



September 4, 2014

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300 Fair Oaks Lane
Frankfort, KY 40601

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Environmental and Natural Resources Division
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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).

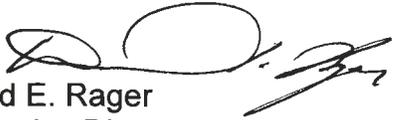
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September 4, 2014

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

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. E. Rager", written over a horizontal line.

David E. Rager
Executive Director

DER/wck
Enclosures

Sanitation District No. 1
September 4, 2014

Nine Minimum Controls 2014 Annual Compliance Report

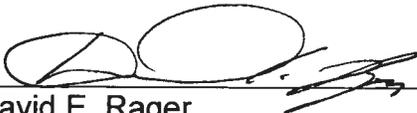


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CERTIFICATION

Nine Minimum Controls 2014 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



Date

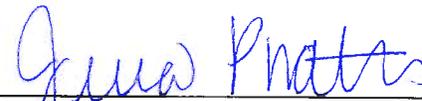
COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 3rd day of September, 2014 by David E. Rager, Executive Director of Sanitation District. No. 1.





NOTARY PUBLIC
Kenton County, Kentucky

My commission expires: 5/3/2016

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NINE MINIMUM CONTROLS 2014 ANNUAL COMPLIANCE REPORT

September 4, 2014



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

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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
KYTC	Kentucky Transportation Cabinet
MACP	Manhole Assessment Certification Program
MS4	Municipal Separate Storm Sewer System
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
SIU	Significant Industrial User
S&F	Solids and Floatables

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 approval of the NMC Compliance Report. The enclosed report serves as the sixth annual report to demonstrate SD1's continued implementation of the NMCs, from January 1, 2013 to December 31, 2013.

SECTION 2. NINE MINIMUM CONTROLS

The following sections present detailed descriptions of SD1's continued compliance efforts during 2013. 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 Lucity. 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 Lucity recordkeeping.

2.1.1 Information Management Tools

In 2013, SD1 continued improving its computerized maintenance management system, Lucity, by customizing inspection and inventory modules for catch basin inspections. The customizations accommodate new data collection efforts to eventually implement standardized Manhole Assessment Certification Program (MACP) ratings. SD1 has initiated a new inspection routine on CSS catch basins to assess their drainage functionality and effectiveness, relative to the existing street grades and any resurfacing projects by the cities. More information on this new inspection program is provided in the next section. Additional MACP rating systems are currently being developed and will be tracked in Lucity in the future.

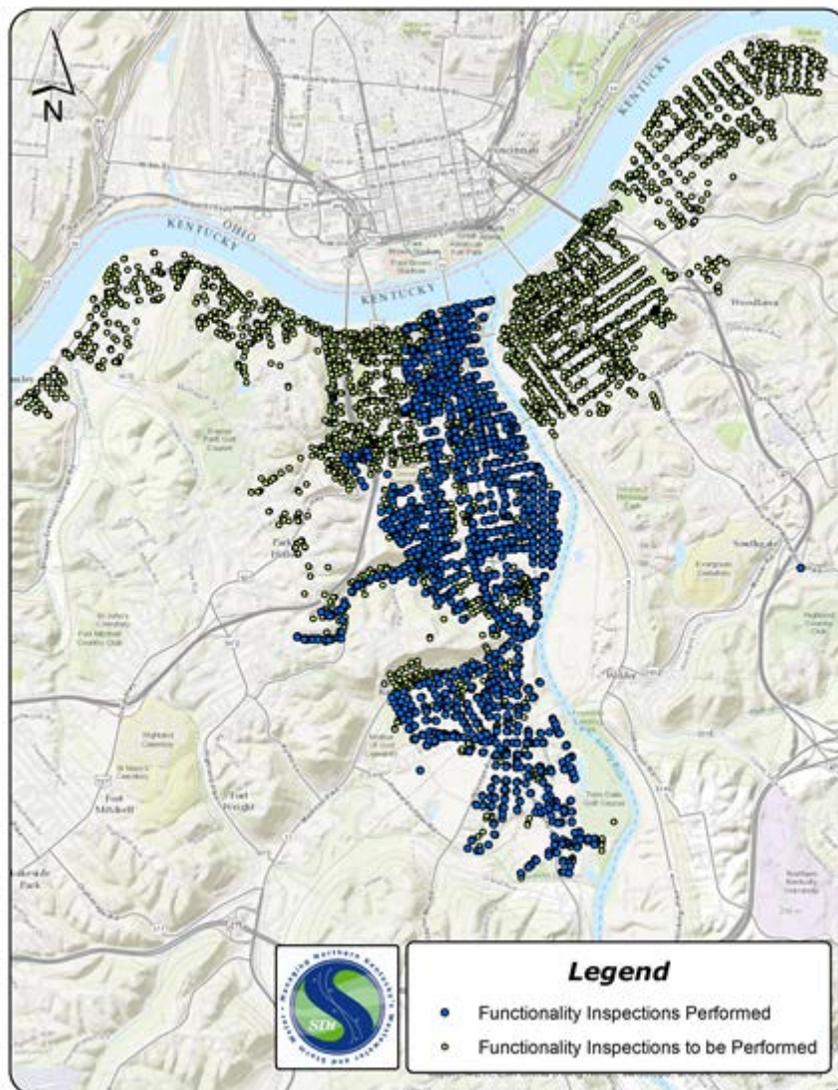
2.1.2 Asset Operation and Maintenance

Catch Basin Ratings

As described above, the new catch basin inspection parameters indicate the effectiveness of street drainage. Annual inspections on all public CSS catch basins to document condition and maintenance needs continue to be performed, in accordance with SD1's NMC program. The new catch basin inspection program initiated in 2013 supplements the regular annual inspections, to provide more in-depth functionality

ratings beyond structural and maintenance conditions. The new inspection parameters include: road slope, slope from centerline to catch basin, curb heights, throat dimensions, positions of the catch basin relative to the gutter, road width, grating size, debris accumulation in the street, and overall functionality rating scores. The new data being collected helps SD1 better inform municipalities of the effects of their resurfacing and street sweeping programs, which minimizes recurring flooding problems and debris build up. To date, SD1 has performed 2,003 inspections to rate 1,873 catch basins. Figure 2.1 illustrates where catch basin rating inspections have been performed.

