



September 4, 2013

Director of the Division of Enforcement
Department for Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
601 D street NW
Washington, DC 20005
DOJ Case No. 90-5-1-1-08591

Chief, Water Program Enforcement Branch
Water Management Division
U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Re: Consent Decree Case No. 2:05-cv-00199-WOB

To Whom It May Concern:

Pursuant to the above-referenced Consent Decree, Sanitation District No. 1 (SD1) was required to document its compliance with the Nine Minimum Controls (NMC), including proposed projects to be performed to ensure that compliance with the NMC is achieved by no later than twenty-four months after entry of the Consent Decree. SD1's NMC Compliance Report was submitted on March 12, 2008 to the EPA and Cabinet and received regulatory approval on July 6, 2008.

SD1 is required to submit an annual report on its implementation of the NMCs within sixty days after the anniversary date of the approved NMC Compliance Report. The enclosed report serves as the sixth annual report to demonstrate SD1's continued implementation of the NMCs.

A certification as required by the Consent Decree is also enclosed (Consent Decree paragraph 38).

Page 2
September 4, 2013

I am confident in the integrity of the enclosed document, and I am certain that its content not only satisfies regulatory requirements, but also helps further the mission and vision of SD1 by establishing aggressive, proactive, achievable measures to protect water resources and enhance the quality of life in Northern Kentucky.

If you have any questions or concerns, do not hesitate to contact me at 859-578-7465 or by e-mail at drager@sd1.org.

Best regards,

A handwritten signature in black ink, appearing to read 'D. Rager', with a large, stylized initial 'D'.

David E. Rager
Executive Director

DER/wck
Enclosures

Sanitation District No. 1
September 4, 2013

Nine Minimum Controls 2013 Annual Compliance Report

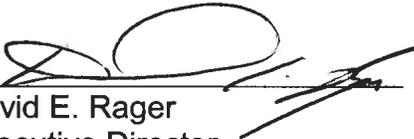


(This page intentionally left blank for double-sided printing.)

CERTIFICATION

Nine Minimum Controls 2013 Annual Compliance Report
Consent Decree Case No. 2:05-cv-00199-WOB

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



David E. Rager
Executive Director

9/3/13

Date

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 3 day of September, 2013 by David E. Rager, Executive Director of Sanitation District. No. 1.

Angela M. Cook
Notary Public
Kentucky, State at Large
Comm. Exp. 07-30-16
Notary ID 471543



NOTARY PUBLIC

Campbell County, Kentucky

My commission expires: 7-30-16

(This page intentionally left blank for double-sided printing.)

NINE MINIMUM CONTROLS 2013 ANNUAL COMPLIANCE REPORT

September 4, 2013



Sanitation District No. 1
1045 Eaton Drive
Ft. Wright, KY 41017

TABLE OF CONTENTS

SECTION 1. INTRODUCTION.....	1
1.1 Overview.....	1
1.2 Report Objective	1
SECTION 2. NINE MINIMUM CONTROLS	1
2.1 NMC #1: Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls	1
2.1.1 <i>Information Management Tools</i>	2
2.1.2 <i>Asset Operation and Maintenance</i>	2
2.2 NMC #2: Maximum Use of Collection System for Storage.....	5
2.2.1 <i>In-Line Storage Analysis</i>	5
2.2.2 <i>River Water Intrusion Mitigation</i>	5
2.3 NMC #3: Review and Modification of Pretreatment Requirements	6
2.4 NMC #4: Maximization of Flow to POTW for Treatment	7
2.5 NMC #5: Elimination of CSOs during Dry Weather.....	8
2.6 NMC #6: Control of Solid and Floatable Materials in CSOs.....	13
2.7 NMC #7: Pollution Prevention.....	17
2.7.1 <i>Public Education Programs</i>	18
2.7.2 <i>Land Disturbance/Sediment and Erosion Control</i>	20
2.7.3 <i>Sponsored Events</i>	21
2.8 NMC #8: Public Notification	22
2.9 NMC #9: Monitoring to Characterize CSO Impacts.....	23

APPENDICES

Appendix A	O&M and Repair Work (2008 through 2012)
Appendix B	2012 Flow Monitoring Locations

FIGURES

Figure 2.1	Lucity Dashboard
Figure 2.2	2012 CSS Catch Basin Cleaning Locations
Figure 2.3	SD1 Inventory of KTC-Owned Structures in the CSS
Figure 2.4	Diversion Sheds in the CSS
Figure 2.5	Elimination of Dry Weather CSOs (2006 through 2012)
Figure 2.6	Locations of Observed Dry Weather CSOs in 2012
Figure 2.7	Trapped Structures in the CSS
Figure 2.8	Proposed Jacob Price Separation
Figure 2.9	Draft Church Street Floatables Control Structure
Figure 2.10	Healthy Household Habits – Bill Insert
Figure 2.11	Don't Drain Your Wallet: Tips for Safe Disposal – Bill Insert
Figure 2.12	Household Waste Collection Event Flyer
Figure 2.13	Recr8OhioRiver Website

TABLES

Table 2.1	Summary of Dry Weather CSOs that Occurred in 2012
Table 2.2	Current Solids and Floatables Control Program

LIST OF ACRONYMS AND ABBREVIATIONS

CSAP	Continuous Sewer Assessment Program
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
GIS	Geographic Information Systems
LDSAP	Large Diameter Sewer Assessment
NMC	Nine Minimum Controls
ORSANCO	Ohio River Valley Water Sanitation Commission
O&M	Operations and Maintenance
RWI	River Water Intrusion
SD1	Sanitation District No. 1

SECTION 1. INTRODUCTION

1.1 Overview

On April 18, 2007, Sanitation District No. 1 (SD1) entered into a Consent Decree with the U.S. Environmental Protection Agency and the Kentucky Energy and Environment Cabinet to address sanitary sewer overflows and combined sewer overflows (CSOs) in an effort to improve water quality throughout SD1's service area. As part of this agreement, SD1 was required to document its compliance with the Nine Minimum Controls (NMC) for CSOs as set forth in the CSO Control Policy, including proposed projects to be performed to ensure that compliance with the NMC is achieved by no later than twenty-four months after entry of the Consent Decree.

SD1's NMC Compliance Report was submitted on March 12, 2008 to the EPA and Cabinet and received regulatory approval on July 6, 2008.

1.2 Report Objective

Pursuant to the Consent Decree, SD1 is required to submit an annual report on its implementation of the NMCs within sixty days after each anniversary date of the original submission. The enclosed report serves as the fifth annual report to demonstrate SD1's continued implementation of the NMCs, from January 1, 2012 to December 31, 2012.

SECTION 2. NINE MINIMUM CONTROLS

The following sections present detailed descriptions of SD1's continued compliance efforts during 2012. These compliance efforts are in direct response to the Consent Decree requirements, to the guidance provided in the CSO Control Policy and EPA's Guidance for Nine Minimum Controls.

2.1 NMC #1: Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls

The purpose of this control is to establish operation, maintenance, and inspection procedures to ensure that the combined sewer system (CSS) and treatment facility will perform as effectively as possible to maximize treatment of combined sewage and reduce the magnitude, frequency, and duration of CSOs.

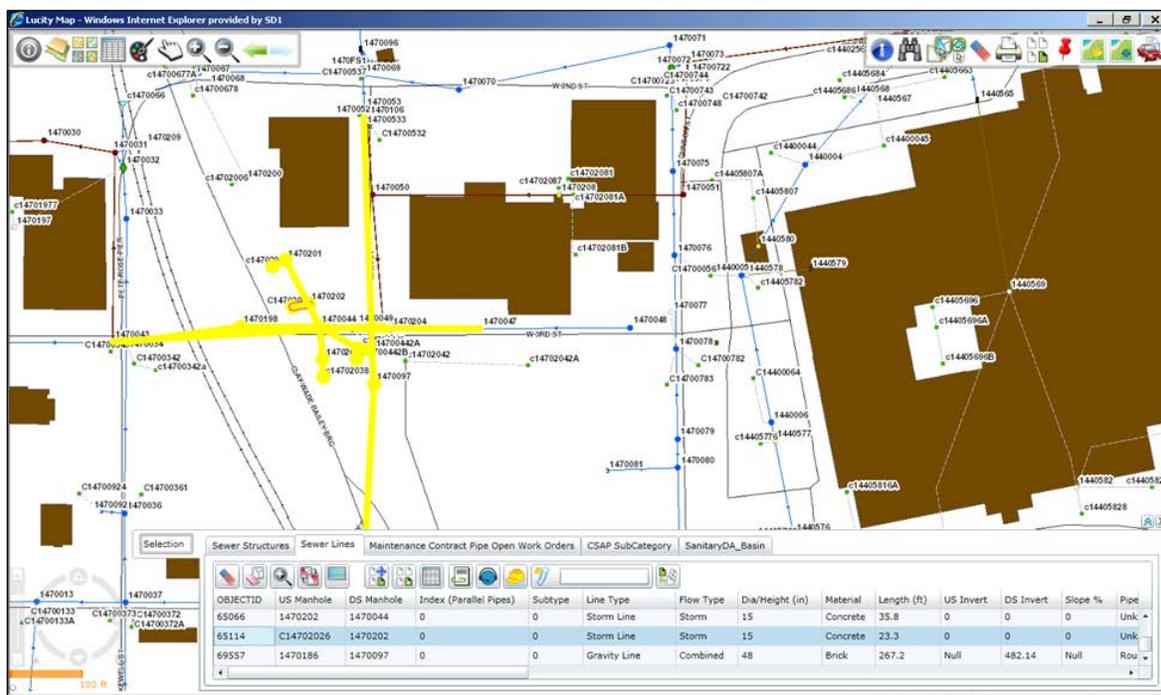
SD1 tracks its operation and maintenance (O&M) activities using the computerized maintenance management system Lucy. Appendix A provides an overview of the major activities performed in both the separate sewer system and CSS through implementation of regularly scheduled O&M activities, as well as SD1's formal Continuous Sewer Assessment Program (CSAP). The data represents approximate

amounts of work completed by both internal and external crews and has been updated from previous years, based on SD1’s continued improvements in Lucy recordkeeping.

