





Sanitation District No. 1  
June 4, 2010

# **Nine Minimum Controls 2010 Annual Compliance Report**



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## CERTIFICATION

Nine Minimum Controls 2010 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.

  
\_\_\_\_\_  
Jeffery A. Eger  
Executive Director

Date June 2, 2010

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 2nd day of June, 2010 by Jeffery A. Eger, Executive Director of Sanitation District No. 1.

  
\_\_\_\_\_  
NOTARY PUBLIC

Kenton County, Kentucky

My commission expires: 9-15-11

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# **NINE MINIMUM CONTROLS 2010 ANNUAL COMPLIANCE REPORT**

June 4, 2010



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

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

Cabinet	Kentucky Energy and Environment Cabinet
CSAP	Continuous Sewer Assessment Program
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
DWO	Dry Weather Overflow
EPA	U.S. Environmental Protection Agency
gbaMS	GBA Master Series (information tracking system)
NMC	Nine Minimum Controls
O&M	Operations and Maintenance
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 (EPA) and the Kentucky Energy and Environment Cabinet (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 second annual report to demonstrate SD1's continued implementation of the NMCs.

## SECTION 2. NINE MINIMUM CONTROLS

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

### Additional Compliance Activities

SD1's approved NMC Compliance Report outlined additional activities to be performed, with compliance schedules, which would aid in effectively achieving regulatory compliance and reducing CSO occurrences throughout the combined sewer system (CSS) area. A comprehensive listing and detailed description of the additional activities that were completed were presented in Appendix A of the 2009 NMC Annual Report dated May 14, 2009. As discussed in the 2009 NMC Annual Report, nearly all of the tasks listed in Appendix A were 100% complete. Those listed as "ongoing" or "to be conducted as part of the Watershed Plans" are either long-term goals that will continue to progress during subsequent report periods, or are tasks that are continuous and do not have a firm start and end date. There were three additional compliance activities that were not completed during the 2009 reporting period and required further explanation. During the 2010 reporting period, further progress on these activities were performed in order to reach completion, which is summarized in Table 2.1.

**Table 2.1 Status of Remaining NMC Additional Compliance Activities**

Item	Activity	Implementation Schedule	Status
<b>NMC 1</b>			
Collection System O&M – Pump Stations	In coordination with CMOM begin utilizing the pump station inspection module in gbaMS to record, track, and document pump station inspections.	30-Jun-08	Complete. The upgrades to gbaMS are complete and staff members have transferred data from the equipment module to the new pump station module. SD1 is utilizing the pump station inspection module to record, track, and document pump station information. This work is being coordinated with SD1’s force main and air release valve preventative maintenance program to integrate that data and program with the pump station inspections.
<b>NMC 2</b>			
In-Line Storage Program	Complete installation of new diversions at Main and McKinney Streets in conjunction with new development.	31-Dec-08	Complete. The construction schedule for this project was delayed due to project issues between the developer and its contractors, and the decline of the economy and lending markets. Constructions began again in the summer of 2009 and the installation of the new diversions, grit sumps, and floatables baffles and bar racks are complete. [The existing interceptor has remained fully functioning with no loss of service.]
Grit Pits	Construct replacement diversions on Main and McKinney Street CSOs with grit sumps and floatables baffle and bar rack.		

**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 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 has continued to effectively utilize its computerized maintenance management system, GBA Master Series (gbaMS), to schedule and track its operation and maintenance (O&M) activities. Table 2.2 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).

**Table 2.2 2009 O&M Activities**

<b>Combined System Components</b>	<b>2009 Total</b>
Catch Basins Cleaned	887
Catch Basin Cleaning (Yards of Debris Removed)	427
Catch Basins Inspected <sup>†</sup>	3,328
Catch Basins Repaired, Replaced, and/or Retrofitted	289
Grit Pit Cleaning (Yards of Debris Removed)	439
<b>Manhole Structures</b>	
Manholes Inspected	4,705
Manholes Repaired	332
Manholes Replaced	59
New Manholes Installed	53
<b>Sewer Cleaning</b>	
Sewer Lines Cleaned (Feet)	530,303
<b>Sewer Inspection</b>	
Sewer Line Initial Inspection (Feet)	856,962
Sewer Line Follow-up Inspection (Feet)	555,856
<i>Total Sewer Lines Inspected (Feet)</i>	<i>1,411,818</i>
<b>Sewer Line Rehab/Replacement</b>	
Sewer Lines Rehabilitated through CIPP (Feet)	2,251
Sewer Lines Repaired (Feet)	2,864
Sewer Lines Replaced (Feet)	14,794
Misc. Sewer Line Repairs	40

