Sanitation District No. 1
December 31, 2012

Capacity, Management, Operations, & Maintenance (CMOM) FY 2012 Annual Report

SD1
Managing Northern Kentucky's
Wastewater and Storm Water

December 31, 2012

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

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

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

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

To Whom It May Concern:

Pursuant to the above-referenced Consent Decree, Sanitation District No. 1 (SD1) is required to submit annual reports on the implementation of its Capacity, Management, Operations, and Maintenance (CMOM) programs. These reports are due no later than December 31 each year.

The Consent Decree was entered on April 18, 2007 and required SD1 to submit four separate CMOM documents within the first year – the Grease Control Program, the Sewer Overflow Response Plan (SORP), the CMOM Self-assessment, and the Pump Station Operation Plan for Backup Power. Each of these submittals has received regulatory approval. Updates to these programs are now included in the CMOM Annual Report, as it is not required for the program updates to be submitted as separate documents.

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

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

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

Best regards,

David E. Rager
Executive Director

DER/wck
Enclosures

SD1
Managing Northern Kentucky's
Wastewater and Storm Water

CERTIFICATION

Capacity, Management, Operations, & Maintenance (CMOM)
FY 2012 Annual 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

12/26/12
Date

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 26 day of December, 2012 by David E. Rager, Executive Director of Sanitation District. No. 1.

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

NOTARY PUBLIC

Kenton County, Kentucky

My commission expires: 7-30-16

1045 Eaton Drive • Ft. Wright, KY 41017 • phone 859-578-7450 • fax 859-331-2436 • www.sd1.org

CAPACITY, MANAGEMENT, OPERATIONS, AND MAINTENANCE FY 2012 ANNUAL REPORT

December 31, 2012

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
CCTV	Closed Circuit Television
CIP	Capital Improvement Program
CMOM	Capacity, Management, Operations, and Maintenance
CSAP	Continuous Sewer Assessment Program
CSO	Combined Sewer Overflow
ERP	Emergency Response Plan
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
FY	Fiscal Year
GCE	Grease Control Equipment
I/I	Inflow and Infiltration
IMS	Information Management System
O&M	Operations & Maintenance
PEAK	Professional, Efficient, Accessible, Knowledgeable
PM	Preventive Maintenance
SCI	Stream Condition Index
SD1	Sanitation District No. 1
SORP	Sewer Overflow Response Plan
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow

SECTION 1. INTRODUCTION

1.1 Overview and Report Period

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 (Cabinet) to address sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs) in an effort to improve water quality throughout SD1's service area. The Consent Decree requires that SD1 continue the implementation of formal Capacity, Management, Operations, and Maintenance (CMOM) programs. SD1's CMOM programs are designed to manage the collection systems' assets and operations in a manner that maximizes efficiency and reduces the potential for overflow occurrences. Proper planning and management of CMOM programs can result in a reduction of the number, frequency, and volume of SSOs and CSOs.

Pursuant to the Consent Decree, SD1 is required to submit annual reports on its implementation of the CMOM programs. This report describes implementation of SD1's CMOM programs during Fiscal Year (FY) 2012, which began on July 1, 2011 and ended on June 30, 2012.

1.2 Collection System Major Components

SD1's sewer system currently covers approximately 239 square miles and serves approximately 102,000 customer accounts. SD1 treats flow from a collection system that is comprised of, approximately:

- 41,028 SD1 owned manholes
- 3,937 SD1 owned catch basins and inlets in the combined sewer system
- 70 gate structures
- 1,575 miles of SD1 owned and operated gravity sewer lines and force mains
- 140 miles of additional Florence owned sewer lines
- 75 miles of additional privately owned sewer lines
- 400 miles of SD1 owned and operated separate storm water lines
- 134 pump stations (11 of which are owned by the City of Walton and operated by SD1 through a contract; 2 of which are owned by the Airport and operated by

SD1 through a contract; 2 of which are associated with treatment plants)
- 15 flood pump stations
- 8 small wastewater treatment plants (4 of which are owned by separate entities and operated under contract by SD1)
- 3 regional water reclamation facilities

SD1's sewer system conveys wastewater from private laterals connected to homes, businesses, and industries through a series of gravity lines, pumped systems, and interceptors to a wastewater treatment plant. The service area consists of both combined and separate systems. The combined sewers are located primarily in the river cities. A map of the service area and major components can be found in Appendix A.

1.2.1 Western Regional Water Reclamation Facility

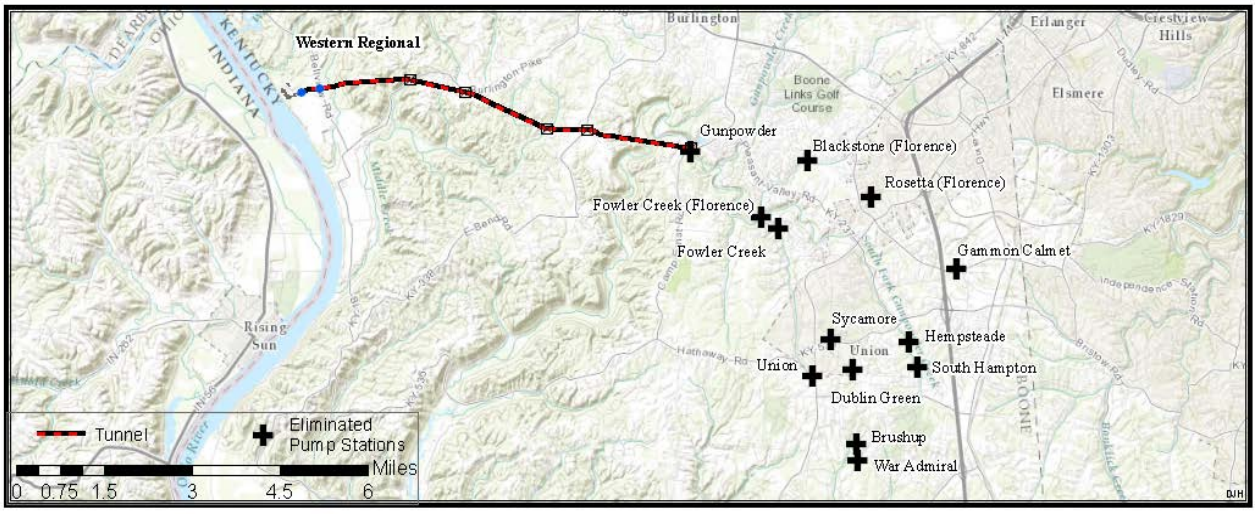
Faced with sanitary sewer overflows in its existing collection system, diminishing capacity at its Dry Creek Treatment Plant, and a growing population in Boone County, SD1 began construction of its Western Regional System Improvements in 2007. During FY 2012, five years of construction culminated in the startup of SD1's newest treatment plant. The Western Regional Water Reclamation Facility went into operation on April 23, 2012.

One of the key features of the Western Regional System Improvements is a new six-mile-long conveyance tunnel which has an inside diameter of 8.5 feet. The tunnel conveys sewage to the new treatment facility and provides substantial in-line storage during peak flow events. The new treatment facility and conveyance tunnel alleviate stress on the entire Northern Kentucky collection system by providing capacity to treat up to an additional 20 million gallons per day and store 14 million gallons of wastewater in the tunnel. Representing the largest capital improvement in SD1's history, these investments were imperative to reducing long-term overflow volumes and pump station operation and maintenance (O&M) costs.

The Western Regional Water Reclamation Facility initially treated approximately three to four million gallons of wastewater per day, when it first became operational. This initial influent primarily came from tributary areas of Boone County that are associated with

the elimination of ten SD1-owned pump stations and three Florence-owned pump stations. An additional three to four million gallons will be redirected from Kenton County to Western Regional Water Reclamation Facility in FY 2013, with the activation of the Narrows Road Diversion Pump Station. Figure 1.1 illustrates the 13 eliminated pump stations in Boone County, as well as the new Western Regional Conveyance Tunnel. Based upon SD1's hydraulic model, it is estimated the Western Regional Water Reclamation Facility will eliminate approximately 60 million gallons of sanitary sewer overflow.

Figure 1.1 Eliminated Pump Stations and Conveyance Tunnel



1.3 CMOM Program Structure

SD1 has been performing CMOM activities for many years. In 2007, these activities were structured into formal CMOM programs during the self-assessment. During the self-assessment process, a written purpose, goals, and recommended improvements were established for each program. SD1 currently has 34 CMOM programs, which are identified in Table 1.1. Section 2 of this Annual Report provides an update on the implementation of these programs.

Table 1.1 CMOM Program Activities

Management Programs	Operations Programs
• Organizational Structure	• Emergency Preparedness & Response
• Communication & Customer Service	• Safety
• Legal Authority	• Budgeting
• Acquisition Considerations	• Engineering
• Information Management System (IMS)	• Call Before You Dig
• Training	• Water Quality Monitoring
• System Mapping	• Compliance
• SSO Reporting & Notification	• Mobile Waste Haulers
Maintenance Programs	• Pump Station Operations
• Manhole Repairs	• Pump Station Emergencies
• Rehabilitation & Replacement	• Pump Station Force Mains PM
• Mainline Sewer Repairs	• Odor & Corrosion Control
• Sewer Cleaning	• Continuous Sewer Assessment
• Equipment & Tools Maintenance	• Smoke & Dye Testing
• Pump Station Maintenance	• Flow Monitoring
• Maintenance of Rights-of-way	• CCTV Inspection
Capacity Programs	• Manhole Inspections
• Capacity Assessment & Assurance	
• New Connection Tap-In	

SECTION 2. CMOM PROGRAM HIGHLIGHTS

This section provides an update on the implementation of SD1's CMOM programs and Section 5 provides an update the remaining tasks to be completed as part of SD1's original CMOM self-assessment. In addition, the Consent Decree required SD1 to specifically establish a Grease Control Program and Pump Station Operation Plan for Backup Power. These specific CMOM programs are described in Sections 3 and 4.

2.1 Budgeting

The purpose of SD1's Budgeting Program is to enable all operating departments to execute SD1's mission and vision in a fiscally responsible manner and provide cost-effective services to ratepayers. The Budgeting Program provides SD1 with a clear understanding of the organization's financial needs and obligations, which results in the ability to adequately manage debt service and plan for future needs. This program also helps SD1 personnel categorize expenses and properly manage assets and infrastructure.

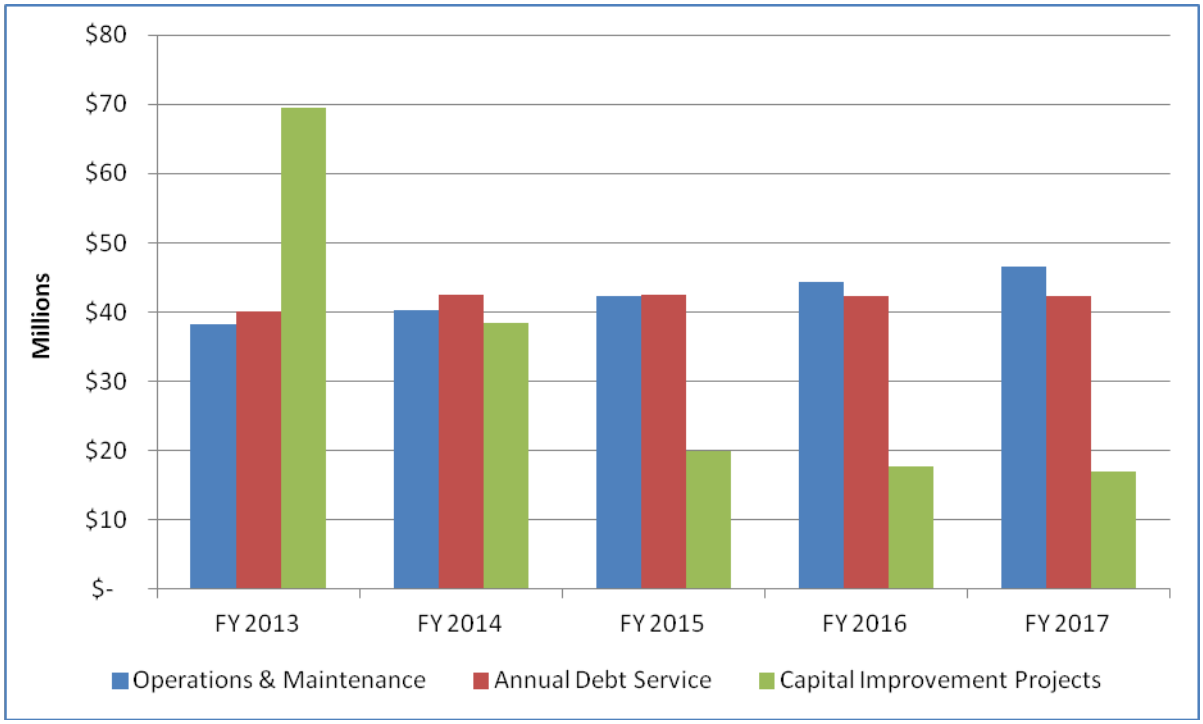
2.1.1 Capital and Operations & Maintenance Expenditures

The audited capital expenditures for FY 2012 totaled approximately $70.5 million, and the audited O&M expenditures for FY 2012 totaled approximately $31 million. As required in the Consent Decree, SD1 has developed Watershed Plans for improvement projects to be implemented over the next several years, which will impact capital spending. The total capital spending associated with all project work over the next five years is approximately $162.4 Million, as demonstrated in Table 2.1. Figure 2.1 represents SD1's anticipated debt service, O&M, and capital improvement program (CIP) expenses over the next five years.

Table 2.1 Five-Year CIP Budget *(FY 2012 – FY 2016)*

Fiscal Year	Projected Capital Spending
2013	$69,499,319
2014	$38,438,586
2015	$19,859,491
2016	$17,786,544
2017	$16,913,000
Total	**$162,496,940**

Figure 2.1 SD1 Estimated Expenses: Annual Debt Service, O&M, and CIP (FY 2013 through FY 2017)



2.1.2 Billing

Low Income Assistance

As an additional effort to help reduce the financial burden placed on ratepayers, SD1 has partnered with a local social service agency to develop a Low Income Assistance Pilot Program. In FYs 2010, 2011, and 2012 SD1 implemented the program that provided families at or below 125% of the Federal Poverty Guidelines the opportunity to receive a 25% discount on sanitation service. Nearly 1,200 accounts have received assistance for at least one billing, for a total of approximately $123,000 in assistance funds provided. Because of its success, SD1 will continue to offer the program through FY 2013.

2.1.3 Alternate Sources of Funding

Although SD1 receives adequate funding from its operating revenue sources to fund its O&M and debt service commitments, these sources do not provide sufficient funding to also support the CIP. SD1 is therefore required to borrow money from other sources.

During FY 2012, user rates and fees made up approximately 60% of the total funding sources, while borrowed money accounted for the remaining 40% of necessary funding sources to support the fiscal year budget.

Clean Water State Revolving Loan Fund

The Kentucky Infrastructure Authority has provided SD1 more than $400 million out of the Clean Water State Revolving Loan Fund program for capital improvement projects. During FY 2012, the projects were in various stages of design, easement acquisition, or construction. Some of the projects include:

- Ash Street Pump Station and Force Main Projects
- Church Street Combined Sewer Overflow Reduction Project
- Kentucky Aire Pump Station Elimination
- Lakeview Pump Station Improvements
- Lakeside Park Public and Private Source Inflow and Infiltration Removal and Sewer Rehabilitation
- Vernon Lane Public and Private Source Inflow and Infiltration Removal and Sewer Rehabilitation

Since 2004, the Kentucky Infrastructure Authority has funded 20 capital improvement projects saving more than $120 million in interest costs when compared to traditional 30-year revenue bonds.

2.2 Capacity Assessment & Assurance

The purpose of SD1's Capacity Assessment and Assurance Program is to determine the overall capacity of the collection, transmission, and treatment components of the system, identify areas that lack adequate capacity, and develop programs and solutions to provide sufficient capacity in these areas. This program provides staff with a holistic understanding of SD1's system's capacity, which allows for better management, design, and control of the system.

2.2.1 Field Inspections and Hydraulic Modeling

During FY 2012, SD1's wet weather CSO investigation crew continued to perform routine inspections before and after rain events. SSO investigation crews also

continued to perform routine inspections during and after rain events at prioritized recurring and suspected SSO locations. The purpose of these routine inspections is to verify overflow activity, assess the cause of overflow, and initiate the proper procedures for overflow cleanup. This is part of SD1's ongoing effort to characterize, verify, and respond to overflows throughout the collection system, and ensure that they are appropriately categorized and prioritized for elimination. More information regarding inspection routes can be found in Section 2.6 Emergency Preparedness and Response. Proper overflow characterization from field inspections helps to reinforce the accuracy of the hydraulic model, which SD1 uses to improve its understanding of system capacity, and to identify the most appropriate and effective solutions for eliminating overflow.

SD1 developed a highly calibrated system-wide hydraulic model in 2008 to be used as an accurate planning tool for capital improvements, and to provide information about the current performance of SD1's collection system. To ensure that the hydraulic model continues to provide the most accurate information about the system's performance, SD1's wet weather investigation crews perform routine inspections during and after rain events to verify suspected modeled overflows. The inspection routines, as well as targeted flow monitoring, help maintain a highly accurate hydraulic model capable of predicting various conditional impacts on an ever-changing system.

During this reporting period, SD1 performed over 1,700 wet-weather inspections of recurring, inactive, or suspected SSOs. SD1 also performed over 8,400 inspections of CSO diversion structures in the combined sewer system, of which approximately 3,800 were conducted within 48 hours of wet-weather events that produced at least 1/2 inch of precipitation. The data collected from these inspections helps SD1 make adjustments to the hydraulic model, and increases the confidence level of the modeled wet-weather overflow volumes that SD1 provides in its Quarterly Consent Decree Reports.

2.2.2 Flow Monitoring

SD1's flow monitoring crew is involved in a number of data collection efforts in specific areas of the collection system to confirm model predictions, identify and confirm areas that are suspected to have high inflow and infiltration (I/I), and collect pre and post construction monitoring data in project areas. The map provided in Appendix B highlights the 56 monitoring locations that the crew monitored during the reporting

period, which includes:

- 20 sanitary sewer evaluation survey (SSES) monitoring sites
- 18 capacity monitoring sites
- 16 post-construction monitoring sites
- 2 pre-construction monitoring sites

Meter Inventory and Calibration Improvements

In June 2012, SD1's flow monitoring crew completed the construction of a new flow meter equipment cage in SD1's main garage. This new space allows the crew to organize and inventory all active and inactive flow meters, rain gauges, and accessories. Additionally, a space for the necessary maintenance of these critical tools was created. Most importantly, the crew was able to gain operational efficiencies and improve meter accuracies, by constructing a calibration flume inside the equipment cage. The calibration flume gives the crew the capability to assess and adjust flow meters before deployment, instead of making adjustments in the field. Figure 2.2 displays the staging area for flow monitoring equipment, before and after construction of the new equipment cage, and Figure 2.3 diagrams how the new flume is used to calibrate flow meters.

Figure 2.2 Flow Monitoring Equipment Cage

Figure 2.3 Flow Meter Calibration Flume

Implementation of Micromonitoring

SD1 expanded its flow monitoring program in FY 2012 with the addition of micromonitors. Micromonitoring uses a weir to measure low flows in the collection system where other equipment cannot detect such levels. It also provides accurate flow measurement in small sections of sewers with only a few service connections. The micromonitors are also equipped with a tool that allows for the monitor to be installed without entering the manhole, which makes it a quick and cost effective solution for evaluating I/I in a collection system. During FY 2012, SD1 utilized this technology in its priority rehabilitation and repair project areas to assess the localized flow conditions. The data is being used in cost-benefit and cost effectiveness analyses to determine which private I/I rehabilitation projects to complete. More information on micromonitoring can be found in Subsection 2.13.1 SSES – I/I Assessment Projects.

New Meter Technology Trials

In an effort to continually expand upon the efficiency and precision of SD1's flow monitoring capabilities, remote sensing meters using digital Doppler RADAR to measure velocity and ultrasonic pulse echo to measure depth, were preliminarily field tested in FY 2012. Such meters remove the possibility of data interruption due to debris

disturbances that are common to submerged sensors and are easier to install and maintain, because they have little or no contact with the flow. Various brands are being evaluated and considered for future acquisition.

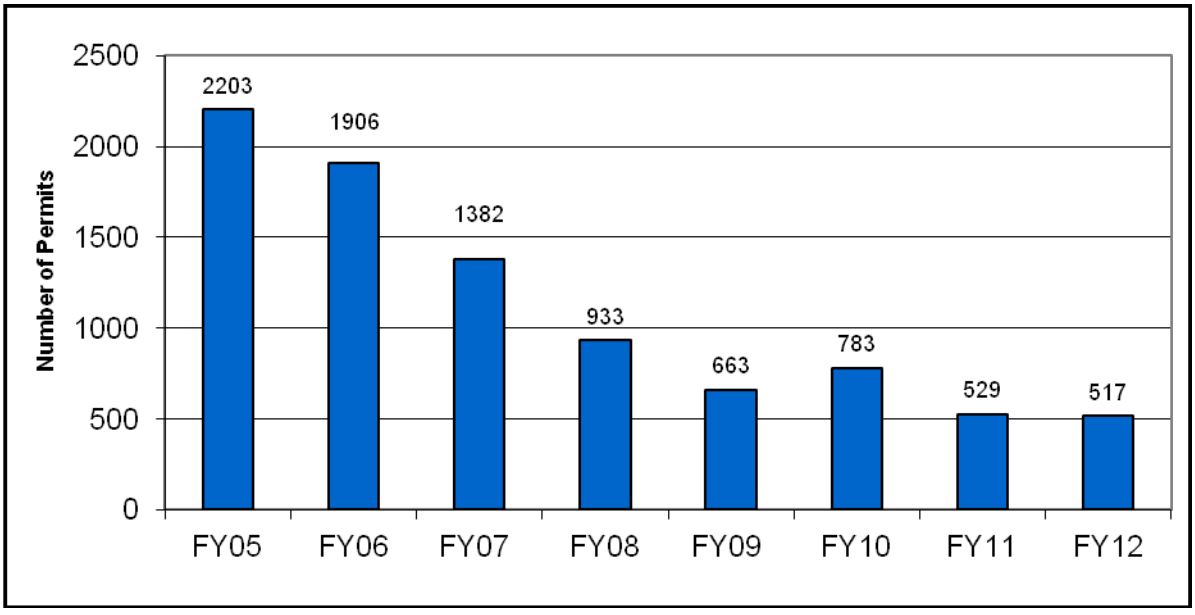
2.2.3 Reservation of Capacity

SD1's Rules and Regulations require developers to submit a written request for the reservation of sanitary sewer capacity, which are reviewed and considered for approval by SD1's Board of Directors or designee.

Capacity Connection Permits

In accordance with SD1's Rules and Regulations, a building sewer capacity connection permit must be obtained from SD1. In FY 2012, SD1 issued 517 capacity connection permits. As depicted in Figure 2.4, the number of permits issued has declined over the past six years with a slight increase during FY 2010.

Figure 2.4 Capacity Connection Permits Issued
(FY 2005 through FY 2012)



2.3 Communication & Customer Service

The purpose of SD1's Communication & Customer Service Program is to inform and

educate staff, external customers, and community groups about the services SD1 offers, including:

- Wastewater collection and treatment
- Storm water collection and management
- Flood protection and drainage
- Industrial monitoring
- Water quality monitoring
- Environmental education

SD1 has worked diligently to establish consistent messages and use unique ways of reaching target audiences through several internal and external communication initiatives. Highlights of these efforts are included throughout the remainder of this section.

Communication/Customer Service

SD1 is dedicated to providing unparalleled customer service to both internal and external customers. In FY 2012, SD1's communication team continued department networking and improved upon a new customer care initiative called PEAK, which was implemented in late 2010.

Department Networking: Communication team members attend other department meetings, in order to stay connected with the communication needs across SD1. Department networking also allows the communication department to identify needs that overlap and avoid duplicate efforts in communicating with the community.

PEAK Customer Service Promise: In Fall 2010, SD1 launched a new customer service campaign. In FY 2012, the program matured into a formal promise referred to as PEAK. SD1's PEAK philosophy is as follows:

- ***P*** – We will be *professional*.
    - We will champion safe and healthy environments for the communities in which we live and work.
    - We will deliver the highest quality of customer service with a sense of warmth, friendliness, individual pride and company spirit.
    - We will continue to improve our services and will embrace any feedback, positive or negative, that helps us meet this goal.

- ***E*** – We will be *efficient*.
    - We manage our operations, finances and services with honesty, efficiency and reliability.
    - We promise to be prompt and efficient, because we realize our customers' time is valuable.
- ***A*** – We will be *accessible*.
    - Our crews can be mobilized 24 hours a day, 7 days a week.
    - We will answer customer questions promptly.
    - We will be prompt and courteous, and we will offer resolutions that are in the best interest of our rate-payers.
    - We will build relationships and create life-long SD1 supporters and advocates.
- ***K*** – We will be *knowledgeable*.
    - We will have trained staff that is always helpful, courteous and knowledgeable.
    - We will continue to train our employees to deliver excellent, timely service.
    - We will offer useful alternatives to a customer if a problem cannot be solved as the customer would like.

An interdepartmental team was formed to make PEAK customer service a priority at SD1. Throughout FY 2012, the PEAK Team made surprise visits to every department to evaluate each employee's job function at SD1, inquire what kind of challenges each employee faces with his or her job, and ascertain how each employee interacts with both internal and external customers. As a result of the visits, new initiatives were developed to assist with customer service awareness at SD1.

One of the PEAK Team's initiatives was to create a PEAK Wall of Fame that recognizes employees who display outstanding customer service. The employees featured on the PEAK Wall of Fame go above and beyond to maintain an excellent customer service standard, and have their pictures and stories displayed as an example for others to follow.

Another example of a PEAK Team initiative was PEAK Week, a week-long event held in late April that focused on SD1's external customers. Each day of PEAK Week was devoted to a special activity to foster a sense of customer service excellence with SD1's employees. PEAK Week activities for FY 2012 included workshops on conflict

resolution, effective communication, and time management.

2.3.1 Conference & Community Group Presentations

Public Education Presentations

As an ongoing educational initiative and a means to share industry information, SD1 staff and consultants make many presentations throughout the year regarding CMOM and other Consent Decree-related information. The target audiences of these presentations include stakeholders at both the local and national level.

Table 2.2 highlights the name and venue of some of the presentations that took place during FY 2012.

Table 2.2 FY 2011 Conference & Community Group Presentations

Date	Forum/Event	Presentation Title/Topic
7/13/2011	ESRI International Users Conference – San Diego, CA	Determining and Analyzing Storm Water Outfalls Using GIS
7/13/2011	Public Meeting – Pleasant Ridge I/I Removal Project	Details regarding the project
7/19/2011	Public Meeting – Kenton and Orchard Projects	Details regarding the projects
7/20/2011	Land Development Council meeting	SD1 – Where We Stand
7/25/2011	2011 Water Professionals Conference	The Axis of New Trenchless Technology: Removing Highland Acres Pump Station with a New Trenchless Boring Technology
7/26/2011	2011 Water Professionals Conference	Innovative Continuous Sewer Assessment Program (CSAP) Streamlines Proactive Asset Management
7/26/2011	2011 Water Professionals Conference	Developing and Defending Your Utility's Private Lateral Program: A Legal Perspective

8/2/2011	Weather the Storm – Chicago WEA Conference	Creating a Regional Storm Water Utility
8/4/2011 & 8/5/2011	Clean Water America Alliance Summer	Utility Sustainability and Green Infrastructure
8/20/2011	Kenton County Mayors Meeting	SD1's State Audit
10/4/2011	Lucity Annual Conference – Kansas City, MO	Best Management Practices for Sewer and Storm Acceptance
10/5/2011	Lucity Annual Conference – Kansas City, MO	Continuous Sewer Assessment Program (CSAP)
10/12/2011	Kentucky GIS Conference – Geographic Information Advisory Council Executive Track – Frankfort, KY	Using Open-Source GIS Platforms to Streamline Requests for Proposals
11/16/2011	Campbell County Fiscal Court Meeting	SD1's Storm Water Program – Services, Obligations and Response to Cold Spring Litigation
11/17/2011	University of Kentucky GIS Day	Using ArcGIS Server to Deploy Webmaps – Trouble Call Dispatcher
11/19/2011	2011 Campus Community Partnerships for Sustainability Conference – NKU	Panel Discussion: Campus and Community Partnerships – How Do They Best Work
11/22/2011	Kenton County Fiscal Court Meeting	Terraced Reforestation Project and the EPA
12/10/2011	Mayors' Group Meeting	SD1's Audit Responses
2/1/2012	Human Resource Conference	Health and Wellness
2/10/2012	NKY Chamber D.C. Fly-in	SD1's Willow Run Sewer Overflow Project
3/14/2012	North American Society for Trenchless Technology No-Dig Show 2012	The Axis of New Trenchless Technology
3/19/2012	Kentucky Water Resources Annual Symposium	A Regionally-calibrated Critical Flow for Stream Channel Protection
4/16/2012	Kenton County Government Academy	Services Provided by SD1

5/15/2012	LINK-GIS Executive Committee – Northern Kentucky Area Planning Commission	New GIS Applications and Technology for Brownfield Inventory
5/20/2012	Society for Freshwater Science Annual Meeting	Using Regional Data to Calibrate Stormwater Management Strategies to the Natural Flow and Disturbance Regime in Urban Streams
5/20/2012	Society for Freshwater Science Annual Meeting	Biological and Hydrogeomorphic Data Support a Recalibration of Stormwater Management to the Critical Flow: The Missing Link for Watershed Management in Northern Kentucky
6/5/2012	Lucity Ohio River Valley Users Group	SD1's Use of Lucity Dashboard

2.3.2 General Public Education Efforts

In addition to the conference and community group presentations, SD1 has taken other approaches, as described below, to engage and inform the general public on issues relating to SD1's services.

Articles

During this reporting period, SD1 initiatives have been featured in a number of publications, e-newsletters, blogs, and newspapers including:

- CVG to Install New Biofilters (8/17/2011) – *The Kentucky Enquirer*
- Sewer District Honors Teachers for Protecting Environment and Water (11/18/2011) – *Fox 19 News*
- David Rager to Head NKY Sanitation District (12/16/2011) – *Business Courier*
- SD1 Financial Audits/Budget Online (1/19/2012) - *The Kentucky Enquirer*
- New Wastewater Treatment Plant Means No Construction Moratorium (5/30/2012) – *The Cincinnati Enquirer*
- Chamber Celebrates Earth Day with Creek Cleanup (6/1/2012) – *Northern Kentucky Business Journal*
- River Sweep is Set for Sunday (6/14/2012) – *Weirton Daily Times*

Educational Material and Publications

As a routine part of SD1's communication efforts, educational information is published in "What's Happening," a county-specific publication that is mailed to every resident in Boone, Campbell and Kenton counties. During FY 2012, SD1 had educational information published in seven different issues of "What's Happening."

In addition, SD1 has developed a number of informational and educational pieces during this reporting period, including:

- Rate Adjustment (bill insert)
- Dry Creek Wastewater Treatment Plant Tour Guide
- Eastern Regional Water Reclamation Facility Tour Guide
- Western Regional Water Reclamation Facility Tour Guide
- Government Relations E-Newsletter
- Clearing the Air, Odor Control at Dry Creek Wastewater Treatment (brochure)
- Adopt Healthy Household Habits to Keep Water Clean (bill insert)
- SD1 - Official Test Bed of Confluence WTIC (conference fact sheet)

Refer to Appendix C, which highlights a few examples of these educational publications.

2.3.3 Website

SD1's new website was launched in May of 2010 and continues to evolve. During this reporting period, new information was added to the site including an interactive tour of the Dry Creek Wastewater Treatment Plant, and the audio tour that is available with the Audio Signs at SD1's award-winning Public Service Park. Additional topics on the website include: current capital projects, the benefits of rain barrels, tips for water conservation, FOG, field trips, policies, and wet weather notifications. In addition, the home page features a series of flash stories that are updated regularly and highlight key messages. These messages included stories such as:

- SD1 Wins Award in Recognition of Pretreatment Program (http://www.sd1.org/NewsArticle.aspx?id=52)
- Protect the Environment, Properly Drain Your Pool (http://www.sd1.org/NewsArticle.aspx?id=54)
- Be Responsible: Fertilizers and Pesticides (http://www.sd1.org/NewsArticle.aspx?id=62)

The site also features a document library which allows users to search for documents by category or key word. Some of the documents added and updated on the site during this reporting cycle included:

- Your SD1 Bill Explained
- Understanding Your Sanitary Sewer Lateral
- Best Management Practices Fact Sheet

Copies of these documents can be found in Appendix C.

2.3.4 Customer Service Surveys

In the past, SD1 provided its' customers paper surveys as a method of gaining feedback as to the quality of service they received during a construction project in their area or when they made a service request. To ensure a high response rate from the customers who received a survey to complete, the surveys were designed as door hangers with return address information and pre-paid postage on the backside. Although this method of feedback has been valuable in evaluating trouble call responses and capital improvement projects, SD1 identified the need for more comprehensive feedback on all of its services.

During FY 2012, SD1 conducted an assessment of surveying methodologies and it was determined that regular phone surveys would provide a better way to not only measure SD1's performance in certain areas, but to also gauge the public's understanding and support of SD1's mission. This is due to the fact that phone surveys provide more valid customer data over the paper surveys by increasing the number of customers being surveyed (sample size) and the variety of those customers (randomness). By having more reliable data, SD1 can use it with greater confidence in decision-making, prioritizing communication and customer service initiatives, and benchmarking progress.

The paper surveys were phased out during FY 2012, and the new surveying strategy is expected to be fully implemented during FY 2013.

2.3.5 Watershed Community Council

In November 2007, SD1 formed a Watershed Community Council to share information and help facilitate open, thoughtful discussion on the watershed planning process. The Council is comprised of 53 members from a diverse group of stakeholders, including

environmental organizations, home builders, the development community, local government and citizens. The council did not meet in FY 2012, but will reconvene in FY 2013, so SD1 can provide updates on the Watershed Plans and various capital projects.

2.4 Compliance

The purpose of SD1's Compliance Program is to identify and control residential, commercial, and industrial sources of flow that could adversely affect the collection system. This program encompasses both the Industrial Pretreatment Program and Grease Control Program (see Section 3 for an update on SD1's Grease Control Program). This program meets the Clean Water Act pretreatment regulations and complies with the National Pollution Discharge Elimination System permit.

2.4.1 Permitting

The Compliance Program provides the authoritative measures necessary to permit and monitor discharges from commercial and industrial users that may cause corrosion or blockages in the collection system. SD1 ended FY 2012 with a total of 52 permitted Significant Industrial Users in its collection system. One new permit was issued during FY 2012 for C & B Marine, LLC in Melbourne, KY.

SD1 did not approve any short-term specialty discharges during FY 2012.

2.4.2 Monitoring & Enforcement

The purpose of the Industrial Pretreatment Monitoring Program is to monitor discharges from industrial users throughout the service area to ensure compliance with Article 5 of SD1's Sanitary Rules and Regulations and protect SD1's sanitary sewer system, treatment plants, employees, and the receiving waters. All permitted industries are inspected annually and monitored semi-annually, with additional inspection and sampling performed as needed. During FY 2012, a total of 186 inspections were conducted.

SD1 has an Enforcement Response Plan in place to address each violation. Typically, the first Notice of Violation issued is verbal (and documented in a computerized program management system). The second violation is written. Each subsequent violation includes a fine. Fines can range anywhere from $500 to $1000 depending

upon the violation. Most issues are resolved before escalating to fines. If problems persist, an industry is put on a compliance schedule. During FY 2012, Notices of Violation were issued 35 times, consisting of 6 verbal notices, 14 written notices with no fine, and 15 written notices with fines totaling $12,500. Refer to Appendix D for a summary report describing these violations in more detail.

2.5 Continuous Sewer Assessment

The purpose of the Continuous Sewer Assessment program (CSAP) is to provide a proactive and coordinated asset management-based approach to assessing the condition and life cycle of SD1's infrastructure and managing a cost-effective rehabilitation/replacement of the system. Implementation of this program has enabled SD1 to more effectively and proactively prioritize and implement system inspection, cleaning, and rehabilitation/replacement of its assets.

The CSAP is comprised of the following six specific O&M activities that work in conjunction to assess and maintain the collection system:

- Interceptor Program – targets the maintenance and condition assessment of critical main trunk and interceptor sewers
- Large Diameter Sewer Assessment Program – focuses on the maintenance and condition assessment of sewers in the combined sewer system with pipes typically 15-inches and larger in diameter that have a high consequence of failure
- Manhole Inspection Program – assesses manholes throughout the collection system to determine the extent of structural defects, signs of sewer surcharge, and risk of I/I
- Preventive O&M Program – prioritizes the condition assessment, maintenance and repair/rehabilitation of the collection system to proactively prevent system failure that can cause overflows
- SSES Program – identifies and assesses the sources of I/I throughout the collection system
- Trouble Call Program – provides response to calls from customers who suspect problems related to the sanitary sewer service

Appropriate inspection technologies such as flow monitoring, closed circuit television (CCTV), smoke & dye testing, sonar, and visual inspection are used in the assessment

phase of the O&M programs. CSAP classifies pipes by using the Sewer Condition Risk Evaluation Analysis Model™ (SCREAM) to generate structural and maintenance scores for each pipe inspected. The structural and maintenance scores then identify appropriate schedules for recommended next actions such as re-inspecting, cleaning, repair, or complete rehabilitation or replacement.

Together, the activities of each O&M program ensure that SD1 is meeting the overall objectives of the CSAP as demonstrated by the program process diagram in Appendix E. The remaining portions of this section highlight the collective progress of the six O&M programs in meeting the performance goals and projected targets of the overall CSAP. The data provided for previous years has been updated based on improvements in Lucity recordkeeping over the past fiscal year.

2.5.1 Collection System Condition Assessment

Sewer Inspections

Table 2.3 outlines the amount of the system that has been assessed since the onset of the CSAP, through the end of the current reporting period.

Table 2.3 Sewer Inspection Footage

	Initial Inspection Footage	Follow-Up Inspection Footage	Total Cumulative Footage
FY 2008 (Jan-June)	374,068	46,898	420,966
FY 2009	1,340,874	498,113	1,838,987
FY 2010	421,130	589,519	1,010,649
FY 2011	600,306	583,389	1,183,695
FY 2012	501,160	483,494	984,654
Total To Date	**3,237,538 (41% of system)**	**2,201,413**	**5,438,951**

The above table shows the initial and follow-up inspection footages over the first five years of the CSAP. Initial inspections reflect the amount of the system that has been inspected for the first time based on a prioritization of assets. Follow-up inspections are

for pipes that have been initially inspected and leading to reactive maintenance, which in turn require a reinspection for an assessment of the maintenance effectiveness and a new condition score.

In FY 2012, SD1 contracted out approximately 260,000 feet of CCTV inspections and light cleaning for pipes within 50 feet of creeks that are classified by the United States Geological Survey as perennial or intermittent. Typically, the locations of such pipes are in remote areas and can be difficult to access, requiring specialized equipment and mobilizations that are not suitable for SD1 CCTV crews. The purpose of prioritizing the inspection of these pipes is to ensure that creek water is not infiltrating and reducing the capacity of the collection system. Only a portion of the inspection footage that has been completed by contract has been fully processed with CSAP, due to the administrative time it requires to import and score the contractor's inspection deliverables. The totals reported in Table 2.3 reflect only the amount of the system that has been inspected and completely scored by CSAP.