2.1.1 Information Management Tools

SD1 has continued improving its computerized maintenance management system, Lucy, with the addition of a dashboard application in 2012, which provides Collection Systems personnel greater flexibility with operation and maintenance (O&M) activities. The Lucy Dashboard is capable of map-based asset management, which allows planning and maintenance personnel to create and schedule work orders with greater ease. The new Lucy Dashboard also extends the functionality of a GIS-based asset management tool to employees that have not had access to these capabilities in the past, due to licensing limitations. In 2012, 90 employees in six departments were trained to use the Lucy Dashboard. Figure 2.1 displays how map-selected assets in the Lucy Dashboard (highlighted in yellow) can have work requests and orders assigned to them.

Figure 2.1 Lucy Dashboard



2.1.2 Asset Operation and Maintenance

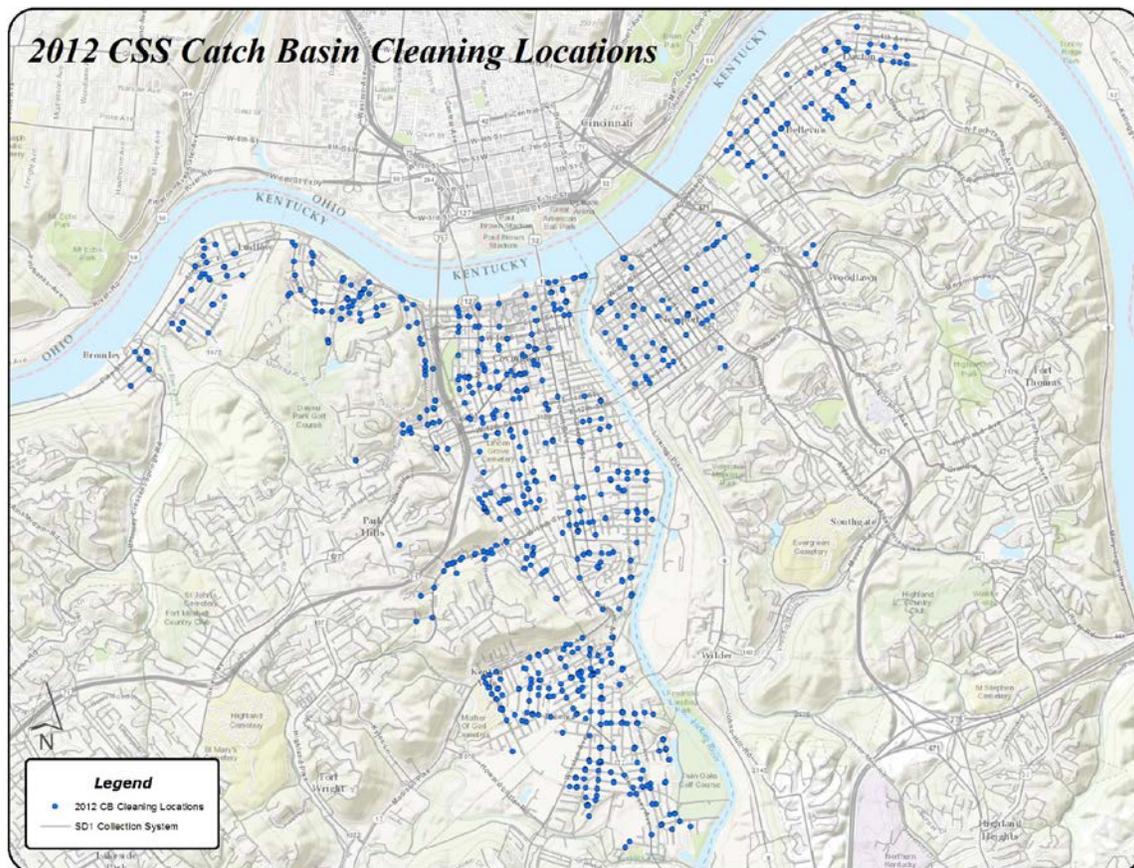
Catch Basin Inspection and Maintenance

SD1-Owned Catch Basins

SD1 performed 3,676 inspections of its own catch basins during 2012, and performed more than 1400 cleanings at approximately 805 locations. Figure 2.2 displays the approximate 805 locations that were cleaned during 2012. SD1 continues to review its

collected inspection data to determine the best strategy for assigning appropriate regularly scheduled cleaning frequencies to ensure that all catch basins are maintained to an appropriate level. In the interim, SD1 will continue to inspect all catch basins at least once each year and clean as needed. In addition, crews will continue to clean a targeted group of catch basins at the specific preventive maintenance schedules that have proven to be effective.

Figure 2.2 2012 CSS Catch Basin Cleaning Locations



Private-Owned Catch Basins

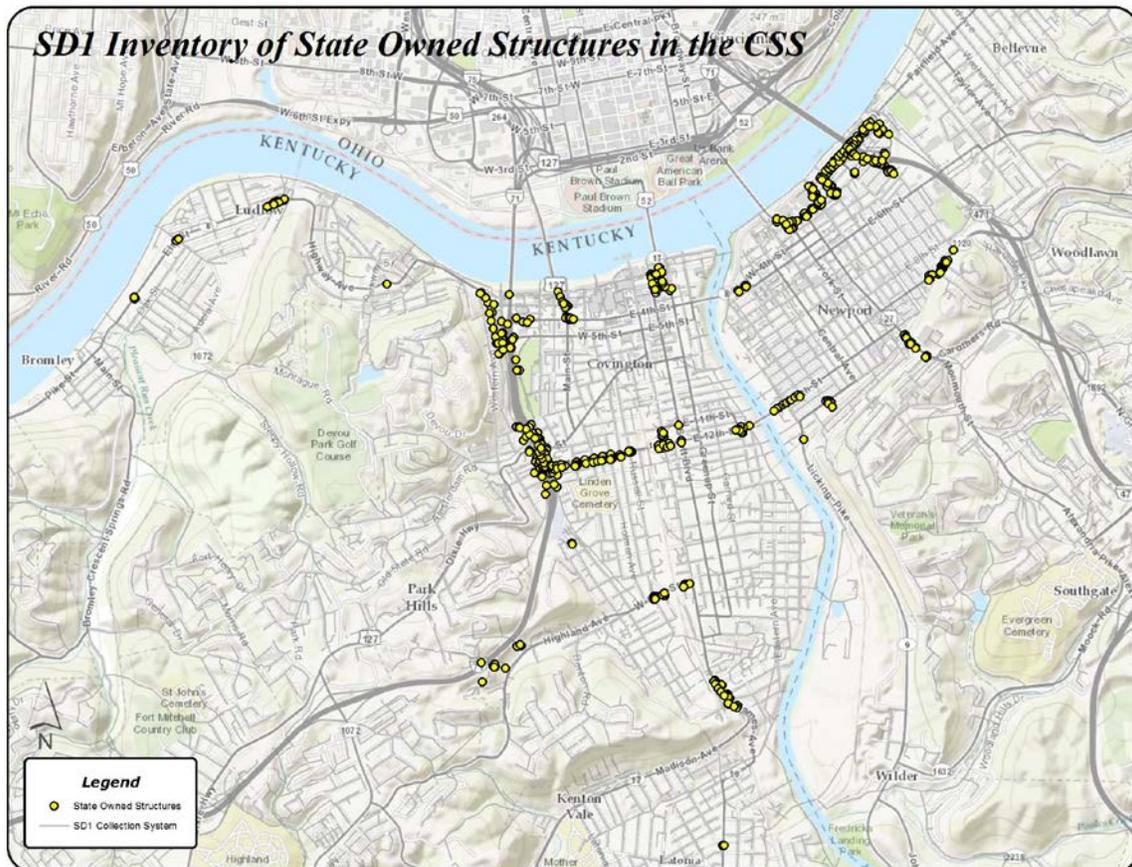
During 2012, SD1 conducted 29 inspections of privately owned catch basins. No new catch basins were installed downstream of private systems to trap solids and floatables, however this method of private source solids and floatables control remains a viable option for SD1, along with enforcement.

KTC-Owned Catch Basins

SD1 and the Kentucky Transportation Cabinet (KTC) are currently in the final stages of verifying the ownership of structures that were installed by KTC in the CSS. After mapping and inventorying the catch basins and inlets in the CSS of Northern Kentucky, SD1 has determined that approximately 528 structures were installed by KTC in the cities of Covington, Ludlow, and Newport. Formal documentation of asset transfers from KTC to the cities or SD1 has not been made available. Once ownership of the

structures has been verified with KTC, negotiations for a maintenance contract between SD1 and KTC will be finalized. SD1 inspected 44 KTC-owned catch basins in 2012 and continued to document maintenance needs. Figure 2.3 demonstrates the locations of all suspected KTC-owned structures in the CSS.

Figure 2.3 SD1 Inventory of KTC-Owned Structures in the CSS



Diversion and CSO Outfall Inspection and Maintenance

During 2012, SD1 regularly inspected each diversion and the associated CSO weekly, as well as after every wet-weather event that exceeded half an inch of rain. Cleaning was performed on an as-needed basis at the CSO locations that have solids & floatables controls installed at the diversion manhole or the outfall (see NMC #6 below for further details on SD1’s solids & floatables program).

Throughout 2012, SD1 performed approximately 8,360 inspections at 133 CSO diversions. Approximately 60 percent of the inspections performed were during dry weather, 38 percent were performed within 48 hours of a wet-weather event, and 2 percent were performed during wet weather. The information gathered from these inspections is used to identify the locations of dry-weather overflows, and the measures needed to eliminate them from reoccurring. The data is also used to verify the accuracy of wet-weather CSO statistics produced with SD1’s hydraulic model.