<sup>†</sup> This includes inspections of SD1 owned catch basins as well as private and Kentucky Transportation Cabinet owned catch basins located in SD1's service area.

#### Catch Basin Inspection and Maintenance

All SD1 owned catch basins were inspected at least once during the reporting period and cleaning or repair work orders were written as-needed. Two pilot areas where trapped catch basins were installed in 2008 continue to be monitored on a more frequent basis in order to help establish an appropriate inspection and cleaning schedule for trapped catch basins. SD1's work to install catch basins upstream of the point of connection to the CSS to trap solids and floatables from private basins is also ongoing. In some instances, this approach has been found to be more effective for SD1 to keep solids and floatables from private basins out of the CSS rather than taking enforcement action. However, SD1 will pursue enforcement action, as needed, on privately owned catch basins. In addition, SD1 has identified approximately 14 CSO diversion locations where catch basin flows connect directly into the diversion manhole. In most instances, the sewer lines from the catch basins drop flow onto the diversion structure, which impacts the operation of the diversion structure. During calendar year 2010, SD1 will be performing projects to disconnect these catch basins from the

diversion manhole and routing the flows downstream to the combined sewer outfall. This work is further discussed in Section 2.6.

The quality assurance and quality control review of the data obtained from the 2007 initial system-wide inventory further progressed during 2009. SD1 continued identifying, mapping and inspecting catch basins owned by SD1, along with additional catch basins owned by Kentucky Transportation Cabinet or private property owners. Data, condition, and amount of debris were recorded for each inspected catch basin. Because these additional catch basins influence the effectiveness of SD1's measures to keep solids and floatables from entering the CSS, it is important that the location, condition, and debris levels of these additional catch basins are determined. The data being collected is providing a comprehensive understanding of all catch basins in the CSS. This data will allow SD1 to make informed decisions on its methods of capturing debris across the CSS before it enters the sewers. SD1 estimates that the inspection process of all catch basins (SD1 owned and owned by others) will be completed in calendar year 2010 in order to verify SD1's catch basin data and to identify and map the location of the additional catch basins owned by others. To ensure adequate and proper maintenance of SD1's catch basins throughout this process, additional personnel have been assigned to inspect all catch basins that were inspected in 2009, while one full-time person continues inspecting all remaining catch basins in the CSS not already inspected in 2009. This process will ensure that all SD1-owned catch basins are inspected on at least a yearly basis as well as continuing the inventorying and mapping of the additional catch basins identified. Once complete, SD1 will be able to better assess the frequency and need for inspections and cleaning of all the catch basins in the CSS.

SD1 and Kentucky Transportation Cabinet are continuing to work together to develop a program in which SD1 would be reimbursed to clean and maintain the catch basins owned by Kentucky Transportation Cabinet. An agreement between SD1 and Kentucky Transportation Cabinet is currently being reviewed by both parties and is expected to be finalized during 2010. Currently, SD1 notifies Kentucky Transportation Cabinet when its catch basins are inspected and are in need of cleaning.

#### Diversion and CSO Outfall Inspection and Maintenance

SD1 also inspects each diversion and the associated CSO once per week as well as after every rainfall event. Cleaning is also 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). When needed, inspections and cleaning frequencies are modified in response to dry weather overflows that have occurred. The information gathered from inspections is used to identify the location of dry weather overflows and measures to eliminate them from reoccurring (described further in Section 2.5). Inspection records for 2009 indicate that very little debris was found during inspections, and inspectors were able to clean diversions, if needed, with simple cleaning measures. There were only 16 work orders generated that required Customer Service crews to perform more intensive cleaning.