Figure 2.1 Catch Basin Functionality Inspections Performed since 2013

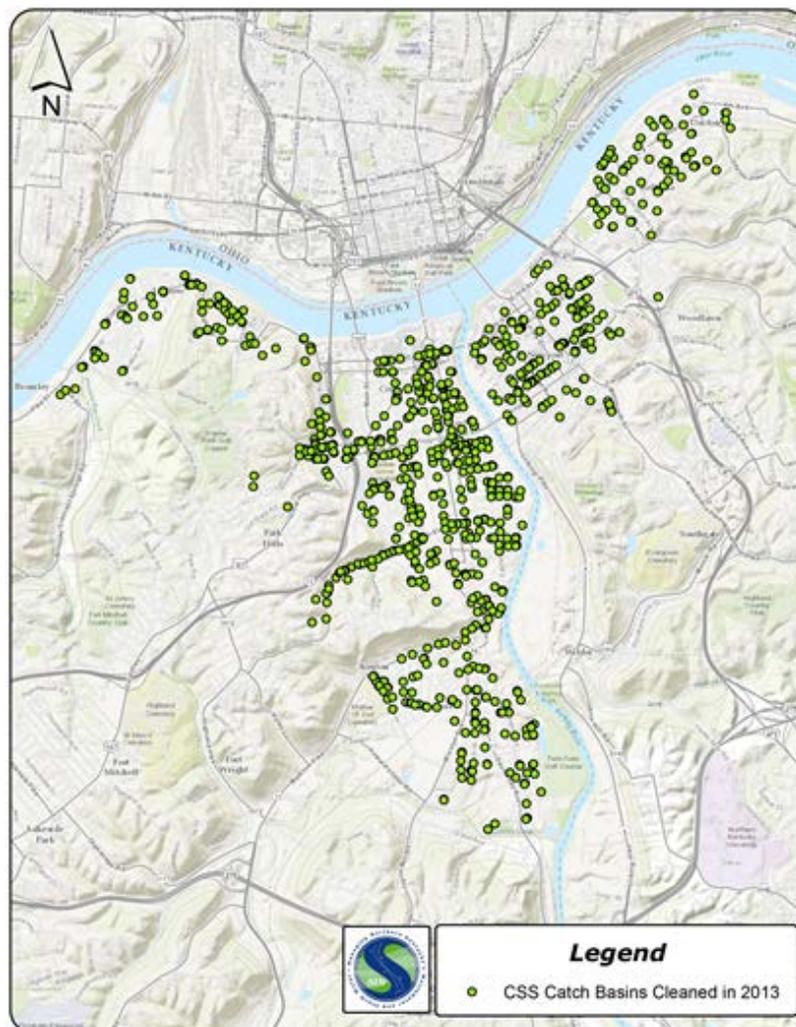


Catch Basin Inspection and Maintenance

SD1-Owned Catch Basins

SD1 performed 4,072 inspections of its own CSS drainage structures during 2013, and performed approximately 1,393 cleanings at approximately 890 locations. Figure 2.2 displays the approximate 890 locations that were cleaned during 2013. SD1 continually reviews its collected inspection data to adjust maintenance strategies and keep catch basins clean. All public catch basins are inspected at least once each year and cleaned on an as-needed basis. In addition to the as-needed cleanings, crews continue to clean a targeted group of catch basins with specific preventive maintenance schedules that have proven to be effective.

Figure 2.2 Locations of CSS Catch Basin Cleanings in 2013



Private-Owned Catch Basins

During 2013, SD1 conducted approximately 20 inspections of privately owned catch basins. Additionally, SD1 performed 24 inspections on newly discovered catch basins where ownership is not yet determined. 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.

KYTC-Owned Catch Basins

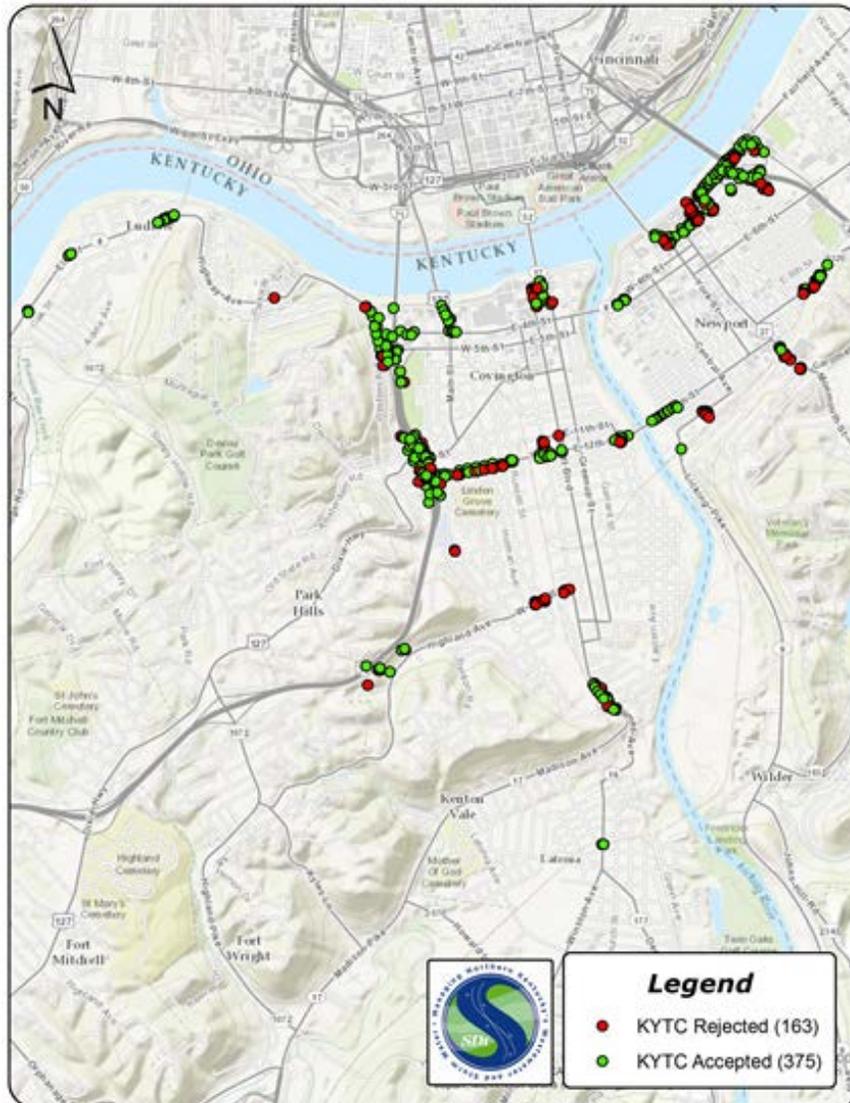
SD1 and the Kentucky Transportation Cabinet (KYTC) has made significant progress confirming the ownership and maintenance responsibilities of approximately 538 drainage structures, in the cities of Covington, Ludlow, and Newport. KYTC installed the majority of these structures, but only acknowledges ownership of structures in the right-of-way of state routes. Formal documentation of asset transfers from KYTC to the cities or SD1 is not available, which has made ownership and maintenance responsibilities unclear.

A series of meetings between the two agencies in 2013 resolved ownership for approximately 70 percent of the structures. KYTC has acknowledged ownership and maintenance responsibility for 375 structures and rejected ownership of 163 structures. While SD1 has not formally accepted the responsibility of the KYTC-rejected structures, annual inspections and as-needed maintenance will be performed on them, as a courtesy to the community, until ownership is finalized. Additionally, SD1 has provided KYTC with a set of maps and databases that indicate maintenance and rehabilitation needs for the confirmed 375 KYTC-owned structures. SD1 recommended repair for 52 and cleaning for 97 KYTC-owned structures.

In 2013, SD1 inspected 11 of the structures that KYTC has accepted ownership of, and all 163 structures that are still under review. Figure 2.3 illustrates the locations of all 375 KYTC-owned structures, as well as the 163 still to be determined..

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Figure 2.3 Drainage Structures Owned by KYTC in the CSS



Diversion and CSO Outfall Inspection and Maintenance

SD1 regularly inspects each diversion and the associated CSO outfall on a weekly or bi-weekly basis, as well as after every wet-weather event that exceeds half of an inch of rain. Cleanings are performed on an as-needed basis at the locations that have solids and floatables controls installed at the diversion manhole or the outfall (see NMC #6 for further details on SD1’s solids and floatables program).

Throughout 2013, SD1 performed approximately 7,330 inspections at 133 CSO diversions. Approximately 50 percent of the inspections performed were during dry

weather, 47 percent were performed within 48 hours of a wet-weather or high-river event, and 3 percent were performed during wet weather. The information gathered from these inspections is used to identify and respond to conditions that may lead to dry-weather overflows. The data is also used to verify the accuracy of wet-weather CSO statistics predicted by SD1's hydraulic model.

SD1 made a minor modification to the dry-weather inspection frequency of some CSO diversions in 2013 (described in further detail 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

Willow Run Combined Sewer Master Plan

SD1 is currently initiating a Master Plan of the Willow Run sewershed that will include a feasibility study of a new dynamic weir facility, and determine potential in-line storage gains. The Master Plan will provide a 20-to-40-year roadmap that details needed activities, projects, and costs to reduce overflows within the Willow Run drainage area. The study will confirm, revise, and add further detail to the previous planning work SD1 conducted in the development of the Watershed Plans for Northern Kentucky. The following are key objectives to the study:

- Develop an overall long-term plan that achieves SD1's desired performance metrics for the Willow Run drainage basin (i.e. CSO volume reduction goals, Level of Service goals in sewer system).
- Update existing project plans and develop additional opportunities to meet the desired performance metrics based on new data available from post construction monitoring for completed projects, incorporate current information regarding the Brent Spence Bridge impacts, and other factors.