A thorough analysis of the outstanding inspections that were completed by contractors during FY 2012, but have not yet been imported into Lucity to generate a SCREAM score for the asset, has yielded a combined total of approximately 3,630,000 feet of initial inspections. Roughly, 46 percent of the entire collection system has been inspected to date, but only 41 percent has been assigned a SCREAM score. This total also includes contractor-provided post-construction inspections of the newly completed improvements associated with the Western Regional Water Reclamation Facility, as well as other sources. The outstanding contractor inspection footages will be imported and incorporated in the totals for FY 2013.

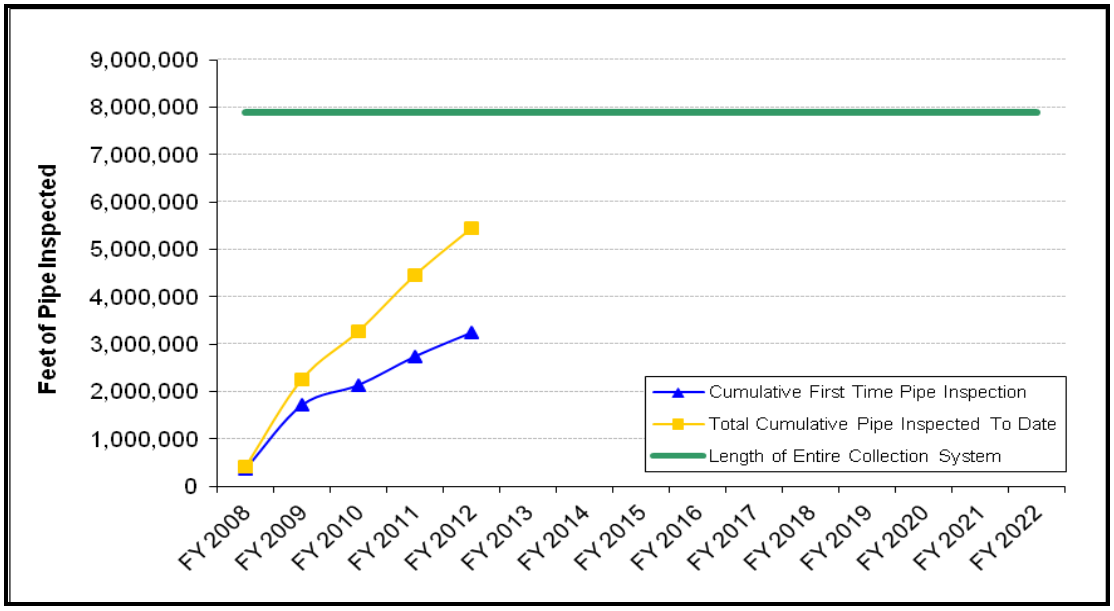
SD1's CMOM Self-Assessment, submitted on October 17, 2007, projected a 10-year target for total system condition assessment. The projection was largely based on historical inspections and maintenance routines performed prior to the formal development of SD1's CSAP. As stated in the Self-Assessment, such estimations require regular reassessment that may lead to adjustments of the initial projection. The need for post-maintenance reinspection has grown in five years, and has kept pace with initial inspections over the past three years, impeding a ten-year assessment cycle, as shown in Table 2.3.

Other factors impede a ten-year cycle as well, such as the increasing frequency of pipe

abandonments, replacements, rehabilitations, and reroutes. From the standpoint of CSAP, such asset renewal can technically remove an existing pipe from the total footage that has been initially inspected, and replace it with a new pipe of approximately the same length that requires a new initial inspection. Such scenarios represent an unforeseen loss of initial inspection footage without a reduction in total footage of the system.

Figure 2.5 illustrates SD1's current progress and inspections target, using the data from Table 2.3. SD1 projects approximately 8,000,000 feet of pipe inspected by 2014, and approximately 8,000,000 feet of pipe for first time inspections by 2022. SD1 will continue to balance the need for first time inspections with follow-up inspections of critical systems. The projections may change as SD1 continues to evaluate system condition and resets priorities.

Figure 2.5 Sewer Inspection Progress



Catch Basin and Manhole Inspections

SD1 inspects upstream and downstream manholes during all sewer inspections, unless the manholes have had an inspection within the last 12 months. SD1-owned catch basins, inlets, and trapped storm manholes that are in the combined sewer system are inspected at least once per year. Table 2.4 summarizes the number of catch basins and manholes inspected since the onset of CSAP.

Table 2.4 Catch Basin & Manhole Inspections

Period	Number of Catch Basin Inspections*	Number of Manhole Inspections
FY 2008 (January – June)	986	2,050
FY 2009	1,774	7,238
FY 2010	4,168	1,933
FY 2011	3,401	1,783
FY 2012	4,019	901
Total Inspections	**14,348**	**13,905**

*Total includes basins owned by SD1, the Commonwealth of Kentucky, municipalities and private entities.

2.5.2 Collection System Maintenance

Sewer Cleaning

Cleaning is critical in maintaining the capacity of the sewer system and preventing overflows. SD1's prioritization process ensures that cleaning activities are done in a cost-effective manner and only on pipes in need of cleaning. The program's logic can be found in the CSAP process diagram in Appendix E. The cleaning program classifies pipes by using SCREAM Model™ maintenance scores and identifies appropriate schedules for re-inspections, re-cleaning, and when the pipe should be reviewed for a permanent solution in lieu of continued cleaning. Table 2.5 provides an overview of the length of pipe cleaned in accordance with the CSAP cleaning program logic.

Table 2.5 Sewer Cleaning Footage

Period	Footage of Pipe Cleaned
FY 2008 (January – June)	113,695
FY 2009	439,191
FY 2010	737,613*
FY 2011	382,352
FY 2012	370,296
Total Feet Cleaned	**2,043,147**

*Higher totals in FY 2010 are due to sewer cleaning support provided by an outside contractor.

Pipes with high recurring maintenance scores undergo further evaluation for potential permanent solutions. Taking into consideration the pipe's structural and maintenance condition, a life-cycle cost analysis is performed to determine if it is more cost-effective to continue to inspect and clean the pipe on a regular preventive maintenance (PM) schedule or to permanently repair or replace the pipe. To date, SD1 has 6,953 feet of pipe on its permanent PM cleaning list, which is approximately 1,000 feet less than in 2011. The reduction in footage assigned to permanent PM cleaning list is due to pipes being replaced or rehabbed, as determined appropriate by the life-cycle cost analysis.

Typically, the cleaning and re-inspection frequencies of pipes vary, depending on the condition of the pipe or the frequency of reoccurring issues, such as grease, roots, basement backups and overflows. SD1's permanent PM cleaning list will continue to evolve as additional inspection data is collected, solutions for the remaining pipes are identified, and other new pipes are identified as needing corrective actions.

Catch Basin and Grit Pit Cleaning

In January 2009 SD1 began tracking the amount of debris removed during catch basin and grit pit cleaning. During FY 2012, SD1 removed an estimated 527 cubic yards of debris from catch basins and 400 cubic yards of debris from grit pits.

Table 2.6 Yards of Debris Removed Through Catch Basin and Grit Pit Cleaning

Activity	FY 2009 Total (Jan–Jun)	FY 2010 Total	FY 2011 Total	FY 2012 Total	Combined Total
Catch Basin Cleaning	149	433	629	527	1,738
Grit Pit Cleaning	237	362	330	400	1,329
Total Cubic Yards of Debris Removed	**386**	**795**	**959**	**927**	**3,067**

Rehabilitation and Replacement

Table 2.7 describes the rehabilitation and replacement activities performed by SD1's internal construction crews and maintenance contractors since the onset of the CSAP through the end of the current reporting period.

Table 2.7 Rehabilitation & Replacement Activities*

Activity	FY 2008 Total	FY 2009 Total	FY 2010 Total	FY 2011 Total	FY 2012 Total	Grand Total
Feet of Sewer Lines Repaired or Replaced	11,608	17,944	29,239	19,500	18,508	**96,799**
Feet of Sewer Lines Rehabilitated (cured-in-place piping)	1,081	3,204	12,872	64,715**	65,757**	**147,629**
Number of Misc. Sewer Repairs	33	41	5	12	4	**95**
Number of Manhole Repairs	548	370	317	321	774***	**2,330**
Number of Manhole Replacements	35	63	80	60	89	**327**
Number of New Manhole Installations	16	53	40	36	57	**202**
Number of Catch Basin Repairs	68	115	71	209	292	**755**
Number of Catch Basin Replacements	81	209	203	116	100	**709**
Number of New Catch Basin Installations	0	4	2	3	3	**12**

*Rehabilitation & Replacement Activities do not include expansion of SD1 system through CIP projects.

**In FY 2011 and FY 2012, SD1 entered into CIPP lining contracts, which account for the significant increases in lineal footage rehabilitated.

***In FY 2012 SD1 entered into a manhole grouting contract, which accounts for the significant increase in manhole repairs.

SD1 Collection System construction crews and SD1's maintenance contractors perform repair, replacement and rehabilitation work. The work schedule is determined by various criticality factors and the proximity of these pipes to priority watershed areas. Pipes requiring emergency work, because of the potential for failure, are scheduled for an immediate repair upon discovery. Additional considerations that may determine if the schedule should be accelerated for a solution are factors such as proximity to overflows, lack of hydraulic capacity, and proximity to other pipes being fixed.

2.6 Emergency Preparedness & Response

SD1's Sewer Overflow Response Plan (SORP) is an operational document that emphasizes emergency response activities to contain, mitigate, and clean residuals from overflows. The long-range objective of the SORP is to provide a framework whereby proper documentation of each event will help establish permanent overflow abatement programs to be incorporated into SD1's Watershed Plans. SD1's SORP as amended July 10, 2009 received regulatory approval on November 10, 2009.

2.6.1 SORP Training

SD1 held annual SORP trainings between June and November of 2012. More than 100 operation level employees attended these trainings, and were issued a standard operating procedures handbook if needed. Personnel in Collection Systems and Plant Operations are required to attend annual training and periodic refreshers throughout the year. Operations level employees also receive continuous hands-on training in the field during actual overflow response events.

The SORP describes SSO Reporting and Notification. Quarterly, SD1 reports overflows that occurred throughout SD1's service area, including a cumulative accounting of overflow activity from January 2008 through the current reporting period and an annual comparison of the overflow activity.

2.6.2 SORP Annual Review

Under the Consent Decree, SD1 is required to perform annual reviews of the SORP and make adjustments as necessary. Specifically, Section 36(c) states that:

> **36. (c) Specific CMOM Program Development – Sewer Overflow Response Plan ("SORP").** …By no later than each anniversary date of the approval of the SORP, the District shall annually review the SORP and propose changes as appropriate subject to Cabinet/EPA review and approval.

SD1 conducted annual review meetings in November 2012, and determined that there were no material modifications to the SORP for FY 2012. Minor updates include personnel and on-call scheduling changes, wet weather SSO route updates, and two new standard operating procedures developed by SORP crew leaders for After Hours Primary On-Call Procedures and Off Shift Emergency Call-in Procedures. Both standard operating procedure documents have been added to the internal employee SORP and CMOM handbooks. Updates to SSO routes, schedules, personnel, and standard operating procedures can be found in Appendix F.

2.7 Information Management Systems (IMS)

SD1 has continued its efforts to automate the CSAP to eliminate the need for manual data entry and work order generation. The CSAP database communicates directly with Lucity, SD1's data management and tracking software, to generate automatic next action work orders for cleaning, re-inspection, work scheduling, and permanent solution determinations.

The CSAP automation also encompasses a feature for determining the rehabilitation and replacement options for asset renewal. This feature is known as the Corrective Action Logic. This feature uses life-cycle costing analysis to produce a comparison for each pipe in order to determine whether it is more cost-effective to continue to clean, repair, rehabilitate or replace each pipe. SD1 will continue to refine these tools to enhance their functionality and increase the efficiency of SD1's decision-making and rehabilitation capabilities.

A number of IMS improvements were implemented during the reporting period to enhance communication, data collection, and workflow. The following are examples of the most significant improvements of FY 2012.

Storage Area Network

SD1 has implemented a storage area network (SAN) to address its increasing data storage requirements for electronic information related to technical projects, administrative functions, sewer infrastructure videos and associated databases. The SAN technology provides a high-performing and scalable storage framework for securely storing SD1's electronic information.

Virtualization

SD1 has implemented virtualization in its data center to address server provisioning for existing and future information initiatives. Virtualization allows multiple server instances to reside on a single physical server, which provides greater operational efficiency by increasing hardware utilization and decreasing power consumption.

Network

SD1's fiber optic network expanded significantly in FY 2012, due to the start up of Western Regional Water Reclamation Facility and other new facilities. Currently, the SD1 Main Office acts as the hub to a fiber optic network with six point-to-point circuits. The points include:

- Dry Creek Waste Water Treatment Plant
- Western Regional Water Reclamation Facility
- Eastern Regional Water Reclamation Facility
- Narrows Road Diversion Pump Station
- Riley Road Pump Station
- Dudley Facility

Software Upgrades

SD1 has upgraded to the most current software versions of both its geographic information system (GIS) and asset management system. With the upgrades to ESRI's ArcGIS version 10 and Lucity version 7.4, greater system integration capabilities and functionalities are now available.

A new feature that is now accessible to all SD1 staff is Lucity Dashboard, an application that provides quick views of preset Lucity data filters and the ability to write work orders without being logged in to the main Lucity Desktop application. The dashboard is also equipped with interactive maps that have some of the same integrated features available in the standard desktop versions of GIS and Lucity, but it requires no

additional licensing to use. This feature makes it possible to extend some of the highest levels of digital asset management to virtually any employee. To date, 35 employees in 12 different departments have been trained to use the Lucity Dashboard and six Lucity Dashboard maps have been developed.

In addition to the Lucity Dashboard maps, SD1 has recently developed numerous web maps using ArcGIS Server version 10, with standard application programming interfaces that pull live data directly from Lucity. The web maps were designed for specific users to help improve their ability to access and relay information as quickly as possible. Examples of some of the maps and the departments that use them include:

- Accident and Hazard Analysis – Safety Department
- Account Services Project Locations – Account Services
- As-built Viewer – GIS, Planning, Records Retention
- After Hours Dispatch Map – Plant Operations (after hours dispatch)
- GIS Updates – Collections Systems
- SSES Editing – Collections Systems
- Aerial Photographs Over Time – Company wide
- Stream Gauges – Water Resources
- ERWRF As-built Viewer – Plant Operations
- Verizon Map – Collections Systems (documents areas of poor cellular service)
- Dispatch Map Main Office – Collections Systems
- Flow Monitoring – Planning

2.8 Legal Authority

The purpose of SD1's Legal Authority Program is to:

- Implement and enforce SD1's Rules and Regulations
- Assist in the development of policies and guidance documents
- Implement SD1's existing policies and guidance
- Ensure compliance with applicable state and federal laws
- Assist with securing necessary permits from state and federal agencies
- Keep informed of relevant legal issues and state and federal policies and guidance
- Reduce legal liability and manage risk
- Provide staff with legal support and advice
- Effectively manage litigation

- Provide legal assistance for timely, effective, and cost-efficient implementation of the Consent Decree, including coordination with regulators and legal review of all plans submitted pursuant to the Consent Decree
- Continuously review and revise legal authority as needed to further the mission of SD1

2.8.1 Private Sewer Laterals

Sewer Lateral Repair and Illegal Connection Inspection and Enforcement Policy

Of the 461 trouble calls related to building backups during FY 2012, 51 were determined to be SD1's responsibility and 403 were the responsibility of private owners. The backups determined to be the responsibility of private owners were due to causes such as breaks and blockages in private service laterals. SD1's Board of Directors has adopted several amendments to the Sewer Lateral Repair and Illegal Connection Inspection and Enforcement Policy in order to more efficiently address private lateral issues and remove private source I/I. The most recent version of this policy can be found in its entirety in Appendix G. SD1 will continue to assess its role in addressing and funding private source lateral and I/I removal issues and make future amendments and/or implement new policies and programs as deemed necessary.

Financing and Grant Program for Defective Private Lateral Repairs and Removal of Illegal Connections Outside Public Roadways

SD1 established a program during FY 2008 to provide financing and/or funds to eligible property owners faced with the obligation to perform excavation and repair work of private laterals outside public roadways.

Through this program, SD1 may advance funds for payment of a licensed plumber to conduct the necessary improvements, and offer a finance option to allow the property owner to repay SD1 with interest. The interest is set at a rate of two basis points above prime rate at the time that financing is initiated over a term not to exceed 15 years. To date, SD1 has provided approximately $99,915 in financing to 27 property owners (approximately $6,000 will be repaid through the grant funds described below).

As part of a Supplemental Environmental Project under the Consent Decree, SD1 was also able to reimburse qualified residential property owners for a portion of the costs of certain sanitary sewer improvement projects. Candidate projects included the repair or

replacement of failing sanitary service laterals and the installation of new sanitary service connections to SD1 sewer mains. Approved residential property owners were eligible to receive grants of up to $5,000 towards such projects, depending on their income level. As documented in SD1's Consent Decree Supplemental and State Environmental Projects Completion Report, submitted on June 15, 2012, SD1 provided approximately $348,746 in grant funding to help 119 qualified property owners make sanitary sewer improvements. The Supplemental Environmental Project has been fully implemented during FY 2012, bringing the program to its end. To date, 110 of the 119 property owners have been reimbursed for the cost of their improvements. Nine homeowners are still in the process of completing their projects.

2.9 New Connection Tap-In

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

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

2.9.1 Certified Tapper Program

SD1's formal Certified Tapper Program ensures that connections to the sanitary and storm sewer system are approved by SD1 personnel and are performed accurately based upon written specifications and procedures. Plumbers interested in becoming

certified are required to attend training and pass a written exam. In addition, Certified Tappers must attend a recertification class offered by SD1 every three years. SD1 currently has 163 Certified Tappers representing 93 plumbing companies, one city, and one utility. Of these 163 Certified Tappers, 25 became newly certified during FY 2012.

2.9.2 Violations and Fines

During FY 2012, SD1 issued four violations and $2,000 in fines to three companies for connecting to SD1's sewer system without obtaining the proper Capacity Permit or Sanitary Sewer Connection Application Permit. Three violations were also issued to three homeowners for improperly connecting private catch basins to storm sewers; however, fines for these violations are pending an appeal process. Table 2.8 shows the fines issued since 2009.

Table 2.8 Capacity Connection Violations and Fines

Fiscal Year	Number of Violations	Number of Companies	Total in Fines
2009	6	6	**$3,000**
2010	8	7	**$5,250**
2011	9	6	**$5,500**
2012	7	3	**$2,000**
Total Violations and Fines	**30**	**22**	**$15,750**

2.10 Organizational Structure

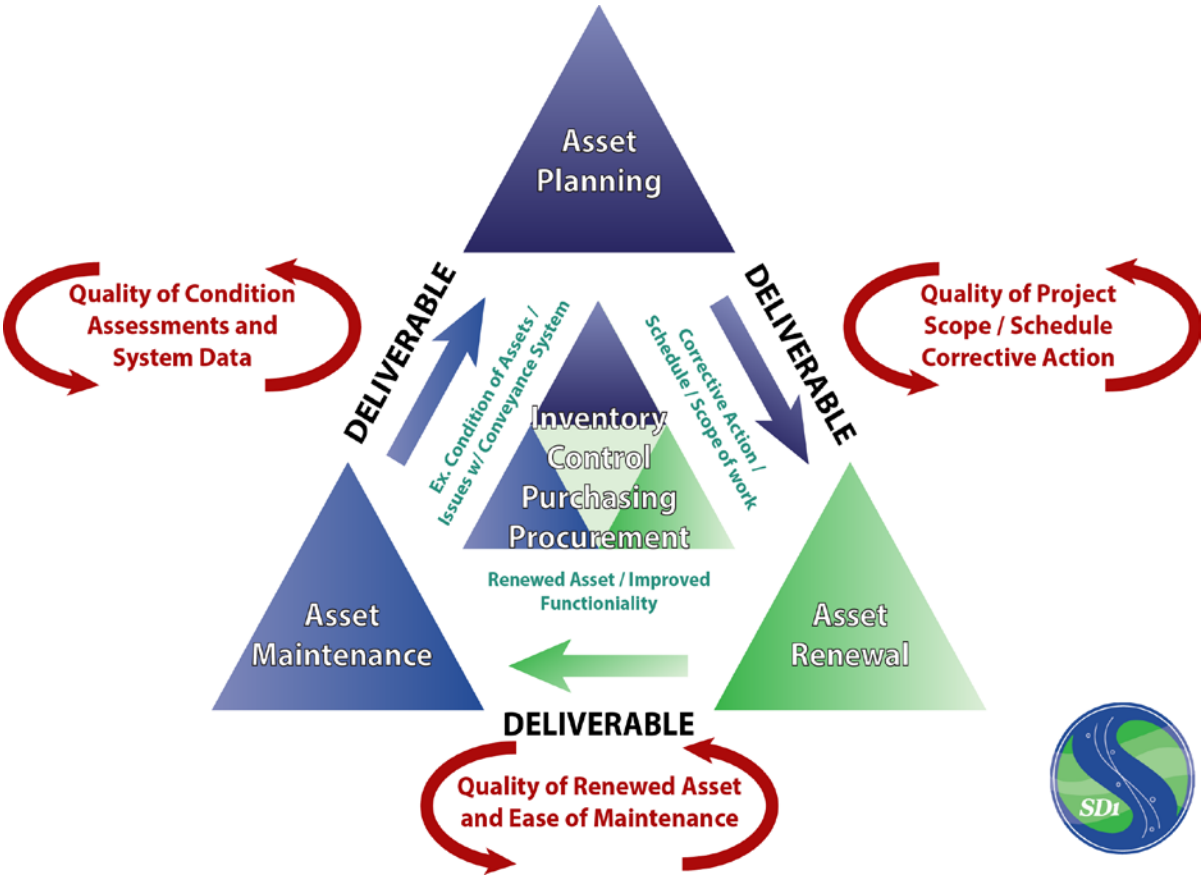
The purpose of SD1's Organizational Structure Program is to provide delineated job responsibilities, outline opportunities for advancement, ensure effective employee supervisor ratios, and guarantee adequate staff is in place to accomplish the mission and vision of SD1. This program also works in conjunction with the annual budget process to determine staffing needs and allocate operational expenses appropriately.

In January 2010, SD1 contracted with a third party to evaluate the O&M activities and business services that take place throughout the organization. To address some of the recommendations set forth in this evaluation, changes were made to the organizational

structure in early 2011 to achieve some of the identified goals.

Throughout FY 2012, additional organizational structure changes were made to gain greater efficiencies and allow for a more proactive, versus reactive, customer service approach. For instance, the Collections Systems Department experienced restructuring that has streamlined the conventional workflow of customer service and construction through three main working groups. The newly organized groups are: Asset Planning, Asset Renewal, and Asset Maintenance. The workflow and responsibilities of the new work groups are illustrated in Figure 2.7. SD1's current organizational charts can be found in Appendix F.

Figure 2.6 Collection Systems Department Structure



New Executive Leadership

During FY 2012, SD1 welcomed two new additions to its executive leadership team.

David Rager began his tenure as SD1's Executive Director on January 1, 2012. He brings with him 36 years of executive management experience and demonstrated success at bringing together diverse entities for more efficient service and superior customer care.

Prior to his new role at SD1, Mr. Rager spent 18 years as CEO of the Greater Cincinnati Water Works, a metropolitan utility serving approximately 1.2 million people over an 800 square mile area in southwestern Ohio and northern Kentucky. Mr. Rager also served as Deputy City Manager for the City of Cincinnati and served for a year as Interim City Manager at the request of the Mayor and City Council.

Mr. Rager has served on the Board of Trustees for the Water Research Foundation and the Association of Metropolitan Water Agencies. He currently serves on the Board of the American Water Works Association. He also served on the Cincinnati Planning Commission and as a trustee on the Cincinnati Retirement Board, as well as on task forces and boards for the National Academy of Sciences, the United States Environmental Protection Agency, the International Water Association, and the Cincinnati Chamber of Commerce.

Also joining SD1 in February 2012 was Lisa Hollander, who was named General Counsel for SD1. She has twenty-six years of experience in environmental, health and safety counseling, regulatory and legislative advocacy, administrative and judicial litigation, and public agency administration. Prior to SD1, Ms. Hollander held several positions at the Northeast Ohio Regional Sewer District, including Assistant General Counsel, Special Liaison for Legislative and Regulatory Affairs and Deputy Director of Law. She also served as in-house counsel for their Combined Sewer Overflow Long Term Control Plan negotiations and litigation with the Ohio Attorney General, the Ohio Environmental Protection Agency, the Environmental Protection Agency Region 5, and the U.S. Department of Justice. She also provided legal counsel during the formation of their storm water management program

Ms. Hollander is an active member of the National Association of Clean Water Agencies where she serves as Chair of the Legal Affairs Committee, and in 2001 she was awarded the association's President's Award. Ms. Hollander was instrumental in the formation of the Association of Ohio Metropolitan Wastewater Agencies and served as its first General Counsel.

2.11 Pump Station Operations

The purpose of SD1's Pump Station Operations program is to ensure reliable operations of the pump stations throughout the service area. Routine inspections and preventative maintenance are preformed to ensure that all stations are operating at maximum efficiency. In FY 2012, SD1 completed approximately 1,460 pump station PM inspections that included assessments of generators, stand-by pumps, bubblers, heating ventilation and air conditioning, electrical, air release valves, gate valves, plug valves and pump/motor lubrication. Approximately 50 less inspections were performed in FY 2012 due to the elimination of the 13 pump stations related to the activation of the Western Regional Water Reclamation Facility. Even fewer inspections are expected in FY 2013, as the eliminated pump stations will have been off-line for the entire year.

Power Systems Evaluation and Asset Management Program

During FY 2012, SD1 implemented a proactive and coordinated asset management program of its treatment and pump operation power systems. The purpose of this program is to assess and identify the condition of the power systems, plan and prioritize subsequent improvement plans based upon criticality and implement regular preventive and corrective maintenance required to sustain the reliability of its power systems. These proactive measures cost-effectively ensure that all power systems are operating at maximum efficiency, thereby reducing the risk of sewage discharges.

The initial assessment phase, completed in FY 2011, indicated that the Willow Run and Covington Main Street Flood Pumping Station power systems were in critical condition and in need of immediate attention. Based on this information, SD1 took immediate action at these stations. Transformers at the Willow Run location were replaced in February 2011 and the transformers at the Covington Main Street Flood Station were replaced in July 2012.

The three flood stations that will receive new transformers are:

- Eastern Avenue Flood Station in Covington
- Fourth Street Flood Station in Newport
- Washington Street Flood Station in Newport

SD1 continued evaluating the initial condition assessments of the other power systems that were found to be in less critical condition and develop a prioritized improvement

plan to address any repairs that are needed. Additionally, SD1 entered into an electrical maintenance contract in FY 2012, to ensure adequate resources during emergencies.

2.12 Safety

The purpose of SD1's Safety Program is to ensure that appropriate measures are taken to eliminate or control the exposure of SD1 employees and the general public to hazards that may cause physical harm, and to comply with local, state, and federal safety codes and legislation. Performing daily operations in a safe manner not only protects our workforce and the community, but also demonstrates fiscal prudence, high employee morale, and results in financial savings for our ratepayers.

SD1's Safety Committee assists in providing a safe working environment for all employees. The Committee provides recommendations to improve safety and working conditions at SD1 and communicates with all departments, staff, and employees on matters relating to occupational safety and health. In addition, SD1 has an established an Emergency Response Team that has been trained to plan for and respond to workplace emergencies.

2.12.1 Safety Training

SD1 has continued to produce and distribute a Safety Training Calendar that identifies class offerings, instructors, times, and dates of training throughout the year. A copy of the FY 2012 Safety Training Calendar is included in Appendix I. The calendar is posted to the Intranet site, and monthly email notifications are sent to SD1 employees to notify them of upcoming trainings and attendance requirements. Attendance at safety training classes is tracked with Training Tracker software to ensure that each employee meets his or her annual safety training requirements.

2.12.2 Performance Indicators

Table 2.9 outlines the indicators used to measure the success of the Safety Program and SD1's performance in each area during FY 2008 through FY 2012.

Table 2.9 Safety Program Performance

Performance Metric	FY 2008	FY 2009	FY 2010	FY 2011	FY2012
OSHA Recordables	10	15	19	6	8
Worker Compensation Claims	10	9	10	9	7
Friendly Reminders Issued	18	1	8	6	5
Safety Violations Issued	3	0	4	1	4
First Aids	17	17	21	23	22
Site Safety Audits	104	348	222	235	192

2.12.3 Safety Program Improvements

SD1's Safety Department and the Safety Committee successfully produced many great improvements in FY 2012. The following are examples of how SD1 has continued to improve safety awareness of not only SD1 employees, but the community at large.

New Training Facility

SD1 built a new collapsed/confined space trench training facility that provides a safe location to practice emergency shoring and shielding for collapsed trenches and confined space entry. This training facility is an innovative full-scale training simulator that provides the essential experience many SD1 employees need to perform their jobs safely. It also promotes overall safety in the community, because other local emergency personnel can use it. Local Homeland Security Departments, city fire fighters, and other emergency response team members from various local agencies have utilized the training grounds. This has also provided the opportunity for SD1 to train alongside other emergency and rescue agencies that may work in conjunction with SD1 in the future to rescue someone trapped or injured in a confined space such as a sewer.

Increased Safety Training for Pressure Testing Plugs

SD1 also began a safety awareness promotion for in-line sewer test plugs. These devices can cause serious work-related injuries due to over-pressurization, material deterioration, and unanticipated back pressure. SD1's Safety Department provided all users of SD1 test plugs additional training to minimize the risk of catastrophic equipment failure. In addition, SD1 updated its procedures to incorporate the use of an extension hose to distance the operator away from hazard area, an inline gauge to

prevent over filling, strain relief webbed hose encasement to prevent kickback from hose failure and established requirements for pre-use pressure inspections.

Pump Station Identification Signs

At the recommendation of the Safety Committee, SD1 installed identification signs at approximately 40 pump station facilities in FY 2012. .The purpose of the signs is to help citizens and local officials identify the facilities, which is especially helpful if there is a need to report a problem at a remote pump station location. This will improve SD1's response time to potential operational failures that may lead to overflows. Identification signs will continue to be installed at more pump stations in FY 2013.

2.13 Smoke & Dye Testing

The purpose of SD1's Smoke & Dye Testing Program is to identify specific sources of rainfall derived I/I into the sanitary sewer system. Smoke & dye testing along with sewer and manhole inspections and flow monitoring comprises SD1's SSES program elements. Smoke testing helps to identify significant sources of storm water I/I, including private service laterals and illegal connections such as downspouts and area drains. Smoke testing can also be used to determine the location of sewer main defects likely contributing to an I/I problem. Dye testing is performed for comprehensive identification of both public and private source I/I connections.

Priority I/I Source Identification & Removal Program

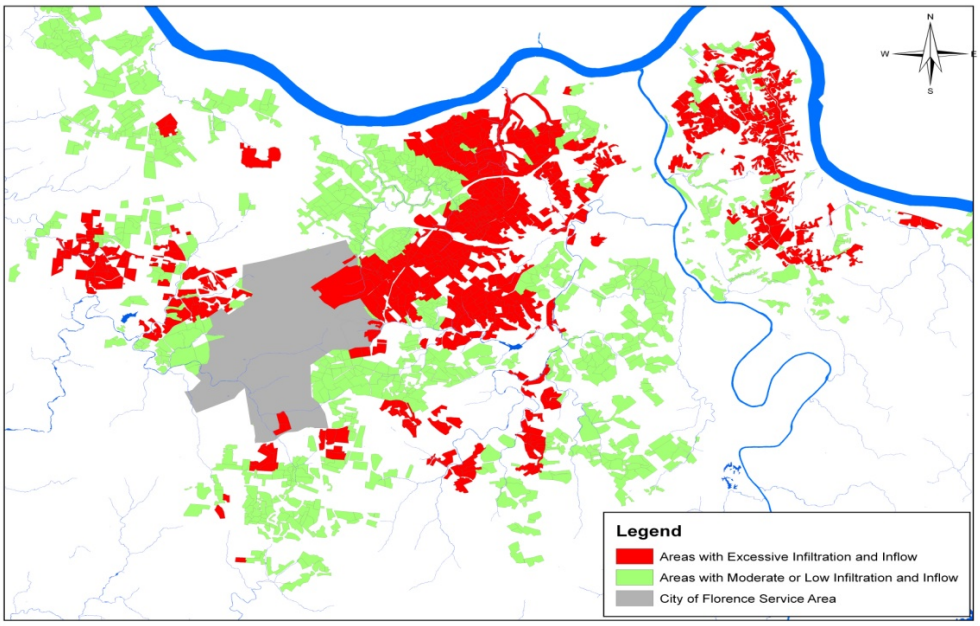
As part of the SSES program, SD1 has budgeted funds as part of its Watershed Plans to implement a Priority Inflow and Infiltration Source Identification & Removal Program designed to reduce and eliminate SSOs through public and private source I/I removal projects. Smoke and dye testing plays a critical role in identifying the sources of I/I as part of this program. The priority watershed areas SD1's SSES crews will initially evaluate as part of this program are known to have extensive I/I and include the Banklick Creek (Lakeview Pump Station) watershed, Taylor Creek watershed, neighborhoods tributary to Crestview Pump Station, Bullock Pen Creek watershed (Erlanger and Elsmere), and the Licking River Siphon watershed.

2.13.1 SSES – I/I Assessment Projects

The goal of the SSES program is to identify and remove both public and private sources

of I/I to reduce and eliminate sanitary sewer overflows. SD1 has expended significant effort over the last several years to identify and quantify the sources of I/I using detailed flow monitoring and smoke and dye testing. The map in Figure 2.7 provides an overview of the areas in SD1's collection system experiencing I/I at levels such that 2% or more of the storm water runoff from the area served ends up in the sanitary sewer. This map provides the focus of the SSES program and I/I associated assessment projects.

Figure 2.7 Areas of Excessive I/I Across SD1's Collection System



Advantages of Micromonitoring

SD1 has made great strides in FY 2012 towards improving the cost effectiveness and efficiency of SSES and I/I assessment, by investing in the emergent technology of micromonitoring. It has become SD1's preferred method for identifying where to focus its resources. The following is a brief explanation of how micromonitoring works, and how it has improved SD1's ability to conduct I/I assessments.

Micromonitoring is a variation of conventional sewer flow monitoring, but focused on smaller pipe segments with the objective of locating actual defects in the sewer. The goal of micromonitoring is to quickly identify sewer pipes that need rehabilitation, in a very economical and time efficient way. To achieve this goal, modified flow monitors

called micromonitors are deployed in sub-basins to collect wet weather flows for one or two storm events. This approach minimizes investigation costs, because follow-up fieldwork is focused only in targeted areas, instead of embarking on a basin-wide assessment of the system with smoke and dye testing or CCTV inspection. If a sewer line does not show any I/I response to a significant storm event during the micromonitoring period, it is immediately removed from the investigation and rehabilitation program. Other segments which indicate sources for I/I are included in the sewer rehabilitation program. If the source is on private property, SD1 can then approach individual home owners to find a solution, rather than imposing intrusive testing unnecessarily on the entire region.

Micromonitoring solves the problem of accurate measurement of low flow in small sections of sewer lines where there are only a few houses connected to the line. Current flow monitoring technology does not accurately measure very low flows. They are subject to two limitations. First, they readily collect sanitary debris in front of the probe, obstructing the signal used to measure velocity thus preventing accurate flow measurements. Second, when the flow is below the top of the probe, depth and velocity readings can be impacted and recorded incorrectly. Micromonitors have a weir behind the normal flow monitoring probe, which keeps the depth sufficient to prevent debris from accumulating and provides an alternative method of calculating the flow rate. When the flow is very slow, the flow rate over the weir can be calculated from the depth and the rating curve of the weir.

The micromonitors are versatile in nature; they work independent of pipe hydraulics such as offset joints, root balls, and drop pipes and can be applied to pipes with fewer houses, where conventional flow monitoring is not reliable. With the ability to measure such flows, micromonitoring can cost-effectively detect I/I sources from pipes with only a few storm connections. This helps direct wet-weather CCTV crews to the individual pipe segments that need further investigation. Additionally, micromonitors can be installed without confined space entry from the surface, eliminating the need for special safety equipment and the completion of additional paperwork.

The following maps provide examples of micromonitor deployments by SD1 in FY 2012 to improve sub-basin characterization prior to SSES and I/I investigations, or to verify rehabilitation results. The red squares depict micromonitor locations and illustrate the thorough analytical coverage the study areas receive using this method.

