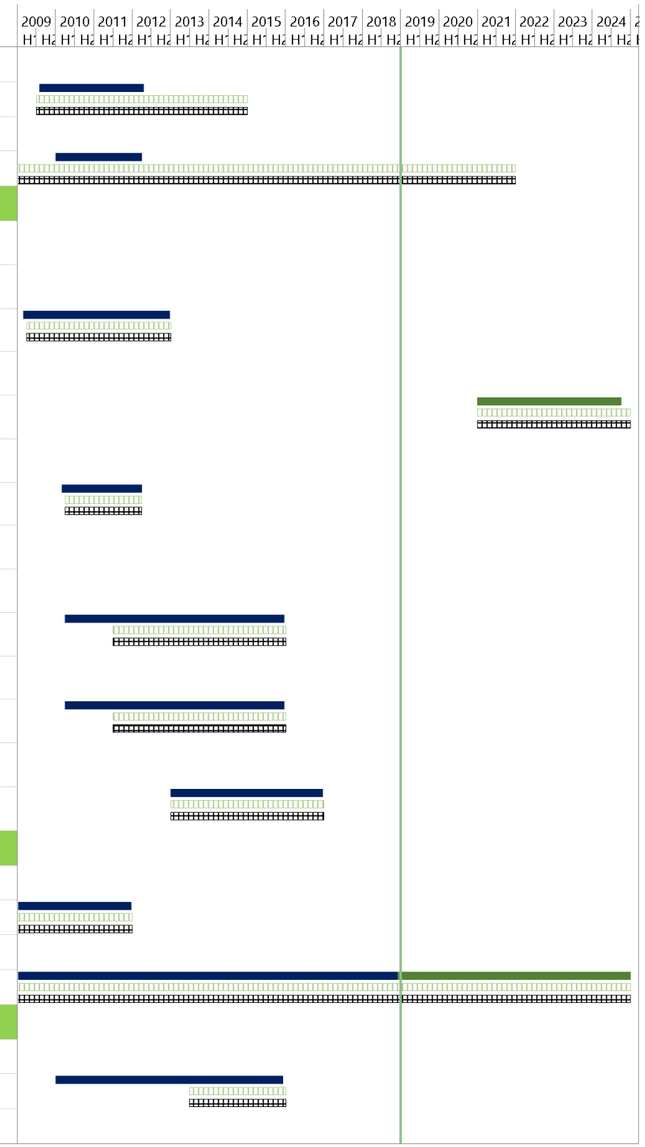
Shively Interceptor	**100%**	**Fri 4/13/12**	**Fri 4/13/12**	**Wed 12/31/14**	**Wed 12/31/14**		
Shively Interceptor	100%	Fri 4/13/12	Fri 4/13/12	Wed 12/31/14	Wed 12/31/14	S_MC_WC_NB01_M_01_A	
East Rockford PS Relocation	**100%**	**Fri 3/30/12**	**Fri 3/30/12**	**Fri 12/31/21**	**Fri 12/31/21**		
East Rockford PS Relocation	100%	Fri 3/30/12	Fri 3/30/12	Fri 12/31/21	Fri 12/31/21	S_MC_WC_NB02_S_03_C	
OHIO RIVER FORCE MAIN AREA	**84%**	**Thu 10/3/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination	**49%**	**Wed 12/19/12**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination - Mellwood PS and FM	**100%**	**Wed 12/19/12**	**Wed 12/19/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Mellwood System Improvements & PS Elimination - Mellwood PS and FM	100%	Wed 12/19/12	Wed 12/19/12	Mon 12/31/12	Mon 12/31/12	S_OR_MF_NB01_M_01_B	
Mellwood System Improvements & PS Elimination - Winton and Mockingbird	**0%**	**Thu 10/3/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination - Winton and Mockingbird	0%	Thu 10/3/24	NA	Tue 12/31/24	Tue 12/31/24	S_OR_MF_NB01_M_01_B	
Derington Ct. PS I/I Investigation & Rehabilitation	**100%**	**Fri 3/30/12**	**Fri 3/30/12**	**Sat 3/31/12**	**Sat 3/31/12**		
Derington Ct. PS I/I Investigation & Rehabilitation	100%	Fri 3/30/12	Fri 3/30/12	Sat 3/31/12	Sat 3/31/12	S_OR_MF_NB03_S_07_C	
Prospect WQTC Eliminations, Harrods Creek PS and ORFM System Improvements	**100%**	**Mon 12/19/16**	**Mon 12/19/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Prospect #1 - WQTC Eliminations	**100%**	**Tue 12/15/15**	**Tue 12/15/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Prospect #1 - WQTC Eliminations	100%	Tue 12/15/15	Tue 12/15/15	Thu 12/31/15	Thu 12/31/15	S_OR_MF_NB04_M_03_B_B	
Prospect #2 - Harrods Creek PS and FM	**100%**	**Tue 12/15/15**	**Tue 12/15/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Prospect #2 - Harrods Creek PS and FM	100%	Tue 12/15/15	Tue 12/15/15	Thu 12/31/15	Thu 12/31/15	S_OR_MF_NB04_M_03_B_B	
Prospect #3 - ORFM System Improvements	**100%**	**Mon 12/19/16**	**Mon 12/19/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Prospect #3 - ORFM System Improvements	100%	Mon 12/19/16	Mon 12/19/16	Sat 12/31/16	Sat 12/31/16	S_OR_MF_NB04_M_03_B_B	
OTHER PROJECTS	**68%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Mon 12/30/24**		
CPE_CCP Modifications To WQTC	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 12/31/11**	**Sat 12/31/11**		
CPE_CCP Modifications To WQTC	100%	Mon 12/19/11	Mon 12/19/11	Sat 12/31/11	Sat 12/31/11		
I/I Reduction Program	**62%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
I/I Reduction Program	62%	Tue 12/31/24	NA	Tue 12/31/24	Tue 12/31/24		
POND CREEK AREA	**93%**	**Thu 6/30/22**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Lea Ann Way System Improvements	**100%**	**Fri 12/4/15**	**Fri 12/4/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Lea Ann Way System Improvements	100%	Fri 12/4/15	Fri 12/4/15	Thu 12/31/15	Thu 12/31/15	S_PO_WC_PC08_M_01_C	
Edsel PS I/I Investigation & Rehabilitation	**100%**	**Tue 9/27/11**	**Tue 9/27/11**	**Sat 12/31/11**	**Fri 9/30/11**		



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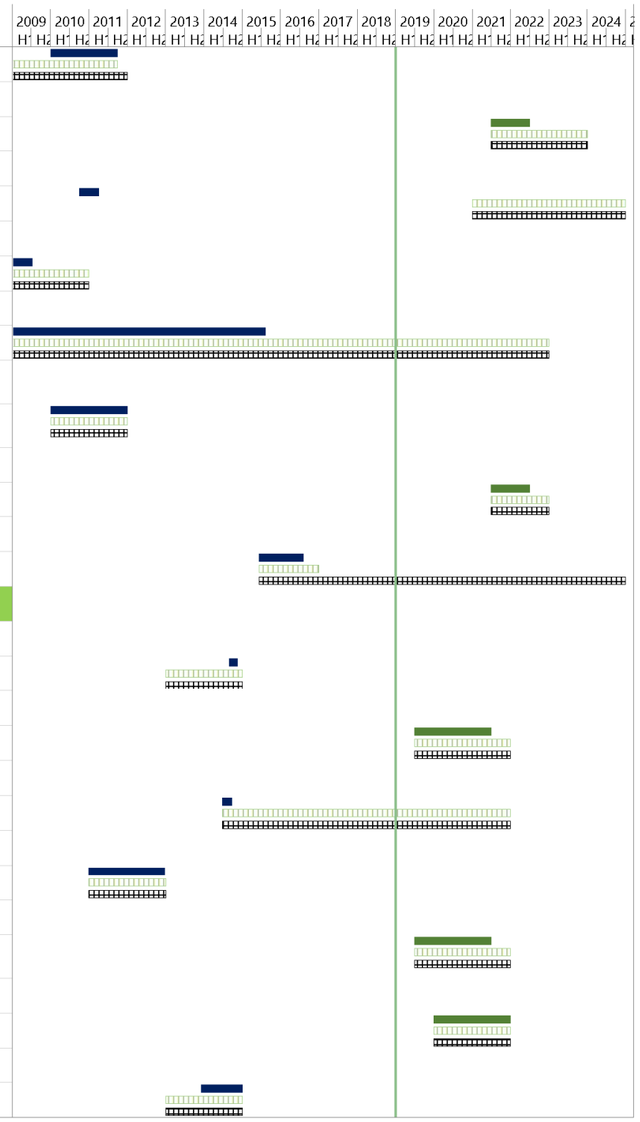
Edsel PS I/I Investigation & Rehabilitation	100%	Tue 9/27/11	Tue 9/27/11	Sat 12/31/11	Fri 9/30/11	S_PO_WC_PC11_M_07_C	
Cinderella PS Elimination	**0%**	**Thu 6/30/22**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Cinderella PS Elimination	0%	Thu 6/30/22	NA	Sun 12/31/23	Sun 12/31/23	S_PO_WC_PC04_M_01_C	
Government Center PS Elimination	**100%**	**Fri 4/1/11**	**Fri 4/1/11**	**Tue 12/31/24**	**Tue 12/31/24**		
Government Center PS Elimination	100%	Fri 4/1/11	Fri 4/1/11	Tue 12/31/24	Tue 12/31/24	S_PO_WC_PC06_M_01_C	
Avanti PS Elimination	**100%**	**Fri 7/10/09**	**Fri 7/10/09**	**Fri 12/31/10**	**Fri 12/31/10**		
Avanti PS Elimination	100%	Fri 7/10/09	Fri 7/10/09	Fri 12/31/10	Fri 12/31/10	S_PO_WC_PC07_M_01_A	
Charleswood Interceptor Extension	**100%**	**Wed 8/5/15**	**Wed 8/5/15**	**Sat 12/31/22**	**Sat 12/31/22**		
Charleswood Interceptor Extension	100%	Wed 8/5/15	Wed 8/5/15	Sat 12/31/22	Sat 12/31/22	S_PO_WC_PC03_M_01_C	
Lantana PS #1 I/I Investigation and Rehabilitation	**100%**	**Thu 12/29/11**	**Thu 12/29/11**	**Sat 12/31/11**	**Thu 12/29/11**		
Lantana PS #1 I/I Investigation and Rehabilitation	100%	Thu 12/29/11	Thu 12/29/11	Sat 12/31/11	Thu 12/29/11	S_PO_WC_PC05_M_07_C	
Leven PS Elimination	**0%**	**Thu 6/30/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Leven PS Elimination	0%	Thu 6/30/22	NA	Sat 12/31/22	Sat 12/31/22	S_PO_WC_PC10_M_01_C	
Caven Ave Pump Station Elimination	**100%**	**Mon 8/1/16**	**Mon 8/1/16**	**Tue 12/31/24**	**Sat 12/31/16**		
Caven Ave Pump Station Elimination	100%	Mon 8/1/16	Mon 8/1/16	Tue 12/31/24	Sat 12/31/16	S_PO_WC_PC09_M_09B_C	
SMALL WWTP AREA	**37%**	**Fri 12/31/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Riding Ridge PS Improvements	**100%**	**Sat 11/15/14**	**Sat 11/15/14**	**Wed 12/31/14**	**Wed 12/31/14**		
Riding Ridge PS Improvements	100%	Sat 11/15/14	Sat 11/15/14	Wed 12/31/14	Wed 12/31/14	S_HC_HN_NB01_S_03_C_A	
Lucas Lane PS Inline Storage	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Lucas Lane PS Inline Storage	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_FF_BT_NB01_S_09A_C_A	
St. Rene Rd. PS Elimination	**100%**	**Fri 9/19/14**	**Fri 9/19/14**	**Fri 12/31/21**	**Fri 12/31/21**		
St. Rene Rd. PS Elimination	100%	Fri 9/19/14	Fri 9/19/14	Fri 12/31/21	Fri 12/31/21	S_FF_CH_NB01_S_09A_C_A	ST. RENE RD PS INLINE STORAGE
Lake Forest PS SSO Investigation	**100%**	**Tue 12/18/12**	**Tue 12/18/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Lake Forest PS SSO Investigation	100%	Tue 12/18/12	Tue 12/18/12	Mon 12/31/12	Mon 12/31/12	S_FF_LF_NB01_S_13_C_A	
Gunpowder PS Inline Storage	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Gunpowder PS Inline Storage	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_HC_HN_NB02_S_09A_C_B	
Fox Harbor Inline Storage	**0%**	**Fri 12/31/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Fox Harbor Inline Storage	0%	Fri 12/31/21	NA	Fri 12/31/21	Fri 12/31/21	S_HC_HN_NB03_S_09A_A_A	
Fairway View PS Improvements	**100%**	**Tue 12/30/14**	**Tue 12/30/14**	**Wed 12/31/14**	**Wed 12/31/14**		
Fairway View PS Improvements	100%	Tue 12/30/14	Tue 12/30/14	Wed 12/31/14	Wed 12/31/14	S_HC_HS_NB01_S_03_C_A	



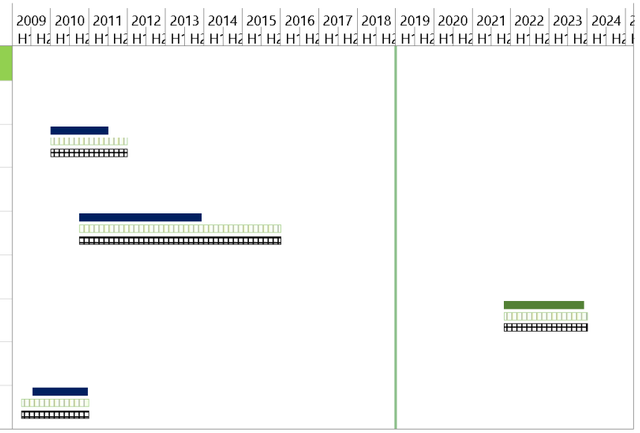
Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

Figure 3.1. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
SOUTHEASTERN DIVERSION AREA	**75%**	**Mon 11/27/23**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Parkview Estates I/I Investigation & Rehabilitation	**100%**	**Tue 6/28/11**	**Tue 6/28/11**	**Sat 12/31/11**	**Sat 12/31/11**		
Parkview Estates I/I Investigation & Rehabilitation	100%	Tue 6/28/11	Tue 6/28/11	Sat 12/31/11	Sat 12/31/11	S_SD_MF_NB03_S_07_C	
Klondike Interceptor	**100%**	**Thu 12/5/13**	**Thu 12/5/13**	**Thu 12/31/15**	**Thu 12/31/15**		
Klondike Interceptor	100%	Thu 12/5/13	Thu 12/5/13	Thu 12/31/15	Thu 12/31/15	S_SD_MF_NB04_S_01_B_A	
Sutherland Interceptor	**0%**	**Mon 11/27/23**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Sutherland Interceptor	0%	Mon 11/27/23	NA	Sun 12/31/23	Sun 12/31/23	S_SD_MF_NB05_M_01_A	
Beargrass Interceptor Rehab Ph. 2	**100%**	**Tue 12/14/10**	**Tue 12/14/10**	**Fri 12/31/10**	**Fri 12/31/10**		
Beargrass Interceptor Rehab Ph. 2	100%	Tue 12/14/10	Tue 12/14/10	Fri 12/31/10	Fri 12/31/10	S_SD_MF_NB06_S_13_C	



Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

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SECTION 4: PROGRAM ACTIVITIES FOR PUBLIC OUTREACH, EDUCATION, NOTIFICATION AND PARTICIPATION

4.1. PUBLIC NOTIFICATION PROGRAM

MSD has developed a program aimed at notifying the community of the objectives of Project WIN, and ways to reduce the risks of coming into contact with sewage overflows.

4.2. PUBLIC EDUCATION PROGRAMS

A public education program aimed at disseminating information to the public on MSD's primary business functions with emphasis on wastewater, stormwater and flood protection has been developed and implemented. Efforts continued to utilize various media outlets, including television, radio, magazines and newspapers, bill inserts, social media, and MSD websites, to serve as a conduit for circulating information to the public.

MSD included Consent Decree compliance, wastewater facility upgrades, and aging infrastructure as key topics in its Critical Repair & Reinvestment Plan. Public education about this initiative continue to include posts on MSD's website and social media accounts.

MSD participated in the Adventures in Water educational festival, October 16-18, 2018, which reached over 1,800 students with information regarding wastewater treatment, stormwater / clean water education, and the Waterway Protection Tunnel.

MSD continues its One Water education effort. This partnership with Louisville Water enables MSD to reach a wider audience through use of classroom educators and educational tours. The "River to River" education curriculum was continued during the reporting period. This program is being taken into classrooms county-wide to share information on Louisville's water cycle. School groups have also had opportunities to tour the Floyds Fork WQTC.

During the reporting period, MetroTV aired the programs listed in Table 4.1.

Table 4.1. Metro TV Broadcasts

DATE	PROGRAM TITLE	ORIGINAL MEETING DATE
11/2/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/3/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/5/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/7/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/8/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
11/9/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/10/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
11/10/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016

Table 4.1. Metro TV Broadcasts

DATE	PROGRAM TITLE	ORIGINAL MEETING DATE
11/10/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
11/10/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/11/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
11/11/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
11/11/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
11/15/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/16/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
11/16/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
11/16/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
11/17/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
11/19/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
11/19/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/20/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
11/21/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
11/24/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
11/24/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/25/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
11/25/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
11/25/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/28/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
11/29/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/1/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/1/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
12/1/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/1/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/2/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
12/4/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/7/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/9/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/10/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/10/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
12/10/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/11/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/12/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016

Table 4.1. Metro TV Broadcasts

DATE	PROGRAM TITLE	ORIGINAL MEETING DATE
12/13/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
12/13/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/15/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
12/16/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/16/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/18/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/21/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/21/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/22/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
12/22/2018	Southwestern Parkway CSO Basin: Construction Meeting	4/18/2017
12/23/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017
12/27/2018	Clifton Heights CSO Basin: Advanced Design Meeting	9/15/2015
12/28/2018	Portland CSO Basin: Conceptual Design Meeting	6/14/2016
12/29/2018	I64 & Grinstead CSO Basin: Advanced Design Meeting	11/15/2016
12/29/2018	Ohio River Tunnel: Advanced Design Meeting	7/19/2017

4.3. PUBLIC OUTREACH PROGRAMS

MSD has developed a public education program aimed at expanding the public's knowledge of MSD's primary business functions of wastewater, stormwater and flood protection, with an emphasis on Project WIN Program elements.

4.3.1. IOAP PROJECT AND PROGRAM MEETINGS

MSD facilitates meetings for the Wet Weather Team and the public to review regulatory commitments, update progress on projects and initiatives, and to gather public input on efforts.

MSD has developed a partnership with Louisville Metro for providing project information and soliciting feedback from stakeholders using a Structured Public Involvement approach. Structured Public Involvement is meant to facilitate relevant input on the design process as MSD prepares to design and construct CSO basins. The current IOAP outreach activities and public meetings are using this process to elicit qualitative and quantitative information and enhance engagement with customers. Additional information regarding the Structured Public Involvement Process and meetings held during this reporting period may be found at the Project WIN Public Input Website, available at **http://www.msdprojectwin.org/Public-Input.aspx**.

MSD held meetings during the current reporting period as shown in Table 4.2. During the upcoming reporting period, MSD has planned for the meetings shown in Table 4.3.

Table 4.2. IOAP Project and Program Meetings – Current Reporting Period

DATE	EVENT
October 16, 2018	Southwestern Parkway CSO Basin: Construction Meeting

Table 4.3. IOAP Project and Program Meetings – Upcoming Reporting Period

DATE	EVENT
January 15, 2019	Southwestern Parkway CSO Basin: Construction Meeting

SECTION 5: CAPACITY MANAGEMENT OPERATIONS AND MAINTENANCE (CMOM) REPORT

Per Paragraph 24.c. of the Amended Consent Decree, the Capacity Management Operations and Maintenance (CMOM) Self Assessment Report was submitted to EPA and KDEP on February 10, 2006. MSD received a letter of approval on August 22, 2006. The approved CMOM document can be viewed on the MSD Project WIN website, available at **www.msdprojectwin.org**.

The primary objectives of CMOM are as follows:

- **Capacity** – Ensuring that adequate wet and dry weather capacity is maintained in existing and new infrastructure.
- **Management** – Implementing programs in support of operations and maintenance activities required to ensure KPDES permit compliance and promote public health by remedying design, construction and operational deficiencies; training staff; and performing activities in a safe manner.
- **Operations** – Implementing written standard operating procedures to operate system components as designed to meet permit requirements.
- **Maintenance** – Implementing systematic, comprehensive asset maintenance and rehabilitation programs to prevent overflows, maximize system reliability, and ensure system sustainability.

Although the program implementation deadlines from the CMOM Self Assessment Report were previously met, MSD continues to enhance the activities. Highlights of the CMOM program implementation over this reporting period are outlined below.

5.1. MANAGEMENT PROGRAMS

M-E-9 Infrastructure Rehabilitation

Refer to the CMOM activity schedule provided in Section 5.4.

M-E-10 System Capacity Assurance Program

Included in the goals of the CMOM Self-Assessment Report, the System Capacity Assurance Plan (SCAP) is the basis for applying capacity decision criteria to support watershed community values. It provides a programmatic approach for confirming available capacity within MSD's sanitary sewer system, creating capacity credits through system improvement and rehabilitation, identifying hydraulic constrictions, and proposing capacity improvements that support interim and long-term performance objectives. SCAP revisions, including credit and balance projections and discussion of approach for multi-family residential unit populations, were discussed with EPA and KDEP and submitted electronically for review on July 21, 2014. The final SCAP revision was submitted for approval on December 9, 2014, and approval was received February 5, 2015. A copy of the approved SCAP can be found on the Project WIN website, available at **www.msdprojectwin.org**.

A current copy of the SCAP Credit Balance is included as Appendix D.

5.2. OPERATIONS PROGRAMS

O-A-1 Pump Station Operations Programs (Routine Operating Programs)
O-A-2 Pump Station Operations Programs (Emergency Operating Programs)

Refer to the CMOM activity schedule provided in Section 5.4.

5.3. COMPREHENSIVE PERFORMANCE EVALUATIONS AND COMPOSITE CORRECTION PLANS (CPE/CCP)

Per requirements of MSD's 2009 Amended Consent Decree, MSD implemented a Comprehensive Performance Evaluation (CPE) and Composite Correction Plan (CCP) program for the District's WQTCs. Although the IOAP CPE assessments that defined specific WQTC improvements were completed by December 31, 2011, MSD will continue to implement CPE/CCP activities as part of the District's CMOM Program. This section lists activities per WQTC as they occur during the reporting period.

Refer to the CMOM activity schedule provided in Section 5.4 for CPE/CCP-related capital projects.

5.3.1. HITE CREEK WATER QUALITY TREATMENT CENTER

The Hite Creek WQTC Expansion project, to expand the capacity of the Hite Creek WQTC from 6 MGD to 9 MGD, is underway. Project design was previously submitted to the KY Division of Water and other agencies for final approval. The project is expected to bid during the next reporting period.

5.3.2. FLOYDS FORK WATER QUALITY TREATMENT CENTER

During this reporting period, there is no activity to report for the Floyds Fork WQTC.

5.3.3. DEREK R. GUTHRIE WATER QUALITY TREATMENT CENTER

The DRG Return Activated Sludge (RAS) 1 and 4 Pump Replacement project is under construction. This project calls for the replacement and upsizing of RAS pumps 1 and 4, replacement of all four pump variable frequency drives (VFDs), and placement in the expanded and renovated electrical room. Project completion is scheduled to occur during next reporting period.

The DRG Clarifier Grout Repair and Gate Replacement project is underway. New gates and automated actuators will be provided for the influent and the RAS lines for Clarifiers 1 - 6. Defective grout will be removed or replaced as needed for Clarifiers 7 – 12 and the aeration basin isolation gate will be replaced. The project design will continue during the next reporting period.

The DRG WQTC Hypo Containment will repair leaks in the containment structure of the Sodium Hypochlorite Building. Design is scheduled to be complete within the next reporting period.

5.3.4. CEDAR CREEK WATER QUALITY TREATMENT CENTER

The Cedar Creek WQTC Hydraulics Study will provide estimated future 20-year flow rates to the WQTC based on population growth projections, update the plant hydraulic grade line profile to identify process constraints and / or bottlenecks, provide input to the wet weather plant phasing strategy, and provide the 20-

year future peak flow rate projection for future capital projects. The study will be completed in the next reporting period.

The Cedar Creek WQTC Solids Study will develop a 20-year projection for biosolids storage and disposal needs. Disposal options to review include existing liquid hauling as well as three higher concentration options for economic comparison on a 20-year net present value (NPV) or net present worth (NPW) basis. This study may to lead into future biosolids thickening and/or dewatering capital projects. This study will be completed in the next reporting period.

5.3.5. PROSPECT AREA WATER QUALITY TREATMENT CENTER UPDATES

An elimination plan for the five WQTCs serving Prospect (Timberlake, Hunting Creek North, Hunting Creek South, Ken Carla, and Shadow Wood) was submitted to EPA/KDEP on March 31, 2009. Approval of this plan was received on September 24, 2009, and work is now complete. A certification letter dated December 15, 2015, was submitted finalizing the completion of the project.

5.3.6. JEFFERSONTOWN WATER QUALITY TREATMENT CENTER

A certification letter dated December 23, 2015, was submitted finalizing the completion of the Jeffersontown WQTC Elimination Project.

5.3.7. OTHER WATER QUALITY TREATMENT CENTERS

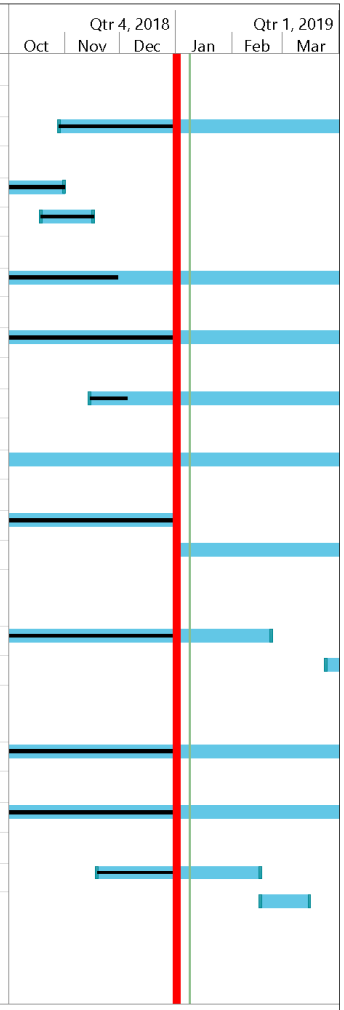
All non-regional WQTCs owned or operated by MSD have been eliminated as of May 27, 2016.

5.4. CMOM ACTIVITY SCHEDULE

CMOM capital project milestones for the current reporting period as well as a look-ahead for the upcoming reporting period are provided in Figure 5.1.

Figure 5.1. CMOM Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
	MSD CMOM Quarterly Commitments Schedule	**52%**	**Mon 7/27/15**	**Fri 3/18/22**
H18332	**Botanical Garden Biofilter Upgrades**	49%	Thu 3/1/18	Sun 8/25/19
H18332	**CLOSEOUT**	22%	Mon 10/29/18	Sun 8/25/19
K19246	**FY19 Telog Recorder Repair**	100%	Sun 7/1/18	Fri 11/16/18
K19246	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Wed 10/31/18
K19246	**CLOSEOUT**	100%	Thu 10/18/18	Fri 11/16/18
A18324	**Oreland Mill Pump Station Elimination**	57%	Fri 4/6/18	Wed 2/26/20
A18324	**CONSTRUCTION**	56%	Mon 5/21/18	Thu 5/2/19
D18285	**ORFM Odor and Corrosion Control**	41%	Mon 1/1/18	Mon 3/29/21
D18285	**DESIGN**	68%	Thu 3/8/18	Sun 5/19/19
A16073	**Mud Lane Interceptor**	57%	Mon 3/20/17	Mon 9/21/20
A16073	**CONSTRUCTION**	5%	Thu 11/15/18	Tue 11/26/19
D16272	**CCWQTC Influent PS MCC Upgrades**	30%	Thu 2/4/16	Fri 9/11/20
D16272	**CONSTRUCTION**	8%	Mon 6/11/18	Thu 9/26/19
E18475	**MF Collection System Baffles**	1%	Sun 7/1/18	Sun 6/30/19
E18475	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
E18475	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
D18292	**DRGWQTC Clarifier Grout Repair and RAS Gate Replacement**	37%	Wed 1/31/18	Fri 3/19/21
D18292	**DESIGN**	81%	Wed 5/23/18	Fri 2/22/19
D18292	**CONSTRUCTION**	0%	Sun 3/24/19	Fri 5/22/20
E18466	**FY19 CMOM Collection System Pump Rehab and Replacement**	40%	Sun 7/1/18	Mon 9/30/19
E18466	**CLOSEOUT**	40%	Sun 7/1/18	Mon 9/30/19
G18326	**Catalpa Farms PS Odor Control Evaluation**	70%	Thu 5/3/18	Wed 4/10/19
G18326	**CLOSEOUT**	70%	Fri 5/11/18	Wed 4/10/19
D19248	**CCWQTC Solids Study**	37%	Sun 7/1/18	Sat 3/16/19
D19248	**STUDY**	47%	Mon 11/19/18	Sun 2/17/19
D19248	**CLOSEOUT**	0%	Sun 2/17/19	Sat 3/16/19



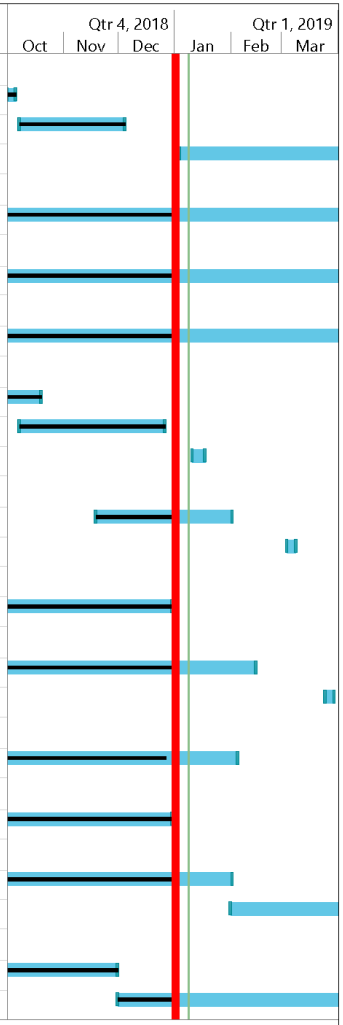
Data Date: 12/31/18 | CMOM Project | Project Progress

Percent complete is calculated based on phase duration.

Page 1

Figure 5.1. CMOM Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
D19268	**CCWQTC Safety Items**	99%	Mon 10/1/18	Tue 10/1/19
D19268	**INITIATION & PROCUREMENT**	100%	Mon 10/1/18	Fri 10/5/18
D19268	**CONSTRUCTION**	100%	Mon 10/8/18	Wed 12/5/18
D19268	**CLOSEOUT**	0%	Fri 1/4/19	Tue 10/1/19
H19056	**CMOM Telog 3G to 4G Conversion**	34%	Sun 7/1/18	Sun 6/30/19
H19056	**CLOSEOUT**	34%	Sun 9/30/18	Sun 6/30/19
D19223	**DRGWQTC WWPS Finite Element Analysis Phase 2**	40%	Mon 7/2/18	Sun 6/30/19
D19223	**CLOSEOUT**	38%	Wed 9/12/18	Sun 6/30/19
F14005	**FY18_19 Sewer Cleaning and TV Gline**	67%	Mon 1/1/18	Sun 6/30/19
F14005	**CLOSEOUT**	67%	Mon 1/1/18	Sun 6/30/19
F19284	**Breakwater PS Electrical Modifications**	99%	Wed 8/1/18	Thu 1/17/19
F19284	**DESIGN**	100%	Wed 8/22/18	Fri 10/19/18
F19284	**CONSTRUCTION**	100%	Mon 10/8/18	Thu 12/27/18
F19284	**CLOSEOUT**	0%	Fri 1/11/19	Thu 1/17/19
D19038	**CCWQTC Hydraulics Study**	63%	Sun 7/1/18	Fri 3/8/19
D19038	**CONSTRUCTION**	56%	Mon 11/19/18	Sat 2/2/19
D19038	**CLOSEOUT**	0%	Mon 3/4/19	Fri 3/8/19
E17010	**Collection System Spare Pump Inventory**	100%	Fri 7/1/16	Mon 12/31/18
E17010	**CLOSEOUT**	100%	Thu 7/7/16	Mon 12/31/18
D18290	**DRGWQTC Carbon Odor Control**	72%	Wed 1/31/18	Fri 3/29/19
D18290	**CONSTRUCTION**	71%	Tue 9/11/18	Fri 2/15/19
D18290	**CLOSEOUT**	0%	Mon 3/25/19	Fri 3/29/19
F14156	**DRGWQTC RAS 1 and 4 Pump Replacement**	96%	Fri 1/1/16	Mon 12/2/19
F14156	**CONSTRUCTION**	94%	Sat 4/1/17	Mon 2/4/19
H18217	**FY18 Consent Decree Operating Program Support**	100%	Wed 11/1/17	Mon 12/31/18
H18217	**CLOSEOUT**	100%	Wed 11/1/17	Mon 12/31/18
H19083	**FY19 CMOM Grinder RR**	50%	Sun 7/1/18	Sun 6/30/19
H19083	**INITIATION & PROCUREMENT**	85%	Sun 7/1/18	Fri 2/1/19
H19083	**CLOSEOUT**	0%	Fri 2/1/19	Sun 6/30/19
H19054	**FY19 CMOM I and C Implementation**	15%	Sun 7/1/18	Sun 6/30/19
H19054	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
H19054	**CLOSEOUT**	14%	Sat 12/1/18	Sun 6/30/19



Data Date: 12/31/18 | CMOM Project | Project Progress

Percent complete is calculated based on phase duration.