SD1 anticipates making modifications to the inspection frequencies of CSO diversions in 2013 (described further in Section 2.5), based upon the inspection and maintenance data gathered in previous years.

2.2 NMC #2: Maximum Use of Collection System for Storage

The purpose of this control is to maximize the use of the collection system by making relatively simple modifications to the CSS to enable the existing sewers to store wet weather flows until capacity is available in the downstream collection and treatment systems in order to reduce CSO volume.

2.2.1 In-Line Storage Analysis

Eighth Street and Patton Street Pump Stations

SD1 has made minor modifications to the operational levels in the Eighth Street and Patton Street pump stations wetwells by adjusting the floats to optimize in-line storage, following an investigation in 2011 that revealed significant amounts of debris in the combined sewer segments upstream of each pump station. The investigation determined that the US Army Corps of Engineers' design for the pump stations allows flow to backup into the upstream combined sewers during normal pump operation. The existing in-line storage lowers velocities and causes debris and sediment to settle in the interceptor. Due to this design, more frequent preventive maintenance schedule will be required to remove the settled debris and increase capacity. The upstream lines and interceptor will continue to be targeted with frequent inspections and cleanings until the long-term solution for equalization (EQ) storage, as outlined in the Watershed Plans, can be implemented.

The design of the pump stations also caused the flow in the influent sewers and associated wetwell to be detained for long periods of time, which made the pump stations more susceptible to hydrogen sulfide corrosion. The concrete walls and ceilings of the wetwells in both pump stations were severely corroded and at risk of failure. During 2012, SD1 analyzed the rehabilitation of the concrete, in order to extend the life of the pump stations, and work will begin in 2013 to make the immediate improvements that are needed.

2.2.2 River Water Intrusion Mitigation

River water intrusion (RWI) during wet-weather events has the potential to occupy in-line storage volume that would otherwise be available to combined sewers flows. Therefore, controlling river intrusion in the CSO outfalls increases the available storage volume and maximizes storage of wet-weather flows.

SD1's approach to protecting against RWI consists of the installation of duckbill check valves at the outfall pipes of 42 CSOs. Planning for the completion of all these duckbill check valve projects continues to move forward. Additionally, manholes in low lying

areas near the CSO outfalls are sealed, and watertight lids are inspected to ensure proper protection against RWI.

Duckbill Check Valves

As of 2012, 33 CSO outfalls have been retrofitted with duckbill check valves. The rubber duckbill style check valves have either been installed on the end of the existing outfall pipes, or in chambers constructed upstream of the existing outfall, depending on accessibility to the existing end of pipes. In some locations, the headwalls may be replaced or modified to accommodate the check valves.

No new duckbill checks valves were installed during 2012. However, SD1 did perform a major repair of a duckbill check valve on the Ward Street CSO in Bellevue (Structure ID# 0600097). The valve was damaged by high river conditions, which required repairs to the headwall, reattachment of the valve, and removal of river bed sand from the outfall.

Repaired and Sealed Manholes in Low Lying Areas

During 2012, four manholes in low lying areas were repaired and sealed to prevent infiltration of river and ground water. One of the manholes sealed was a diversion (Structure ID# 0630001) that was rehabbed as part of a larger, on-going lining project of a CSO outfall in Newport. The lining project will extend the life of the system upstream of the flood gate and protect against ground water infiltration on the bank of the Ohio River.

Of the three remaining RWI-susceptible manholes addressed in 2012, two in Bellevue and one in Fort Thomas were sealed.

Refer to the O&M data presented in Appendix A for a complete tally of all the manhole repairs made in 2012.

2.3 NMC #3: Review and Modification of Pretreatment Requirements

The purpose of this control is to minimize the impacts of discharges into the CSS from non-domestic sources during wet weather events, and to minimize CSO occurrences by modifying inspection, reporting and oversight procedures within the approved pretreatment program.

Standard Permits

SD1 permitted two new Significant Industrial Users (SIU) during 2012: Kiswel Inc (Categorical Industrial User), and C&B Marine. Neither sites are located within the CSS. With these additions, SD1 had a total of 53 permitted Significant Industrial Users in its collection system as of December 31, 2012. Four previously permitted Significant Industrial Users were removed from the pre-treatment program during 2011.

Compliance Monitoring

SD1 did not issue any short term specialty discharges in 2012.

Enforcement

SD1 issued the following enforcement actions during 2012:

- 39 Notice of Violations, none in the CSS.
- \$13,250 in administrative fines issued with 8 of the Notice of Violations.

Pretreatment Modifications

Louis Trauth Dairy was placed on a compliance schedule in March 2011 for its pH violations. However, prior to making modifications, it ceased production at its Newport location and is now only using the facility for warehousing and distribution. SD1 continued monitoring the location throughout 2012 and found no evidence of further violations. No new pretreatment modifications were required in 2012.

2.4 NMC #4: Maximization of Flow to POTW for Treatment

The purpose of this control is to maximize flow to the treatment plant by making simple modifications to the CSS and treatment plant to enable as much wet weather flow as possible to reach the treatment plant, thereby minimizing the magnitude, frequency, and duration of CSOs that flow untreated into receiving waters.

Dry Creek Wastewater Treatment Plant Improvements

SD1 continued making progress on the additional capacity improvements at the Dry Creek Waste Water Treatment Plant in 2012. These improvements are intended to provide the following benefits:

- Increase in plant screening and grit removal capacity from 75 million gallons per day to 160 million gallons per day. This improvement will remove the current screenings capacity limitation identified in the NMC report dated March 12, 2008 and is consistent with the Watershed Plans long-term strategy to increase the wet weather capacity of the Dry Creek Waste Water Treatment Plant to 160 million gallons per day.
- Equalized flow splits between plant final clarifiers to allow for more consistent operation and accommodate future increases in flow.
- Odor control for solids storage and dewatering.
- Reduce typical year CSO volume by 34 million gallons.

Two projects help to accomplish these goals:

- Project C-401-45 Secondary Clarifier Rehabilitation: This project began in January 2010. All work related to improving the operation, capacity and efficiency of the secondary clarifiers and appurtenances were completed in June of 2012.
- Project C-401-44-1 Headworks, Hydraulics & Odor Control Improvements: This project began in September 2011 and is still under construction. The current construction schedule anticipates this project will reach punch-out phase in the last quarter of 2013. Once complete, flow from the Lakeview Pump Station will be diverted to a newly constructed headworks and will receive preliminary

treatment separate from the existing headworks that will continue to receive flow from the Bromley and Taylorsport Pump Stations.

Bromley Pump Station

SD1 began a condition assessment of Bromley Pump Station in 2012. The study identifies immediate needs, short-term improvements, and long-term improvements that will keep the pump station operational over the next two decades. Condition assessments of the pump station's mechanical equipment, pumps, air conditioning, plumbing, structural integrity, instrumentation, and electrical systems were performed. The findings will be reviewed in 2013, and the deficiencies will be addressed in a master plan that will also include an evaluation of the force main's long-term ability to reliably convey wastewater to the Dry Creek Wastewater Treatment Plant.

2.5 NMC #5: Elimination of CSOs during Dry Weather

The purpose of this control is to ensure overflows do not occur in the CSS during dry weather conditions by implementing measures that focus on proper and efficient collection system operation.

Investigations to Identify Potential Dry Weather Overflow Locations

In conjunction with the routine CSO diversion inspections described in Section 2.1, inspectors visually look for debris and blockages that may trigger a dry weather overflow or would affect the ability of the diversion to maximize the flow entering the interceptor during rainfall. Diversions that are found to have dry weather overflows or have the potential to overflow during dry weather are evaluated in further detail to determine a recommended course of action which, for one time occurrences, may include more frequent monitoring of that diversion and tracking. Diversions where multiple dry weather overflows have occurred are further evaluated for additional actions, which may include:

- Catch basin modifications to reduce solids that may cause dry weather overflow risk at the downstream diversion.
- Permanent modifications to the diversion, such as removing a weir plate, removing the bar rack over the diversion or upsizing the diversion pipe.
- Targeted cleaning upstream or at diversions to address solids deposits.
- More frequent inspections for those with a configuration considered susceptible to dry weather overflow or for previously modified locations to confirm that the issue has been sufficiently addressed.
- Permanent monitoring for early warning at locations where other measures have failed to address the issue.

Dry Weather CSO Inspection Frequency

As mentioned in Section 2.1, SD1 anticipates an adjustment of the CSO inspection schedule in 2013. In accordance with EPA's 1995 Guidance for Nine Minimum Controls for the fifth minimum control, elimination of CSOs during dry weather, historical trends and patterns will be analyzed to determine where inspection frequency adjustments are appropriate. Greater scrutiny will be given to areas of historical dry weather overflows.

Diversions that have never experienced a dry weather overflow, are in good repair, and have no known hydraulic capacity issues, may be inspected less frequently.

Targeted Inspection Effort – LDSAP Diversion

In early 2011, SD1 began a targeted effort to investigate 2,500 feet upstream of each CSO diversion to ensure that any pipes with maintenance or structural deficiencies would be fixed so that dry weather overflows would not occur as a result of pipe defects or accumulated debris. As crews began performing the investigations they were also required to inspect a portion of the sidelines. In doing this, SD1 found that the sidelines were a greater contributor of debris than the mainline pipe upstream of the CSO diversion. Therefore, SD1 revised its planned effort and instead targeted the inspection of all pipes and structures within a 1,000 feet radius of a CSO diversion, excluding the downstream outfall pipes that were inspected in 2010. This revised method has proven to be more effective in maintaining and eliminating debris and structural defects that may have caused a dry weather overflow.