- Develop alternatives and a negotiating framework for expanding the potential future drainage system for the Brent Spence Bridge Realignment to mitigate CSO volumes from the entire Willow Run drainage basin.
- Support SD1's coordination with the Kentucky Transportation Cabinet (KYTC) regarding potential impacts and upgrades for the Willow Run Flood Station in conjunction with the Brent Spence Bridge project.
- Develop projects that address surface flooding and basement backups in the Willow Run drainage basin, which includes the City of Covington.
- Develop an implementation strategy for the recommended projects, including a prioritization list, and a schedule.

Church Street CSO Reduction Project

Construction began on the Church Street CSO Reduction Project in 2013. The project includes upsizing of the existing 1,700 feet of 36-inch and 48-inch pipe to 72 inches, a new diversion chamber with solids and floatable control, and targeted catch basin disconnections. With the completion of the project in 2014, SD1 anticipates to reduce CSO from 57.6 million gallons to approximately 25 million gallons in a typical year. More information about the Church Street CSO Project is included in Section 2.6 NMC #6.

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. 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

SD1 continues installing duckbill check valves for the RWI mitigation program as funding is available. 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.

Repaired Manholes in Low Lying Areas

In 2013, SD1 continued to make repairs to structures in low lying areas along the rivers to prevent infiltration of river water. One such repair was along the Ohio River in the City of Ludlow, where a barge knocked off the top section of a manhole while the river was up and exposed the 60-inch interceptor sewer to RWI (see Figure 2.4). Asset damage from barge traffic during high river events is a challenging problem that SD1 continues to look for ways to best mitigate the associated risks. In some cases, large markers are installed to increase the visibility of the structures. Another option is to modify or relocate structures to avoid further damage. In this case, the manhole frame was reset and lowered to be flush with the river bank, and a watertight lid was installed.

Figure 2.4 Interceptor Manhole Repaired After Barge Damage



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 Angstrom Technologies and Magnatech as new Significant Industrial Users (SIU), during 2013. Neither site is located within the CSS. With these additions, SD1 had a total of 54 permitted Significant Industrial Users in its collection system as of December 31, 2013. Duro Bag, an SIU in the CSS, has ceased operations and is no longer discharging.

Wet Weather Permit Conditions

Four SIUs have special conditions in their permits, requiring zero discharges during wet weather, due to their locations within the CSS. SD1 conducts an annual surprise inspection during wet weather to ensure that the SIUs are in compliance with their permits. In 2013, no SIU in the CSS was found to be discharging during wet weather.

The four current SIUs in the CSS with special conditions in their permits are:

Imperial Sugar Company – Ludlow

Louis Trauth Dairy – Newport

McGinnis Incorporated – Ludlow

Newport Aquarium - Newport

Compliance Monitoring

In 2013, one special short term discharge permit was issued to Speedway in the City of Erlanger.

Enforcement

SD1 issued the following enforcement actions during 2013:

- 56 Notice of Violations, none in the CSS.
- \$8,000 in administrative fines issued with 4 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 in 2012 and is now only using the facility for warehousing and distribution. SD1 continued monitoring the location throughout 2013 and found no evidence of further violations. No new pretreatment modifications were required in 2013.

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 Wastewater Treatment Plant in 2013. These improvements are intended to provide the following benefits:

- Increase in plant screening and grit removal, and increase wet weather treatment 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 Compliance Report dated March 12, 2008 and is consistent with the Watershed Plan's long-term strategy to increase the wet-weather capacity of the Dry Creek Wastewater 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.

Project C-401-44-1 Headworks, Hydraulics & Odor Control Improvements

This project began in September 2011 and was under construction throughout 2013. January 2014 marked the date of substantial completion, and the project is currently in the final punch-out phase. The new headworks project provides SD1 with the ability to deliver preliminary treatment to separated sanitary flows, which arrive from the Lakeview Pump Station, while the original headworks continue to receive combined

flows from the Bromley Pump Station. By segregating the two headworks, SD1 has made significant progress towards the goal of doubling the peak wet-weather treatment capacity at the Dry Creek Wastewater Treatment Plant.

Bromley Pump Station

SD1 began a condition assessment of Bromley Pump Station in 2012. The study identified the pump station's immediate needs, short-term improvements, and long-term improvements that will keep it 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 were reviewed in 2013, and the priority projects of transformer assessment, motor replacement, and sluice gate actuator replacements have begun.

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 dry-weather overflows, or would affect the ability of the diversions to maximize the flows entering the interceptors during rainfall. Diversions that have experienced one dry-weather overflow or have the potential to overflow during dry weather are evaluated in further detail to determine a recommended course of action, which may include more frequent monitoring. Diversions where multiple dry-weather overflows have occurred are further evaluated for additional actions that 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

Historically, SD1's CSO investigation crews have inspected every CSO diversion once per week and after every rainfall event greater than half of an inch. The information gathered from these diversion inspections have been used to characterize the activity of CSOs during wet weather, and to identify locations susceptible to dry-weather overflows and the measures needed to eliminate them from reoccurring.

EPA's 1995 Guidance for Nine Minimum Controls for the fifth minimum control allows for historical trends and patterns to be analyzed to determine where inspection frequency adjustments are appropriate. According to the NMC Guidance, greater scrutiny should 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.

During 2013, SD1 made a minor modification to the dry-weather inspection frequencies of some diversions. Based on historical inspections, modeled data, targeted CCTV inspections of upstream pipe, and EPA's 1995 Guidance for Nine Minimum Controls, SD1 determined that 37 diversions no longer need weekly dry-weather inspections. These 37 locations have shown no evidence of structural or maintenance issues, or lack of capacity that would lead to a dry-weather overflow. EPA's guidance suggests that monthly inspections of such locations may be warranted, but SD1 is inspecting these 37 locations on a bi-weekly basis. The bi-weekly inspection frequency of the 37 diversions may be adjusted to monthly, if the bi-weekly schedule results in no additional dry-weather CSOs. The new list of 37 bi-weekly dry-weather inspections is referred to as the Consolidated Route in Appendix B.

Targeted Inspection Effort – LDSAP Diversion Sub-Program

SD1's Large Diameter Sewer Assessment Program (LDSAP) has a sub-program dedicated to pipe assessment and maintenance in the vicinity of CSO diversions. The Diversion Sub-Program began in early 2011 as a targeted inspection and cleaning

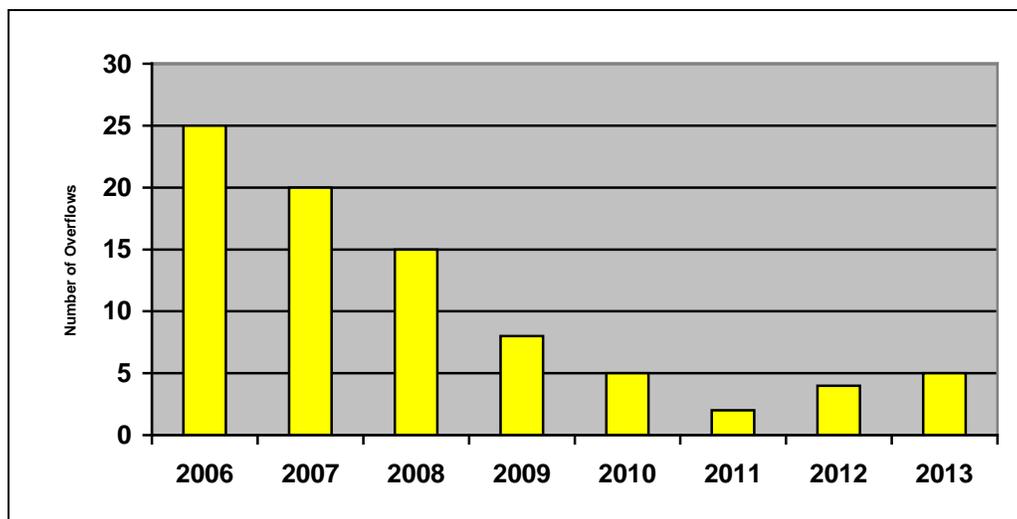
strategy for pipes that are within a 1000-foot radius of all CSO diversions. The subprogram systematically and repeatedly assesses all lines upstream of the diversions, and produces appropriate next actions in the Continuous Sewer Assessment Program (CSAP). This level of proactive maintenance in the combined system has improved SD1’s ability to eliminate accumulating debris in critical areas and curtail dry-weather CSOs. In 2013, SD1 inspected approximately 202,100 feet of pipe in the LDSAP Diversion subprogram and cleaned approximately 61,400 feet. Respectively, the LDSAP Diversion subprogram accounted for more than 15 percent of all 2013 inspections and more than 10 percent of all cleanings. Pipes that are cleaned as a part of this subprogram are reassessed, according to the CSAP logic, to determine the effectiveness of the preventative maintenance and evaluate potential sources of returning debris that may lead to dry-weather CSOs. SD1 anticipates inspecting another 68,600 feet of LDSAP Diversion pipes as follow-up CSAP next actions, during 2014.