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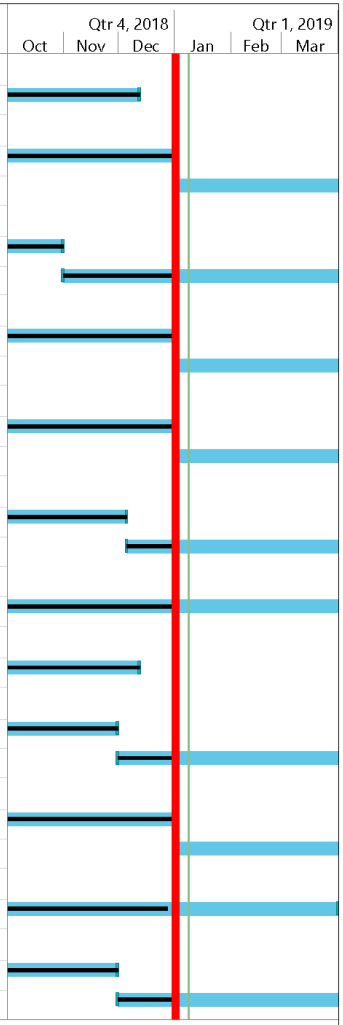
Figure 5.1. CMOM Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H16008	**FY19 CMOM PM Assist**	100%	Sun 7/1/18	Wed 12/12/18
H16008	**CLOSEOUT**	100%	Thu 7/5/18	Wed 12/12/18
H16010	**FY19 CMOM PS-Generator Upgrades**	1%	Sun 7/1/18	Sun 6/30/19
H16010	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Tue 1/1/19
H16010	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H16012	**FY19 CMOM SCAP, AAM and FOG**	26%	Sun 7/1/18	Sun 6/30/19
H16012	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Thu 11/1/18
H16012	**CLOSEOUT**	25%	Thu 11/1/18	Sun 6/30/19
H16041	**FY19 CMOM SSES-ICA**	1%	Sun 7/1/18	Sun 6/30/19
H16041	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H16041	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H16006	**FY19 CMOM WQTC CCP Upgrades**	1%	Sun 7/1/18	Sun 6/30/19
H16006	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H16006	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H19052	**FY19 CMOM WQTC Process Improvement**	13%	Sun 7/1/18	Sun 6/30/19
H19052	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Thu 12/6/18
H19052	**CLOSEOUT**	12%	Thu 12/6/18	Sun 6/30/19
A19061	**FY19 Construction Inspection**	51%	Sun 7/1/18	Sun 6/30/19
A19061	**CLOSEOUT**	50%	Sun 7/1/18	Sun 6/30/19
H19053	**FY19 CRRP Implementation Assistance**	100%	Sun 7/1/18	Wed 12/12/18
H19053	**CLOSEOUT**	100%	Tue 7/10/18	Wed 12/12/18
G16032	**FY19 Development Team Support**	15%	Sun 7/1/18	Sun 6/30/19
G16032	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
G16032	**CLOSEOUT**	14%	Sat 12/1/18	Sun 6/30/19
H16036	**FY19 I and I Reduction Program**	0%	Sun 7/1/18	Sun 6/30/19
H16036	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Tue 1/1/19
H16036	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H18171	**FY19 Information Governance Architecture**	50%	Sun 7/1/18	Sun 6/30/19
H18171	**INITIATION & PROCUREMENT**	67%	Sun 7/1/18	Mon 4/1/19
D18451	**FY19 MFWQTC Equipment Renewal and Replacement**	15%	Sun 7/1/18	Sun 6/30/19
D18451	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
D18451	**CLOSEOUT**	14%	Sat 12/1/18	Sun 6/30/19



Data Date: 12/31/18 | CMOM Project | Project Progress

Percent complete is calculated based on phase duration.

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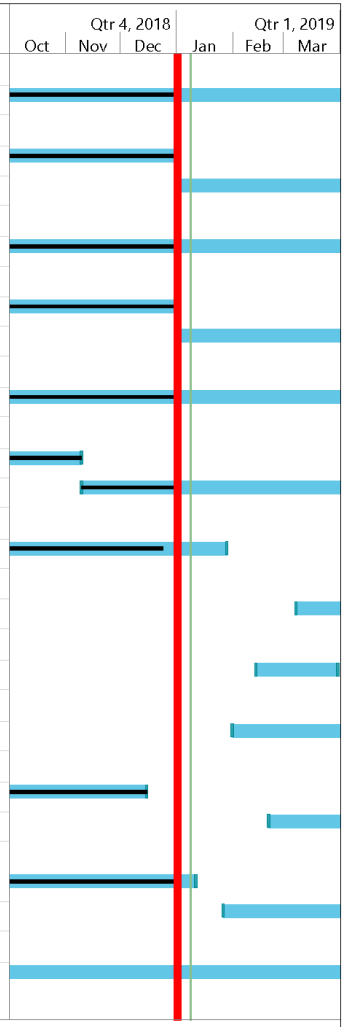
Figure 5.1. CMOM Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H16040	**FY19 PMP**	51%	Sun 7/1/18	Sun 6/30/19
H16040	**CLOSEOUT**	50%	Sun 7/1/18	Sun 6/30/19
H19087	**FY19 PS RR**	1%	Sun 7/1/18	Sun 6/30/19
H19087	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H19087	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
G19001	**FY19 Renewal and Replacement**	51%	Sun 7/1/18	Sun 6/30/19
G19001	**CLOSEOUT**	50%	Sun 7/1/18	Sun 6/30/19
E18445	**FY19 Systems Automation**	0%	Sun 7/1/18	Sun 6/30/19
E18445	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
E18445	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H19225	**FY19 Telog Support**	43%	Sun 7/1/18	Sun 6/30/19
H19225	**CLOSEOUT**	43%	Fri 8/17/18	Sun 6/30/19
D19042	**FY19 WQTC Odor Improvements**	23%	Sun 7/1/18	Sun 6/30/19
D19042	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 11/10/18
D19042	**CLOSEOUT**	22%	Sat 11/10/18	Sun 6/30/19
D17153	**HCWQTC Bioscrubber Installation**	99%	Fri 1/1/16	Mon 1/28/19
D17153	**CLOSEOUT**	83%	Mon 7/2/18	Mon 1/28/19
H14126	**HCWQTC Expansion**	48%	Mon 11/2/15	Fri 3/18/22
H14126	**CONSTRUCTION**	0%	Fri 3/8/19	Sat 5/22/21
D19237	**MFWQTC Arc Flash Update**	11%	Mon 7/2/18	Mon 5/6/19
D19237	**STUDY UPDATE AND FIELD WORK**	0%	Thu 2/14/19	Sun 3/31/19
H16074	**Nightingale Rehab**	1%	Mon 7/2/18	Mon 9/20/21
H16074	**CONSTRUCTION**	0%	Fri 2/1/19	Sun 11/22/20
A18353	**Ohio River Interceptor Structural Rehabilitation**	99%	Tue 3/6/18	Mon 10/14/19
A18353	**CONSTRUCTION**	100%	Fri 5/4/18	Sat 12/15/18
A18353	**CLOSEOUT**	0%	Thu 2/21/19	Mon 10/14/19
H19232	**Parkwood PS Access Road**	59%	Wed 8/1/18	Mon 3/9/20
H19232	**DESIGN**	92%	Tue 8/28/18	Fri 1/11/19
H19232	**CONSTRUCTION**	0%	Sat 1/26/19	Sat 5/11/19
E15033	**Shively PS Generator Replacement**	64%	Fri 4/1/16	Fri 5/1/20
E15033	**CONSTRUCTION**	49%	Mon 11/27/17	Sat 7/6/19



Data Date: 12/31/18 | CMOM Project | Project Progress

Percent complete is calculated based on phase duration.

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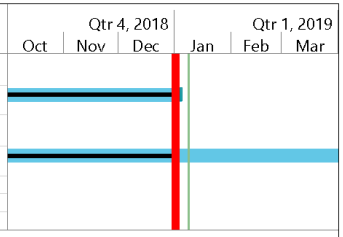
Figure 5.1. CMOM Quarterly Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H16356	**South Pope Lick Pump Station Repair**	99%	Mon 7/27/15	Fri 1/4/19
H16356	**CLOSEOUT**	99%	Tue 12/5/17	Fri 1/4/19
E19204	**FY19 Operations RR**	51%	Sun 7/1/18	Sun 6/30/19
E19204	**CLOSEOUT**	50%	Sun 7/1/18	Sun 6/30/19



Data Date: 12/31/18

CMOM Project

Project Progress

Percent complete is calculated based on phase duration.

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SECTION 6: PROJECT WATERWAY IMPROVEMENTS NOW (WIN) PERFORMANCE OVERVIEW

6.1. COMBINED SEWER OVERFLOW REDUCTION AND SANITARY SEWER OVERFLOW ABATEMENT ACTIVITIES

The following sections outline the activities performed during the reporting period to reduce or control CSOs and eliminate SSOs.

6.1.1. SANITARY SEWER OVERFLOW ELIMINATION ACTIVITIES

Refer to Section 3.4.1 for Final SSDP project updates.

6.1.2. COMBINED SEWER OVERFLOW REDUCTION AND CONTROL ACTIVITIES

Refer to Section 3.4.2 for CSO LTCP project updates.

6.2. SYSTEMWIDE PERFORMANCE

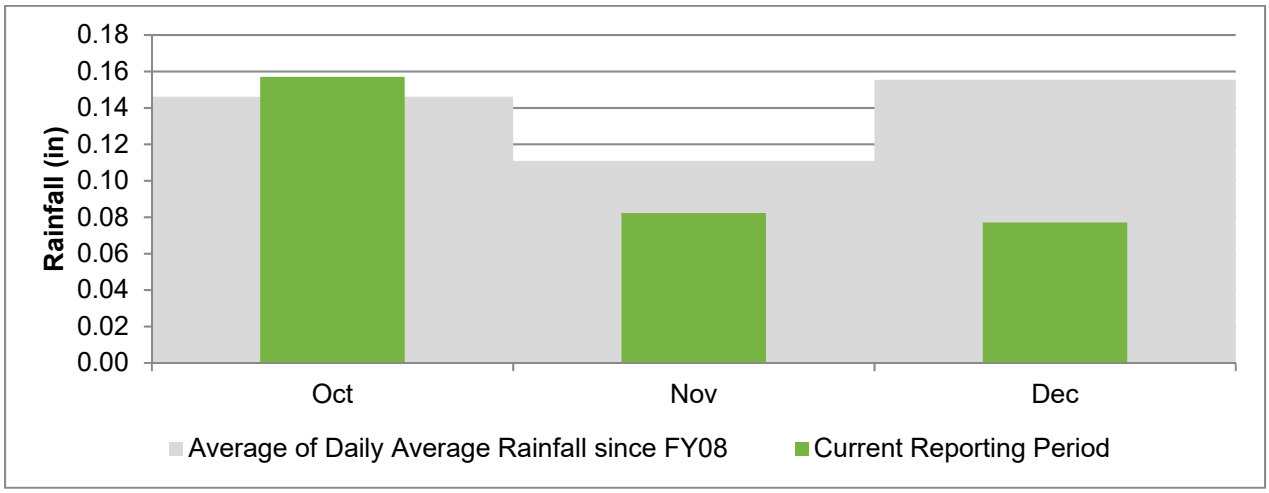
6.2.1. RAINFALL

The number and the volume of wet weather overflows are directly related to the amount of rain that has fallen during the reporting period. Figure 6.1 shows the service area daily average rainfall amounts for each month of the last quarter, compared with the average of the daily average rainfall since FY08. Data was pulled from MSD's rain gauge network.

Weather Event Summary

Daily average rainfall was above average for October and below average for November and December when compared with the previous fiscal year average for these months.

Figure 6.1. Daily Average Rainfall by Month



6.3. WATER QUALITY TREATMENT CENTER PERFORMANCE

6.3.1. BYPASSES

One bypass event occurred during this reporting period, as reflected in Appendix A-2 and Table 6.1.

Table 6.1. Unauthorized Discharges - Bypasses at WQTCs

DATE	TYPE OF BYPASS	ID	FACILITY NAME
11/10/2018	DRY WEATHER DISCHARGE	MSD0277	DEREK R. GUTHRIE

6.3.2. JEFFERSONTOWN WATER QUALITY TREATMENT CENTER

A letter dated December 23, 2015, certified the elimination of Jeffersontown WQTC. Inspections were conducted upstream of what was previously Jeffersontown WQTC Headworks during the reporting period. There were no overflows reported as a result of these inspections. Refer to Section 2.2 for SSO Route information.

6.3.3. PHOSPHORUS MONITORING AT THE PROSPECT WQTCs

An elimination plan for the five WQTCs serving Prospect (Timberlake, Hunting Creek North, Hunting Creek South, Ken Carla, and Shadow Wood) was submitted to EPA/KDEP on March 31, 2009. Approval of this plan was received on September 24, 2009, and work is now complete. A certification letter dated December 15, 2015, was submitted finalizing the completion of the project.

6.4. COMBINED SEWER OVERFLOW PERFORMANCE

6.4.1. AUTHORIZED DISCHARGES – WET WEATHER CSOs

The observed CSO data for the reporting period for each monitored overflow has been tabulated, along with rainfall information from the nearest rain gauge to facilitate review of the overflows that occurred. This data is included as Appendix B. During development of this appendix for the previous reporting period, MSD identified aa potential improvement with the rainfall analysis tool that is being investigated.

6.4.2. UNAUTHORIZED DISCHARGES – DRY WEATHER CSOs

MSD recorded information related to dry weather overflows from permitted combined sewer overflow outfalls. This information is entered and maintained in Hansen utilizing procedures reviewed and improved through efforts associated with various components of the Amended Consent Decree. A detailed report of these overflows will be included in the Annual Report for the current reporting period. There were five dry weather overflows reported at CSOs during the reporting period, as shown in Table 6.2 and detailed in Appendix A-1 .

Table 6.2. Unauthorized Discharges – Dry Weather CSOs

START DATE	CSO	PROBLEM	CAUSE	VOLUME (GAL)
10/3/2018	CSO197	STRUCTURAL FAILURE	OBSTRUCTION.	137
10/8/2018	CSO166	OBSTRUCTION-NOT GREASE / ROOTS	OBSTRUCTION.	10,000
12/4/2018	CSO108	MECHANICAL FAILURE	PLC MECHANICAL MALFUNCTION. ERRONEOUS SIGNAL SENT FROM THE PLC ACTIVATED THE PUMPS.	42,667
12/5/2018	CSO055	OBSTRUCTION-NOT GREASE / ROOTS	OBSTRUCTION IN LOW FLOW LINE, PIPED THROUGH ORI PROJECT. UNABLE TO FLUSH AS A SAFETY ISSUE FOR WORKERS IN ORI. PIPING TO BE DISMANTLED WITHIN 24 HRS.	64,000
12/11/2018	CSO020	STRUCTURAL FAILURE	PLANNED OUTAGE TO REMOVE TEMPORARY BULKHEAD INSTALLED IN ORI FOR REPAIRS.	3,675,000

6.4.3. CSO FLOW MONITORING QUALITY IMPROVEMENT

During the July 2016 – September 2016 reporting period, MSD identified a potential for inaccurate volume reporting at some CSOs. This was identified by comparing measured overflow volumes against modeled overflow volumes for similar storms. It was determined that several CSO flow monitors are affected by backwater levels from the receiving streams causing a discrepancy actual overflow volume, along with other potential variables at some locations. MSD notified EPA and KDEP of data discrepancies on September 29, 2016.

A workgroup was established to review CSO flow monitoring and resolve potential over-reporting of overflow volumes. Initial findings indicated that potentially significant discrepancies between modeling and monitoring data existed at 33 of MSD's 98 CSO locations. This set of 33 CSOs was the highest priority to review, correct data, document SOPs, and implement changes. For these CSO locations, MSD performed site visits including elevation surveys, performed detailed analysis, investigated equipment configurations, and investigated PLC programming or monitoring program logic. This has led to the development of an SOP for each CSO that describes the existing monitoring equipment, configuration, and flow calculation in use as of December 31, 2016, and evaluates the effectiveness of the existing setup. If a more effective arrangement was recommended, MSD added the proposed arrangement to the SOP for implementation and determined if historical data could be updated. In cases where the historical data could be updated, MSD has developed revised volumes for reporting. Locations for which revised volumes have been developed are detailed in Appendix F. In some cases, historical volumes could not be recalculated based on the available data. For instance, CSOs influenced by river or creek elevation for which there was no available historic level data could not be recalculated for historical volumes but will be calculated or measured according to the revised SOPs as they are implemented.

To date, SOPs have been drafted and historical volume data corrections (where possible) have been made for all of the 33 initial CSO locations. These changes have also been made for two additional CSO locations included in the review due to interaction with priority CSOs. Multiple SOPs require programming or equipment changes in order to implement the final SOPs. During the upcoming reporting period, MSD will continue

working to procure and replace equipment as required and update the programming at the PLC or with monitoring program logic, as summarized in Figure 6.2 and detailed in Appendix F, to complete implementation of the SOPs.

The remaining 65 active CSO locations are being reviewed during the current fiscal year. MSD has also identified two inactive sites with historic data that will be reviewed. MSD has developed a schedule for review of these sites and has begun site visits, calculation review, and SOP development. Status for these remaining CSOs is summarized in Figure 6.3 and detailed in Appendix F.

Until the review is complete, CSO flow monitoring data will continue to be included as an appendix to each quarterly report, will be listed as “Draft”, and will include the statement “CSO data monitoring procedures are currently being revised”. As changes are made to flow meter locations and or flow meter calculation algorithms, MSD will provide status updates in the quarterly reports on progress to evaluate data accuracy, revise monitoring data records, update monitoring procedures, and implement recommendations. CSO flow monitoring data reported quarterly will include updated volumes based on completion of the review and update of the reporting standards for each CSO. Revised volumes for previous reporting periods up to and including FY18 for the 33 CSO locations initially reviewed were included as an appendix to the FY18 Consent Decree Annual Report. Any subsequently developed revised volumes for previous reporting periods up to and including FY20 will be included as an appendix to the FY20 Consent Decree Annual Report.

6.5. COLLECTION SYSTEM OVERFLOW PERFORMANCE

6.5.1. UNAUTHORIZED DISCHARGES TO WATERS OF US

MSD recorded information related to overflows reaching Waters of the United States (WUS) for the reporting period. This information is entered and maintained in Hansen utilizing procedures reviewed and improved through efforts associated with various components of the Amended Consent Decree. Details of these overflows are included in Appendix A-3 . During this quarter, 46 unauthorized discharges to WUS were reported, summarized in Table 6.3.

Table 6.3. Dry and Wet Weather SSOs by Cause – Unauthorized Discharges to Waters of US

PROBLEM	DRY WEATHER	WET WEATHER
LACK OF SYSTEM CAPACITY	0	39
OBSTRUCTION-NOT GREASE / ROOTS	1	0
STRUCTURAL FAILURE	1	1
GREASE BLOCKAGE	0	1
ELECTRICAL	1	1
POWER OUTAGE (LG&E)	0	1

Figure 6.2. CSO Flow Monitoring Quality Improvement Status – Phase 1

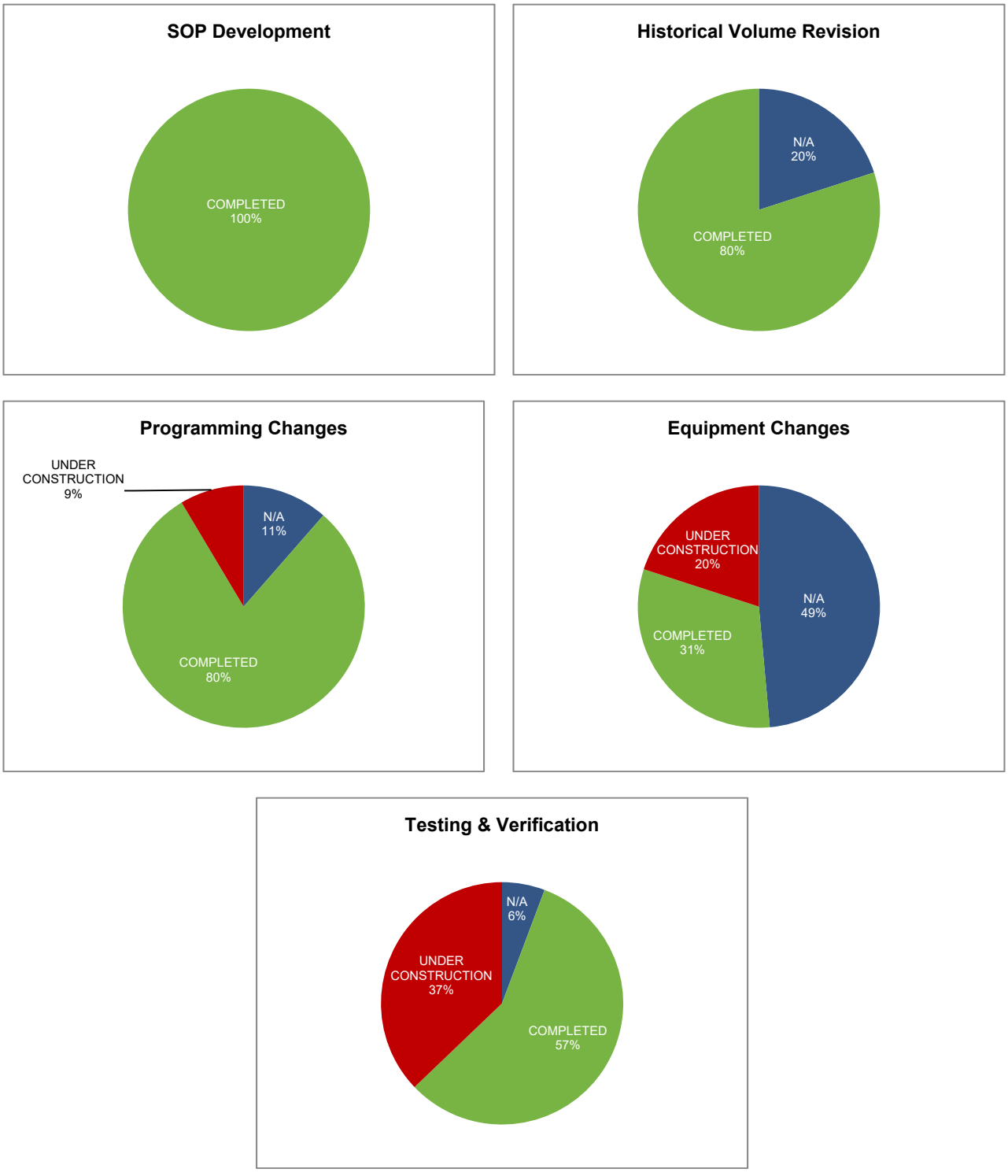
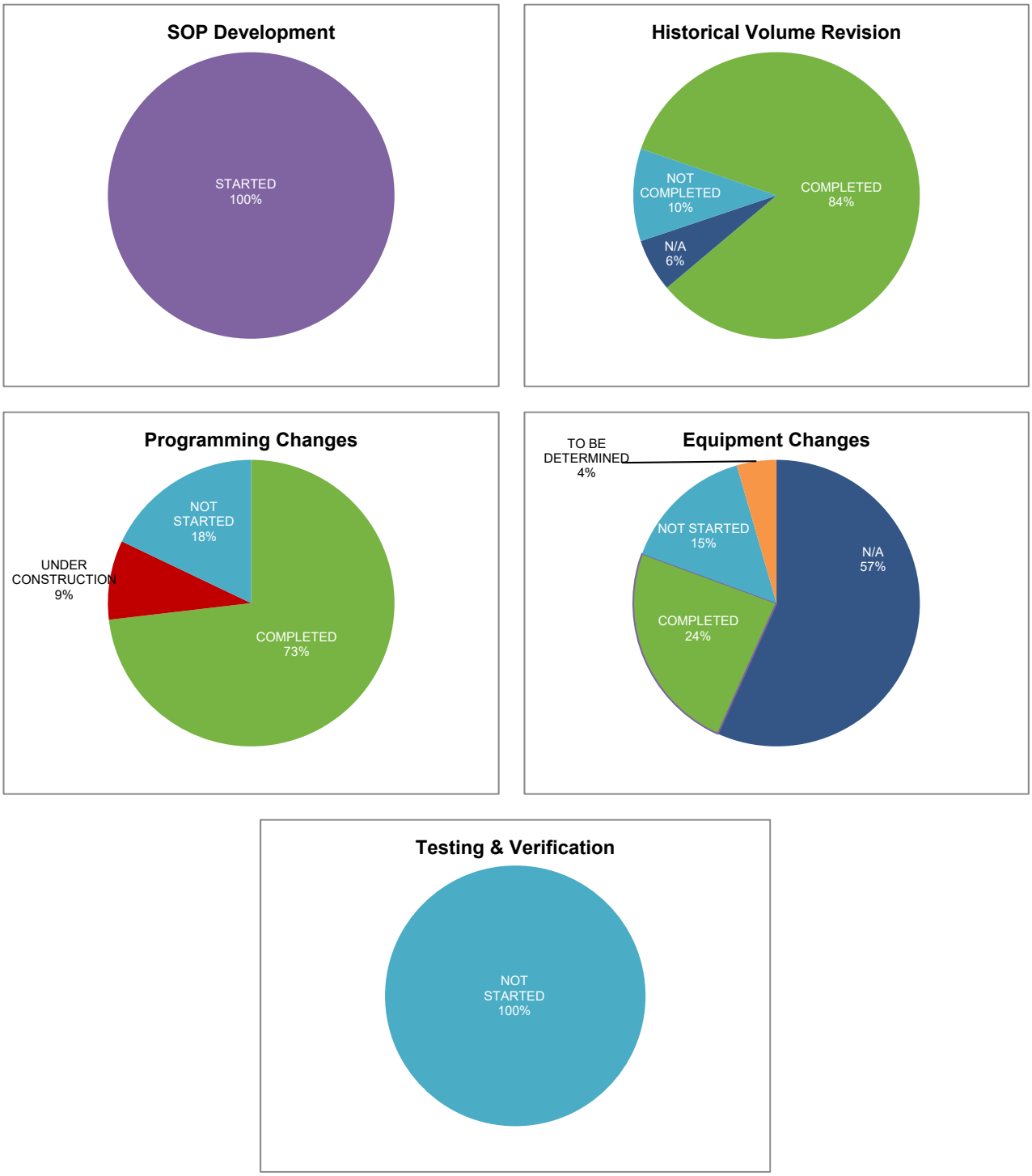


Figure 6.3. CSO Flow Monitoring Quality Improvement Status – Phase 2



[1]Draft SOPs are completed and under review.

6.5.2. OVERFLOWS TO THE EXTERIOR

MSD recorded information related to overflows to the ground that did not reach Waters of the United States for the reporting period. This information is entered and maintained in Hansen utilizing procedures reviewed and improved through efforts associated with various components of the Amended Consent Decree. These overflows will be included in the Annual Report for the reporting period.

6.5.3. OVERFLOWS TO INTERIOR

MSD recorded information related to overflows to building interiors for the reporting period. This information is entered and maintained in Hansen utilizing procedures reviewed and improved through efforts associated with various components of the Amended Consent Decree. These overflows, that are the result of an issue in the main line, will be included in the Annual Report for the reporting period.

6.6. GRAVITY LINE PREVENTIVE MAINTENANCE (GLPM)

Each quarter, data and statistics relating to the cleaning, inspection and maintenance of sewer assets performed under the Gravity Line Preventive Maintenance are reported. Data for the current and previous three reporting periods are shown in Table 6.4.

Targets have been developed for planned maintenance (PM) only, which includes any activities that are routinely scheduled to maintain asset condition and decrease its likelihood of failure. Unscheduled maintenance (UM) activities include those activities performed as a reaction to correct asset deficiencies.

Table 6.4. Rolling Quarterly GLPM Performance with Targets

ACTIVITY	ACTIVITY TYPE	AREA	Jan-Mar 18	Apr-Jun 18	Jul-Sep 18	Oct-Dec 18	Total	Target/ qtr	% of Annual Target
Catch Basins Cleaned	PM	Combined System	3,526	5,490	4,540	5,961	19,517	4,460	33%
		Separate System	477	2,340	1,401	157	4,375	1,144	3%
	UM	Combined System	203	268	386	175	1,032		
		Separate System	86	101	92	45	324		
CSO Inspections	PM	Combined System	1,250	1,263	1,248	1,285	5,046	1,272	25%
CSO Debris Removal WO	UM		140	170	199	159	668		
Sewer Main Chemical Root Treatment (LF)	UM	Combined System	18,437	539	0	19,175	38,151		
		Separate System	362,026	4,801	0	93,006	459,833		
Sewer Main Flushing and Cleaning (LF)	UM	Combined System	1,908	175	4,989	3,370	10,442		
		Separate System	38,469	20,043	20,654	12,070	97,430		
Sewer Main Inspections MSD Crews (LF)	PM	County Wide	13,862	12,714	10,881	10,427	47,884	198,000	1%
Sewer Main Inspections Contractor (LF)	PM	County Wide	23,032	15,306	32,947	34,004	105,289	198,000	4%
Total Sewer Main Inspections (LF)	PM	County Wide	36,894	28,020	43,828	44,431	153,173	396,000	3%
Sewer Main Root Cutting (LF)	UM	Combined System	510	1,279	200	1,741	3,997		
		Separate System	20,513	16,420	12,977	13,099	63,009		

6.7. OHIO RIVER INTERCEPTOR EMERGENCY REPAIR

6.7.1. BACKGROUND

The Ohio River Interceptor (ORI) is a critical asset for MSD. The ORI was constructed by MSD in the late 1950s to intercept and convey flow from multiple combined sewer pipes to the newly-constructed Fort Southworth Treatment Plant (now Morris Forman WQTC). Portions of the ORI and its associated structures, including gates and combination sanitary / flood pump stations, were built in by the US Army Corps of Engineers with the City of Louisville as the local sponsor, to provide an outlet for wastewater while protecting the city from riverine flooding.

The seven-mile long non-circular pipe ranges from 60 to 102 inches in diameter and runs west from Starkey PS (SPS) under Main Street to I-264, then turns southwest to Morris Forman WQTC. Because of its location under busy Main Street, a sensitive downtown corridor subjected daily to heavy traffic loading and home to multiple large businesses and entertainment venues, portions of the interceptor were constructed as a hand-dug tunnel. These tunnel sections extend for up to a mile with no direct access structures or manholes. Because the pipe was constructed to intercept other existing structures, there are multiple vertical transitions. While most of the transitions are 12 inches or less, a transition at 4th Street drops flow approximately 9 vertical feet at a 1:1 slope.

The interceptor receives flow from local sources; the Ohio River Force Main (ORFM), which conveys flow from northeastern Jefferson County; and SPS, which lifts flow from the Beargrass Interceptor (BGI) and Middle Fork Interceptor (MFI). Together these sources account for 40% of dry weather flow in the district.

On August 30, 2017, a major failure occurred on the ORI at the intersection of Main and Hancock near the junction with the ORFM. The intersection was closed for weeks and caused major traffic issues downtown. The line had previously been inspected in 2009 using video only. A new inspection was commissioned in November 2017 using video as well as sonar to detect debris under the water surface and laser profiling to detect pipe wall defects and losses above the water surface to determine if other new defects existed in the line that could lead to failure.

The reinspection was performed in January 2018, and the report was delivered to MSD on March 1, 2018. The report was reviewed immediately, and showed a 1,700 LF stretch of 84-inch pipe from 4th Street to just beyond 7th Street with significant deterioration due to hydrogen sulfide attack. This section is part of the mile-long tunnel section from 4th to 15th street. No manholes or other ways for gasses to escape the interior of the pipe exist in this section. The section is also just downstream of the significant vertical transition, and video revealed turbulence caused by the transition that extended nearly 100 LF. Due to technology limitations of the time, the 2009 inspection was not attempted on this section, and high flows prevent person-entry for manual inspection, so this was MSD's first glimpse at the condition of this pipe since its construction.

6.7.2. EMERGENCY REPAIR SOLUTION

MSD consulted with an outside engineering firm to perform a limited finite element analysis of the ORI. The consultant confirmed that the section from 4th to just beyond 7th Street had a factor of safety of less than 1.0, where 1.8 is the industry standard and less than 1.0 is considered to be in failure mode. Based on this finding, MSD declared the repair an emergency and brought on a design engineer and a construction firm, both with significant experience in repair of large-diameter pipes.