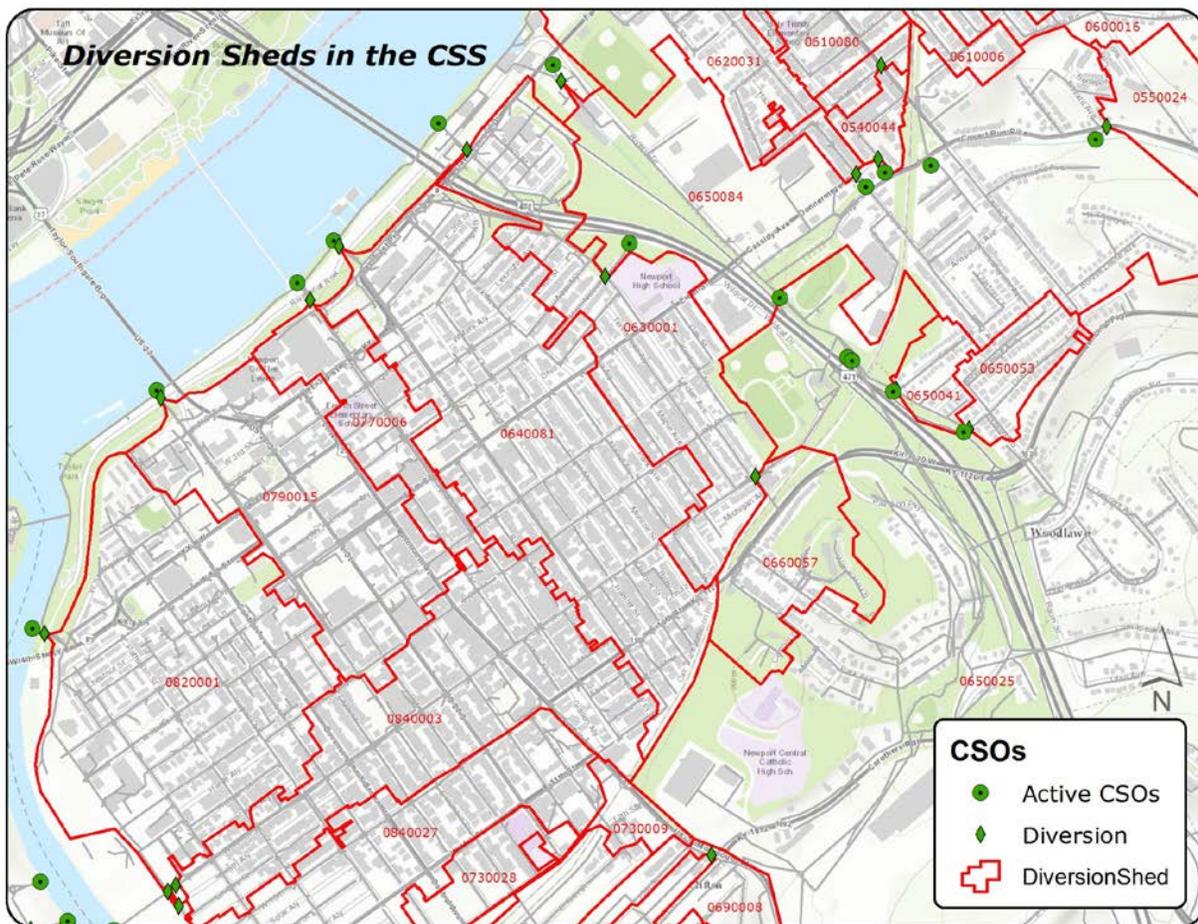
In 2011, SD1 completed the 1,000 feet radius targeted inspection for 30 of the 132 CSO diversions, and completed the remaining 102 CSO diversions in 2012. SD1's CSAP has generated next actions for all of the targeted lines requiring maintenance, which will be addressed throughout 2013. The second round of LDSAP Diversion inspections that are to be completed in 2013, will help SD1 identify where debris quickly returns to the targeted areas. Such areas will be put on a preventative maintenance schedule, and will be reviewed further to ascertain the source of the returning debris. Beyond 2013, SD1 plans to expand the targeted LDSAP Diversion inspection radius approximately 500 feet.

During 2012, this successful method of targeted inspections was formally implemented in SD1's CSAP as a component of the Large Diameter Sewer Assessment Program (LDSAP), called the LDSAP Diversion sub-program. SD1 also delineated the sewer sheds of each CSO diversion in 2012 to assist with the analysis and asset management of the LDSAP Diversion sub-program. Each diversion shed contains critical information that helps manage the LDSAP Diversion sub-program, such as: total upstream LDSAP pipe footage, total upstream pipe footage, known capacity issues, dry-weather overflow occurrences, number of residential and commercial customers in the shed, impervious area totals, land use statistics, and receiving waters.

Mapping of the diversion sheds for the LDSAP Diversion sub-program also assisted in the identification of an additional diversion (Structure ID# 0540055) at the intersection of Taylor Avenue and Retreat Street in Bellevue. This diversion is downstream of approximately 50 residential properties and discharges into Covert Run. The recently added CSO (Structure ID# 0540158) was documented in SD1's Quarterly Report No. 21, submitted on January 30, 2013.

Figure 2.4 on the next page provides an example of the diversion sheds delineated in Newport and Bellevue.

Figure 2.4 Diversion Sheds in the CSS



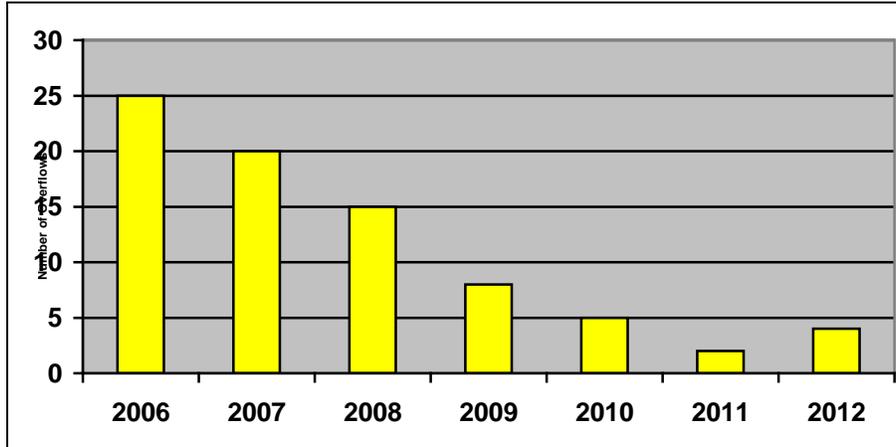
The total footage of pipe inspected and cleaned, and the amount of debris and grit removed as part of the LDSAP Diversion sub-program, is included in the O&M data presented in Appendix A.

Elimination of Dry Weather CSOs

SD1 has continued to make significant progress in eliminating dry weather CSOs, as summarized in Figure 2.5 on the next page.

(This space was intentionally left blank.)

Figure 2.5 Elimination of Dry Weather CSOs (2006 through 2012)



2012 Dry Weather CSO Locations

Figure 2.6 illustrates the locations of the dry-weather CSOs that occurred in 2012. A summary of the four dry-weather CSOs, including the locations, causes of overflows, estimated overflow volumes, and the actions taken to prevent the overflows from reoccurring is provided on the following page in Table 2.1. A more thorough description of the overflow events can be found in SD1’s 2012 quarterly reports submitted to the Cabinet and EPA.