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.

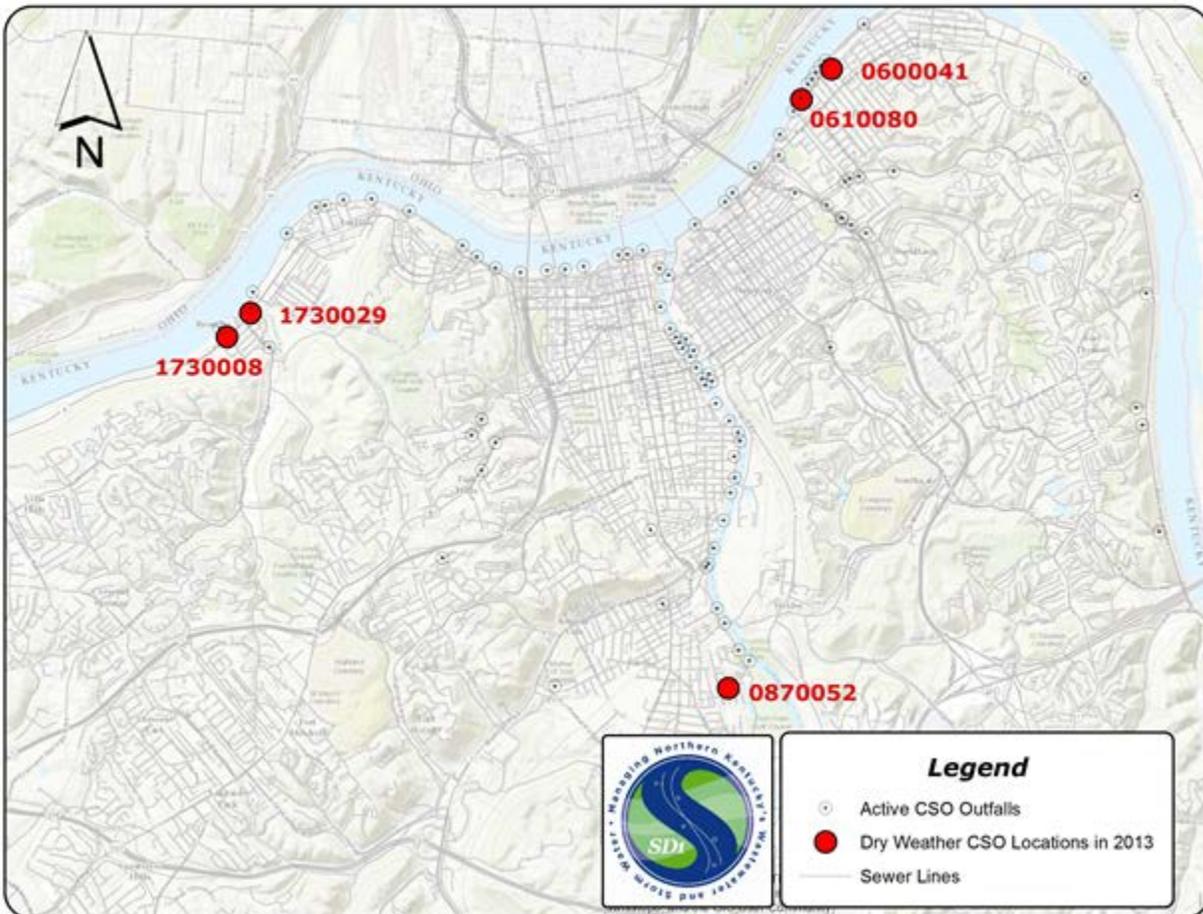
Figure 2.5 Elimination of Dry Weather CSOs (2006 through 2013)



2013 Dry-Weather CSO Locations

Figure 2.6 illustrates the locations of the dry-weather CSOs that occurred in 2013. A summary of the five dry-weather CSOs, including the locations, causes of overflows, estimated overflow volumes, and the actions taken to prevent the overflows from reoccurring is provided in page in Table 2.1. A more thorough description of the overflow events can be found in SD1’s 2013 Consent Decree Quarterly Reports.

Figure 2.6 Locations of Observed Dry-Weather CSOs in 2013



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Table 2.1 Summary of Dry Weather CSOs that Occurred in 2013

Structure ID#	Location	Date	Overflow Cause	Estimated Volume	Corrective Action Taken
0600041	Bellevue, KY O'Fallon Ave CSO Diversion	01/10/13	Blockage of Debris	1,200 gallons	The dry weather diversion line was cleaned and a re-inspection was performed to ensure all debris was cleared. The old washout catch basin was replaced with a new precast cast basin, equipped with a bell to trap solids and floatables. Additionally, odor control liners were installed in three manholes to trap road grit. The diversion will continue to be inspected regularly, and the catch basin will be inspected annually.
1730029	Bromley, KY Pleasant Street CSO Diversion	02/11/13	Blockage of Debris following a High River Event	5,500 gallons	The dry weather diversion line was cleaned and a re-inspection was performed to ensure all debris was cleared. This CSO outfall is at the confluence of Pleasant Run Creek and the Ohio River, and is prone to river water intrusion (RWI). This CSO outfall is scheduled next to be retrofitted with a duckbill check valve, as described in the RWI Mitigation section of SD1's Integrated Watershed Plan.
0610080	Bellevue, KY Taylor Avenue CSO Diversion	02/14/13	Blockage of Debris following a High River Event	8,000 gallons	The diversion structure and surrounding lines were cleaned, and a re-inspection was performed to ensure all debris was cleared. The diversion will continue to receive regular inspections to ensure debris does not return.

Structure ID#	Location	Date	Overflow Cause	Estimated Volume	Corrective Action Taken
1730008	Bromley, KY Rohman Street CSO Diversion	09/03/13	Blockage of Grit	1,525 gallons	The dry weather diversion line and the upstream grit pit were cleaned and an inspection was performed to ensure all debris was cleared. The upstream grit pit has been put on a more aggressive preventative maintenance schedule to avoid future washouts of accumulated grit during wet weather.
0870052	Covington, KY Glenn Avenue CSO Diversion	09/18/13	Blockage of Grit and Debris	425 gallons	<p>The dry weather diversion line was cleaned and a re-inspection was performed to ensure all debris was cleared from the line. This line will be re-inspected, in accordance with SD1's CSAP, to ensure the debris does not return. The diversion has also been put on a more frequent inspection schedule.</p> <p>An investigation of the area's catch basins and manholes has been performed, in order to identify and control any unchecked sources of grit. As a result, a new bell has been installed in one upstream catch basin.</p>

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 (S&F) 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 Modifications

In 2013, SD1 continued replacing catch basins and retrofitting catch basins with bells and grated inlets to reduce the amount of S&F materials entering the CSS. Currently, the following factors are considered when determining if a bell installation is appropriate are:

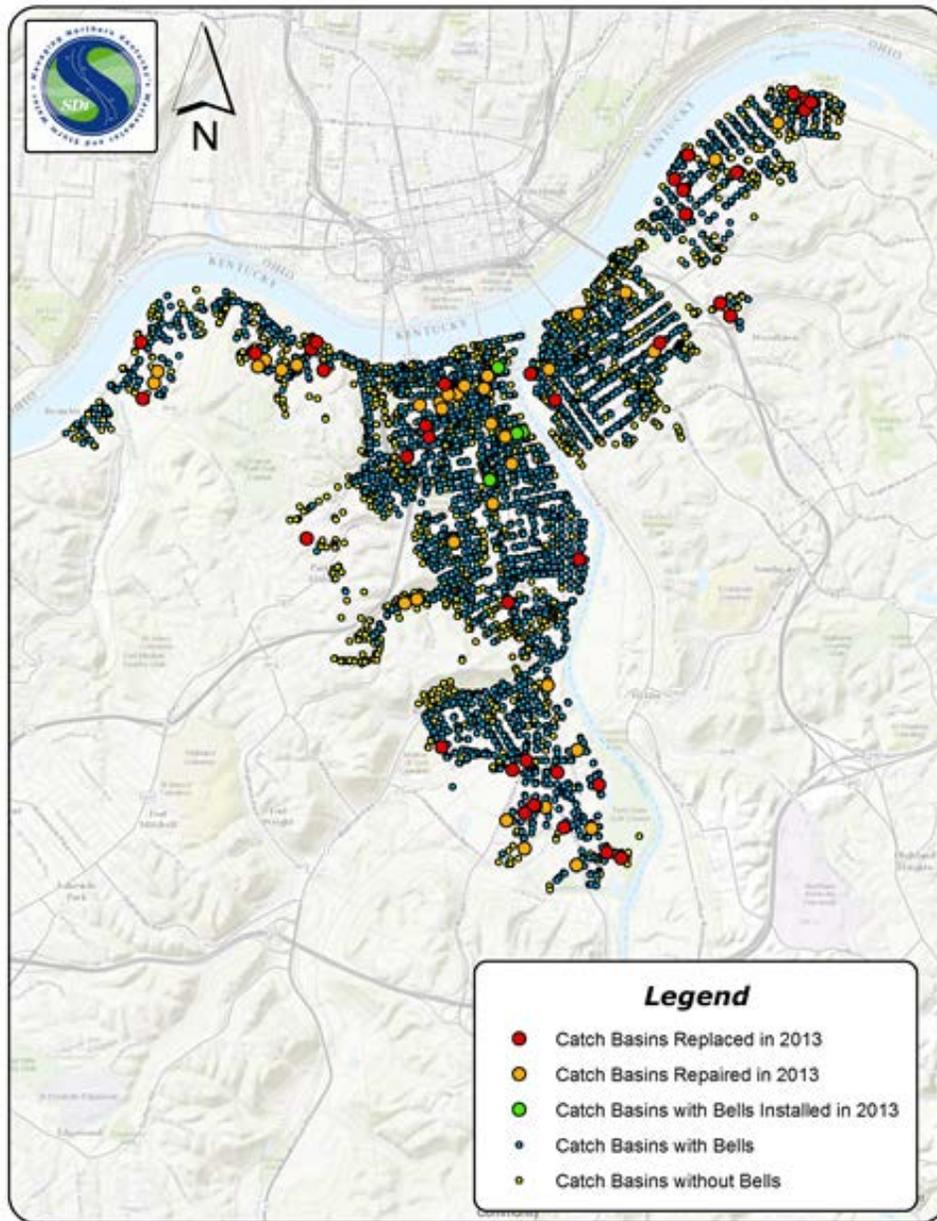
- Catch basin is in need of structural repair and does not have a bell.
- Catch basin is in need of total rehabilitation and can be replaced with a new catch basin that has both a grated inlet and a bell.
- SD1-owned catch basin directly upstream of a dry-weather overflow that appears to be a source of debris will be retrofitted with a bell.

From January 1, 2013 to December 31, 2013, SD1 performed 59 catch basin repairs and installed bells at 6 locations. SD1 also replaced 59 catch basins in the CSS. Of the currently known 5,662 public, private, and state-owned catch basins and inlets in the CSS, there are 2,668 structures that are fitted with a trap or bell for solids and floatables control.

Figure 2.7 illustrates the locations of all trapped structures, including the 6 bells installed and all catch basins that were replaced or repaired in 2013.

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Figure 2.7 Trapped Structures and 2013 Catch Basin Modifications in the CSS



In-line and End-of-Pipe Controls

SD1's solids and floatables controls program is summarized in Table 2.2. The program consists of 22 controls, including:

- 9 outfall nets
- 4 baffles
- 4 baffle chambers

- 2 static weirs
- 1 bar rack
- 1 combination weir and baffle
- 1 combination weir and screen

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 2013, 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	Postponed
1850158	Church Street	Weir and screen	Installed

Adela Street

The Adela Street weir and baffle installation will require a replacement of the existing diversion structure, which will be planned in conjunction with the rehabilitation of the surrounding collection system. A 2013 review of the assets determined that rehabilitation can be postponed, and it may ultimately be more effective to use the Cured in Place Pipe (CIPP) lining method, instead of replacing the existing pipes. SD1 will continue to evaluate the current diversion structure to determine its effectiveness in retaining solids and floatables, however the installation of the new weir and baffle will be postponed until rehabilitation of the surrounding system is required.

Church Street

The Church Street project was under construction in 2013, and is nearing completion in 2014. The newly installed Church Street S&F control structure is a 12-foot long screen basket that is mounted to the top of an elevated weir, on the side of the CSO outfall. Solids and floatables are trapped in the screen as they pour over the weir wall. A regular maintenance schedule will be established for the S&F control, once the project is complete.

The design profile of the new diversion chamber, weir, and S&F screen is provided in Figure 2.8. A photograph of the S&F screen basket inside the diversion chamber illustrates its effectiveness in trapping debris before entering the CSO outfall in Figure 2.9.

Figure 2.8 Design of Church Street Diversion Chamber

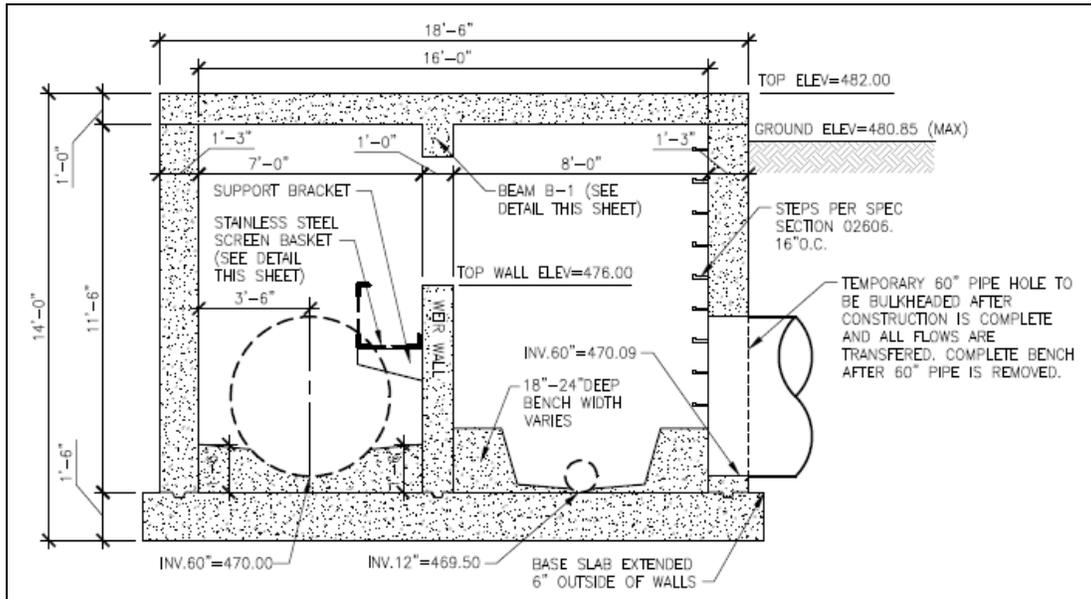


Figure 2.9 S&F Screen inside the Church Street CSO Diversion Chamber



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 Municipal Separate Storm Sewer System (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 630 cubic yards of debris and debris from catch basin cleaning activities in 2013 and approximately 408 cubic yards of grit and debris from grit pits. 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, SD1's Public Service Park targets many audiences, ranging from the development community and water professionals, to students and the general public who can follow a self-guided tour.