## **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.

### In-Line Storage Analysis

SD1 conducted an investigation of the Eight Street and Patton Street pump stations during 2009 after the targeted interceptor cleaning project identified significant amounts of debris in the combined sewer segments upstream of each pump station. From this investigation, SD1 determined that both pump stations had originally been designed by the Army Corp of Engineers and that the pump operating wetwell levels were designed to utilize the influent combined sewer as part of the wetwell volume. This design allows flow to backup into the upstream combined sewers during normal pump operation, which lowers the velocities in the sewer and causes debris and sediment to settle in the sewer. Because of this existing design, SD1 must conduct more frequent preventive maintenance inspection and cleaning to remove the settled debris, and the collection system experiences reduced conveyance and inline storage capacity.

The existing design also causes the flow in the influent sewers and associated wetwell to be detained for long periods of time, which makes the pump stations more susceptible to corrosion due to hydrogen sulfide attack. The concrete walls and ceilings of the wetwells in both pump stations are severely corroded and must be rehabilitated in order to extend the life of the pump stations.

Based on this investigation, SD1 is currently evaluating the feasibility of lowering the pump operating wetwell levels in both pump stations in order to prevent the use of the influent sewers for wetwell volume. Lowering the operating levels will reduce the amount of debris settlement and allow for increased conveyance capacity, reduce detention time, and provide the ability to store flows in the upstream combined sewers during wet weather to reduce CSO volumes. Because the existing wetwells are shallow and have limited volumes unless the upstream combined sewers are used, SD1 is currently considering either lowering the wetwell bottom elevation and installing new suction-lift pumps or providing additional side wetwell volume to offset the volume utilized in the upstream sewers. SD1 is currently performing an alternatives and cost-benefit analysis to determine the best approach to address both the wetwell operating levels and the corrosion. The evaluation of these options and the methods to repair the corroded wetwells is anticipated to be complete by the summer of 2010.

## **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.

### **2.3.1 Permitting**

#### Standard Permits

SD1 permitted one new Significant Industrial User during 2009: Domino's Pizza Kentucky Supply Chain Center in Erlanger (Categorical Industrial User), which is not located within the CSS. With this addition, SD1 had a total of 54 permitted Significant Industrial Users in its collection system as of December 31, 2009.

#### Compliance Monitoring

In 2009 SD1 approved the following short term specialty discharges, none of which were located in the CSS or occurred during wet weather:

- Holiday Homes/Derby Hills - Unusual Discharge (decommissioned wastewater treatment plant sludge decant)
- St. Luke Hospital West – Two Unusual Discharges (Glycol)
- Surface Cleaning L.C. – Four Unusual Discharges (Pavement Cleaning)
- Lithko Contracting Inc. – Unusual Discharge (Floor Cleaning)
- D.R. Clark and Associates – Unusual Discharge (Floor Cleaning)
- DeBra-Kuempel – Unusual Discharge (Glycol)
- Aristech Acrylics, LLC – Unusual Discharge (Fire Suppression)
- Speedway SuperAmerica LLC – Underground Storage Tank
- MACTEC Engineering and Consulting Inc. – Soil Remediation Project

#### Enforcement

SD1 issued the following enforcement actions during 2009:

- 45 Notice of Violations (The only violation in the CSS was issued to Louis Trauth Dairy, LLC due to a pH violation detected during one of the semi-annual sampling events.)
- \$4,500 in administrative fines were issued for 7 Notice of Violations

#### Pretreatment Modifications

No pretreatment requirements or modifications were required for industries in the CSS; however, the following industries in the separate sanitary sewer system were required to make modifications:

- Perfetti Van Melle USA
- Club Chef LLC
- Messier-Bugatti: Carbon Facility
- Ameripride Linens and Apparels
- Ultra Environmental Services Inc.

### **2.3.2 Investigation**

In addition to monitoring Significant Industrial Users, SD1 has also continued to inspect Non-Significant Users during the past year. While a single industry may not have a measurable impact on SD1's system, a group of Non-Significant Users may discharge like pollutants that, in total, could potentially contribute to CSO impacts. In June 2009, SD1 completed its investigation of the remaining Non-Significant User clusters identified

from the 2008 audit of the Non-Domestic Discharges within the service area. The hotel, motel, laundry and carwash operations in the five areas indicated in Table 2.3 were inspected to determine if chemicals being used were contributing significant amounts of surfactant and phosphate pollutants to the combined sewer system.