Figure 2.6 Locations of Observed Dry Weather CSOs in 2012

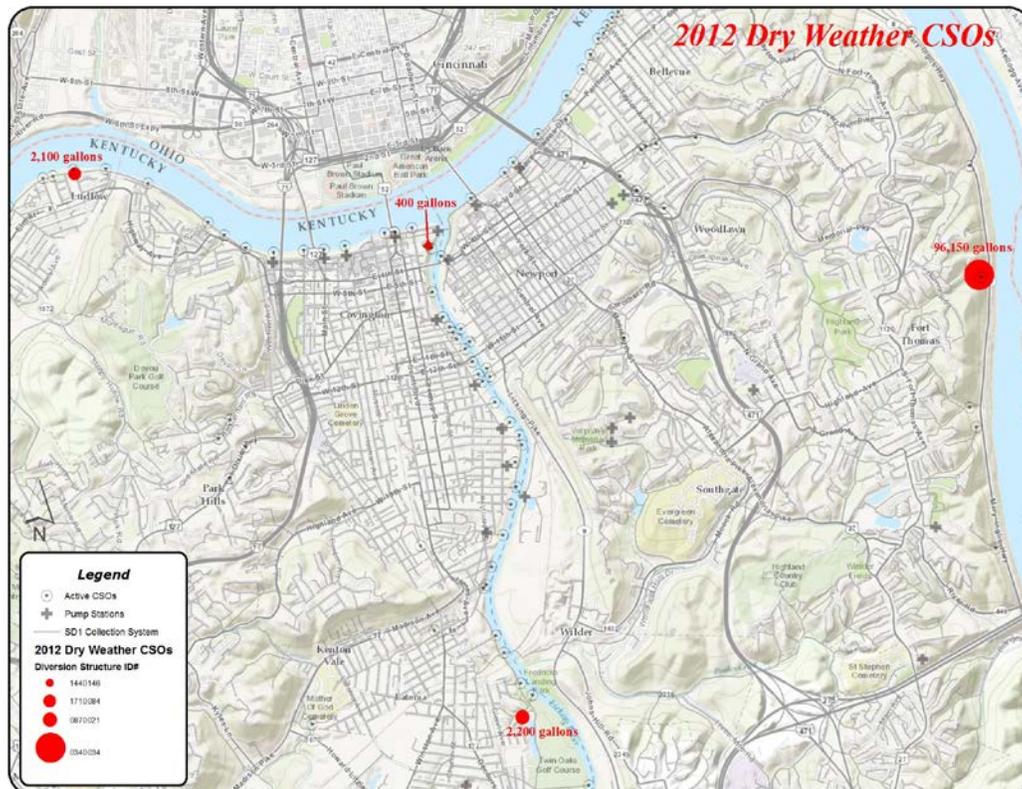


Table 2.1 Summary of Dry Weather CSOs that Occurred in 2012

Structure ID#	Location	Date	Overflow Cause	Estimated Volume	Corrective Action Taken
0870021	East 38 th Street, CSO Diversion	2/6/12	Blockage of Debris	2,200 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. The catch basins in the drainage area were inspected and retrofitted/ replaced with bells to reduce the amount of solids and floatables entering the system. The pipe was re-inspected and reassessed in 6 months as part of CSAP.
0340034	Lester Lane, CSO Diversion	3/14/12	Corrosion of Manhole	96,150 gallons	Bypass pumping was required to make an entry of the manhole. The damaged section of the manhole was sealed and will continue to be regularly inspected as part of SD1's CSO diversion inspection routine.
1440146	Kennedy Street, CSO Diversion	6/19/12	Blockage of Debris	400 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. Debris was also removed from the netbag at the outfall. It was determined that a flat grade of the line contributed to the blockage. The line was put on a more frequent cleaning schedule to prevent future debris.
1710084	Carneal Street, CSO Diversion	12/17/12	Blockage of Debris	2,100 gallons	The debris and roots were cleared from the dry-weather diversion line to return the flow to the pipe. A review of a displaced joint between the dry-weather diversion line and the interceptor determined that rehabilitation is not cost effective at this time. The line will be considered for a more frequent maintenance schedule.

2.6 NMC #6: Control of Solid and Floatable Materials in CSOs

The purpose of this control is to reduce the amount of solid and floatable material discharged to water bodies through wet weather CSOs through the implementation of simple measures such as: baffles, screens, catch basin modifications, and nets.

Catch Basin Modification

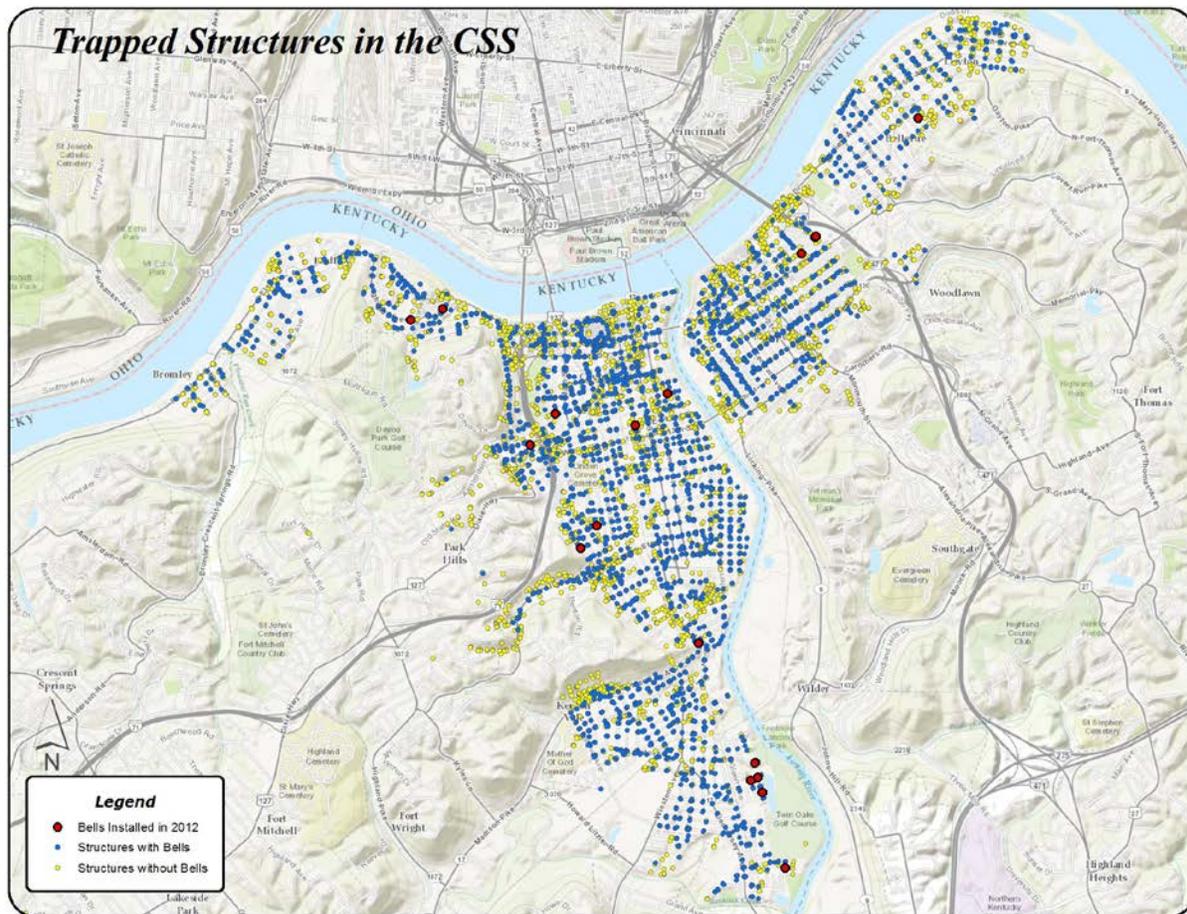
In 2012, SD1 continued retrofitting catch basins with bells and grated inlets as a method of reducing the amount of solid and floatable materials entering the CSS. Catch basin rehabilitation and replacement work are scheduled based on established priority areas upstream of past and recurring dry weather overflows. The following methodology is used to determine which modification is appropriate:

- Catch basins that are in need of structural repair have a bell installed at the time of repair.
- Catch basins that are in need of total rehabilitation are replaced with both grated inlets and bells.
- Catch basins that have no rehabilitation or repair needs but are able to be retrofitted have a bell installed.
- All SD1-owned catch basins in priority areas upstream of recurring dry weather overflows are retrofitted or replaced to have a bell installed. .

From January 1, 2012 to December 31, 2012, SD1 performed 38 catch basin repairs and installed bells at 19 locations. SD1 also replaced 61 catch basins in the CSS. Of the known 5,781 public and private catch basins and inlets in the CSS, currently, 2,665 of the structures are fitted with a trap for solids and floatables control. Figure 2.7 illustrates the general locations of all trapped structures, including the 19 bells installed in 2012.

(This space was intentionally left blank.)

Figure 2.7 Trapped Structures in the CSS



In 2010, SD1 began a targeted disconnection and retrofit of catch basins that discharge directly into CSO diversion manholes (in addition to making catch basin modifications according to the above-described methodology). There were 13 known CSO diversion manholes where these types of catch basin arrangements existed. SD1 implemented projects to disconnect the catch basins from the diversion manhole, retrofit them to trap solids and floatables, and move the flow downstream into the CSO discharge pipe. The improvements effectively removed storm water from the CSS, which reduces CSO volumes and traps the solid and floatable materials before the flow is discharged to a waterway. Of the 13 projects, six were completed in 2010, and five were completed in 2011.

No new disconnection projects were completed in 2012; however, multiple catch basins will be disconnected and rerouted to outfall lines of the Church Street CSO outfalls, as part of the ongoing Church Street CSO reduction project described in Watershed Plans.

A second project that was identified as an opportunity for separation in the Watershed Plans is the Jacob Price revitalization plan in Covington. During 2012, the Jacob Price redevelopment project was in design. Phase one of construction is anticipated to be completed in late 2013, which includes the disconnection of multiple catch basins above

two CSO diversions and reconnection below the diversions on the outfall line. In total, 33 catch basins will be separated, trapped, and rerouted into the Robbins Street and 11th Street CSO outfalls along the Licking River. Figure 2.8 highlights the planned separated catch basins along two city blocks in yellow, and the reconnections to the outfalls between the diversion and the flood wall.

Figure 2.8 Proposed Jacob Price Separation



In-line and End-of-Pipe Controls

SD1’s solids and floatables controls program is summarized in Table 2.2. The program includes 23 controls, including nets at 9 CSOs, a bar rack at one CSO, and weirs or baffles at 1 CSOs. The engineered solids and floatables control baffle chambers at Greenup Street, Main Street, McKinney Street and Garrard Street also include sumps to capture grit and other heavy solids.