SD1 conducted 15 Public Service Park tours, for 236 participants in 2013. These tours included participants from Northern Kentucky University, Gateway Community College,

Greater Cincinnati Metropolitan Sewer District, Louisville Parks, Kentucky Associate for Environmental Education, and local adult chaperone trainings for school field trips.

In addition to the adult tours, SD1 conducted 34 field trips for local elementary schools at SD1's Public Service Park. These field trips are an optional extension of SD1's elementary storm water and watershed curriculum that is taught in over 60 Northern Kentucky schools. In 2013, 1,824 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 with interactive school presentations. SD1 uses an interactive model called Enviroscope to teach the negative impact of polluted storm water runoff on local waterways. During 2013, 31 Enviroscope lessons were taught in 27 schools, which reached over 1,900 students.

Public Presentations

SD1 participated in more than 38 education events and reached approximately 2,800 students and adults, beyond the formal programs covered above.

Printed Publications

Bill Inserts

SD1 continued to focus public education and outreach efforts on the region's pollutants of concern, which include: bacteria, nutrients and sediment. In December of 2013, SD1 sent a "Be Winter Ready: Tips for Buying and Applying De-Icer" bill insert (see Figure 2.10) to approximately 100,000 Northern Kentucky customer accounts. In addition, this flyer was sent to all MS4 co-permittees to be displayed and distributed at municipal administration buildings. The bill insert provided tips for buying de-icers that are less harmful to the environment and waterways, as well tips for properly applying deicers. 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 Bill Insert - Be Winter Ready: Tips for Buying and Applying De-Icer



Be Winter Ready
Tips for Buying and Applying De-Icer

Snow and ice removal is an annual winter chore. As snow piles up, the first line of defense is simply to shovel paved areas to keep them clean and prevent ice from forming. When ice does form, it is common to use salt and other types of chemical de-icers to clear walkways and driveways.

Salt and other chemical de-icers help make travel conditions less hazardous, but they can have an impact on local waterways, landscaping, pets and wildlife. The suggestions on the back of this insert will help you safely battle the icy cold this winter without harming the environment.



Tips for buying:

Traditional rock salt and some chemical de-icers can injure a pet's paws, damage cars, prematurely age cement and asphalt and pollute streams. There are some alternative de-icers that have less of an impact, but are just as effective at melting ice from paved walkways and driveways.

- ▶ Look for alternative de-icers like calcium chloride and calcium magnesium acetate.
- ▶ Try using de-icers that contain alternative ingredients, such as beet juice.
- ▶ Avoid using de-icers that contain urea.

Tips for applying:

- ▶ Before applying de-icer, make sure to manually remove as much snow and ice as possible. De-icer works best when it is applied to thin layers of ice.
- ▶ Follow the directions on the de-icer container. Using more than what is recommended will not make the ice melt faster. When snow and ice melt, the runoff picks up the excess de-icer and carries it to our streams.
- ▶ When possible, avoid using salt and other de-icers near trees, shrubs and grasses. The salty water can severely harm or kill a home's landscaping.

If you have questions, email info@sd1.org or call the Storm Water Hotline at 859-578-6745

SD1 System and Treatment Information Booklets

Additionally, SD1 developed and distributed educational booklets in 2013 titled "Solving the Storm Water Puzzle" and "Northern Kentucky's Sewage Superhighways." Examples of each booklet are provided as Appendix C and D and are inserted in the back pocket of the hard copy of this report. These booklets contain information on various pieces of

Northern Kentucky's Regional Storm Water Management Program, the differences between CSS and MS4, proper management of storm water runoff, Consent Decree requirements, treatment, and private laterals. Copies of the booklets were also distributed to all MS4 co-permittees for distribution and display at municipal administration buildings.

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 2013, SD1 issued 52 Land Disturbance Permits, 16 Grading Permits, and 5 Clearing Permits. 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, 2013. 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 1,300 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 2.11.

Figure 2.11 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 15, 2013. More than 18,000 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 18,000 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 180 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 2013, email notifications were sent to this group on 15 occasions. SD1's website also includes other overflow related information.

Recreational Management Tool

SD1's recreational management application called Recr8OhioRiver was developed with Greater Cincinnati Metropolitan Sewer District and the ORSANCO. This smart phone application is now fully functional, and the main website has been made available to inform the public about water quality around Greater Cincinnati and Northern Kentucky. 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 is still under review as a part of SD1's overall Strategic Business Plan.

The website can be found at www.recr8ohioriver.org.

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 for its collection system 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 collection systems model continue to provide the most accurate information about the systems' performance, SD1's wet weather CSO and SSO 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 or bi-weekly, 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 ensure proper operation and maintenance of the diversions as described in Section 2.1, but are also evaluated 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 to 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 collection systems model as appropriate to better reflect any discrepancies found with observed conditions. The ongoing recalibration of SD1's collection systems model is critical to accurately quantify CSO impacts with future water quality modeling.

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 2013, flow monitoring crews deployed flow meters in 28 locations within the CSS, of which 21 were used to investigate capacity issues for system characterization and model updates, 4 were used for post-construction monitoring, and 3 were used to monitor RWI at diversions. The map provided in Appendix E highlights the monitoring locations across the entire SD1 service area in 2013.

APPENDIX A:
O&M and Repair Work (2008 through 2013)

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O&M and Repair Work (2008 through 2013)							
Activity	2008	2009	2010	2011	2012	2013	Total
Combined System Structures							
Catch Basins Cleanings	1,211	888	787	1,392	1,431	1,393	7,102
Catch Basin Cleaning (Yards of Debris Removed)	N/A	427	469	525	465	629	2,515
Catch Basin Inspections	2,057	3,328	4,070	4,125	3,750	4,072	21,402
New Catch Basin Installation	0	5	2	2	0	5	14
Catch Basins Replaced	159	224	140	90	61	59	733
Catch Basins Repaired	128	65	78	211	38	59	579
Grit Pit Cleaning (Yards of Debris Removed)	358	439	355	365	415	408	2,340
Manholes							
Manhole Inspections	5,985	4,688	1,254	1,841	814	1,258	15,840
Manholes Repaired	485	332	320	656	407	314	2,514
Manholes Replaced	55	59	96	30	38	33	311
New Manholes Installed	26	53	39	50	49	35	252
Sewer Cleaning							
Sewer Lines Cleaned – Feet (Length of Pipe)	706,441	530,303	451,877	375,303	462,281	613,968	3,140,173
Sewer Inspection							
Sewer Line Initial Inspection - Feet	1,126,198	855,962	463,299	504,488	623,277	721,736	4,294,960
Sewer Line Follow-up Inspection – Feet	288,605	555,856	631,781	473,996	581,711	801,503	3,333,452
Sewer Lines Inspected - Total Feet	1,414,803	1,411,818	1,095,080	978,484	1,204,988	1,523,239	7,628,412
Sewer Line Rehab/Replacement Stats							
Sewer Lines Rehabilitated (CIPP) - Feet	953	2,251	29,528	84,717	51,100	59,137	227,686
Sewer Lines Repaired/Replaced - Feet	18,442	17,658	27,157	11,392	31,391	12,680	118,720
Misc. Sewer Line Repairs - Count	45	40	8	9	15	0	117

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APPENDIX B:
CSO Inspection Routes