**Table 2.3 2009 Non-Significant User Cluster Investigations**

<b>Outfall</b>	<b>Outfall ID</b>	<b>Cluster NSUs</b>
9 <sup>th</sup> Street	0840005	Hotels/Motels (2)
Columbia Street	0790084	Hotels/Motels (1) Carwash (1)
Madison	1440212	Hotels/Motels (2)
Main Street	1470093	Hotels/Motels (1) Laundry (1)
Willow Run	1480187	Hotels/Motels (4)

The Material Safety Data Sheets for each establishment were reviewed and indicated that the chemicals being used at the sites contain no or trace amounts of phosphates and the surfactants are no foam or low foaming. Based on these inspections, there is no concern of those pollutants being discharged from these locations.

SD1 has created a best management practice brochure for distribution to Non-Significant Users in the CSO areas and will be distributing those to laundries, hotels, and other similar businesses on an as-needed basis beginning in July 2010.

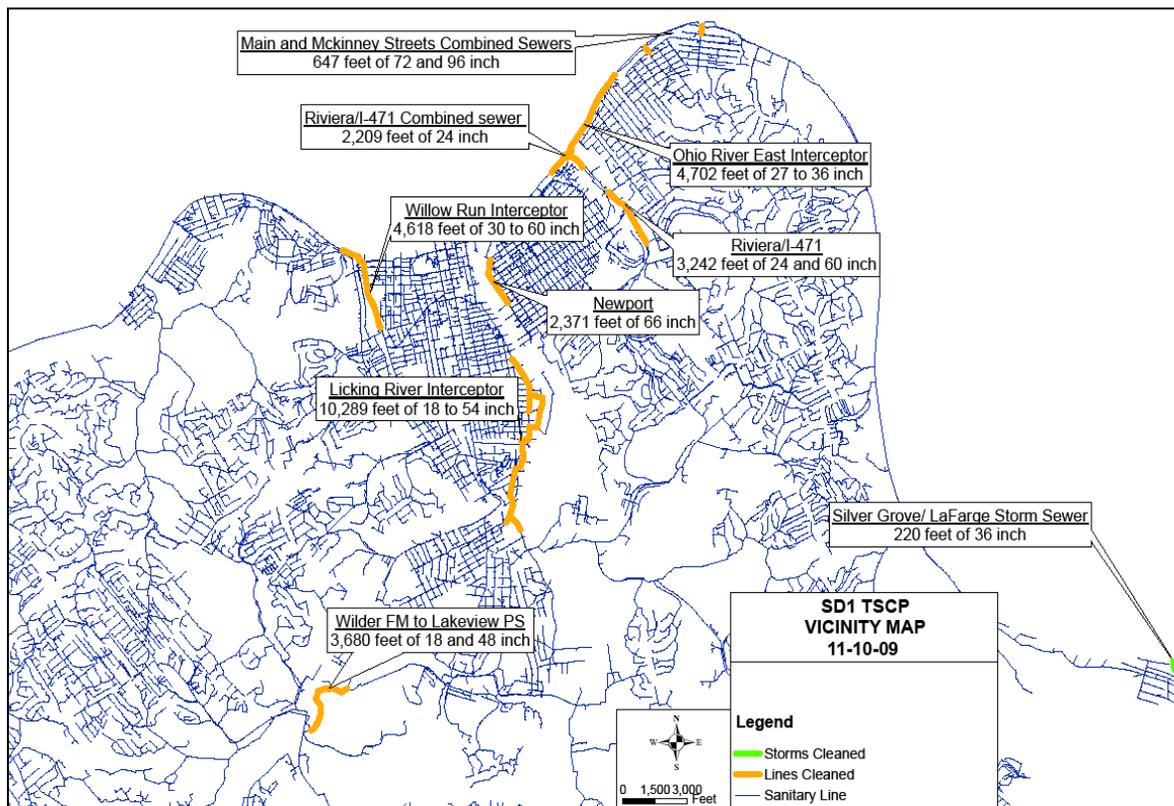
## **2.4 NMC #4: Maximization of Flow to POTW for Treatment**

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.