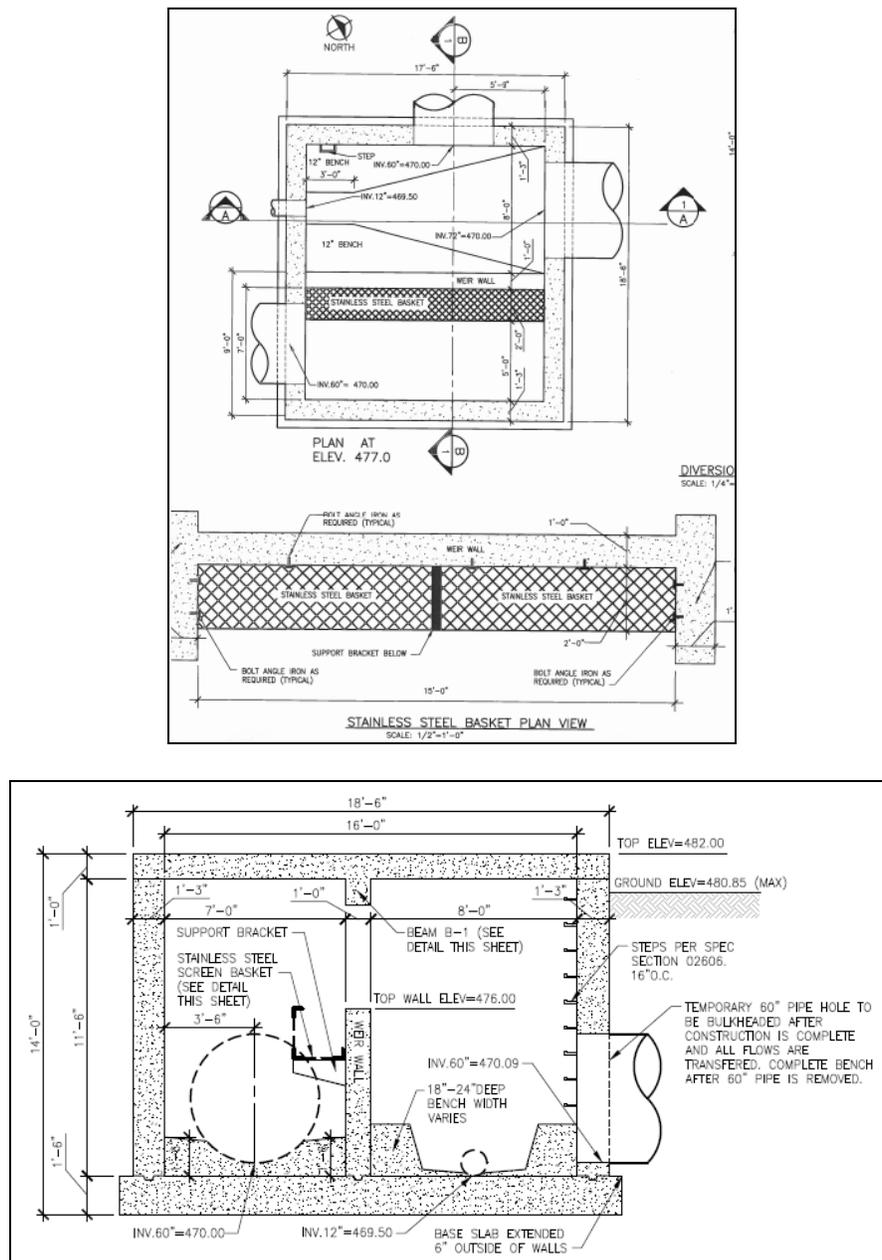
During 2012, no new end-of-pipe solids and floatables control projects were completed. Regular maintenance of the existing controls, such as baffle chamber cleanings and net replacements, were performed on an as-needed basis in response to the regular CSO diversion inspections outlined in Section 2.1.

Table 2.2 Current Solids and Floatables Control Program

CSO/Diversion	Name	Type of Control	Status
0030031	Carmel Manor	Black Net	Installed
0200069	617 Mary Ingles	Green Net	Installed
0330100	Tower Hill	Green Net	Installed
0340050	Lester Ln.	Black Net	Installed
0340051	Manor Lane	Green Net	Installed
0360079	Anchor Inn	Black Net	Installed
0570011	McKinney Street	Engineered S&F Control Baffle Chamber w/Bar Rack Above Baffle	Installed
0570030	Main Street	Engineered S&F Control Baffle Chamber w/Bar Rack Above Baffle	Installed
0650041	Geiger Avenue	Type "B" Bar Rack	Installed
0650098	Wildcat Run	Black Net	Installed
0770006	Saratoga Street	Weir	Installed
0910005	Oakland Avenue	Weir	Installed
0910084	Meiken/Eastern	Black Net	Installed
0930026	17th Street	Baffle	Installed
0930050	19th St.	Baffle	Installed
0930066	19th St.	Weir and baffle	Installed
0650084	Taylor Bottoms	Baffle	Installed
1420043	10th Street	Baffle	Installed
1440121	Greenup Street	Engineered S&F Control Nutrient Separating Baffle Box (solids sump, screen and baffle)	Installed
1440156	Garrard Street	Engineered S&F Control Baffle Chamber (solids sump, screen and baffle)	Installed
1490172	Swain Court	Black Net	Installed
1710003	Adela Street	Weir and baffle	In-progress
1850158	Church Street	Weir and screen	In-progress

The Church Street project was under design in 2012, and construction is anticipated to begin in the last quarter of 2013. The updated draft Church Street solids and floatables control structure is shown in Figure 2.9.

Figure 2.9 Draft Church Street Floatables Control Structure



2.7 NMC #7: Pollution Prevention

The purpose of this control is to minimize various forms of pollution from entering into the CSS, and compromising the water quality of the receiving water body and/or SD1's conveyance and treatment infrastructure. As the Northern Kentucky regional storm water agency, many components of SD1's approach to pollution prevention is implemented as required by EPA National Pollutant Discharge Elimination System Phase II MS4 regulations and reported in SD1's storm water annual reports. In that

regard, SD1 uses a wide-ranging approach to pollution prevention from public education and programmatic initiatives to physical efforts such as street sweeping and catch basin cleaning.

SD1 collected approximately 465 cubic yards of debris from catch basin cleaning activities in 2012. In addition, street sweeping operations occur on a regular basis by 21 communities throughout SD1's service area, and range in frequency from annually to weekly, depending on the city/county.

The following sections describe some of the other major activities that demonstrate SD1's continued commitment to this minimum control.

2.7.1 Public Education Programs

Public Service Park

Dedicated to those who enhance Northern Kentucky's quality of life through public service, Public Service Park is an example of SD1's leadership in water pollution prevention practices, also known as best management practices. The park is an aggressive approach to empower and educate the public on the vital importance of protecting the waterways for future generations. Featuring storm water best management practices, a wide range of green infrastructure, and cutting edge public educational programming, Public Service Park is targeted at all audiences ranging from the development community, to students, to the general public who can follow a self-guided tour.

SD1 conducted 24 adult Public Service Park tours, with 354 participants in 2012. These tours included members from Morehead State University, University of Cincinnati, City of Columbus Division of Sewer and Drainage, Kentucky Farm Bureau, Montgomery County Environmental Services (Ohio), Cincinnati Area Professional Green Infrastructure Group, Miami University Institute of Environment and Sustainability, Northern Kentucky University and Huntington, West Virginia Sewer Utility..

In addition to the adult tours, SD1 conducted 27 field trips for local elementary schools at SD1's Public Service Park. These field trips are an optional extension of the elementary storm water and watershed curriculum that SD1 has developed that is taught in over 60 Northern Kentucky schools. In 2012, 1,776 students attended a field trip at Public Service Park. Groups attending field trips included students from public, private and independent schools as well as home school groups and scout troops.

Classroom Presentations

SD1 is committed to empowering students to protect the environment and has reached many students this year through interactive school presentations. SD1 uses an interactive model called the Enviroscape to teach the negative impact of polluted storm water runoff on local waterways. During 2012, 66 Enviroscape lessons were taught in 27 schools, which reached over 1,600 students.

Public Presentations

During 2012, SD1 participated in 24 storm water education events that reached approximately 2,250 students and adults.

Printed Publications

SD1 continued to focus public education and outreach efforts on the region’s pollutants of concern, which include: bacteria, nutrients and sediment. In July of 2012, SD1 sent a “Practicing Healthy Household Habits” bill insert (see Figure 2.10) to approximately 100,000 Northern Kentucky customer accounts. In addition, this bill insert was sent to all MS4 co-permittees to be displayed and distributed at municipal administration buildings. The bill inserts contained information regarding healthy household habits that residents can practice to protect the quality of Northern Kentucky’s waterways. Healthy household habits were provided for vehicle and garage maintenance, home repairs, pet care, and lawn care. Information included in this bill insert was also included on SD1’s website and featured as a website flash story on the homepage.

Figure 2.10 Healthy Household Habits – Bill Insert

PRACTICING HEALTHY HOUSEHOLD HABITS

VEHICLE AND GARAGE

- ▶ Wash your car on your lawn or another unpaved surface, or visit a commercial carwash facility to reduce the amount of dirty, soapy water flowing into the storm drains.
- ▶ Check your car, boat, motorcycle, machinery and other equipment for leaks and spills often, and make repairs immediately. Clean up any spills with an absorbent material like kitty litter or sand, and don't rinse spills into a nearby storm drain.
- ▶ If you change the oil in your vehicle at home, recycle the used oil at participating service stations. NEVER dump used oil or other fluids down a storm drain or dispose of them in your trash.

HOME REPAIR

- ▶ Sweep up and properly dispose of construction debris like concrete and mortar.
- ▶ Clean paint brushes in a sink, not outdoors. If using paint thinner to clean your paint brushes, set the used thinner aside in a closed jar to settle paint particles. Then, pour off the clear liquid for future use and dispose of the residue as a hazardous waste.
- ▶ Properly dispose of unused paint through a household hazardous waste collection program, or donate to local organizations.

LAWN AND GARDEN

- ▶ Use pesticides and fertilizers sparingly, and follow the label to apply only the recommended amounts. If fertilizers and pesticides are applied too heavily, excess nutrients and chemicals are left in the soil and can be washed into local waterbodies.
- ▶ Incorporate native grasses and plants into your landscaping that are adapted to the local environment and are less likely to need supplemental nutrients.
- ▶ After working on your lawn, sweep up yard debris instead of hosing down the area.

PET CARE

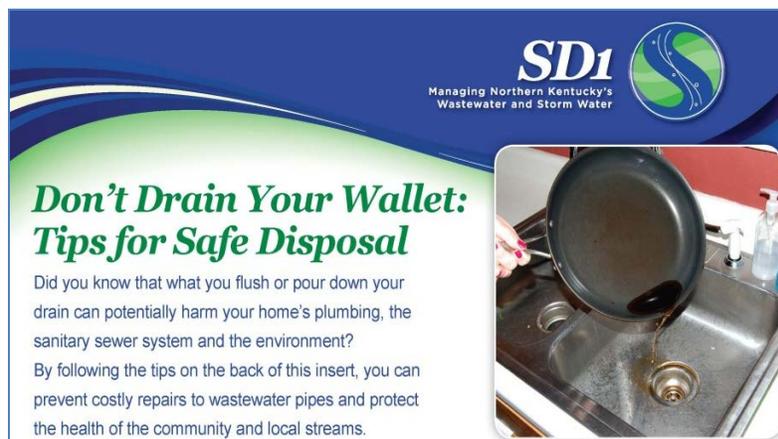
Bacteria from pet and animal waste constitute a major pollutant of concern in Northern Kentucky’s waterways. While we cannot control the waste that comes from wildlife, we can control the environmental impact of our pet waste. When walking your pet, remember to pick up waste and dispose of it in a trash receptacle.