The team examined several options for rehabilitation, including circular and non-circular sliplining and panel lining. The recommended rehabilitation method developed by the team is a panel liner, which includes the reconstruction of the pipe wall using rebar and grout, constructed with a PVC panel form that will remain in place as a liner to protect the concrete from future hydrogen sulfide attack. The panel liner method was selected for its maintenance of long-term flow capacity, minimal disruption to vehicular and pedestrian traffic, minimal disruption of downtown business, minimal utility relocations, short construction schedule, minimal odors from excavations, and least regulatory and environmental impact. This method does require that the pipe be dry for worker safety, as workers are required to enter the pipe to install the new pipe liner.

MSD built a temporary pump station, located at 4th Street & River Road, to divert flow around the degraded section of pipe. MSD diverted flow through an existing decommissioned floodgate through the flood influent line for the 4th Street PS to the 4th Street Sewer, which serves as the outfall pipe for CSO022 and CSO023. Flow was intercepted by a temporary overflow structure constructed in the outfall pipe and diverted to the temporary pump station well, where it was pumped 3,800 feet through four 18" temporary force mains back to the ORI at the intersection of 9th and Main Streets.

MSD based the design of the temporary pump station on average daily flow conditions with flow diverted at two locations upstream of the ORI. These upstream system diversions were put in place in June to minimize surcharge conditions in the ORI until the pipe can be repaired. These diversions also served to minimize wet weather flow to the interceptor when construction began, which dampered the increase in overflow volume that was anticipated to occur at CSOs 020, 022, 023, 058, and 062. The two diversions were upstream of

SPS, which normally lifts flow to the ORI and controls wet weather events through CSO020 and CSO062, and CSO058 is located on the ORI at Preston Street. MSD installed a weir plate in a sanitary manhole near the Upper Middle Fork Pump Station (UMFPS) to divert flow from the MFI to the BGI. Additionally, gates in the BGI and Beargrass Interceptor Relief (BGIR) at Nightingale PS (NPS) were closed, sending all flow through NPS to the Manning Road / Cardinal Drive Sewer west to Morris Forman WQTC. The diversions reduced the average daily flow at 4th Street PS from 36 to 26 MGD. The temporary pump station was designed to pump 30 MGD with additional pump capacity for peak conditions, up to 40 MGD. An additional pump was added to support modified operations discussed below, bringing the peak capacity of the station to near 50 MGD.

Another existing decommissioned floodgate was used to seal off the section of the ORI to be repaired to protect the workers from wastewater flow and to minimize exposure to hydrogen sulfide gas. A temporary bulkhead was constructed to protect workers while the gate replacement was performed. The temporary bulkhead also served as a secondary bulkhead to the floodgate in the event of failure of the new floodgate.

MSD modified the plan with the contractor for operational procedures of SPS, the temporary pump station, and the gate being used as the main bulkhead. This gate was intended to be operated in the event of a heavy rainfall, but in the interest of public and contractor safety, MSD decided to complete all repairs on the deteriorated section before allowing flow to return to the ORI and the gate has remained closed since installation. The overflow weir, located in the temporary overflow structure in the 4th Street Sewer, was designed to pass the 2-year design storm as a CSO discharge without localized flooding; a temporary weir extension was added to be used during dry weather to increase the flow that could be pumped from SPS during upstream dewatering operations. SPS was controlled based on freeboard at the temporary weir to maximize the volume of flow sent to MFWQTC. During rain events less than the design storm, workers evacuated the ORI until the rain event ends. During rain events greater than the design storm, the temporary weir extension was pulled until the CSO stopped discharging, when it was reintroduced.

As a part of this rehabilitation effort, MSD also constructed CSO connections from CSOs 054, 055, and 056 in 5th, 6th, and 7th Streets to the ORI. The low flow lines of each of these CSOs direct flow to the ORI, and additional connections were made to send additional wet weather flow to the ORI and reduce CSO volumes in accordance with the IOAP. These connections were originally a part of the IOAP Downtown CSO Interceptor project, which was bid in April 2018, but they were removed from the project and added to the emergency ORI repair project to prevent construction conflicts and abate safety concerns around tying into the degraded section of the ORI.

6.7.3. CONSTRUCTION PROGRESS

Once the temporary pump station construction was completed and the system was tested, the bulkhead was in place for worker protection, and the failure discovered in August was addressed, rehabilitation construction could commence in the degraded section of the ORI. Rehabilitation began September 3, including ring beam and tunnel lagging installed in the first 165 LF of the repair section and rebar cages for the next 600 LF. The delay in schedule caused by the installation of the additional steel was addressed through a change in means and methods for installation of the liner panels and grout. Rehabilitation efforts were completed on December 8, and flow was restored to the ORI on December 11.

Construction on the CSO connections began in late July, and were completed in November.

Demobilization began on December 9, including removal of the temporary pump station and piping, and was completed December 21.

6.7.4. DECEMBER 11, 2018 – DRY WEATHER DISCHARGE

On December 11, 2018, the contractor entered the ORI at the intersection of 4th and Main Street to remove the temporary bulkhead. Operational changes were made upstream to divert and store flow to reduce the flow rate in addition to the UMFPS and NPS diversions. These additional modifications included diversion of flows to the Muddy Fork Basin to reduce flows to the ORFM as well as inline storage at CSO146 to reduce flow in the BGI downstream of NPS. Based on the conditions found during the previous shutdown, the total volume that was estimated to have the potential to leave the system as a dry weather overflow during an 8-hour shutdown period was 1.9 MG. During this shutdown, the total volume discharged was approximately 3.7 MG, greater than the estimated flow due to wet weather conditions that had occurred in the days leading up to the shutdown.

6.7.5. SUMMARY OF REPAIR-RELATED DISCHARGES

Over the course of the project, 11 discharges occurred related to the repair. Three discharges were related to planned outages for the measurement, installation and removal of the temporary bulkhead, and advance notification of the potential to discharge was provided to KDOW. Of the remaining eight discharges, three were associated with temporary pump station startup, four were associated with heavy rain events that required pumping at Starkey PS / CSO020 to prevent surface flooding on Frankfort Ave, and one was due to an obstruction in the low flow line of CSO055 that was piped through the ORI during construction. All discharges were reported in a timely manner through the discharge notification system and will be included in the appendices of the FY18 or FY19 Annual Report as appropriate.

Table 6.5. Discharges Associated with ORI Repair

START DATE	CSO	WEATHER	CAUSE	VOLUME (GAL)
6/7/2018	CSO020	DRY	STARKEY PS WAS SHUT DOWN TO TAKE MEASUREMENTS FOR REHABILITATION OF THE OHIO RIVER INTERCEPTOR.	578,054
8/10/2018	CSO020	DRY	PLANNED OUTAGE TO INSTALL TEMPORARY BULKHEAD IN ORI FOR REPAIRS.	883,123
8/10/2018	CSO022	DRY	DISCHARGING AT CSO022 DURING RECOVERY FROM OVERNIGHT SHUTDOWN RELATED TO ORI EMERGENCY REPAIR. DISCHARGE UP TO 1 FT OVER WEIR.	21,994,374
8/14/2018	CSO022	DRY	TEMPORARY PUMP STATION AT 4TH AND RIVER ROAD. FLOW OVERTOPPED DIVERSION STRUCTURE.	5,700
8/15/2018	CSO022	DRY	TEMPORARY PUMP STATION RELATED TO ORI REPAIR, LOST A VFD.	782,000

Table 6.5. Discharges Associated with ORI Repair

START DATE	CSO	WEATHER	CAUSE	VOLUME (GAL)
11/10/2018	CSO020	WET	FLASH FLOODING FROM RAIN EVENT OVERWHELMED CSOS REQUIRING PUMPED OVERFLOW.	333,000,000
11/18/2018	CSO020	WET	HEAVY RAINS OVERWHELMED CSOS, CANNOT MAXIMIZE FLOW DOWNSTREAM DUE TO ORI REPAIRS, PUMPING TO PREVENT SURFACE FLOODING.	96,378,353
11/26/2018	CSO020	WET	HEAVY RAINS OVERWHELMED CSOS, CANNOT MAXIMIZE FLOW DOWNSTREAM DUE TO ORI REPAIRS, PUMPING TO PREVENT SURFACE FLOODING.	25,945,290
12/7/2018	CSO020	WET	HEAVY RAINS OVERWHELMED CSOS, CANNOT MAXIMIZE FLOW DOWNSTREAM DUE TO ORI REPAIRS, PUMPING TO PREVENT SURFACE FLOODING.	267,456,608
12/9/2018	CSO055	DRY	OBSTRUCTION IN LOW FLOW LINE, PIPED THROUGH ORI PROJECT. UNABLE TO FLUSH AS A SAFETY ISSUE FOR WORKERS IN ORI. PIPING TO BE DISMANTLED WITHIN 24 HRS.	64,000
12/11/2018	CSO022	DRY	PLANNED OUTAGE TO REMOVE TEMPORARY BULKHEAD INSTALLED IN ORI FOR REPAIRS.	3,675,000

APPENDICES

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Appendix A-1 Discharge Work Orders – Dry Weather CSOs

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Appendix A-1 Discharge Work Orders – Dry Weather CSOs

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	1218 S 3RD ST	KY0022411	10/3/2018 11:10	10/3/2018 12:38	137	SEWER MANHOLE	CSO197	STREAM	OHIO RIVER	OBSTRUCTION.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2991573	NO CLEAN UP PERFORMED. PIPE DISCHARGING TO CENTRAL RELIEF DRAIN.	FLUSH & ROOT CUT HEAVY SEDIMENT AND BRICKS IN THE LINE.
MORRIS FORMAN	2201 CROSS HILL RD	KY0022411	10/8/2018 20:00	10/8/2018 20:15	10,000	SEWER MANHOLE	CSO166	STREAM	MIDDLE FORK BEARGRASS CREEK	OBSTRUCTION.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2994503	MAGNITUDE OF STORM RESULTED IN NO DEBRIS REMAINING.	NO REPAIR REQUIRED, SYSTEM FLUSHED OBSTRUCTION.
MORRIS FORMAN	2324 NEWBURG RD	KY0022411	12/4/2018 13:58	12/4/2018 14:13	42,667	SEWER MANHOLE	CSO108	STREAM	SOUTH FORK BEARGRASS CREEK	PLC MECHANICAL MALFUNCTION. ERRONEOUS SIGNAL SENT FROM THE PLC ACTIVATED THE PUMPS.	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	3019590	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	REPAIRS ARE BEING MADE TO THE REAL TIME CONTROL PLC SYSEM.
MORRIS FORMAN	100 N 6TH ST	KY0022411	12/5/2018 6:00	12/9/2018 7:45	64,000	SEWER MANHOLE	CSO055	STREAM	OHIO RIVER	OBSTRUCTION IN LOW FLOW LINE, PIPED THROUGH ORI PROJECT. UNABLE TO FLUSH AS A SAFETY ISSUE FOR WORKERS IN ORI. PIPING TO BE DISMANTLED WITHIN 24 HRS.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	3019831	NONE POSSIBLE, PIPE SUBMERGED.	REMOVE FLOW THROUGH PIPING IN ORI 12/6/18.
MORRIS FORMAN	147 BUCHANAN ST	KY0022411	12/11/2018	12/11/2018 2:50	3,675,000	SEWER MANHOLE	CSO020	STREAM	OHIO RIVER	PLANNED OUTAGE TO REMOVE TEMPORARY BULKHEAD INSTALLED IN ORI FOR REPAIRS.	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	3022388	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	PLANNED OUTAGE TO TERMINATE BY 0800.

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Appendix A-2 Discharge Work Orders – Bypass

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Appendix A-2 Discharge Work Orders – Bypass

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
DEREK R. GUTHRIE	11621 LOWER RIVER RD	KY0078956	11/10/2018 21:45	11/11/2018 2:00	9,450,000	SEWER TREATMENT PLANT	MSD0277	STREAM	OHIO RIVER	LOSS OF POWER TO BISULFITE BUILDING. MAIN BREAKER.	BYPASS AT WQTC	DISDW DRY WEATHER DISCHARGE	3010431	NONE	REPAIRS MADE BY ELECTRICAL CREW.

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Appendix A-3 Discharge Work Orders – Unauthorized Discharges

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Appendix A-3 Discharge Work Orders – Unauthorized Discharges

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	1726 FRASER DR	KY0022411	11/1/2018 2:15	11/1/2018 5:00	584,000	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3004532	CLEAN UP NOT REQUIRED. PIPE IS SUMERGED.	LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	11/1/2018 3:06	11/2/2018 12:30	526,000	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3004512	NO CLEAN UP REQUIRED DISCHARGED PIPE IS SUBMERGED UNDERGROUND.	LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	11/1/2018 3:30	11/2/2018 0:45	1,706,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3004495	NO CLEAN UP REQUIRED. DISCHARGED PIPE IS SUBMERGED UNDERGROUND.	LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	1132 ROSTREVOR CIR	KY0022411	11/1/2018 4:15	11/1/2018 11:22	10,500	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3004563	WO#3005015	LOCATION INCLUDED IN THE IOAP.
MORRIS FORMAN	1011 ALTA CIR	KY0022411	11/1/2018 4:30	11/2/2018 6:15	468,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3004569	WO#3005078	LOCATION INCLUDED IN THE IOAP.
FLOYDS FORK	611 WOODLAKE DR	KY0102784	11/4/2018 13:00	11/4/2018 14:10	3,300	SEWER MAIN	80581B-AG	STREAM	FLOYDS FORK	STRUCTURAL FAILURE. FORCE MAIN BREAK.	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	3006011	CLEANED AND SANITIZED THE IMPACTED AREA.	ISOLATED MAIN AND CONTACTED CONTRACTOR FOR REPAIRS.
MORRIS FORMAN	1726 FRASER DR	KY0022411	11/5/2018 22:45	11/6/2018 10:45	3,620	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006485	NO CLEAN UP REQUIRED. DISCHARGED PIPE IS SUBMERGED UNDERGROUND.	LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	11/5/2018 22:55	11/6/2018 15:32	878,000	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006481	NO CLEAN UP REQUIRED. DISCHARGED PIPE IS SUBMERGED UNDERGROUND.	LOCATION IS INCLUDED IN THE IOAP.
DEREK R. GUTHRIE	9317 LANTANA DR	KY0078956	11/5/2018 23:00	11/6/2018 15:44	4,050	SEWER MANHOLE	93719	DITCH	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006332	CLEANED UP BY MSD AND LIME PUT DOWN ON AREA	A SOLUTION FOR THIS LOCATION HAS BEEN INCLUDED IN THE IOAP.
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	11/5/2018 23:30	11/6/2018 17:45	2,807,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006477	NO CLEAN UP REQUIRED. DISCHARGED PIPE IS SUBMERGED UNDERGROUND.	LOCATION IS INCLUDED IN THE IOAP.
DEREK R. GUTHRIE	9114 CINDERELLA LN	KY0078956	11/6/2018 0:15	11/6/2018 15:40	6,900	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY - HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006333	CLEANED UP BY MSD AND LINE PUT DOWN IN AREA	A SOLUTION FOR THIS LOCATION HAS BEEN INCLUDED IN THE IOAP
MORRIS FORMAN	201 BULLITT LN	KY0022411	11/6/2018 2:25	11/6/2018 9:54	112,500	SEWER MANHOLE	47582	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006490	WO#3006583	LOCATION INCLUDED INT THE IOAP.
MORRIS FORMAN	202 OXMOOR LN	KY0022411	11/6/2018 2:25	11/6/2018 9:54	90,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006488	WO#3006586	LOCATION INCLUDED INT THE IOAP.
MORRIS FORMAN	3402 CHARLANE PKY	KY0022411	11/6/2018 5:10	11/6/2018 10:00	7,500	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006503	WO#3006589	LOCATION INCLUDED INT THE IOAP.
MORRIS FORMAN	3406 CHARLANE PKY	KY0022411	11/6/2018 5:20	11/6/2018 9:50	6,750	SEWER MANHOLE	28451	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3006505	WO#3006588	LOCATION INCLUDED INT THE IOAP.
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	11/15/2018 5:15	11/15/2018 5:16	100	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY. HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3012332	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	11/15/2018 7:29	11/15/2018 13:15	300,000	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3012326	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
HITE CREEK	7520 KAVANAUGH RD	KY0022420	11/15/2018 11:35	11/15/2018 13:15	5,700	SEWER LIFT STATION	MSD1085-PS	GROUND	HITE CREEK	POWER OUTAGE (LG&E).	POWER OUTAGE (LG&E)	DISREV RAIN EVENT DISCHARGE	3012575	MSD DISINFECTED AREA WITH LIME.	GENERATOR UTILIZED UNTIL POWER RESTORED.
DEREK R. GUTHRIE	4510 COD DR	KY0078956	11/15/2018 19:55	11/17/2018 9:30	50,000	SEWER MAIN	62018	STREAM	POND CREEK	STRUCTURAL FAILURE OF MAIN SEWER.	STRUCTURAL FAILURE	DISREV RAIN EVENT DISCHARGE	3012604	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA.	REFERRED TO SUPERVISOR TO MAKE NEEDED REPAIRS.
MORRIS FORMAN	4640 BARBOUR LN	KY0022411	11/18/2018 19:12	11/18/2018 19:27	750	SEWER MANHOLE	42680	STREAM	LITTLE GOOSE CREEK	ELECTRICAL PROBLEM WITH MSD EQUIPMENT/STOP FLOAT HUNG IN F.O.G. LAYER.	ELECTRICAL PROBLEMS AT MSD	DISDW DRY WEATHER DISCHARGE	3013035	MSD STAFF SANITIZED THE IMPACTED AREA WITH LIME.	REINSERTED STOP FLOAT BELOW F.O.G. LAYER. WILL BE VACTORED ASAP.
MORRIS FORMAN	3000 INDUSTRIAL BLVD	KY0022411	11/29/2018 14:29	11/29/2018 14:30	100	SEWER MANHOLE	15074	DITCH	NORTHERN DITCH	OBSTRUCTION IN MAIN SEWER.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	3018025	MSD PERSONNEL CLEANED DISCHARGE AREA.	FLUSHED MAIN SEWER.
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	12/1/2018 9:25	12/2/2018 17:23	2,197,000	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018161	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1726 FRASER DR	KY0022411	12/1/2018 10:00	12/1/2018 21:30	456,454	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018164	CLEANING NOT REQUIED	LOCATION IS INCLUDED IN THE IOAP
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	12/1/2018 10:15	12/2/2018 17:30	3,915,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018160	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1011 ALTA CIR	KY0022411	12/1/2018 10:58	12/2/2018 8:40	378,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018168	WO#3018235	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	3402 CHARLANE PKY	KY0022411	12/1/2018 11:20	12/2/2018 8:50	32,250	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018165	WO#3019059	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	202 OXMOOR LN	KY0022411	12/1/2018 11:40	12/2/2018 9:10	378,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018169	WO#3019091	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	9707 WILLOWWOOD WAY	KY0022411	12/1/2018 11:45	12/2/2018 9:20	32,375	SEWER MANHOLE	28336	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018167	WO#3019050	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	1418 TREVILIAN WAY	KY0022411	12/1/2018 13:00	12/1/2018 13:20	500	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018171	WO3024131	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	2120 INDIAN HILLS TRL	KY0022411	12/1/2018 14:00	12/1/2018 16:30	11,500	SEWER LIFT STATION	MSD0186-PS	DITCH	MUDDY FORK BEARGRASS CREEK	ELECTRICAL PROBLEM WITH MSD EQUIPMENT/ASSET - ONLY CALLED FOR 2 PUMPS TO RUN AND NO HIGH WET WELL ALARM	ELECTRICAL PROBLEMS AT MSD	DISREV RAIN EVENT DISCHARGE	3018134	CLEANED AND SANITIZED THE IMPACTED AREA	VACTOR WET WELL REMOVING FOG LAYER
DEREK R. GUTHRIE	9317 LANTANA DR	KY0078956	12/1/2018 14:25	12/1/2018 18:00	9,375	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018146	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	4339 PRUITT CT	KY0022411	12/1/2018 14:30	12/1/2018 15:41	1,775	SEWER MANHOLE	08431	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3018174	CLEAN UP NOT REQUIRED	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	1726 FRASER DR	KY0022411	12/15/2018 7:45	12/15/2018 15:30	86,813	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023884	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	12/15/2018 9:30	12/15/2018 21:45	1,613,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023883	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.

Appendix A-3 Discharge Work Orders – Unauthorized Discharges

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	12/15/2018 10:23	12/15/2018 17:02	143,432	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023880	NO CLEAN UP PERFORMED - PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1011 ALTA CIR	KY0022411	12/15/2018 11:30	12/16/2018 8:54	322,500	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023885	PENDING	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	202 OXMOOR LN	KY0022411	12/15/2018 12:27	12/16/2018 9:30	252,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023887	PENDING	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	3402 CHARLANE PKY	KY0022411	12/15/2018 13:45	12/15/2018 19:55	9,000	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3023888	PENDING	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
HITE CREEK	7500 RIVER RD	KY0022420	12/21/2018 0:30	12/21/2018 1:15	40	SEWER MANHOLE	110837	STREAM	WALLACE CREEK	GREASE	GREASE BLOCKAGE	DISREV RAIN EVENT DISCHARGE	3025153	MSD WILL CLEAN AREA	FLUSHED LINE
MORRIS FORMAN	1001 BRECKENRIDGE LN	KY0022411	12/31/2018 10:52	1/1/2019 14:33	341,000	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032865	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1201 OLD CANNONS LN	KY0022411	12/31/2018 11:45	1/1/2019 9:15	2,826,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032866	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1726 FRASER DR	KY0022411	12/31/2018 12:15	12/31/2018 22:45	92,153	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032867	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1011 ALTA CIR	KY0022411	12/31/2018 14:09	1/1/2019 10:26	146,850	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032870	WO#302949	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	3402 CHARLANE PKY	KY0022411	12/31/2018 14:31	1/1/2019 6:50	24,475	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032869	WO#3032947	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
MORRIS FORMAN	1418 TREVILIAN WAY	KY0022411	12/31/2018 16:04	1/1/2019 5:10	117,900	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032871	WO#302948	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE INTEGRATED OVERFLOW ABATEMENT PLAN.
DEREK R. GUTHRIE	9114 CINDERELLA LN	KY0078956	12/31/2018 19:53	12/31/2018 21:53	3,000	SEWER LIFT STATION	MSD1013-PS	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	3032878	MAGNITUDE OF STORM RESULTED IN NO DEBRIS REMAINING	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD

Appendix B CSO Flow Monitoring Data

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO015	10/4/2018 16:15	10/5/2018 9:00	1005	0.04	290,375	0.06	0.03	1	Atlas		11,615	1
	10/6/2018 20:45	10/9/2018 11:30	3765	0.03	196,167	0.1	0.03	1	Atlas		5,885	1
	10/10/2018 18:45	10/10/2018 20:00	75	0.33	9,606	0.43	0.27	1	Atlas		3,170	1
CSO015 Total											**20,670**	**3**
CSO016	10/10/2018 16:45	10/10/2018 18:45	120	0.45	1,326,918	0.58	0.38	1	Atlas		597,113	1
	10/31/2018 17:15	11/1/2018 4:30	675	2.58	2,262,869	2.37	0.90	24	Atlas		5,838,201	1
	11/1/2018 16:45	11/1/2018 18:45	120	2.58	46,793	3.08	0.90	24	Atlas		120,726	1
	11/5/2018 21:15	11/6/2018 3:00	345	1.44	5,940,701	4.11	0.78	6	Atlas		8,554,610	1
	11/14/2018 23:15	11/15/2018 6:30	435	0.46	20,679,787	0.69	0.21	12	Atlas		9,512,702	1
	12/1/2018 4:30	12/1/2018 17:45	795	1.69	13,009,713	1.89	0.75	12	Atlas		21,986,415	1
	12/15/2018 3:00	12/15/2018 13:30	630	1.61	7,756,942	1.62	0.64	12	Atlas		12,488,676	1
	12/27/2018 18:30	12/27/2018 21:15	165	0.4	5,750,873	0.72	0.23	1	Atlas		2,300,349	1
	12/31/2018 6:00	12/31/2018 23:45	1065	1.58	16,546,460	2	0.61	24	Atlas		26,143,407	1
CSO016 Total											**87,542,199**	**9**
CSO019	10/12/2018 22:15	10/13/2018 0:00	105	0.08	207,550	0.44	0.04	6	Atlas		16,604	1
	10/14/2018 4:00	10/15/2018 13:30	2010	0.24	1,072,479	0.79	0.13	3	Atlas		257,395	1
	10/19/2018 20:45	10/20/2018 0:30	225	0.17	197,253	0.58	0.10	1	Atlas		33,533	1
	10/26/2018 2:45	10/27/2018 1:45	1380	0.5	467,442	0.67	0.19	24	Atlas		233,721	1
	10/31/2018 11:45	11/2/2018 13:15	2970	2.63	4,308,564	3.16	0.90	24	Atlas		11,331,524	1
	11/4/2018 19:00	11/4/2018 19:30	30	0.09	504,111	2.71	0.05	3	Atlas		45,370	1
	11/5/2018 19:30	11/6/2018 14:15	1125	1.15	5,203,490	3.87	0.62	6	Atlas		5,984,013	1
	11/9/2018 3:30	11/9/2018 9:45	375	0.12	381,217	1.36	0.06	6	Atlas		45,746	1
	11/12/2018 21:30	11/12/2018 21:30	0	0.09	30,400	0.83	0.03	24	Atlas		2,736	1
	11/13/2018 6:00	11/13/2018 9:00	180	0.09	125,833	0.22	0.03	24	Atlas		11,325	1
	11/14/2018 20:15	11/16/2018 0:00	1665	0.44	11,690,591	0.68	0.20	12	Atlas		5,143,860	1
	11/24/2018 0:00	11/24/2018 12:00	720	0.34	317,744	0.35	0.18	6	Atlas		108,033	1
	11/25/2018 23:45	11/26/2018 3:00	195	0.06	426,950	0.41	0.03	12	Atlas		25,617	1
	11/30/2018 1:30	11/30/2018 2:00	30	0.06	97,550	0.5	0.04	1	Atlas		5,853	1
	12/1/2018 3:00	12/2/2018 4:00	1500	1.62	6,639,761	1.8	0.71	12	Atlas		10,756,413	1
	12/14/2018 14:45	12/15/2018 22:15	1890	1.91	4,937,685	1.93	0.78	12	Atlas		9,430,979	1
	12/20/2018 14:15	12/21/2018 9:15	1140	0.59	361,975	2.51	0.23	24	Atlas		213,565	1
	12/27/2018 17:45	12/27/2018 20:30	165	0.42	2,982,576	0.79	0.19	12	Atlas		1,252,682	1
	12/31/2018 4:45	12/31/2018 23:00	1095	1.36	6,018,558	1.8	0.52	24	Atlas		8,185,239	1
CSO019 Total											**53,084,208**	**19**
CSO020	10/2/2018 23:15	10/5/2018 0:45	2970	Discharge	0	0.32					361,276	
	10/5/2018 11:15	10/5/2018 23:15	720	Discharge	0	0.02					55,833	

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO020	10/6/2018 14:00	10/6/2018 19:15	315	Discharge	0	0.02					31,207	
	10/8/2018 20:30	10/8/2018 21:30	60	Discharge	0	0.02					1,703	
	10/10/2018 16:00	10/11/2018 1:15	555	0.13	1,819,238	0.15	0.09	1	Atlas		236,501	1
	10/11/2018 21:00	10/11/2018 23:30	150	Discharge	0	0.15					542	
	10/12/2018 19:15	10/13/2018 1:15	360	0.09	1,218,989	0.22	0.05	6	Atlas		109,709	1
	10/14/2018 5:45	10/14/2018 22:30	1005	0.25	519,180	0.47	0.13	3	Atlas		129,795	1
	10/15/2018 9:15	10/16/2018 0:30	915	0.11	4,132,718	0.58	0.08	1	Atlas		454,599	1
	10/16/2018 10:00	10/16/2018 13:15	195	Discharge	0	0.58					10,917	
	10/19/2018 21:30	10/20/2018 0:00	150	0.11	292,691	0.49	0.06	6	Atlas		32,196	1
	10/26/2018 9:00	10/27/2018 1:00	960	0.22	2,134,264	0.33	0.08	24	Atlas		469,538	1
CSO020 Total											**1,893,816**	**6**
CSO029	10/10/2018 16:15	10/10/2018 16:30	15	0.19	53,453	0.12	0.13	1	Atlas		10,156	1
CSO029 Total											**10,156**	**1**
CSO035	10/10/2018 16:30	10/10/2018 16:30	0	0.11	414,209	0.07	0.07	3	Atlas		45,563	1
	11/1/2018 0:45	11/1/2018 1:00	15	1.71	10,664	1.29	0.60	24	Atlas		18,235	1
	11/5/2018 22:00	11/5/2018 22:15	15	0.82	82,041	2.25	0.44	6	Atlas		67,274	1
	12/27/2018 17:45	12/27/2018 17:45	0	0.41	291,759	0.55	0.27	1	Atlas		119,621	1
	12/15/2018 4:00	12/15/2018 4:30	30	1.66	71,713	0.97	0.70	12	Atlas		119,044	1
	12/31/2018 12:15	12/31/2018 16:30	255	1.17	104,568	1.57	0.45	24	Atlas		122,344	1
CSO035 Total											**492,081**	**6**
CSO036	10/10/2018 16:30	10/10/2018 16:30	0	0.11	345,327	0.07	0.07	3	Atlas		37,986	1
	10/15/2018 9:00	10/15/2018 9:15	15	0.17	65,106	0.62	0.10	1	Atlas		11,068	1
	10/31/2018 15:00	11/1/2018 16:15	1515	1.71	41,119	1.91	0.60	24	Atlas		70,313	1
	11/5/2018 21:15	11/6/2018 0:15	180	0.82	104,828	2.57	0.44	6	Atlas		85,959	1
	12/27/2018 17:45	12/27/2018 18:30	45	0.41	149,688	0.65	0.27	1	Atlas		61,372	1
	12/1/2018 3:15	12/1/2018 14:15	660	1.21	190,837	1.25	0.51	12	Atlas		230,913	1
	12/15/2018 2:45	12/15/2018 10:15	450	1.66	110,709	1.6	0.70	12	Atlas		183,777	1
	12/31/2018 5:15	12/31/2018 17:00	705	1.17	153,577	1.6	0.45	24	Atlas		179,685	1
CSO036 Total											**861,073**	**8**
CSO038	10/12/2018 21:30	10/12/2018 21:30	0	0.14	7	0.3	0.07	6	Atlas		1	1
CSO038 Total											**1**	**1**
CSO050	10/10/2018 16:00	10/10/2018 17:30	90	0.34	612,947	0.38	0.27	1	Atlas		208,402	1
	10/12/2018 21:45	10/12/2018 21:45	0	0.1	1,470	0.44	0.05	6	Atlas		147	1
	10/14/2018 4:30	10/14/2018 4:45	15	0.27	19,615	0.67	0.14	3	Atlas		5,296	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO050	10/15/2018 9:00	10/15/2018 9:15	15	0.16	97,575	0.84	0.10	1	Atlas		15,612	1
	10/19/2018 20:45	10/19/2018 21:15	30	0.14	5,007	0.63	0.08	1	Atlas		701	1
	10/26/2018 14:15	10/26/2018 16:00	105	0.34	101,097	0.46	0.13	24	Atlas		34,373	1
	10/31/2018 11:30	11/1/2018 17:45	1815	2.27	312,987	2.64	0.80	24	Atlas		710,481	1
	11/5/2018 19:30	11/6/2018 1:45	375	0.99	564,104	3.33	0.54	6	Atlas		558,463	1
	11/25/2018 23:45	11/26/2018 0:00	15	0.07	92,414	0.35	0.04	1	Atlas		6,469	1
	11/4/2018 18:45	11/4/2018 18:45	0	0.07	6,157	2.34	0.05	3	Atlas		431	1
	11/14/2018 22:00	11/15/2018 4:15	375	0.42	571,740	0.62	0.19	12	Atlas		240,131	1
	11/23/2018 21:45	11/24/2018 0:00	135	0.27	34,374	0.15	0.14	6	Atlas		9,281	1
	12/1/2018 3:00	12/1/2018 21:00	1080	1.45	563,770	1.64	0.60	12	Atlas		817,466	1
	12/14/2018 14:15	12/14/2018 14:30	15	1.55	3,767	0.12	0.64	12	Atlas		5,839	1
	12/15/2018 2:00	12/15/2018 11:00	540	1.55	714,566	1.53	0.64	12	Atlas		1,107,577	1
	12/20/2018 14:45	12/20/2018 21:30	405	0.47	32,106	1.91	0.18	24	Atlas		15,090	1
	12/27/2018 17:30	12/27/2018 18:45	75	0.36	358,594	0.64	0.21	1	Atlas		129,094	1
	12/31/2018 4:30	12/31/2018 17:30	780	1.59	612,652	1.97	0.62	12	Atlas		974,116	1
CSO050 Total											**4,838,969**	**18**
CSO051	10/10/2018 16:15	10/10/2018 16:15	0	0.34	27,844	0.27	0.27	1	Atlas		9,467	1
	11/5/2018 21:45	11/5/2018 22:00	15	0.99	4,212	2.85	0.54	6	Atlas		4,170	1
	11/1/2018 2:15	11/1/2018 2:15	0	2.27	349	1.89	0.80	24	Atlas		793	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.36	2,633	0.49	0.21	1	Atlas		948	1
	12/1/2018 9:00	12/1/2018 10:00	60	1.45	1,160	1.26	0.60	12	Atlas		1,682	1
	12/15/2018 4:15	12/15/2018 9:15	300	1.55	9,758	1.43	0.64	12	Atlas		15,125	1
	12/31/2018 12:30	12/31/2018 17:00	270	1.59	8,348	1.97	0.62	12	Atlas		13,273	1
CSO051 Total											**45,458**	**7**
CSO052	10/10/2018 16:15	10/10/2018 16:15	0	0.16	36,038	0.09	0.10	1	Atlas		5,766	1
	11/5/2018 22:00	11/5/2018 23:15	75	0.88	328	2.79	0.48	6	Atlas		289	1
	11/1/2018 2:00	11/1/2018 2:00	0	1.98	1,845	1.62	0.69	24	Atlas		3,654	1
	12/31/2018 12:15	12/31/2018 17:00	285	1.43	4,892	1.79	0.55	24	Atlas		6,996	1
	12/15/2018 4:15	12/15/2018 8:15	240	1.56	10,726	1.31	0.65	12	Atlas		16,733	1
	12/1/2018 8:00	12/1/2018 12:30	270	1.32	253	1.24	0.55	12	Atlas		334	1
CSO052 Total											**33,772**	**6**
CSO053	10/10/2018 16:30	10/10/2018 17:00	30	0.16	271,244	0.18	0.10	1	Atlas		43,399	1
	12/27/2018 16:30	12/27/2018 17:15	45	0.35	75,394	0.48	0.21	1	Atlas		26,388	1
	12/31/2018 3:45	12/31/2018 15:45	720	1.43	97,270	1.4	0.55	24	Atlas		139,096	1
CSO053 Total											**208,883**	**3**