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2013 CSO Inspection Routes

Diversion Inspections - Western Route	Dry Weather Inspection Frequency	Wet Weather Inspection Frequency
STEVE TANNER -1730053	Weekly	After 1/2" of Rain
KENNER ST - 1710054	Weekly	After 1/2" of Rain
BUTLER ST - 1710068	Weekly	After 1/2" of Rain
SWAIN CT - 1490015	Weekly	After 1/2" of Rain
WRIGHT ST - 1480017	Weekly	After 1/2" of Rain
320 CRESENT AVE - 1480103	Weekly	After 1/2" of Rain
3RD ST and I-75 - 1480097	Weekly	After 1/2" of Rain
4TH ST and I-75 - 1480108	Weekly	After 1/2" of Rain
WILLOW RUN - 1480116	Weekly	After 1/2" of Rain
AMSTERDAM and PARKVALE - 1380054	Weekly	After 1/2" of Rain
AMSTERDAM and ARLINGTON - 1380083	Weekly	After 1/2" of Rain
DIXIE HWY and ARLINGTON - 1320093	Weekly	After 1/2" of Rain
PARK HILLS and DIXIE HWY - 1350104	Weekly	After 1/2" of Rain
MARCELLA DR - 1510133	Weekly	After 1/2" of Rain
PHILADEPHIA ST - 1470003	Weekly	After 1/2" of Rain
BAKEWELL ST - 1470032	Weekly	After 1/2" of Rain
MAIN ST - 1470052	Weekly	After 1/2" of Rain
JOHNSON ST - 1470072	Weekly	After 1/2" of Rain
2ND and RUSSELL - 1440002	Weekly	After 1/2" of Rain
2ND and WASHINGTON - 1440053	Weekly	After 1/2" of Rain
MADISON AVE - 1440072	Weekly	After 1/2" of Rain
SCOTT ST - 1440100	Weekly	After 1/2" of Rain
GREENUP ST - 1440121	Weekly	After 1/2" of Rain
GARRARD ST - 1440156	Weekly	After 1/2" of Rain
KENNEDY ST#1 - 1440145	Weekly	After 1/2" of Rain
KENNEDY ST#2 - 1440146	Weekly	After 1/2" of Rain
6TH and GARRARD 1420004	Weekly	After 1/2" of Rain
8TH and GARRARD - 1420022	Weekly	After 1/2" of Rain
8TH and SANFORD - 1420028	Weekly	After 1/2" of Rain
9TH ST - 1420032	Weekly	After 1/2" of Rain
10TH ST - 1420043	Weekly	After 1/2" of Rain
ROBBINS ST - 1420076	Weekly	After 1/2" of Rain
13TH ST - 0980016	Weekly	After 1/2" of Rain
MARYLAND AVE - 0980036	Weekly	After 1/2" of Rain
15TH ST - 0960003	Weekly	After 1/2" of Rain
PATTON ST - 0960032	Weekly	After 1/2" of Rain
16TH and WATER ST - 0930014	Weekly	After 1/2" of Rain
16TH ST - 0930002	Weekly	After 1/2" of Rain
17TH ST - 0930026	Weekly	After 1/2" of Rain
GLENWAY and PARK - 0930050	Weekly	After 1/2" of Rain
S.E SIDE BALLPARK#2 - 0930066	Weekly	After 1/2" of Rain
S.E SIDE BALLPARK#1 - 0930056	Weekly	After 1/2" of Rain
20TH ST - 0930075	Weekly	After 1/2" of Rain
DURETTE AVE - 0930083	Weekly	After 1/2" of Rain
OAKLAND ST - 0910007	Weekly	After 1/2" of Rain
EASTERN AVE NORTH - 0910027	Weekly	After 1/2" of Rain
EASTERN AVE and HOLMES - 0910025	Weekly	After 1/2" of Rain
HERMAN ST - 1310052	Weekly	After 1/2" of Rain
WARREN ST #1 - 1310062	Weekly	After 1/2" of Rain
WARREN ST #2 - 1310065	Weekly	After 1/2" of Rain
<i>Highlighted structures indicate Secondary Diversions that divert to other parts of the CSS.</i>		

2013 CSO Inspection Routes

Diversion Inspections - Eastern Route	Dry Weather Inspection Frequency	Wet Weather Inspection Frequency
33RD and LATONIA - 1840055	Weekly	After 1/2" of Rain
33RD and EMERSON - 1840072	Weekly	After 1/2" of Rain
33RD and CARLISLE - 1840069	Weekly	After 1/2" of Rain
CHURCH NORTH - 1850150	Weekly	After 1/2" of Rain
CHURCH WEST - 1850024	Weekly	After 1/2" of Rain
CHURCH EAST - 1850032	Weekly	After 1/2" of Rain
DECOURSEY - 1870025	Weekly	After 1/2" of Rain
VIRGINIA - 1880021	Weekly	After 1/2" of Rain
BALTIMORE - 1880028	Weekly	After 1/2" of Rain
44TH ST - 1880010	Weekly	After 1/2" of Rain
E38TH ST #1- 0870021	Weekly	After 1/2" of Rain
E38TH ST #2 - 0870019	Weekly	After 1/2" of Rain
EARL and GILBERT - 0870052	Weekly	After 1/2" of Rain
SOUTHERN and MYRTLE - 0870039	Weekly	After 1/2" of Rain
SOUTHERN - 0870071	Weekly	After 1/2" of Rain
PARK DR - 0870007	Weekly	After 1/2" of Rain
34TH ST at L&N BRIDGE - 0880017	Weekly	After 1/2" of Rain
E33RD ST - 0880004	Weekly	After 1/2" of Rain
25 28TH ST - 0890063	Weekly	After 1/2" of Rain
ASHLAND OIL - 0910064	Weekly	After 1/2" of Rain
EASTERN and ADAMS - 0910039	Weekly	After 1/2" of Rain
9TH ST - 0840003	Weekly	After 1/2" of Rain
BRIETHE and LOWELL - 0840132	Weekly	After 1/2" of Rain
LOWELL and 10TH ST - 0840027	Weekly	After 1/2" of Rain
FITZSIMMONS - 0730005	Weekly	After 1/2" of Rain
12TH ST #1 - 0730009	Weekly	After 1/2" of Rain
12TH ST #2 - 0730028	Weekly	After 1/2" of Rain
4TH CHAMBER - 0820001	Weekly	After 1/2" of Rain
16TH and MONMOUTH - 0690034	Weekly	After 1/2" of Rain
ENTERPRISE RENTAL - 0690008	Weekly	After 1/2" of Rain
LESTER - 0340034	Weekly	After 1/2" of Rain
GLAZIER - 0650053	Weekly	After 1/2" of Rain
GEIGER - 0650041	Weekly	After 1/2" of Rain
SOUTH WARD and COVERT RUN - 0550024	Weekly	After 1/2" of Rain
TAYLOR&RETREAT - 0540055	Weekly	After 1/2" of Rain
DONNERMEYER and LAFAYETTE - 0540044	Weekly	After 1/2" of Rain
DONNERMEYER and BERRY - 0540009	Weekly	After 1/2" of Rain
NELSON and LINDEN - 0630039	Weekly	After 1/2" of Rain
9TH and LINDEN - 0660057 (GATEWELL)	Weekly	After 1/2" of Rain
WILDCAT DR - 0650025	Weekly	After 1/2" of Rain
PARTY SOURCE - 0650084	Weekly	After 1/2" of Rain
COLUMBIA ST CHAMBER - 0790015	Weekly	After 1/2" of Rain
WASHINGTON ST CHAMBER - 0640081	Weekly	After 1/2" of Rain
DON PABLO - 0630001	Weekly	After 1/2" of Rain
PATCHEN - 0620031	Weekly	After 1/2" of Rain
LAFAYETTE - 0620015	Weekly	After 1/2" of Rain
TAYLOR - 0610080	Weekly	After 1/2" of Rain
WASHINGTON - 0610006	Weekly	After 1/2" of Rain
FOOTE - 0600002	Weekly	After 1/2" of Rain
WARD - 0600016	Weekly	After 1/2" of Rain
VAN VOAST - 0600037	Weekly	After 1/2" of Rain
O'FALLON - 0600041	Weekly	After 1/2" of Rain
MCKINNEY - 0570115	Weekly	After 1/2" of Rain
MCKINNEY - 0570011	Weekly	After 1/2" of Rain
Main St - 0570123	Weekly	After 1/2" of Rain
MAIN ST - 0570030	Weekly	After 1/2" of Rain
ANCHOR INN - 0360018	Weekly	After 1/2" of Rain
TOWER HILL - 0330099	Weekly	After 1/2" of Rain
625 MARY INGLES - 0340044	Weekly	After 1/2" of Rain
617 MARY INGLES - 0200066	Weekly	After 1/2" of Rain
CARMEL MANOR - 0030017	Weekly	After 1/2" of Rain
ASH ST - 0010001	Weekly	After 1/2" of Rain

Highlighted structures indicate Secondary Diversions, which divert to other parts of the CSS.