For more information, visit our website at www.SD1.org, email info@sd1.org or call SD1’s Storm Water Hotline at 859-578-6745.

For proper disposal methods of household chemicals or for community recycling event details, visit www.nkyhhw.org.

Additionally, SD1 developed the “Don’t Drain Your Wallet: Tips for Safe Disposal” bill insert (see Figure 2.11) which was distributed to Northern Kentucky residents in November, 2012. This insert contained information about proper disposal of household grease, personal hygiene products, and household chemicals to prevent damage to the sanitary, storm, and combined sewer systems. Tips on this insert were developed to help prevent costly repairs to the collection system and protect the health of local streams. This insert was also distributed to all co-permittees for distribution and display at municipal administration buildings.

Figure 2.11 Don’t Drain Your Wallet: Tips for Safe Disposal – Bill Insert



2.7.2 Land Disturbance/Sediment and Erosion Control

SD1's Storm Water Rules and Regulations established a land disturbance permit process, which is applicable for any land disturbance activity greater than or equal to one acre that occurs within the storm water service area. All construction activities within SD1's service area that disturb one acre of land or more in the separate system, or an area of 10,000 square feet or more in the combined system, now receive a permit from SD1 prior to the commencement of the activity. SD1's plan review process includes examination of storm water runoff from construction sites and post-construction storm water management for new developments and re-developments. Appropriate best management practices must be cited and installed properly for plans to be approved.

Post-construction storm water runoff treatment controls are required in the separate storm sewer system, as well as the combined sewer system to reduce the pollution associated with the storm water runoff. Property owners are required to enter into a long term maintenance agreement for post-construction water quality and volume reduction controls.

During 2012, SD1 issued 53 Land Disturbance Permits, 35 Grading Permits, and 1 Clearing Permit. SD1 also conducted approximately 3,000 inspections of 150 construction sites.

2.7.3 Sponsored Events

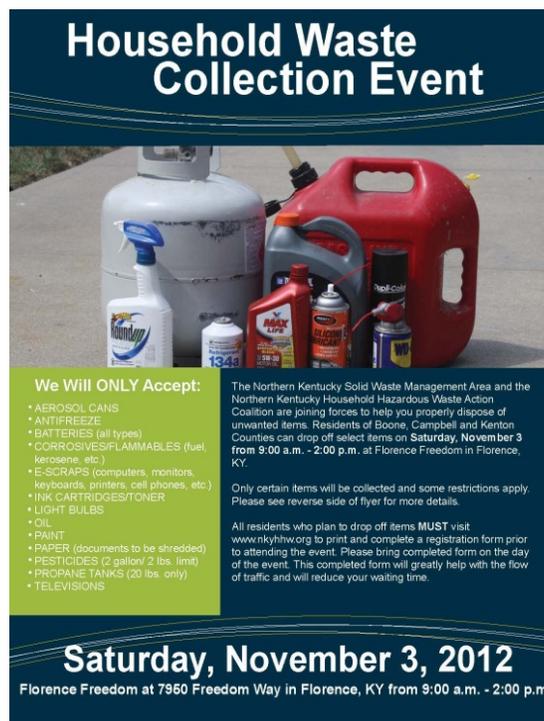
SD1 continues its partnership with the Northern Kentucky Household Hazardous Waste Action Coalition. This unique coalition is comprised of local governments and organizations and is sponsored by area businesses. SD1 serves as the chair of the coalition, which meets about once a quarter.

As a way to inform the public about the proper disposal methods of household hazardous waste, SD1 worked with the Household Hazardous Waste Action Coalition to form and, more importantly, promote the website www.nkyhhw.org. The website provides viewers with disposal and recycling methods for household items, especially those considered hazardous waste. By informing people of how to properly dispose of the waste, SD1 can work towards eliminating the illicit discharges associated with illegal and improper dumping.

Household Hazardous Waste Collection Event

A household hazardous waste collection event for the residents of Boone, Campbell and Kenton counties was held November 3, 2012. This event was promoted through various media outlets including: websites, flyers, an advertisement placed in the community newspapers, a column in the quarterly community publication What's Happening, and a press release distributed to local TV news stations. More than 1,200 citizens participated in the event. Participants dropped off items such as: antifreeze, oil, lead acid batteries, paint, solvents, pesticides, electronics, fluorescent light bulbs, propane tanks, etc. A sample flyer from the event is provided in Figure 2.12.

Figure 2.12 Household Waste Collection Event Flyer



River Sweep Event

SD1 once again sponsored Ohio River Valley Water Sanitation Commission's (ORSANCO) annual River Sweep event, which took place on June 16, 2012. More than 20,000 volunteers from public organizations, civic groups, recreational clubs and the general public in six states bordering the Ohio River came together to collect more than 20,000 tons of trash and other debris from the banks of the Ohio River and its tributaries.

2.8 NMC #8: Public Notification

The purpose of this control is to reduce exposure to potential health risks caused by CSOs by informing the public of the location of CSOs, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities curtailed as a result of CSOs.

SD1 maintains warning signage posted near CSO outfalls and public education signs located near public access to water to warn about unsafe conditions during and after rainfall events. In addition, SD1 has continued to issue email wet-weather advisories to alert those who requested to be on the distribution list that weather conditions could potentially cause a CSO. There are approximately 140 individuals on the distribution list, which includes members of the general public, Northern Kentucky community leaders, local Water Districts, and SD1's Watershed Community Council members. Individuals can sign up to receive this e-mail notification by filling out a request form on SD1's website or by e-mailing a request to info@sd1.org. During 2012, email notifications were sent to this group on 19 occasions. SD1's website also includes other overflow related information.

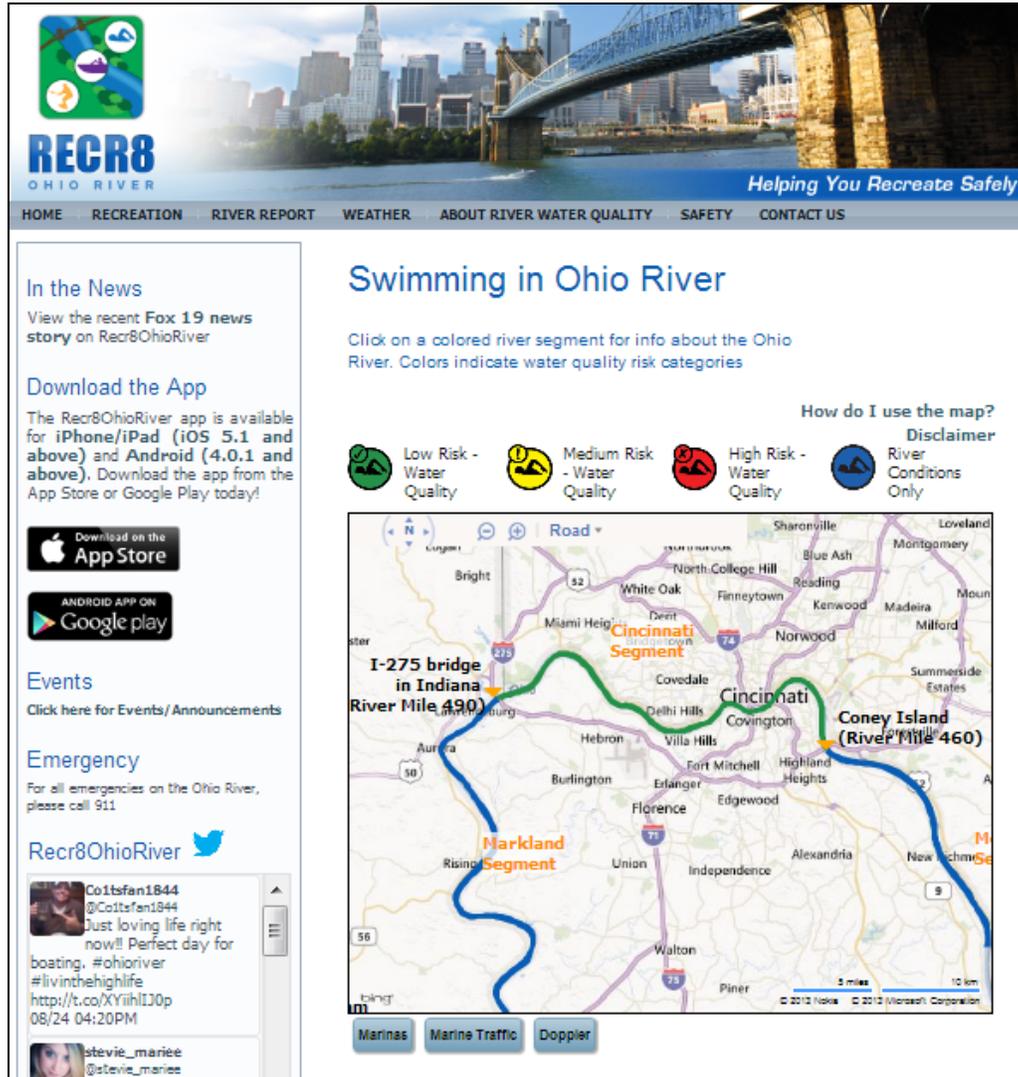
Recreational Management Tool

SD1 has continued developing the Recr8OhioRiver website and application with Cincinnati Metropolitan Sewer District and the ORSANCO. These tools are now fully functional, and the main website has been made available to inform the public about water quality. Recr8OhioRiver provides predicted bacteria counts (*E.coli*) on sections of the Ohio River, based upon historical monitoring and modeling that has been conducted by the three agencies. Giving the public access to this information in real-time, especially during and after extreme wet weather when CSOs may be active, allows them to make a more informed decision on whether or not they choose to recreate on the Ohio River.