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO054	10/10/2018 16:15	10/10/2018 16:15	0	0.16	117,356	0.09	0.10	1	Atlas		18,777	1
	12/31/2018 12:15	12/31/2018 17:00	285	1.43	48,055	1.79	0.55	24	Atlas		68,719	1
CSO054 Total											**87,496**	**2**
CSO055	10/10/2018 16:30	10/10/2018 16:30	0	0.16	124,238	0.12	0.10	1	Atlas		19,878	1
	10/26/2018 15:00	10/26/2018 16:00	60	0.3	6,317	0.43	0.12	24	Atlas		1,895	1
	10/31/2018 11:30	11/1/2018 17:15	1785	1.98	24,448	2.29	0.69	24	Atlas		48,408	1
	11/14/2018 22:00	11/15/2018 4:15	375	0.38	39,345	0.57	0.17	12	Atlas		14,951	1
	11/5/2018 19:45	11/6/2018 0:45	300	0.88	63,067	2.93	0.48	6	Atlas		55,499	1
	11/7/2018 16:15	11/7/2018 17:45	90	Discharge	0	2.58					7,369	
	11/23/2018 22:00	11/24/2018 0:15	135	0.26	4,773	0.16	0.13	6	Atlas		1,241	1
	11/26/2018 0:00	11/26/2018 0:15	15	0.07	14,143	0.34	0.04	1	Atlas		990	1
	11/28/2018 12:45	11/28/2018 19:45	420	Discharge	0	0.35					1,419	
	11/29/2018 6:30	12/2/2018 0:15	3945	Discharge	0	1.73					191,976	
	12/15/2018 3:00	12/15/2018 9:30	390	1.56	54,489	1.46	0.65	12	Atlas		85,003	1
	12/27/2018 17:45	12/27/2018 17:45	0	0.35	420	0.5	0.21	1	Atlas		147	1
	12/2/2018 12:30	12/2/2018 21:15	525	Discharge	0	1.47					9,711	
	12/3/2018 9:00	12/4/2018 21:30	2190	Discharge	0	1.41					47,572	
	12/5/2018 6:00	12/9/2018 7:45	5865	0.02	3,177,550	1.44	0.01	6	Atlas		63,551	1
	12/31/2018 10:15	12/31/2018 17:30	435	1.43	564	1.79	0.55	24	Atlas		806	1
CSO055 Total											**550,416**	**11**
CSO056	10/10/2018 16:30	10/10/2018 17:30	60	0.16	605,313	0.18	0.10	1	Atlas		96,850	1
	10/15/2018 9:15	10/15/2018 10:30	75	0.13	67,515	0.65	0.07	1	Atlas		8,777	1
	10/26/2018 15:15	10/26/2018 16:30	75	0.3	40,153	0.43	0.12	24	Atlas		12,046	1
	10/31/2018 11:45	11/1/2018 18:15	1830	1.98	80,532	2.31	0.69	24	Atlas		159,454	1
	11/23/2018 22:00	11/24/2018 3:45	345	0.26	24,354	0.25	0.13	6	Atlas		6,332	1
	11/26/2018 0:00	11/26/2018 0:30	30	0.07	136,314	0.34	0.04	1	Atlas		9,542	1
	11/5/2018 20:00	11/6/2018 2:15	375	0.88	15,841	2.93	0.48	6	Atlas		13,940	1
	11/14/2018 22:15	11/15/2018 0:45	150	0.38	12,474	0.45	0.17	12	Atlas		4,740	1
	12/31/2018 13:15	12/31/2018 16:15	180	1.43	131	1.72	0.55	24	Atlas		188	1
	12/1/2018 5:30	12/1/2018 21:45	975	1.32	6,986	1.49	0.55	12	Atlas		9,221	1
CSO056 Total											**321,090**	**10**
CSO057	10/10/2018 16:30	10/10/2018 16:30	0	0.13	4,192	0.09	0.09	3	Atlas		545	1
	11/1/2018 0:30	11/1/2018 2:15	105	1.75	512	1.56	0.62	24	Atlas		896	1
	11/5/2018 21:45	11/5/2018 22:00	15	0.85	4	2.26	0.46	6	Atlas		3	1
	11/23/2018 22:00	11/23/2018 22:15	15	0.28	39	0.11	0.14	6	Atlas		11	1
	11/9/2018 6:45	11/9/2018 6:45	0	0.13	38	1.02	0.07	6	Atlas		5	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO057	11/14/2018 21:45	11/15/2018 0:00	135	0.38	105	0.45	0.17	12	Atlas		40	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.45	5,384	0.53	0.30	1	Atlas		2,423	1
	12/1/2018 10:00	12/1/2018 10:00	0	1.34	149	1.2	0.56	12	Atlas		199	1
	12/15/2018 1:00	12/15/2018 14:30	810	1.63	37	1.63	0.68	12	Atlas		61	1
CSO057 Total											**4,183**	**9**
CSO082	10/10/2018 17:15	10/10/2018 18:15	60	0.11	487,545	0.12	0.07	3	Atlas		53,630	1
	10/15/2018 9:30	10/15/2018 11:30	120	0.13	1,220,292	0.56	0.08	1	Atlas		158,638	1
	10/26/2018 15:15	10/26/2018 18:45	210	0.23	912,065	0.32	0.09	24	Atlas		209,775	1
	10/31/2018 15:00	11/1/2018 19:45	1725	1.64	832,438	1.89	0.59	24	Atlas		1,365,199	1
	11/5/2018 21:30	11/6/2018 2:45	315	0.83	705,380	2.52	0.45	6	Atlas		585,465	1
	11/8/2018 10:45	11/8/2018 11:30	45	Discharge	0	0.98					37,148	
	11/14/2018 22:30	11/15/2018 5:00	390	0.39	1,173,213	0.59	0.17	12	Atlas		457,553	1
	11/16/2018 23:15	11/17/2018 0:45	90	Discharge	0	0.51					248,279	
	11/23/2018 23:00	11/23/2018 23:00	0	0.27	53,537	0.11	0.14	6	Atlas		14,455	1
	11/26/2018 0:15	11/26/2018 1:30	75	0.06	2,165,617	0.36	0.03	1	Atlas		129,937	1
	12/1/2018 3:45	12/1/2018 19:00	915	1.46	959,425	1.49	0.60	12	Atlas		1,400,760	1
	12/15/2018 3:15	12/15/2018 21:15	1080	1.6	1,453,239	1.63	0.68	12	Atlas		2,325,182	1
	12/20/2018 16:30	12/21/2018 0:30	480	0.47	1,798,366	2.04	0.18	12	Atlas		845,232	1
	12/31/2018 5:45	1/1/2019 0:00	1095	1.21	2,819,219	1.54	0.47	24	Atlas		3,411,255	1
CSO082 Total											**11,242,508**	**12**
CSO084	10/15/2018 20:00	10/15/2018 20:00	0	0.15	55,207	0.57	0.10	1	Atlas		8,281	1
	10/31/2018 17:30	11/1/2018 1:30	480	1.65	119,183	1.28	0.59	24	Atlas		196,652	1
	11/5/2018 21:45	11/6/2018 0:30	165	0.94	242,186	2.64	0.51	6	Atlas		227,655	1
CSO084 Total											**432,588**	**3**
CSO104	10/10/2018 17:15	10/10/2018 17:15	0	0.47	11,172	0.52	0.40	1	Atlas		5,251	1
	11/1/2018 2:45	11/1/2018 2:45	0	2.49	63	2.3	0.86	24	Atlas		156	1
	11/5/2018 22:45	11/6/2018 0:45	120	1.29	29,621	3.87	0.69	6	Atlas		38,211	1
	12/27/2018 18:30	12/31/2018 17:45	5715	0.42	95,417	2.32	0.25	1	Atlas		40,075	1
	12/1/2018 8:45	12/1/2018 10:45	120	1.63	21,276	1.55	0.72	12	Atlas		34,680	1
	12/15/2018 6:00	12/15/2018 17:30	690	1.78	15,776	1.78	0.71	12	Atlas		28,082	1
	12/20/2018 21:00	12/22/2018 5:15	1935	0.61	777	2.4	0.23	12	Atlas		474	1
CSO104 Total											**146,929**	**7**
CSO111	11/1/2018 0:30	11/1/2018 1:15	45	1.72	8,180	1.47	0.62	24	Atlas		14,070	1
	11/5/2018 23:00	11/6/2018 0:00	60	1.13	10,495	2.89	0.61	6	Atlas		11,859	1
	12/1/2018 10:00	12/1/2018 10:15	15	1.42	13,422	1.33	0.63	12	Atlas		19,059	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO111	12/31/2018 12:00	12/31/2018 16:45	285	1.2	18,878	1.54	0.46	24	Atlas		22,653	1
CSO111 Total											**67,641**	**4**
CSO118	10/10/2018 17:15	10/10/2018 17:30	15	0.09	2,667	0.1	0.06	1	Atlas		240	1
	10/15/2018 9:00	10/15/2018 9:45	45	0.15	1,075,153	0.56	0.10	1	Atlas		161,273	1
	10/26/2018 15:15	10/26/2018 16:00	45	0.27	99,148	0.35	0.10	1	Atlas		26,770	1
	10/31/2018 15:00	11/1/2018 18:15	1635	1.65	2,387,195	1.94	0.59	24	Atlas		3,938,871	1
CSO118 Total											**4,127,154**	**4**
CSO119	10/15/2018 9:00	10/15/2018 9:15	15	0.15	293,860	0.56	0.10	1	Atlas		44,079	1
	10/31/2018 15:00	11/1/2018 18:00	1620	1.65	491,151	1.94	0.59	24	Atlas		810,399	1
	11/14/2018 22:30	11/15/2018 1:00	150	0.43	853,737	0.45	0.20	12	Atlas		367,107	1
	11/5/2018 21:00	11/6/2018 0:45	225	0.94	694,982	2.64	0.51	6	Atlas		653,283	1
	12/27/2018 17:30	12/27/2018 18:45	75	0.33	644,215	0.59	0.19	1	Atlas		212,591	1
	12/1/2018 5:30	12/1/2018 14:30	540	1.34	708,003	1.39	0.57	12	Atlas		948,724	1
	12/31/2018 5:00	12/31/2018 17:45	765	1.2	887,591	1.54	0.46	12	Atlas		1,065,109	1
	12/15/2018 2:30	12/15/2018 10:45	495	1.66	648,140	1.65	0.70	12	Atlas		1,075,912	1
CSO119 Total											**5,177,204**	**8**
CSO120	10/15/2018 9:00	10/15/2018 9:00	0	0.13	290,738	0.54	0.08	1	Atlas		37,796	1
	10/31/2018 17:30	11/1/2018 17:00	1410	1.64	558,177	1.86	0.59	24	Atlas		915,411	1
	11/5/2018 21:30	11/6/2018 0:30	180	0.83	491,852	2.52	0.45	6	Atlas		408,237	1
	11/14/2018 22:45	11/15/2018 1:00	135	0.39	579,692	0.45	0.17	12	Atlas		226,080	1
	12/1/2018 3:00	12/1/2018 14:15	675	1.46	190,041	1.47	0.60	12	Atlas		277,460	1
	12/27/2018 17:45	12/27/2018 18:30	45	0.32	166,778	0.57	0.18	1	Atlas		53,369	1
	12/15/2018 2:45	12/15/2018 10:15	450	1.6	146,547	1.55	0.68	12	Atlas		234,475	1
	12/31/2018 5:15	12/31/2018 17:00	705	1.21	305,653	1.54	0.47	24	Atlas		369,840	1
CSO120 Total											**2,522,668**	**8**
CSO121	10/31/2018 15:15	11/1/2018 18:15	1620	1.64	228,871	1.89	0.59	24	Atlas		375,349	1
	11/5/2018 21:15	11/6/2018 0:45	210	0.83	344,501	2.52	0.45	6	Atlas		285,936	1
	11/14/2018 22:45	11/15/2018 1:00	135	0.39	508,256	0.45	0.17	12	Atlas		198,220	1
	12/1/2018 3:15	12/1/2018 14:45	690	1.46	308,896	1.46	0.60	12	Atlas		450,988	1
	12/15/2018 2:45	12/15/2018 10:45	480	1.6	341,118	1.6	0.68	12	Atlas		545,789	1
	12/31/2018 5:15	12/31/2018 19:15	840	1.21	372,348	1.54	0.47	24	Atlas		450,541	1
	12/27/2018 18:00	12/27/2018 19:00	60	0.32	141,181	0.56	0.18	1	Atlas		45,178	1
CSO121 Total											**2,352,001**	**7**
CSO125	10/15/2018 9:15	10/15/2018 9:30	15	0.13	2,500	0.57	0.09	1	Atlas		325	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO125	10/31/2018 15:15	11/1/2018 0:30	555	1.77	2,579	1.26	0.60	24	Atlas		4,565	1
	11/23/2018 22:15	11/24/2018 15:45	1050	0.33	13,888	0.35	0.17	6	Atlas		4,583	1
	11/14/2018 22:45	11/15/2018 1:30	165	0.5	355,448	0.52	0.23	12	Atlas		177,724	1
	11/5/2018 20:45	11/6/2018 1:15	270	1.02	355,792	2.87	0.55	6	Atlas		362,908	1
	12/15/2018 3:00	12/15/2018 21:15	1095	1.51	323,918	1.52	0.61	12	Atlas		489,116	1
	12/27/2018 17:45	12/27/2018 18:45	60	0.31	151,674	0.64	0.17	1	Atlas		47,019	1
	12/1/2018 3:15	12/1/2018 15:30	735	1.63	195,245	1.76	0.71	12	Atlas		318,249	1
	12/31/2018 5:30	12/31/2018 18:30	780	1.36	276,979	1.69	0.52	24	Atlas		376,692	1
CSO125 Total											**1,781,181**	**9**
CSO127	10/10/2018 17:15	10/10/2018 17:45	30	0.12	70,400	0.13	0.10	1	Atlas		8,448	1
	10/14/2018 5:00	10/14/2018 5:00	0	0.23	7,430	0.43	0.12	3	Atlas		1,709	1
	10/15/2018 9:15	10/15/2018 9:45	30	0.14	44,086	0.59	0.10	1	Atlas		6,172	1
	10/26/2018 15:15	10/26/2018 16:00	45	0.38	38,168	0.48	0.16	1	Atlas		14,504	1
	10/31/2018 15:00	11/1/2018 19:00	1680	1.99	122,537	2.39	0.68	24	Atlas		243,848	1
	11/14/2018 22:15	11/15/2018 4:30	375	0.47	201,047	0.66	0.22	12	Atlas		94,492	1
	11/26/2018 0:15	11/26/2018 0:45	30	0.1	52,950	0.43	0.07	1	Atlas		5,295	1
	11/5/2018 20:15	11/6/2018 1:45	330	1.13	304,630	3.21	0.61	6	Atlas		344,232	1
	11/23/2018 22:45	11/23/2018 22:45	0	0.29	9,148	0.12	0.15	6	Atlas		2,653	1
	12/27/2018 17:45	12/27/2018 19:00	75	0.35	132,866	0.68	0.19	1	Atlas		46,503	1
	12/1/2018 3:15	12/1/2018 15:30	735	1.59	137,727	1.72	0.70	12	Atlas		218,986	1
	12/31/2018 5:15	12/31/2018 18:30	795	1.47	292,795	1.84	0.57	24	Atlas		430,408	1
	12/14/2018 14:30	12/14/2018 14:45	15	1.52	822	0.12	0.62	12	Atlas		1,249	1
	12/20/2018 15:45	12/20/2018 21:15	330	0.58	6,621	1.96	0.22	12	Atlas		3,840	1
	12/15/2018 2:30	12/15/2018 12:00	570	1.52	197,566	1.51	0.62	12	Atlas		300,300	1
CSO127 Total											**1,722,639**	**15**
CSO132	10/10/2018 17:45	10/10/2018 17:45	0	0.1	65,240	0.12	0.08	1	Atlas		6,524	1
	10/15/2018 9:00	10/15/2018 9:45	45	0.12	879,658	0.55	0.09	1	Atlas		105,559	1
	10/26/2018 15:15	10/26/2018 16:00	45	0.25	242,452	0.34	0.10	24	Atlas		60,613	1
	10/31/2018 15:00	11/1/2018 20:00	1740	1.54	786,322	1.81	0.55	24	Atlas		1,210,936	1
	11/14/2018 22:15	11/15/2018 5:30	435	0.43	2,149,098	0.62	0.20	12	Atlas		924,112	1
	11/26/2018 0:15	11/26/2018 0:30	15	0.07	349,200	0.34	0.04	1	Atlas		24,444	1
	11/23/2018 22:15	11/23/2018 22:30	15	0.25	83,856	0.09	0.13	6	Atlas		20,964	1
	11/5/2018 20:15	11/6/2018 3:15	420	0.82	940,701	2.42	0.44	6	Atlas		771,375	1
	12/1/2018 3:15	12/1/2018 20:15	1020	1.38	824,580	1.51	0.60	12	Atlas		1,137,920	1
	12/31/2018 5:30	1/1/2019 0:00	1110	1.2	751,810	1.5	0.46	24	Atlas		902,172	1
	12/20/2018 17:00	12/20/2018 23:45	405	0.51	536,535	2	0.20	12	Atlas		273,633	1
	12/27/2018 13:15	12/27/2018 19:30	375	0.29	597,062	0.76	0.18	1	Atlas		173,148	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO132 Total											**5,611,400**	**12**
CSO151	10/15/2018 9:30	10/15/2018 9:45	15	0.19	167,147	0.63	0.12	1	Atlas		31,758	1
	10/31/2018 17:15	11/1/2018 2:45	570	1.78	288,590	1.63	0.63	24	Atlas		513,691	1
	11/5/2018 22:00	11/6/2018 0:45	165	1.05	533,348	2.9	0.57	6	Atlas		560,015	1
	11/14/2018 23:30	11/15/2018 1:00	90	0.48	374,925	0.49	0.22	12	Atlas		179,964	1
	11/1/2018 18:30	11/1/2018 18:30	0	1.78	1,192	2.16	0.63	24	Atlas		2,122	1
	12/15/2018 3:15	12/15/2018 9:45	390	1.76	246,868	1.67	0.73	12	Atlas		434,487	1
	12/27/2018 18:00	12/27/2018 18:45	45	0.35	108,423	0.65	0.20	1	Atlas		37,948	1
	12/1/2018 6:30	12/1/2018 15:00	510	1.42	316,806	1.52	0.62	12	Atlas		449,864	1
	12/31/2018 9:45	12/31/2018 16:45	420	1.29	162,509	1.64	0.50	24	Atlas		209,637	1
CSO151 Total											**2,419,486**	**9**
CSO152	12/27/2018 17:45	12/27/2018 17:45	0	0.34	39,976	0.53	0.19	1	Atlas		13,592	1
	12/31/2018 10:00	12/31/2018 16:30	390	1.15	34,817	1.48	0.44	24	Atlas		40,039	1
CSO152 Total											**53,631**	**2**
CSO155	10/10/2018 16:30	10/10/2018 16:30	0	0.34	37,838	0.3	0.27	1	Atlas		12,865	1
	11/1/2018 0:30	11/1/2018 2:15	105	2.27	7,004	1.89	0.80	24	Atlas		15,900	1
	11/5/2018 21:45	11/5/2018 23:45	120	0.99	5,696	3.25	0.54	6	Atlas		5,639	1
	11/15/2018 0:00	11/15/2018 0:00	0	0.42	381	0.44	0.19	12	Atlas		160	1
	12/31/2018 12:15	12/31/2018 16:30	255	1.59	4,036	1.94	0.62	12	Atlas		6,418	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.36	10,039	0.49	0.21	1	Atlas		3,614	1
	12/15/2018 3:15	12/15/2018 8:00	285	1.55	5,188	1.28	0.64	12	Atlas		8,042	1
	12/1/2018 6:00	12/1/2018 10:00	240	1.45	3,476	1.27	0.60	12	Atlas		5,040	1
CSO155 Total											**57,678**	**8**
CSO161	10/10/2018 16:30	10/10/2018 16:30	0	0.13	1,100	0.09	0.09	3	Atlas		143	1
	12/31/2018 12:15	12/31/2018 16:15	240	1.2	1,303	1.61	0.46	24	Atlas		1,563	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.45	387	0.53	0.30	1	Atlas		174	1
CSO161 Total											**1,880**	**3**
CSO166	10/8/2018 20:00	10/8/2018 20:00	0	Discharge	0	0.01					9,719	
	10/15/2018 9:30	10/15/2018 9:45	15	0.14	208,821	0.59	0.10	1	Atlas		29,235	1
	10/31/2018 15:30	11/1/2018 19:00	1650	1.99	615,664	2.39	0.68	24	Atlas		1,225,172	1
	11/14/2018 23:15	11/15/2018 4:15	300	0.47	1,064,323	0.64	0.22	12	Atlas		500,232	1
	11/5/2018 21:45	11/6/2018 2:45	300	1.13	708,090	3.22	0.61	6	Atlas		800,142	1
	12/15/2018 3:15	12/15/2018 12:15	540	1.52	716,907	1.52	0.62	12	Atlas		1,089,699	1
	12/27/2018 18:00	12/27/2018 19:00	60	0.35	441,834	0.67	0.19	1	Atlas		154,642	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO166	12/31/2018 8:15	12/31/2018 20:30	735	1.47	837,941	1.84	0.57	24	Atlas		1,231,774	1
CSO166 Total											**5,040,615**	**7**
CSO167	10/10/2018 17:30	10/10/2018 17:30	0	0.1	39,560	0.12	0.08	1	Atlas		3,956	1
	10/15/2018 9:15	10/15/2018 9:30	15	0.12	46,558	0.55	0.09	1	Atlas		5,587	1
	10/26/2018 15:15	10/26/2018 15:45	30	0.25	20,180	0.34	0.10	24	Atlas		5,045	1
	10/31/2018 15:15	11/1/2018 18:30	1635	1.54	147,864	1.81	0.55	24	Atlas		227,711	1
	11/14/2018 22:15	11/15/2018 4:00	345	0.43	233,874	0.59	0.20	12	Atlas		100,566	1
	11/5/2018 20:30	11/6/2018 1:15	285	0.82	300,930	2.41	0.44	6	Atlas		246,763	1
	12/15/2018 3:00	12/15/2018 11:30	510	1.55	179,021	1.53	0.64	12	Atlas		277,483	1
	12/27/2018 17:45	12/27/2018 19:00	75	0.29	170,259	0.57	0.18	1	Atlas		49,375	1
	12/1/2018 3:15	12/1/2018 15:15	720	1.38	218,411	1.47	0.60	12	Atlas		301,407	1
	12/31/2018 5:15	12/31/2018 20:15	900	1.2	220,230	1.5	0.46	24	Atlas		264,276	1
CSO167 Total											**1,482,169**	**10**
CSO178	11/5/2018 22:00	11/5/2018 22:15	15	0.83	41,552	2.48	0.45	6	Atlas		34,488	1
	11/14/2018 23:00	11/15/2018 1:00	120	0.36	716,742	0.45	0.17	12	Atlas		258,027	1
CSO178 Total											**292,515**	**2**
CSO180	10/15/2018 9:00	10/15/2018 9:00	0	0.2	12,355	0.66	0.13	1	Atlas	Retained by the Sneads Branch	2,471	1
	11/1/2018 0:30	11/1/2018 1:15	45	1.73	36,680	1.38	0.62	24	Atlas	Retained by the Sneads Branch	63,457	1
	11/5/2018 21:45	11/5/2018 23:45	120	0.95	43,478	2.66	0.51	6	Atlas	Partially Retained by the Sneads Branch	41,304	1
	11/14/2018 23:45	11/15/2018 0:00	15	0.41	10,144	0.41	0.19	12	Atlas	Retained by the Sneads Branch	4,159	1
	12/15/2018 3:00	12/15/2018 8:00	300	1.69	25,530	1.43	0.72	12	Atlas	Retained by the Sneads Branch	43,146	1
	12/1/2018 3:00	12/1/2018 13:00	600	1.29	8,657	1.32	0.57	12	Atlas	Retained by the Sneads Branch	11,167	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO180	12/27/2018 17:45	12/27/2018 17:45	0	0.32	15,081	0.48	0.19	1	Atlas	Retained by the Sneads Branch	4,826	1
	12/31/2018 12:00	12/31/2018 16:30	270	1.18	29,503	1.49	0.45	24	Atlas	Retained by the Sneads Branch	34,814	1
CSO180 Total											**205,344**	**8**
CSO185	10/15/2018 9:30	10/15/2018 9:30	0	0.19	626	0.72	0.13	1	Atlas	Retained by the Sneads Branch	119	1
	11/1/2018 0:45	11/1/2018 1:15	30	1.75	56,855	1.48	0.62	24	Atlas	Retained by the Sneads Branch	99,497	1
	11/5/2018 22:00	11/5/2018 23:45	105	1.1	28,413	2.86	0.60	6	Atlas	Partially Retained by the Sneads Branch	31,254	1
	12/15/2018 3:00	12/15/2018 7:30	270	1.7	5,415	1.34	0.70	12	Atlas	Retained by the Sneads Branch	9,206	1
	12/27/2018 17:45	12/27/2018 17:45	0	0.36	30,958	0.57	0.19	1	Atlas	Retained by the Sneads Branch	11,145	1
	12/1/2018 10:15	12/1/2018 10:15	0	1.38	2,819	1.28	0.61	12	Atlas	Retained by the Sneads Branch	3,890	1
	12/31/2018 10:00	12/31/2018 12:00	120	1.26	1,506	1.31	0.49	12	Atlas	Retained by the Sneads Branch	1,897	1
CSO185 Total											**157,008**	**7**
CSO190	10/10/2018 16:15	10/10/2018 16:30	15	0.34	309,568	0.3	0.27	1	Atlas		105,253	1
	11/1/2018 2:00	11/1/2018 2:15	15	2.27	10,783	1.89	0.80	24	Atlas		24,478	1
	11/5/2018 23:00	11/5/2018 23:30	30	0.99	4,342	3.22	0.54	6	Atlas		4,299	1
	12/15/2018 4:00	12/15/2018 8:00	240	1.55	5,697	1.28	0.64	12	Atlas		8,831	1
	12/1/2018 9:00	12/1/2018 10:00	60	1.45	1,608	1.26	0.60	12	Atlas		2,332	1
	12/31/2018 16:00	12/31/2018 16:30	30	1.59	25,729	1.94	0.62	12	Atlas		40,909	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO190 Total											**186,102**	**6**
CSO193	10/31/2018 17:15	11/1/2018 2:30	555	1.93	66	1.74	0.69	24	Atlas		128	1
	11/1/2018 16:15	11/1/2018 16:15	0	1.93	4	2.16	0.69	24	Atlas		8	1
	12/31/2018 12:15	12/31/2018 16:15	240	1.3	1,326	1.69	0.50	12	Atlas		1,724	1
	12/20/2018 12:45	12/24/2018 16:30	5985	0.43	160	2.09	0.17	12	Atlas		69	1
CSO193 Total											**1,929**	**4**
CSO196	10/15/2018 9:00	10/15/2018 9:00	0	0.2	2,730	0.7	0.13	1	Atlas		546	1
	10/26/2018 7:45	10/26/2018 9:45	120	0.24	4	0.22	0.09	24	Atlas		1	1
	10/31/2018 11:45	10/31/2018 12:45	60	1.85	14	0.33	0.67	24	Atlas		26	1
	11/5/2018 22:00	11/5/2018 22:00	0	0.88	3,030	2.42	0.48	6	Atlas		2,666	1
CSO196 Total											**3,239**	**4**
CSO197	10/3/2018 7:45	10/3/2018 9:45	120	Discharge	0	0.07					197	
	10/10/2018 17:15	10/10/2018 17:30	15	0.13	7,092	0.14	0.09	1	Atlas		922	1
	10/12/2018 21:45	10/12/2018 22:30	45	0.13	11,677	0.27	0.08	1	Atlas		1,518	1
	10/14/2018 4:30	10/14/2018 5:00	30	0.24	12,413	0.49	0.13	3	Atlas		2,979	1
	10/15/2018 9:00	10/15/2018 9:30	30	0.2	48,150	0.7	0.13	1	Atlas		9,630	1
	10/19/2018 21:00	10/19/2018 21:15	15	0.12	14,425	0.66	0.07	6	Atlas		1,731	1
CSO197 Total											**16,977**	**5**
CSO198	11/5/2018 21:45	11/5/2018 21:45	0	0.88	584	2.39	0.48	6	Atlas		514	1
CSO198 Total											**514**	**1**
CSO199	11/1/2018 0:45	11/1/2018 0:45	0	1.85	359	1.41	0.67	24	Atlas		665	1
	11/5/2018 22:00	11/5/2018 22:00	0	0.88	1,776	2.42	0.48	6	Atlas		1,563	1
	12/15/2018 15:00	12/15/2018 15:00	0	1.63	0	1.65	0.69	12	Atlas		0	1
CSO199 Total											**2,228**	**3**
CSO211	10/31/2018 17:45	11/1/2018 4:00	615	2.58	4,803,458	2.34	0.90	24	Atlas		12,392,922	1
	11/5/2018 21:45	11/6/2018 2:15	270	1.44	18,389,374	4.11	0.78	6	Atlas		26,480,699	1
	11/14/2018 23:30	11/15/2018 3:45	255	0.46	14,448,452	0.65	0.21	12	Atlas		6,646,288	1
	12/15/2018 3:15	12/15/2018 11:45	510	1.61	9,698,121	1.61	0.64	12	Atlas		15,613,975	1
	12/1/2018 5:45	12/1/2018 16:45	660	1.69	16,679,850	1.89	0.75	12	Atlas		28,188,946	1
	12/27/2018 18:45	12/27/2018 18:45	0	0.4	5,145	0.71	0.23	1	Atlas		2,058	1
	12/31/2018 7:45	12/31/2018 21:30	825	1.58	10,040,180	2	0.61	24	Atlas	Retained by the Sneads Branch	15,863,485	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO211 Total											**105,188,373**	**7**
CSO018	11/13/2018 11:30	11/13/2018 11:30	0	0.1	13,370	0.24	0.04	24	Atlas		1,337	1
	12/1/2018 16:15	12/2/2018 18:30	1575	1.53	386,022	1.73	0.67	12	Atlas		590,614	1
CSO018 Total											**591,951**	**2**
CSO034	11/1/2018 0:30	11/1/2018 2:15	105	1.93	36	1.71	0.69	24	Atlas		69	1
	12/31/2018 16:15	12/31/2018 16:15	0	1.3	257	1.69	0.50	12	Atlas		334	1
CSO034 Total											**403**	**2**
CSO058	11/1/2018 13:15	11/1/2018 20:00	405	1.73	2,211,462	1.99	0.62	24	Atlas		3,825,830	1
CSO058 Total											**3,825,830**	**1**
CSO083	11/1/2018 0:45	11/1/2018 0:45	0	1.65	4,478	1.25	0.59	24	Atlas		7,388	1
	11/5/2018 22:00	11/5/2018 22:00	0	0.94	3,266	2.24	0.51	6	Atlas		3,070	1
CSO083 Total											**10,458**	**2**
CSO092	11/1/2018 0:45	11/1/2018 0:45	0	1.6	18	1.33	0.57	24	Atlas		29	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.34	344	0.53	0.19	1	Atlas		117	1
CSO092 Total											**146**	**2**
CSO093	11/5/2018 22:00	11/5/2018 22:00	0	0.84	44	2.12	0.45	6	Atlas		37	1
CSO093 Total											**37**	**1**
CSO097	10/31/2018 17:00	11/1/2018 2:30	570	2.04	153,515	1.89	0.73	24	Atlas		313,170	1
	11/5/2018 21:30	11/6/2018 0:45	195	1.24	463,515	3.38	0.67	6	Atlas		574,758	1
	11/14/2018 23:00	11/15/2018 0:45	105	0.48	137,894	0.49	0.22	12	Atlas		66,189	1
	12/27/2018 17:30	12/27/2018 19:15	105	0.32	427,509	0.65	0.18	1	Atlas		136,803	1
	12/1/2018 6:00	12/1/2018 14:30	510	1.5	172,637	1.61	0.66	12	Atlas		258,955	1
	12/15/2018 2:15	12/15/2018 13:15	660	1.7	776,101	1.7	0.70	12	Atlas		1,319,371	1
	12/20/2018 20:15	12/20/2018 22:15	120	0.56	29,439	2.17	0.22	12	Atlas		16,486	1
	12/31/2018 5:00	12/31/2018 17:45	765	1.36	404,979	1.69	0.52	24	Atlas		550,771	1
CSO097 Total											**3,236,503**	**8**
CSO108	11/1/2018 0:45	11/1/2018 6:15	330	2.38	307,058	2.36	0.85	24	Atlas		730,799	1
	11/5/2018 22:00	11/6/2018 3:45	345	1.39	785,575	3.9	0.75	6	Atlas		1,091,949	1
	12/4/2018 14:15	12/4/2018 14:15	0	Discharge	0	1.66					42,663	
CSO108 Total											**1,865,411**	**2**