Figure 2.8 Micromonitoring in Drainage Area 49 (Newport, KY)

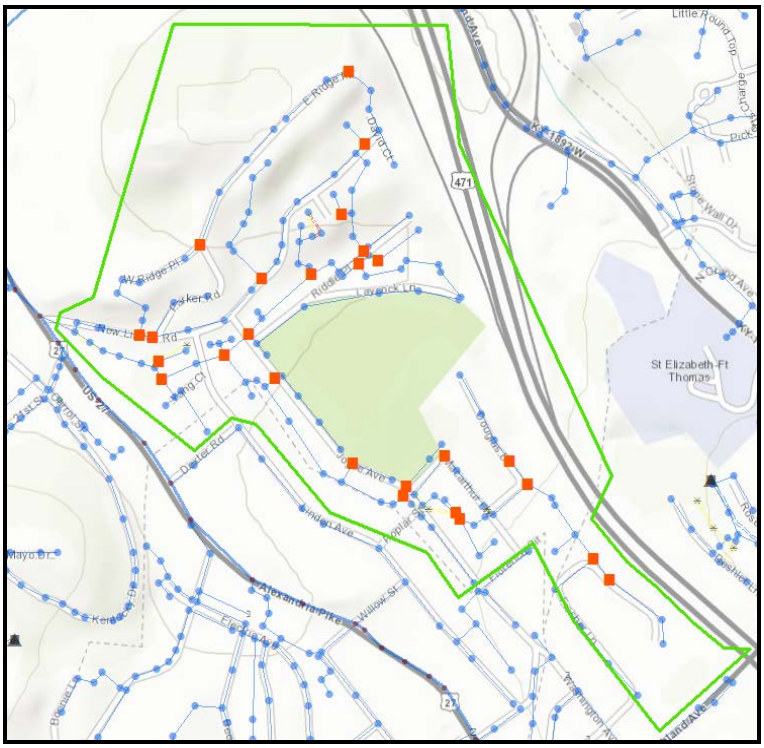


Figure 2.9 Micromonitoring in Drainage Area 193 (Southgate, KY)

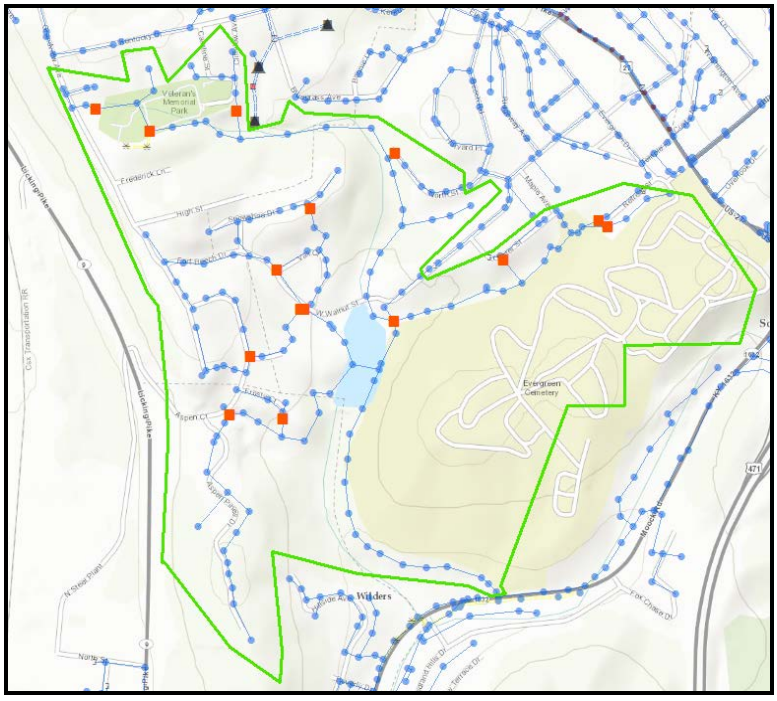


Figure 2.10 Micromonitoring in Drainage Area 208 (Elsmere, KY)

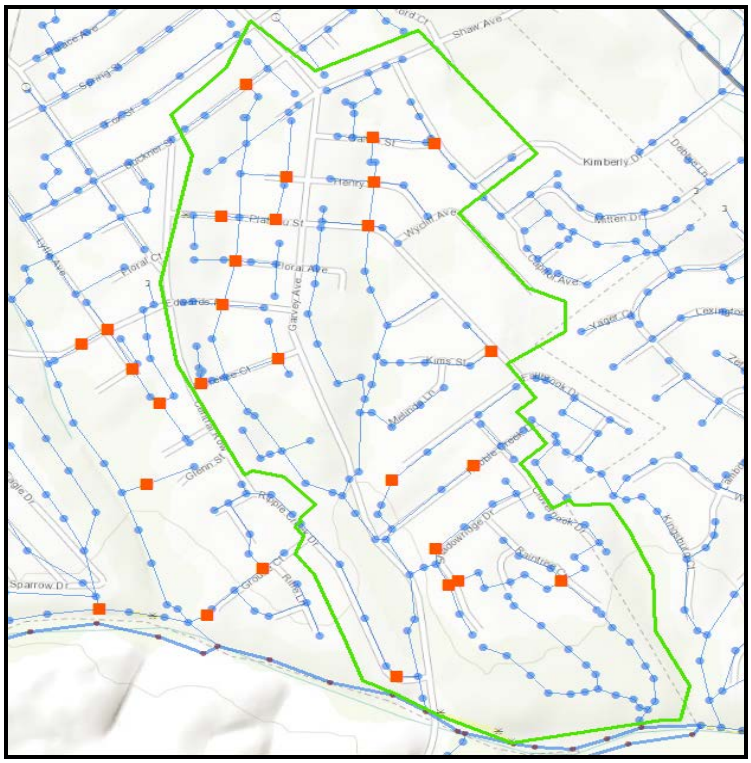
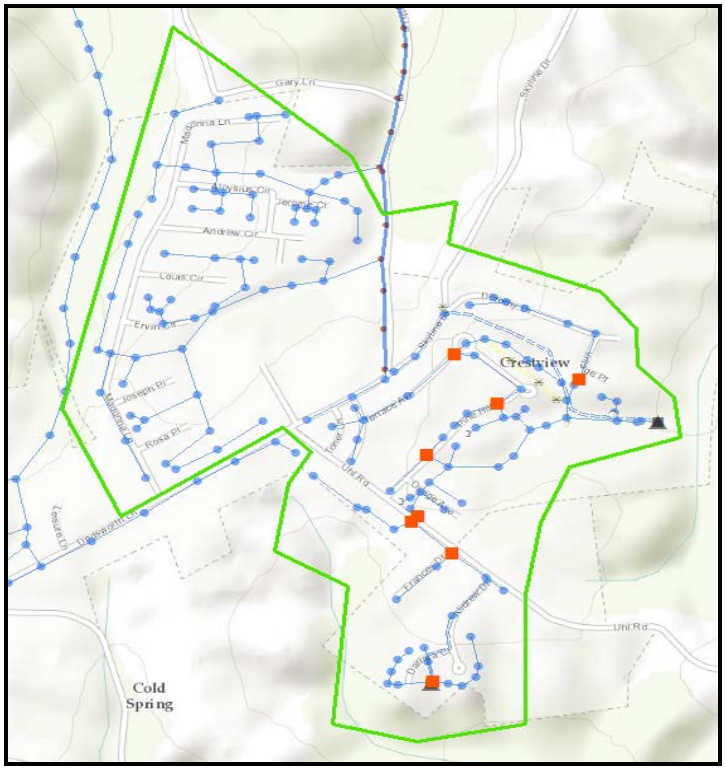


Figure 2.11 Micromonitoring in Drainage Area 209 (Elsmere, KY)

Figure 2.12 Micromonitoring in Drainage Area 215 (Crestview, KY)



Drainage Area 208

As an example of the benefits of micromonitoring, Figure 2.13 displays the results of the monitoring performed in Drainage Area 208. This is an area of Elsmere, Kentucky that has a mixture of newer and older homes. During FY 2012, approximately 20 micrometers were deployed in the area, as shown in Figure 2.10. The micrometers quickly provided insight into the conditions of the system and the neighborhood. Obvious patterns emerged from the data that suggested the sewers servicing the older homes had significant indications of I/I during peak intensity wet weather, and the newer homes had none. Every individual line segment that signaled the presence of I/I was easily identifiable. Maps, such as Figure 2.13, were then created to highlight suitable properties for the SSES crews to target with dye testing and further investigation in FY 2013. This innovative approach to pre-characterizing a study basin with micromonitoring narrowed the scope of assessment for Drainage Area 208 from 637 to 150 houses. The micromonitoring method ensures SD1‘s ability to reserve critical resources and time for investigation and elimination of the largest sources of I/I, and will continue to be a major part of SD1’s future I/I removal strategy.

Figure 2.13 Drainage Area 208 Micromonitoring Results

2.14 Training

The purpose of SD1's Training Program is to build an elite, professional, and proactive workforce capable of executing the mission and vision of SD1 in a safe, timely, and cost-effective manner. This comprehensive Training Program results in several benefits for the organization, including:

- Ensuring the safety of our employees and the community we serve
- Increasing job satisfaction, employee morale, and workforce engagement by providing opportunities for personal and professional growth
- Keeping staff up-to-date on industry trends, as well as certification and license requirements
- Maintaining the efficiency and consistency of job performance, which consequently upholds the quality of our work and yields a greater return on investment
- Meeting and exceeding the expectations of our ratepayers and governing bodies by ensuring fiscally responsible, efficient, and well-informed operations

SD1 employees are provided with a wide array of training opportunities throughout the year, including safety training, technical skills training, and soft skills training in areas such as communication and leadership. SD1 personnel received more than 5,600 total hours of training during FY 2012. Employees may receive professional development through external courses or through SD1's formal in-house training program that is managed by Human Resources.

2.14.1 In-House Training Program

During this reporting period, SD1 provided leadership training courses including: managing change, team building, conflict management, time management, and effective communication. In addition, specific computer skills training courses geared towards field personnel were offered to help ensure the continued advancement of technology in SD1's field operations. All of the classroom instruction for the courses identified in the catalog is provided by highly qualified and trained SD1 personnel, and instruction material is made available through the training program's in-house library. The training calendar and library is updated annually to provide revised or new training information.

In FY 2012, SD1's in-house training program focused on performance-based management and core competencies to allow for more job-specific training and certification.

(Refer to Section 2.6.1 for a description of SORP training and Section 2.12.1 for a description of safety training that took place during the current reporting period.)

2.14.2 External Training

Kentucky WINS Program

SD1 continued its participation in the Kentucky WINS program that provides grant funding for customized employee training through the Kentucky Community & Technical College System. During FY 2012, SD1 was able to secure grant funds to provide personnel additional specialized job training. Personnel attended Gateway Community College and completed courses in project management, motor controls, fluid power, and a programmable logic controls course that was customized to SD1 needs.

Many of the employees that have taken classes through this program over the last several years are close to meeting the requirements needed to obtain specialized certifications. In FY 2013, SD1 will seek additional grant funds for those employees to take the technical classes needed to fulfill the certification requirements of their respective programs. In addition, SD1 is seeking WINS grant funds for employee course training to help support the development of specific core competencies.

2.15 Water Quality Monitoring

The purpose of the Watershed Monitoring Program is to establish a baseline assessment of watershed conditions and instream water quality, via the collection of water chemistry, biological, physical habitat and hydromodification data throughout Northern Kentucky. This program includes dry weather base flow water chemistry and biological monitoring in all watersheds (approximately 75 locations), as well as, event-based wet weather in major watersheds (approximately 60 locations). Additionally, both wet and dry weather water chemistry samples are collected on the Ohio River between river miles 444 and 518 (22 locations).

During 2012, SD1 continued the collection of instream water chemistry, biological (fish

and macroinvertebrate communities) and habitat data to support the characterization of the Northern Kentucky Watersheds, and continued to expand the hydromodification component in its monitoring efforts. The hydromodification component focuses on measuring the physical stream channel responses that are primarily attributable to land-use conversion from undeveloped to developed. The altered flow regime associated with conventional urban development (i.e. hydromodification) leads to flashier and larger flows, excessive stream erosion, and overall channel instability that can cause water quality impairments (e.g. high TSS and sedimentation/siltation) and have adverse effects on aquatic biota such as fish and macroinvertebrates. Accelerated bank erosion, channel widening, and enlargement also pose risks to adjacent public infrastructure (e.g. sewers, roads, and bridges) and private property.

This data is being used to calculate critical flow values (Qcritical) for Northern Kentucky streams. Qcritical is a flow threshold, that when exceeded, can induce new or accelerate existing impairments, such as stream bank erosion and habitat simplification. The calculation of Qcritical allows for the design of storm water runoff controls that address both issues. In addition, this factor is viewed as the link between water quality and water quantity management due to the strong relationship revealed by recent data analysis between stream stability and ecological integrity.

Performance Monitoring

Instream water quality and overflow data collected to help characterize watersheds in Northern Kentucky plays an integral role in prioritizing, designing, and implementing cost-effective solutions that will reduce overflow occurrences and improve water quality in rivers and creeks within SD1's service area. These data were used to create the hydraulic and water quality models that served as essential planning tools in developing SD1's Watershed Plans submitted June 30, 2009, as well as, the March 31, 2011 resubmittal. In 2012, SD1 initiated Phase II of their monitoring efforts, which entailed revisiting site originally sampled at the onset of the program in 2007. These site revisits included biological and habitat assessments, base flow water chemistry samples, and where appropriate, hydromodification surveys. Additionally, base flow sampling was continued in the entire Northern Kentucky portion of the Ohio River (river miles 444-518). SD1 also continued to develop and refine performance metrics, in order to measure its progress in improving water quality in relation to the base-line water quality models.

Stream Condition Index

Data collected through SD1's watershed monitoring program continues to support and refine the Stream Condition Index (SCI). During 2012, with initial data collection complete, SD1 continued to make final refinements to the index, by including additional biological, chemical, habitat and stream flow data, as well as introducing a hydromodification metric. These data have considerably strengthened the index, which is expected to be fully implemented in FY 2013.

Recreational Management Tool

Several years ago SD1 began discussions with the Cincinnati Metropolitan Sewer District and the Ohio River Valley Water Sanitation Commission (ORSANCO) about the development of a recreational management tool. This tool would be used to inform the public about water quality and facilitate informed decisions regarding recreational use of the Ohio River. In 2011, efforts began to develop an application for smart phones and a website that provides predicted bacteria counts (E.coli) on sections of the Ohio River, based on monitoring that was conducted by the three agencies. Giving the public access to this information in real-time allows them to make a more informed decision on whether or not they choose to recreate on the Ohio River. In FY 2012, the tool was made available to the public as a free smart phone application called Recr8OhioRiver. The main website is still undergoing beta testing, but is now available for preview at http://preview.recr8ohioriver.org/.

SECTION 3. GREASE CONTROL PROGRAM

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

SD1 received regulatory approval of its Grease Control Program: Proposed Phased Implementation Plan on January 8, 2008. The revised Grease Control Program includes components such as ordinances, design standards, and permitting

requirements, inspection, and enforcement protocols. The enhancements made in the new Grease Control Program reduce sewer overflows within the collection systems and optimizes system capacity.

The program was constructed through the implementation of four phases, each lasting 12 months, as outlined in Table 3.1. For a status update of the final Phase 4 tasks that have been completed or are on-going, refer to Appendix J. SD1 met the deadline for completion of all tasks by January 8, 2012, and is currently tracking the remaining on-going tasks as part of its regulatory compliance measures.

Table 3.1 Grease Control Program Phased Implementation Plan Schedule

Actions	Phase 1	Phase 2	Phase 3	Phase 4
Conduct Self Assessment	■			
Review Rules and Regulation/ Enforcement	■	■		
Design Criteria	■	■		
FSE Education	■	■	■	■
Public Education	■		■	
Compile Data from Self Assessment		■		
Revise Rules and Regulations/ Enforcement Response Plan		■		
Develop Inspection Protocol		■		
Approval for Rules and Regulations/ Enforcement Response Plan			■	
Modify Food Service Discharge Permit			■	
Revise Domestic Holding Tank Waste Hauler Manifest			■	
Evaluate Staffing and Equipment Requirements			■	■
Public Reading for Rules and Regulations/Enforcement Response Plan				■
Permitting				■
Performance Indicators				■

Shaded areas indicate actions performed in phase.

3.1 Program Management

3.1.1 Responsibility

SD1's Industrial Monitoring and Plan Review groups are responsible for the implementation of the Grease Control Program.

3.1.2 Legal Authority

Sanitary Rules & Regulations

The Sanitary Rules and Regulations provide SD1 the legal authority necessary to control the sewer system and monitor discharges to the public wastewater treatment system. This control, along with other controls affected by these Rules and Regulations, is necessary not only to conform to federal and state Environmental Protection Agency laws and regulations, but also to provide for the consistent, reliable, and efficient functioning of the SD1's wastewater collection and treatment systems.

Enforcement Response Plan

SD1's Enforcement Response Plan (ERP) is used to determine the appropriate enforcement response to a specific violation of pretreatment requirements. The purpose of plan is to define the range of appropriate enforcement actions based on the nature and the severity of the violation and the overall degree of noncompliance. It also promotes consistent and timely use of the enforcement remedies available to SD1 by eliminating uncertainty and confusion concerning enforcement options.

SD1 updated its ERP during FY 2010 to include provisions necessary to enforce the requirements of the grease control program. These updates were approved by the Cabinet on July 19, 2010.

FOG Management Policy

During FY 2010, SD1 created a FOG Management Policy to describe in greater detail the implementation of its permitting program. The policy is intended to establish clear design standards, procedures, and guidelines to regulate FSE operations, as well as the disposition of FOG wastes pumped from FSE Grease Control Equipment (GCE) during routine maintenance.

In July 2011, SD1 notified certified tappers, plumbing suppliers, the Northern Kentucky Restaurant Association, the Northern Kentucky Health Department, and city and county representatives that new FSEs are required to install and maintain appropriately sized grease control equipment in accordance with the provisions of the new FOG Management Policy and its related design standards. The policy went into effect on January 1, 2012. SD1's complete FOG Management Policy can be found in Appendix J.

3.2 Permitting

SD1 determines the need to issue a Food Service Discharge Permit along with any applicable fees. Effective January 1, 2012, all new food service establishments are required to obtain a Food Service Discharge Permit, in accordance with SD1 Rules and Regulations.

3.2.1 Record Keeping

SD1 Food Service Discharge Permit requires that FSE maintain a "FOG Folder" at the FSE facility address that must be available for periodic inspections. Records shall be retained for a minimum of three years. Failure to meet any of the record keeping requirements is a violation of the Food Service Discharge Permit and SD1 Rules and Regulations.

3.2.2 Grease Control Equipment (GCE)

SD1's permit requires that all discharges containing grease & oil pass through Grease Control Equipment (GCE) before entering the sanitary sewer. GCE refers to any equipment that removes fats, oils, and grease from wastewater such as a grease trap which is installed inside the building usually under a counter/sink or built into the floor of the kitchen area; or a grease interceptor which is usually installed outside in the ground and is much larger in size. GCE must be well-maintained and in proper operating condition at all times.

The design criteria for approved devices are defined in the FOG Management Policy and will be enforced with deadlines for installation through the revisions made to the Sanitary Rules and Regulations.

Effective January 1, 2012, all new FSEs, as well as those undergoing significant renovations, are required to submit plumbing plans to SD1 to ensure that the grease control device specified for installation meets SD1's design criteria. Once installed, the grease control device must be inspected by SD1 to verify that an appropriate grease control device was installed and is operating properly. SD1 will use any and all legal remedies to enforce the use of such devices, including the Administrative and Judicial remedies set forth in SD1's Sanitary Rules and Regulation. Commonly used remedies include: notices of violation, cease and desist orders, and administrative fines.

In the first six months of the formal implementation of the FOG Management Policy, approximately 23 plans for GCE installations were reviewed and 10 permits were issued by SD1.

3.2.3 Reporting Requirements

SD1 requires permitted FSEs to report proof of service or cleaning of its GCE. All documentation must be submitted to SD1 within 30 days of the actual cleaning/service.

3.3 Inspections

3.3.1 Permitting Inspections

SD1's Industrial Monitoring Department performs inspections of local FSEs that may be contributing to the buildup of FOG in the collection system. Random inspections are conducted to ensure compliance with the permit and with SD1's Rules and Regulations.

FSEs were initially inspected in known FOG problem areas where maintenance and inspection data reveal that the condition of the lines and pump stations are significantly stressed due to the buildup of FOG. In FY 2012, all known problem areas were thoroughly investigated. In addition, FSEs were inspected when contributing wastewater to a line that is found overflowing due to a blockage caused by FOG. By evaluating the collection system in this manner, SD1 was able to prioritize which areas to focus on, and target inspections to FSEs that have the greatest potential impact of reducing FOG. Since the implementation of the Fog Management Policy in FY 2012, the main focus of the inspections has been ensuring the proper procedures of newly permitted FSEs.

Sewer Inspection Data

SD1 conducts FSE inspections based on current sewer inspection data, which provides specific locations of grease blockages. CCTV inspection data in Lucity indicating a blockage of 30% or greater due to grease is integrated into a GIS data layer to visually represent the FOG problem areas across SD1's service area. Maps are created from the data layer to display the sewer lines, sewer structures, and buildings connected to the collection system in relation to the grease blockages. The maps are updated monthly with new inspection data and are reviewed to determine if new problem areas exist. If new problem areas are indicated, the FSEs in those areas are inspected. Over time, the maps will also be reviewed to ensure that pipe conditions are improving and the FOG issues are being resolved.

3.3.2 Compliance Inspections

At the end of FY 2012, SD1 had 50 permitted FSEs throughout the service area. Within one year of a permit's issue date, at least one follow-up inspection is conducted at each permitted FSE. SD1 did not issue any Notice of Violations for non-compliance with the Food Service Discharge Permit. This is a significant improvement from FY 2011, when 28 Notices of Violation were issued.

3.4 Grease Trap Waste Disposal

All individuals or companies that haul waste to the Dry Creek Wastewater Treatment Plant must apply for and obtain a Domestic Holding Tank Waste Hauler Discharge Permit. Permits are issued on an annual basis and provisions of the permit must be adhered to at all times. Mobile waste haulers disposing grease trap waste at the plant are required to submit a Domestic Holding Tank Waste Hauler Manifest, which provides a detailed description of each load on their truck. All FSEs in SD1 jurisdiction shall have a SD1 certified grease waste hauler complete a grease interceptor certification annually.

Two waste hauler certification courses were held in 2012 (one in April and one in November). Beginning January 1, 2012, any hauler disposing of grease from a permitted FSE at the plant must attend a training course and become certified to inspect GCEs. SD1 does not require all grease to be disposed at the plant therefore, only those haulers associated with a permitted FSE are required to be certified.

SD1 monitors the method and location of disposal of grease removed from accepted grease control devices through the grease hauler manifest. The information is stored in LINKO HW FOG software. However, SD1 is planning in FY 2013 to migrate all of the historical FOG data stored in LINKO to a new FOG module that has been recently developed in Lucity. This will help SD1 maintain FOG records in a centralized database that is accessible to more employees, and provides the capability to easily integrate with other information systems.

The amount of grease hauled to and disposed of at the Dry Creek Wastewater Treatment plant since FY 2008 is provided in Table 3.2.

Table 3.2 Grease Disposed at Dry Creek Wastewater Treatment Plant (FY 2008 through FY 2011)

Fiscal Year	Gallons of Grease
2008	555,833*
2009	43,649
2010	108,300
2011	161,150
2012	234,210
Total	**1,103,142**

*There was a significant reduction in the amount of grease disposed at Dry Creek following FY 2008 because SD1 no longer received grease from Schwan's Global Supply Chain; however, SD1 anticipates that this number will increase as additional FSEs become permitted.

3.5 FOG Education

3.5.1 FSE Compliance Workshop

SD1 has created appropriate training materials to educate grease generators and their employees on best management practices, permit requirements, and applicable rules and regulations. A representative from all permitted FSEs is required to attend a training workshop.

SD1's current FSE compliance training workshop is being coordinated through the

Northern Kentucky Health Department's monthly Food Service Managers Workshop, which is a required program for all FSEs in Boone, Campbell and Kenton counties. This coordination provides a cost-effective and efficient way for SD1 to ensure that all FSEs, even those not currently permitted, are being trained. FSEs must have at least one trained employee on duty per shift.

SD1 is provided a monthly summary of the attendees who attended the training and the number of educational pamphlets and brochures that were distributed to each attendee. During FY 2011, approximately 970 food service managers (including representatives from FSEs that are not currently permitted) attended the workshop and received over 970 brochures and pamphlets.

3.5.2 General Education

SD1 uses various communication pieces throughout the year to inform and educate private residences on the harmful effects of FOG in sewer lines and the proper grease handling techniques that can be used to minimize the release of FOG into the collection system. This information is distributed through various channels such as: direct mailings, bill inserts, SD1's website, promotional product giveaways, and community newsletters and newspapers. Using the data provided by sewer inspections, SD1 will focus its public education efforts primarily in areas that are showing signs of grease problems and will apply an appropriate communication strategy to best fit the situation.

Residential Communication

During FY 2012, SD1 mailed approximately 1,500 letters to residents in areas that have experienced an overflow or building backup caused by a build-up of grease. The letter alerts residents that an overflow or building backup occurred, educates the residents about the effects of fats, oils, and grease (FOG) on the collection system, and provides proper disposal methods.

Website

SD1 has been working to expand the grease control section of its website to include additional information for the public, FSEs, and sludge haulers. Information regarding the new FOG Management Policy has been added to the website. The website also provides detailed descriptions of common FOG sources, tips on how to properly dispose of FOG, and clarification of residential and commercial FOG categories.

3.6 Performance Indicators

Table 3.2 provides a summary of the performance indicators that SD1 is tracking in relation to its implementation of a formal Grease Control Program. Now that there are three full years of data for this program SD1 can begin analyzing the performance information. Specifically, SD1 is determining if there is any correlation between the reduction in the feet of lines on the permanent PM cleaning list and the increase in the number of SSOs and building backups, or if there are other influences/factors that have lead to these results.

Table 3.2 Grease Control Program Performance Indicators

Performance Indicator	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Feet of Line on Current PM Cleaning List due to Grease	82,000*	4,326	4,326	4,892	4,945
Number of SSOs due to Grease	4	17	10	7	5
Number of Building Backups due to Grease (Reported through Trouble Calls)	2	5	7	7	7

*Between FYs 2008 and 2009, the lines listed on the permanent PM list were inspected and assessed according to the CSAP, using SCREAM scores to help identify the lines requiring PM.

SECTION 4. PUMP STATION BACKUP POWER

SD1 received regulatory approval of the Pump Station Operation Plan for Backup Power on May 14, 2008 and has made significant progress assessing and implementing backup power solutions throughout the service area. For a detailed update on the current progress of this program, refer to Appendix J.

SECTION 5. SELF-ASSESSMENT PROGRAM

SD1 performed an extensive self-assessment of each CMOM program in mid-2007, involving approximately 75 employees in a series of interviews and team planning

workshops. During this process, SD1 employees identified nearly 100 improvements to collection system activities that would aid in more effectively achieving regulatory compliance and reducing SSO and CSO occurrences throughout the service area. SD1's progress in completing the final three tasks during FY 2012 is provided in Table 5.1.

Table 5.1 Status of Remaining CMOM Recommended Improvements

CMOM Program	I.D.	Task	Current Status
Acquisition Considerations	N/A	Assess the use of Lucity for inputting new construction inspection reports and applicable photos.	**Complete**. Lucity has made enhancements to the Master Project module to track pertinent construction inspection data. Final database development was completed in FY 2012 and pilot phase of data collection is underway for FY 2013.
IMS	IMS-6	Assess the use of the Inspection module in Lucity for new construction inspections.	**Complete**. Inspection module has been optimized in Lucity for post construction inspections in FY 2012. Pilot phase is underway for FY 2013.
Engineering	EN-2	Upload technical specifications to SD1's website.	The specs will be uploaded to the website in FY 2013, upon completion of new updates. Persons interested in obtaining the current specifications can receive them electronically.

APPENDIX A:

Map of Service Area

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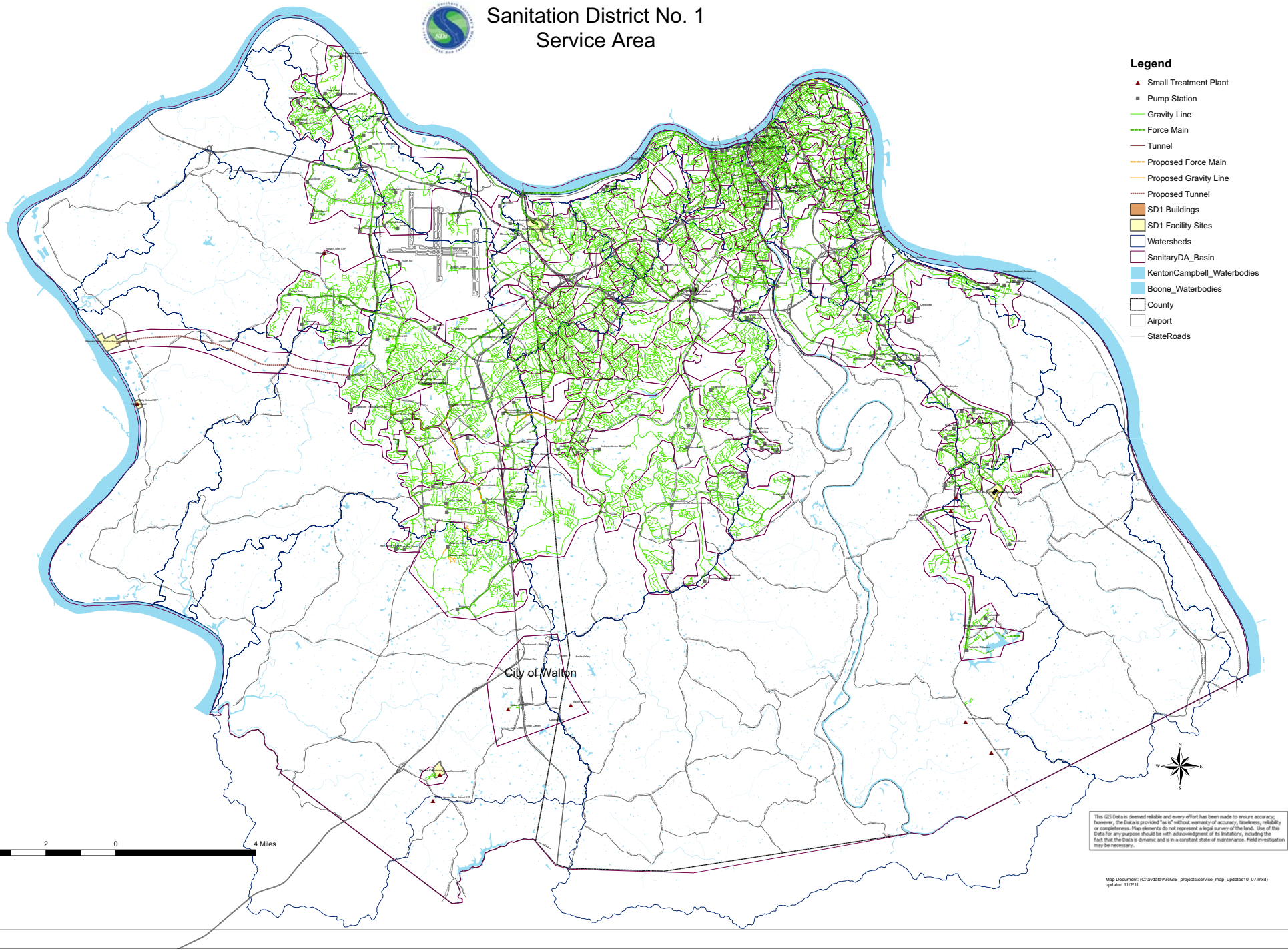
Sanitation District No. 1
Service Area



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.

Map Document: (C:\arcdata\ArcGIS_projects\service_map_updates10_07.mxd)
updated 11/2/11

APPENDIX B:

Regional Flow Monitoring Locations

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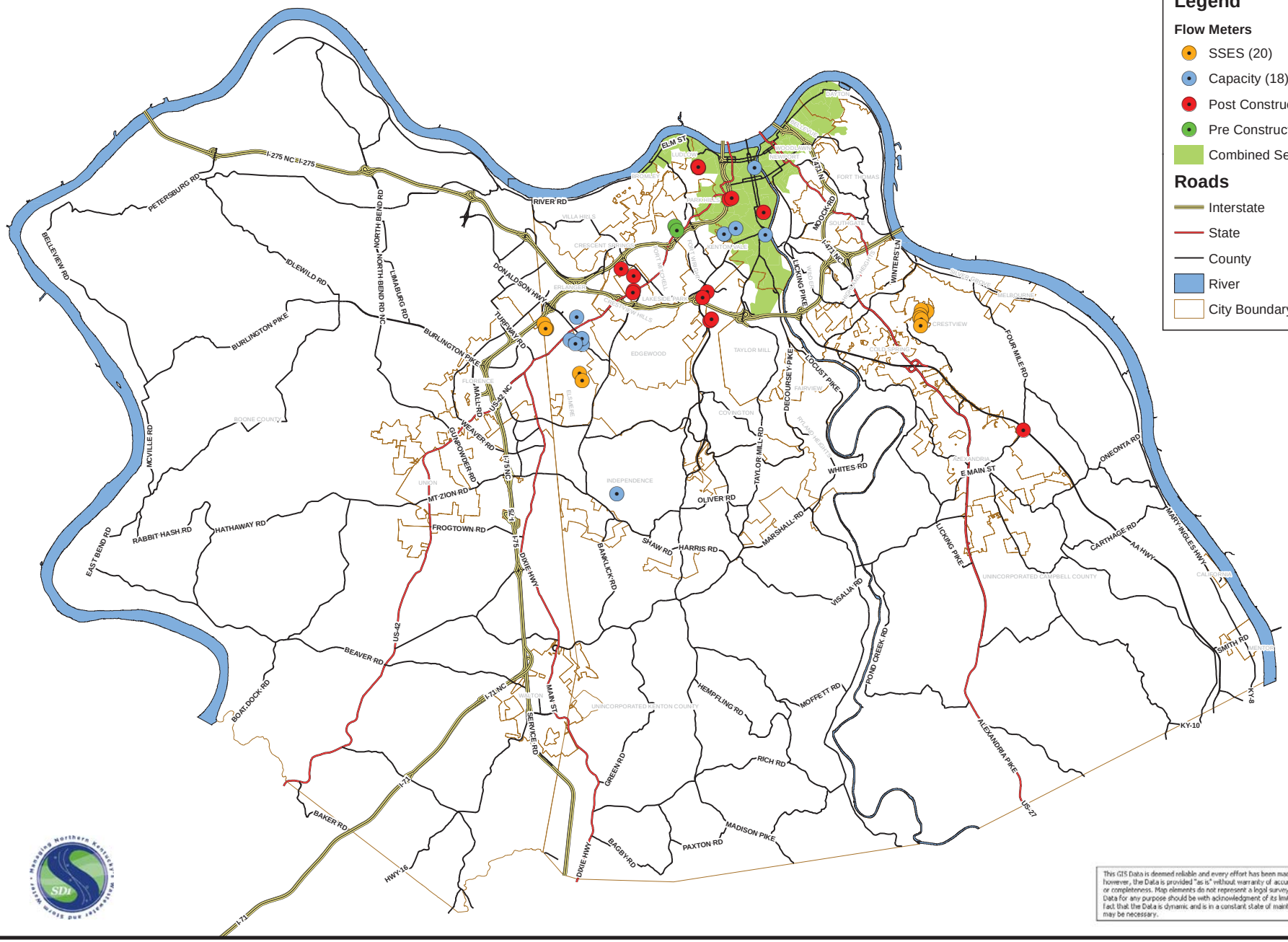
C-MOM 2012 Meter Classification



APPENDIX C:

FY 2012 Example Educational Publications

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BIOFILTRATION SWALE

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

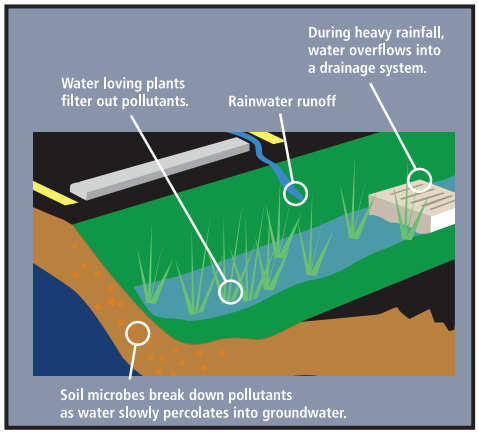
Biofiltration is a natural process by which living organisms remove pollution. Certain plants, bacteria, and other soil-living microbes are able to remove and break down some types of water pollution. Biofiltration can reduce the amount of toxic metals, oil, gasoline, and particulates carried by runoff.

Description

A biofiltration swale, also called bioswale, is a gently sloping channel that is planted with vegetation and designed to treat sheet flow runoff from adjacent areas. Biofiltration swales help to slow runoff velocities, filter our trash and other pollutants, and allow for evaporation/plant transpiration (evapotranspiration) of storm water. They are designed to collect rainwater from parking lots or other hard surfaces and cleanse the water of pollutants before the water enters the streams and rivers. Biofiltration swales can replace traditional curb and gutter systems and add landscaping features to a site.

Benefits

- Reduces storm water peak flows
- Reduces storm water volume
- Filters pollutants
- Improves water quality
- Alternative to curb & gutters
- Adds landscaping value



Design & Siting Considerations

- Swales must be designed to prevent erosion and to ensure proper drainage.
- Grade site so that water sheet flows to swale.
- Commonly, parking lot islands can be retrofitted into biofiltration or bioinfiltration swales.

Maintenance

- Newly installed plants will require watering.
- Remove accumulated debris, sediment and litter.
- Treat or replace dead and diseased vegetation.
- Add mulch annually.
- Annual pruning.

Cost Considerations

- Biofiltration swale with underdrain can start at $5/square foot.
- Costs will vary depending on complexity of the design, plant selection, and size of the feature.

Links

- SD1 BMP Manual
http://www.sd1.org/resourcehandler.aspx?id=261

- Natural Resource Conservation Service (NRCS)
Urban Conservation Factsheets
http://www.ia.nrcs.usda.gov/news/brochures/urbanfactsheets.html

- The Stormwater Manager's Resource Center
http://www.stormwatercenter.net

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park BIOFILTRATION SWALE Details

SD1's biofiltration swale is located in the center channel of the southern parking area. It is approximately 125 feet long and 11 feet wide. The vegetation consists of Serviceberry, American Sycamore, Red Twig Dogwood, Palm Sedge Grass, and Pink Summer Sweet. SD1's biofiltration swale includes an underground drainage and detention system that collects and conveys the filtered storm water to Banklick Creek. The system consists of a 72-inch pipe that provides 2,900 cubic feet of storage. The drainage system also helps to minimize the chance of flooding during heavy rain events. SD1 has another swale in the adjacent parking lot that is considered a vegetated swale. This swale was designed without the underdrain and acts as a conveyance swale for surface waters running off the parking lot and into a constructed wetland. The vegetated swale still helps to reduce storm water peak flow and volumes, while still filtering and improving water quality.

CISTERN

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

A cistern is a structure that collects and stores roof runoff for reuse in landscaping and other non-drinking water purposes. Cisterns allow storm water to be treated as a resource and harvested for reuse, reducing water demand. Cisterns can reduce or eliminate storm water runoff from a site and are versatile enough for use in dense urban areas.

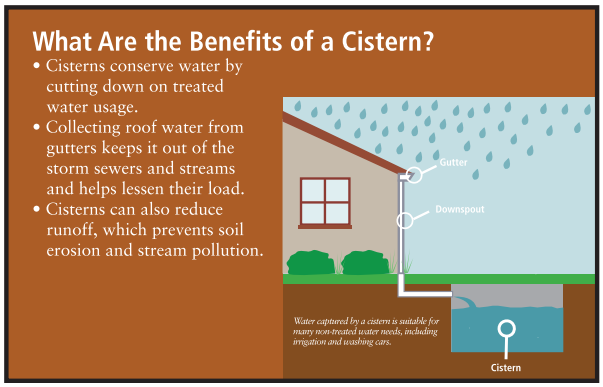
Description

Cisterns are larger and more permanent than rain barrels and can range in size from 100-10,000 gallons. Cisterns can be installed either above-ground, underground, or on a rooftop. Depending on the installation, they can be constructed of concrete, plastic, polyethylene, or metal. Cisterns can also collect water from multiple downspouts or even multiple roofs and save water for later distribution.

It is possible to use cisterns for household drinking water, provided the system has the proper filtration, inspection, and permitting.

Benefits

- Captures rainwater for reuse
- Reduces storm water runoff volume and discharge rate
- Provides alternative source for irrigation needs
- Reduces need for public or well water



Design & Siting Considerations

- Cisterns can be designed with a filter to capture debris, pumps to facilitate reuse, and overflow systems to convey excess rainwater.
- A cistern and its components are estimated to have a lifespan of 20 to 50 years.
- Do not reuse water from parking areas, surface water runoff or standing water.
- The water collected is generally for non-drinking water use only.
- Minimize leaves and debris by placing a screen at the top of the downspout.
- To maximize storage, drain the cistern between storms.
- As necessary, direct overflow to a permeable area to infiltrate the overflow volume.

Maintenance

- Clean roof surfaces and gutters of debris.
- Inspect cistern annually for leaks and blockages from debris.
- Remove deposits from the bottom of the tank as necessary.

Cost Considerations

Cisterns range in price depending on the size, material, and construction methods. Without installation, cisterns can range from $250 for a 200-gallon cistern to $5,000 for a 10,000 gallon cistern. Above-ground custom cisterns can exceed $10,000. Long-term savings include lower water usage fee.

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261

- Low Impact Development Center
  http://www.lid-stormwater.net/raincist_home.htm

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park CISTERN Details

SD1's cistern is a prominent feature of Public Service Park. It collects water from the equipment barn and uses the stored water for educational demonstrations and irrigation. SD1 uses solar energy to circulate the water stored in the cistern. The ceramic dishes cascading down the side of the cistern also help to circulate and oxygenate the water. SD1's concrete cistern is nine feet in diameter and 18 feet tall. It is estimated to hold 8,400 gallons of runoff.