SD1 is currently evaluating if social media is a proper forum for public notification of CSO risks. The Recr8OhioRiver application and website can be integrated with social media feeds, which could provide SD1 with the capability of making public notifications to smart phone and tablet users that do not rely on conventional methods of electronic communication such as email. Development of this strategy will be expanded upon in future reports.

Figure 2.12 demonstrates an example of Recr8OhioRiver's predicted conditions for swimming in the river. The website can be found at www.recr8ohioriver.org.

Figure 2.13 Recr8OhioRiver Website



2.9 NMC #9: Monitoring to Characterize CSO Impacts

The purpose of this control is to determine the occurrence and apparent impacts of CSOs through visual inspections and other simple methods, to gain an understanding on overflow occurrences and water quality problems that reflect use impairments caused by CSOs. Changes in such occurrences can provide a preliminary indication of the effectiveness of the NMC.

Field Inspections and Flow Monitoring

During 2008, SD1 completed the development of a highly calibrated system-wide hydraulic model to be used as an accurate planning tool for capital improvements and to provide information about the current performance of SD1's system. To ensure that the hydraulic models continue to maintain and provide the most accurate information about

the systems' performance, SD1's wet weather investigation group's SSO and CSO investigation crews continue to perform routine inspections during and after rain events.

As described previously, SD1's CSO investigation crew regularly inspects each CSO outfall and its associated diversions once per week, as well as after wet-weather events that produce at least half an inch of rain. The solids & floatables controls associated with CSO diversions and outfalls are inspected routinely, as a part of the regular CSO inspections. The solids and floatable controls are cleaned on an as-needed basis. These inspections and cleanings are not only performed to ensure proper operation and maintenance of the diversions as described in Section 2.1, but are also to support characterization and verification of the collection system models. Information gathered from diversion inspections is collected and stored in Lucity, which is then used to characterize the activity of CSOs during wet weather and identify the location of dry-weather overflows and the measures needed to eliminate them from reoccurring.

These efforts are part of SD1's on-going process of verifying the model results against actual field conditions through monitoring and observation. Over time, these field verifications will continue to improve the model as appropriate to better reflect any discrepancies found with observed conditions.

In addition, SD1's flow monitoring crews are involved in a number of monitoring efforts to collect data in specific areas of the collection system to confirm model predictions, to identify and confirm areas that are suspected to have high inflow and infiltration (I/I), and to collect pre and post construction monitoring data in improvement projects areas.

SD1 actively maintains approximately 60 flow meters in the collection system, throughout the year. During 2012, flow monitoring crews deployed 18 flow meters in the CSS, of which 13 were used to investigate capacity issues and 5 were used for post-construction monitoring. The map provided in Appendix B highlights the monitoring locations across the entire SD1 service area in 2012.

(This page intentionally left blank for double-sided printing.)

APPENDIX A:

O&M and Repair Work (2008 through 2012)

(This page intentionally left blank for double-sided printing.)

O&M and Repair Work (2008 through 2012)

Activity	2008	2009	2010	2011	2012	Total
Combined System Structures						
Catch Basins Cleanings	1,211	888	787	1,392	1,431	5,709
Catch Basin Cleaning (Yards of Debris Removed)	N/A	427	469	525	465	1,886
Catch Basin Inspections	2,057	3,328	4,070	4,125	3,750	17,330
New Catch Basin Installation	0	5	2	2	0	9
Catch Basins Replaced	159	224	140	90	61	674
Catch Basins Repaired	128	65	78	211	38	520
Grit Pit Cleaning (Yards of Debris Removed)	358	439	355	365	415	1,932
Manholes						
Manhole Inspections	5,985	4,688	1,254	1,841	814	14,582
Manholes Repaired	485	332	320	656*	407	1,544
Manholes Replaced	55	59	96	30	38	278
New Manholes Installed	26	53	39	50	49	217
Sewer Cleaning						
Sewer Lines Cleaned – Feet (Length of Pipe)	706,441	530,303	451,877	375,303	462,281	2,526,205
Sewer Inspection						
Sewer Line Initial Inspection - Feet	1,126,198	855,962	463,299	504,488	623,277	3,573,224
Sewer Line Follow-up Inspection – Feet	288,605	555,856	631,781	473,996	581,711	2,531,949
Sewer Lines Inspected - Total Feet	1,414,803	1,411,818	1,095,080	978,484	1,204,988	6,105,173
Sewer Line Rehab/Replacement Stats						
Sewer Lines Rehabilitated (CIPP) - Feet	953	2,251	29,528	84,717	51,100	168,549
Sewer Lines Repaired/Replaced - Feet	18,442	17,658	27,157	11,392	31,391	106,040
Misc. Sewer Line Repairs - Count	45	40	8	9	15	117

*2011 Manholes Repaired total has been revised to include manholes that were sealed and grouted as part of a contract.

(This page intentionally left blank for double-sided printing.)

APPENDIX B:
Flow Monitoring Locations

(This page intentionally left blank for double-sided printing.)

Flow Meter Classification

Legend

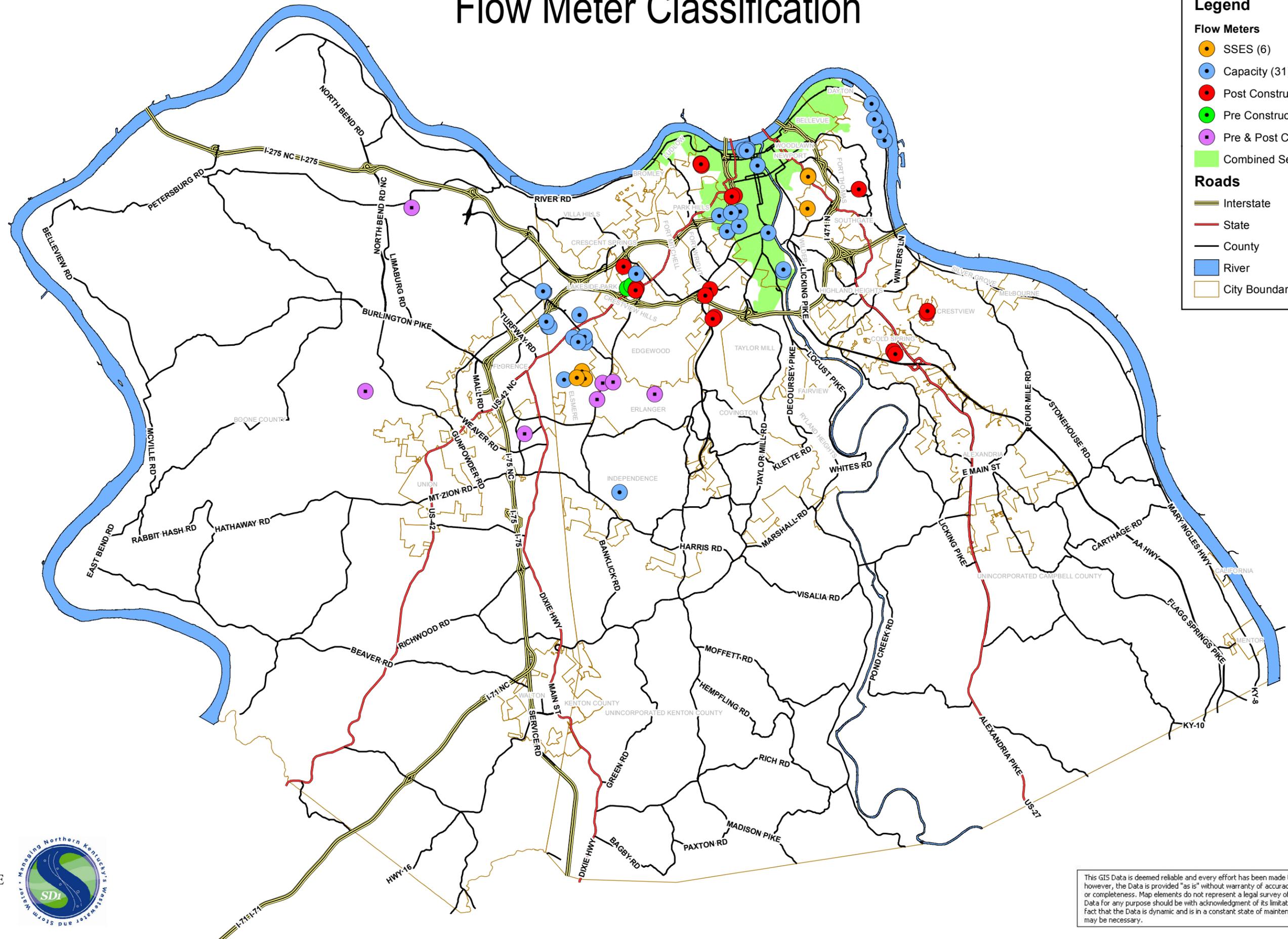
Flow Meters

- SSES (6)
- Capacity (31)
- Post Construction (17)
- Pre Construction (3)
- Pre & Post Construction (7)

Combined Sewer System

Roads

- Interstate
- State
- County
- River
- City Boundary



This GIS Data is deemed reliable and every effort has been made to ensure accuracy; however, the Data is provided "as is" without warranty of accuracy, timeliness, reliability or completeness. Map elements do not represent a legal survey of the land. Use of this Data for any purpose should be with acknowledgment of its limitations, including the fact that the Data is dynamic and is in a constant state of maintenance. Field investigation may be necessary.