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO109	11/1/2018 0:45	11/1/2018 1:15	30	2.41	46,434	2.3	0.87	24	Atlas		111,906	1
	11/5/2018 22:00	11/5/2018 22:15	15	1.42	69,234	3.42	0.77	6	Atlas		98,312	1
	12/15/2018 4:15	12/15/2018 4:15	0	1.69	8,080	0.97	0.69	12	Atlas		13,655	1
CSO109 Total											**223,873**	**3**
CSO110	11/14/2018 22:15	11/15/2018 4:30	375	0.46	640,898	0.61	0.21	12	Atlas		294,813	1
	11/5/2018 20:30	11/6/2018 1:15	285	1.13	480,414	2.93	0.61	6	Atlas		542,868	1
	11/23/2018 22:15	11/24/2018 0:30	135	0.27	59,852	0.21	0.14	6	Atlas		16,160	1
	11/26/2018 0:30	11/26/2018 0:30	0	0.08	201,750	0.38	0.05	1	Atlas		16,140	1
	12/1/2018 3:15	12/1/2018 15:15	720	1.42	382,569	1.53	0.63	12	Atlas		543,248	1
	12/31/2018 5:00	12/31/2018 17:45	765	1.2	494,662	1.54	0.46	24	Atlas		593,594	1
	12/14/2018 14:30	12/14/2018 14:45	15	1.7	2,295	0.12	0.70	12	Atlas		3,901	1
	12/15/2018 1:15	12/15/2018 11:30	615	1.7	384,816	1.69	0.70	12	Atlas		654,188	1
	12/20/2018 15:45	12/20/2018 21:30	345	0.56	44,352	2.15	0.22	12	Atlas		24,837	1
	12/27/2018 18:00	12/27/2018 19:00	60	0.32	243,494	0.62	0.19	1	Atlas		77,918	1
CSO110 Total											**2,767,667**	**10**
CSO126	11/1/2018 0:45	11/1/2018 18:30	1065	1.77	41,803	2.14	0.60	24	Atlas		73,992	1
	11/5/2018 22:00	11/6/2018 8:00	600	1.02	174,625	2.88	0.55	6	Atlas		178,117	1
	11/15/2018 4:30	11/15/2018 9:00	270	0.5	29,544	0.69	0.23	12	Atlas		14,772	1
	12/1/2018 10:15	12/1/2018 14:45	270	1.63	503,561	1.74	0.71	12	Atlas		820,804	1
	12/15/2018 4:30	12/15/2018 17:30	780	1.51	524,748	1.52	0.61	12	Atlas		792,370	1
	12/31/2018 9:00	12/31/2018 23:30	870	1.36	367,314	1.69	0.52	24	Atlas		499,547	1
CSO126 Total											**2,379,602**	**6**
CSO131	11/1/2018 0:45	11/1/2018 1:15	30	1.6	41,399	1.3	0.58	24	Atlas		66,238	1
	11/5/2018 22:00	11/5/2018 22:15	15	0.79	56,781	2.14	0.43	6	Atlas		44,857	1
	12/27/2018 17:45	12/27/2018 17:45	0	0.3	93,663	0.46	0.19	1	Atlas		28,099	1
	12/1/2018 10:15	12/1/2018 10:15	0	1.32	3,976	1.2	0.56	12	Atlas		5,248	1
	12/31/2018 16:30	12/31/2018 16:45	15	1.22	34,838	1.53	0.47	24	Atlas		42,502	1
CSO131 Total											**186,944**	**5**
CSO140	11/5/2018 22:45	11/6/2018 12:00	795	0.84	4,064	2.49	0.45	6	Atlas		3,414	1
	11/1/2018 1:00	11/1/2018 16:15	915	1.59	12,270	1.81	0.57	24	Atlas		19,509	1
	11/15/2018 4:00	11/15/2018 12:30	510	0.43	2,228	0.62	0.20	12	Atlas		958	1
	12/1/2018 9:45	12/1/2018 9:45	0	1.52	4	1.22	0.61	12	Atlas		6	1
	12/1/2018 23:00	12/2/2018 5:45	405	1.52	2,704	1.66	0.61	12	Atlas		4,110	1
	12/15/2018 8:00	12/15/2018 20:15	735	1.66	13,082	1.66	0.69	12	Atlas		21,716	1
	12/31/2018 9:30	1/1/2019 0:00	870	1.23	352,370	1.53	0.47	24	Atlas		433,415	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO140 Total											**483,128**	**7**
CSO141	11/15/2018 1:45	11/15/2018 3:45	120	0.39	8,982	0.56	0.17	12	Atlas		3,503	1
CSO141 Total											**3,503**	**1**
CSO142	11/1/2018 0:30	11/1/2018 1:00	30	1.73	4,147	1.38	0.62	24	Atlas	Retained by the Sneads Branch	7,175	1
	11/5/2018 22:00	11/5/2018 22:00	0	0.95	11,927	2.34	0.51	6	Atlas	Retained by the Sneads Branch	11,331	1
	12/31/2018 16:15	12/31/2018 16:15	0	1.18	1,375	1.47	0.45	24	Atlas	Retained by the Sneads Branch	1,622	1
CSO142 Total											**20,128**	**3**
CSO153	11/1/2018 0:30	11/1/2018 11:00	630	1.64	285,048	1.79	0.59	24	Atlas		467,478	1
	11/5/2018 21:45	11/6/2018 0:15	150	0.83	255,728	2.51	0.45	6	Atlas		212,254	1
CSO153 Total											**679,732**	**2**
CSO154	11/6/2018 1:00	11/6/2018 1:15	15	0.82	52,880	2.41	0.44	6	Atlas		43,362	1
	12/27/2018 18:00	12/27/2018 18:00	0	0.29	32,669	0.52	0.18	1	Atlas		9,474	1
	12/31/2018 16:45	12/31/2018 16:45	0	1.2	14,653	1.5	0.46	24	Atlas		17,584	1
CSO154 Total											**70,420**	**3**
CSO174	11/1/2018 0:45	11/1/2018 1:00	15	1.73	141,464	1.38	0.62	24	Atlas	Retained by the Sneads Branch	244,733	1
	11/5/2018 22:00	11/5/2018 22:00	0	0.95	77,556	2.34	0.51	6	Atlas	Retained by the Sneads Branch	73,678	1
CSO174 Total											**318,411**	**2**
CSO183	11/5/2018 22:00	11/5/2018 22:00	0	1.1	81	2.53	0.60	6	Atlas	Retained by the Sneads Branch	89	1
CSO183 Total											**89**	**1**

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO184	11/1/2018 0:45	11/1/2018 1:00	15	1.75	6,794	1.48	0.62	24	Atlas	Retained by the Sneads Branch	11,889	1
	11/5/2018 22:00	11/5/2018 22:00	0	1.1	5,393	2.53	0.60	6	Atlas	Retained by the Sneads Branch	5,932	1
CSO184 Total											**17,821**	**2**
CSO200	11/5/2018 21:45	11/5/2018 22:00	15	0.88	1,798	2.42	0.48	6	Atlas		1,582	1
	11/1/2018 0:45	11/1/2018 0:45	0	1.85	350	1.41	0.67	24	Atlas		647	1
CSO200 Total											**2,229**	**2**
CSO202	11/1/2018 0:30	11/1/2018 0:45	15	1.85	505	1.41	0.67	24	Atlas		934	1
	11/5/2018 21:45	11/5/2018 22:00	15	0.88	2,526	2.42	0.48	6	Atlas		2,223	1
	12/31/2018 16:15	12/31/2018 16:15	0	1.24	1,021	1.59	0.48	24	Atlas		1,266	1
	12/27/2018 17:30	12/27/2018 17:30	0	0.39	3,200	0.5	0.25	1	Atlas		1,248	1
	12/1/2018 10:00	12/1/2018 12:45	165	1.19	9	1.23	0.53	12	Atlas		11	1
CSO202 Total											**5,682**	**5**
CSO203	11/5/2018 23:00	11/5/2018 23:00	0	0.88	131	2.58	0.48	6	Atlas		115	1
	12/31/2018 16:15	12/31/2018 16:15	0	1.24	32	1.59	0.48	24	Atlas		40	1
CSO203 Total											**155**	**2**
CSO210	10/10/2018 16:00	10/10/2018 18:45	165	0.45	8,514,122	0.58	0.38	1	Atlas		3,831,355	1
	10/31/2018 17:00	11/1/2018 4:30	690	2.58	6,525,955	2.37	0.90	24	Atlas		16,836,964	1
	11/5/2018 21:00	11/6/2018 3:00	360	1.44	8,346,234	4.11	0.78	6	Atlas		12,018,577	1
	11/1/2018 16:00	11/1/2018 18:45	165	2.58	1,363,801	3.08	0.90	24	Atlas		3,518,607	1
CSO210 Total											**36,205,503**	**4**
CSO027	12/31/2018 13:15	12/31/2018 16:15	180	1.3	1,626	1.69	0.50	12	Atlas		2,114	1
CSO027 Total											**2,114**	**1**
CSO113	12/15/2018 4:00	12/15/2018 4:00	0	1.76	383	0.91	0.73	12	Atlas		674	1
CSO113 Total											**674**	**1**
CSO117	12/31/2018 16:15	12/31/2018 17:30	75	1.17	1,202,815	1.58	0.45	24	Atlas		1,407,293	1
	12/1/2018 10:15	12/1/2018 14:45	270	1.27	1,060,160	1.3	0.53	12	Atlas		1,346,403	1
	12/15/2018 7:30	12/15/2018 11:00	210	1.65	1,384,378	1.62	0.69	12	Atlas		2,284,224	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO117 Total											**5,037,920**	**3**
CSO146	12/31/2018 16:45	12/31/2018 16:45	0	1.18	14,349	1.52	0.45	24	Atlas		16,932	1
CSO146 Total											**16,932**	**1**
CSO150	12/27/2018 17:30	12/27/2018 17:30	0	0.35	1,551	0.47	0.21	1	Atlas		543	1
	12/15/2018 4:30	12/15/2018 9:30	300	1.56	26,240	1.46	0.65	12	Atlas		40,935	1
	12/31/2018 10:00	12/31/2018 17:30	450	1.43	57,155	1.79	0.55	24	Atlas		81,731	1
CSO150 Total											**123,209**	**3**
CSO182	12/31/2018 4:45	12/31/2018 19:00	855	1.16	127,141	1.59	0.45	24	Atlas	Retained by the Sneads Branch	147,483	1
	12/1/2018 8:00	12/2/2018 1:15	1035	1.31	1,497,230	1.44	0.58	12	Atlas	Retained by the Sneads Branch	1,961,371	1
	12/14/2018 14:30	12/14/2018 15:00	30	1.61	5,860	0.12	0.66	12	Atlas	Retained by the Sneads Branch	9,435	1
	12/15/2018 1:15	12/15/2018 13:30	735	1.61	369,677	1.61	0.66	12	Atlas	Retained by the Sneads Branch	595,180	1
	12/20/2018 15:00	12/20/2018 22:45	465	0.52	263,940	2.07	0.21	12	Atlas	Retained by the Sneads Branch	137,249	1
	12/27/2018 19:00	12/27/2018 19:15	15	0.42	28,824	0.66	0.27	1	Atlas	Retained by the Sneads Branch	12,106	1
CSO182 Total											**2,862,824**	**6**
CSO022/023	10/10/2018 16:15	10/10/2018 16:15	0	0.17	142,700	0.12	0.11	3	Atlas		24,259	1
	10/31/2018 17:00	11/1/2018 19:30	1590	1.83	641,005	2.11	0.64	24	Atlas		1,173,040	1
	11/5/2018 21:45	11/5/2018 23:15	90	0.86	133,859	2.62	0.46	6	Atlas		115,119	1
	11/24/2018 9:15	11/24/2018 9:30	15	0.26	1,555,227	0.27	0.14	6	Atlas		404,359	1
CSO022/023 Total											**1,716,777**	**4**
CSO191	10/4/2018 16:15	10/5/2018 9:00	1005	0.04	13,050	0.06	0.03	1	Atlas		522	1
	10/6/2018 20:45	10/9/2018 11:30	3765	0.03	8,800	0.1	0.03	1	Atlas		264	1
	10/10/2018 18:45	10/10/2018 20:00	75	0.33	430	0.43	0.27	1	Atlas		142	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (Inch)	Discharge per Rain	Antecedent Rain	Frequency (yr)	Period (hr)	Standard	Comment	Discharge Volume (Gal)	Count of KEY
CSO191 Total											**928**	**3**
Grand Total											**362,945,076**	**394**

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Appendix C Acronyms

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Appendix C Acronyms

ACD	Amended Consent Decree
AAOV	Average Annual Overflow Volume
BGI	Beargrass Interceptor
BGIR	Beargrass Interceptor Relief
BOD	Biological Oxygen Demand
CCP	Composite Correction Plan
CCWQTC	Cedar Creek Water Quality Treatment Center
CMF	Central Maintenance Facility
CMOM	Capacity Management Operations and Maintenance
CPE	Comprehensive Performance Evaluations
CSO	Combined Sewer Overflow
CSOFT	Software Name
CSS	Combined Sewer System
DAP	Discharge Abatement Plan
DRGWQTC	Derek R. Guthrie Water Quality Treatment Center
DWO	Dry Weather Overflow
EPA	Environmental Protection Agency
FEPS	Final Effluent Pump Station
FOG	Fat Oil and Grease
FY	Fiscal Year
GLPM	Gravity Line Preventive Maintenance
HCWQTC	Hite Creek Water Quality Treatment Center
HMI	Human Machine Interface
ICM	Integrated Catchment Model
ID	Identification
IFIX	Software name
I/O	Input/ Output
I/I	Inflow and Infiltration
IOAP	Integrated Overflow Abatement Plan
ISSDP	Interim Sanitary Sewer Discharge Plan
KDEP	Kentucky Department of Environmental Protection
KPDES	Kentucky Pollutant Discharge Elimination System
LG&E	Louisville Gas & Electric Company
LWC	Louisville Water Company
LTCP	Long Term Control Plan
MCC	Motor Control Center
MF/MFWQTC	Morris Forman Water Quality Treatment Center
MFI	Middle Fork Interceptor
MG	Million Gallons
MGD	Million Gallons per Day
MSD	Metropolitan Sewer District (Louisville and Jefferson County)
NGPS	Nightingale Pump Station

Appendix C Acronyms

NMC	Nine Minimum Controls
ORFM	Ohio River Force Main
ORI	Ohio River Interceptor
PLC	Programmable Logic Controller
PM	Preventive Maintenance
PS	Pump Station
RAS	Return Activated Sludge
RTC	Real Time Control
SED2	South East Diversion 2
SCADA	Supervisory Control And Data Acquisition
SCAP	System Capacity Assurance Plan
SCS	Soil Conservation Service
SOP	Standard Operating Procedure
SOR1	Southern Outfall Retention Facility 1
SORP	Sewer Overflow Response Protocol
SPS	Starkey Pump Station
SSDP	Sanitary Sewer Discharge Plan
SSES	Sewer System Evaluation Survey
SSO	Sanitary Sewer Overflow
SSOP	Sanitary Sewer Overflow Plan
SWOR1	Southwestern Outfall Retention – Phase 1
SWOR2	Southwestern Outfall Retention – Phase 2
SWPS	Southwestern Pump Station
SWSG	Southwest Sluice Gate
TRFD	Total Rainfall Depth
TSS	Total Suspended Solids
TV	Television
UMFPS	Upper Middle Fork Pump Station
UM	Unplanned Maintenance
US	United States
VFD	Variable Frequency Drive
WIN	Waterway Improvements Now
WQTC	Water Quality Treatment Center
WUS	Waters of the United States
WWTF	Wastewater Treatment Facility

Appendix D SCAP Balance

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APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
CCREEK						
235533	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	6,521	6,521
362688	MAINTENANCE WORK FY09A - CEDAR	SCAPCREDIT		12/31/08	5	6,526
236380	FAIRMOUNT ROAD MH REHAB	SCAPCREDIT		6/5/09	10,734	17,260
362689	MAINTENANCE WORK FY09B - CEDAR	SCAPCREDIT		6/30/09	201	17,461
SC1011254	MAINTENANCE WORK FY10A - CEDAR	SCAPCREDIT		12/31/09	347	17,808
SC1011255	MAINTENANCE WORK FY10B - CEDAR	SCAPCREDIT		6/30/10	194	18,002
SC1011259	MAINTENANCE WORK FY11A - CEDAR	SCAPCREDIT		12/31/10	1,720	19,722
SC1011262	MAINTENANCE WORK FY11B - CEDAR	SCAPCREDIT		6/30/11	934	20,656
SC1011264	MAINTENANCE WORK FY12A - CEDAR	SCAPCREDIT		12/31/11	269	20,925
SC1011267	MAINTENANCE WORK FY12B - CEDAR	SCAPCREDIT		6/30/12	814	21,739
SC1005519	CONTRACTED WORK FY12 - CEDAR	SCAPCREDIT		9/10/12	21,321	43,060
320989	LITTLE CEDAR CREEK I/I REHABIL	SCAPCREDIT		9/27/12	652,907	695,967
263934	ST JAMES CROSSINGS	LAT EXT	9,000	11/30/12	-19,575	676,392
196927	SONIC SPRINGS	LAT EXT	3,600	12/5/12	-7,830	668,562
SC1074160	MAINTENANCE WORK FY13 JAN-JUN -	SCAPCREDIT		6/30/13	4,443	673,005
SC1005524	CONTRACTED WORK FY13 - CEDAR	SCAPCREDIT		8/19/13	425	673,430
14SC1000	MAINTENANCE WORK FY13A - CEDAR	SCAPCREDIT		12/31/13	2,220	675,650
SC1082184	MAINTENANCE WORK FY14 JUL-DEC -	SCAPCREDIT		12/31/13	1,482	677,132
13LE1155	RAISING CANE'S CEDARLOOK DRIVE	LAT EXT	1,175	5/23/14	-2,556	674,576
SC1082223	MAINTENANCE WORK FY14 JAN-JUN-	SCAPCREDIT		6/30/14	4,729	679,305
SC1082493	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	4,583	683,888

239030	POPLAR LAKES PH 1	LAT EXT	18,000	1/26/15	-39,150	644,738
13LE1003	Bardstown Woods Sec 6	LAT EXT	5,200	5/26/15	-11,310	633,428
SC1082496	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	21	633,449
LE916330	Altawood Development	LAT EXT	1,600	9/14/15	-3,480	629,969
SC1003694	CONTRACTED WORK FY16 - CEDAR	SCAPCREDIT		9/25/15	328	630,297
SC1006188	CONTRACTED WORK FY15 - CEDAR	SCAPCREDIT		9/25/15	1	630,298
SC1082497	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	16	630,314
LE915727	BARDSTOWN WOODS SEC 7	LAT EXT	4,400	5/25/16	-9,570	620,744
SC1082498	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	169	620,913
SC1006171	CONTRACTED WORK FY14 - CEDAR	SCAPCREDIT		10/26/16	45,900	666,813
SC1082499	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	2,396	669,209
SC1082500	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	3,464	672,673
LE983107	Poplar Lakes Phase 3	LAT EXT	12,000	8/14/17	-26,100	646,573
LE971176	Cedar Ridge	LAT EXT	18,800	10/24/17	-40,890	605,683
SC1082501	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	3,067	608,750
LE1027406	Chenoweth Run, LLC	LAT EXT	1,600	3/13/18	-3,480	605,270
LE1005655	Carrier Court	LAT EXT	400	4/2/18	-870	604,400
FFORK						
235557	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	14,540	14,540
362638	MAINTENANCE WORK FY09A - FLOYDS	SCAPCREDIT		12/31/08	1	14,541
362647	MAINTENANCE WORK FY09B - FLOYDS	SCAPCREDIT		6/30/09	4	14,545
362651	MAINTENANCE WORK FY10A - FLOYDS	SCAPCREDIT		12/31/09	524	15,069
230379	SHAKES RUN SECTION 4	LAT EXT	3,770	1/5/10	-8,200	6,869
362655	MAINTENANCE WORK FY10B - FLOYDS	SCAPCREDIT		6/30/10	82	6,951
362661	MAINTENANCE WORK FY11A - FLOYDS	SCAPCREDIT		12/31/10	14,163	21,114

362669	MAINTENANCE WORK FY11B - FLOYDS	SCAPCREDIT		6/30/11	22,707	43,821
242480	CLAIBOURNE CROSSINGS PHASE 2	LAT EXT	0	10/17/11	0	43,821
359320	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	4,000	47,821
362674	MAINTENANCE WORK FY12A - FLOYDS	SCAPCREDIT		12/31/11	317	48,138
362678	MAINTENANCE WORK FY12B - FLOYDS	SCAPCREDIT		6/30/12	338	48,476
332823	SINGLE FAMILY HOME	LAT EXT	400	7/13/12	-870	47,606
315945	BROOKFIELD SEC 3	LAT EXT	12,800	10/26/12	-27,840	19,766
361689	LAKE FOREST REHAB PH1	SCAPCREDIT		12/18/12	174,769	194,535
362683	MAINTENANCE WORK FY13A - FLOYDS	SCAPCREDIT		12/31/12	10	194,545
331397	BROOKFIELD SEC 2A	LAT EXT	14,400	5/8/13	-31,320	163,225
13SC1000	FY14 STARVIEW REHABILITATION	SCAPCREDIT		6/30/13	14,183	177,408
SC1082514	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	161	177,569
SC1082517	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	991	178,560
SC1082518	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	662	179,222
SC1082519	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	1,318	180,540
13LE1062	SPEEDWAY #9451	LAT EXT	540	2/18/15	-1,175	179,366
SC1003809	BERRYTOWN WQTC I/I REMEDIATION	SCAPCREDIT		6/30/15	116,834	296,200
SC1082520	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	661	296,861
SC1003723	MIDDLETOWN SSR P2S2 I/I REMEDIATION	SCAPCREDIT		11/6/15	102	296,963
SC1082521	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	659	297,622
LE941673	Locust Creek Section 8B	LAT EXT	2,000	1/7/16	-4,350	293,272
SC1082523	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	3,578	296,850
SC1003331	CONTRACTED WORK FY16 - FLOYDS	SCAPCREDIT		7/7/16	35	296,885
LE932677	Shakes Run Sec 9	LAT EXT	12,000	9/20/16	-26,100	270,785
SC1082524	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	1,804	272,589

LE945783	Urton Woods, Section 2B	LAT EXT	17,200	1/4/17	-37,410	235,179
LE971261	Notting Hills Section 4 and Clubhouse	LAT EXT	10,400	2/27/17	-22,620	212,559
SC1082525	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	1,320	213,879
LE992628	Blankenbaker Centre II	LAT EXT	2,340	10/9/17	-5,090	208,789
SC1082526	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	6,158	214,947
LE1026269	Valencia Villas at Landis Lakes	LAT EXT	2,000	12/27/18	-4,350	210,597
LE1039193	Glen Lakes Section 4 - Phase 3	LAT EXT	16,400	1/7/19	-35,670	174,927
HCREEK						
SC1006307	CONTRACTED WORK FY06 - HITE CREEK	SCAPCREDIT		5/15/06	656	656
235561	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	6,404	7,060
362641	MAINTENANCE WORK FY09A - HITE	SCAPCREDIT		12/31/08	2	7,062
SC1006214	CONTRACTED WORK FY09 - HITE CREEK	SCAPCREDIT		6/1/09	328	7,390
362648	MAINTENANCE WORK FY09B - HITE	SCAPCREDIT		6/30/09	7	7,397
362652	MAINTENANCE WORK FY10A - HITE	SCAPCREDIT		12/31/09	10	7,407
362657	MAINTENANCE WORK FY10B - HITE	SCAPCREDIT		6/30/10	332	7,739
320906	FLOYDSBURG ROAD I/I REHABILITA	SCAPCREDIT		12/17/10	28,437	36,176
362662	MAINTENANCE WORK FY11A - HITE	SCAPCREDIT		12/31/10	9	36,185
362670	MAINTENANCE WORK FY11B - HITE	SCAPCREDIT		6/30/11	9	36,194
SC1011058	Meadow Stream Pump Station & Force Main	SCAPCREDIT		9/7/11	2,304,000	2,340,194
246638	CHAPMAN COURT S/S	LAT EXT	800	9/28/11	-1,740	2,338,454
362675	MAINTENANCE WORK FY12A - HITE	SCAPCREDIT		12/31/11	340	2,338,794
362679	MAINTENANCE WORK FY12B - HITE	SCAPCREDIT		6/30/12	5,007	2,343,801
290181	CAMDEN WOOD APARTMENTS	LAT EXT	12,400	8/31/12	-26,970	2,316,831
304536	MAGNOLIA SPRINGS EAST PRIV P/S	LAT EXT	9,500	12/1/12	-20,663	2,296,169

335610	ROCK SPRINGS FARM SEC 4B	LAT EXT	6,400	12/7/12	-13,920	2,282,249
362684	MAINTENANCE WORK FY13A - HITE	SCAPCREDIT		12/31/12	7	2,282,256
SC1005530	CONTRACTED WORK FY13 - HITE CREEK	SCAPCREDIT		4/11/13	1,442	2,283,698
SC1082527	MAINTENANCE WORK FY13 JAN-JUN-HITE	SCAPCREDIT		6/30/13	967	2,284,665
SC1082528	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	3,211	2,287,876
SC1082529	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	2,207	2,290,083
SC1082530	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	360	2,290,443
SC1006178	CONTRACTED WORK FY14 - HITE CREEK	SCAPCREDIT		1/27/15	77,660	2,368,103
SC983697	MEADOWSTREAM REHABILITATION -	SCAPCREDIT		3/13/15	448,447	2,816,550
SC1082531	MAINTENANCE WORK FY15 JAN-JUN-HITE	SCAPCREDIT		6/30/15	124	2,816,674
SC1082532	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	1,191	2,817,865
SC1082533	MAINTENANCE WORK FY16 JAN-JUN-HITE	SCAPCREDIT		6/30/16	336	2,818,201
LE943178	Rock Springs Farm Section 5A	LAT EXT	6,800	9/13/16	-14,790	2,803,411
SC1006192	CONTRACTED WORK FY15 - HITE CREEK	SCAPCREDIT		10/26/16	1	2,803,412
SC1082534	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	3,599	2,807,011
LE971406	Old Henry Business Park	LAT EXT	930	3/17/17	-2,023	2,804,988
SC1082535	MAINTENANCE WORK FY17 JAN-JUN-HITE	SCAPCREDIT		6/30/17	4,109	2,809,097
SC1082536	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	6,823	2,815,920
JTOWN						
235563	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	6,203	6,203
359323	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	10,203
254871	LAKESIDE BAPT CHURCH PRIV PS	LAT EXT	2,500	8/10/10	-5,438	4,766

340213	JEFFERSONTOWN ENG REHAB	SCAPCREDIT		8/11/11	997,448	1,002,214
359324	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	4,000	1,006,214
14SC1002	MAINTENANCE WORK FY13A -	SCAPCREDIT		12/31/12	3,490	1,009,704
337261	SINGLE FAMILY 2909 PELHAM CT	LAT EXT	400	5/28/13	-870	1,008,834
13LE1010	SWOPE HR & TRAINING BLDG	LAT EXT	400	6/28/13	-870	1,007,964
13LE1092	BALE EQUIPMENT	LAT EXT	450	10/25/13	-979	1,006,985
13LE1098	UNIPAK	LAT EXT	720	2/27/14	-1,566	1,005,419
LE924043	Bluegrass Indoor Carting	LAT EXT	400	5/1/14	-870	1,004,549
13LE1067	PARK COMMUNITY	LAT EXT	2,220	12/31/14	-4,829	999,720
14LE1149	Grand Lakes Section 3	LAT EXT	5,600	2/1/16	-12,180	987,540
LE924049	Blankenbaker Road S/S	LAT EXT	9,010	3/10/16	-19,597	967,944
326360	WATTERSON TRAIL CENTER	LAT EXT	2,745	5/4/16	-5,970	961,973
LE930127	Vantage Point Sec 3B	LAT EXT	7,200	6/21/16	-15,660	946,313
14LE1148	Grand Lakes Section 2	LAT EXT	4,400	11/8/16	-9,570	936,743
LE926081	Monticello Manors Sec 2	LAT EXT	7,600	3/23/17	-16,530	920,213
MCREEK						
359380	CALENDAR 2005 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/05	12,000	12,000
359381	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	24,000	36,000
235568	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	51,530	87,530
359382	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	16,000	103,530
362642	MAINTENANCE WORK FY09A - MILL	SCAPCREDIT		12/31/08	93	103,623
362649	MAINTENANCE WORK FY09B - MILL	SCAPCREDIT		6/30/09	1,507	105,130
236614	DEVEROES	LAT EXT	960	9/9/09	-2,088	103,042
362653	MAINTENANCE WORK FY10A - MILL	SCAPCREDIT		12/31/09	25,272	128,314
359383	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	32,000	160,314
253586	KINGSFORD RETAIL CENTER	LAT EXT	480	1/6/10	-1,044	159,270

238421	6840 DIXIE HWY OUTLOT	LAT EXT	2,100	4/28/10	-4,568	154,703
362658	MAINTENANCE WORK FY10B - MILL	SCAPCREDIT		6/30/10	6,216	160,919
259408	FAMILY DOLLAR 5105 DIXIE	LAT EXT	1,200	7/2/10	-2,610	158,309
264294	SAINT PETER THE APOSTLE CATHOL	LAT EXT	2,000	7/23/10	-4,350	153,959
276215	FAMILY DOLLAR - KRISTIN WAY	LAT EXT	400	10/12/10	-870	153,089
362664	MAINTENANCE WORK FY11A - MILL	SCAPCREDIT		12/31/10	22,745	175,834
359384	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	4,000	179,834
359325	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	8,000	187,834
320916	SONNE AVE PS REHABILITATION -	SCAPCREDIT		6/30/11	120,800	308,634
362671	MAINTENANCE WORK FY11B - MILL	SCAPCREDIT		6/30/11	11,745	320,379
299399	FAMILY DOLLAR - GREENWOOD RD	LAT EXT	800	10/4/11	-1,740	318,639
309018	PRP PERFORMING ARTS ADDITION	LAT EXT	1,134	11/9/11	-2,466	316,172
359385	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	12,000	328,172
362676	MAINTENANCE WORK FY12A - MILL	SCAPCREDIT		12/31/11	4,800	332,972
359326	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	12,000	344,972
318096	CRACKER BARREL OLD COUNTRY	LAT EXT	6,000	1/19/12	-13,050	331,922
SC1005678	CONTRACTED WORK FY12 - MILL CREEK	SCAPCREDIT		3/16/12	22	331,944
262545	DIXIE MANOR SHOPPING CENTER	LAT EXT	965	5/21/12	-2,099	329,845
300374	FORT KNOX FEDERAL CREDIT UNION	LAT EXT	400	6/26/12	-870	328,975
362680	MAINTENANCE WORK FY12B - MILL	SCAPCREDIT		6/30/12	4,133	333,108
361693	FY12 MILL CREEK REHAB	SCAPCREDIT		6/30/12	81,675	414,783
231800	PIONEER MOBILE HOME PARK	LAT EXT	11,200	7/24/12	-24,360	390,423
237457	WAVERLY HILLS	LAT EXT	400	9/18/12	-870	389,553
341883	NHK SPRING PRECISION	LAT EXT	17,800	10/19/12	-38,715	350,838
334997	BEECHLAND BAPTIST CHURCH	LAT EXT	2,715	12/5/12	-5,905	344,933