1 Vegetated Roof
2 Underground Detention
3 Biofiltration Swale
4 Permeable Pavers
5 Vegetated Swale
6 Wetland
7 Retention Pond
8 Permeable Concrete
9 Permeable Asphalt
10 Outdoor Classroom
11 Storm Water Garden
12 Cistern
13 Runoff Surfaces
14 Oil/Water Separator
15 Detention Pond
16 Urban Forest
17 Step Pools
18 Upper Trail
19 Lower Trail
20 Creek Overlooks

DETENTION BASIN

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

A detention basin is a Best Management Practice (BMP) that holds storm water, and then slowly releases it to the receiving stream after the storm event. Detention basins are effective in controlling the peak storm water discharge rates, which helps to limit downstream flooding and provides some degree of channel protection. They are generally a low-cost approach that is applicable in both small and large watersheds.

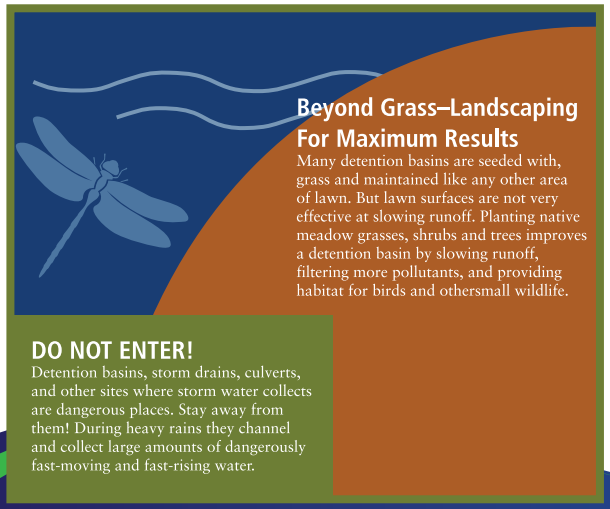
Description

Detention basins, also called dry detention ponds or extended detention basins, are designed to collect and detain storm water runoff generated from impervious surfaces such as rooftops, roadways, and parking lots. The water collected during wet weather is then slowly released over a period of time to prevent downstream flooding. Typically, discharge rates are limited to pre-development flow rates. Detention basins typically drain within 24 to 36 hours.

Detention basins are typically thought of as a water quantity control, but water quality treatment and pollutant removal efficiency can be increased by including a forebay, extending storage time, or by making it part of a water quality treatment train. The detention basin's water quality treatment is most effective in the removal of floatables, suspended solids and their associated contaminants.

Benefits

- Reduces downstream flooding
- Reduces peak flow rates
- Reduces energy of storm water into receiving waters
- Allows pollutant settling
- Serves both large and small watersheds



Design & Siting Considerations

- Applicable for sites 10 acres and larger.
- Should be designed to properly drain to insure no standing water during dry weather.
- Depending on volume and depth, approval may be needed by the dam safety authorities.
- Fencing may be required for safety issues.
- Discharge velocities should comply with local regulations (see SD1's Storm Water Rules and Regulations).

Maintenance

- Inspect semi-annually for erosion.
- Revegetate eroded areas as necessary.
- Remove debris as necessary.
- Remove sediment buildup as necessary.
- Mow routinely to limit unwanted vegetation.

Cost Considerations

Detention basins are a low-cost BMP for water quantity control. Cost for detention basins will vary due to factors such as the value of the land, location, size, and the basin design features.

Links

- SD1 BMP Manual
http://www.sd1.org/resourcehandler.aspx?id=261

- Natural Resource Conservation Service (NRCS)
Urban Conservation Factsheets
http://www.ia.nrcs.usda.gov/news/brochures/urbanfactsheets.html

- The Stormwater Manager's Resource Center
http://www.stormwatercenter.net

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park DETENTION BASIN Details

SD1's Public Service Park includes a dry detention basin as part of a storm water treatment train. The detention basin receives flows that have been routed through a wetland and retention basin for water quality treatment. SD1's basin was designed for a 100-year storm and has a volume of 13,500 cubic feet. There are also staged inlets to allow different storms to pass. The detention basin is used as an educational tool during tours of Public Service Park. Children are warned that these basins can be dangerous, especially during heavy rains when water can be swift and rise rapidly.

OIL/WATER SEPARATOR

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Oil/water separators are structures designed to remove oil, grease, sediment, and floatable materials from storm water runoff through gravitational settling and trapping. These Best Management Practices (BMPs) are well suited for dense, urban areas, where they can be installed underground to treat runoff from parking lots and other vehicle use areas.

Description

Oil/water separators, also called oil/grit or gravity separators, are BMPs that use gravity and settling to separate grit, sediment, and floatable materials like oil and grease from storm water.

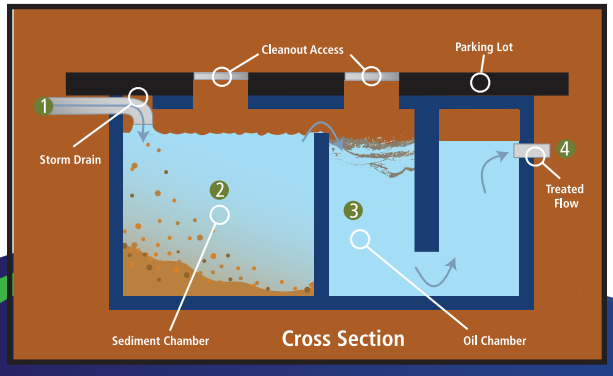
The oil/water separator consists of chambers that are separated by baffles, one for sediment removal and the other for oil removal. The water flows into the first chamber, which is designed to allow solids to settle out of the water column and be stored at the bottom of the chamber. The water and oils then pass over the top of a baffle into the second chamber. Here, a vertical baffle extends down into the water column and allows the oil and grease to float to the top while the clean water flows out.

The oil/water separator is efficient in trapping pollutants, but these must be removed through regular maintenance to maintain effectiveness. Additionally, oil/water separators do not reduce the volume of storm water nor remove dissolved pollutants.

Oil/water separators can be cast in place or are available as prefabricated proprietary systems from a number of vendors.

Benefits

- Improves water quality by removing sediment, grit, oil, grease, and other floatables from storm water runoff
- Easily accessed for maintenance
- Underground installation for urban areas
- Compatible with storm drain systems
- Long life span with proper maintenance



Design & Siting Considerations

- Oil/water separators are best for areas with high vehicular traffic such as industrial, commercial, or ultra-urban settings.
- Sizing of the oil/water separator will depend on the size of the site, and contributing drainage area.
- Contributing drainage area should not exceed one acre of impervious area.

Maintenance

- Clean out every one to six months.
- Catch basin cleaning equipment should be used for cleaning.

Cost Considerations

Costs vary tremendously based on the amount of contributing drainage area and the numerous proprietary vendors.

Links

- SD1 BMP Manual
http://www.sd1.org/resourcehandler.aspx?id=261

- Metropolitan Council, St. Paul, MN
www.metrocouncil.org/environment/Watershed/BMP/CH3_STDetOilGrit.pdf

- Georgia Stormwater Management Manual, Volume two: Technical manual
www.georgiastormwater.com/vol2/3-3-6.pdf

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park OIL/WATER SEPARATOR Details

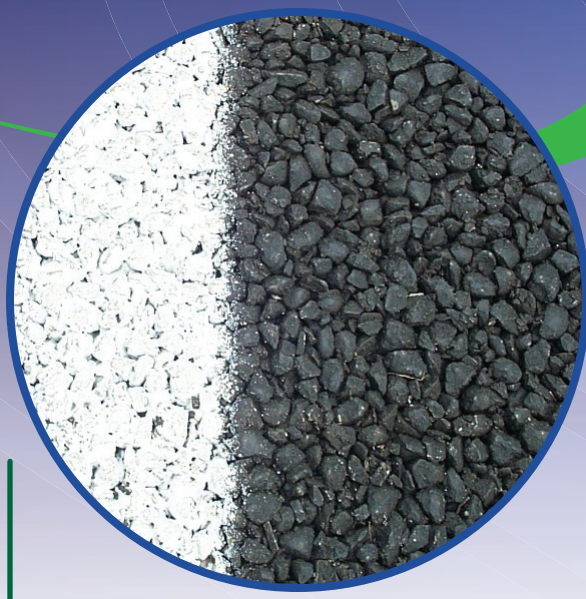
SD1's oil/water separator is located in the rear of the building, collecting runoff from the materials storage area and parking surrounding the maintenance garage. It is installed under the pavement and connected to the catch basins in the parking lot. SD1's unit is 60 feet long and 6 feet in diameter. It was donated to SD1 by Advance Drainage Systems (ADS) for demonstration purposes.

PERMEABLE ASPHALT

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Permeable asphalt resembles conventional asphalt, but has more air spaces that allow water to pass through the pavement and into an underlying stone reservoir that stores the surface runoff. By allowing the storm water to pass through into the sub-surface reservoir, this Best Management Practice (BMP) reduces the amount of storm water runoff and allows the water to infiltrate into the ground, without limiting the use of space.



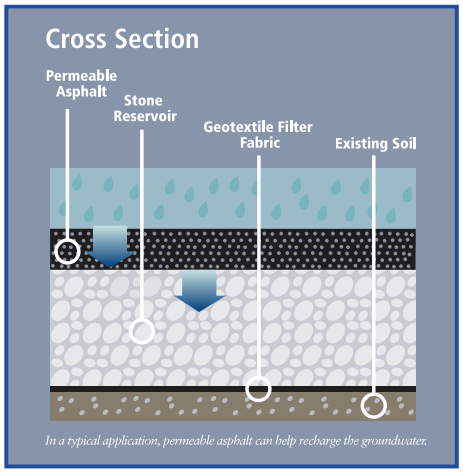
Description

The permeable asphalt mix consists of coarse gravel and asphalt binder, underlaid with a thick layer of gravel, which allows water to drain through quickly. Unlike traditional asphalt, permeable asphalts contain little or no fine materials. Instead, it contains air spaces, or voids that allow the storm water to pass through to the stone reservoir and infiltrate into the ground. By increasing onsite infiltration, the storm water runoff rate and volume is reduced and in some cases, may decrease the need for conventional storm water curb and gutter systems.

When properly maintained, permeable asphalt has also shown pollutant reduction capabilities by filtering water through the stone reservoir and infiltrating it back into the ground.

Benefits

- Reduces storm water runoff volume
- Reduces peak discharge rates
- Allows storm water to infiltrate into ground
- Recharges groundwater
- Maintains stream baseflows
- Reduces pollutant transport through infiltration
- Less need for conventional curb and gutters
- Adds landscaping value



In a typical application, permeable asphalt can help recharge the groundwater.

Design & Siting Considerations

- Best suited for low to medium traffic areas, such as residential roads and parking lots.
- Avoid areas with high amount of sediment or erosion to prevent clogging and maintain permeability of the system.
- In soils with limited permeability, consider the installation of a discharge pipe from the storage area that is able to bypass large storm events.
- Since water is able to pass through the system, permeable pavement is less prone to cracking or buckling from freezing and thawing. In some areas, the rapid drainage below the porous surface has increased the rate of snow melt above.
- Permeable concrete pavement is an infiltration practice and should not be used in areas with a high potential for storm water contamination (such as auto maintenance areas, loading facilities and hazardous material areas).

Maintenance

- Vacuum four times a year.
- Use liquid and pellet forms of chlorides sparingly. (Do not use sand, this can clog the voids in the concrete.)
- Use snow plow or snow blower as needed.
- Pressure wash if necessary.

Cost Considerations

While the initial costs of permeable asphalt may exceed traditional materials, these costs may be offset by reducing the need for storm water management structures, reducing the amount of land necessary for storm water management, and obtaining storm water credits from the local storm water utility. Cost will vary depending on the site's size, design, inlets, piping, and soil characteristics.

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261
- National Asphalt Pavement Association
  http://www.pavegreen.com
- Eaton Asphalt
  859-371-1274

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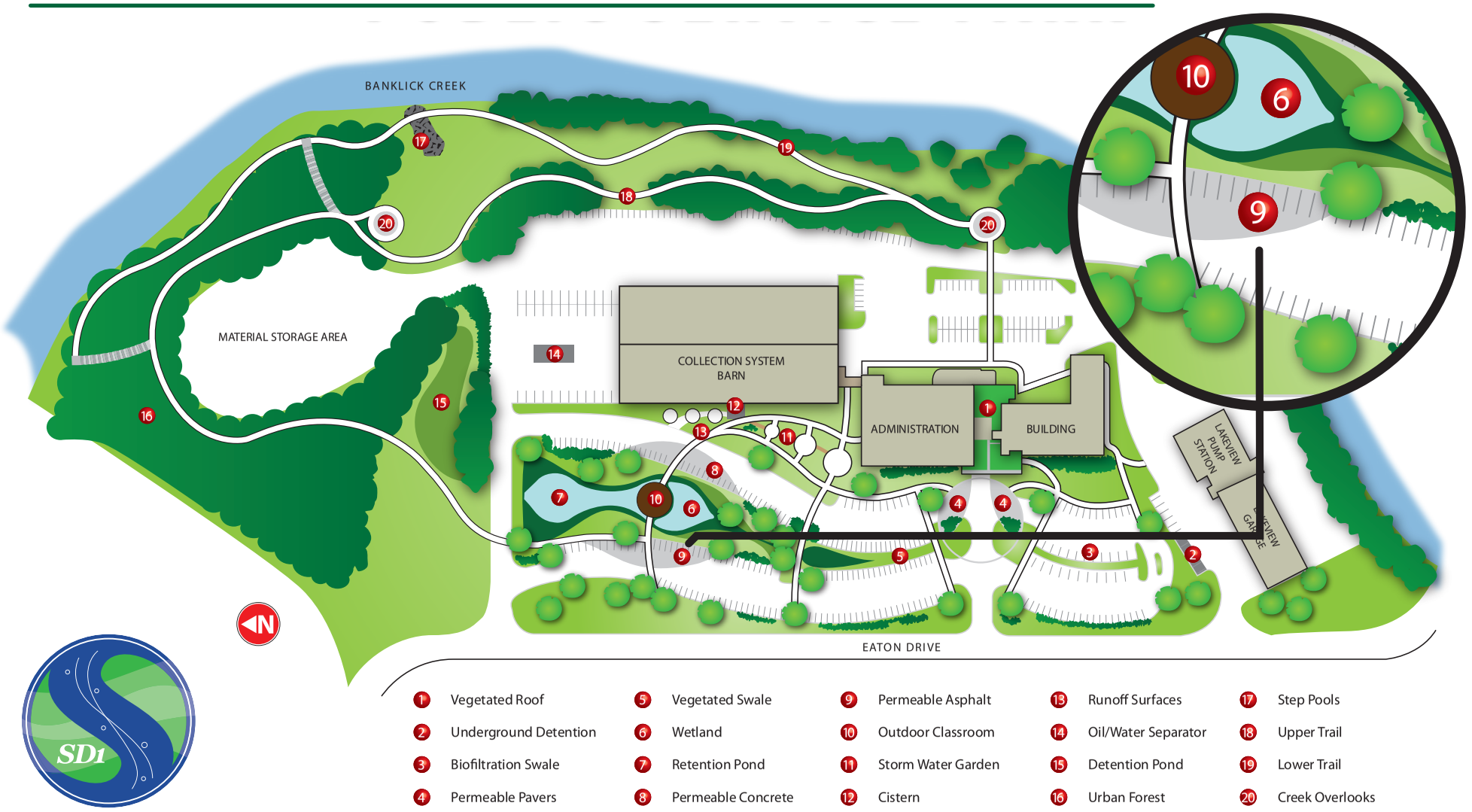
For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park PERMEABLE ASPHALT Details

SD1 installed approximately 2,300 square feet of permeable asphalt in the southwest parking area. Public Service Park's demonstration site consists of seven inches of permeable asphalt over eight inches of base materials. Due to the high clay content and lower permeability rate of the native soils, SD1 utilizes an underdrain system that conveys the infiltrated storm water to an underground detention chamber, which ultimately discharges into Banklick Creek. Public Service Park's site was designed with monitoring wells where sampling will be conducted to determine the effectiveness and performance of the permeable asphalt.

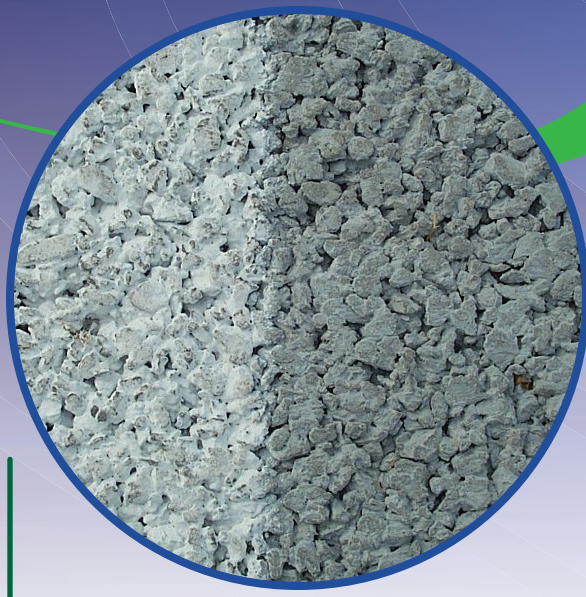


PERMEABLE CONCRETE

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Permeable concrete resembles conventional concrete, but has more air spaces that allow water to pass through the pavement. By allowing the storm water to pass through into an underlying reservoir, this Best Management Practice (BMP) reduces the amount of storm water runoff and allows the water to infiltrate into the ground, without limiting the use of the space.



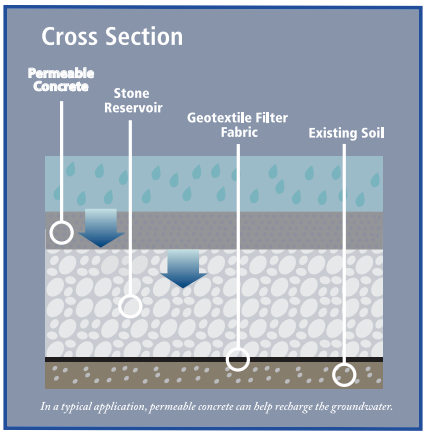
Description

Permeable concrete is a mixture of coarse aggregate, cement, and water with little to no sand. By reducing the amount of sand, permeable concrete contains air spaces, or voids, that allow the storm water to pass through the pavement. When constructed over an underlying stone reservoir, storm water will be stored and allowed to infiltrate into the ground. By increasing onsite retention and infiltration, the storm water runoff rate and volume is reduced and in some cases, may decrease the need for conventional storm water curb and gutter systems.

A typical pervious concrete pavement has a 15-25% void structure and allows three to eight gallons of water per minute to pass through each square foot. Permeable concrete has also shown pollutant reduction capabilities by filtering water through the stone reservoir and infiltrating it back into the ground.

Benefits

- Reduces storm water runoff volume
- Reduces peak discharge rates
- Allows storm water to infiltrate into ground
- Recharges groundwater
- Maintains stream baseflows
- Reduces pollutant transport through infiltration
- Less need for conventional curb and gutters



In a typical application, permeable concrete can help recharge the groundwater.

Links

- National Ready Mixed Concrete Association
  http://www.pervious pavement.org/
- Concrete Promotion Council of SW Ohio
  http://www.cpcso.org/
- Kentucky Ready Mixed Concrete Association
  www.krmca.org

Design & Siting Considerations

- Best suited for low to medium traffic areas, such as residential roads and parking lots.
- Avoid areas with high amount of sediment or erosion to prevent clogging and maintain permeability of the system.
- In soils with limited permeability, consider the installation of a discharge pipe from the storage area that is able to bypass large storm events.
- Since water is able to pass through the system, permeable pavement is less prone to cracking or buckling from freezing and thawing. In some areas, the rapid
  drainage below the porous surface has increased the rate of snow melt above.
- Permeable concrete pavement is an infiltration practice and should not be used in areas with a high potential for storm water contamination (such as auto maintenance areas, loading facilities, and hazardous material areas).

Maintenance

- Vacuum two to three times a year.
- Use a snow plow or snow blower as needed.
- Use liquid and pellet forms of chlorides sparingly. (Do not use sand which can clog the voids in the concrete.)
- Remove trash and debris monthly.

Cost Considerations

While the initial costs of permeable concrete may exceed traditional materials, these costs may be offset by reducing the need for storm water management structures, reducing the amount of land necessary for storm water management, and obtaining storm water credits from the local storm water utility. Cost will vary depending on the site's size, design, inlets, piping, and soil characteristics.

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park PERMEABLE CONCRETE Details

SD1 installed approximately 6,000 square feet of permeable concrete in the northern public parking area of Public Service Park. Public Service Park's demonstration site consists of seven inches of permeable concrete over eight inches of base materials. Due to the high clay content and lower permeability rate of the native soils, SD1 utilizes an underdrain system that conveys the infiltrated storm water to a retention pond. Public Service Park's site was designed with monitoring wells where sampling will be conducted to determine the effectiveness and performance of the permeable concrete.

PERMEABLE PAVERS

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Permeable pavers are an alternative paving system that integrates storm water management into an aesthetic amenity on a site. Small spaces between the paving blocks allow storm water to pass through to underlying materials and soil. This Best Management Practice (BMP) slows down storm water and reduces the amount of runoff volume, without limiting the use of space.

Description

Permeable paving systems are made of paving stones that are impervious to water, but are spaced such that the joints between the stones allow water to flow downward through the paving. The stones are made of brick, stone, or concrete. The joint spaces are filled with sand or other material that allows water to flow through quickly. The paving stones are set on a bed of sand that can cover a reservoir filled with crush stone that retains storm water runoff. By retaining storm water, the rate and volume of runoff is reduced and may decrease the need for conventional storm water curb and gutter systems.

An alternative design to the paving stones are grass pavers (or turf blocks), which are grids with open cells that can be filled with soil and planted with turf or other vegetation. These grid systems distribute the weight of the vehicles to prevent compaction of the soil and are appropriate for a light vehicular use area such as overflow parking.

Benefits

- Reduces storm water runoff volume
- Reduces peak discharge rates
- Allows storm water to infiltrate into ground
- Recharges groundwater
- Maintains stream baseflows
- Reduces storm water pollution
- Reduces runoff temperature
- Less need for conventional curb and gutters
- Can provide aesthetic improvement

Design & Siting Considerations

- Best suited to low traffic and low speed areas such as parking lots.
- Avoid high pollution areas since direct infiltration is utilized.
- In soils with limited permeability, an underdrain may be necessary.
- Since water is able to pass through the system, pavers hold up well to freeze/ thaw cycles. Evidence has actually shown a reduction in refreezing due to less ponded surface water.

Maintenance

- Periodically remove trash and debris.
- Periodically add joint material.
- Snow blowers are an alternative to plows, which may catch on the edge of the stones.

Cost Considerations

While the initial costs of permeable pavers may exceed traditional paving materials, studies have shown that the long-term maintenance costs are less and pavers can actually be less expensive, when a full 25-year life cycle cost is considered.

Additionally, paver installation costs may be offset by reducing the amount of storm water structures, reducing the amount of land necessary for storm water management, and possible credits from the local storm water utility.

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park PERMEABLE PAVERS Details

SD1 installed approximately 2,300 square feet of permeable pavers at the entryway to the main office facilities. This demonstration area at Public Service Park consists of Landmark Pavers, which are eight inches square and 3.125 inches deep. An Enviropave structural paver spacer was used and the 7/16" joints were filled with limestone chip paving stones. Due to the high clay content and lower permeability rate of the native soils, SD1 utilizes an underdrain system that conveys the infiltrated storm water to an underground detention chamber, which ultimately discharges into Banklick Creek. Public Service Park's site was designed with monitoring wells where sampling will be conducted to determine the effectiveness and performance of the permeable pavers.

RETENTION BASIN

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

A retention basin is a constructed pond that maintains a permanent pool of water. Retention basins are an effective means to reduce storm water runoff and improve water quality. Wet ponds are applicable for residential, commercial, and industrial sites, and may provide aesthetic, habitat, and recreational value.

Description

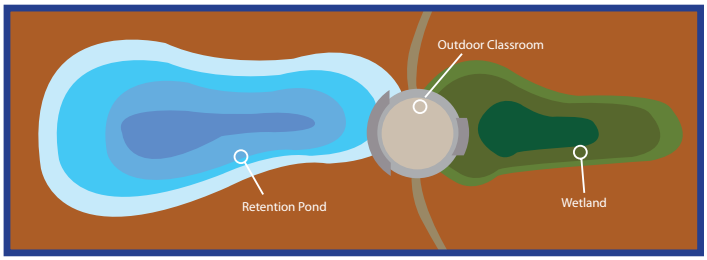
Retention basins, also called wet detention ponds, or wet ponds are an effective means of reducing peak flows and providing water quality treatment. Unlike detention basins, which only store water for a short period of time, retention ponds hold a permanent pool of water.

Retention basins allow for sedimentation to remove particulates, organic matter, and metals. Additionally, ponds support the biological uptake of dissolved metals and nutrients. Removal efficiencies are dependent upon the amount of time that the runoff remains in the pond, but generally two-thirds of the pollutants are removed in the first 24 hours.

Retention basins can support aquatic ecosystems, provide habitat, and enhance the aesthetics of a property.

Benefits

- Improves water quality
- Reduces sediment, solids, and metals
- Reduces storm water runoff volume
- Reduces peak storm water runoff rates
- Aesthetically pleasing
- Provides wildlife habitat



Design & Siting Considerations

- To maintain proper pool elevations, contributing drainage area should be at least 10 acres.
- Can require a large land area.
- Cannot be placed on steep or unstable slopes.
- Should have a sediment forebay or equivalent pretreatment.
- Design must ensure proper depth to avoid the accumulation of pollutants.
- The release of trapped pollutants has a greater capability if the pond is not designed properly.
- Proper lining must be installed.

Maintenance

- Inspect annually.
- Mow as necessary.
- Debris and litter removal as necessary.
- Clean out the basin before it becomes more than 1/3 full of sediment.
- Control algae blooms.

Cost Considerations

Costs for retention basins will vary due to factors such as the value of the land, size, and complexity of the basin design.

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261
- U.S. Environmental Protection Agency Technology Fact Sheets
  www.epa.gov/owmitnet/mtb/wetdtnpn.pdf
- Storm Water Manager's Resource Center
  www.stormwatercenter.net
- Center for Stormwater Technology and Stormwater Benefits
  www.unh.edu/erg/cstev/fact_sheets/index.htm

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park RETENTION BASIN Details

The retention basin is a central feature of SD1's Public Service Park and includes informational signage on animal and plant species supported by the wet pond. The retention basin receives storm water runoff from the wetland, adjacent paved areas, and surrounding gardens. The basin is approximately 140 feet by 50 feet, and has a maximum depth of eight feet. It has approximately 14,000 cubic feet of storm water storage capacity above the normal pond level. The basin was designed with an aerator that provides the necessary amount of oxygen to the water. In addition, some of the retention basin's water is used to irrigate nearby landscaped areas.

URBAN FOREST

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Preserving or restoring trees to the urban environment is simple, attractive, and provides numerous storm water benefits. Trees effectively capture and retain storm water in their leaves and branches. It is estimated that a medium-sized tree can intercept 2,380 gallons of water per year. Additionally, they filter pollutants out of storm water and stabilize hillsides that would otherwise erode, increasing the amount of sediment entering the receiving water bodies.

Description

Urban areas, which house over 80% of the US population, are typically characterized by increased amounts of hard surfaces and less vegetation. These paved surfaces generate higher concentrations of storm water and pollution is carried off in the runoff. Urban forests are a Best Management Practice (BMP) that can help break up the impervious areas, provide small but essential green spaces, and link walkways and trails. The trees also help absorb water, allowing sites to help address storm water management requirements in an urban setting.

Urban forests are loosely defined as collections of trees that grow within a city, town, or suburb. They provide several important functions: interception of rainwater by their canopy cover, evapotranspiration whereby the roots draw water up from the soil, enhancing infiltration of polluted runoff into the soil, and erosion prevention by holding soil in place with their roots. These processes not only reduce the amount of surface runoff, but also improve the quality of the storm water. The presence of a tree canopy cover provides additional benefits such as wildlife habitat, shade, and reduced urban 'heat island' temperatures.

Benefits

- Reduces amount of storm water runoff
- Leaves, branches and roots collect, intercept and absorb precipitation
- Produces 30%-50% less runoff than lawns
- Improves soil porosity, improves infiltration
- Improves water quality
- Filters pollutants
- Reduces soil erosion
- Improves habitat
- Reduces noise level
- Improves air quality
- Lowers CO_2 in atmosphere
- Moderates urban temperatures with shade
- Decreases building cooling costs
- Increases aesthetics, livability and property value

Design & Siting Considerations

- Preserve and maintain existing trees.
- Maximize native plants.
- Choose species suitable to the rainfall patterns in the area.
- Plant low-water use species.
- Plant species with a higher rate of growth where appropriate.

Maintenance

- Water during drought periods.
- Prune only when needed to remove damaged branches, crossing limbs or prevent obstructions.
- If necessary, maintain grass ground cover by mowing twice a year, once in early spring and then again in late fall.
- Inspect annually for diseases and pests.

Cost Considerations

Urban forests vary in cost due to different types and sizes of trees used in creating an urban forest. Generally, planting costs range:

- Tree Seedlings – minimal
- Landscape Trees - $200 - $300

The District received a grant from the Urban Forestry Council to establish the Urban Forest at Public Service Park.

Links

- Pacific Southwest Research Station
  http://www.fs.fed.us/psw/programs/uesd/uep/
- National Arbor Day Foundation
  http://www.arborday.org
- Northern Kentucky Urban & Community Forestry Council
  http://www.nkyurbanforestry.org

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Public Service Park URBAN FOREST Details

Located at the north end of Public Service Park, SD1's urban forest is a prime example of how this BMP can be incorporated into a site design. Students who visit the park learn that urban forests and other natural areas are very important in protecting the environment and our overall quality of life. SD1's urban forest is comprised of the following species, which are suited to the Northern Kentucky climate: Red Sunset Maple, Sugar Maple, Redbud, Flowering Dogwood, Winter King Hawthorn, Patmore Ash, Tulip Tree, Norway Spruce, Serbian Spruce, American Sycamore, White Pine, Shingle Oak, Bald Cypress.

VEGETATED ROOF

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Vegetated roofs are an innovative Best Management Practice (BMP) that began in Europe more than 25 years ago. Today, vegetated roofs are being integrated into cities throughout North America, including Chicago, Portland, Toronto, and Pittsburgh. Vegetated roofs can minimize storm water runoff that would otherwise intensify water pollution and flooding. They can also lower energy costs, improve air quality, and even extend roof life.

Description

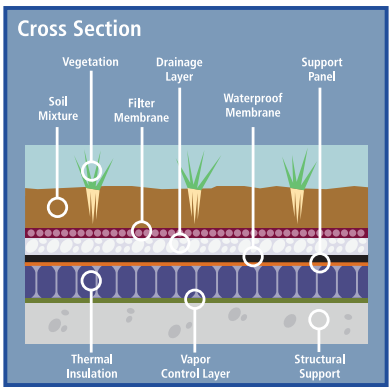
A vegetated roof is a roofing system consisting of thin waterproofing layers topped by soil and low-lying, drought-tolerant vegetation. There are two types of vegetated roofs: extensive, which has six inches or less of growing media, or intensive, which has six inches or greater and are generally used by the public as a park or relaxation area.

Both types of roofs act like giant sponges by soaking up storm water. This helps to reduce annual runoff volumes by as much as 60 percent, and decreases building cooling and maintenance costs. Additionally, the vegetation and growth media help to protect roofing materials by intercepting damaging UV rays.

Vegetated roofs can be incorporated into existing structures or new development, for both commercial and residential use.

Benefits

- Reduces the volume of storm water runoff
- Reduces pollution
- Plant uptake & processing of pollutants
- Improves air quality
- Reduces energy costs
- Reduces 'heat island' effect
- Diffracts UV rays
- Provides additional insulation
- Extends roof life by protecting the underlying roofing system gutters
- Adds landscaping value



Design & Siting Considerations

- Roof strength must be adequate to hold additional weight above the requirements of a basic roof. (Consult a design professional.)
- Roofs can be flat or pitched structures up to a slope of 25%.
- Vegetated roofs are expected to last up to 40 years, twice as long as conventional.

Maintenance

- Periodic weeding.
- Trim grasses in fall.
- Collect trash and debris.

Cost Considerations

- Vegetated roofs start at $5/square foot.
- Typical vegetated roofs cost $8-$15/square foot for new construction.
  - – Costs decrease as size of roof increases.
- Long-term savings include:
  - – Deferred repair and replacement
  - – Lower heating and cooling costs

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261
- Green Roofs for Healthy Cities
  www.greenroofs.org
- Roofmeadow
  www.roofscapes.com
- Human Nature, Inc. 513-281-2211

SD1 • 1045 Eaton Drive, Ft. Wright, KY 41017 • Ph 859-578-7450

For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park VEGETATED ROOF Details

SD1's vegetated roof is 3,600 square feet. It is a Savannah type three design which is comprised of: two inches of growth media, a root permeable fabric, two inches of drainage gravel, a waterproof membrane, insulation, and the roof decking. The vegetation consists of sedums, ornamental grasses, and chives. SD1's vegetated roof is used for demonstration purposes and was designed with a walkway to allow visitors out onto the roof. It is estimated that the weight of the roof is 60 lbs/square foot for the pedestrian live load and 25 lbs/square foot for the saturated load. SD1's roofing system was designed as a demonstration project to compare equal areas of conventional and vegetated roof. Separate piping systems were installed to monitor and compare the quantity and quality of the storm water from the vegetated roof and conventional roof. The pipes lead to two separate downspouts located at the front of SD1's building, where the public can see the difference in flows during wet weather.

WETLAND

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES

Overview

Wetlands are shallow pools constructed with a variety of wetland plants to maximize pollutant removal from storm water runoff. Wetlands are one of the most effective storm water practices for improving water quality, while providing both aesthetic and habitat value.

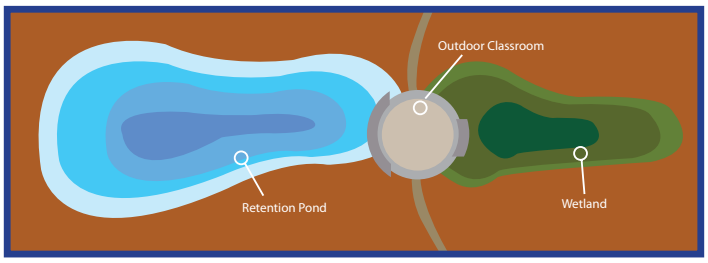
Description

Storm water wetlands are constructed to filter pollutants from runoff using microbial breakdown of pollutants, plant uptake, retention, settling, and absorption. Storm water wetlands consist of shallow pools that collect runoff and sustain wetland plants. They are often used as part of a storm water treatment train, where runoff flows through a series of storm water management practices.

Constructed wetlands differ from natural wetlands because they are specifically designed for water quality treatment and flood control. Natural wetlands provide more comprehensive ecological functions and greater biodiversity, and should generally not be used for storm water control purposes. Storm water wetlands can require a relatively large drainage area to sustain pool levels, but pocket wetlands can be a suitable option for smaller sites.

Benefits

- Improves water quality
- Settles out particles
- Biological uptake by plants
- Reduces runoff rates
- Reduces runoff volumes
- Provides habitat
- Improves aesthetics



Design & Siting Considerations

- Consideration must be given to the types of soils, depth to groundwater, contributing drainage area, and the amount of available land.
- Wetlands can be used in almost all soils and geology with proper design adjustments.
- The site must have an adequate contributing drainage area to maintain a permanent pool and vegetation.
- Wetlands may need three to five percent of the land draining to them. This large land requirement can limit their applicability for some sites.

Maintenance

- Inspect annually for erosion and sediment accumulation.
- Remove sediment and replace plants as necessary.
- Remove non-native invasive plant species.

Cost Considerations

The cost of wetlands are largely dependent upon the size of the watershed. Wetlands may cost up to 25% more than a storm water pond, but may be more effective in clay soils than other BMPs.

Links

- SD1 BMP Manual
  http://www.sd1.org/resourcehandler.aspx?id=261
- Stormwater Managers Resource Center Factsheets
  http://www.stormwatercenter.net
- Metropolitan Council (Twin Cities) Small Urban Sites BMP Manual
  http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm
- EPA Constructed Wetland Website
  http://www.epa.gov/owow/wetlands/watersheds/cwetlands.html

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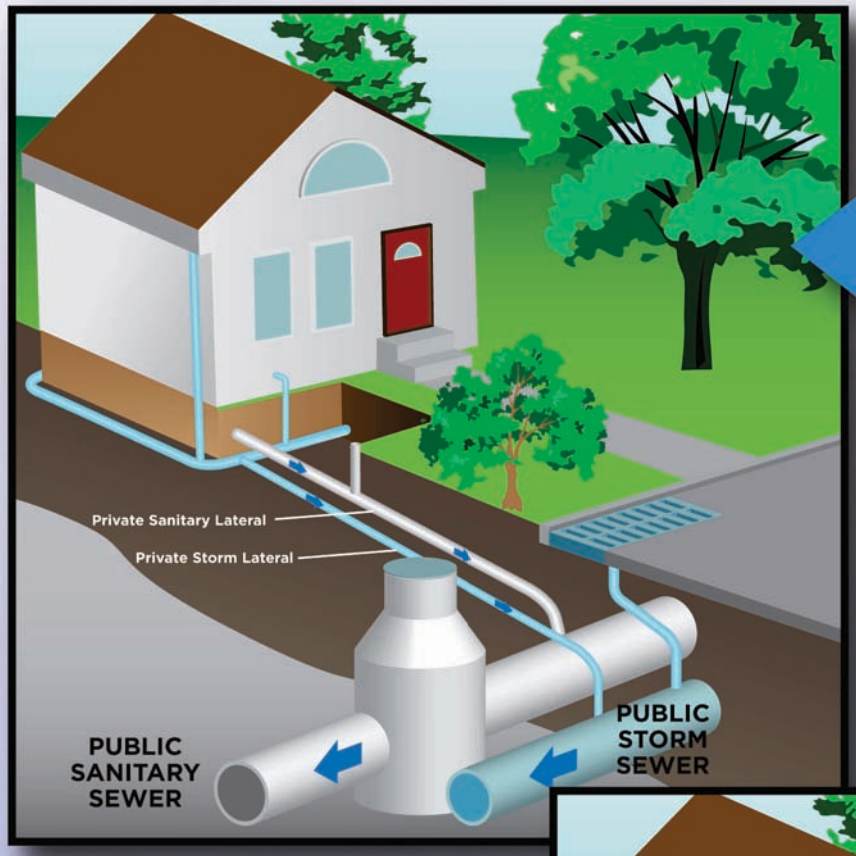
For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park WETLAND Details

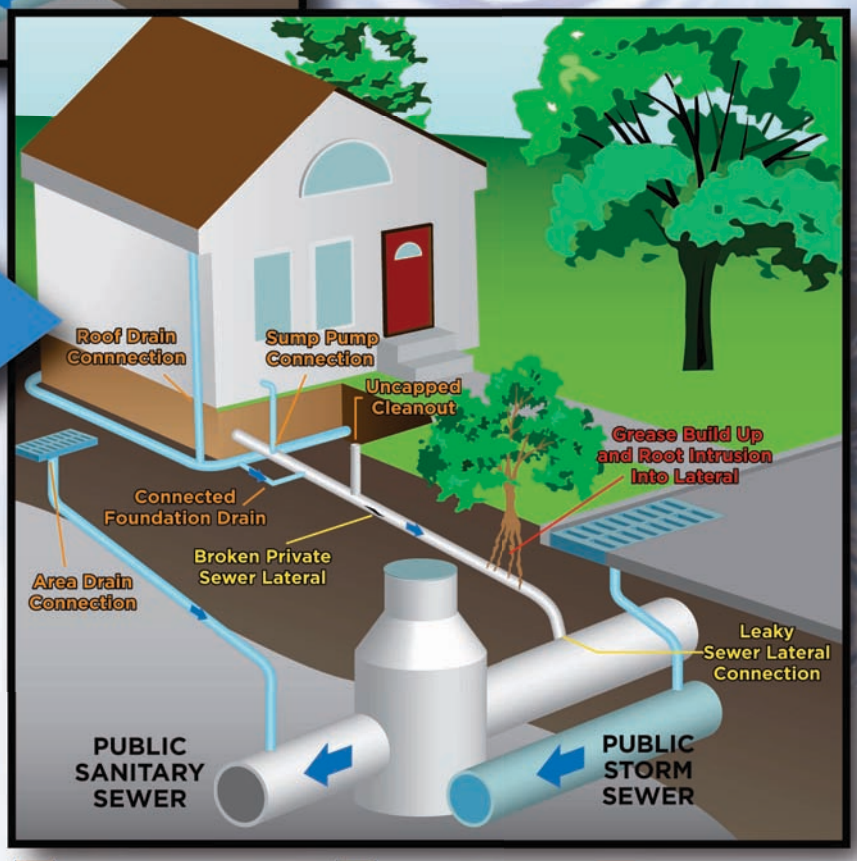
SD1's storm water wetland is located next to the outdoor classroom, a covered gathering area for student experiments and discussion during field trips to Public Service Park. SD1's wetland is triangular shape approximately 160 feet long and 35 feet at its widest. It averages about one foot deep, and has an estimated storage capacity of 2,700 cubic feet. SD1's wetland consists of aquatic plants such as Feather Fern, White Water Lilly, Common Rush, Pickerel, and Blue Flag Iris. Surrounding terrestrial species include Service Berry, American Sycamore, Bald Cypress, Ash, and Red Chokeberry. This wetland is part of a treatment train, or a series of best management practices to collect and treat storm water runoff. The wetland serves as a forebay to SD1's wet retention pond. By combining these practices, there are additional water quality improvements and water quantity reductions.