### Collection Interceptor

Since July 2008, SD1 has contracted with Doetsch Industrial Services to clean and inspect approximately 30,450 feet of combined and interceptor sewers, as identified in Figure 2.1. As of November 2009, approximately 1,520 tons (3,040,000 pounds) of debris has been removed, which equates to an average of 100 pounds of debris per foot of pipe. This targeted interceptor cleaning is estimated to reduce typical year overflow volume by 20 million gallons. Flow monitors have been placed in strategic locations within the targeted sewers to assess the changes in capacity and its related effects on overflow volumes. Additional targeted sewer cleaning in the CSS is currently being identified and additional cleaning will be performed in the summer of 2010.

**Figure 2.1 Targeted Sewer Cleaning Program Vicinity Map**



**Bromley Pump Station**

The Bromley wet well setting optimization (described in Section 3.4.2 of SD1’s NMC Annual Compliance Report submitted May 11, 2009) was implemented during the first quarter of 2009 and has been successfully operating since that time. The lowered wet well setting adjustments are estimated to reduce typical year overflow volume by 80 million gallons.

**Improvements at Dry Creek Wastewater Treatment Plant**

SD1 was able to secure low interest loan monies from the state revolving loan fund through the Kentucky Infrastructure Authority in the amount of \$16 million in order to perform additional capacity improvements at the Dry Creek Waste Water Treatment Plant. This project is in addition to the five-year plan projects identified in the Watershed Plans dated June 2009. Because of this low interest loan, SD1 has entered into a professional engineering services contract to provide detailed design services for headworks, hydraulics, and odor control improvement projects at the Dry Creek Wastewater Treatment Plant. Final designs of these improvements are anticipated by the end of 2010 and construction is currently estimated to begin in the spring of 2011. 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 the Watershed Plans dated June 2009, 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.

## 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 (DWO) Locations

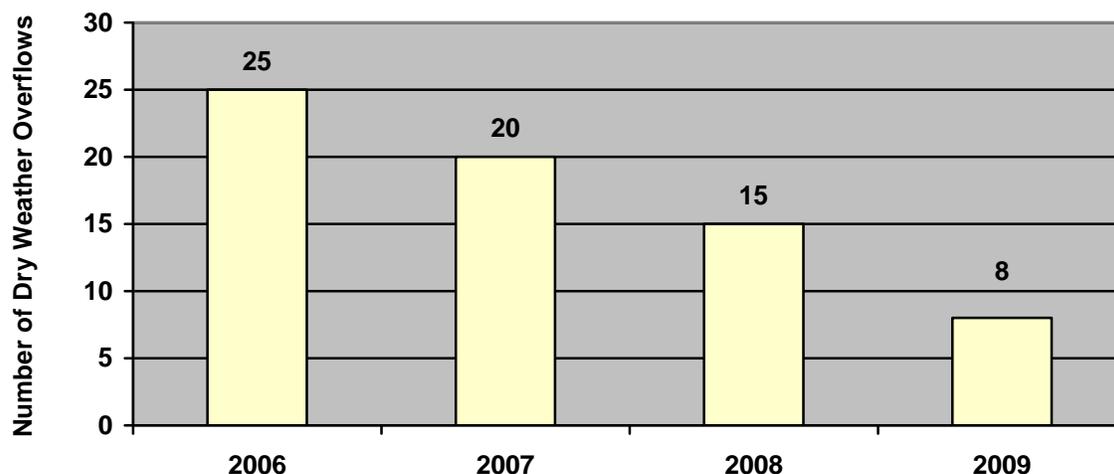
In conjunction with the routine CSO diversion inspections described under NMC 1, inspectors visually look for debris and blockages that may trigger a DWO or would affect the ability of the diversion to maximize the flow entering the interceptor during rainfall. Diversions that are found to have DWOs 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 DWOs have occurred are further evaluated for additional actions, which may include:

- Catch basin modifications to reduce solids that may cause DWO 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 DWOs 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.