359327	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	148,000	492,933
362685	MAINTENANCE WORK FY13A - MILL	SCAPCREDIT		12/31/12	22,996	515,929
359386	CALENDAR 2012 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/12	4,000	519,929
343763	SOUTHEAST CHRISTIAN CHURCH SW	LAT EXT	6,000	1/18/13	-13,050	506,879
224875	ASHBY GREEN APARTMENT HOMES	LAT EXT	36,400	3/20/13	-79,170	427,709
265944	RIVERPORT PHASE 4A - MICHELIN	LAT EXT	400	6/6/13	-870	426,839
SC1082559	MAINTENANCE WORK FY13 JAN-JUN-MILL	SCAPCREDIT		6/30/13	32,425	459,264
314887	DAYTON FREIGHT	LAT EXT	1,200	9/10/13	-2,610	456,654
13LE1014	LOUISVILLE FREE PUBLIC LIBRARY	LAT EXT	8,200	9/26/13	-17,835	438,819
357140	FAMILY DOLLAR CANE RUN ROAD	LAT EXT	832	10/3/13	-1,810	437,009
SC1082560	MAINTENANCE WORK FY14 JUL-DEC-MILL	SCAPCREDIT		12/30/13	11,451	448,460
13LE1171	SINGLE FAMILY HOME 3700 ROMANIA DR	LAT EXT	400	1/29/14	-870	447,590
SC1082562	MAINTENANCE WORK FY14 JAN-JUN-MILL	SCAPCREDIT		6/30/14	7,753	455,343
SC1082563	MAINTENANCE WORK FY15 JUL-DEC-MILL	SCAPCREDIT		12/30/14	4,491	459,834
SC1005536	ROSA TERRACE I/I REHABILITATION FY13	SCAPCREDIT		3/10/15	156,635	616,469
SC1082564	MAINTENANCE WORK FY15 JAN-JUN-MILL	SCAPCREDIT		6/30/15	4,861	621,330
SC1003690	CONTRACTED WORK FY15 - MILL CREEK	SCAPCREDIT		7/31/15	58	621,388
LE937142	ZAXBYS DIXIE HWY	LAT EXT	924	8/10/15	-2,010	619,379
SC1082565	MAINTENANCE WORK FY16 JUL-DEC-MILL	SCAPCREDIT		12/30/15	6,692	626,071
SC1082566	MAINTENANCE WORK FY16 JAN-JUN-MILL	SCAPCREDIT		6/30/16	3,523	629,594
LE944727	Britz Deer Hollow Lane	LAT EXT	800	7/28/16	-1,740	627,854

SC1082567	MAINTENANCE WORK FY17 JUL-DEC-MILL	SCAPCREDIT		12/30/16	12,857	640,711
SC1082568	MAINTENANCE WORK FY17 JAN-JUN-MILL	SCAPCREDIT		6/30/17	5,103	645,814
SC1082569	MAINTENANCE WORK FY18 JUL-DEC-MILL	SCAPCREDIT		12/30/17	27,293	673,107
LE1049057	Advanced ENT	LAT EXT	705	5/15/18	-1,533	671,573
MFORK						
359400	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	84,000	84,000
359328	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	20,000	104,000
235566	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	43,779	147,779
359329	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	8,000	155,779
SC1011287	MAINTENANCE WORK FY09A - MIDDLE	SCAPCREDIT		12/31/08	13	155,792
236517	ANCHOR ESTATES MH REHAB	SCAPCREDIT		1/16/09	15,552	171,344
217235	SINKING FORK ICA PHASE I REHAB	SCAPCREDIT		3/30/09	437,967	609,311
235376	MIDDLE FORK INT REHAB PH1	SCAPCREDIT		5/15/09	487,744	1,097,055
179246	SHADY GLEN OF LYNDON PERSONAL	LAT EXT	-500	5/26/09	1,088	1,098,143
SC1011288	MAINTENANCE WORK FY09B - MIDDLE	SCAPCREDIT		6/30/09	4,208	1,102,351
250572	1316 WITAWANGA AVE	LAT EXT	400	11/4/09	-870	1,101,481
359331	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	24,000	1,125,481
359401	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	4,000	1,129,481
SC1011290	MAINTENANCE WORK FY10A - MIDDLE	SCAPCREDIT		12/31/09	50	1,129,531
197432	ALMOST HOME KENNELS - ALL PET	LAT EXT	3,700	3/16/10	-8,048	1,121,483
260064	OXMOOR GOLF FRONT 9	LAT EXT	400	4/15/10	-870	1,120,613
260065	OXMOOR GOLF BACK 9	LAT EXT	400	4/15/10	-870	1,119,743
229834	THE BROOK HOS- DUPONT ADDITION	LAT EXT	1,763	4/27/10	-3,835	1,115,908
SC1011292	MAINTENANCE WORK FY10B - MIDDLE	SCAPCREDIT		6/30/10	1,113	1,117,021

265723	Z-XPRESS CAR WASH	LAT EXT	5,449	7/2/10	-11,852	1,105,170
255793	HERR LANE APARTMENTS - 4 PLEX	LAT EXT	1,200	7/14/10	-2,610	1,102,560
255792	HERR LANE APARTMENTS - 8 PLEX	LAT EXT	2,400	7/14/10	-5,220	1,097,340
274303	FARM CREDIT SERVICES	LAT EXT	525	9/9/10	-1,142	1,096,198
278015	METROPOLITAN UROLOGY	LAT EXT	400	12/15/10	-870	1,095,328
359402	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	8,000	1,103,328
359333	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	12,000	1,115,328
SC1011293	MAINTENANCE WORK FY11A - MIDDLE	SCAPCREDIT		12/31/10	1,205	1,116,533
285637	SHELBYHURST OFFICE BUILDING 1	LAT EXT	6,600	1/20/11	-14,355	1,102,178
313465	DORSEY POINTE/CODOMINIUMS 8-13	LAT EXT	2,400	1/27/11	-5,220	1,096,958
291263	BROWNS LANE BUILDING	LAT EXT	400	4/14/11	-870	1,096,088
293400	FOUR PLEX APARTMENTS	LAT EXT	1,200	6/14/11	-2,610	1,093,478
SC1011294	MAINTENANCE WORK FY11B - MIDDLE	SCAPCREDIT		6/30/11	7,183	1,100,661
330019	FY11 ANCHOR ESTATES REHAB	SCAPCREDIT		8/11/11	1,359	1,102,020
310046	EL NAPEL - MCMAHAN CENTER	LAT EXT	3,100	10/31/11	-6,743	1,095,278
314591	CHOCOLATE MARTINI BAR/REST	LAT EXT	3,275	11/29/11	-7,123	1,088,154
320983	HURSTBOURNE I/I INVESTIGATION	SCAPCREDIT		12/27/11	1,408,279	2,496,433
359335	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	16,000	2,512,433
SC1011295	MAINTENANCE WORK FY12A - MIDDLE	SCAPCREDIT		12/31/11	919	2,513,352
321228	SINGLE FAMILY UNIT	LAT EXT	400	2/15/12	-870	2,512,482
SC1005671	CONTRACTED WORK FY12 - MIDDLE	SCAPCREDIT		3/16/12	7,305	2,519,787
321647	SINGLE FAMILY	LAT EXT	400	3/27/12	-870	2,518,917
328074	SINGLE FAMILY-703 FOUNTAIN AVE	LAT EXT	400	6/22/12	-870	2,518,047
SC1011297	MAINTENANCE WORK FY12B - MIDDLE	SCAPCREDIT		6/30/12	949	2,518,996
193195	CEDAR LAKE LODGE WASHBURN	LAT EXT	1,900	8/20/12	-4,133	2,514,864
320923	ST MATTHEWS I/I REHABILITATION	SCAPCREDIT		8/23/12	20,841	2,535,705

337796	CHAMPPS	LAT EXT	635	9/5/12	-1,381	2,534,324
347126	ADVANCE PRODUCTION SYSTEMS	LAT EXT	400	12/28/12	-870	2,533,454
359336	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	92,000	2,625,454
14SC1003	MAINTENANCE WORK FY13A - MIDDLE	SCAPCREDIT		12/31/12	3,309	2,628,763
339367	BAPTIST RADIATION ONCOLOGY	LAT EXT	1,500	1/4/13	-3,263	2,625,500
340778	PANDA RESTAURANT	LAT EXT	1,725	1/16/13	-3,752	2,621,748
349044	BLAIRWOOD POOL ADDITION	LAT EXT	400	1/29/13	-870	2,620,878
328659	SINGLE FAMILY HOME - 6911 AMBR	LAT EXT	400	2/4/13	-870	2,620,008
352805	POOL HOUSE 9213 REIGATE COURT	LAT EXT	200	2/20/13	-435	2,619,573
14LE1001	MIRANDA LAGRANGE RD	LAT EXT	400	3/19/13	-870	2,618,703
350246	SINGLE FAMILY - 218 BLISS AVE	LAT EXT	400	3/20/13	-870	2,617,833
349974	SINGLE FAMILY 205 N WATTERSON	LAT EXT	400	3/26/13	-870	2,616,963
342433	SHELBYHURST 700 OFFICE BLDG	LAT EXT	7,500	4/15/13	-16,313	2,600,651
350340	JARED THE GALLERY OF JEWELRY	LAT EXT	770	4/16/13	-1,675	2,598,976
SC1005532	CONTRACTED WORK FY13 - MIDDLE	SCAPCREDIT		5/30/13	6,480	2,605,456
13LE1009	Single family 11716 Wetherby Ave	LAT EXT	400	6/7/13	-870	2,604,586
SC1082545	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	6,989	2,611,575
13LE1001	Single Family 835 Fountain Ave	LAT EXT	400	8/28/13	-870	2,610,705
355162	PROPOSED RESTAURANT	LAT EXT	7,540	9/10/13	-16,400	2,594,306
13LE1045	SINGLE FAMILY 8325 WHIPPS MILL RD	LAT EXT	400	9/30/13	-870	2,593,436
319292	WATERMARK ON HURSTBOURNE	LAT EXT	71,600	10/22/13	-155,730	2,437,706
331542	DENTAL/MEDICAL OFFICE BLDG	LAT EXT	400	10/28/13	-870	2,436,836
13LE1128	SINGLE FAMILY HOME 1327 ETAWAH AVE	LAT EXT	400	11/5/13	-870	2,435,966
13LE1144	SINGLE FAMILY 1329 ETAWAH AVE	LAT EXT	400	11/5/13	-870	2,435,096
13LE1165	SINGLE FAMILY 8504 LORE LANE	LAT EXT	400	11/25/13	-870	2,434,226

13LE1146	CITY OF ST MATTHEWS COMMUNITY CTR	LAT EXT	1,500	11/26/13	-3,263	2,430,963
13LE1099	NICKLIES - ST MATTHEWS	LAT EXT	1,920	12/11/13	-4,176	2,426,787
353963	DORSEY COMMONS TRACTS 1,2,3	LAT EXT	4,335	12/18/13	-9,429	2,417,359
SC1082546	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	91,183	2,508,542
352026	MCMAHAN PLAZA PHASE II BLDG B	LAT EXT	766	12/31/13	-1,666	2,506,875
13LE1117	THE VININGS	LAT EXT	850	4/10/14	-1,849	2,505,027
14LE1021	KODA KENTUCKY ORGAN DONOR	LAT EXT	400	6/18/14	-870	2,504,157
SC1082547	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	4,404	2,508,561
14LE1128	WALDORF SCHOOL OF LOUISVILLE	LAT EXT	400	6/30/14	-870	2,507,691
SC1082548	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	3,664	2,511,355
SC1006201	GOOSE CREEK PLANTATION I/I	SCAPCREDIT		2/10/15	163,919	2,675,274
SC1006179	CONTRACTED WORK FY14 - MIDDLE	SCAPCREDIT		2/11/15	15,043	2,690,317
SC1082549	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	2,568	2,692,885
SC1082550	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	15,216	2,708,101
LE939199	Westport Road Apartments	LAT EXT	62,800	6/8/16	-136,590	2,571,511
SC1082552	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	3,573	2,575,084
LE971405	Lyndon Lane Office Condos	LAT EXT	2,652	8/30/16	-5,768	2,569,316
SC1003387	CONTRACTED WORK FY16 - MIDDLE	SCAPCREDIT		10/18/16	91,264	2,660,580
SC1006194	CONTRACTED WORK FY15 - MIDDLE	SCAPCREDIT		10/24/16	3	2,660,583
LE938563	The Paddock at Sawyer Park	LAT EXT	99,800	12/20/16	-217,065	2,443,518
SC1082554	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	2,385	2,445,903
SC1082555	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	3,799	2,449,702
SC1082557	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	5,851	2,455,553
LE960133	ShelbyHurst Office - 435 Building	LAT EXT	9,500	4/11/18	-20,663	2,434,890
LE1042560	202 Oxmoor Lane Residential	LAT EXT	76,700	4/11/18	-166,823	2,268,068

LE1032029	The Enclave at Douglas Hills Section 1	LAT EXT	27,200	4/23/18	-59,160	2,208,908
LE1055615	Bennett & Bloom Medical Office	LAT EXT	585	6/6/18	-1,272	2,207,635
LE1041043	Single Family Unit (Lot 11)	LAT EXT	400	7/24/18	-870	2,206,765
166053	616 & 618 FOUNTAIN AVE S/S	LAT EXT	1,600	9/7/18	-3,480	2,203,285
NDITCH						
359404	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	28,000	28,000
235569	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	11,147	39,147
236363	NORTHERN DITCH INT REHAB PH1	SCAPCREDIT		11/25/08	108,760	147,907
SC1011338	MAINTENANCE WORK FY09A -	SCAPCREDIT		12/31/08	11	147,918
SC1011339	MAINTENANCE WORK FY09B -	SCAPCREDIT		6/30/09	1,884	149,802
359339	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	4,000	153,802
SC1011340	MAINTENANCE WORK FY10A -	SCAPCREDIT		12/31/09	1,177	154,979
234678	THE LIGHTHOUSE PROMISE COMPLEX	LAT EXT	2,825	3/5/10	-6,144	148,835
SC1011343	MAINTENANCE WORK FY10B -	SCAPCREDIT		6/30/10	2,532	151,367
284728	SUBWAY - NEW CUT RD	LAT EXT	1,314	12/21/10	-2,858	148,509
359340	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	4,000	152,509
SC1011344	MAINTENANCE WORK FY11A -	SCAPCREDIT		12/31/10	2,456	154,965
320908	PARKVIEW ESTATES REHABILITATIO	SCAPCREDIT		6/28/11	36	155,001
SC1011345	MAINTENANCE WORK FY11B -	SCAPCREDIT		6/30/11	1,989	156,990
312810	WILLOW PLACE APT COMMUNITY CEN	LAT EXT	400	11/11/11	-870	156,120
359341	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	24,000	180,120
359405	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	12,000	192,120
SC1011346	MAINTENANCE WORK FY12A -	SCAPCREDIT		12/31/11	911	193,031
315723	JCPS EARLY CHILDHOOD DEVELOP	LAT EXT	6,000	1/26/12	-13,050	179,981
312057	DOLLAR GENERAL - MEDALLION CT	LAT EXT	400	3/21/12	-870	179,111
SC1011336	MAINTENANCE WORK FY12B -	SCAPCREDIT		6/30/12	7,893	187,004

312659	KROGER L-350 FUEL STATION	LAT EXT	400	8/20/12	-870	186,134
359343	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	24,000	210,134
14SC1004	MAINTENANCE WORK FY13A -	SCAPCREDIT		12/31/12	4,239	214,373
SC1082570	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	6,459	220,832
13LE1147	CARLON ROOFING	LAT EXT	992	12/5/13	-2,158	218,674
13LE1126	JENNINGS CROSSING TRACT 3	LAT EXT	2,100	12/12/13	-4,568	214,107
SC1082571	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	2,707	216,814
SC1082572	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	9,044	225,858
SC1006180	CONTRACTED WORK FY14 - NORTHERN	SCAPCREDIT		10/21/14	5	225,863
SC1082573	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	8,330	234,193
SC1082575	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	5,564	239,757
LE947316	Heimbrock I	LAT EXT	400	8/14/15	-870	238,887
LE947318	Heimbrock II	LAT EXT	400	8/14/15	-870	238,017
SC1082576	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	6,074	244,091
SC1082577	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	5,519	249,610
SC1082578	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	9,266	258,876
SC1082579	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	6,441	265,317
SC1082580	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	7,810	273,127
LE1056400	Thomas Car Wash	LAT EXT	4,670	10/10/18	-10,157	262,969
LE1032761	TRACKSIDE at Churchill Downs	LAT EXT	13,400	10/22/18	-29,145	233,824
ORFM						
359433	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	56,000	56,000
359344	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	4,000	60,000
235572	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	19,826	79,826
362643	MAINTENANCE WORK FY09A - ORFM	SCAPCREDIT		12/31/08	2	79,828

362650	MAINTENANCE WORK FY09B - ORFM	SCAPCREDIT		6/30/09	3,835	83,663
362654	MAINTENANCE WORK FY10A - ORFM	SCAPCREDIT		12/31/09	7,330	90,993
263548	SINGLE FAMILY CONNECTION	LAT EXT	400	5/18/10	-870	90,123
213488	NORTHEAST CHRISTIAN CHURCH	LAT EXT	10,000	6/28/10	-21,750	68,373
362660	MAINTENANCE WORK FY10B - ORFM	SCAPCREDIT		6/30/10	6,773	75,146
362665	MAINTENANCE WORK FY11A - ORFM	SCAPCREDIT		12/31/10	181	75,327
362672	MAINTENANCE WORK FY11B - ORFM	SCAPCREDIT		6/30/11	4,139	79,466
280837	SPRINGHURST TOWNE CTR LOT C	LAT EXT	400	9/20/11	-870	78,596
320920	SHADOW WOOD I/I REHABILITATION	SCAPCREDIT		9/30/11	14,279	92,875
311412	SPRINGHURST CHEVROLET	LAT EXT	855	10/14/11	-1,860	91,015
359345	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	16,000	107,015
359434	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	16,000	123,015
362677	MAINTENANCE WORK FY12A - ORFM	SCAPCREDIT		12/31/11	7,268	130,283
320921	DERINGTON COURT I/I REHABILITA	SCAPCREDIT		3/1/12	56,208	186,491
187028	GLENVIEW PARK SUBD SECTION 1	LAT EXT	4,400	3/5/12	-9,570	176,921
213450	GLENVIEW PARK SUB, SEC 2	LAT EXT	5,600	3/5/12	-12,180	164,741
322455	FIRST LADY NAILS	LAT EXT	400	3/12/12	-870	163,871
362681	MAINTENANCE WORK FY12B - ORFM	SCAPCREDIT		6/30/12	19,941	183,812
SC1011315	MAINTENANCE WORK FY12B - ORFM	SCAPCREDIT		6/30/12	19,941	203,753
292239	SPRINGHURST RESTAURANT/ RETAIL	LAT EXT	3,440	7/5/12	-7,482	196,271
323821	TIRE DISCOUNTERS WESTPORT RD	LAT EXT	400	12/11/12	-870	195,401
363238	FY13 PROSPECT MANHOLE REHAB	SCAPCREDIT		12/18/12	72,703	268,104
341319	RAISING CANES RETAIL CENTER	LAT EXT	1,225	12/18/12	-2,664	265,440
359346	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	24,000	289,440
363235	FY13 MUDDY FORK MH REHAB	SCAPCREDIT		12/31/12	41,653	331,093
362686	MAINTENANCE WORK FY13A - ORFM	SCAPCREDIT		12/31/12	1,161	332,254

360262	SINGLE FAMILY 3419 HILLVALE RD	LAT EXT	400	5/13/13	-870	331,384
343729	RETAIL & RESTAURANT	LAT EXT	3,500	6/21/13	-7,613	323,772
SC1082581	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	279	324,051
334154	GLENVIEW PARK SUBD SEC 4	LAT EXT	3,600	11/7/13	-7,830	316,221
SC1082582	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	1,302	317,523
13LE1024	Overlook at Beech Spring Farm Sec 4	LAT EXT	5,600	12/31/13	-12,180	305,343
199896	SPRINGDALE OFFICE BUILDING	LAT EXT	4,210	3/11/14	-9,157	296,186
225863	SPRING FARM LAKES SEC 1	LAT EXT	4,800	5/16/14	-10,440	285,746
SC1082583	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	1,293	287,039
177756	SUMMIT GARDENS PHASE 1	LAT EXT	32,000	9/22/14	-69,600	217,439
14LE1121	Riverside Sewer Extension	LAT EXT	1,200	11/10/14	-2,610	214,829
SC1082584	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	4,394	219,223
SC1006181	CONTRACTED WORK FY14 - ORFM	SCAPCREDIT		12/31/14	1,654	220,877
13LE1071	SPRING FARM LAKE SEC 2	LAT EXT	6,000	1/16/15	-13,050	207,827
352634	BAUER PROPERTY	LAT EXT	2,920	2/12/15	-6,351	201,476
SC1082585	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	2,547	204,023
SC983704	PROSPECT I&I REHABILITATION - FY13	SCAPCREDIT		7/12/15	1,034,758	1,238,781
SC1003730	RIVER ROAD I/I REMEDIATION	SCAPCREDIT		8/5/15	120,418	1,359,199
LE929244	Summit Gardens Phase 2	LAT EXT	18,000	10/21/15	-39,150	1,320,049
SC1006195	CONTRACTED WORK FY15 - ORFM	SCAPCREDIT		11/19/15	1	1,320,050
LE938166	Spring Farm Lake Section 3	LAT EXT	3,200	12/14/15	-6,960	1,313,090
SC1082586	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	1,478	1,314,568
SC1082589	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/16	3,171	1,317,739
SC1082587	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	460	1,318,199
SC1003696	CONTRACTED WORK FY16 - ORFM	SCAPCREDIT		8/10/16	17,566	1,335,765
SC1003728	PROSPECT I&I REHABILITATION - FY16	SCAPCREDIT		10/6/16	199,036	1,534,801

LE923204	Indian Springs Hotel	LAT EXT	13,000	11/16/16	-28,275	1,506,526
SC1082590	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	1,630	1,508,156
SC1082592	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	3,330	1,511,486
PCREEK						
235574	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	71,782	71,782
359347	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	75,782
359438	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	4,000	79,782
SC1011298	MAINTENANCE WORK FY09A - POND	SCAPCREDIT		12/31/08	1,913	81,695
SC1011299	MAINTENANCE WORK FY09B - POND	SCAPCREDIT		6/30/09	6,403	88,098
359439	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	12,000	100,098
359348	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	4,000	104,098
SC1011305	MAINTENANCE WORK FY10A - POND	SCAPCREDIT		12/31/09	22,337	126,435
192513	BANNON CROSSINGS SECTION 3A-1	LAT EXT	800	2/17/10	-1,740	124,695
261115	EMERGENCY RESTORATION	LAT EXT	400	4/27/10	-870	123,825
SC1011307	MAINTENANCE WORK FY10B - POND	SCAPCREDIT		6/30/10	11,060	134,885
276977	DADISMAN BUILDERS-POPLAR TREE	LAT EXT	400	10/13/10	-870	134,015
266833	THORNTONS @ PRESTON HWY	LAT EXT	400	12/1/10	-870	133,145
280751	NOTTINGTON HILLS SEC 1	LAT EXT	4,400	12/29/10	-9,570	123,575
359350	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	12,000	135,575
SC1011308	MAINTENANCE WORK FY11A - POND	SCAPCREDIT		12/31/10	19,773	155,348
187739	GLENGARRY INDUSTRIAL PARK	LAT EXT	4,300	1/13/11	-9,353	145,996
277777	TIRE DISCOUNTERS - BOERSTE WAY	LAT EXT	2,960	3/21/11	-6,438	139,558
SC1011309	MAINTENANCE WORK FY11B - POND	SCAPCREDIT		6/30/11	10,562	150,120
304408	UPS SUPPLY CHAIN SOLUTIONS #7	LAT EXT	2,250	9/14/11	-4,894	145,226
320918	EDSEL I/I REHABILITATION - FY1	SCAPCREDIT		9/27/11	106,700	251,926

313444	PLANET FITNESS - JEFF BLVD	LAT EXT	1,600	11/4/11	-3,480	248,446
312391	LONGHORN STEAKHOUSE RESTAURANT	LAT EXT	4,840	11/29/11	-10,527	237,919
320919	LANTANA I/I REHABILITATION - F	SCAPCREDIT		12/29/11	5,000	242,919
359351	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	20,000	262,919
SC1011310	MAINTENANCE WORK FY12A - POND	SCAPCREDIT		12/31/11	5,380	268,299
310845	ZAXBY'S RESTAURANT	LAT EXT	3,750	2/28/12	-8,156	260,143
255044	ISA-RECYCLING CENTER	LAT EXT	400	3/13/12	-870	259,273
312814	MILLER TRANSPORTATION	LAT EXT	1,800	3/19/12	-3,915	255,358
324554	NORTONS TEMPORARY OFFICE	LAT EXT	900	4/16/12	-1,958	253,400
234102	ETHOS AT VALLEY FARM SR LIVING	LAT EXT	7,050	6/19/12	-15,334	238,066
322367	SHEPHERDS CARE MEMORY HOME	LAT EXT	2,000	6/21/12	-4,350	233,716
SC1011313	MAINTENANCE WORK FY12B - POND	SCAPCREDIT		6/30/12	3,877	237,593
307332	LOUISVILLE INDUSTRIAL BLDG B	LAT EXT	2,520	8/6/12	-5,481	232,112
SC1005684	CONTRACTED WORK FY12 - POND	SCAPCREDIT		8/10/12	3,812	235,924
279860	BANNON CROSSINGS SEC 3B-2	LAT EXT	9,600	8/10/12	-20,880	215,044
312053	DOLLAR GENERAL - CLEARWATER FA	LAT EXT	400	8/13/12	-870	214,174
343455	SINGLE FAMILY 1812 GREYLING DR	LAT EXT	400	10/12/12	-870	213,304
243109	OVERBROOK APARTMENTS	LAT EXT	41,200	11/9/12	-89,610	123,694
359354	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	56,000	179,694
14SC1005	MAINTENANCE WORK FY13A - POND	SCAPCREDIT		12/31/12	25,984	205,678
329624	COPART	LAT EXT	400	2/20/13	-870	204,808
346082	ZAXBYS	LAT EXT	2,065	5/2/13	-4,491	200,317
320924	LEA ANN WAY INTERCEPTOR I&I RE	SCAPCREDIT		6/30/13	1,017,423	1,217,740
SC1082593	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	41,995	1,259,735
335385	HARRISON LOW PRESSURE S/S	LAT EXT	1,600	7/2/13	-3,480	1,256,255

SC1005534	PICADILLY I/I REHABILITATION FY13	SCAPCREDIT		7/12/13	187,564	1,443,819
320940	4 RESIDENCE SFU 7821 MANSLICK	LAT EXT	400	8/16/13	-870	1,442,949
SC1005538	CONTRACTED WORK FY13 - POND	SCAPCREDIT		8/27/13	18,958	1,461,907
361336	RENAISSANCE SOUTH BUSINESS	LAT EXT	540	9/6/13	-1,175	1,460,732
324886	PNC BANK	LAT EXT	400	9/6/13	-870	1,459,862
13LE1083	SINGLE FAMILY HOME 5402 (H) E	LAT EXT	400	9/26/13	-870	1,458,992
SC1005319	FEGENBUSH I/I REHABILITATION FY13	SCAPCREDIT		11/12/13	226,201	1,685,193
353125	PEGASUS TRANSPORTATION	LAT EXT	250	12/9/13	-544	1,684,650
341439	PRESTON GARDENS APTS	LAT EXT	22,200	12/10/13	-48,285	1,636,365
308206	APPLEGATE FARMS	LAT EXT	57,200	12/10/13	-124,410	1,511,955
SC1082594	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	19,491	1,531,446
13LE1179	TIMBERBEND SUBDIVISION SEC 5B	LAT EXT	6,400	2/14/14	-13,920	1,517,526
13LE1035	RENAISSANCE SOUTH BUSINESS PARK	LAT EXT	5,415	4/10/14	-11,778	1,505,748
13LE1115	VERIZON-OUTER LOOP	LAT EXT	400	4/22/14	-870	1,504,878
348014	ASHTON PARK TOWN HOMES	LAT EXT	9,000	4/24/14	-19,575	1,485,303
280180	LOUISVILLE INDUSTRIAL CTR F	LAT EXT	2,480	5/16/14	-5,394	1,479,909
14LE1085	Williams Properties - Self Storage Facility	LAT EXT	400	5/28/14	-870	1,479,039
13LE1034	6300 GEIL LANE WAREHOUSE	LAT EXT	720	6/9/14	-1,566	1,477,473
SC1082595	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	14,457	1,491,930
284215	HURSTBOURNE POINTE APTS	LAT EXT	9,600	7/7/14	-20,880	1,471,050
344230	AUSTIN PARK APARTMENTS PH6	LAT EXT	27,600	8/25/14	-60,030	1,411,020
13LE1105	JEFFERSON COMMONS	LAT EXT	17,075	11/13/14	-37,138	1,373,882
SC1005323	FERN CREEK I/I REHABILITATION FY13	SCAPCREDIT		11/18/14	551,108	1,924,990
SC1082596	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	26,095	1,951,085
13LE1017	APEX ON PRESTON APT HOMES(Formally	LAT EXT	84,400	1/13/15	-183,570	1,767,515

SC1005541	STONY BROOK I/I REHABILITATION FY13	SCAPCREDIT		3/10/15	345,397	2,112,912
SC995942	CAVEN AVE I/I REMEDIATION - FY13	SCAPCREDIT		3/11/15	225,645	2,338,557
354207	COOPER FARMS SEC 11B	LAT EXT	12,400	4/29/15	-26,970	2,311,587
354209	COOPER FARMS SEC 11A	LAT EXT	13,200	4/29/15	-28,710	2,282,877
SC1082597	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	10,279	2,293,156
LE948692	Jim's Express Wash	LAT EXT	10,500	7/28/15	-22,838	2,270,318
LE951121	Allgeier Site	LAT EXT	400	8/7/15	-870	2,269,448
13LE1086	WOODS OF PENN RUN OFFSITE SS	LAT EXT	1,000	8/25/15	-2,175	2,267,273
13LE1140	JEFFERSON POST APARTMENTS	LAT EXT	28,800	10/2/15	-62,640	2,204,633
SC1082598	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	13,994	2,218,627
14LE1116	CATALPA SPRINGS	LAT EXT	2,800	12/30/15	-6,090	2,212,537
SC939830	Lea Ann Way West Quad 1 & 2 Rehabilitation	SCAPCREDIT		12/31/15	445,911	2,658,448
358356	WOODS OF PENN RUN Section 1	LAT EXT	18,800	2/12/16	-40,890	2,617,558
SC1003699	CONTRACTED WORK FY16 - POND	SCAPCREDIT		5/17/16	36,063	2,653,621
LE936598	Jefferson Commerce Center Tract 1A	LAT EXT	5,250	6/6/16	-11,419	2,642,203
LE918484	AUSTIN PARK SS PHASE 8	LAT EXT	16,800	6/21/16	-36,540	2,605,663
14LE1170	Austin Park Phase 7 & 8	LAT EXT	26,400	6/21/16	-57,420	2,548,243
SC1082599	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	12,650	2,560,893
SC1003087	HILLRIDGE I/I REMEDIATION	SCAPCREDIT		8/5/16	308,184	2,869,077
SC1003292	LEA ANN WAY WEST (LAWW) QUAD 3 I/I	SCAPCREDIT		8/31/16	311,526	3,180,603
SC1006197	CONTRACTED WORK FY15 - POND	SCAPCREDIT		10/24/16	310	3,180,913
SC1006182	CONTRACTED WORK FY14 - POND	SCAPCREDIT		10/26/16	8,390	3,189,303
SC1005639	SILVER HEIGHTS SEWER REHAB	SCAPCREDIT		10/31/16	284,936	3,474,239
SC1005631	LEA ANN WAY WEST (LAWW) QUAD 4 I/I	SCAPCREDIT		10/31/16	692,905	4,167,144
SC1082601	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	14,699	4,181,843

LE954229	Jeffeerson Commerce Center Bldg.2	LAT EXT	3,150	2/2/17	-6,851	4,174,991
SC1082602	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	14,076	4,189,067
SC1082603	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	10,803	4,199,870
LE1053266	Yokomori Manufacturing Facility	LAT EXT	1,750	4/9/18	-3,806	4,196,064
SEDIV						
359355	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	8,000	8,000
359440	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	128,000	136,000
235575	MAINTENANCE WORK FY06 AUG-FY09	SCAPCREDIT		11/1/08	71,472	207,472
236214	GOLDSMITH BUECHB ICA PHI REHAB	SCAPCREDIT		12/22/08	314,808	522,280
236296	BEARGRASS INT REHAB PH1 SEDIV	SCAPCREDIT		12/22/08	122,688	644,968
359441	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	16,000	660,968
359356	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	664,968
SC1011317	MAINTENANCE WORK FY09A - SE	SCAPCREDIT		12/31/08	1,555	666,523
SC1011318	MAINTENANCE WORK FY09B - SE	SCAPCREDIT		6/30/09	2,929	669,452
229854	TINY HANDS DAYCARE	LAT EXT	1,225	10/20/09	-2,664	666,788
359357	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	12,000	678,788
359443	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	8,000	686,788
SC1011322	MAINTENANCE WORK FY10A - SE	SCAPCREDIT		12/31/09	16,974	703,762
235291	SULLIVAN COLLEGE OF TECHNOLOGY	LAT EXT	900	2/11/10	-1,958	701,804
238328	LOUISVILLE COLLEGIATE SPORTS	LAT EXT	400	3/1/10	-870	700,934
241759	FRISCHS BIG BOY RESTAURANT	LAT EXT	2,400	3/5/10	-5,220	695,714
257275	LOUISVILLE JUNIOR ACADEMY	LAT EXT	520	4/16/10	-1,131	694,583
SC1011326	MAINTENANCE WORK FY10B - SE	SCAPCREDIT		6/30/10	10,739	705,322
320993	BEARGRASS CREEK PHASE II - FY1	SCAPCREDIT		12/14/10	10,368	715,690
359358	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	4,000	719,690
359444	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	24,000	743,690