UNDERSTANDING
YOUR SANITARY SEWER LATERAL



ACCEPTABLE SYSTEM

UNACCEPTABLE SYSTEM



Improper Connections | Structural Issues | Maintenance Issues

SD1

Your sewer lateral is your property – from your home's plumbing to the connection with SD1's sewer – and maintaining it helps protect your home and our environment.

Q. What is a private sanitary sewer lateral?

A. A private sanitary sewer lateral is an underground pipe that is part of your home's plumbing. It conveys wastewater from your home to SD1's public sanitary sewer system. If you own your home, you also own your lateral from the end of your home's internal plumbing to the connection with SD1's sewer. You are responsible for maintaining your lateral, just like other pipes in your home.

Q. What is a cleanout?

A. Many homes have sewer lateral cleanouts. A cleanout is a vertical pipe from an underground lateral to the surface. It has a removable cap for maintenance access. Know where your sewer cleanout is in case you or your plumber needs quick access to stop a mess and costly sewage backups into your home. If your home doesn't have a cleanout, you may want to add one at your property line.

Q. Who is responsible for the maintenance of the private sewer lateral?

A. The property owner is responsible for all maintenance, operation, cleaning, repair and reconstruction of the private sewer lateral from the building/house on the property to the point of connection with SD1's public sewer main.

SD1 is responsible for the maintenance of the public sewer main, not the private sewer lateral. However, if a property owner conclusively demonstrates that the private sewer lateral is not functioning as a result of a problem occurring at a section of the private lateral located beneath the public roadway, that cannot be corrected through routine sewer cleaning or similar maintenance activities, SD1 will repair the problem of the private lateral from the public sewer to the edge of the public roadway at no cost to the property owner. For more information about SD1's Sewer Lateral Repair Policy, visit www.sd1.org.

Q. Why are defective laterals a problem?

A. Broken sewer laterals can allow tree roots or debris into the pipe, which may cause blockages, building backups, or overflows in the environment. Leaking pipes can also allow wastewater to reach groundwater, which may contribute to water pollution.

Q. Why is it important to keep rainwater from entering sanitary laterals?

A. Defects and prohibited connections to private sanitary laterals allow rainwater to enter SD1's sewers. This extra water costs more to treat and it may overload the public sewer system causing overflows. Improper connections include roof downspouts, groundwater sump pumps, foundation drains, and drains from window wells, driveways, etc.

Q. Who should you call if you are experiencing structural issues beneath the public roadway?

A. If you are experiencing structural issues beneath the public roadway, please contact SD1 immediately at (859) 578-7466.

Q. How can you maintain your private sewer lateral?

A. Help protect your property and the environment by following these tips:

- Maintain/repair your private sewer lateral to meet regulations and area plumbing codes.
- Remove any prohibited storm water connections.
- Clear roots, grease, debris or other blockages in the lateral all the way to the connection with the sewer main.
- Know where your cleanout is for quick access to clear blockages or stop backups.
- Keep your cleanout cap on and in good shape. This keeps out rain and debris that can cause blockages, back-ups or overflows.

Q. Should you purchase sewage back-up insurance?

A. Did you know that if sewage backs up into your home, insurance does not generally cover the resulting damage and clean-up costs? In most instances, if a back-up occurs, the homeowner is responsible for repair, clean-up and replacement costs, including the arrangement of repairs and clean-up. Most insurance companies offer optional back-up coverage on homeowner's policies to protect your home for a potential back-up. Please contact your insurance agent for coverage premiums and deductibles.

Western Regional Water Reclamation Facility

Welcome to SD1's newest wastewater treatment plant, the Western Regional Water Reclamation Facility! Operational in 2012, this western Boone County, Kentucky plant can clean up to 20 million gallons a day (MGD) of industrial, commercial and residential wastewater. It is served by the Western Regional Tunnel Conveyance System, which consists of 32,500 feet of 8.5 foot diameter pipe installed by tunneling through solid rock. Western Regional utilizes state-of-the-art technology that allows it to function with a small but dedicated staff 24 hours a day, seven days a week.

Preliminary Treatment

Wastewater Screening

Western Regional primarily serves western Boone County, receiving flow from the Narrows Road Diversion Pump Station through the Western Regional Tunnel Conveyance System. All incoming wastewater, or influent, is kept in covered channels and is monitored for hydrogen sulfide, a colorless, flammable and highly toxic gas that can reach potentially fatal concentrations. All harmful gases are captured and routed through a biofilter that treats odor and makes the fumes safe. The wastewater is then filtered through bar screens that remove debris such as rags, cans, wood and cigarette butts. This debris is conveyed to a dumpster via screening press and taken to a local landfill.

Bar screens in the Headworks building remove debris.

Grit Removal

The wastewater from Headworks is distributed into grit tanks. Using a vortex motion, debris such as sand, gravel and eggshells are forced to separate from lighter materials. The grit removed from the waste stream is washed clean of organic materials, discharged into a dumpster and sent to a landfill. The water separated from the grit is then returned to the beginning of the grit tank cycle to receive further treatment.

Grit is removed from the wastewater and collected in a dumpster.

Secondary Treatment

Aeration Tanks

After flowing into four aeration tanks, the wastewater enters the activated sludge process, in which microscopic organisms use the wastewater as their food source. Bacteria in the tanks, which are often referred to as the "life" of the plant, eat the nonsettleable organic materials that remain in the wastewater, simulating the natural method of breaking down organic material. Because oxygen is vital to the bacteria, compressed air is pumped into the bottom of the tanks, where it then bubbles up through the wastewater.

Compressed air bubbles up through the tanks.

Final Clarifiers

The water next flows by gravity into the final clarifiers, which work to settle out the activated sludge solids. A portion of the sludge, known as return activated sludge, is returned to the aeration tanks to mix with the incoming wastewater, and the rest of the sludge, called waste activated sludge, is transferred to the solids handling system for processing. Nearly all of the solids settle out in the final clarifiers, leaving a purified effluent, the term for the treated flow discharged from the plant. Ultraviolet light shines on the effluent, killing any remaining bacteria or pathogenic organisms as it flows from the plant down a series of steps. These steps incorporate oxygen back into the water before it reaches the environment.

An empty clarifier awaits wastewater influent.

Solids Handling

Belt Filter Presses

The waste activated sludge removed from the final clarifiers is sent to a belt filter press for further dewatering. Here, a polymer is added that bonds to solids and helps them separate from liquid. The sludge/polymer mix flows onto a conveyer belt, where the liquid falls through the porous weave of the belt, leaving the sludge behind. The sludge is then pressed between two belts, and more water is squeezed out.

Biosolids

This dewatered sludge is known as biosolids. The biosolids are sent through screw conveyors to a dumpster destined for the landfill.

A screw conveyor moves biosolids to a dumpster.

Administration

Control Room

All activity in and around Western is monitored 24 hours a day by onsite staff. Through an intricate network of computer systems, plant operators are able to ensure all machinery throughout the plant is operating efficiently. They also monitor the amount of wastewater entering the plant and maintain remote contact with pump stations and treatment plants throughout SD1's service area.

Several systems monitor plant operations.

Laboratory

To ensure water quality standards are met, samples of the wastewater are studied every day by trained lab technicians who make sure harmful chemicals and other substances have been eliminated from the wastewater. Currently, all testing for Western Regional is sent to the Dry Creek Wastewater Treatment Plant lab where technicians test samples each week to evaluate the quality of the influent and effluent flows at the plant. Technicians run tests to determine levels of dissolved oxygen, fecal coliform and pH, among many others. These tests are mandatory and must comply with EPA regulations.

A technician tests water samples.

Western Regional Innovations

Biofilters

Historically, unpleasant odors have been associated with wastewater treatment, but Western's state-of-the-art biofilters eliminate virtually all odor and hazardous gas. These biofilters use the naturally-occurring bacteria found in organic materials. Filtering influent and solids gases through the organic material, the bacteria consumes the odor-causing matter.

Ultraviolet Light Disinfection

Western's effluent is disinfected using ultraviolet light. In older plants, like SD1's Dry Creek Wastewater Treatment Plant, effluent is treated with sodium hypochlorite and then must be treated again to neutralize the chlorine. In one simple step, Western disinfects without the use of chemicals.

Ultraviolet light disinfects the effluent.

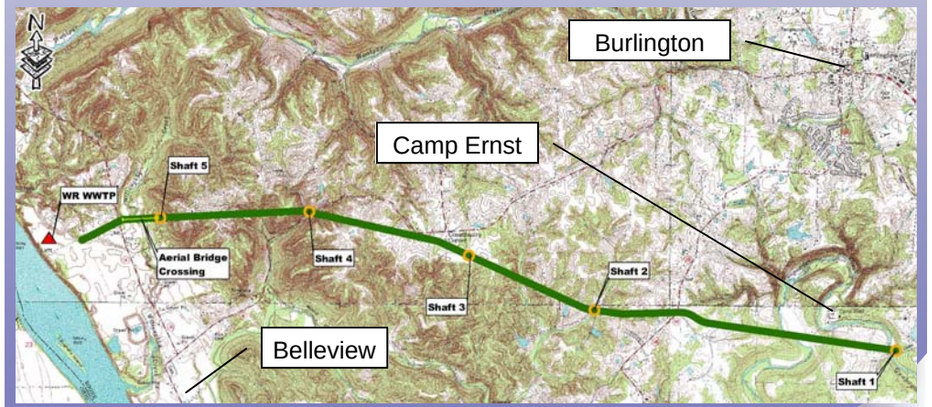
Western Regional Conveyance Tunnel System

The Western Regional Conveyance Tunnel System carries sewage to the new treatment facility, alleviating stress on the sewer systems throughout Northern Kentucky. The tunnel depth reaches more than 250 feet underground and is approximately six miles long, beginning at Gunpowder Pump Station and ending at Western Regional. It will provide 14 million gallons of wet weather storage.

The tunnel was created with an energy-saving design that flows by gravity, eliminating the need for a pump station. Operational simplicity, minimal maintenance and limited operations involvement means that future expenses will be marginal.

Crews construct a tunnel segment.

Shafts allow for tunnel maintenance.



This map shows the scope of the Western Regional Conveyance Tunnel.

Western Regional
Water Reclamation Facility
5459 Belleview Rd. | Petersburg, KY 41080 | 859-331-6674

Eastern Regional Water Reclamation Facility

Welcome to SD1's award-winning Eastern Regional Water Reclamation Facility! Operational in 2007, this southern Campbell County, Kentucky plant can clean up to eight million gallons a day (MGD) of industrial, commercial and residential wastewater, which makes it the smallest of SD1's three regional treatment plants currently in operation. Eastern utilizes state-of-the-art technology that allows it to function with a small but dedicated staff, 24 hours a day, seven days a week.

Preliminary Treatment

Wastewater Screening

Eastern primarily serves southern Campbell County, receiving flow from the Kahn, Pond Creek and Riley Road pump stations. All incoming wastewater is kept in a covered channel and is monitored for hydrogen sulfide, a colorless, flammable and highly toxic gas that can reach potentially fatal concentrations. All harmful gases are captured and routed through a biofilter that treats odor and makes the fumes safe. The wastewater is then filtered through bar screens that remove debris such as rags, cans, wood and cigarette butts. This debris is conveyed to a dumpster via screening press and taken to a local landfill.

A channel brings wastewater into the treatment facility.

Grit Removal

The wastewater is distributed into one of two grit tanks. Using a vortex motion, debris such as sand, gravel and eggshells are forced to separate from lighter materials. The grit removed from the waste stream is washed clean of organic materials, discharged onto the same conveyor as the debris from the bar screens and sent to a landfill. The water separated from the grit is returned to the beginning of the grit tank cycle to receive further treatment.

Grit that has been removed from the wastewater

Secondary Treatment

Oxidation Ditches

After flowing into one of two oxidation ditches, the wastewater enters the activated sludge process, in which microscopic organisms use the wastewater as their food source. Bacteria in the ditches, which are often referred to as the "life" of the plant, eat the nonsettleable organic materials that remain in the wastewater, simulating a natural method of breaking down organic material. Because oxygen is vital to the bacteria, a mechanical mixer churns the contents of the oxidation ditch to incorporate air and feed the bacteria.

A mixer churns the wastewater.

Final Clarifiers

The water flows by gravity into the final clarifiers, which work to settle out the activated sludge solids. A portion of the sludge, known as return activated sludge, is returned to the oxidation ditch to mix with the incoming wastewater, and the rest of the sludge, called waste activated sludge, is transferred to the solids handling system for processing. Nearly all of the solids settle out in the final clarifiers, leaving a purified effluent, the term for the treated flow discharged from the plant. Ultraviolet light shines on the effluent, killing any remaining bacteria or pathogenic organisms, as it flows from the plant down a series of steps. These steps incorporate oxygen back into the water before it reaches the environment.

The final clarifier allows solids to settle.

Solids Handling

Belt Filter Presses

The waste activated sludge removed from the final clarifiers is sent to a belt filter press for further dewatering. Here, a polymer is added that bonds to solids and helps them separate from liquid. The sludge/polymer mix flows onto a conveyer belt, where the liquid falls through the porous weave of the belt, leaving the sludge behind. The sludge is then pressed between two belts, and more water is squeezed out.

Biosolids

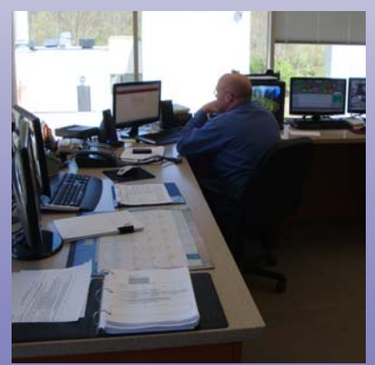
This dewatered sludge is known as biosolids. The biosolids are sent through a screw conveyor, which sends them through an enclosed tube to dumpsters destined for the landfill. Every week, about 58 tons of dried sludge are removed from Eastern.

A screw conveyor moves biosolids to a dumpster.

Administration

Control Room

All activity in and around Eastern is monitored 24 hours a day by staff from the control room at Dry Creek Wastewater Treatment Plant in Villa Hills. Through an intricate network of computer systems, plant operators are able to ensure all machinery throughout the plant is operating efficiently. They also monitor the amount of wastewater entering the plant and maintain remote contact with a number of pump stations and other small treatment plants throughout SD1's service area.



A technician monitors plant operations.

Laboratory

To ensure water quality standards are met, samples of the wastewater are studied every day by technicians at Dry Creek Wastewater Treatment Plant's advanced laboratory. Trained in chemical and biological sciences, the lab technicians perform a vital service, ensuring harmful chemicals and other substances have been eliminated from the wastewater before it is discharged into the Ohio River. Tests are run to determine levels of dissolved oxygen, fecal coliform and pH, among many others. These tests are mandatory procedures and must comply with Environmental Protection Agency regulations.

A technician tests water samples.

Eastern Regional Innovations

Ultraviolet Light Disinfection

Using ultraviolet light to disinfect Eastern's effluent is a state-of-the-art development. In older plants, like SD1's Dry Creek Wastewater Treatment Plant, effluent is treated with sodium hypochlorite and then must be treated again to neutralize the chlorine. In one simple step, Eastern disinfects without the use of more chemicals.

Ultraviolet light disinfects the effluent.

Biofilters

Historically, unpleasant odors have been associated with wastewater treatment, but Eastern's state-of-the-art biofilters eliminate virtually all odor and hazardous gas. These biofilters use the naturally-occurring bacteria found in organic materials, filtering influent and solids gases through the organic material and allowing the bacteria to consume the odor-causing matter.

Biofilters remove potentially foul and harmful odors.

Equalization Basin

Eastern was constructed with an aerated equalization basin that has a capacity of 1.5 million gallons. This basin can accommodate high wet weather flow events and prevent overflows.

An equalization basin prevents wet weather overflows.

Eastern Regional
Water Reclamation Facility
8880 E. Main Street | Alexandria, KY 41016 | 859-331-6674

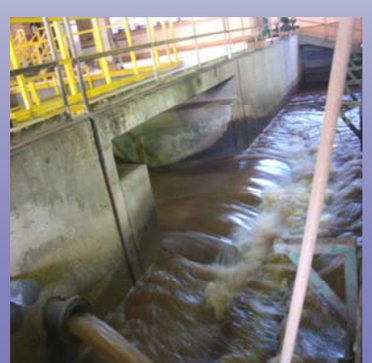
Dry Creek Wastewater Treatment Plant

Welcome to SD1's award-winning Dry Creek Wastewater Treatment Plant! Operational in 1979, this Villa Hills, Kentucky plant cleans industrial, commercial and residential wastewater from more than 94,000 customer accounts in Boone, Campbell and Kenton counties in Northern Kentucky. Dry Creek's dedicated and experienced staff treats an average of 33 million gallons of wastewater per day, seven days a week, 24 hours a day.

Preliminary Treatment

Wastewater Screening

Wastewater first enters the Dry Creek Wastewater Treatment Plant from two main incoming sources: the Bromley Pump Station and the Lakeview Pump Station. During this time, the wastewater is monitored for hydrogen sulfide, a colorless, flammable and highly toxic gas that can reach potentially fatal concentrations. Also during this time, sodium hypochlorite, a liquid form of chlorine similar to common household bleach, is injected into the wastewater to control odor. As the wastewater enters the building, it is filtered through three bar screens that remove debris such as rags, cans, wood and cigarette butts. This debris is then carried on a conveyor belt into a dumpster and taken to a landfill.



Water pours into the preliminary treatment building

Grit Removal

The wastewater is distributed into two grit tanks. Using a vortex motion, debris such as sand, gravel and eggshells are forced to separate from lighter materials. The grit removed from the waste stream is pumped up to a cyclone separator screw, where it is separated from the water, washed clean of organic materials, discharged onto the same conveyor belt as the debris from the bar screens and sent to a landfill. The water separated from the grit is returned back to the beginning of the grit tank cycle to receive further treatment.

Grit that has been removed from the wastewater

Primary Treatment

Settling Tanks

Flowing at a slower pace, the wastewater is distributed into six settling tanks. Heavy materials settle to the bottom while lighter materials, such as grease and scum, float to the top. The grease and scum are removed through a skimming process and sent to a landfill. The solids that settle at the bottom of the tank, which are collectively referred to as sludge, are pumped to holding tanks for further processing.

Although fats, oils and greases are removed from wastewater in this process, they can clog pipes on their way to the plant. That is why they should never be poured into drains or toilets.

Grease and scum are skimmed off the top

Secondary Treatment

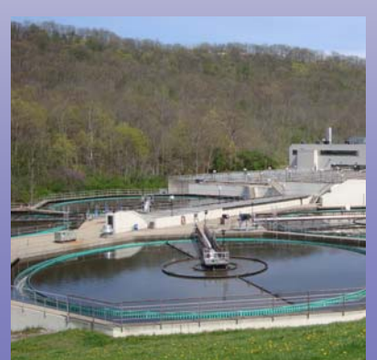
Aeration Tanks

After flowing into six aeration tanks, the wastewater enters the activated sludge process, in which microscopic organisms use the wastewater as their food source. Bacteria in the tanks, which are often referred to as the "life" of the plant, eat the nonsettleable organic materials that remain in the wastewater, simulating a natural method of breaking down organic material. Because oxygen is vital to the bacteria, compressed air is pumped into the bottom of the tanks, where it then bubbles up through the wastewater.

Compressed air bubbles up through the tanks

Final Clarifiers

The water flows by gravity into the final clarifiers, which work to settle out the activated sludge solids. A portion of the sludge, known as return activated sludge, is returned to the beginning of the aeration tank cycle to mix with the incoming wastewater, and the rest of the sludge, called waste activated sludge, is conveyed to the solids handling system for processing. Nearly all of the solids settle out in the final clarifiers, leaving a purified effluent, the term for the treated flow discharged from the plant. At this point, sodium hypochlorite is added to the effluent to kill any remaining bacteria or pathogenic organisms.



The clarifiers at work

Secondary Treatment, con't.

Dechlorination & Discharge

The dechlorination facility is the final stop the treated wastewater makes before being discharged into the Ohio River. Chlorine is one of the chemicals found in the sodium hypochlorite used during preliminary and secondary treatment. The dechlorination facility removes the chlorine from the treated effluent, protecting fish and other organisms that can be harmed by even the smallest amounts. After leaving the dechlorination facility, the treated wastewater is discharged into the Ohio River.

Dechlorination pumps ready the effluent

Solids Handling

Gravity Belt Thickeners

So what happens to the waste activated sludge removed from the final clarifiers? It is sent to gravity belt thickeners for further dewatering. Here, a polymer is added that bonds to solids and helps them separate from liquid. The sludge/polymer mix flows onto a conveyer belt, where the liquid falls through the porous weave of the belt, leaving the sludge behind.

Centrifuges

But the sludge isn't done yet. Three continuous flow scroll centrifuges further dewater the sludge at a rate of 150-200 gallons per minute. In the centrifuges, the sludge is pumped into a rotating bowl where the solids are separated from the liquids by centrifugal force, a process similar to the spin cycle of a washing machine.

Waste activated sludge is thickened on a gravity belt

Biosolids

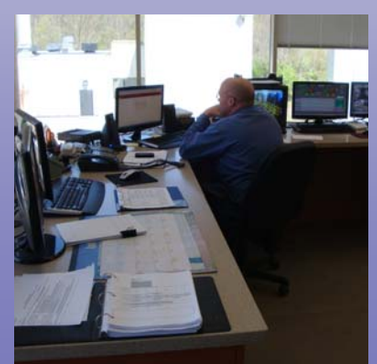
The end product of the solids handling process is known as biosolids. The biosolids are collected in large dumpsters and sent to a nearby landfill. Every day, about 360 tons of dried sludge are removed from the Dry Creek Wastewater Treatment Plant.

The centrifuges separate water from sludge

Administration Building

Control Room

All activity in and around the plant is monitored 24 hours a day by staff from the control room in the administration building. Through an intricate network of computer systems, plant operators are able to ensure all machinery throughout the plant is operating efficiently. They also monitor the amount of wastewater entering the plant and maintain remote contact with a number of pump stations and other small treatment plants throughout SD1's service area.



A technician monitors plant operations

Laboratory

To ensure water quality standards are met, samples of the wastewater are studied every day by lab technicians trained in chemical and biological sciences. Their job is vital to ensure harmful chemicals and other substances have been eliminated from the wastewater before it is discharged into the Ohio River. Dry Creek lab technicians test about 6,000 samples each month to evaluate the quality of the influent and effluent flows at the plant. Technicians run tests to determine levels of dissolved oxygen, fecal coliform and pH, among many others. These tests are mandatory procedures and must comply with Environmental Protection Agency regulations.

A technician tests water samples

Dry Creek
Wastewater Treatment Plant
2999 Amsterdam Road | Villa Hills, KY 41017 | 859-331-6674

For generations, it was assumed that unpleasant odors were an inevitable aspect of treating wastewater. Today, the wastewater industry has become increasingly cognizant of the importance of odor control as communities expand and the areas around wastewater treatment plants become more populated.

SD1's Dry Creek Wastewater Treatment Plant strives to be a good neighbor while cleaning an average of 33 million gallons of wastewater a day from more than 94,000 homes and businesses throughout Boone, Campbell and Kenton counties. This award-winning facility has been operated seven days a week, 24 hours a day since 1979 by dedicated and experienced staff.

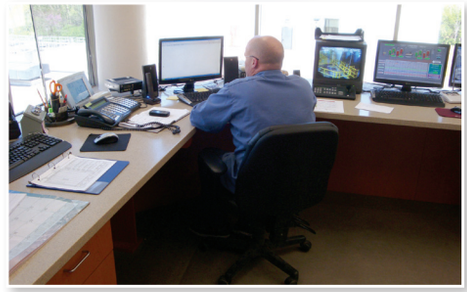
SD1 is aware that odor control is a vital part of our customer service. Despite many technological upgrades and the integration of state of the art tools, Dry Creek still occasionally experiences odor control issues.

WHAT CAN I DO IF I'M AFFECTED BY ODOR FROM DRY CREEK?

SD1 makes every effort to respond to odor complaints with prompt and efficient service. Sometimes, sewer odors arise from a local system or private property. Please notify SD1 or the property owner in the event of an odor issue because such odors can be the sign of underlying problems.

If you have concerns or would like more information, contact the Dry Creek Plant Manager or Director of Operations at 859-331-6674 or email info@sd1.org.

SD1 welcomes visitors to tour our facility. Please contact us if you are interested in learning more about what we do.

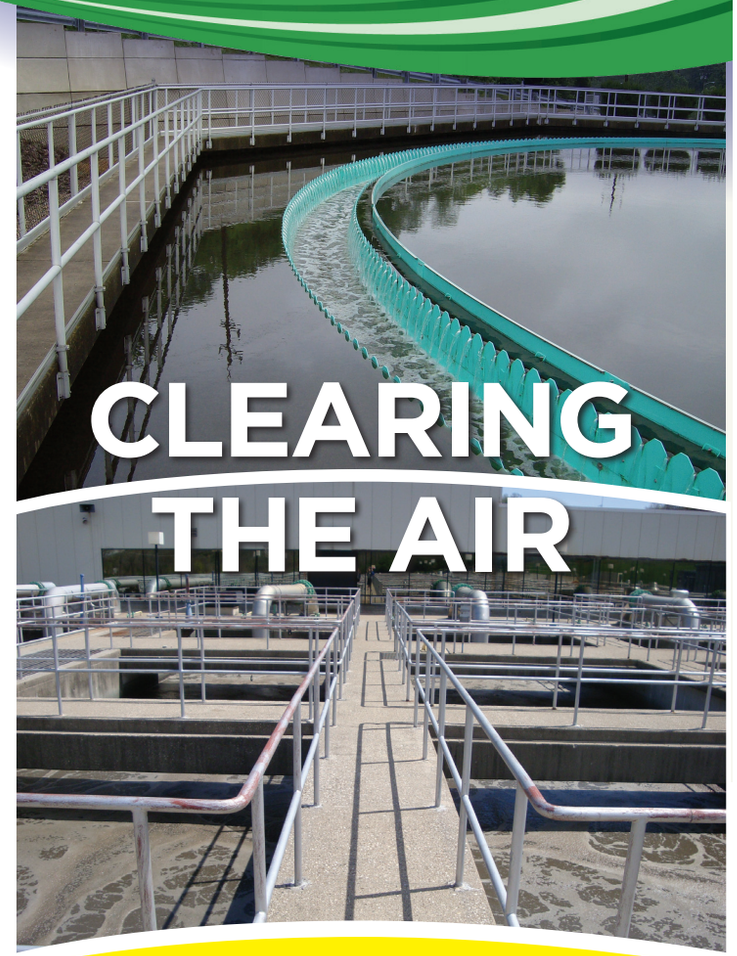


DRY CREEK WASTEWATER TREATMENT PLANT
SANITATION DISTRICT NO. 1
859-331-6674
2999 AMSTERDAM ROAD
VILLA HILLS, KY 41017
WWW.SD1.ORG

SD1

Managing Northern Kentucky's Wastewater and Storm Water

WASTEWATER TREATMENT



CLEARING THE AIR

ODOR CONTROL AT

DRY CREEK WASTEWATER TREATMENT PLANT

WHAT IS SD1 DOING TO IMPROVE ODOR CONTROL?

SD1 is committed to addressing off-site odors. Every component of the wastewater treatment process at Dry Creek is closely monitored, and workers are ready to respond if odor levels become problematic.

To minimize odors, SD1 has:

- Chlorinated the wastewater as it enters the treatment plant.
- Replaced a system that used heat to remove water from solids with one that utilizes different technology.
- Added hydrogen peroxide to the sewage sludge.
- Put tarps on dumpsters that haul sewage sludge and other solids.
- Added odor-reducing chemicals to incoming water at pump stations.

In addition, SD1 continues to explore new and innovative solutions to odor issues. Projects are scheduled that will continue to improve SD1's ability to keep odors contained to the Dry Creek site through cutting edge technologies.

An aerial view of Dry Creek Wastewater Treatment Plant, 2011

WHY ARE THERE ODORS?

Wastewater undergoes a series of processes at Dry Creek Wastewater Treatment Plant before it can be discharged into the Ohio River. Throughout each stage, biodegradable materials are broken down, sometimes creating unpleasant odors.

Preliminary Process

In addition to haulers bringing in the contents of septic tanks, two large pipes carry water into the treatment plant, one from the Bromley Pump Station and one from the Lakeview Pump Station. Immediately, this incoming water is treated with chlorine to control odor. Then, as it enters the Headworks building, it is filtered through bar screens that separate out debris. This garbage is hauled by truck to a landfill.

Primary Process

Water is then held in a quiet tank for several hours, allowing solid particles to settle to the bottom and greases to float to the top. The solids and greases are separated out to receive further treatment.

Biological Process

Next, oxygen is pumped into the water, stimulating the growth of microorganisms that absorb the organic matter from the sewage as their food supply.

Clarifier Process

The water is then sent to new tanks to settle. The microorganisms that digested the waste sink to the bottom while the cleansed water on top flows into an exit pipeline, where it is disinfected one last time with chlorine.

Dechlorination Process

Before it is released back into the natural world, the chlorine must be removed from the treated water to make it safe for the environment. Sodium bisulfite is added to neutralize the chlorine, and the clean water is discharged into the Ohio River.

DRY CREEK WASTEWATER TREATMENT AND ODOR CONTROL IMPROVEMENT PROJECT

PROJECT DESCRIPTION

In an effort to provide better and more efficient sanitary sewer service to our customers, SD1 is making a series of improvements to our Dry Creek Wastewater Treatment Plant.

Currently at Dry Creek, sanitary flows from both the Bromley Pump Station and the Lakeview Pump Station enter the plant through one Headworks facility, the site of the preliminary stage in wastewater treatment. Heavy precipitation can greatly increase the amount of flow being pumped through the Lakeview and Bromley Pump Stations, overwhelming the existing Headworks facility and resulting in a decrease in treatment effectiveness, backups and combined sewer overflows (CSOs). As a part of the Dry Creek improvement project, a second Headworks facility will be built to accept flow strictly from the Lakeview Pump Station, increasing Dry Creek's treatment capacity and alleviating stress on the existing Headworks facility. When more waste is able to be pumped from the pump stations to the treatment plant, fewer CSOs occur and less sanitary waste pollutes the environment.

The new Headworks will feature cutting edge technology, allowing for more efficient and effective preliminary wastewater treatment. Advanced screening equipment will allow for removal of finer particles from the wastewater, decreasing wear and tear on the pipes and pumps, and automated flow-monitoring controls will streamline the preliminary treatment stage and decrease the risk of flooding.

In addition, the new Headworks will employ the innovative odor control features used at our Eastern Regional and Western Regional Water Reclamation Facilities. This highly effective odor control measure utilizes a mulch pit into which gases from the incoming wastewater are pumped. The mulch filters the foul gases, trapping and eliminating odor. The Solids Handling area will also receive an odor-control upgrade. A two-stage chemical scrubber will be installed to capture and treat the odors emitting from the dewatered sludge solids.

Aside from the new Headworks, several other improvements for Dry Creek are included in the project. To streamline the dumping process for grease and septage haulers, each hauler will be given a key fob that will grant access to the dumping area and control all necessary equipment while tracking how often each hauler is dumping. Also, the vactor dumping area will be doubled in size. Both enhancements will increase productivity and dumping capacity and decrease dumping time.

Dry Creek will also be adding environmental technology to conserve energy and control storm water runoff. A large, domed skylight will be constructed in the new Headworks facility to increase natural light in the building, and a bioretention basin will be added to capture storm water runoff from the plant and filter it before it enters the neighboring creek. This basin will be an aesthetic asset to Dry Creek's natural landscape and remove pollutants from the many impervious surfaces at the plant.

PROJECT TIMELINE

The Dry Creek Wastewater Treatment and Odor Control Improvement Project is scheduled to be completed in the year 2013.

CONTACT INFORMATION

>> Joe Baxter, Dry Creek Wastewater Treatment Plant Manager | 859-547-1111 | jbaxter@sd1.org

>> John Clark, Director of Treatment Plant and Pump Station Operations | 859-547-1108 | jclark@sd1.org

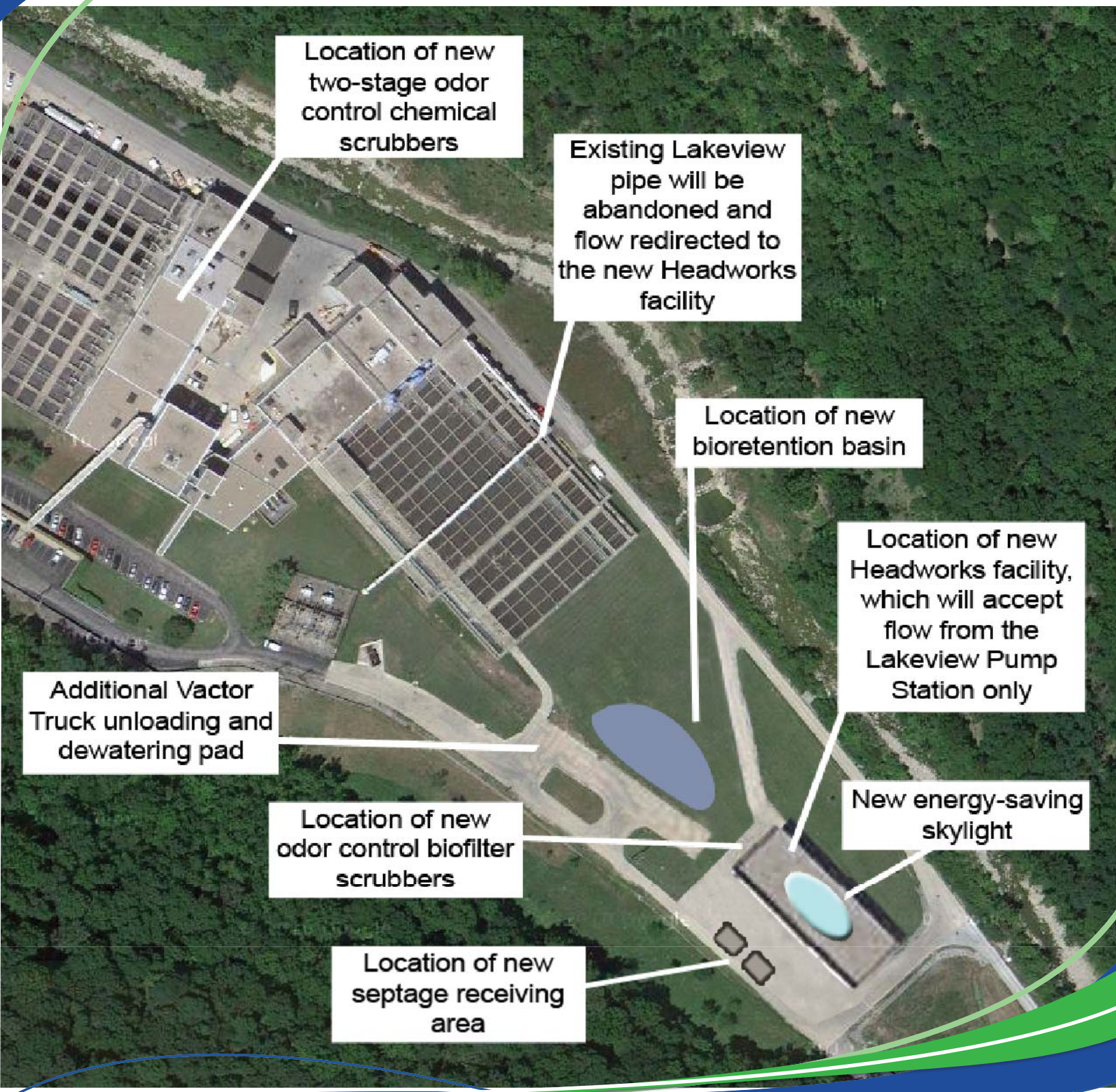
>> SD1 Customer Care Team | 859-578-7452 | info@sd1.org

for more information please visit

www.SD1.org

for PROJECT MAP, *see back page*

PROJECT MAP


Location of new two-stage odor control chemical scrubbers
Existing Lakeview pipe will be abandoned and flow redirected to the new Headworks facility
Location of new bioretention basin
Location of new Headworks facility, which will accept flow from the Lakeview Pump Station only
Additional Vactor Truck unloading and dewatering pad
New energy-saving skylight
Location of new odor control biofilter scrubbers
Location of new septage receiving area

BANKLICK CREEK REGIONAL WETLANDS PROJECT

PROJECT DESCRIPTION

Completed on October 31, 2011, the Banklick Creek Regional Wetlands project involved the construction of six acres of wetland to help improve the water quality of Banklick Creek, as it has been identified by the Kentucky Division of Water (KDOW) as a polluted waterway for bacteria, sediment, nutrients and other contaminants. Wetlands provide natural water treatment by allowing bacteria to naturally decay and by capturing the excess sediment, nutrients and other pollutants often found in storm water runoff and waterways. The water released from a wetland is, as a result, much cleaner and free of many of the contaminants that pollute our waterways.

A small pump station has been constructed near Banklick Creek to remove a portion of the polluted creek water and divert it into the wetlands for natural decontamination. The naturally treated water released from the wetland is then allowed to flow back into the creek downstream. Because wetlands provide natural cleansing processes, the objective for the project is to reduce bacteria in the creek and provide other water quality improvements during both the recreation season, May through October, and the warmer months of early spring and late fall.

PROJECT TIMELINE

The Banklick Creek Regional Wetlands project began normal operations in the spring of 2012.