In addition, SD1 began performing a closed circuit television inspection of all dry weather flow diversion pipes (approximately 140 locations) during 2009. This work will be completed by the summer of 2010. The pipes are being assessed for the appropriate next action and rehabilitation or replacement as part of SD1's CSAP. This process will ensure that any pipes with structural or maintenance deficiencies will be fixed to ensure dry weather overflows do not occur as a result of pipe defects or accumulated debris.

SD1 has made significant progress with these efforts in eliminating dry weather CSOs during the last four years, as summarized in Figure 2.2.

**Figure 2.2 Elimination of Dry Weather CSOs (2006 through 2009)**



Corrective Actions

A summary of the eight DWO events that occurred in 2009, including the locations, causes of the overflows, estimated overflow volumes, and the actions taken to prevent the overflows from re-occurring is provided in Table 2.4. (A more detailed description of the overflows can be found in SD1’s 2009 quarterly reports submitted to the Cabinet and EPA.)

**Table 2.4 2009 Dry Weather CSOs**

Structure ID#	Location	Date	Overflow Cause	Estimated Volume	Corrective Action Taken
0910031	South Eastern Avenue CSO Diversion	3/20/2009	Blockage of Debris	38,000 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 or grated inlets to reduce the amount of solids and floatables entering the system. The pipe was re-inspected and reassessed in 6 months as part of SD1’s CSAP.
0600016	Ward Street, CSO Diversion	5/21/2009	Blockage of Debris	2,000 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. The pipe was re-inspected and reassessed in 6 months as part of SD1’s CSAP.

Structure ID#	Location	Date	Overflow Cause	Estimated Volume	Corrective Action Taken
0600016	Ward Street, CSO Diversion	5/29/2009	Line Defect	2,000 gallons	During the diversion's follow-up inspection this overflow was detected. Upon inspection, defects were found in the dry weather flow pipe downstream of the diversion that was trapping debris. The pipe was repaired the next day to eliminate the defects.
1850150	Church Street, CSO Diversion	6/2/2009	Blockage of Debris	36,000 gallons	The debris was removed to stop the dry weather overflow. It was determined that the landing grating was the cause of the dry weather overflow and the grating was removed.
0980002	12 <sup>th</sup> Street, CSO Diversion	6/16/2009	Blockage of Debris	500 gallons	The debris was removed to stop the dry weather overflow. The sewers were inspected and one upstream catch basin was identified as the problem. The catch basin was replaced in order to trap debris within the basin to prevent future occurrences.
1480012	3 <sup>rd</sup> Street, CSO Diversion	6/22/2009	Blockage of Debris	2,200 gallons	The debris was removed to stop the dry weather overflow. The sewers were inspected and one upstream catch basin was identified as the problem. The catch basin was replaced in order to trap debris within the basin to prevent future occurrences.
0910068	Oakland Avenue CSO Diversion	8/26/2009	Blockage of Debris from Upstream Collapsed Line	22,000 gallons	The debris was removed and the collapsed upstream line was repaired. The diversion manhole was also replaced with a new weir and baffle wall to provide inline storage and trap solids & floatables.
0880004	East 33 <sup>rd</sup> Street Diversion	10/5/2009	Blockage of Roots and Grease	730 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. The pipe was re-inspected and reassessed in 6 months as part of SD1's CSAP.

Pump Station Back-Up Power

In August 2009, a permanent generator was installed at the Banklick Pump Station, which was the last of the combined system pump stations to be addressed with back-up power solutions.

River Water Intrusion Mitigation

As described in the Watershed Plans dated June 2009, SD1’s planned improvements to protect against river water intrusion consist of the installation of duckbill-type check valves at the outfall pipes of 42 CSO diversion locations to provide passive check valve service. In addition, manholes in low lying areas near the outfalls will be sealed at the frame and lid along with ensuring watertight lids are properly functioning to protect against river water intrusion. The rubber duckbill style check valves will either be 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. Table 2.5 summarizes SD1’s current progress in river water intrusion mitigation.