SC1011328	MAINTENANCE WORK FY11A - SE	SCAPCREDIT		12/31/10	11,090	754,780
286513	GARDINER POINT RESIDENCE HALL	LAT EXT	10,800	2/16/11	-23,490	731,290
276378	TIRE DISCOUNTERS - BARDSTOWN	LAT EXT	1,500	5/6/11	-3,263	728,028
287888	BEVERAGE WAREHOUSE	LAT EXT	1,180	5/30/11	-2,567	725,461
SC1011330	MAINTENANCE WORK FY11B - SE	SCAPCREDIT		6/30/11	3,661	729,122
296295	KEN TOWERY -3800 S HURSTBOURNE	LAT EXT	400	7/1/11	-870	728,252
359445	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	8,000	736,252
359359	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	64,000	800,252
SC1011331	MAINTENANCE WORK FY12A - SE	SCAPCREDIT		12/31/11	5,071	805,323
SC1011316	MAINTENANCE WORK FY12B - SE	SCAPCREDIT		6/30/12	24,202	829,525
SC1011333	MAINTENANCE WORK FY12B - SE	SCAPCREDIT		6/30/12	6,141	835,666
307018	HOOK PROPERTY FAMILY DOLLAR	LAT EXT	400	8/10/12	-870	834,796
359361	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	68,000	902,796
359446	CALENDAR 2012 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/12	4,000	906,796
14SC1006	MAINTENANCE WORK FY13A - SE	SCAPCREDIT		12/31/12	24,202	930,998
187741	BROOKSTONE SENIOR APARTMENTS	LAT EXT	16,800	3/11/13	-36,540	894,458
232601	RAINTREE/MARIAN CT P/S ELIM	LAT EXT	105,800	6/14/13	-230,115	664,343
SC1082605	MAINTENANCE WORK FY13	SCAPCREDIT		6/30/13	21,761	686,104
SC1005539	CONTRACTED WORK FY13 - SOUTHEAST	SCAPCREDIT		9/18/13	25,344	711,448
330437	COLLEGIATE ATHLETIC FIELD	LAT EXT	800	11/26/13	-1,740	709,708
SC1082606	MAINTENANCE WORK FY14	SCAPCREDIT		12/30/13	19,491	729,199
SC1082607	MAINTENANCE WORK FY14	SCAPCREDIT		6/30/14	9,087	738,286
SC1082608	MAINTENANCE WORK FY15	SCAPCREDIT		12/30/14	15,321	753,607
SC1006185	CONTRACTED WORK FY14 - SOUTHEAST	SCAPCREDIT		2/11/15	187,478	941,085

SC1082610	MAINTENANCE WORK FY15	SCAPCREDIT		6/30/15	10,273	951,358
SC1006199	CONTRACTED WORK FY15 - SOUTHEAST	SCAPCREDIT		10/20/15	1	951,359
LE919560	Todd's Place Express Car Wash	LAT EXT	4,830	12/22/15	-10,505	940,854
SC1082611	MAINTENANCE WORK FY16	SCAPCREDIT		12/30/15	7,052	947,906
SC1003718	SOUTHEAST DIVERSION AREA G (SEDG)	SCAPCREDIT		2/16/16	75,998	1,023,904
SC1003704	CONTRACTED WORK FY16 - SOUTHEAST	SCAPCREDIT		5/24/16	66	1,023,970
SC1082612	MAINTENANCE WORK FY16	SCAPCREDIT		6/30/16	19,904	1,043,874
LE943171	Costco Wholesale and Fuel Facility	LAT EXT	8,000	7/28/16	-17,400	1,026,474
SC1082613	MAINTENANCE WORK FY17	SCAPCREDIT		12/30/16	5,812	1,032,286
SC1082614	MAINTENANCE WORK FY17	SCAPCREDIT		6/30/17	6,961	1,039,247
SC1082615	MAINTENANCE WORK FY18	SCAPCREDIT		12/30/17	14,909	1,054,156
LE1039341	Silver Creek Place Apartments	LAT EXT	7,200	4/9/18	-15,660	1,038,496
LE1046691	Crown Packaging	LAT EXT	400	4/18/18	-870	1,037,626

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Appendix E **IOAP Project Crosswalk**

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PROJECT NAME	PROGRAM	ASSET ID	PROJECT ID
17TH ST FPS DWO ELIMINATION	IOAP	MSD0306-FP	L_OR_MF_190_S_03_A_A
27TH STREET FPS DWO ELIM	IOAP	MSD0307-FP	L_OR_MF_019_S_03_A_A
34TH ST FPS DWO ELIMINATION	IOAP	MSD0308-FP	L_OR_MF_019_S_03_A_B
4TH STREET FPS DWO ELIMINATION	IOAP	MSD0303-FP	L_OR_MF_022_M_03_A_A
ADAMS STREET SEWER SEPARATION (FORMERLY STORAGE BASIN)	IOAP	CSO172	L_OR_MF_172_S_09B_B_A_0
ANCHOR ESTATES PS ELIMINATIONS 1 - VANNAH PUMP STATION ELIMINATION	IOAP	01106	S_MI_MF_NB06_M_01_A_A-2
ANCHOR ESTATES PS ELIMINATIONS 2 - ANCHOR ESTATES #1 AND #2 PUMP STATION ELIMINATION	IOAP	00056-W	S_MI_MF_NB06_M_01_A_A - 1
ANCHOR ESTATES PS ELIMINATIONS 2 - ANCHOR ESTATES #1 AND #2 PUMP STATION ELIMINATION	IOAP	0057-W	S_MI_MF_NB06_M_01_A_A - 1
ANCHOR ESTATES PS ELIMINATIONS 2 - ANCHOR ESTATES #1 AND #2 PUMP STATION ELIMINATION	IOAP	00746	S_MI_MF_NB06_M_01_A_A - 1
ANCHOR ESTATES PS ELIMINATIONS 2 - ANCHOR ESTATES #1 AND #2 PUMP STATION ELIMINATION	IOAP	00817	S_MI_MF_NB06_M_01_A_A - 1
ANCHOR ESTATES PS ELIMINATIONS 2 - ANCHOR ESTATES #1 AND #2 PUMP STATION ELIMINATION	IOAP	MSD0057-LS	S_MI_MF_NB06_M_01_A_A - 1
ASHBURTON PS IMPROVEMENTS & DIVERSION	IOAP	MSD0165-PS	S_FF_FF_NB03_M_01_C_A
ASHBURTON PS IMPROVEMENTS & DIVERSION	IOAP	MSD0166-PS	S_FF_FF_NB03_M_01_C_A
AVANTI PS ELIMINATION	IOAP	21229	S_PO_WC_PC07_M_01_A
BARDSTOWN RD PS IMPROVEMENTS	IOAP	88545	S_CC_CC_MSD1025_S_03_B
BEARGRASS INTERCEPTOR REHABILITATION PH 2	IOAP	51594	S_SD_MF_NB06_S_13_C
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21061	BEECHWOOD VILLAGE SEWER REPL
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21089	BEECHWOOD VILLAGE SEWER REPL
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21089A	BEECHWOOD VILLAGE SEWER REPL
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21101	BEECHWOOD VILLAGE SEWER REPL
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21153	BEECHWOOD VILLAGE SEWER REPL

PROJECT NAME	PROGRAM	ASSET ID	PROJECT ID
BEECHWOOD VILLAGE SEWER REPL	ISSDP	21156	BEECHWOOD VILLAGE SEWER REPL
BELLS LANE (FORMERLY PADDY'S RUN) WET WEATHER TREATMENT FACILITY	IOAP	CSO015	L_OR_MF_015_M_13_B_B_8
BELLS LANE (FORMERLY PADDY'S RUN) WET WEATHER TREATMENT FACILITY	IOAP	CSO191	L_OR_MF_015_M_13_B_B_8
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	08717	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	104223	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	104224	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	104231	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	13931	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	13943	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	13946	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	34093542	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	36763	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	44396	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	44397	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	51301	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	66349	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	99259	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	KK14815019	S_SF_MF_30917_M_09_A
CAMP TAYLOR SYSTEM IMPROVEMENT PHASE 1 - SSES	IOAP	KK14855239	S_SF_MF_30917_M_09_A
CAVEN AVENUE PS ELIMINATION	IOAP	17724	S_PO_WC_PC09_M_09B_C
CAVEN AVENUE PS ELIMINATION	IOAP	27116	S_PO_WC_PC09_M_09B_C
CAVEN AVENUE PS ELIMINATION	IOAP	61667	S_PO_WC_PC09_M_09B_C
CAVEN AVENUE PS ELIMINATION	IOAP	61687	S_PO_WC_PC09_M_09B_C
CAVEN AVENUE PS ELIMINATION	IOAP	70212	S_PO_WC_PC09_M_09B_C
CAVEN AVENUE PS ELIMINATION	IOAP	MSD0133-PS	S_PO_WC_PC09_M_09B_C
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO028	L_OR_MF_155_M_09B_B_B_4-1

PROJECT NAME	PROGRAM	ASSET ID	PROJECT ID
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO029	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO034	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO036	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO178	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO181	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO193	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO195	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO196	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO197	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO199	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO200	L_OR_MF_155_M_09B_B_B_4-1
CENTRAL RELIEF DRAIN CSO IN-LINE STORAGE, GREEN INFRASTRUCTURE, AND DISTRIBUTED STORAGE	IOAP	CSO202	L_OR_MF_155_M_09B_B_B_4-1
CHARLESWOOD INTERCEPTOR EXTENSION	IOAP	25477	S_PO_WC_PC03_M_01_C
CHARLESWOOD INTERCEPTOR EXTENSION	IOAP	25479	S_PO_WC_PC03_M_01_C
CHARLESWOOD INTERCEPTOR EXTENSION	IOAP	25480	S_PO_WC_PC03_M_01_C
CHARLESWOOD INTERCEPTOR EXTENSION	IOAP	MSD0130-PS	S_PO_WC_PC03_M_01_C
CINDERELLA PS ELIMINATION	IOAP	102339	S_PO_WC_PC04_M_01_C
CINDERELLA PS ELIMINATION	IOAP	35309	S_PO_WC_PC04_M_01_C
CINDERELLA PS ELIMINATION	IOAP	60679	S_PO_WC_PC04_M_01_C
CINDERELLA PS ELIMINATION	IOAP	MSD1013-PS	S_PO_WC_PC04_M_01_C

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CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO083	L_MU_MF_154_M_09B_B_A_8
CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO088	L_MU_MF_154_M_09B_B_A_8
CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO131	L_MU_MF_154_M_09B_B_A_8
CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO132	L_MU_MF_154_M_09B_B_A_8
CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO154	L_MU_MF_154_M_09B_B_A_8
CLIFTON HEIGHTS STORAGE BASIN	IOAP	CSO167	L_MU_MF_154_M_09B_B_A_8
CSO058 IN-LINE STORAGE & GREEN INFRASTRUCTURE	IOAP	CSO058	L_OR_MF_058_S_08_A_A_0
CSO093 STRUCTURAL MODIFICATIONS & GREEN INFRASTRUCTURE	IOAP	CSO093	L_SO_MF_093_S_08_A_A_0
CSO108 DAM MODIFICATION	IOAP	CSO108	L_SO_MF_108_S_09A_B_A_4
CSO140 IN-LINE STORAGE & GREEN INFRASTRUCTURE	IOAP	CSO140	L_MI_MF_140_S_08_A_A_0
CSO160 SEWER SEPARATION	IOAP	CSO160	L_OR_MF_160_S_08_A_A_0
CSO190 GREEN INFRASTRUCTURE (FORMERLY18TH & NORTHWESTERN PKWY STORAGE BASIN)	IOAP	CSO190	L_OR_MF_190_S_09B_B_A_8
CSO206 SEWER SEPARATION	IOAP	CSO206	L_MI_MF_206_S_08_A_A_0
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	104289	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28249	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28250	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28336	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28340	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28413	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28414	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28415	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28416	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28417	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28451	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28453	S_JT_JT_NB02_M_01_C
DELL RD/CHARLANE PKWY INTERCEPTOR IMPROVEMENTS	IOAP	28711	S_JT_JT_NB02_M_01_C

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DEREK R GUTHRIE WQTC UPGRADES	ISSDP	22307	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	22370	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	22385	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	32682	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	32688	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	59169	DEREK R GUTHRIE WQTC UPGRADES
DEREK R GUTHRIE WQTC UPGRADES	ISSDP	MSD0277	DEREK R GUTHRIE WQTC UPGRADES
DERINGTON CT PS I&I INVESTIGATION & REHABILITATION	IOAP	20154-W	S_OR_MF_NB03_S_07_C
DERINGTON CT PS I&I INVESTIGATION & REHABILITATION	IOAP	20155	S_OR_MF_NB03_S_07_C
DERINGTON CT PS I&I INVESTIGATION & REHABILITATION	IOAP	MSD0095-PS	S_OR_MF_NB03_S_07_C
EAST ROCKFORD PS RELOCATION	IOAP	04699-W	S_MC_WC_NB02_S_03_C
EDEN CARE PS SSO INVESTIGATION	IOAP	MSD1105-PS	S_FF_FF_NB02_S_13_C
EDSEL PS I&I INVESTIGATION & REHABILITATION	IOAP	92098	S_PO_WC_PC11_M_07_C
EDSEL PS I&I INVESTIGATION & REHABILITATION	IOAP	92099	S_PO_WC_PC11_M_07_C
EDSEL PS I&I INVESTIGATION & REHABILITATION	IOAP	94009	S_PO_WC_PC11_M_07_C
EDSEL PS I&I INVESTIGATION & REHABILITATION	IOAP	MSD1048-PS	S_PO_WC_PC11_M_07_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	64096	S_JT_JT_NB01A_M_03_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	86052	S_JT_JT_NB01A_M_03_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	92061	S_JT_JT_NB01A_M_03_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	MSD0196-PS	S_JT_JT_NB01A_M_03_C

PROJECT NAME	PROGRAM	ASSET ID	PROJECT ID
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	MSD0263	S_JT_JT_NB01A_M_03_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	MSD0263A-PS	S_JT_JT_NB01A_M_03_C
ELIMINATION OF CHENOWETH HILLS WQTC, CHENOWETH RUN PUMP STATION, AND CHIPPEWA PUMP STATION	IOAP	MSD1043-PS	S_JT_JT_NB01A_M_03_C
FAIRMOUNT RD PS IMPROVEMENTS	IOAP	116106	S_FF_CC_81316_M_03_C_A
FAIRMOUNT RD PS IMPROVEMENTS	IOAP	81316	S_FF_CC_81316_M_03_C_A
FAIRMOUNT RD PS IMPROVEMENTS	IOAP	97362	S_FF_CC_81316_M_03_C_A
FAIRMOUNT RD PS IMPROVEMENTS	IOAP	97363	S_FF_CC_81316_M_03_C_A
FAIRMOUNT RD PS IMPROVEMENTS	IOAP	97365	S_FF_CC_81316_M_03_C_A
FAIRWAY VIEW PS IMPROVEMENTS	IOAP	MSD1065-PS	S_HC_HS_NB01_S_03_C_A
FLOYDSBURG RD I&I INVEST	IOAP	108953	S_HC_HC_MSD1086_M_07_C_A
FLOYDSBURG RD I&I INVEST	IOAP	108956	S_HC_HC_MSD1086_M_07_C_A
FLOYDSBURG RD I&I INVEST	IOAP	108957	S_HC_HC_MSD1086_M_07_C_A
FLOYDSBURG RD I&I INVEST	IOAP	108958	S_HC_HC_MSD1086_M_07_C_A
FLOYDSBURG RD I&I INVEST	IOAP	90776	S_HC_HC_MSD1086_M_07_C_A
FLOYDSBURG RD I&I INVEST	IOAP	MSD1086-PS	S_HC_HC_MSD1086_M_07_C_A
FOX HARBOR IN-LINE STORAGE	IOAP	62769	S_HC_HN_NB03_S_09A_A_A
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	105936	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	117721	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	43472	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	46891	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	62418	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	62420	S_MI_MF_NB04_M_03_B-1

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GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	91629	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	91630	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	MSD0040-PS	S_MI_MF_NB04_M_03_B-1
GOOSE CREEK PS IMPROVEMENTS AND WET WEATHER STORAGE 1 - DEVONDALE WET WEATHER STORAGE	IOAP	MSD1024-PS	S_MI_MF_NB04_M_03_B-1
GOVERNMENT CENTER PS ELIMINATION	IOAP	94541	S_PO_WC_PC06_M_01_C
GOVERNMENT CENTER PS ELIMINATION	IOAP	94542	S_PO_WC_PC06_M_01_C
GOVERNMENT CENTER PS ELIMINATION	IOAP	MSD0180-PS	S_PO_WC_PC06_M_01_C
GUNPOWDER PS IN-LINE STORAGE	IOAP	MSD1055-LS	S_HC_HN_NB02_S_09A_C_B
HAZELWOOD PS I&I INVESTIGATION & REHABILITATION	IOAP	55665	S_MC_MF_55665_S_07_C
HAZELWOOD PS I&I INVESTIGATION & REHABILITATION	IOAP	55667	S_MC_MF_55665_S_07_C
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	17571	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18134	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18297	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18298	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18299	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18302	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18318-W	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18370	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18434	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18471	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18483	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18505	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	18595	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	47960A	HIKES LN INTER & HIGHGATE SPR

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HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	48885	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	48886	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	48888	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	49224	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	49236	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	49672	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	49673	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	73111	HIKES LN INTER & HIGHGATE SPR
HIKES LANE-HIGHGATE SPRINGS PS	ISSDP	MSD0012-PS	HIKES LN INTER & HIGHGATE SPR
HURSTBOURNE I/I INVESTIGATION & REHABILITATION	IOAP	01793	S_MI_MF_NB07_S_07_C
HURSTBOURNE I/I INVESTIGATION & REHABILITATION	IOAP	47650	S_MI_MF_NB07_S_07_C
HURSTBOURNE I/I INVESTIGATION & REHABILITATION	IOAP	47656	S_MI_MF_NB07_S_07_C
HURSTBOURNE I/I INVESTIGATION & REHABILITATION	IOAP	67535	S_MI_MF_NB07_S_07_C
IDLEWOOD IN-LINE STORAGE	IOAP	28984	S_CC_CC_70158_M_09A_C
IDLEWOOD IN-LINE STORAGE	IOAP	28985	S_CC_CC_70158_M_09A_C
IDLEWOOD IN-LINE STORAGE	IOAP	28998	S_CC_CC_70158_M_09A_C
IDLEWOOD IN-LINE STORAGE	IOAP	63094	S_CC_CC_70158_M_09A_C
IDLEWOOD IN-LINE STORAGE	IOAP	63095	S_CC_CC_70158_M_09A_C
IDLEWOOD IN-LINE STORAGE	IOAP	70158	S_CC_CC_70158_M_09A_C
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28173	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28390	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28391	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28392	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28395	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	28551	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	31733	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	64505	S_JT_JT_NB01_M_01_C_A

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JEFFERSONTOWN WQTC ELIMINATION	IOAP	IS028-SI	S_JT_JT_NB01_M_01_C_A
JEFFERSONTOWN WQTC ELIMINATION	IOAP	MSD0255	S_JT_JT_NB01_M_01_C_A
KAVANAUGH RD PS IMPROVEMENTS	IOAP	MSD1085-PS	S_HC_HC_MSD1085_S_03_A
KLONDIKE INTERCEPTOR	IOAP	20644	S_SD_MF_NB04_S_01_B_A
KLONDIKE INTERCEPTOR	IOAP	25676	S_SD_MF_NB04_S_01_B_A
KLONDIKE INTERCEPTOR	IOAP	26650	S_SD_MF_NB04_S_01_B_A
KLONDIKE INTERCEPTOR	IOAP	26651	S_SD_MF_NB04_S_01_B_A
KLONDIKE INTERCEPTOR	IOAP	49513	S_SD_MF_NB04_S_01_B_A
KLONDIKE INTERCEPTOR	IOAP	66232	S_SD_MF_NB04_S_01_B_A
LAKE FOREST PS SSO INVESTIGATION	IOAP	MSD1169-LS	S_FF_LF_NB01_S_13_C_A
LANTANA #1 PS I/I INVESTESTIGATION & REHABILITATION	IOAP	25484	S_PO_WC_PC05_M_07_C
LANTANA #1 PS I/I INVESTESTIGATION & REHABILITATION	IOAP	93719	S_PO_WC_PC05_M_07_C
LANTANA #1 PS I/I INVESTESTIGATION & REHABILITATION	IOAP	MSD0101-PS	S_PO_WC_PC05_M_07_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	19360	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	19369	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	29933	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	29943	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	29948	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	29949	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	31073	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	31074	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	31083	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	31084	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	57874	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	61266	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	79076	S_PO_WC_PC08_M_01_C
LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	MSD1010-PS	S_PO_WC_PC08_M_01_C

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LEA ANN WAY SYSTEM IMPROVEMENT	IOAP	MSD1200-PS	S_PO_WC_PC08_M_01_C
LELAND RD SSO INVESTIGATION	IOAP	96020	S_OR_MF_NB02_S_13_C
LEVEN PS ELIMINATION	IOAP	36419	S_PO_WC_PC10_M_01_C
LEVEN PS ELIMINATION	IOAP	MSD1019-PS	S_PO_WC_PC10_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	67997	S_CC_CC_67997_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	67999	S_CC_CC_67997_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	86423	S_CC_CC_67997_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	86424	S_CC_CC_67997_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	89196	S_CC_CC_67997_M_01_C
LITTLE CEDAR CREEK INTERCEPTOR IMPROVEMENTS	IOAP	89197	S_CC_CC_67997_M_01_C
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO091	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO097	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO106	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO110	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO111	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO113	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO137	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO146	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO148	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO149	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO151	L_SO_MF_092_M_09B_B_D_8
LOGAN & BRECKINRIDGE ST STORAGE BASIN	IOAP	CSO152	L_SO_MF_092_M_09B_B_D_8
LUCAS LN PS IN-LINE STORAGE	IOAP	MSD0199-LS	S_FF_BT_NB01_S_09A_C_A
MEADOW STREAM PS & FM UPGRADE	IOAP	91087	S_HC_HC_MSD1082_S_09A_C
MEADOW STREAM PS & FM UPGRADE	IOAP	MSD1082-PS	S_HC_HC_MSD1082_S_09A_C
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	24152-W	S_OR_MF_NB01_M_01_B-1

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MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	24472	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	26752	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	41374	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	41416	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	MSD0006-PS	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	MSD0007-PS	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	MSD0010-PS	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	MSD0023-PS	S_OR_MF_NB01_M_01_B-1
MELLWOOD SYSTEM IMPROVEMENTS AND PS ELIMINATIONS 1 - MELLWOOD PS AND FM IMPROVEMENTS	IOAP	MSD0024-PS	S_OR_MF_NB01_M_01_B-1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	02932	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	02933	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	02935	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	08537	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	08935-SM	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	115183	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	115184	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	115185	S_MISF_MF_NB01_M_01_C_A1

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MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	15194	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	15195	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	23211	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	23212	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	24553	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	27005	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	27007	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	30376	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	40471	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	40559	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	43726	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	45796	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	45829	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	45835	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	45900	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47034	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47582	S_MISF_MF_NB01_M_01_C_A1

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MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47583	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47593	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47596	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47603	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	47604	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	51160	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	51161	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	51180	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	51221	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	72288	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	72289	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	74513	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	84155	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	90700	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	96672	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	96673	S_MISF_MF_NB01_M_01_C_A1
MIDDLE FORK RELIEF INTERCEPTOR, WET WEATHER STORAGE AND UMFPS DIVERSION 1 - BUECHEL BASIN	IOAP	IS021A-SI	S_MISF_MF_NB01_M_01_C_A1

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MONTICELLO PS ELIMINATION	IOAP	27969	S_JT_JT_NB04_M_01_A
MONTICELLO PS ELIMINATION	IOAP	MSD0151-PS	S_JT_JT_NB04_M_01_A
MORRIS FORMAN WQTC HEADWORKS (FORMERLY ALGONQUIN PKWY STORAGE BASIN)	IOAP	CSO211	L_OR_MF_211_M_13_B_A_8_
NIGHTINGALE PS REPLACEMENT & STORAGE	IOAP	CSO018	L_SO_MF_018_S_03_A_A
NORTHERN DITCH DIVERSION INTER	ISSDP	MSD0271	NORTHERN DITCH DIVERSION INTER
PARKVIEW ESTATES I&I INVESTIGATION	IOAP	47250	S_SD_MF_NB03_S_07_C
PORTLAND CSO STORAGE BASIN	IOAP	CSO019	L_OR_MF_019_S_13_B_A_8
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	16455	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	22436	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	40870	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	40871	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	40872	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	40879	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	40880	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	42675	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	42680	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	46621	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	46623	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	46627	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	65606	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	65610	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	65623	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	65633	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	65635	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	89646	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	89791	S_OR_MF_NB04_M_03_B_B-1

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PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0123-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0183-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0186-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0192-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0193-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0291	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD0292	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD1044-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 1 - WQTC ELIMINATIONS	IOAP	MSD1063-PS	S_OR_MF_NB04_M_03_B_B-1
PROSPECT SYSTEM IMPROVEMENTS 3 - ORFM SYSTEM IMPROVEMENTS	IOAP	89641	S_OR_MF_NB04_M_03_B_B-3
RAINTREE DRIVE AND MARIAN COURT SYSTEM IMPROVEMENTS PHASE 1 - PUMP STATION ELIMINATION	IOAP	28729-W	S_JT_JT_NB03_M_01_C-1
RAINTREE DRIVE AND MARIAN COURT SYSTEM IMPROVEMENTS PHASE 1 - PUMP STATION ELIMINATION	IOAP	MSD0149-PS	S_JT_JT_NB03_M_01_C-1
RIDING RIDGE PS IMPROVEMENTS	IOAP	MSD1060-LS	S_HC_HN_NB01_S_03_C_A
RUNNING FOX PS ELIMINATION	IOAP	MSD1080-LS	S_CC_CC_MSD1080_S_01_C
SHAWNEE FPS DWO ELIMINATION	IOAP	MSD0309-FP	L_OR_MF_189_M_03_A_A
SHIVELY INTERCEPTOR	IOAP	04498	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	04542	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	81814-W	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0016-PS	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0043-PS	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0044-PS	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0047-PS	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0049-PS	S_MC_WC_NB01_M_01_A
SHIVELY INTERCEPTOR	IOAP	MSD0050-PS	S_MC_WC_NB01_M_01_A
SINKING FORK INTERCEPTOR	IOAP	21103	SINKING FORK RELIEF SEWER
SINKING FORK INTERCEPTOR	IOAP	25012	SINKING FORK RELIEF SEWER

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SINKING FORK INTERCEPTOR	IOAP	63319	SINKING FORK RELIEF SEWER
SONNE PS I&I INVESTIGATION & REHABILITATION	IOAP	MSD0042-PS	S_OR_MF_42007_S_07_C
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	08426	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	08427	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	08430	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	08431	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	18654	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	30680	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	30681	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	30701	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	30702	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	30704	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	49647	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	63779	SOUTHEASTERN DIVERSION STRUCT
SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	IOAP	72571-X	SOUTHEASTERN DIVERSION STRUCT
SOUTHERN OUTFALL IN-LINE STORAGE AT 43RD STREET (SOR1) (FORMERLY ALGONQUIN PKWY STORAGE BASIN)	IOAP	CSO016	L_OR_MF_211_M_13_B_A_8__
SOUTHERN OUTFALL IN-LINE STORAGE AT 43RD STREET (SOR1) (FORMERLY ALGONQUIN PKWY STORAGE BASIN)	IOAP	CSO210	L_OR_MF_211_M_13_B_A_8__
SOUTHWESTERN PKWY CSO BASIN	IOAP	CSO104	L_OR_MF_105_M_13_B_A_0

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SOUTHWESTERN PKWY CSO BASIN	IOAP	CSO105	L_OR_MF_105_M_13_B_A_0
SOUTHWESTERN PKWY CSO BASIN	IOAP	CSO189	L_OR_MF_105_M_13_B_A_0
ST RENE RD PS IN-LINE STORAGE	IOAP	94187	S_FF_CH_NB01_S_09A_C_A
SUTHERLAND INTERCEPTOR	IOAP	16649	S_SD_MF_NB05_M_01_A
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO022	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO023	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO050	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO051	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO052	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO053	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO054	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO055	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO056	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO150	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY 13TH ST/ROWAN ST STORAGE BASIN)	IOAP	CSO155	L_OR_MF_155_M_09B_B_B_4
WATERWAY PROTECTION TUNNEL (FORMERLY I-64 & GRINSTEAD DRIVE CSO BASIN)	IOAP	CSO125	L_MI_MF_127_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY I-64 & GRINSTEAD DRIVE CSO BASIN)	IOAP	CSO126	L_MI_MF_127_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY I-64 & GRINSTEAD DRIVE CSO BASIN)	IOAP	CSO127	L_MI_MF_127_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY I-64 & GRINSTEAD DRIVE CSO BASIN)	IOAP	CSO166	L_MI_MF_127_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO082	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO084	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO118	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO119	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO120	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO121	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO141	L_SO_MF_083_M_09B_B_A_8
WATERWAY PROTECTION TUNNEL (FORMERLY LEXINGTON RD & PAYNE ST STORAGE BASIN)	IOAP	CSO153	L_SO_MF_083_M_09B_B_A_8

PROJECT NAME	PROGRAM	ASSET ID	PROJECT ID
WATERWAY PROTECTION TUNNEL (FORMERLY STORY & MAIN ST STORAGE BASIN)	IOAP	CSO020	L_OR_MF_020_S_09B_B_A_8
WOODLAND HILLS PS DIVERSION	IOAP	33003	S_FF_FF_NB01_S_01_C_A
WOODLAND HILLS PS DIVERSION	IOAP	65516	S_FF_FF_NB01_S_01_C_A
WOODLAND HILLS PS DIVERSION	IOAP	65531	S_FF_FF_NB01_S_01_C_A

Appendix F CSO Flow Monitoring Quality Improvement

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Table F.1. Phase 1 CSOs

CSO	FINAL SOP COMPLETED	HISTORICAL VOLUME REVISED	PROGRAMMING CHANGES COMPLETED	EQUIPMENT CHANGES COMPLETED	TESTING / VERIFICATION COMPLETED
015	6/30/2017	6/30/2017	UNDER CONSTRUCTION	UNDER CONSTRUCTION	UNDER CONSTRUCTION
016	6/30/2017	N/A	7/30/2018	N/A	9/10/2018
018	6/30/2017	N/A	9/13/2017	N/A	UNDER CONSTRUCTION
020	6/30/2017	6/30/2017	9/21/2017	N/A	10/10/2017
036	6/30/2017	6/30/2017	8/23/2017	UNDER CONSTRUCTION	9/14/2017
054	6/30/2017	6/30/2017	9/8/2017	N/A	9/12/2017
058	6/30/2017	6/30/2017	8/8/2018	N/A	UNDER CONSTRUCTION
088	6/30/2017	6/30/2017	8/23/2017	N/A	UNDER CONSTRUCTION
093	6/30/2017	6/30/2017	11/19/2018	N/A	UNDER CONSTRUCTION
104	6/30/2017	6/30/2017	8/16/2017	N/A	9/12/2017
105	6/30/2017	6/30/2017	8/16/2017	N/A	9/12/2017
106	6/30/2017	6/30/2017	N/A	N/A	N/A
108	6/30/2017	6/30/2017	11/21/2017	10/17/2017	12/1/2018
109	6/30/2017	6/30/2017	11/21/2017	10/13/2017	10/8/2018
110	6/30/2017	6/30/2017	11/19/2018	UNDER CONSTRUCTION	UNDER CONSTRUCTION
118	6/30/2017	N/A	N/A	UNDER CONSTRUCTION	9/12/2017
121	6/30/2017	6/30/2017	9/12/2017	10/13/2017	12/21/2017
125	6/30/2017	6/30/2017	9/8/2017	8/7/2017	9/8/2017
126	6/30/2017	6/30/2017	9/14/2017	7/25/2017	12/21/2017
127	6/30/2017	N/A	N/A	N/A	N/A
130	6/30/2017	6/30/2017	8/16/2017	N/A	UNDER CONSTRUCTION
132	6/30/2017	6/30/2017	9/8/2017	7/25/2017	9/21/2017
140	6/30/2017	6/30/2017	11/21/2017	10/13/2017	UNDER CONSTRUCTION
146	6/30/2017	N/A	11/19/2018	UNDER CONSTRUCTION	UNDER CONSTRUCTION
149	6/30/2017	N/A	11/19/2018	UNDER CONSTRUCTION	UNDER CONSTRUCTION
154	6/30/2017	6/30/2017	12/1/2017	12/20/2017	3/21/2018
160	6/30/2017	6/30/2017	8/23/2017	9/20/2017	12/22/2017
166	6/30/2017	6/30/2017	9/12/2017	10/9/2017	12/21/2017
167	6/30/2017	6/30/2017	9/8/2017	N/A	12/21/2017
189	6/30/2017	6/30/2017	8/16/2017	N/A	9/21/2017
190	6/30/2017	6/30/2017	11/1/2017	N/A	1/26/2018
191	6/30/2017	6/30/2017	UNDER CONSTRUCTION	UNDER CONSTRUCTION	UNDER CONSTRUCTION
206	6/30/2017	6/30/2017	N/A	11/22/2017	12/6/2017
210	6/30/2017	N/A	UNDER CONSTRUCTION	N/A	UNDER CONSTRUCTION
211	6/30/2017	6/30/2017	8/16/2017	N/A	UNDER CONSTRUCTION