PROJECT DESCRIPTION

- Modeling results indicate that the wetland will result in a 54 percent reduction in average bacteria quantities in Banklick Creek immediately downstream of the wetland during the recreation season. This reduction is estimated to achieve compliance with KDOW's water quality standards in regards to bacteria levels for approximately 31 more days out of the year than it does currently.
- The primary purpose of the project is to reduce bacteria; however, the use of the regional wetland also allows for water quality benefits not provided by traditional infrastructure like pipes and tunnels. These benefits include reduction of other pollutants, improved wetland habitat and educational opportunities.
- More traditional infrastructure to contain or treat sanitary sewer overflows in the area, like pipes and tunnels, are more expensive. A more traditional approach to controling water quality in Banklick Creek was estimated to cost approximately $20 million and would not provide additional days of compliance to water quality standards set by KDOW.

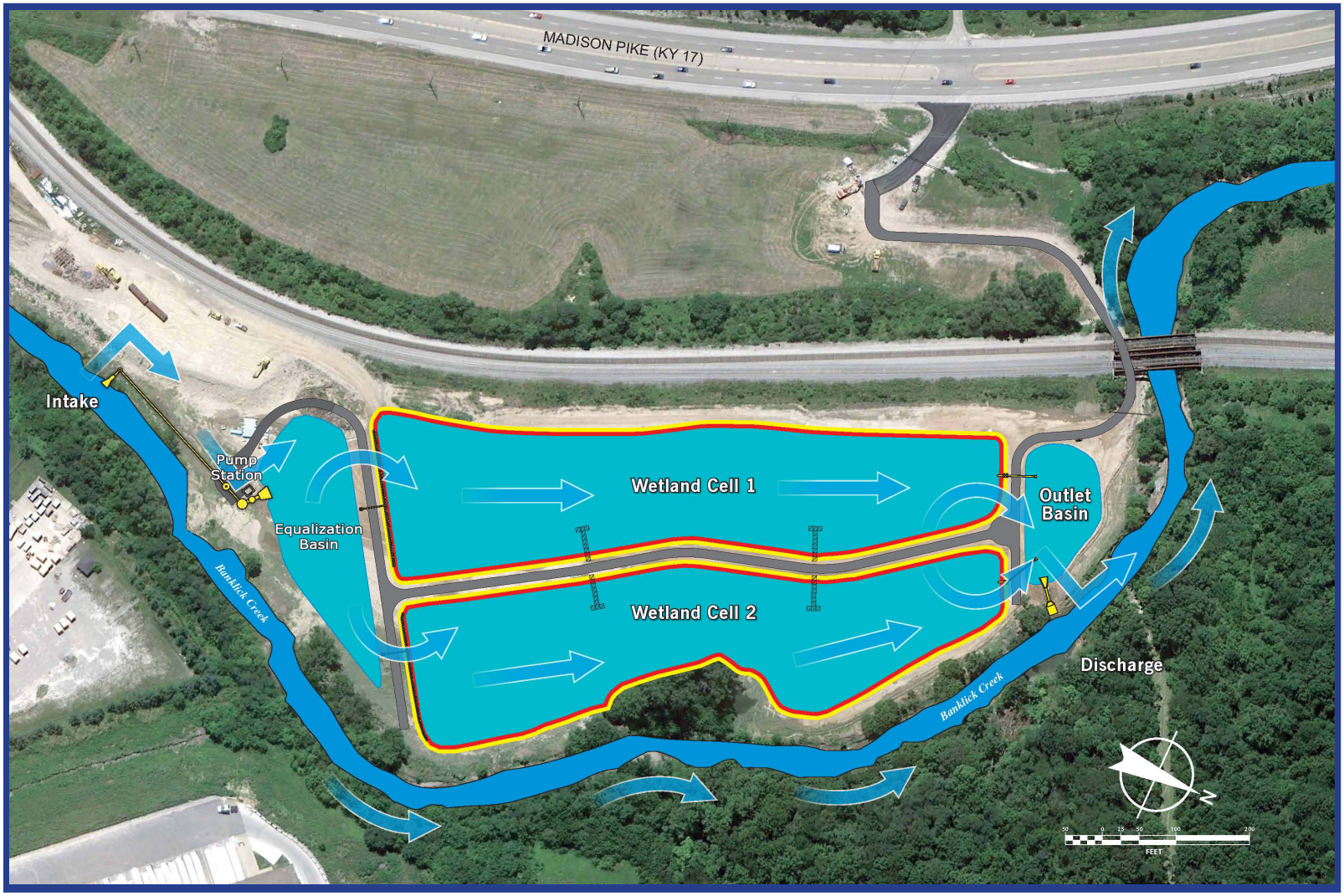
CONTACT INFORMATION

- Jim Gibson, Director of Water Resources | 859-578-6882 | jgibson@sd1.org
- Craig Frye, Environmental Scientist | 859-547-1647 | cfrye@sd1.org
- SD1 Customer Care Team | 859-578-7452 | info@sd1.org

For more information, please visit
www.SD1.org.

PROJECT MAP on back

PROJECT MAP


MADISON PIKE (KY 17)
Intake
Pump Station
Equalization Basin
Wetland Cell 1
Wetland Cell 2
Outlet Basin
Discharge
Banklick Creek
Banklick Creek
N
50 0 25 50 100 200
FEET

NARROWS ROAD DIVERSION PUMP STATION

PROJECT DESCRIPTION

Sanitation District No. 1 (SD1) is constructing a Diversion Pump Station (DPS) which is a key component of the Western Regional Sanitary Sewer System improvements. The DPS will be located on Narrows Road where it crosses Bullock Pen Creek in Erlanger. The project is a critical project in SD1's capital improvement plan required by their Federal Court Order to reduce Sanitary Sewer Overflows (SSOs).

Two existing major gravity sewer interceptors converge at the DPS site and currently flow to the Lakeview Pump Station and ultimately the Dry Creek Wastewater Treatment Plant. The new 17 million gallon per day peak capacity DPS will redirect the flow from these two interceptors to the Western Regional Water Reclamation Facility in Boone County. This improvement project will reduce flow to the Lakeview Pump Station resulting in a reduction of SSOs at the Lakeview Pump Station. The following photo show a rendering of the front of the proposed pump station building.

The project also includes construction of a new aerial sewer line crossing of Bullock Pen Creek near the pump station, to replace an old aerial crossing in the same location. Improvements to the Bullock Pen Creek channel are also part of the project, including stream flow velocity control and bank erosion control elements near the pump station.

SD1 has received a low-interest loan through the Kentucky Infrastructure Authority (KIA) to fund this project.

PROJECT TIMELINE

Construction of the DPS is expected to start in January 2011 and be completed by Summer 2012.

TEMPORARY INCONVENIENCES

The construction site is located near the dead-end of Narrows Road. However, construction traffic on Narrows Road and Brightleaf Boulevard may create some noise and disturbance as the project proceeds.

SAFETY

- The construction contractor is required to follow all OSHA safety requirements.
- Children can be curious about construction. Please keep them away from machinery, trenches, or pits to avoid accidents.
- If you see a potentially unsafe condition or safety fencing that needs repair, please contact SD1 immediately.

CONTACT INFORMATION

- Kyle Boyle, Project Engineer | (859) 547-1644 | kboyle@sd1.org
- John LaRue, Project Engineer, HDR Engineering, Inc. | (859) 223-3755 | john.larue@hdrinc.com
- SD1 Customer Care Team | (859) 578-7452 | info@sd1.org

for more information please visit
www.SD1.org

for PROJECT MAP, *see back page*

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SOUTH FORK GUNPOWDER INTERCEPTOR *and* ROSETTA SEWER

PROJECT DESCRIPTION

Sanitation District No. 1 (SD1) is constructing a portion of the Western Regional Sanitary Sewer System along Gunpowder Creek starting at the Fowler Creek Pump Station near Woodcreek Subdivision to Sunnybrook Drive and along Utter Back Creek from Haines Road to Rosetta Drive. The project includes installation of approximately 17,000 feet of 42-inch to 66-inch and approximately 3,700 feet of 30-inch to 36-inch interceptor sewer and related manholes. The majority of the sewer will be installed by open cut, trench construction. However, there will be two tunnels; one 150 feet long and one 1,170 feet long.

The project is a critical project in SD1's capital improvement plan required by their Federal Court Order to reduce Sanitary Sewer Overflows (SSOs). This sewer will replace the existing sewer along this alignment and will ultimately eliminate both the Fowler Creek Pump Station and the Rosetta Pump Station. It will also convey flows from the upsteam sewers including Sunnybrook Sewer to the downstream Gunpowder Interceptor. SD1 was able to obtain a low interest loan to fund the project through Kentucky Infrastructure Authority (KIA).

PROJECT TIMELINE

Construction is expected to start Fall 2010 and be completed by Spring 2012.

for more information please visit **www.SD1.org**

TEMPORARY INCONVENIENCES

- Most of the construction is along Gunpowder Creek. However, construction traffic will need to access the project area.
- Access to homes will be maintained throughout the project. Some noise, dirt, vibration, and disturbance will occur as the project proceeds.
- Expect travel delays in and around the construction, so plan travel time accordingly to avoid stress and frustration.

SAFETY

- The contractor is required to follow all OSHA safety requirements. However, if you become aware of a public safety hazard, please report it to 911 immediately.
- Children can be curious about construction. Please keep them away from machinery, trenches or pits to avoid accidents.
- If you see a potentially unsafe condition or safety fencing that needs repair, please contact SD1 immediately.
- Follow the speed limit and be aware that in construction zones, the speed limits are often lower than normal.

RESTORATION

Restoration of landscaping and grassy areas disturbed by construction will begin after construction is complete in that area. Every effort will be made to restore property to its original condition.

CONTACT INFORMATION

- Bob Wilson, Project Manager | (859) 578-7469 | rwilson@sd1.org
- Tom Schaffer, Project Engineer, HDR Engineering, Inc. | (859) 223-3755 | tom.schaffer@hdrinc.com
- SD1 Customer Care Team | (859) 578-7452 | info@sd1.org

for PROJECT MAP, *see back page*

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FROGTOWN INTERCEPTOR SEWER

PROJECT DESCRIPTION

Sanitation District No. 1 (SD1) is constructing the next portion of the Western Regional Sanitary Sewer System along Gunpowder Creek from Sunnybrook Drive to Frogtown Road. The project includes installation of approximately 10,900 feet of 42-inch interceptor sewer and related manholes. The majority of the sewer will be installed by open cut, trench construction. However, there will be one bore and jack under Mount Zion Road.

The project is an important project in SD1's capital improvement plan and is required by their Federal Court Order to reduce Sanitary Sewer Overflows (SSOs). This sewer will replace the existing sewer along this alignment and will ultimately eliminate two pump stations in the area, the South Hampton Pump Station and Hemstead Pump Station. It will also convey flows from the upstream sewers to the downstream South Gunpowder Interceptor. SD1 was able to obtain a low interest loan to fund the project through Kentucky Infrastructure Authority (KIA).

PROJECT TIMELINE

Construction is expected to start Winter 2010 and be completed by Spring 2012.

for more information please visit

www.SD1.org

TEMPORARY INCONVENIENCES

- Most of the construction is along Gunpowder Creek. However, construction vehicles will need to access the project area.
- Access to homes will be maintained throughout the project. Some noise, dirt, vibration, and disturbance will occur as the project proceeds.
- Expect travel delays in and around the construction area and plan travel time accordingly.

SAFETY

- The contractor is required to follow all OSHA safety requirements. However, if you become aware of a public safety hazard, please report it to 911 immediately.
- Children can be curious about construction. Please keep them away from machinery, trenches, and pits to avoid accidents.
- If you see a potentially unsafe condition or safety fencing that needs repair, please contact SD1 immediately.
- Follow the speed limit and be aware that in construction zones, the speed limits are often lower than normal.

RESTORATION

Restoration of landscaping and grassy areas disturbed by construction will begin after construction is complete in that area. Every effort will be made to restore property to its original condition.

CONTACT INFORMATION

- Bob Wilson, SD1 Project Manager | (859) 578-7469 | rwilson@sd1.org
- Tom Schaffer, Project Engineer, HDR Engineering, Inc. | (859) 223-3755 | tom.schaffer@hdrinc.com
- SD1 Customer Care Team | (859) 578-7452 | info@sd1.org

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ASH STREET PUMP STATION *and* FORCE MAIN

PROJECT DESCRIPTION

Sanitation District No. 1 (SD1) is designing the Ash Street Pump Station and associated force main, which will be key components of the Eastern Regional Sanitary Sewer System. The Ash Street Pump Station will be located at the intersection of First Street and Ash Street in Silver Grove. The project is critical to SD1's capital improvement plan and is required by their Federal Court Order to reduce sewer overflows.

Currently, a 10-inch diameter sewer line conveys wastewater from local cities to the Silver Grove Pump Station, located at the intersection of Mary Ingles Highway & State Route 1998. However, during heavy rainfall, flow into the sewer quickly exceeds its conveyance capacity. The excess flow is discharged into a drainage ditch through a combined sewer overflow (CSO). This overflow discharges a combination of wastewater and storm water an average of 29 times per year with an annual overflow volume of about 2.4 million gallons (MG). The CSO discharge is located near a mobile home community and the surrounding area is subject to frequent backwater from the Ohio River. It experiences poor drainage even in low river conditions. When the river is elevated, ground and river water enter the Silver Grove Pump Station through low lying manholes and leaky sewers, resulting in sewer overflows near the Silver Grove Pump Station that discharge approximately 23.2 MG a year.

The new 7 to 9 million gallon per day (MGD) Ash Street Pump Station will redirect the flow to the state-of-the-art Eastern Regional Water Reclamation Facility (ERWRF) in Campbell County. The total, projected overflow volume reduced by this project is 38.4 MG. This project also includes:

- >> Installation of approximately 27,000 linear feet (LF) of 20-inch diameter force main to convey wet weather flows from Ash Street to the ERWRF.
- >> Redirecting the existing Silver Grove Force Main to the Ash Street Pump Station.
- >> Installation of a new gravity sewer immediately upstream of the Silver Grove Pump Station to convey the remaining flow and to eliminate the intrusion of river water.
- >> Abandonment of the 10-inch diameter gravity sewer that currently conveys flow from downtown Silver Grove to the Silver Grove Pump Station.
- >> New services for the customers that are currently served directly by the 10-inch diameter gravity sewer to be abandoned. These customers shall receive sewer service through the installation of approximately 19 individual grinder pumps and 6,000 LF of low pressure sewer.

PROJECT TIMELINE

Construction is expected to start in Winter 2011 and be completed by Summer 2013.

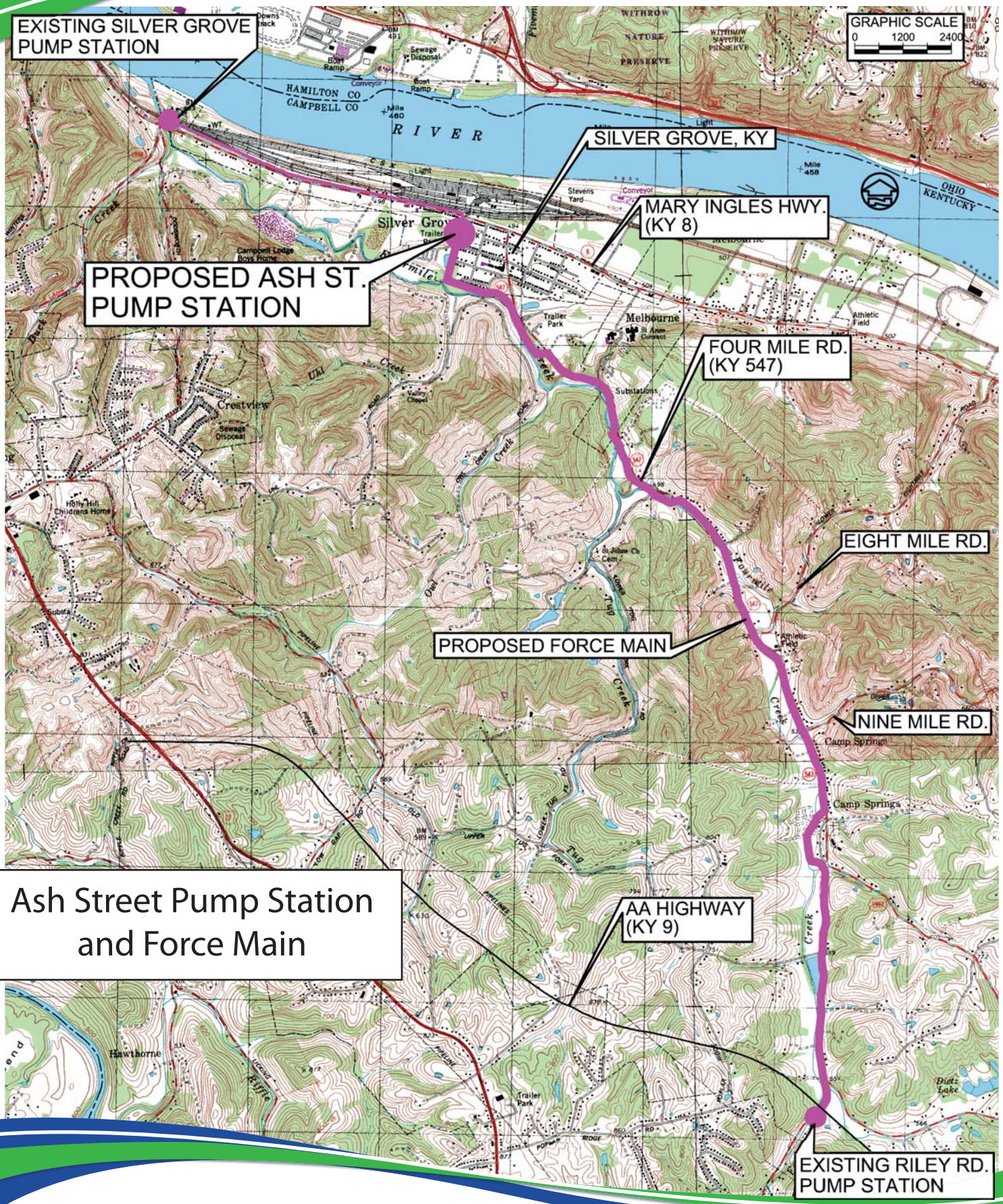
CONTACT INFORMATION

- >> Kyle Boyle, SD1 Project Engineer | 859-547-1644 | kboyle@sd1.org
- >> Joe Henry, GRW, Inc. | 859-223-3999 | jhenry@grwinc.com
- >> SD1 Customer Care Team | 859-578-7452 | info@sd1.org

for more information please visit **www.SD1.org**

for PROJECT MAP, *see back page*

PROJECT MAP



Ash Street Pump Station and Force Main

NEWPORT AREA SEWER REHABILITATION

PROJECT DESCRIPTION

Sanitation District No. 1 (SD1) is undertaking a comprehensive rehabilitation project involving the sanitary sewer system in the cities of Fort Thomas, Southgate and Newport. Approximately 450 homes are included in this project area and will be affected by the rehabilitation. SD1 will be repairing the entire sanitary sewer system in this area, including manholes, mainlines and private laterals. In most cases, these repairs will be made with minimally invasive and cost-effective "trenchless" techniques, meaning the replacement and repair of underground pipes will require only a relatively small hole to be dug rather than a large excavation.

Homes are connected to main sanitary sewer lines by private laterals. SD1 will replace ten feet of private piping in the most structurally-damaged area for each home affected by this project. Additionally, a section of pipe with a removable cap will be installed at each connection point between a private lateral and the mainline to allow for easier maintenance access to the sewer lines.

Currently, an aging and defective sewer system allows for excessive overflow of the sanitary sewer lines during heavy rainfall, as the sanitary sewer lines are not designed or intended to carry rainwater. By repairing the sewer lines, SD1 hopes to significantly reduce the amount of rainwater entering the sanitary sewer lines, thereby reducing downstream overflows.

PROJECT TIMELINE

Sewer rehabilitation work is expected to begin in August 2012.

TEMPORARY INCONVENIENCES

>> The impact to private property will be minimal, but some noise, dirt, vibration and disturbance may occur. After construction in the area has been completed, private property disturbed will be restored to original conditions or better.

>> Expect travel delays in and around the construction, and plan travel time accordingly to avoid stress and frustration.

SAFETY

>> Contractors working with SD1 on this project are required to follow all OSHA safety requirements. However, if you become aware of a public safety hazard imposed by construction on the project, please report your concern to 911 immediately. Also, please alert SD1 to the situation.

>> Children are often curious about construction. Please keep them away from all construction equipment and sites to avoid accidents.

>> Follow the posted speed limit in construction zones.

CONTACT INFORMATION

>> Debbie Rizzo | Collections Systems Project Coordinator | 859-578-6746 | drizzo@sd1.org

>> Mike Manning | Collections Systems Crew Leader | 859-512-0268 | mmanning@sd1.org

>> SD1 Customer Care Team | 859-578-7452 | info@sd1.org

For more information please visit

www.SD1.org

for PROJECT MAP, *see back page*

PROJECT MAP


Yellow lines indicate the project area for service lateral rehabilitation
NEWPORT SHOPPING CENTER
NEWPORT
471
SAINT ELIZABETH
RIDDLEVIEW PARK
FORT THOMAS
SOUTHGATE
471

SUNSET PUMP STATION, FORCE MAIN AND GRAVITY SEWER PROJECT

PROJECT DESCRIPTION

Before SD1 took over ownership and maintenance of Northern Kentucky's sewer systems, each Northern Kentucky city owned and maintained their own sewer system. Once SD1 established ownership of the sewer systems, we discovered that many of the pipes beneath our feet were aging and deteriorating. Cracked, aging and broken pipes can allow ground and storm water from rain and snow events to seep into the sanitary sewer pipes, which were not designed or intended to carry storm water. During heavy rain, these sewer pipes can become overwhelmed with an excess of rain water, causing the system to overflow and release sewage into the environment. These sanitary sewer overflows (SSOs) pose a significant threat to public health and water quality, and one of SD1's main goals is to reduce or eliminate SSOs in the Northern Kentucky region using innovative and cost-effective solutions.

A major SSO location near the Sunset Pump Station at the end of Sunset Drive off of Highway 27 in Alexandria has been targeted as one of the most active in the region. In an effort to reduce overflows in this area, SD1 will be replacing the Sunset Pump Station with a new pump station that will have the capacity to handle higher volumes of flow, therefore serving a greater area. The new pump station will be located roughly 4,500 feet to the northwest of the existing pump station in a wooded area planned for new development. SD1 will also be constructing several thousand feet of sewer force main pipe and gravity sewer pipe to convey greater volumes of wastewater through the system.

PROJECT BENEFITS

>> The new pump station will significantly reduce or eliminate overflows in the area, as it is designed to accept a much heavier volume of flow. Because of its high-capacity design, the new pump station also allows for future growth in the area.

>> The existing Sunset Pump Station is located in a difficult-to-reach area near a lake, which magnifies pollution related to SSOs. The proposed location of the new pump station is in an easier-to-access area further from local waterbodies.

>> The decision to build one high-capacity pump station in the area instead of replacing the Sunset Pump Station in its current location and building a second pump station to accomodate the new residential development nearby is a more cost-effective solution to reducing overflows, as operation and maintenance costs for two separate pump stations is much greater than the cost to operate one larger pump station.

PROJECT TIMELINE

Construction of Phase I of this two-part project is scheduled to begin in the fall of 2012 and be completed by the summer of 2013, when Phase II is projected to begin. Phase I includes construction the force main and gravity sewer system. Phase II of the project involves decommissioning the existing Sunset Pump Station and constructing a new pump station nearby.

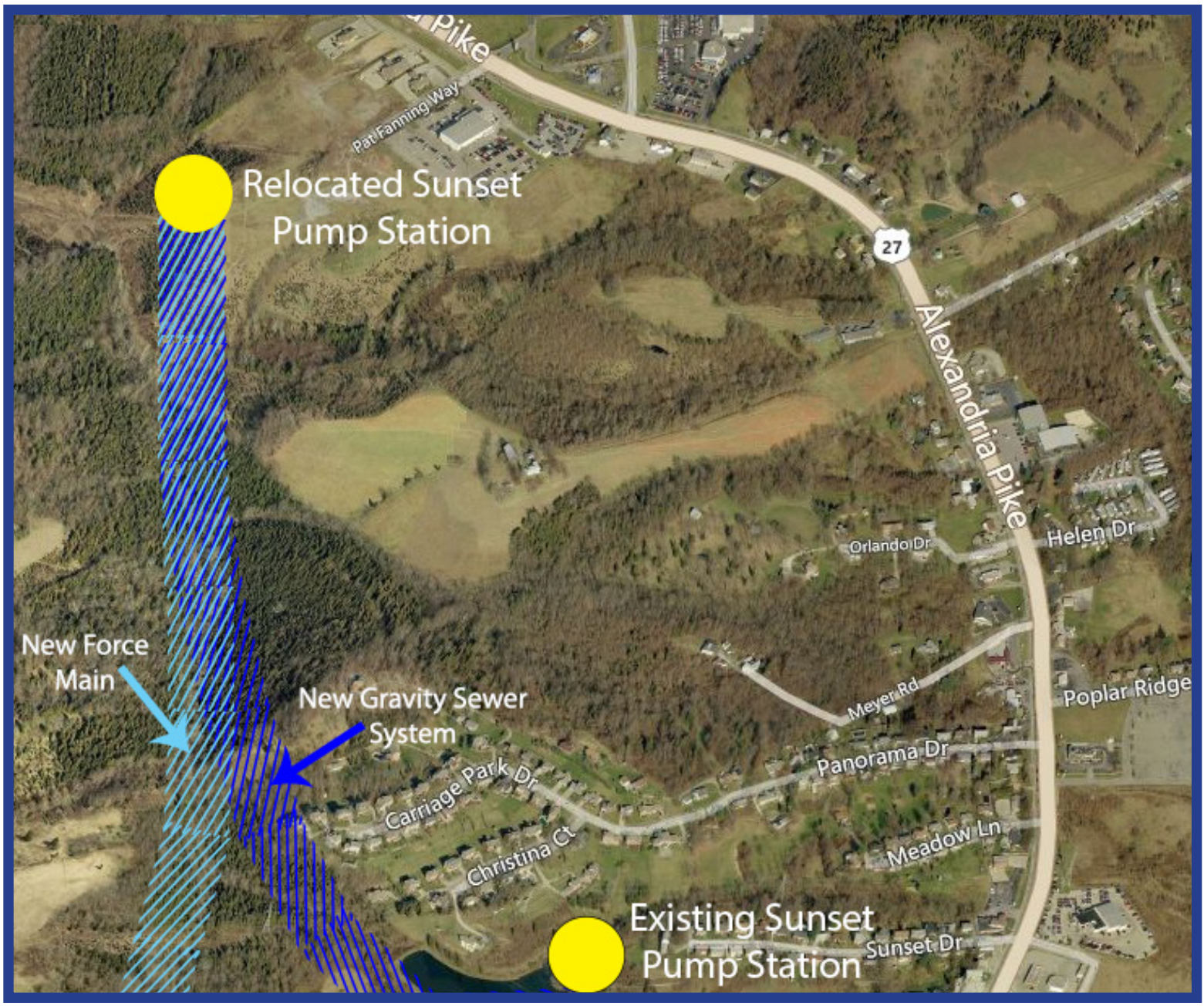
CONTACT INFORMATION

>> Jim Turner | Construction Manager | 859-578-7461 | jturner@sd1.org

>> SD1 Customer Care Team | 859-578-7452 | info@sd1.org

For more information, please visit **www.SD1.org.**

PROJECT MAP


Relocated Sunset
Pump Station
New Force
Main
New Gravity Sewer
System
Existing Sunset
Pump Station
Alexandria Pike
27
Pat Fanning Way
Orlando Dr
Helen Dr
Meyer Rd
Poplar Ridge
Panorama Dr
Carriage Park Dr
Christina Ct
Meadow Ln
Sunset Dr

SANITATION DISTRICT NO. 1

OFFICIAL TEST BED OF CONFLUENCE WTIC

SD1 is responsible for the collection and treatment of Northern Kentucky's wastewater, as well as regional storm water management. SD1 is the second largest public sewer utility in Kentucky, serving approximately 325,000 residents across a service area that covers approximately 220 square miles, encompassing more than 30 municipalities and unincorporated portions of Boone, Campbell and Kenton counties.

SD1 maintains more than 1,650 miles of sanitary sewer line, 142 wastewater pumping stations, 15 flood pump stations, eight package treatment plants, three major wastewater treatment plants, more than 400 miles of storm sewer and more than 17,800 sewer structures.

Ultraviolet light disinfects wastewater outflow.

A biofilter neutralizes odors.

A message from David Rager, Executive Director

SD1 is nationally recognized as a leader in the wastewater field. In an effort to provide our customers with exceptional service, we are always on the search for new technology that will increase efficiency and reduce costs.

As a vanguard of cutting-edge developments in water management, SD1 is proud to foster home-grown talent and is excited to be a part of the WTIC Conference.

To ensure SD1 continues its tradition of being at the forefront of technological development, it has entered into a partnership with Confluence WTIC to expedite the process of field testing emergent technology and moving products with economic potential to the market place. SD1 is an official Test Bed of Confluence WTIC and will consider hosting innovative technologies for testing purposes.

For more information regarding this service, see SD1's Test Bed description on WTIC's website at watercluster.org.

SD1 • 1045 Eaton Drive, Ft. Wright, KY 41017 • Ph 859-578-7450

For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

SANITATION DISTRICT NO. 1

OFFICIAL TEST BED OF CONFLUENCE WTIC

SD1's Consent Decree

To comply with the Clean Water Act, SD1 signed a Consent Decree, a negotiated agreement with the US Environmental Protection Agency (US EPA) and the Kentucky Energy and Environment Cabinet, in 2007.

Many sewer districts across the country have entered into consent decrees like SD1. However, SD1's Consent Decree is unique. It incorporates a regional watershed-based approach in the planning process that focuses on improving the overall quality of Northern Kentucky's waterways in addition to reducing the number of sewer overflows. This allows SD1 to take all pollution sources into consideration as it works to improve water quality.

Through its Consent Decree, SD1 will be managing the largest program of water quality improvement in Northern Kentucky's history.

Process Train

SD1's three major wastewater treatment plants utilize state-of-the-art treatment and odor-control technologies, including ultraviolet light for disinfection and biofilter mulch pits to minimize odors. Wastewater entering SD1's treatment plants undergoes a series of steps to clean and disinfect the water before it is released back into the environment, including:

- Headworks monitoring of hydrogen sulfide
- Chlorination with sodium hypochlorite
- Screening for debris
- Grit removal
- Separation of solids in settling tanks
- Removal of solids, fats, oils and grease
- Digestion of organic material by bacteria
- A second chlorination for disinfection in clarifiers
- Dechlorination for environmental safety
- UV treatment

Type of Discharge

Wastewater from separate sanitary and combined sewers is discharged into the Ohio River after intense treatment at one of SD1's three major treatment plants. Water in SD1's storm sewers discharges into local Northern Kentucky waterways, including ponds, lakes, creeks, streams and rivers.

Lab Facility Availability

The laboratory at Dry Creek Wastewater Treatment Plant analyzes nearly 50,000 samples of incoming and outgoing wastewater, as well as samples from local waterways and industrial plants each year. Mandatory tests of dissolved oxygen, pH, fecal coliform and many others are required by the EPA.

Areas of Technology Interest

- Real-time remote sensing
- Flow monitoring
- Industrial monitoring
- Sampling
- Treatment
- Process control and automation
- System integration / IT / GIS
- Advances in cctv / automated digital inspection
- Collection system improvements
- Construction, rehab and retrofit methods
- Green infrastructure
- Materials
- Energy use

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Wastewater treatment plant operational

The Western Regional facility has the capacity to treat up to 20 million gallons of wastewater a day.

SD1's Western Regional Water Reclamation Facility began operations in spring 2012. Located in western Boone County, the facility will improve sewer function across the region by relieving demand on the Dry Creek Wastewater Treatment Plant, which serves all three Northern Kentucky counties. Western Regional treats an estimated average of 6 million gallons a day (MGD) of wastewater, with the capacity to treat up to 20 MGD as demand increases.

"Our customers pay their sanitary sewer fees with the expectation that SD1 will provide them with exceptional service," said David Rager, SD1's Executive Director. "This new treatment plant is key to improving our service and supporting Northern Kentucky's businesses and growing population."

The Western Regional Facility and the Western Regional Conveyance Tunnel are projected to significantly alleviate stress on Northern Kentucky's existing wastewater facilities and reduce sanitary sewer overflows by about 59.7 million gallons, based on average rainfall. By maximizing the use of gravity sewer mains leading to the plant, 14 older pump stations will also be eliminated, increasing efficiency and reducing SD1's facility maintenance costs.

"The Western Regional Facility and Tunnel together represent the largest infrastructure investment SD1 has ever made," said Rager. "They are vital to the continued growth of Northern Kentucky because businesses cannot build or thrive in our region without wastewater infrastructure. Business development means job growth for our community."

The Western Regional facility incorporates state-of-the-art wastewater treatment and odor control technologies. Instead of using chlorine, water released from Western Regional is disinfected using ultraviolet light. Odor is controlled using an innovative and inexpensive biofilter.

To help finance the construction of Western Regional, SD1 received a low-interest loan of $70 million through the Kentucky Infrastructure Authority's Federally Assisted Wastewater Revolving Loan, saving SD1 and its rate payers approximately $54.2 million in interest costs when compared to traditional bonds.

"SD1 is committed to meeting the needs of our customers in the most cost-effective methods possible," said Rager. "We are confident that this investment in Northern Kentucky will bring many returns in the future for our region."

For more information on the Western Regional facility, please visit www.sd1.org.

Be responsible: Proper use of fertilizers and pesticides

Maintaining beautiful lawns and landscaping may involve the use of pesticides and fertilizers. With proper care, you can maximize the benefits of these products while minimizing their adverse effects on the environment.

Fertilizers and pesticides provide nutrients to our lawns and gardens and protect them from pests. If they are applied too heavily, excess nutrients and chemicals are left in the soil. These excess pesticides and fertilizers can leach into groundwater systems or be washed into local streams, causing pollution, algae blooms and can lead to reduced oxygen levels in the water.

For fertilizers

- Test your lawn's soil to determine its characteristics and which nutrients are lacking. Choose a product with appropriate proportions of nutrients needed.
- Minimize nitrogen use. Excess nitrogen is particularly harmful to wildlife and public health, especially small children.
- Choose slow-release fertilizers to minimize chemical loss through the soil and promote uptake by plants.
- Plant native grasses and plants that are adapted to the local environment and may not need supplemental nutrients.

For pesticides

- Identify the pest and choose the appropriate control. Using the wrong pesticide could damage plants without solving the problem.
- Try nontoxic controls first. For example, soapy water can eliminate many garden pests.
- Follow the label if pesticides must be used. Do not overapply and only treat the affected part of the plant.
- Apply when pests are most vulnerable. Depending on the pest, applications at night, early morning or after watering may be most effective.
- Inspect for pests often. Catching a problem early reduces the amount of pesticide needed and prevents storage and disposal problems.

For more information on proper pesticide and fertilizer use or if you have any storm water related questions, please contact the Storm Water Hotline at 859/578-6745.

SD1

Managing Northern Kentucky's Wastewater and Storm Water

1045 Eaton Drive • Fort Wright, KY 41017
phone: 859/578-7450

Hours of Operation:
Monday-Friday, 8 am - 4:30 pm

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SD1 announces David Rager as new Executive Director

David Rager began working with SD1 in early 2012.

On December 16, 2011, SD1 announced that David E. Rager will be the new Executive Director of SD1. Rager began working with SD1 in early 2012.

"I am thrilled to be taking the reins of an organization that has done so much for Northern Kentucky," Rager said. "SD1 provides a critical service to the community and is approaching a pivotal point in its history. I am energized at the opportunity to work with the community, the Board and the SD1 employees as we tackle the challenges ahead."

SD1's Board was impressed with Rager's 36 years of executive level experience managing utilities and government agencies and the Board is confident that he will be a good leader for SD1.

Chuck Heilman, President of SD1's Board of Directors shared, "The Board took our time choosing a candidate because we wanted to ensure that we found the best person for the job. We are confident that we have."

Most recently, Rager was CEO of the Greater Cincinnati Water Works, where he implemented several private business practices which included an increased emphasis on customer service.

"I believe there are opportunities to take the best service delivery practices of the private sector and apply them in public agencies like SD1," Rager said. "While I know that SD1's employees are some of the hardest working individuals in the industry, we as an organization also have to evolve as science and technology evolve."

Previous to his time at Greater Cincinnati Water Works, Rager served as Deputy City Manager for the City of Cincinnati, even briefly serving as Interim City Manager at the request of the Mayor and City Council.

Rager brings to SD1 a demonstrated success in emergency management. He led the emergency operations center for the City of Cincinnati as it responded to the 1997 flood and a 2005 railroad car styrene gas release. He served as Director of the Department of Public Safety in Cincinnati for the first chapter of his career, overseeing emergency response services for the city.

Mark Wurschmidt, SD1's Deputy Executive Director of Engineering, acted as the Interim Executive Director of SD1 during the search for a new Executive Director. .

"Dave will be an incredible asset, not only to SD1 but to our entire service area," Wurschmidt said. "I look forward to working with someone with his experience to guide us into the future."

SD1's Protecting the Environment Award recognizes area educators

The 2011 Protecting the Environment Award ceremony recognized four teachers and one Scout troop leader who have gone above and beyond to protect the environment and water resources in Northern Kentucky.

Each educator was awarded a $150-$300 mini-grant to purchase supplies for teaching water-related topics to their classes next school year. The $1,500 in cash prizes was generously provided by Walmart in Ft. Wright.

The awarded educators were:

- **Anita France,** Immaculate Heart of Mary School
  Project: Microscopes for Boone Woods Park creek testing
- **Maureen Randle,** St. Joseph (Cold Spring)
  Project: Science materials for Water Pollution Mystery testing
- **Dave Schlachter,** St. Catherine of Siena School
  Project: Learning water conservation lessons through gardening
- **Autumn Hendrickson,** White's Tower Elementary
  Project: Transportation and science fees to release classroom trout in natural environment
- **Jessica Blevins,** Girl Scout Junior Troop #104 of Kenton Elementary
  Project: Install and monitor rain barrel at Kenton Elementary

Since 2003, SD1's Protecting the Environment Award program has energized Northern Kentuckians to protect the environment and our water resources. The program rewards those who are making a positive environmental and community impact through education and service. For more information on SD1's Environmental Education program, please visit www.sd1.org.

USEPA supports SD1's integrated approach

The United States Environmental Protection Agency (USEPA) recently released a statement supporting the innovative and adaptive approach to wastewater and storm water management that SD1 has advocated for years.

As part of its enforcement of the Clean Water Act (CWA), the USEPA and its state and regional entities require sanitation organizations like SD1 to make improvements in water quality. Traditional gray water approaches, such as those originally advocated by enforcement agencies, can be costly and only address limited problem areas. For years, SD1 has partnered with other utilities and the United States Conference of Mayors to advocate for a more comprehensive approach that is based on regional improvements and local data.

To read the entire statement released by the USEPA, please visit SD1's website at www.sd1.org.

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The Western Regional facility has the capacity to treat up to 20 million gallons a day of wastewater.

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"SD1 is committed to meeting the needs of our customers in the most cost-effective methods possible," said Rager. "We are confident that this investment in Northern Kentucky will bring many returns in the future for our region."

For more information on the Western Regional facility, please visit www.sd1.org/westernregional.

Adopt healthy household habits to keep water clean

By adopting healthy household habits, you can help protect our region's water resources.

Vehicle and Garage

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

Lawn and Garden

- Use pesticides and fertilizers sparingly and in the recommended amounts. If they are applied too heavily, excess nutrients and chemicals are left in the soil and can be washed into local waterbodies.
- Install native grasses and plants that are adapted to the local environment and may not need supplemental nutrients.
- After working on your lawn, sweep up yard debris rather than hosing down the area.