**Table 2.5 Check Valve Installation Progress**

Location	CSO ID	Diversion ID	Status
16th Street Covington	CSO-0930106	DIV-0930002 DIV-0930014	Complete
Adela	CSO-1710116	DIV-1710003	In-Progress
Anchor Inn	CSO-0360079	DIV-0360018	Complete
Donnermyer and Lafayette	CSO-0540044	DIV-0540044	Complete
Garrard Street Covington	CSO-1440206	DIV-1440156	Complete
Kenner Street	CSO-1710114	DIV-1710054	In-Progress
Lagoon Street	CSO-1720109	DIV-1720005	In-Progress

**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.

Storm Drain Marking Program

SD1 has continued to implement its volunteer storm drain marking program geared towards Girl Scouts, Boy Scouts, school groups and concerned citizens. SD1 provides all materials and storm drain markers for groups interested in completing a project. To promote the program, brochures are distributed at city buildings, mailed to scout leaders and displayed at SD1’s front counter. SD1 employees also assist in marking catch basins while on the job. In 2009, approximately 311 drains were marked in the Northern

Kentucky area (127 by community groups, 84 by Northern Kentucky University students and 100 by SD1 staff).

### Catch Basin Modification

In 2008, SD1 began 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, including these modifications, are scheduled based on established priority areas upstream of past and recurring DWOs. Crews focus on completing the projects in the highest priority area before moving onto projects in the next priority area. 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 DWOs are retrofitted or replaced to have a bell installed. SD1 also evaluates the need to install a trapped catch basin at the location where multiple private-owned catch basins tie into the CSS to trap debris at one location owned by SD1.

From January 1, 2009 to December 31, 2009, SD1's construction crews performed 22 catch basin repairs with bells installed, 224 catch basin replacements with grated inlets and bells installed, and 43 catch basin retrofits with bells for a total of 289 catch basins in the CSS retrofitted to trap solids & floatables.

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). SD1 has identified approximately 14 CSO diversion manholes where these types of catch basin arrangements exist and are moving forward with 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. These improvements effectively remove storm water from the CSS, which reduces CSO volumes and traps the solid and floatable materials before the flow is discharged to a waterway.

### In-line and End-of-Pipe Controls

Table 2.6 summarizes the current status of SD1's solids and floatables controls and the type of control installed. The program includes 21 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.

**Table 2.6: Current Solids and Floatables Control Program**

<b>CSO/Diversion</b>	<b>Name</b>	<b>Type of Control</b>	<b>Status</b>
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 – completed in 2009
0570030	Main Street	Engineered S&F Control Baffle Chamber w/Bar Rack Above Baffle	Installed – completed in 2009
0650041	Geiger Avenue	Type “B” Bar Rack	Installed
0650098	Wildcat Run	Black Net	Installed
0770006	Saratoga Street	Weir	Installed
0910005	Oakland Avenue	Weir	Installed – completed in 2009
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)	Anticipated completion June 2010
1490172	Swain Court	Black Net	Installed

## 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. 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 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.

Thousands of people have toured Public Service Park over the past year, including local groups and groups from other states. Among SD1's visitors in 2009 was a group from Kansas City that was developing a storm water utility in their community, middle school age children from Germany and NKU college students studying abroad from various countries. Overall, SD1 provided the following tours during 2009:

- Approximately 390 adults tours, including consultants, engineers, developers, environmentalists and parent chaperones.
- Over 1,900 tours for elementary through college age students and scouts.

#### Classroom Presentations

SD1 is committed to empowering students to protect the environment and has reached thousands of students this year through interactive school presentations. In 2009, these presentations introduced over 2,300 students and scouts to concepts such as point source and non-point source pollution. SD1 uses an interactive model called the Enviroscape to teach the negative impact of polluted storm water runoff on local waterways.

#### Northern Kentucky University "Protecting Water Resources Course"

In an effort to expand storm water education to students in different grade levels, SD1 conducted several meetings with Northern Kentucky University to see if a college course could be developed about storm water. Dr. Rebecca Kelley from Northern Kentucky University developed a lecture and lab that revolves around the topic of storm water. The course was presented to Northern Kentucky University curriculum coordinators and was successfully approved.