2013 CSO Inspection Routes

Diversions Inspections - Consolidated Route	Dry Weather Inspection Frequency	Wet Weather Inspection Frequency
ROHMAN ST - 1730008	Bi-Weekly	After 1/2" of Rain
PLEASANT ST - 1730029	Bi-Weekly	After 1/2" of Rain
LAGOON ST - 1720005	Bi-Weekly	After 1/2" of Rain
ADELA ST - 1710003	Bi-Weekly	After 1/2" of Rain
CARNEAL ST - 1710084	Bi-Weekly	After 1/2" of Rain
ASH ST - 1710098	Bi-Weekly	After 1/2" of Rain
ALTAMONT ST - 1500010	Bi-Weekly	After 1/2" of Rain
PARKWAY and HIGHWAY - 1490027	Bi-Weekly	After 1/2" of Rain
320 CRESCENT ST - 1480103	Bi-Weekly	After 1/2" of Rain
3RD ST - 1480012	Bi-Weekly	After 1/2" of Rain
3RD ST at I-75 - 1480097	Bi-Weekly	After 1/2" of Rain
DALTON ST - 1480123	Bi-Weekly	After 1/2" of Rain
8TH and PHILADEPHIA - 1480129	Bi-Weekly	After 1/2" of Rain
KENNEDY ST #2 - 1440146	Bi-Weekly	After 1/2" of Rain
8TH ST - 1420025	Bi-Weekly	After 1/2" of Rain
11TH ST - 1420079	Bi-Weekly	After 1/2" of Rain
12TH ST - 0980002	Bi-Weekly	After 1/2" of Rain
OLIVER ST - 0960027	Bi-Weekly	After 1/2" of Rain
GLEWAY and PARK - 0930050	Bi-Weekly	After 1/2" of Rain
19TH ST and OAKLAND - 0930041	Bi-Weekly	After 1/2" of Rain
EASTERN AVE SOUTH - 0910031	Bi-Weekly	After 1/2" of Rain
EASTERN AVE - 0910025	Bi-Weekly	After 1/2" of Rain
OAKLAND and FLORIST - 0910005	Bi-Weekly	After 1/2" of Rain
EASTERN and MEINKEN - 0910055	Bi-Weekly	After 1/2" of Rain
ASHLAND OIL - 0910064	Bi-Weekly	After 1/2" of Rain
34TH ST and L&N BRIDGE - 0880017	Bi-Weekly	After 1/2" of Rain
47TH ST - 1870031	Bi-Weekly	After 1/2" of Rain
CHURCH ST NORTH - 1850150	Bi-Weekly	After 1/2" of Rain
LOWELL and 9TH ST - 0840005	Bi-Weekly	After 1/2" of Rain
9TH ST - 0840003	Bi-Weekly	After 1/2" of Rain
4TH ST CHAMBER - 0820001	Bi-Weekly	After 1/2" of Rain
SARATOGA (PURPLE BRIDGE) - 0770006	Bi-Weekly	After 1/2" of Rain
LAFAYETTE ST - 0620015	Bi-Weekly	After 1/2" of Rain
TAYLOR ST - 0610080	Bi-Weekly	After 1/2" of Rain
O'FALLON ST - 0600041	Bi-Weekly	After 1/2" of Rain
MC KINNEY - 0570115	Bi-Weekly	After 1/2" of Rain
EARL&GILBERT - 0870052	Bi-Weekly	After 1/2" of Rain

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APPENDIX C:

Solving the Storm Water Puzzle

See Back Pocket of Hard Copy Report

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APPENDIX D:

Northern Kentucky's Sewage Superhighway

See Back Pocket of Hard Copy Report

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APPENDIX E:
2013 Flow Monitoring Locations

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Flow Meter Locations in 2013

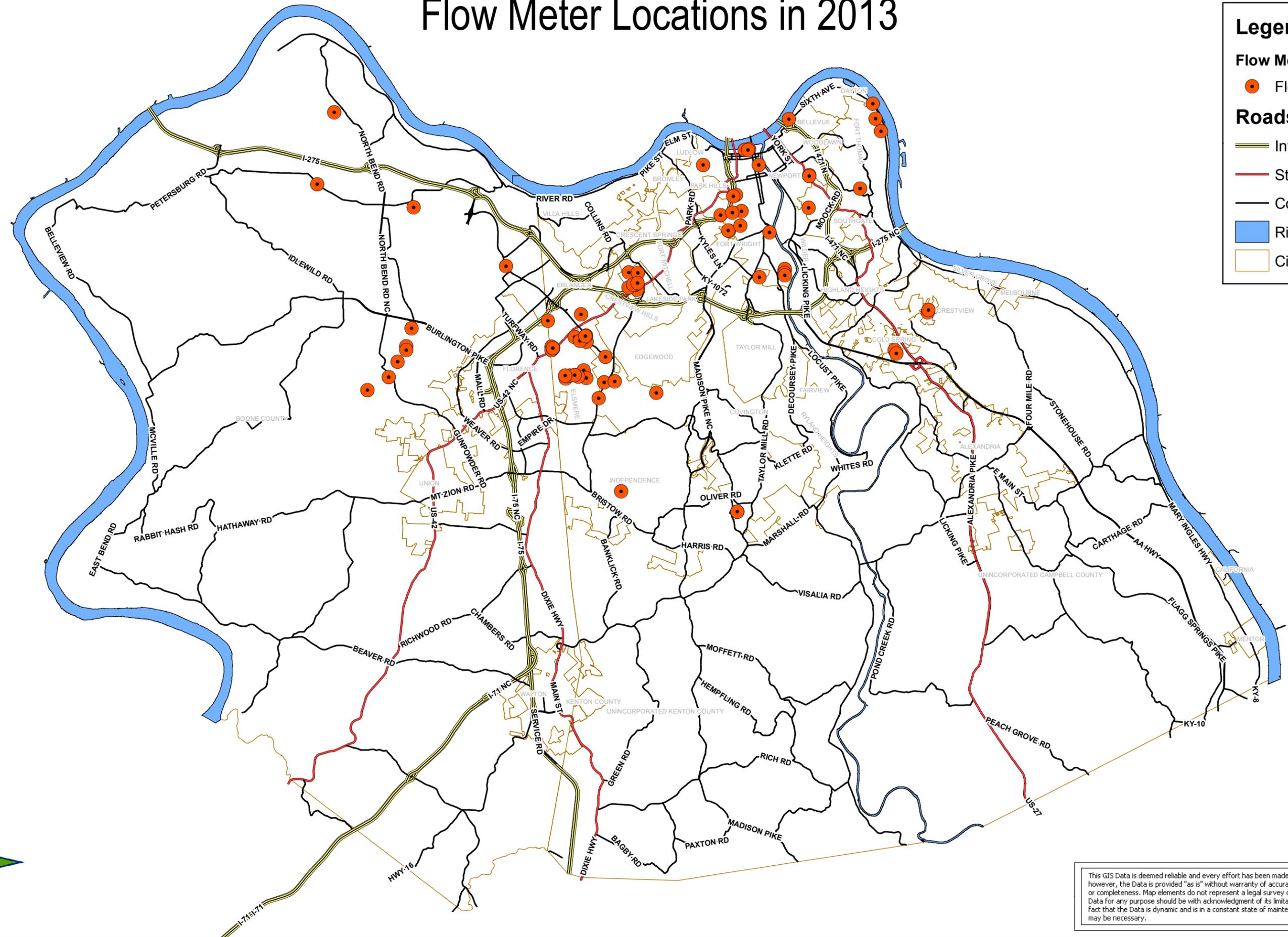
Legend

Flow Meters

- Flow Meters

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.