Home Repair

- Sweep up and properly dispose of construction debris like concrete and mortar.
- Clean paint brushes in a sink, not outdoors. When using oil-based paints, filter and reuse paint thinner.
- Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.

Pet Care

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

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

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SD1

Managing Northern Kentucky's
Wastewater and Storm Water

RATE ADJUSTMENT

Just as roads require repaving, cars need regular service and homes must be maintained, it is essential that sewers are replaced and repaired. Broken and overloaded sewer systems pose a threat to public health and pollute local rivers and streams. Inadequate or nonfunctional sewer systems can damage property and cause destruction through flooding and erosion.

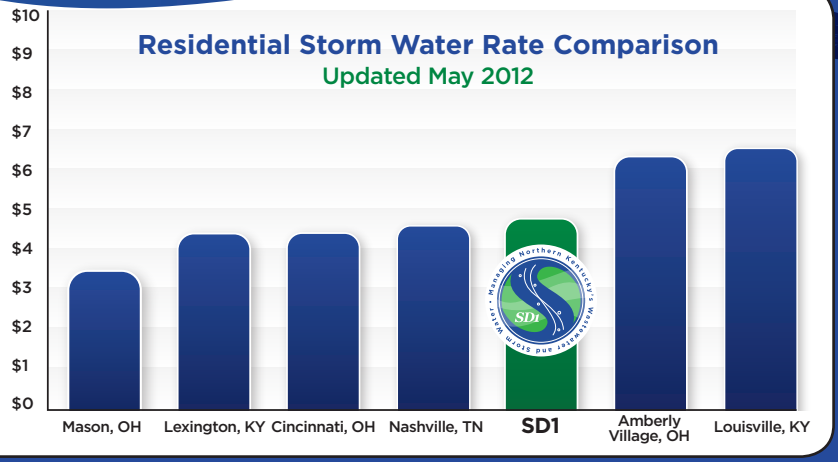
Restaurants, grocery stores, manufacturing plants and all types of businesses rely on functioning sewer and storm water systems in order to operate. When SD1 invests in the sanitary and storm water system, it fosters business growth and job creation.

To continue to provide these vital services, SD1's rates need to be adjusted.

The sanitary sewer rate adjustment was approved in 2011 and reflects an increase of about 17 cents a day for SD1's average customer. The rate per hundred cubic feet (748 gallons) of water usage will be $6.69.

The storm water rate will be adjusted by 14 cents, or less than a penny a day, to $4.68 per household. For nonresidential customers, it will be $4.68 per 2,600 square feet of developed property.

NEW RATES EFFECTIVE MAY 1, 2012



SD1's storm water rates are comparable or lower than other storm water agencies in the area. Rates are based on the monthly charge for a single family residence on a parcel of land that is 0.25 acres or larger.

When rain water hits the ground it can create issues such as flooding, erosion and water pollution. SD1 strives to implement the most cost-effective solutions to the problems caused by storm water.

Your storm water fee provides you with:

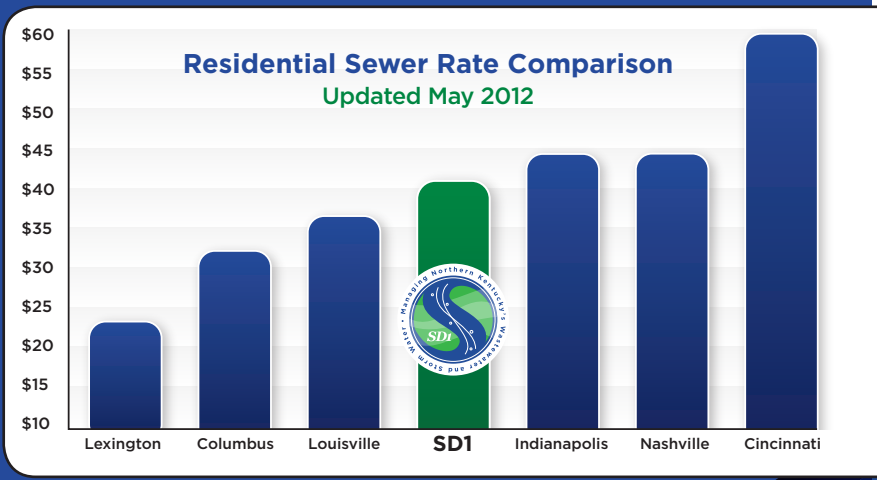
- Improvements to public infrastructure to better control flooding and prevent erosion problems
- Water quality monitoring in local rivers and streams to protect public health
- Identification and elimination of damaged or dysfunctional pipes that allow waste to enter local rivers and streams

When you use clean water, you create dirty water. SD1 works to safely collect and treat wastewater.

Your sanitary sewer fee provides you with:

- Removal and safe conveyance of the wastewater from your toilet, sink, washing machine, dishwasher and other drains 24 hours a day, seven days a week
- Treatment of sewage and wastewater in technologically-advanced and extremely efficient treatment facilities
- Ongoing construction and upgrades of systems necessary to provide you with a reliable, cost-effective sewer system

SD1 multiplies the sanitary rate by your winter water usage to calculate your monthly bill. Conserving water is an effective way to minimize your bill.



SD1's average residential sanitary sewer rates continue to be lower than many other regional wastewater utilities and remain below national averages. The rates in the above chart are based on 6 hundred cubic feet or 4,488 gallons of water usage per month.

For more information, visit our website at www.SD1.org, email info@sd1.org or call us at 859-578-7450.

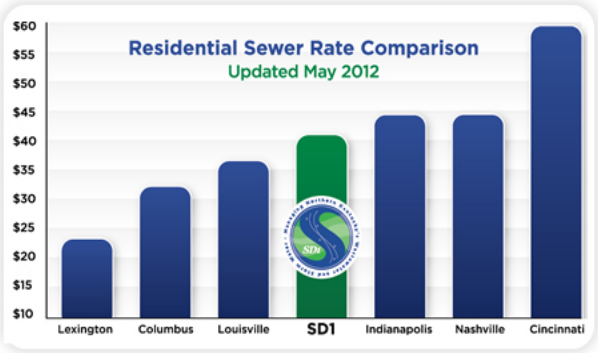
SD1
Managing Northern Kentucky's Wastewater and Storm Water

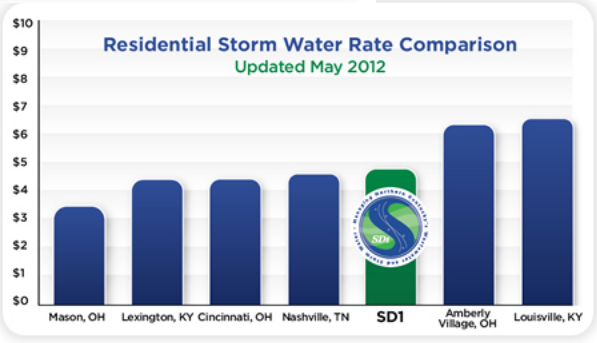
Your SD1 Bill Explained

How is my SD1 bill calculated?

There are two services on your bill: sanitary sewer and storm water .

The sanitary sewer charge is collected to support the removal and treatment of all water and sewage that goes down the drains in your home. SD1 calculates a home's sanitary sewer charge based on water usage records provided by your local water district. This is because water going into a home has to go out, usually through a drain that leads to the sanitary sewer system. However, customers use water during outdoor summertime activities, such as washing a car or watering a lawn, that does not drain into the sanitary sewer system. To compensate for this disparity, SD1's sanitary sewer charge is based on the water a customer uses during the winter months only. This takes out of consideration water used outdoors while still reflecting water usage that typically takes place year-round, such as washing clothes, taking showers and cleaning dishes.





The usage factor is calculated annually based on water usage during the previous October 1 through April 30 period for residential customers serviced by Northern Kentucky Water District and Florence Water District. The usage factor for residential customers serviced by Boone County Water District is calculated annually based on water usage during the previous November 1 through February 28 period.

SD1's average residential sanitary sewer rates are lower than many other wastewater utilities in the region and are below national averages.

The storm water charge is collected for rain water runoff that causes flooding and water pollution in the region if not properly managed. Storm water charges are based on the average impervious or paved area of residential properties in Boone, Campbell and Kenton counties. This average is approximately 2,600 square feet and is referred to as an ERU (equivalent residential unit). All residential properties are charged a single, flat monthly fee of $4.68 for one ERU. Non-residential customers, however, are charged per square foot of impervious or paved surface.

Like sanitary sewer rates, SD1's storm water rates are comparable to other storm water agencies in the area.

What do sanitary funds support?

- The safe removal and conveyance of wastewater from your toilet, sink, washing machine, dishwasher and other drains inside your home or office 24 hours a day, seven days a week
- Treatment of sewage and wastewater in technologically-advanced and extremely efficient treatment facilities.
- Ongoing construction, maintenance and upgrades of effective pipes, pump stations and treatment facilities to provide you with a reliable, cost-effective sanitary sewer system
- Operation of over 1,600 miles of sanitary sewer line, 143 wastewater pumping stations, 15 flood pump stations, eight small treatment plants and three major wastewater treatment plants

Payment Options

In Person
Stop by SD1's main office during regular business hours, Monday through Friday, 8 a.m. to 4:30 p.m., at 1045 Eaton Drive, Ft. Wright, KY.

By Phone
Make a payment over the phone by calling our Account Services Department at 859-578-7450 during regular business hours. The check-by-phone option incurs a small convenience fee.

Online
Register with MyCheckFree to view and pay your bill online. You will need a copy of your original bill, which includes your account number, E-ID number and the biller's zip code (41012-0112). Once you have completed your registration, you will no longer receive paper statements. You can even create auto-withdrawal options.

By Mail
You can use the self-addressed envelope that is included in your bill or mail your payment to SD1, PO Box 12112, Covington, KY 41012-0112.

Auto-withdrawal
Arrange for your monthly payment to be automatically deducted from a checking, savings or credit card account. For more information, contact our Account Services Department during regular business hours.

What do storm water funds support?

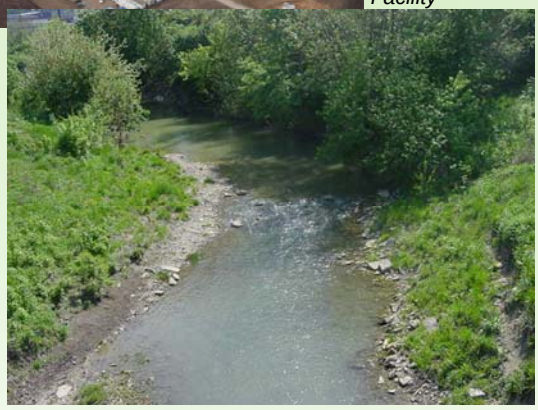
- The operation and maintenance of public storm water systems
- Improvements to public storm water infrastructure to better manage flooding and erosion problems
- Monitoring of water quality in local creeks and rivers to protect public health
- Identification and elimination of damaged or improperly connected pipes that allow waste to enter local creeks and rivers
- Inspection of construction sites for compliance with sediment and erosion control requirements
- Many programs to educate the community on storm water issues facing the region

Testing on local creek

Why are my sanitary rates increasing?

Just as roads require repaving, cars need regular service and homes must be maintained, it is essential that sewers are replaced and repaired. Broken and overloaded sewer systems pose a significant threat to public health and pollute local creeks and rivers. Inadequate or nonfunctional sewer systems can damage property and cause destruction through flooding and erosion. In addition, restaurants, grocery stores, manufacturing plants and all types of businesses rely on functioning sewer and storm water systems in order to operate. When SD1 invests in the sanitary and storm water systems, it fosters business growth and job creation, safeguards public health and protects the environment.

Western Regional Water Reclamation Facility



A Northern Kentucky creek

In order to provide these services to the public and bring water quality up to acceptable standards, SD1 must implement strategic plans to correct Northern Kentucky's water quality and infrastructure problems. Capital improvement projects and programs are driven by a Federal Consent Decree, which requires SD1 to comply with the Clean Water Act (CWA) and improve water quality in local creeks and rivers. It is estimated that the Consent Decree will require a $1.2 billion investment over 20 years. It is also important to note that, for every $1 collected from your rates, SD1 borrows about $1.62 to fund the projects needed to provide you with reliable service. Debt service is expected to be over $35 million this year alone and will soon surpass operations and maintenance costs.

What has SD1 done to keep rates low?

- SD1 advocated for House Bill 504, legislation that will help strike a balance between compliance with the CWA and the financial burden it places on local ratepayers. It was signed into law in April 2010.
- SD1 has taken advantage of low interest rate loans through the Clean Water State Revolving Loan Fund, helping to save ratepayers over $100 million in future interest expenses.

How are my sewer rates determined and approved?

SD1 utilizes a detailed financial tool that evaluates when rate and fee adjustments are needed. Following a 30-day public comment period, proposed rate adjustments are reviewed and approved by SD1's eight-member citizen Board of Directors and the Judges Executive of Boone, Kenton and Campbell counties. Rate changes of more than five percent require the approval of at least two of the three counties' fiscal courts.

What is the difference between my sanitation bill and my water bill?

Your water bill and the sanitation charge on your SD1 bill pay for two very different services and are each calculated using different methodologies. Your water bill is based on actual water usage, and your sanitary sewer charge is calculated using the usage factor *(see "How is my SD1 bill calculated?")*. The operating and capital costs to run water and sewer utilities vary, as do federal, state and local requirements. For tips on how to conserve water, thereby minimizing both your water and sanitary sewage bills, visit www.sd1.org/conservation.

What is done to help low income residents?

SD1 strives to lessen the financial burden on our ratepayers while ensuring that advancements in water quality are made. The Low Income Assistance Program can help increase affordability for qualifying residential customers. More information can be found at www.sd1.org/paymentoptions.

Why do I receive a bill from SD1?

SD1's clean water projects are all required by law. More importantly, we all create waste, and we all need clean water. SD1 provides that very basic service at the lowest cost possible.

Can I see my sewer rates at work?

Absolutely! SD1 offers tours of the Dry Creek Wastewater Treatment Plant in Villa Hills, the Eastern Regional Water Reclamation Facility in Alexandria and the Western Regional Water Reclamation Facility in Petersburg. SD1 also hosts tours and educational programs at our innovative Public Service Park in Ft. Wright. Call or email us to schedule a tour. Visit www.sd1.org/projects for information on the projects SD1 is working on in your community.

Questions?

Contact our Account Services Department at 859-578-7450, Monday through Friday, 8 a.m. to 4:30 p.m., or email us at info@sd1.org. For more information on the cost of clean water, visit www.sd1.org/costofclean. Learn more about water infrastructure at www.epa.org, www.wef.org or liquidassets.psu.edu.

SD1

Managing Northern Kentucky's
Wastewater and Storm Water

Adopt healthy household habits to keep water clean

When rain water falls to the ground, it flows over driveways, lawns and sidewalks, picking up debris, chemicals, dirt and other pollutants. This polluted rain water flows untreated down a local storm drain or directly into streams that our communities use for swimming, fishing and providing drinking water.

SD1's responsibility is to find cost-effective solutions that help minimize rain water pollution. We continuously monitor water quality in local creeks and rivers because polluted rain water has health and safety impacts on our entire region. Our goal is to prevent waterborne disease, keep our natural areas visually pleasing and make sure that we don't pollute the waterways from which we get our drinking water. SD1 seeks to identify and eliminate sources of pollution such as damaged pipes that allow wastewater to enter local streams.

By using the provided information about healthy household habits, you can help protect our region's water resources.

PRACTICING HEALTHY HOUSEHOLD HABITS

VEHICLE AND GARAGE

- Wash your car on your lawn or another unpaved surface, or visit a commercial carwash facility to reduce the amount of dirty, soapy water flowing into the storm drains.
- Check your car, boat, motorcycle, machinery and other equipment for leaks and spills often, and make repairs immediately. Clean up any spills with an absorbent material like kitty litter or sand, and don't rinse spills into a nearby storm drain.

- If you change the oil in your vehicle at home, recycle the used oil at participating service stations. NEVER dump used oil or other fluids down a storm drain or dispose of them in your trash.

HOME REPAIR

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

- Properly dispose of unused paint through a household hazardous waste collection program, or donate to local organizations.

LAWN AND GARDEN

- Use pesticides and fertilizers sparingly, and follow the label to apply only the recommended amounts. If fertilizers and pesticides are applied too heavily, excess nutrients and chemicals are left in the soil and can be washed into local waterbodies.

- Incorporate native grasses and plants into your landscaping that are adapted to the local environment and are less likely to need supplemental nutrients.
- After working on your lawn, sweep up yard debris instead of hosing down the area.

PET CARE

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

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

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

SD1
Managing Northern Kentucky's Wastewater and Storm Water

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- Adopt healthy household habits to keep water clean
- Boone county wastewater treatment plant operational
- Be Responsible: Fertilizers and Pesticides

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- 07/04/2012 - Offices Closed -- Independence Day
- 07/24/2012 - SD1 Board of Directors Meeting
- 08/21/2012 - SD1 Board of Directors Meeting

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Adopt healthy household habits to keep water clean

When rain water falls to the ground it flows over driveways, lawns and sidewalks, picking up debris, chemicals, dirt and other pollutants. This polluted rain water flows untreated down a local storm drain or directly into streams that our communities use for swimming, fishing and providing drinking water.

Read More ›

1 2 3

Welcome to SD1

SD1 is responsible for the collection and treatment of Northern Kentucky's wastewater, as well as regional storm water management. SD1 is the second largest public sewer utility in Kentucky with a service area that covers approximately 220 square miles, encompassing more than 30 municipalities and unincorporated portions of Boone, Campbell and Kenton counties.

SD1 maintains more than 1,600 miles of sanitary sewer line, 142 wastewater pumping stations, 15 flood pump stations, 8 package treatment plants, three major wastewater treatment plants, more than 400 miles of storm sewer and over 29,000 storm sewer structures.

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News

Adopt healthy household habits to keep water clean

06/26/2012 - When rain water falls to the ground it flows over driveways, lawns and sidewalks, picking up debris, chemicals, dirt and other pollutants. This polluted rain water flows untreated down a local storm drain or directly into streams that our communities use for swimming, fishing and providing drinking water.

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

SD1's responsibility is to find cost-effective solutions that help minimize rain water pollution. We continuously monitor water quality in local creeks and rivers because polluted rain water has health and safety impacts on our entire region. Our goal is to prevent water-borne disease, keep our natural areas visually pleasing and make sure that we don't pollute the waterways from which we get our drinking water. SD1 seeks to identify and eliminate sources of pollution such as damaged pipes that allow wastewater to enter local streams.

By using the provided information about healthy household habits, you can help protect our region's water resources.

Practicing Healthy Household Habits

Vehicle and Garage

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

Lawn and Garden

- Use pesticides and fertilizers sparingly and in the recommended amounts. If they are applied too heavily, excess nutrients and chemicals are left in the soil and can be washed into local waterbodies.
- Install native grasses and plants that are adapted to the local environment and may not need supplemental nutrients.
- After working on your lawn, sweep up yard debris, rather than hosing down the area.

Home Repair

- Sweep up and properly dispose of construction debris like concrete and mortar.
- Clean paint brushes in a sink, not outdoors. When using oil-based paints, filter and reuse paint thinner.
- Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.

Pet Care

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

For more information, email info@sd1.org or call SD1's Storm Water Hotline at 859-578-6745.

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- Protect the Environment, Properly Drain Your Pool
- State audit found SD1 to have an effective structure for the oversight and processes that govern its operations
- Audio signs debut at SD1's Public Service Park

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Upcoming Events 16

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- 09/20/2011 - SD1 Board of Directors Meeting
- 10/25/2011 - SD1 Board of Directors Meeting

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Protect the Environment, Properly Drain Your Pool

If not properly handled, swimming pool water can harm our creeks and streams. The chemicals used in pool maintenance are designed to sterilize pools but can wreak havoc in the natural environment, killing fish, insects and plants in our waterways.

Read More

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Welcome to SD1

SD1 is responsible for the collection and treatment of Northern Kentucky's wastewater, as well as regional storm water management. SD1 is the second largest public sewer utility in Kentucky with a service area that covers approximately 220 square miles, encompassing more than 30 municipalities and unincorporated portions of Boone, Campbell and Kenton counties.

SD1 maintains more than 1,600 miles of sanitary sewer line, 143 wastewater pumping stations, 15 flood pump stations, 8 package treatment plants, two major wastewater treatment plants, more than 250 miles of storm sewer and over 17,800 storm sewer structures.

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Protect the Environment, Properly Drain Your Pool

08/23/2011 - If not properly handled, swimming pool water can harm our creeks and streams. The chemicals used in pool maintenance (chlorine, bromine, copper and silver) are designed to sterilize pools but can wreak havoc in the natural environment, killing fish, insects and plants in our waterways.

When draining your pool, the preferred method is to discharge the pool water to the sanitary sewer system. If discharging to a sanitary system is not possible, either because it is unavailable or not allowed, the next best choices are to discharge pool water onto the lawn of your property or to the storm water system. **Please note** that water must be clear, dechlorinated and of a neutral pH before it may be discharged from a pool to the street, storm sewer system or a stream.

When discharging pool water onto you lawn, the water should not flow off your property. Be aware that allowing the water to pond for a prolonged period of time could create odors as well as fly and mosquito breeding conditions.

Pool discharges should be done slowly to prevent soil erosion, flooding or damage to adjacent properties. The recommended discharge rate is 25 gallons per minute or less.

Water containing cleaning chemicals, acid buffering compounds, algae and other substances may not be discharged to the street, storm water system or a stream. Be sure to test your pool water for chemicals and other pollutants before discharging.

When is it safe to discharge pool water?

- Pool water should essentially be free of chlorine (less than 0.1 parts per million total chlorine), algaecides and other potential pollutants prior to discharge. Chlorine Neutralizer can be used to reduce chlorine levels and can be purchased at many pool supply stores.
- A 10-day holding time after the last chemical treatment is adequate to dissipate chlorine prior to discharging the pool water.
- pH levels should be within a normal range (6 to 9). pH adjustment chemicals, instructions and test kits are available at many pool supply stores.

If you have any questions regarding proper pool discharging procedures, please contact Darren Martin at 859-547-1641.

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SD1 Managing Northern Kentucky's Wastewater and Storm Water

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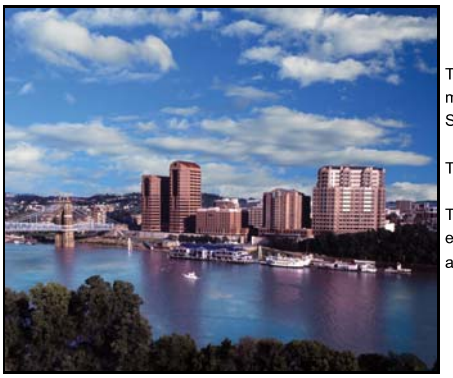

USEPA: Integrated approach is best.

USEPA Recognizes the Value of SD1's Integrated Approach to Water Quality

The United States Environmental Protection Agency (USEPA) released a statement last month supporting the innovative approach to wastewater and storm water management that Sanitation District No. 1 (SD1) has advocated for years.

To read SD1's press release about the memo, click here.

To review the USEPA's memo sent to the EPA Regional Administrators directing them to embrace the comprehensive integrated watershed-based approach in their enforcement actions with municipalities, click here.

Storm Water Knows No Boundaries: SD1's Valuable Role in Storm Water Management

Ever wonder how SD1 gained the responsibilities for managing Northern Kentucky's storm water?

In the early 2000s, cities and counties in Northern Kentucky were required to comply with the USEPA's Phase II Regulations, a mandate intended to improve water quality and clean aquatic habitats by ensuring that storm water is properly controlled. The municipalities affected by these regulations determined that the most cost-effective and efficient approach for addressing local storm water management issues was to develop and implement a regional approach under the guidance of SD1.

In March of 2003, SD1 initiated the Regional Storm Water Management Program to comply with the USEPA's Phase II Storm Water regulations and to prepare SD1 to take over ownership and maintenance of the public storm sewer systems in 30 local cities and three counties.

But it is not just a matter of taking care of public storm sewers. Under the federal Consent Decree, SD1 must manage storm water runoff that enters its sanitary sewer systems to reduce wet weather overflows. The Clean Water Act requires SD1 to cut the number of sewer overflows and managing the flow of storm water is one way to do that. SD1 also has the option to improve water quality by managing storm water runoff from point and nonpoint sources that contribute to water quality impairment through its integrated Watershed Plans. These plans include offsetting or delaying measures relating to sewer overflows.

There are several advantages in taking a regional approach to storm water management:

- SD1 is able to look at the major pollution contributors holistically and determine how to effectively solve them.
- SD1 is able to provide expertise on different storm water projects and programs as required through various regulations and permits.SD1 is able to advocate for needed policy change on the state and national level to address environmental problems at a more affordable cost to our ratepayers.
- SD1 is a national leader for its innovative practices with green infrastructure and watershed controls, both of which, positively impact the region environmentally, economically and socially.
- SD1 offers the region several engaging and unique educational programs for businesses, residents and students.
- Being apart of the regional program helps develop community partnerships which have facilitated public involvement in decisions that affect Northern Kentucky's quality of life and the environment.
- SD1's regional approach maximizes Northern Kentucky's resources while proactively tackling the challenge of reducing storm water runoff and improving our water quality.

Click here to find out more information about SD1's regional storm water program.

Mike Apgar, SD1's Director of Governmental Affairs, has announced his official date

Vision, Dedication of Legislators Make HB504 a Success

of departure. Mike will be retiring from SD1 on November 25, 2011.

Click here to read a personal note of departure from Mike and read a full article published in The Enquirer about Mike's many community contributions.

House Bill 504 (HB 504), signed in 2010, aims to strike a balance between compliance with the federal Clean Water Act and the financial burden placed on local ratepayers to fund infrastructure improvements needed for this compliance. The landmark legislation was made possible because of the vision and dedication of our state legislators. HB 504 has now created the opportunity for federal action which has taken place with the US Conference of Mayors and the US EPA when implementing and negotiating federal unfunded mandates. Ohio recently enacted legislation that mirrors HB 504 and Indiana is in the beginning stages of advocating for similar legislation.

APPENDIX D:

Compliance Program FY 2012 Violations Summary Report

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Filter Criteria:
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Event Category that Contain Violation
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Permit: **IND-00002** **Southern Graphic Systems, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	12/16/2011	Non-compliance parameter violation - Copper, total The daily limit was exceeded in a self monitoring sample taken on 12/16/2011. The result was 45.4 mg/L while the daily limit is 5.0 mg/L.	2/13/2012	W	20-Jan-12	Written Notice of Violation (NOV)

Permit: **IND-00014** **Camco Chemical Co. Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-O	9/22/2011	During an investigation conducted on 9/22/2011 to determine the source of foam entering the Drycreek Treatment Plant, it was discovered that a retain sample of your product failed to meet the SD1 time requirements for foam dissipation during a “Shake Test”. Although it was determined that this retain sample was not associated with the Drycreek foaming, it is still a violation of your Discharge Permit. Also of concern was the fact that the lab technician responsible for checking the sample prior to discharge insisted that the foam in the sample was significantly higher than it was when it was initially checked 5 hours earlier.	9/22/2011	W	06-Oct-11	Written Notice of Violation (NOV)

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All Permits
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Permit: **IND-00014** **Camco Chemical Co. Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	10/3/2011	Oil & Grease, Hydrocarbon Total Daily Limit was exceeded. 1036 mg/L.	11/29/2011	W	03-Oct-11	Written Notice of Violation (NOV)
NC-R	11/18/2011	Late Resampling: resampling and result reporting requirements for a violation of SD1's Oil & Grease, Hydrocarbon limit(NOV date 10/3/11) were not performed by the due date.	11/17/2011	W	18-Nov-11	Written Notice of Violation (NOV)

Permit: **IND-00016** **Imperial Sugar Company**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	10/4/2011	Zinc, total TRC Non-Compliance. Daily Limit was exceeded. The Concentration Result was 4.47 mg/L while the Concentration Daily Limit was 3.5 mg/L. The Violation occurred for Sample 'AB90297' on the Sample Date of '10/4/2011 11:00:00 AM' and for Monitoring Point 'Official sampling MH'.	12/6/2011	V	06-Dec-11	Verbal Notice of Violation (NOV)

Permit: **IND-00019** **Blue Grass Quality Meats**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

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All Permits
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Permit: **IND-00019** **Blue Grass Quality Meats**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	9/30/2011	pH excursion outside SD1 approved limits. Effluent pH greater than 10 SU for longer than 1 hour.	9/30/2011	W	06-Oct-11	Written Notice of Violation (NOV)

Permit: **IND-00021** **Louis Trauth Dairy, LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	7/7/2011	Non-compliance parameter violation - pH - Four (4) days of Louis Trauth Dairy's pH data from July 7, 2011 to July 28, 2011 showed the pH fell outside of SD1 accepted limits of 6.0 to 10.0. The pH was recorded at levels below 6.0 for an extent of time that violated our time frame limit and also below the violation limit of 5.0 (review your pH graph data and also refer to SD1 Rules and Regulations on pH for the Dry Creek Wastewater Treatment plant).	9/29/2011	WF	25-Aug-11	Written Notice of Violation (NOV) and fine.

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Permit: **IND-00021** **Louis Trauth Dairy, LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-R	7/8/2011	Non-Compliance Reporting Violation - Non-Reporting of Violations- Per the Industrial Wastewater Discharge Permit IND-00021, Louis Trauth Dairy, LLC must report all pH excursions, from your continuous pH monitoring system within 24 hours. The pH data submitted on August 5, 2011 shows four (4) days of violations and there is no record of reporting of any of these violations to SD1.	9/29/2011	WF	25-Aug-11	Written Notice of Violation (NOV) and fine.

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Permit: **IND-00021** **Louis Trauth Dairy, LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-R	8/5/2011	Non-Compliance Reporting Violation - Data Not Complete- Per the Industrial Wastewater Discharge Permit IND-00021, Louis Trauth Dairy, LLC must submit all logs detailing maintenance and calibration of pH monitoring equipment and copies of all recorded pH data to SD1 by the 7th of each month. This submittal will for pH activity occurring during the previous month. The pH data submitted on August 5, 2011 was from July 7, 2011 through July 28, 2011. The previous submittal was from June 1, 2011 to June 30, 2011. No data from July 1 through July 6 was submitted nor were the maintenance and calibrations logs of the pH monitoring equipment.	9/29/2011	WF	25-Aug-11	Written Notice of Violation (NOV) and fine.

Permit: **IND-00026** **Lingo Manufacturing Co., Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

Sanitation District # 1
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NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00026** **Lingo Manufacturing Co., Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-R	1/20/2012	Non-Compliance Reporting Violation - Semi-Annual Report – The second half 2011 semi-annual self-monitoring report was not been received by the 1/20/2012 due date. In a phone conversation you stated that no samples were taken for the 2nd half 2011 timeframe.	2/16/2012	W	26-Jan-12	Written Notice of Violation (NOV)

Permit: **IND-00033** **Schwan's Global Supply Chain, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	8/8/2011	Non-compliance parameter violation - pH violation The pH fell outside the Districts limits of 6.0 to 10.0. The pH was recorded at levels below 6.0 for an extent of time that violated our time frame limit and also below the violation limit of 5.0 (see attached graph and also refer to the SD1 Rules and Regulations on pH for the Dry Creek Wastewater Treatment plant).	9/14/2011	W	23-Aug-11	Written Notice of Violation (NOV)

Permit: **IND-00034** **LOreal USA Products, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

Sanitation District # 1
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Filter Criteria:
All Permits
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Permit: **IND-00034** **LOreal USA Products, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-O	7/22/2011	Foam: Retain sample failed shake test on 7/22/11. The discharge and travel times coincide with a foam event that entered the Dry Creek Wastewater Treatment Plant on 7/22/11. Please keep in mind the foam must dissipate immediately after the shake test which is stated in your Industrial Wastewater Discharge Permit. The shake test helps provide evidence that the wastewater batch being discharged has been properly treated and will likely not be the cause of foaming in SD1's collection system and/or treatment plant.	7/22/2011	WF	01-Aug-11	Written Notice of Violation (NOV) and fine.

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All Permits
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NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00034** **LOreal USA Products, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-O	12/19/2011	Foam in the retain samples from 12-14-11, 12-17-11 and 12-19-11 did not dissipate immediately after the shake test. Also, the discharges and travel times for the discharges on 12-14-11 and 12-19-11 match up with the foam that entered the Dry Creek Wastewater Treatment Plant. Please keep in mind the foam must dissipate immediately after the shake test which is stated in your Industrial Wastewater Discharge Permit. The shake test helps provide evidence that the wastewater batch being discharged has been properly treated and will likely not be the cause of foaming in SD1's collection system and/or treatment plant.	2/10/2012	WF	06-Jan-12	Written Notice of Violation (NOV) and fine.

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NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00034** **LOreal USA Products, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-O	3/30/2012	Foam in the retain samples on 3-30-12 and 3-29-12 did not dissipate immediately after the shake test. Also, the discharge and travel time from 3-30-12 from the discharge on 3-30-12 match up with the foam that entered the Dry Creek Wastewater Treatment Plant on 3/30/12. Please keep in mind the foam must dissipate immediately after the shake test which is stated in your Industrial Wastewater Discharge Permit. The shake test helps provide evidence that the wastewater batch being discharged has been properly treated and will likely not be the cause of foaming in SD1's collection system and/or treatment plant.		WF	02-May-12	Written Notice of Violation (NOV) and fine.

Permit: **IND-00036** **AmeriPride Linen & Apparel Services**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	9/20/2011	Verbal NOV: pH above 10 for over an hour/failure to report bypass	9/14/2011	V	20-Sep-11	Verbal Notice of Violation (NOV)
NC-R	11/22/2011	Late Reporting: 3rd Quarter Self Monitoring Report submitted late.	11/22/2011	V	22-Nov-11	Verbal Notice of Violation (NOV)

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All Permits
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NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00036** **AmeriPride Linen & Apparel Services**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	3/23/2012	pH violation	5/11/2012	W	28-Mar-12	During the time frame listed above your facility demonstrated pH excursions that exceed both the high and low limits of SD1 local limits for pH. Sampling results show a spike below the SD1 limit of 5SU, as well as, extremely long periods of time at greater than 10 SU. (See Graph).
NC-P	5/7/2012	pH Violation	6/24/2012	WF	24-May-12	Written Notice of Violation (NOV) and fine.

Permit: **IND-00037** **Aristech Acrylics LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	1/3/2012	Ph went above 11 for 32 min and above 12 for 11 min.		V	09-Jan-12	Verbal Notice of Violation (NOV)

Permit: **IND-00039** **Duro Designer Company, Inc. (Walton)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	12/14/2011	The Daily Maximum Limit for Copper, Total was exceeded on 10/25/11. Copper, Total = 50.55 mg/L, the Daily Maximum Limit is 5.0 mg/L. The Daily Maximum Limit for Zinc, Total was exceeded on 10/28/11. Zinc, Total = 4.27 mg/L, the Daily Maximum Limit is 3.5 mg/L.	2/17/2012	WF	14-Dec-11	Written Notice of Violation (NOV) and fine.

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Permit: **IND-00039** **Duro Designer Company, Inc. (Walton)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	12/15/2011	The Daily Maximum Limit for Copper, Total was exceeded on 12/15/11. Copper, Total = 38.8 mg/L, the Daily Maximum Limit is 5.0 mg/L. The Daily Maximum Limit for Zinc, Total was exceeded on 12/15/11. Zinc, Total = 16.4 mg/L, the Daily Maximum Limit is 3.5 mg/L.	2/17/2012	WF	18-Jan-12	Written Notice of Violation (NOV) and fine.

Permit: **IND-00050** **Highway Transport Chemical, LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	7/21/2011	Oil & Grease, Hydrocarbons - The TRC Daily Limit was exceeded in a self monitoring sample taken on 7/21/2011. The Result was 804 mg/L while the Daily Limit is 50 mg/L.	9/27/2011	W	23-Aug-11	Written Notice of Violation (NOV)
NC-O	7/22/2011	Verbal NOV: Foam in retain sample. Sample contained significant foam after shake test at 17:00 on 7/22/11.	7/22/2011	V	01-Aug-11	Verbal Notice of Violation (NOV)

Permit: **IND-00054** **Perfetti Van Melle USA**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

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Filter Criteria:
All Permits
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Permit: **IND-00054** **Perfetti Van Melle USA**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	6/28/2012	During the sampling event that occurred between 6/25/2012 through 6/29/2012 your facility demonstrated multiple pH excursions outside SD1 and Federal EPA limits. All excursions violated the SD1 and Federal EPA limit that states that pH shall not fall below 5.0 Standard Units. See enclosed pH graph.	8/10/2012	W	05-Jul-12	Written Notice of Violation (NOV)

Permit: **IND-00057** **Mubea Inc. (Industrial Rd)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-R	10/26/2011	Late reporting of Monthly report	10/26/2011	V	01-Nov-11	Verbal Notice of Violation (NOV)

Permit: **IND-00064** **Wild Flavors, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

Sanitation District # 1
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Violations Summary Report

Filter Criteria:
All Permits
Event Category that Contain Violation
NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00064** **Wild Flavors, Inc.**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	7/19/2011	The pH fell outside the Sanitation District No. 1's (SD1) limits of 6.0 to 10.0. The pH of your wastewater discharge on 7/19/11 around 1:30 pm and then again on 7/20/11 around 12:00 midnight was found to be above 11 for periods of greater than 15 minutes based on your phone call and pH and flow records. This is a violation of our time frame limits. (Refer to SD1's Rules and Regulations on pH for the Dry Creek Wastewater Treatment Plant).	8/29/2011	W	27-Jul-11	Written Notice of Violation (NOV)
NC-P	4/5/2012	They emailed that they had a pH violation on their self monitoring on 4/5/12.. Gave verbal NOV.	4/5/2012	V	10-Apr-12	Verbal Notice of Violation (NOV)

Permit: **IND-00068** **Messier-Bugatti, USA (Carbon Bldg)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	1/23/2012	Non-compliance parameter violation - pH violation - During the sampling period of 1-23-12 through 1-27-12 the pH of your wastewater discharge had numerous spikes below 5.0 (see attached graph and also refer to SD1's Rules and Regulations on pH for the Dry Creek Wastewater Treatment Plant).		WF	10-Feb-12	Written Notice of Violation (NOV) and fine.

Sanitation District # 1
Industrial Pretreatment Program
Violations Summary Report

Filter Criteria:
All Permits
Event Category that Contain Violation
NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00068** **Messier-Bugatti, USA (Carbon Bldg)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-R	1/26/2012	Non-Compliance Reporting Violation - Semi-Annual Report - The second half 2011 semi-annual self-monitoring report was not been received by the 1/20/2012 due date. In a phone conversation you stated that no samples were taken for the 2nd half 2011 timeframe.	2/1/2012	W	26-Jan-12	Written Notice of Violation (NOV)

Permit: **IND-00073** **Lyons Magnus**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	10/17/2011	During the September 2011 sampling, our pH graph showed several quick spikes of pH below 5.0 S.U. which is a violation. The violations were on 9/20/11 @ 13:55 with a pH of 2.8, 9/21/11 @ 4:28 pH of 4.9, 9/22/11 @ 22:590PM a pH of 4.7, and 9/23/11 @ 00:37 pH of 4.2.	11/18/2011	W	18-Oct-11	Written Notice of Violation (NOV). pH spikes below 5.0
NC-P	5/22/2012	pH exceeded allowable limits numerous times throughout sampling period of 5/21 to 5/25/12. pH was recorded below 5.0 several times and 6.0 for more than an hour once.	8/28/2012	WF	30-May-12	Written Notice of Violation (NOV) and fine.