Table F.2. Phase 2 CSOs

CSO	FINAL SOP COMPLETED	HISTORICAL VOLUME REVISED	PROGRAMMING CHANGES COMPLETED	EQUIPMENT CHANGES COMPLETED	TESTING / VERIFICATION COMPLETED
019	STARTED	COMPLETED	NOT STARTED	N/A	NOT STARTED
022	STARTED	COMPLETED	10/10/2018	N/A	NOT STARTED
023	STARTED	COMPLETED	10/10/2018	N/A	NOT STARTED
027	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
028	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
029	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
031	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
034	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
035	STARTED	NOT COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
038	STARTED	COMPLETED	NOT STARTED	N/A	NOT STARTED
050	STARTED	COMPLETED	6/12/2018	N/A	NOT STARTED
051	STARTED	NOT COMPLETED	6/12/2018	N/A	NOT STARTED
052	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
053	STARTED	COMPLETED	6/20/2018	N/A	NOT STARTED
055	STARTED	COMPLETED	6/18/2018	N/A	NOT STARTED
056	STARTED	N/A	10/24/2017	10/24/2017	NOT STARTED
057	STARTED	N/A	6/12/2018	N/A	NOT STARTED
062	STARTED	N/A	NOT STARTED	NOT STARTED	NOT STARTED
082	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
083	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
084	STARTED	COMPLETED	6/27/2018	12/7/2018	NOT STARTED
091	STARTED	NOT COMPLETED	12/21/2018	11/19/2018	NOT STARTED
092	STARTED	COMPLETED	6/20/2018	N/A	NOT STARTED
097	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED
111	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED
113	STARTED	COMPLETED	12/21/2018	11/19/2018	NOT STARTED
117	STARTED	COMPLETED	12/21/2018	11/19/2018	NOT STARTED
119	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
120	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
131	STARTED	NOT COMPLETED	10/2/2018	10/2/2018	NOT STARTED
137	STARTED	COMPLETED	12/21/2018	NOT STARTED	NOT STARTED
141	STARTED	NOT COMPLETED	5/30/2018	5/30/2018	NOT STARTED
144	STARTED	COMPLETED	6/26/2018	TO BE DETERMINED	NOT STARTED
148	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED
150	STARTED	NOT COMPLETED	6/12/2018	N/A	NOT STARTED
151	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED

Table F.2. Phase 2 CSOs

CSO	FINAL SOP COMPLETED	HISTORICAL VOLUME REVISED	PROGRAMMING CHANGES COMPLETED	EQUIPMENT CHANGES COMPLETED	TESTING / VERIFICATION COMPLETED
152	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED
153	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
155	STARTED	COMPLETED	6/12/2018	N/A	NOT STARTED
161	STARTED	N/A	6/12/2018	N/A	NOT STARTED
172	STARTED	NOT COMPLETED	1/1/2018	1/1/2018	NOT STARTED
178	STARTED	COMPLETED	NOT STARTED	TO BE DETERMINED	NOT STARTED
179	STARTED	COMPLETED	UNDER CONSTRUCTION	1/1/2018	NOT STARTED
181	STARTED	COMPLETED	NOT STARTED	NOT STARTED	NOT STARTED
193	STARTED	COMPLETED	6/20/2018	N/A	NOT STARTED
195	STARTED	COMPLETED	6/22/2018	N/A	NOT STARTED
196	STARTED	COMPLETED	6/22/2018	N/A	NOT STARTED
197	STARTED	COMPLETED	6/22/2018	N/A	NOT STARTED
198	STARTED	COMPLETED	6/26/2018	N/A	NOT STARTED
199	STARTED	COMPLETED	6/18/2018	N/A	NOT STARTED
200	STARTED	COMPLETED	6/22/2018	12/12/2018	NOT STARTED
201	STARTED	COMPLETED	6/22/2018	N/A	NOT STARTED
202	STARTED	COMPLETED	6/15/2018	N/A	NOT STARTED
203	STARTED	COMPLETED	6/15/2018	N/A	NOT STARTED
207	STARTED	COMPLETED	6/22/2018	N/A	NOT STARTED
208	STARTED	COMPLETED	6/25/2018	N/A	NOT STARTED
SBR 142	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED
SBR 174	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED
SBR 180	STARTED	COMPLETED	6/8/2018	TO BE DETERMINED	NOT STARTED
SBR 182	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED
SBR 183	STARTED	COMPLETED	6/4/2018	N/A	NOT STARTED
SBR 184	STARTED	COMPLETED	6/4/2018	N/A	NOT STARTED
SBR 185	STARTED	COMPLETED	6/4/2018	N/A	NOT STARTED
SBR 186	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED
SBR 187	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED
SBR 188	STARTED	COMPLETED	6/8/2018	12/7/2018	NOT STARTED
SBR 205	STARTED	COMPLETED	6/8/2018	N/A	NOT STARTED

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Appendix G CSO108 Semi-Annual Report

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700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

January 14, 2019

Shaun Zeigler
Applied Ecologist & Nature Preserves Manager
Kentucky State Nature Preserve Commission
801 Teton Trail
Frankfort, KY 40601

Subject: CSO 108 Semi-Annual Report #21

Dear Mr. Zeigler,

As required in Paragraph #2 of the document titled “Memorandum of Understanding by and between the Commonwealth of Kentucky, Office of Kentucky Nature Preserves ad the Louisville and Jefferson County Metropolitan Sewer District”, MSD submits to you the MOU Semi-Annual Report #20. This report summarizes activities at the CSO 108 CDS Site during the reporting period of July 1, 2018 to December 31, 2018.

Should you have any questions or comments, please feel free to contact me via email at heather.dodds@louisvillemsd.org or phone at (502) 540-6961.

Sincerely,

Heather Dodds

Heather Dodds, PE
Regulatory Compliance & Asset Management Administrator

INTRODUCTION

The Louisville and Jefferson County Metropolitan Sewer District (MSD) has entered into a Memorandum of Understanding (MOU) with the Kentucky State Nature Preserve Commission (Commission). The MOU was signed by MSD on July 31, 2018, and by the Commission on August 10, 2018. This MOU is effective for the period starting August 1, 2018, and ending on August 1, 2028.

This is the 21st Semi-Annual Report submitted in accordance with Paragraph 2 of the MOU. This report covers the time period of July 1, 2018 to December 31, 2018.

This Semi-Annual Report will address only those requirements considered ongoing. The initial Semi-Annual Report, MOU Semi-Annual Report #1, was comprehensive and included a response to each requirement addressed within the MOU. Please refer to the initial Semi-Annual Report for additional information not found within this document.

Work and activities undertaken by MSD and relating to the MOU are outlined in the paragraphs below.

1.1. PARAGRAPH #2 OF THE MOU

MSD shall be diligent of this ten-year period in supplying the Commission with timely semi-annual reports on the efficacy of the CDS unit, water quality monitoring data, and any other such pertinent information. Said reports shall be provided to the Commission by January 30 and July 30 of each year.

1.2. MSD RESPONSE

This document is the 21st semi-annual report to the Commission since the completion of the Project.

1.2.1 CLEANING AND INSPECTION ACTIVITIES

The CSO108 CDS unit is inspected weekly and cleaned on an as-needed basis. During the reporting period, MSD cleaned the CDS Unit bar racks **three** times. The information, shown in Table 1, is generated from work orders initiated whenever the CDS Unit is inspected and needs to be cleaned. Cleaning consists of either washing debris off the bar racks or hauling the solids and floatables from the site. Both operations result in removing debris that would otherwise overflow into Beargrass Creek. When cleaning the bar racks, the debris is reintroduced into the sewer system, and as a result, is difficult to accurately estimate the amount removed during the maintenance process. The Crystal Report often indicates the quantity removed as “unknown”.

Table 1: CSO108 CDS Unit Debris Removal

ACTIVITY	QUANTITY	COMMENTS	COMPLETED DATE
Debris	Unknown	Cleaned medium debris off rack bars	11/13/2018
Debris	Unknown	Cleaned medium debris off rack bars	11/27/2018
Debris	Unknown	Cleaned heavy debris off rack bars	11/30/2018

1.2.2 MAINTENANCE ACTIVITIES

In addition to the weekly inspections, MSD has initiated a preventative maintenance program to insure that the CDS unit and respective pumps are performing optimally. During these quarterly preventative maintenance activities, MSD staff also cleans the CDS unit and rack bars, washing the debris into the interceptor. The CDS Unit's pumps are removed from the facility twice yearly to more closely inspect and to perform any needed maintenance.

1.2.3 CAPTURED FLOW

The CDS unit was placed along the Trevillian Way Twin Trunk Sewer to capture solids and floatables from a 485-acre drainage area. The unit uses a vortex action created by the hydraulic energy of incoming flow to separate solids and floatable from the flow. The treated flow is then discharged through the outlet pipe to Beargrass Creek and the debris that is captured is pumped to the Morris Forman Water Quality Treatment Center (WQTC).

In an effort to estimate the volume of debris captured by the CDS unit and kept within the sewer system, a study of the efficiency of the unit was performed in the early 2002. The results of the study indicated that the concentration of solids kept within the sewer system was approximately 1ml/l. Using pump run times and knowing the efficiency of the pumps, MSD was able to determine a volume of solids captured by the CDS technology. MSD estimates that the CDS unit captured 58.3 tons of solids during the reporting period. Attachment "B" lists the pump run times and calculations MSD used to determine the amount of debris captured by the CDS Unit and sent to the Morris Forman WQTC for treatment.

ATTACHMENT "A" – PHOTOS OF AREA ADJACENT TO CSO 108 AND THE CDS UNIT (DATED DECEMBER 26, 2018)

Figure 1. Entrance to CDS Unit

Figure 2. Entrance to CDS Unit

Figure 3. Area Adjacent to the CDS Unit

Figure 4. Area Adjacent to the CDS Unit

Figure 5. Area Adjacent to the Creek

Figure 6. Area Adjacent to the Creek

ATTACHMENT "B" –CDS UNIT PUMP RUN TIMES

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
July 1, 2018	0.00	0.00	0.13
July 2, 2018	0.00	0.00	0.03
July 3, 2018	0.00	0.00	0.10
July 4, 2018	0.38	0.78	1.02
July 5, 2018	0.00	0.00	0.08
July 6, 2018	0.00	0.00	0.08
July 7, 2018	0.00	0.00	0.10
July 8, 2018	0.00	0.00	0.03
July 9, 2018	0.00	0.00	0.08
July 10, 2018	0.00	0.00	0.05
July 11, 2018	0.00	0.00	0.05
July 12, 2018	0.00	0.00	0.00
July 13, 2018	0.00	0.00	0.03
July 14, 2018	0.00	0.00	0.00
July 15, 2018	0.00	0.00	0.20
July 16, 2018	0.00	0.00	0.00
July 17, 2018	0.43	0.05	0.75
July 18, 2018	0.00	0.00	0.13
July 19, 2018	0.00	0.00	0.00
July 20, 2018	0.00	0.00	0.05
July 21, 2018	0.00	0.00	0.00
July 22, 2018	0.22	0.53	0.83
July 23, 2018	0.00	0.00	0.12
July 24, 2018	0.00	0.00	0.05
July 25, 2018	0.00	0.00	0.05
July 26, 2018	0.00	0.00	0.00
July 27, 2018	0.00	0.00	0.17
July 28, 2018	0.00	0.00	0.00
July 29, 2018	0.00	0.00	0.00
July 30, 2018	0.00	0.00	0.00
July 31, 2018	0.00	0.00	0.00
August 1, 2018	0.00	0.00	0.00
August 2, 2018	0.00	0.00	0.23
August 3, 2018	0.32	0.03	0.55

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
August 4, 2018	0.00	0.00	0.08
August 5, 2018	0.00	0.00	0.00
August 6, 2018	0.00	0.00	0.05
August 7, 2018	0.00	0.00	0.00
August 8, 2018	0.00	0.00	0.00
August 9, 2018	0.00	0.00	0.03
August 10, 2018	0.00	0.00	0.00
August 11, 2018	0.00	0.00	0.05
August 12, 2018	0.00	0.00	0.00
August 13, 2018	0.00	0.00	0.00
August 14, 2018	0.00	0.00	0.03
August 15, 2018	0.00	0.00	0.00
August 16, 2018	0.00	0.00	0.00
August 17, 2018	0.00	0.00	0.05
August 18, 2018	5.67	3.98	9.33
August 19, 2018	0.00	0.00	2.28
August 20, 2018	0.00	0.00	2.17
August 21, 2018	1.65	0.82	4.27
August 22, 2018	0.27	0.28	0.68
August 23, 2018	0.00	0.00	0.25
August 24, 2018	0.00	0.00	0.17
August 25, 2018	0.00	0.00	0.13
August 26, 2018	0.00	0.00	0.13
August 27, 2018	0.00	0.00	0.13
August 28, 2018	0.00	0.00	0.08
August 29, 2018	0.00	0.00	0.03
August 30, 2018	0.00	0.00	0.05
August 31, 2018	0.00	0.00	0.03
September 1, 2018	0.00	0.00	0.05
September 2, 2018	0.10	0.63	0.92
September 3, 2018	0.00	0.00	0.05
September 4, 2018	0.00	0.00	0.28
September 5, 2018	0.00	0.00	0.00
September 6, 2018	0.00	0.00	0.00

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
September 7, 2018	0.00	0.00	0.00
September 8, 2018	0.00	0.00	0.00
September 9, 2018	0.00	0.00	0.03
September 10, 2018	2.30	2.07	4.90
September 11, 2018	1.33	1.92	4.50
September 12, 2018	0.00	0.00	0.22
September 13, 2018	0.00	0.00	0.17
September 14, 2018	0.00	0.00	0.23
September 15, 2018	0.00	0.00	0.08
September 16, 2018	0.00	0.00	0.13
September 17, 2018	0.00	0.00	0.08
September 18, 2018	0.00	0.00	0.08
September 19, 2018	0.00	0.00	0.08
September 20, 2018	0.00	0.00	0.05
September 21, 2018	0.00	0.00	0.03
September 22, 2018	0.00	0.00	0.05
September 23, 2018	0.00	0.00	0.32
September 24, 2018	0.00	0.00	0.13
September 25, 2018	0.00	0.00	3.75
September 26, 2018	0.00	0.00	13.25
September 27, 2018	0.00	0.00	1.90
September 28, 2018	0.00	0.00	1.92
September 29, 2018	0.00	0.00	0.38
September 30, 2018	0.00	0.00	0.27
October 1, 2018	0.00	0.00	0.22
October 2, 2018	0.00	0.00	0.17
October 3, 2018	0.00	0.00	0.17
October 4, 2018	0.00	0.00	0.13
October 5, 2018	0.00	0.00	0.13
October 6, 2018	0.00	0.00	0.12
October 7, 2018	0.00	0.00	0.10
October 8, 2018	0.00	0.00	0.03
October 9, 2018	0.00	0.00	0.08
October 10, 2018	0.00	0.00	0.05

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
October 11, 2018	0.00	0.00	0.03
October 12, 2018	0.00	0.00	0.00
October 13, 2018	0.00	0.00	0.05
October 14, 2018	0.00	0.00	0.00
October 15, 2018	0.00	0.00	0.03
October 16, 2018	0.00	0.00	0.05
October 17, 2018	0.00	0.00	0.05
October 18, 2018	0.00	0.00	0.03
October 19, 2018	0.00	0.00	0.00
October 20, 2018	0.00	0.00	0.05
October 21, 2018	0.00	0.00	0.00
October 22, 2018	0.00	0.00	0.03
October 23, 2018	0.00	0.00	0.00
October 24, 2018	0.00	0.00	0.00
October 25, 2018	0.00	0.00	0.05
October 26, 2018	0.00	0.00	0.00
October 27, 2018	0.00	0.00	0.00
October 28, 2018	0.00	0.00	0.03
October 29, 2018	0.00	0.00	0.00
October 30, 2018	0.00	0.00	0.05
October 31, 2018	0.00	0.00	0.00
November 1, 2018	0.00	0.00	0.03
November 2, 2018	0.00	0.00	0.10
November 3, 2018	0.00	0.00	1.28
November 4, 2018	0.00	0.00	0.22
November 5, 2018	0.00	0.00	0.17
November 6, 2018	0.00	0.00	0.12
November 7, 2018	0.00	0.00	1.55
November 8, 2018	0.00	0.00	0.43
November 9, 2018	0.00	0.00	0.22
November 10, 2018	0.00	0.00	0.17
November 11, 2018	0.00	0.00	0.17
November 12, 2018	0.00	0.00	0.17
November 13, 2018	0.00	0.00	0.10

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
November 14, 2018	0.00	0.00	0.08
November 15, 2018	0.00	0.00	0.12
November 16, 2018	0.00	0.00	0.05
November 17, 2018	0.00	0.00	0.27
November 18, 2018	0.00	0.00	0.27
November 19, 2018	0.00	0.00	0.17
November 20, 2018	0.00	0.00	0.18
November 21, 2018	0.00	0.00	0.17
November 22, 2018	0.00	0.00	0.13
November 23, 2018	0.00	0.00	0.08
November 24, 2018	0.00	0.00	0.03
November 25, 2018	0.00	0.00	0.05
November 26, 2018	0.00	0.00	0.13
November 27, 2018	0.00	0.00	0.08
November 28, 2018	0.00	0.00	0.08
November 29, 2018	0.00	0.00	0.08
November 30, 2018	0.00	0.00	0.05
December 1, 2018	0.00	0.00	0.00
December 2, 2018	0.00	0.00	0.17
December 3, 2018	0.00	0.00	0.35
December 4, 2018	0.00	0.00	0.38
December 5, 2018	0.00	0.00	0.22
December 6, 2018	0.02	0.15	0.28
December 7, 2018	0.00	0.00	0.17
December 8, 2018	0.00	0.00	0.13
December 9, 2018	0.00	0.00	0.13
December 10, 2018	0.00	0.00	0.08
December 11, 2018	0.00	0.00	0.03
December 12, 2018	0.00	0.00	0.05
December 13, 2018	0.00	0.00	0.03
December 14, 2018	0.00	0.00	0.00
December 15, 2018	0.00	0.00	0.05
December 16, 2018	0.00	0.00	0.00
December 17, 2018	0.00	0.00	0.35

CDS Unit Pump Runtimes

DATE	PUMP 1 RUN HOURS	PUMP 2 RUN HOURS	PUMP 3 RUN HOURS
December 18, 2018	0.00	0.00	0.25
December 19, 2018	0.00	0.00	0.18
December 20, 2018	0.00	0.00	0.12
December 21, 2018	0.00	0.00	0.13
December 22, 2018	0.00	0.00	0.13
December 23, 2018	0.00	0.00	0.17
December 24, 2018	0.00	0.00	0.13
December 25, 2018	0.00	0.00	0.13
December 26, 2018	0.00	0.00	0.08
December 27, 2018	0.00	0.00	0.23
December 28, 2018	0.00	0.00	0.00
December 29, 2018	0.00	0.00	0.00
December 30, 2018	0.00	0.00	0.13
December 31, 2018	0.00	0.00	0.08

CSO108 Underflow Pump Flow Meter Data

DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
July 1, 2018	0.0452	6,036.39	45,155.31	45.16
July 2, 2018	0.0393	5,252.34	39,290.20	39.29
July 3, 2018	0.0439	5,870.73	43,916.14	43.92
July 4, 2018	0.1255	16,775.41	125,488.80	125.49
July 5, 2018	0.0397	5,311.26	39,731.02	39.73
July 6, 2018	0.0461	6,156.26	46,052.06	46.05
July 7, 2018	0.0446	5,966.59	44,633.18	44.63
July 8, 2018	0.0393	5,254.97	39,309.91	39.31
July 9, 2018	0.0428	5,719.53	42,785.09	42.79
July 10, 2018	0.0392	5,237.87	39,181.96	39.18
July 11, 2018	0.0411	5,497.39	41,123.31	41.12
July 12, 2018	0.0369	4,936.62	36,928.49	36.93
July 13, 2018	0.0400	5,347.57	40,002.62	40.00
July 14, 2018	0.0369	4,936.62	36,928.49	36.93
July 15, 2018	0.0521	6,964.24	52,096.14	52.10
July 16, 2018	0.0369	4,936.62	36,928.49	36.93
July 17, 2018	0.0986	13,183.41	98,618.77	98.62
July 18, 2018	0.0465	6,213.18	46,477.83	46.48
July 19, 2018	0.0369	4,936.62	36,928.49	36.93
July 20, 2018	0.0379	5,069.33	37,921.20	37.92
July 21, 2018	0.0369	4,936.62	36,928.49	36.93
July 22, 2018	0.1095	14,633.92	109,469.33	109.47
July 23, 2018	0.0461	6,157.93	46,064.51	46.06
July 24, 2018	0.0412	5,504.06	41,173.26	41.17
July 25, 2018	0.0415	5,543.90	41,471.28	41.47
July 26, 2018	0.0369	4,936.62	36,928.49	36.93
July 27, 2018	0.0511	6,836.49	51,140.53	51.14
July 28, 2018	0.0369	4,936.62	36,928.49	36.93
July 29, 2018	0.0369	4,936.62	36,928.49	36.93
July 30, 2018	0.0369	4,936.62	36,928.49	36.93
July 31, 2018	0.0369	4,936.62	36,928.49	36.93
August 1, 2018	0.0369	4,936.62	36,928.49	36.93
August 2, 2018	0.0509	6,800.50	50,871.25	50.87
August 3, 2018	0.0665	8,895.67	66,544.24	66.54

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DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
August 4, 2018	0.0419	5,599.25	41,885.33	41.89
August 5, 2018	0.0369	4,936.62	36,928.49	36.93
August 6, 2018	0.0397	5,310.55	39,725.65	39.73
August 7, 2018	0.0369	4,936.62	36,928.49	36.93
August 8, 2018	0.0369	4,936.62	36,928.49	36.93
August 9, 2018	0.0395	5,278.92	39,489.09	39.49
August 10, 2018	0.0369	4,936.62	36,928.49	36.93
August 11, 2018	0.0414	5,531.34	41,377.28	41.38
August 12, 2018	0.0369	4,936.62	36,928.49	36.93
August 13, 2018	0.0369	4,933.16	36,902.61	36.90
August 14, 2018	0.0416	5,554.91	41,553.59	41.55
August 15, 2018	0.0369	4,936.62	36,928.49	36.93
August 16, 2018	0.0369	4,936.62	36,928.49	36.93
August 17, 2018	0.0411	5,492.42	41,086.16	41.09
August 18, 2018	0.8429	112,676.29	842,877.21	842.88
August 19, 2018	0.2452	32,781.93	245,225.88	245.23
August 20, 2018	0.2425	32,412.93	242,465.57	242.47
August 21, 2018	0.3976	53,145.66	397,557.17	397.56
August 22, 2018	0.0929	12,424.59	92,942.42	92.94
August 23, 2018	0.0597	7,975.29	59,659.32	59.66
August 24, 2018	0.0523	6,986.83	52,265.09	52.27
August 25, 2018	0.0494	6,605.90	49,415.57	49.42
August 26, 2018	0.0505	6,745.16	50,457.27	50.46
August 27, 2018	0.0496	6,630.96	49,603.06	49.60
August 28, 2018	0.0460	6,147.99	45,990.15	45.99
August 29, 2018	0.0388	5,189.11	38,817.23	38.82
August 30, 2018	0.0415	5,541.81	41,455.64	41.46
August 31, 2018	0.0414	5,533.98	41,397.06	41.40
September 1, 2018	0.0394	5,269.43	39,418.10	39.42
September 2, 2018	0.0965	12,898.45	96,487.14	96.49
September 3, 2018	0.0395	5,285.65	39,539.37	39.54
September 4, 2018	0.0616	8,235.06	61,602.52	61.60
September 5, 2018	0.0370	4,950.46	37,032.01	37.03
September 6, 2018	0.0370	4,943.54	36,980.25	36.98

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DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
September 7, 2018	0.0369	4,933.16	36,902.61	36.90
September 8, 2018	0.0369	4,936.62	36,928.49	36.93
September 9, 2018	0.0371	4,964.08	37,133.87	37.13
September 10, 2018	0.2726	36,442.21	272,606.70	272.61
September 11, 2018	0.0961	12,848.19	96,111.15	96.11
September 12, 2018	0.0544	7,271.41	54,393.96	54.39
September 13, 2018	0.0515	6,888.67	51,530.86	51.53
September 14, 2018	0.0576	7,701.72	57,612.85	57.61
September 15, 2018	0.0404	5,404.61	40,429.26	40.43
September 16, 2018	0.0452	6,048.68	45,247.30	45.25
September 17, 2018	0.0413	5,521.67	41,304.94	41.30
September 18, 2018	0.0423	5,660.65	42,344.61	42.34
September 19, 2018	0.0403	5,387.16	40,298.75	40.30
September 20, 2018	0.0369	4,928.61	36,868.53	36.87
September 21, 2018	0.0390	5,208.93	38,965.48	38.97
September 22, 2018	0.0395	5,280.23	39,498.83	39.50
September 23, 2018	0.0447	5,969.98	44,658.59	44.66
September 24, 2018	0.0375	5,009.91	37,476.75	37.48
September 25, 2018	0.0670	8,957.77	67,008.81	67.01
September 26, 2018	0.1421	18,998.01	142,114.97	142.11
September 27, 2018	0.0777	10,386.98	77,700.05	77.70
September 28, 2018	0.0814	10,880.47	81,391.57	81.39
September 29, 2018	0.0652	8,720.51	65,233.94	65.23
September 30, 2018	0.0610	8,153.08	60,989.31	60.99
October 1, 2018	0.0549	7,342.74	54,927.54	54.93
October 2, 2018	0.0488	6,521.47	48,784.02	48.78
October 3, 2018	0.0477	6,376.84	47,702.04	47.70
October 4, 2018	0.0460	6,154.40	46,038.11	46.04
October 5, 2018	0.0488	6,529.13	48,841.32	48.84
October 6, 2018	0.0509	6,801.84	50,881.26	50.88
October 7, 2018	0.0439	5,865.95	43,880.35	43.88
October 8, 2018	0.0410	5,476.36	40,966.03	40.97
October 9, 2018	0.0458	6,125.55	45,822.29	45.82
October 10, 2018	0.0402	5,367.72	40,153.32	40.15

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DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
October 11, 2018	0.0393	5,251.31	39,282.50	39.28
October 12, 2018	0.0370	4,950.46	37,032.01	37.03
October 13, 2018	0.0386	5,163.80	38,627.89	38.63
October 14, 2018	0.0372	4,979.38	37,248.38	37.25
October 15, 2018	0.0421	5,628.87	42,106.84	42.11
October 16, 2018	0.0419	5,595.22	41,855.16	41.86
October 17, 2018	0.0415	5,545.95	41,486.57	41.49
October 18, 2018	0.0411	5,495.10	41,106.19	41.11
October 19, 2018	0.0373	4,992.84	37,349.04	37.35
October 20, 2018	0.0413	5,519.19	41,286.44	41.29
October 21, 2018	0.0375	5,010.22	37,479.03	37.48
October 22, 2018	0.0396	5,299.21	39,640.83	39.64
October 23, 2018	0.0377	5,043.11	37,725.08	37.73
October 24, 2018	0.0376	5,028.76	37,617.71	37.62
October 25, 2018	0.0417	5,574.70	41,701.64	41.70
October 26, 2018	0.0375	5,008.42	37,465.62	37.47
October 27, 2018	0.0374	4,998.29	37,389.80	37.39
October 28, 2018	0.0420	5,616.71	42,015.88	42.02
October 29, 2018	0.0375	5,007.47	37,458.51	37.46
October 30, 2018	0.0418	5,593.21	41,840.09	41.84
October 31, 2018	0.0374	5,001.04	37,410.41	37.41
November 1, 2018	0.0419	5,596.57	41,865.22	41.87
November 2, 2018	0.0464	6,198.38	46,367.10	46.37
November 3, 2018	0.0707	9,448.44	70,679.28	70.68
November 4, 2018	0.0578	7,723.47	57,775.57	57.78
November 5, 2018	0.0538	7,194.98	53,822.16	53.82
November 6, 2018	0.0452	6,047.67	45,239.68	45.24
November 7, 2018	0.1546	20,671.16	154,631.05	154.63
November 8, 2018	0.0706	9,443.49	70,642.25	70.64
November 9, 2018	0.0570	7,614.07	56,957.22	56.96
November 10, 2018	0.0535	7,157.44	53,541.34	53.54
November 11, 2018	0.0543	7,258.00	54,293.59	54.29
November 12, 2018	0.0523	6,990.14	52,289.85	52.29
November 13, 2018	0.0459	6,129.96	45,855.32	45.86

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DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
November 14, 2018	0.0459	6,141.59	45,942.32	45.94
November 15, 2018	0.0509	6,810.13	50,943.34	50.94
November 16, 2018	0.0429	5,736.92	42,915.17	42.92
November 17, 2018	0.0322	4,300.35	32,168.87	32.17
November 18, 2018	0.0617	8,253.72	61,742.11	61.74
November 19, 2018	0.0514	6,876.48	51,439.63	51.44
November 20, 2018	0.0539	7,201.65	53,872.12	53.87
November 21, 2018	0.0542	7,242.21	54,175.47	54.18
November 22, 2018	0.0511	6,827.22	51,071.18	51.07
November 23, 2018	0.0458	6,128.05	45,840.99	45.84
November 24, 2018	0.0421	5,631.73	42,128.25	42.13
November 25, 2018	0.0420	5,612.47	41,984.19	41.98
November 26, 2018	0.0503	6,719.30	50,263.86	50.26
November 27, 2018	0.0453	6,053.53	45,283.57	45.28
November 28, 2018	0.0471	6,292.01	47,067.52	47.07
November 29, 2018	0.0471	6,296.86	47,103.80	47.10
November 30, 2018	0.0429	5,728.35	42,851.01	42.85
December 1, 2018	0.0378	5,052.65	37,796.45	37.80
December 2, 2018	0.0539	7,204.46	53,893.09	53.89
December 3, 2018	0.0598	7,991.71	59,782.12	59.78
December 4, 2018	0.0713	9,534.35	71,321.92	71.32
December 5, 2018	0.0593	7,922.23	59,262.42	59.26
December 6, 2018	0.0656	8,774.43	65,637.28	65.64
December 7, 2018	0.0513	6,853.90	51,270.74	51.27
December 8, 2018	0.0500	6,684.33	50,002.24	50.00
December 9, 2018	0.0511	6,824.81	51,053.15	51.05
December 10, 2018	0.0473	6,322.98	47,299.20	47.30
December 11, 2018	0.0426	5,701.09	42,647.14	42.65
December 12, 2018	0.0428	5,726.71	42,838.77	42.84
December 13, 2018	0.0426	5,700.70	42,644.18	42.64
December 14, 2018	0.0377	5,035.17	37,665.72	37.67
December 15, 2018	0.0412	5,512.53	41,236.62	41.24
December 16, 2018	0.0372	4,973.68	37,205.73	37.21
December 17, 2018	0.0720	9,619.37	71,957.86	71.96

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DATE	DAILY VOLUME (MG)	DAILY VOLUME (CF)	DAILY VOLUME (GAL)	DAILY VOLUME DEBRIS (GAL)
December 18, 2018	0.0613	8,200.27	61,342.31	61.34
December 19, 2018	0.0539	7,204.29	53,891.80	53.89
December 20, 2018	0.0498	6,654.32	49,777.74	49.78
December 21, 2018	0.0501	6,702.70	50,139.70	50.14
December 22, 2018	0.0492	6,572.30	49,164.26	49.16
December 23, 2018	0.0533	7,120.44	53,264.61	53.26
December 24, 2018	0.0500	6,687.21	50,023.77	50.02
December 25, 2018	0.0500	6,681.07	49,977.89	49.98
December 26, 2018	0.0467	6,247.67	46,735.80	46.74
December 27, 2018	0.0604	8,078.14	60,428.71	60.43
December 28, 2018	0.0378	5,048.81	37,767.75	37.77
December 29, 2018	0.0372	4,976.02	37,223.19	37.22
December 30, 2018	0.0500	6,687.31	50,024.52	50.02
December 31, 2018	0.0467	6,245.45	46,719.21	46.72