The course, which examines water quality issues from a global perspective down to a local view, was taught for the first time in the fall 2009 semester. Enrollment started out with 18 students in the lecture and 12 students in the lab. Throughout the first semester, SD1 assisted NKU by providing start up funds to purchase items for the course. SD1 also worked with NKU to complete a storm drain marking project and made various presentations to the class to provide information and resources helpful in developing term papers. A pre and post test was conducted to measure the learning curve of the class. The survey results indicated that students scored 38% higher after the course instruction, which indicates the students gained a greater understanding of the information through the course.

### **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 the storm water service area that disturb greater than or equal to one acre of land now receive a permit from SD1 prior to the commencement of the activity. SD1's plan review process includes examination of sediment and erosion controls to ensure that adequate controls are put in place. Appropriate best management practices must be cited and installed properly for plans to be approved.

During 2009, SD1 issued 46 Land Disturbance Permits, 16 Grading Permits and 2 Clearing Permits. Since the program started, SD1 has issued 479 Land Disturbance Permits, 259 Grading Permits and 46 Clearing Permits.

### **2.7.3 Household Hazardous Waste Management**

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](http://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. The website was promoted through distributed flyers at SD1's main office, it was mentioned in a newspaper article about a recycling event and it is shared with all people who call about disposal methods. The website was also featured in the Living Green segment that aired on WCPO in September.

### “Living Green”

Twice a year, a local television network WCPO, airs a 30-minute special during primetime television called “Living Green”. This show highlights local environmental organizations and their efforts in going green in the community. In 2009, SD1 joined forces with the Boone, Campbell and Kenton County Solid Waste Coordinators to produce a spot about household hazardous waste. The goal of the show was to bring to the community’s attention that everyone has hazardous household items that need to be properly disposed in order to protect water quality. The group worked with WCPO to produce a three minute segment for the show that aired September 15, 2009. To promote this show on the day that it aired, SD1 and the solid waste coordinators participated in a phone bank at the television station. During the 5:00 p.m. and 6:00 p.m. news, SD1 and county employees answered 128 calls from the viewers about household hazardous waste. After the “Living Green” spot aired in September, it was posted on [www.wcpo.com](http://www.wcpo.com).

### Computer/Mercury/TV Recycling Event

A recycling event for the residents of Boone, Campbell and Kenton counties was held on October 3, 2009 at SD1’s main office. Environmental Enterprises provided recovery and recycling services of items containing mercury and Apex technologies provided the services for televisions and electronics. Over 240 cars dropped off the following items during the four hour event:

- Televisions = 17,277 pounds
- Computer Monitors = 9,052 pounds
- CPU’s = 5,662 pounds
- Printers = 3,168 pounds
- Miscellaneous Electronics = 2,708 pounds
- Mercury = 30 pounds
- Fluorescent Bulbs = 133 pounds

### Bill Insert

SD1 created a bill insert that was designed to look like a paint swatch sample to attract the attention of customers when they opened their bill. Information about how to reduce, reuse and recycle paint was provided on the back of the insert. Over 100,000 of the inserts were distributed to SD1’s rate payers.

The paint bill insert was also directly mailed to over 50 professional painters. The bill insert and a letter was mailed directly to these professionals as a way to inform them of the effects that hazardous waste has on our environment if not properly cleaned up and disposed.

## **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 currently 90 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 2009, SD1's website was compromised due to a security threat and currently has limited functionality. The website is currently being reprogrammed and redesigned to be more secure. Once complete, the website will again include the wet weather notification request form and other overflow related information.

## **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 every rainfall event. The CSO locations with solids & floatables controls are also cleaned as-needed. These inspections and cleanings not only provide opportunities to ensure proper operation and maintenance of the diversions as described in Section 2.1 but are also supportive of characterization efforts. Information gathered from diversion inspections is collected and stored in gbaMS, which is then used to characterize the activity of CSOs during wet weather and identify the location of dry weather overflows and measures 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, flow monitoring crews began a monitoring program consisting of more than 45 flow meters to collect data in specific areas of the collection system to confirm model predictions and to identify and confirm areas that are suspected to have high inflow and infiltration. Flow monitors have also been placed in strategic locations within sewers that were part of the targeted interceptor cleaning project to assess the changes in capacity and its related effects on overflow volumes.