Permit: **IND-00076** **Hillshire Brands**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement	Penalty

Sanitation District # 1
Industrial Pretreatment Program
Violations Summary Report

Filter Criteria:
All Permits
Event Category that Contain Violation
NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00076** **Hillshire Brands**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	9/26/2011	G&O result for the first day of sampling on 9/26/11 showed a result of 107.5 mg/L. The "G&O -Total" limit is 100 mg/L.	9/27/2011	W	14-Oct-11	Written Notice of Violation

Permit: **IND-00078** **ImmuDyne Inc. (Florence Kentucky Facility)**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	10/17/2011	Spike below 5.0 on 10/17/2011.	10/17/2011	V	24-Oct-11	Verbal Notice of Violation (NOV)

Permit: **IND-00083** **Club Chef LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-O	8/2/2011	Your facility wastewater pretreatment system was by-passing which resulted in the sanitary sewer blockage down stream causing a flooding of a building down the street. SD1 had to respond to clear the blockage and clean the debris resulting from the sanitary sewer backup/flooding.	9/6/2011	WF	24-Aug-11	Written Notice of Violation (NOV) and fine and Cost Recovery. For sanitary sewerline blockage and flooding of building due to pretreatment system by-passing.
				CS	24-Aug-11	Club Chef LLC is being put on a new compliance schedule to have the current wastewater pretreatment system to be re-evaluated for proper pretreatment of pH, solids handling, and elimination of by-passing of unpretreated wastewater to the sanitary sewer system. This includes the evaluation of the building space that is required to properly pretreat.

Sanitation District # 1
Industrial Pretreatment Program
Violations Summary Report

Filter Criteria:
All Permits
Event Category that Contain Violation
NC Date: Jul 1 2011 - Jun 30 2012

Permit: **IND-00083** **Club Chef LLC**

Violation Type	Date of NC	Violation Description	Date In Compliance	Enforcement		Penalty
NC-P	8/3/2011	The final completion of the compliance schedule for pH pretreatment resulted in a pH analysis of your wastewater pretreatment system performance. The test results demonstrated extended pH violations of SD1's limits occuring on each of the 3 days tested. Due to the circumstances of these pH violations just after coming out of a pH compliance schedule, a fine of $750.00 will be levied for each day that there was an extended pH violation.	9/6/2011	WF	24-Aug-11	Written Notice of Violation (NOV) and fine. For each of the 3 days of extended pH violations detected in the pH resampling taken just after the ending of a pH compliance schedule.
				CS	24-Aug-11	Club Chef LLC is being put on a new compliance schedule to have the current wastewater pretreatment system to be re-evaluated for proper pretreatment of pH, solids handling, and elimination of by-passing of unpretreated wastewater to the sanitary sewer system. This includes the evaluation of the building space that is required to properly pretreat.

APPENDIX E:

Continuous Sewer Assessment Program Process Diagram

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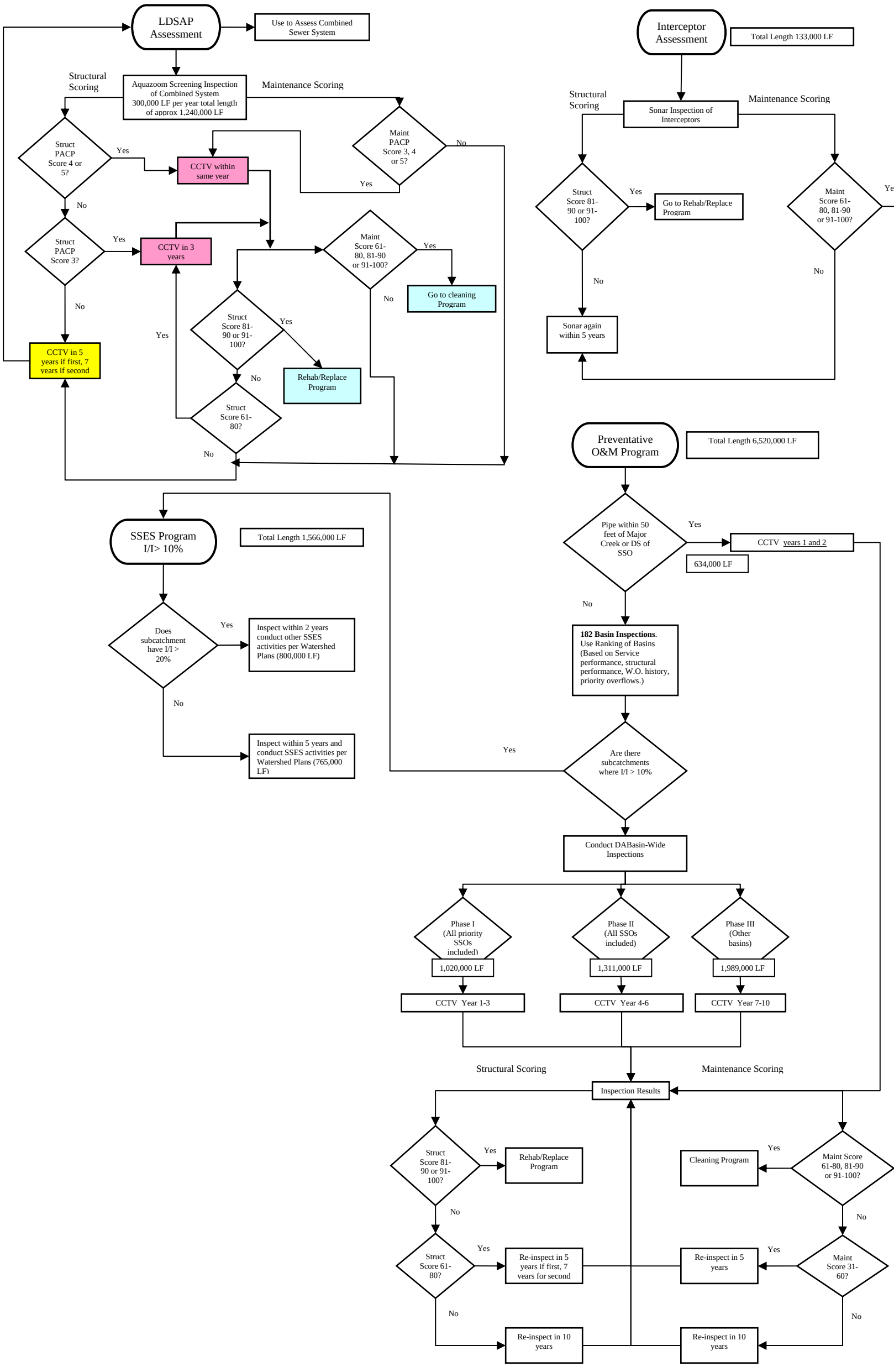
Sanitation District No. 1
Continuous Sewer Assessment Program

Process Diagram
10/05/09

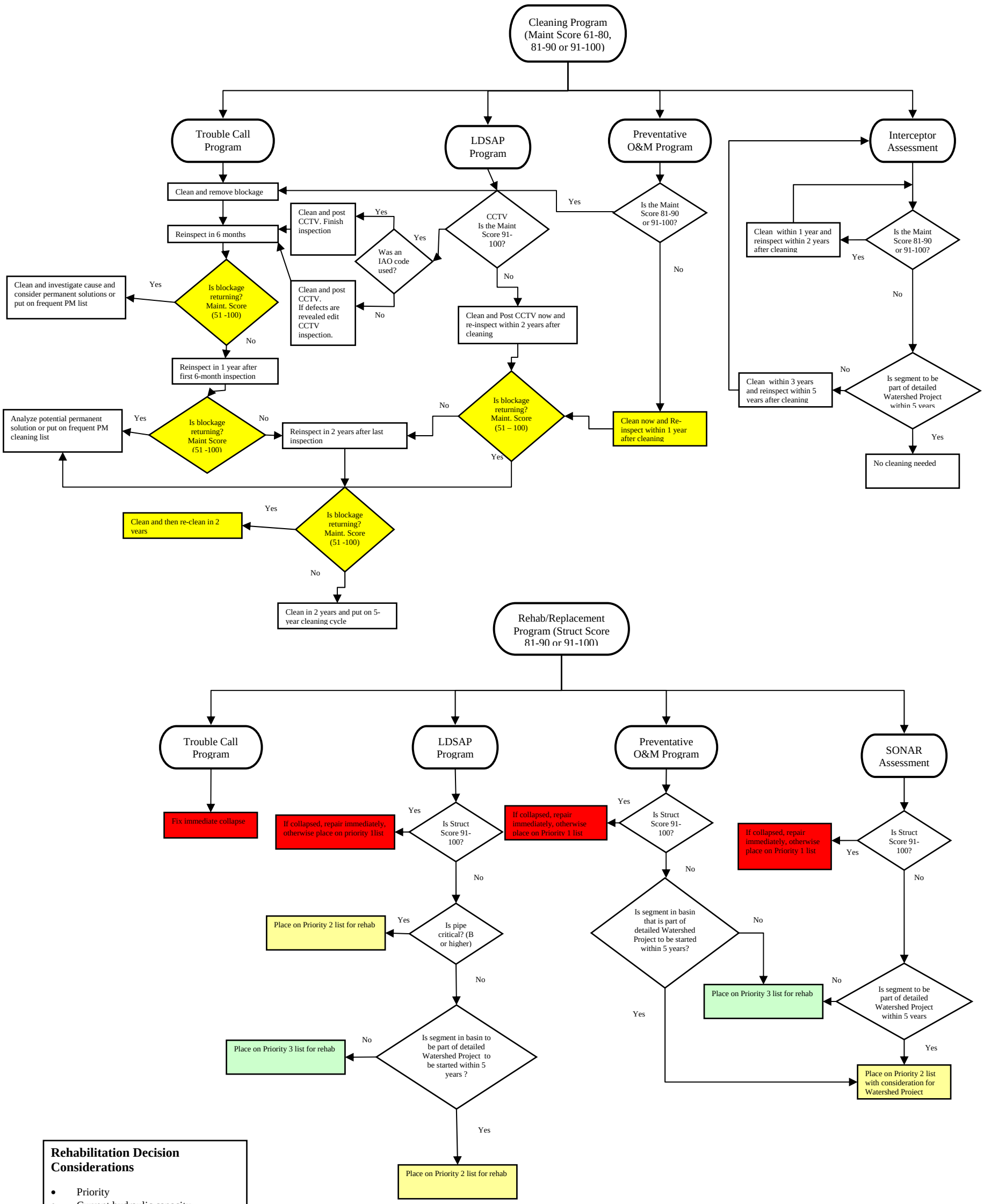
CONFIDENTIAL PRELIMINARY WORKING DRAFT WATERSHED CONSENT DECREE



Sanitation District No. 1
Continuous Sewer Assessment Program

Process Diagram
11/17/08

CONFIDENTIAL PRELIMINARY WORKING DRAFT WATERSHED CONSENT DECREE



Rehabilitation Decision Considerations

- Priority
- Current hydraulic capacity
- Proximity to other pipes (basin basis)
- Watershed Planning
- Extent of defects
- Constructability

APPENDIX F:

SORP Updates

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Wet Weather Investigation Routes

Introduction

SD1's wet weather investigation program has been in place since 2005 and will continue to be expanded as warranted for ongoing field verification and response cleanup for recurring and potential sewer overflows. SD1's wet weather investigation group and SORP team continue to perform routine inspections during and after rain events at recurring SSO locations and prioritized, potential SSO locations to understand and verify overflow activity and the need for sewer overflow response cleanup. This is part of SD1's ongoing effort to characterize and verify overflows throughout the collection system and ensure they are categorized accurately and cleaned up after rain events as needed. In addition, proper characterization of overflows ensures that the hydraulic models that SD1 utilizes continue to maintain and provide the most accurate information available on overflow activations and volumes.

The route sheets provided herein are based upon both field observations and model data that indicate the need to provide inspections and a SORP response at confirmed wet weather recurring and potential SSO locations.

Recurring SSOs

SD1 has confirmed 183 locations throughout the collection system that have recurring wet weather overflows. Through field observations and model data, SD1 has identified the size of the rain event that triggers overflows at these locations. Crews are deployed to 92% (169) of these locations during or shortly after the threshold rain event to implement inspection and clean-up procedures. Historical field data and observations confirmed that the remaining 8% (14) do not require a regular cleanup due to either low frequency/low volume of activations or the location of the outfall. These recurring locations are inspected periodically throughout the year to continue to confirm that a SORP cleanup is not required. All of the recurring SSO locations are characterized and reported on a quarterly basis. The list of recurring SSOs is updated annually and submitted in SD1's April Consent Decree Quarterly Report Table 1.1 presents these locations and how they are inspected, cleaned-up, and reported.

Pump Stations with Constructed Bypasses

SD1 has 15 pump stations throughout the collection system that have the potential to overflow during rain events. These pump stations are monitored by supervisory control and data acquisition (SCADA) systems, and pump station operation personnel are deployed to these locations to implement response procedures if an alarm is activated.

Table 1.1 Overview of Recurring SSO Response

Count	15	40	129	14
Monitoring	SCADA (continuous)	Inspected by SORP team after wet-weather	Inspected by Wet Weather Investigation Group after wet-weather events	NR(1)
SORP Cleanup	**YES –** Using SORP SOP			
Event Documentation	**YES** – entered in Lucity			
Event Reporting	**YES** – when observed overflowing			
Quarterly Reporting	**YES** – using modeled activations and volumes			

(1) Past inspections to characterize these overflows revealed no need for regular SORP cleanup, due to location or low frequency

Potential SSOs

SD1 is following a systematic program to field-investigate potential overflows that are predicted by model data or have historical evidence based on past inspections that may indicate overflow activity. This information is summarized and grouped in excel spreadsheets, which the wet weather investigation group uses, along with route sheets, to inspect each location. The current program prioritizes locations for inspection and characterization by watershed. Currently, SD1 has identified approximately 19 potential SSOs across the collection system, in addition to the confirmed recurring SSO locations. The 19 potential SSOs will continue to be monitored and characterized through field inspections and hydraulic modeling to determine their status.

As demonstrated in the following route sheets, crews are deployed to all 19 potential SSO locations, during or shortly after the trigger rain event, to inspect and implement response and cleanup procedures, if needed. As SD1's systematic and prioritized inspection program continues, this list of potential SSOs requiring cleanup may be revised. Table 1.2 presents a summary of the potential overflows and how they are inspected, cleaned-up, and reported.

Table 1.2 Overview of Potential SSO Response

Count	19 potential SSOs
Monitoring	Inspected by Wet Weather Investigation Group after wet-weather events Program prioritizes locations for inspection and characterization by watershed All 19 potential locations receive regular SORP inspection
SORP cleanup	**YES** – using SORP SOP
Event documentation	**YES** – entered in Lucity
Event reporting	**YES** - when observed overflowing
Quarterly reporting	When added to Recurring SSO List

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Wet Weather Investigation Routes

Recurring SSOs

Manhole	Status	County	Field Monitoring	Rain	Watershed
0020006	Recurring SSO	Campbell	SORP Team	1"	Fourmile Creek
0360074	Recurring SSO	Campbell	SORP Team	1"	Fourmile Creek
0860003	Recurring SSO	Campbell	SORP Team	1"	Licking River
0060001	Recurring SSO	Campbell	SORP Team	1"	Ohio River east
0060002	Recurring SSO	Campbell	SORP Team	1"	Ohio River east
0150009	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150063	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150064	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150065	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150085	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150086	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0150399	Recurring SSO	Campbell	SORP Team	1"	Threemile Creek
0860016	Recurring SSO	Campbell	SORP Team	2"	Threemile Creek
1850140	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
1850141	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
1950232	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
1990032	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2100002	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2100128	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2100129	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2110002	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2120001	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2120041	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2280011	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2280016	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2300016	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2300121	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2300123	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2301219	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2301274	Recurring SSO	Kenton	SORP Team	1"	Banklick Creek
2130026	Recurring SSO	Kenton	SORP Team	1"	Dry Creek
2130028	Recurring SSO	Kenton	SORP Team	1"	Dry Creek
1110161	Recurring SSO	Kenton	SORP Team	2"	Banklick Creek
1760047	Recurring SSO	Kenton	SORP Team	2"	Banklick Creek
1760048	Recurring SSO	Kenton	SORP Team	2"	Banklick Creek
2040040	Recurring SSO	Kenton	SORP Team	2"	Banklick Creek
2070019	Recurring SSO	Kenton	SORP Team	2"	Banklick Creek
2130027	Recurring SSO	Kenton	SORP Team	2"	Dry Creek
2130286	Recurring SSO	Kenton	SORP Team	2"	Dry Creek
2280010	Recurring SSO	Kenton	SORP Team	3"	Banklick Creek
2380957	Recurring SSO	Boone	Wet Weather Group	1"	Gunpowder Creek
2410387	Recurring SSO	Boone	Wet Weather Group	1"	Gunpowder Creek
2390002	Recurring SSO	Boone	Wet Weather Group	2"	Woolper Creek
2360024	Recurring SSO	Boone	Wet Weather Group	3"	Elijahs Creek
2400001	Recurring SSO	Boone	Wet Weather Group	3"	Sand Run
2370003	Recurring SSO	Boone	Wet Weather Group	3"	Woolper Creek
0020007	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek
0020008	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek
0200003	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek
1920086	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek

Wet Weather Investigation Routes

Recurring SSOs

Manhole	Status	County	Field Monitoring	Rain	Watershed
1920097	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek
2150090	Recurring SSO	Campbell	Wet Weather Group	1"	Fourmile Creek
0040003	Recurring SSO	Campbell	Wet Weather Group	1"	Ohio River east
0120019	Recurring SSO	Campbell	Wet Weather Group	1"	Ohio River east
0370001	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0380005	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0400002	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0410010	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0410019	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0430006	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0500047	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0530083	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
1010002	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
1010025	Recurring SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0100002	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0110010	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0220044	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0220058	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0270020	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0270103	Recurring SSO	Campbell	Wet Weather Group	1"	Threemile Creek
0020031	Recurring SSO	Campbell	Wet Weather Group	2"	Fourmile Creek
0280073	Recurring SSO	Campbell	Wet Weather Group	2"	Fourmile Creek
0060004	Recurring SSO	Campbell	Wet Weather Group	2"	Ohio River east
0070044	Recurring SSO	Campbell	Wet Weather Group	2"	Ohio River east
0300035	Recurring SSO	Campbell	Wet Weather Group	2"	Ohio River east
0330005	Recurring SSO	Campbell	Wet Weather Group	2"	Ohio River east
0360004	Recurring SSO	Campbell	Wet Weather Group	2"	Ohio River east
0390007	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0400034	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0410036	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0440074	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0490039	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0540064	Recurring SSO	Campbell	Wet Weather Group	2"	Taylor Creek
0100003	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0150024	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0150087	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0150356	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0220035	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0220056	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0220086	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0230011	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0230016	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0250002	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
1930007	Recurring SSO	Campbell	Wet Weather Group	2"	Threemile Creek
0020032	Recurring SSO	Campbell	Wet Weather Group	3"	Fourmile Creek
2450001	Recurring SSO	Campbell	Wet Weather Group	3"	Licking River
0280001	Recurring SSO	Campbell	Wet Weather Group	3"	Ohio River east
0370009	Recurring SSO	Campbell	Wet Weather Group	3"	Taylor Creek
0400017	Recurring SSO	Campbell	Wet Weather Group	3"	Taylor Creek
1010027	Recurring SSO	Campbell	Wet Weather Group	3"	Taylor Creek

Wet Weather Investigation Routes

Recurring SSOs

Manhole	Status	County	Field Monitoring	Rain	Watershed
0110002	Recurring SSO	Campbell	Wet Weather Group	3"	Threemile Creek
0260001	Recurring SSO	Campbell	Wet Weather Group	3"	Threemile Creek
0270062	Recurring SSO	Campbell	Wet Weather Group	3"	Threemile Creek
1110025	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1110226	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1110294	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1940006	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1950014	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1960002	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1990018	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2090008	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2100057	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2110001	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2170006	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2170097	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
2300019	Recurring SSO	Kenton	Wet Weather Group	1"	Banklick Creek
1190012	Recurring SSO	Kenton	Wet Weather Group	1"	Dry Creek
1230019	Recurring SSO	Kenton	Wet Weather Group	1"	Dry Creek
1240008	Recurring SSO	Kenton	Wet Weather Group	1"	Dry Creek
1610053	Recurring SSO	Kenton	Wet Weather Group	1"	Dry Creek
1610054	Recurring SSO	Kenton	Wet Weather Group	1"	Dry Creek
1550053	Recurring SSO	Kenton	Wet Weather Group	1"	Pleasant Run Creek
1040060	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1110051	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1110164	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1110174	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1110275	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1120029	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1570025	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1860108	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1870013	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1870014	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1990028	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2020035	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2020203	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2090063	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2100007	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2100036	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2100037	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2100106	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2100126	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2110006	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2160004	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2170008	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2170013	Recurring SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1600050	Recurring SSO	Kenton	Wet Weather Group	2"	Dry Creek
1790003	Recurring SSO	Kenton	Wet Weather Group	2"	Dry Creek
0870037	Recurring SSO	Kenton	Wet Weather Group	2"	Licking River
2350173	Recurring SSO	Kenton	Wet Weather Group	2"	Licking River
1560102	Recurring SSO	Kenton	Wet Weather Group	2"	Pleasant Run Creek

Wet Weather Investigation Routes

Recurring SSOs

Manhole	Status	County	Field Monitoring	Rain	Watershed
1700008	Recurring SSO	Kenton	Wet Weather Group	2"	Pleasant Run Creek
1730100	Recurring SSO	Kenton	Wet Weather Group	2"	Pleasant Run Creek
1750076	Recurring SSO	Kenton	Wet Weather Group	3"	Banklick Creek
2160005	Recurring SSO	Kenton	Wet Weather Group	3"	Banklick Creek
2160006	Recurring SSO	Kenton	Wet Weather Group	3"	Banklick Creek
1230036	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1190001	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1210018	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1220016	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1220054	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1240012	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1600029	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1610102	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1770062	Recurring SSO	Kenton	Wet Weather Group	3"	Dry Creek
1560092	Recurring SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek
1690043	Recurring SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek
1700006	Recurring SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek
1730103	Recurring SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek
2290001	Recurring SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek
1830020	Recurring SSO	Boone	No Clean Up Needed		Dry Creek
1830067	Recurring SSO	Boone	No Clean Up Needed		Dry Creek
0050022	Recurring SSO	Campbell	No Clean Up Needed		Ohio River east
0270026	Recurring SSO	Campbell	No Clean Up Needed	3"	Threemile Creek
0860001	Recurring SSO	Campbell	No Clean Up Needed		Licking River
2150050	Recurring SSO	Campbell	No Clean Up Needed		Fourmile Creek
1090069	Recurring SSO	Kenton	No Clean Up Needed		Banklick Creek
1110067	Recurring SSO	Kenton	No Clean Up Needed		Banklick Creek
1220029	Recurring SSO	Kenton	No Clean Up Needed		Dry Creek
1560016	Recurring SSO	Kenton	No Clean Up Needed		Pleasant Run Creek
1560019	Recurring SSO	Kenton	No Clean Up Needed		Pleasant Run Creek
1560074	Recurring SSO	Kenton	No Clean Up Needed		Pleasant Run Creek
1690072	Recurring SSO	Kenton	No Clean Up Needed		Pleasant Run Creek
1700025	Recurring SSO	Kenton	No Clean Up Needed		Pleasant Run Creek

Wet Weather Investigation Routes

Potential SSOs					
Manhole	**Status**	**County**	**Field Monitoring**	**Rain**	**Watershed**
2280023	Potential SSO	Boone	Wet Weather Group	2"	Banklick Creek
0430007	Potential SSO	Campbell	Wet Weather Group	1"	Taylor Creek
0120018	Potential SSO	Campbell	Wet Weather Group	2"	Ohio River
2340004	Potential SSO	Campbell	Wet Weather Group	3"	Licking River
2340006	Potential SSO	Campbell	Wet Weather Group	3"	Licking River
2340007	Potential SSO	Campbell	Wet Weather Group	3"	Licking River
0490073	Potential SSO	Campbell	Wet Weather Group	3"	Taylor Creek
2280073	Potential SSO	Kenton	Wet Weather Group	2"	Banklick Creek
2280076	Potential SSO	Kenton	Wet Weather Group	2"	Banklick Creek
1330022	Potential SSO	Kenton	Wet Weather Group	2"	Licking River
1290047	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1290054	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1300007	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1330025	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1880009	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1880022	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1880048	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1880087	Potential SSO	Kenton	Wet Weather Group	3"	Licking River
1730086	Potential SSO	Kenton	Wet Weather Group	3"	Pleasant Run Creek

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After Hours Primary On-Call Procedures

Purpose

SD1 strives to provide courteous and prompt customer service. SD1 provides response to trouble calls 24 hours a day 7days a week. This program is to insure that these calls are handled in a professional and timely manner to protect the safety and health of the community. It will also help to standardize practices and documentation by all response personnel.

Scope

Sd1 has set a standard of a 2hr maximum window to respond to each individual call in the three county areas. This includes the approximate 1,800 miles of sanitary sewer lines, 47,500 sanitary structures and 405 miles of storm lines, 30,000 storm structures that SD1 currently maintains.

Responsibility

Reactive Maintenance
Collections Systems Assistant Manager

Procedure

1. **Core group of responders-** SD1 has a core group of eight responders that are on call after normal working hours. These eight responders rotate on a weekly basis. The after hours calls are forwarded to the Dry Creek Waste Water Treatment Plant control room operator, who notifies the scheduled on-call person when there is a trouble call. The proper information, including name of the person calling, address of the trouble call and the problem they are experiencing is recorded. This information is then passed along to the trouble call responder, who may call the customer for additional information or can respond directly to address.

2. **Additional responders-** If the scheduled on-call employee becomes overwhelmed with calls and cannot make the two hour window, the next scheduled responder in the rotation is called in to assist. During heavy call volumes additional responders are added following the rotation schedule.

3. **On-Call Pay-**The on-call responder will receive at a minimum 3 hrs overtime pay for the initial call they respond to each day. After the initial call of the day they will receive normal overtime hours for additional calls. An additional fifty dollars will be paid to employees who are on call during a district designated paid holiday.

4. **Vehicle-** The on-call responders are provided a company vehicle to drive home to insure that calls are ran in a timely manner. This vehicle is to be used for SD1 related business only.

5. **Trouble call responder responsibility-**

   A. **Investigation-** By using knowledge, experience, and other resources (Lucity, ArcReader, etc.) the on-call employee will determine responsibility and mitigate the situation.

   B. **Mitigation/Resolution-** Depending on responsibility, the on-call responder will contact the homeowner or customer who called in the trouble call to explain testing procedures and results from the test. If responsibility is determined to be SD1's, the proper action will be made to mitigate the problem (jet or televise line, etc.). If the issue is deemed the home owners it will be turned over to them to correct the issue.

   C. **Documentation-** Trouble Call responders will be required to collect detailed information, including photos and enter the data into Lucity at the completion of the call. With this detailed information we will be able to make informed decisions on further action that may need to be taken.

   D. **Availability –** It will be the responder's responsibility to make sure that he is available to respond to trouble calls on his rotation.

   - A calendar is made available documenting which responder is on duty. It is each responder's responsibility to check the calendar and know when he is on duty and when he is in line as a additional responder.
   - It is the responder's responsibility to make sure he has a substitute in place if he is not able to respond.
   - Responders are permitted to exchange days or entire rotations if both parties are agreeable. This exchange will need to be approved by Craig Massie or Greg Braunwart in his absence. If approved Craig or Greg will adjust the calendar.
   - If a responder is unable to work his rotation because of a unforeseen emergency and unable to find a substitute, Donnie Couch and Craig Massie will determine how to cover the responders shift. This may include adding additional days to other responders

Off Shift Emergency Call-in Procedures (Secondary)

Purpose

Emergencies can occur in the collection system at any time from a host of causes. Regardless if the emergency is during normal working hours or during the off shift response personnel must respond and follow the same response procedures to ensure adequate protection of public health and mitigation of the cause of the emergency.

Scope

Each emergency is unique and requires SD1 personnel to respond and perform the appropriate actions. It is critical that employees respond to emergencies promptly. This SOP will address how to call-in employees during the off shift hours to respond to emergencies using Vactor trucks.

Responsibility

Department: Collection System – Customer Service – Corrective Action Assistant Manager

Procedure

1. Core group of responders

- ☐ A core group of seven employees who have demonstrated an initiative and availability to respond to emergency call ins in previous situations.
  - o These seven employees are chosen by reviewing past history of the amount of occurrences where they were called and responded to the request for assistance.

2. Calling in employees

- ☐ Each Trouble call person will be paired up with a responder.
  - o The trouble call person will attempt to call the responder that is paired with him first.
  - o If that responder is not available he will move to the next responder on the list and so on.

- The list with the rotation will be developed by the Corrective Action Assistant Manager.
- If the core group of responders is not available the on call person will have Dry Creek Control start the normal call in procedures. The on call person also has the option of calling in other trouble call personal or crew leaders.

3. Incentive

☐ Responders will be compensated for their time when called in.

- For each employee that responds during the week Monday – Friday they will receive $50.00 a day (not per call) and a minimal of three hours pay per call out.
- For each employee that responds during the weekend Saturday and Sunday they will receive $75.00 a day (not per call) and a minimal of 3 hours per call out.

SORP On-Call Scheduling & Inspections

During FY 2012, SD1 began scheduling Collection Systems crew leaders for SORP on-call duties. Prior to this new scheduling routine, 26 Collection Systems personnel were on a daily rotating schedule for on-call duties, as described in Appendix A of the amended SORP submitted on July 10, 2009.

Using Google Calendar, SD1 now maintains a schedule that identifies which crew leader is responsible for on-call duties. Generally, the crew leaders are on weekly rotations.

The 8 SD1 crew leaders responsible for SORP on-call duties are:

Omer Blackburn
Paul Hartman
Mike Hurst
Cap Kiser
Darrell Meader
Bill Mullins
Donnie Roberts
Jeremy Spada

As an example of the updated routine, the calendar year 2013 on-call schedule has been provided in the following pages.

In addition to the SORP on-call personnel changes in the Collections Systems Department, the Pump Station Maintenance on-call personnel have also changed during FY 2012. The following 7 SD1 employees are currently responsible for pump station on-call maintenance:

Chris Crone
Zac Galloway
Dave Koetting
Rick McDannold
Kyle Rabe
Jonathan Reis
Jim Thurman

Immediately following the 2013 SORP on-call schedule is the updated schedule for regular pump station inspections, performed by the Pump Station Maintenance Crew.

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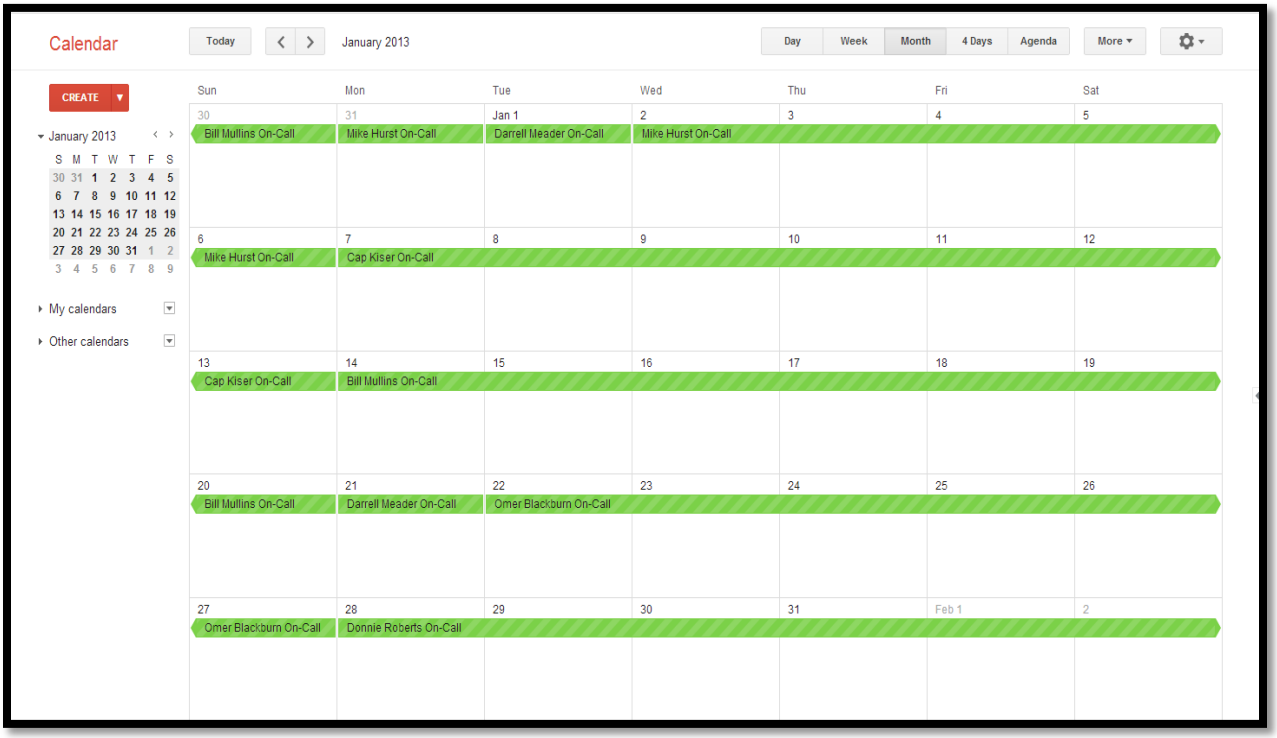
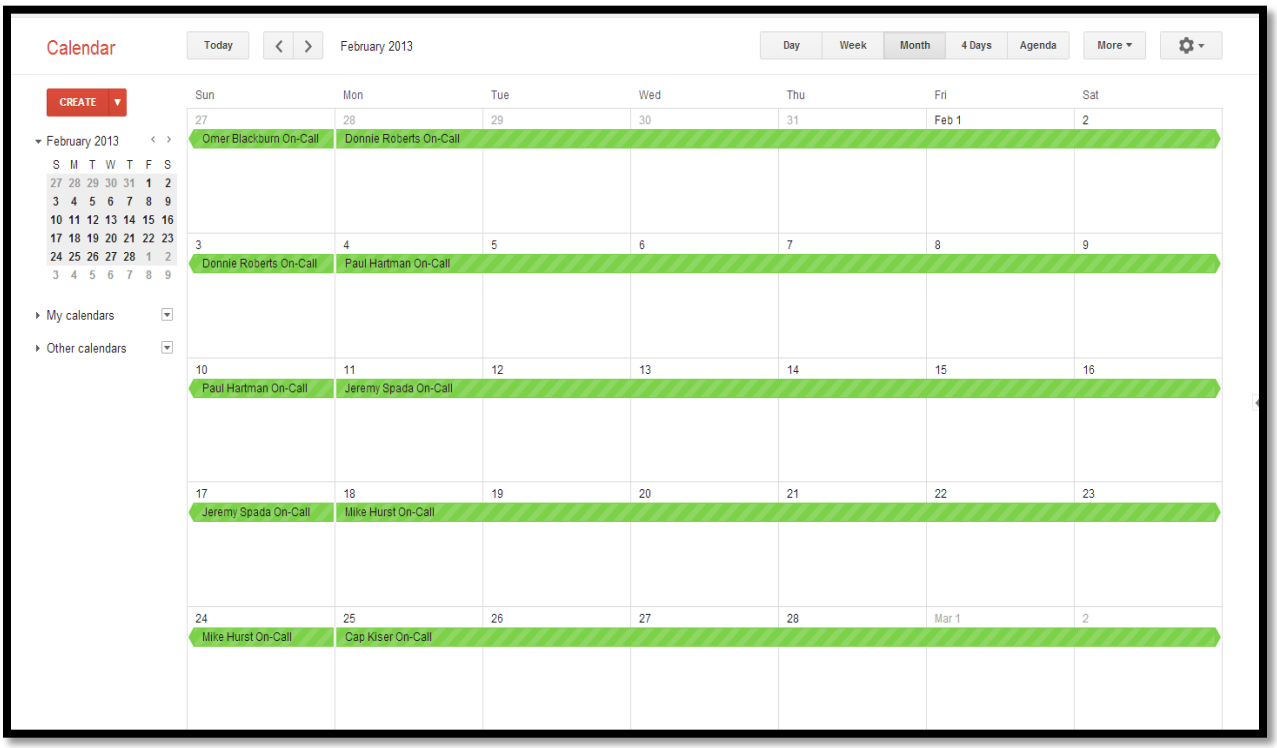
2013 SORP On-Call Schedule

January

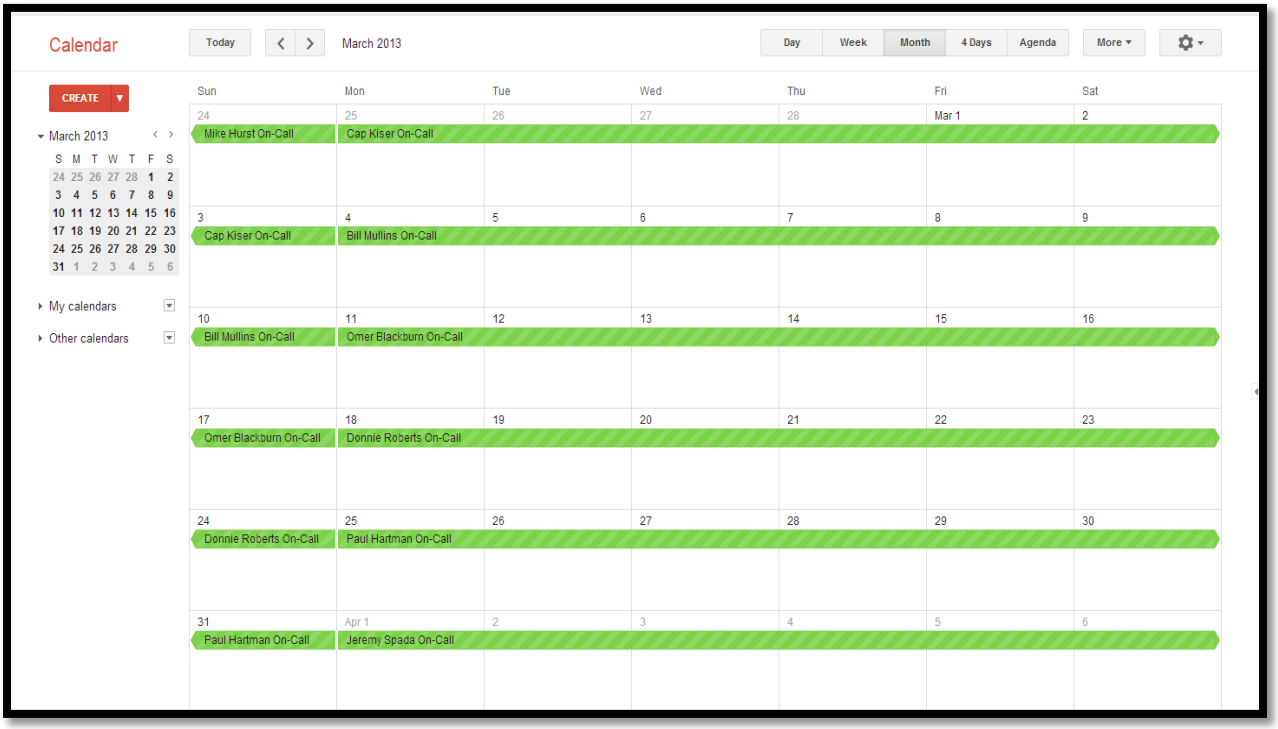


February

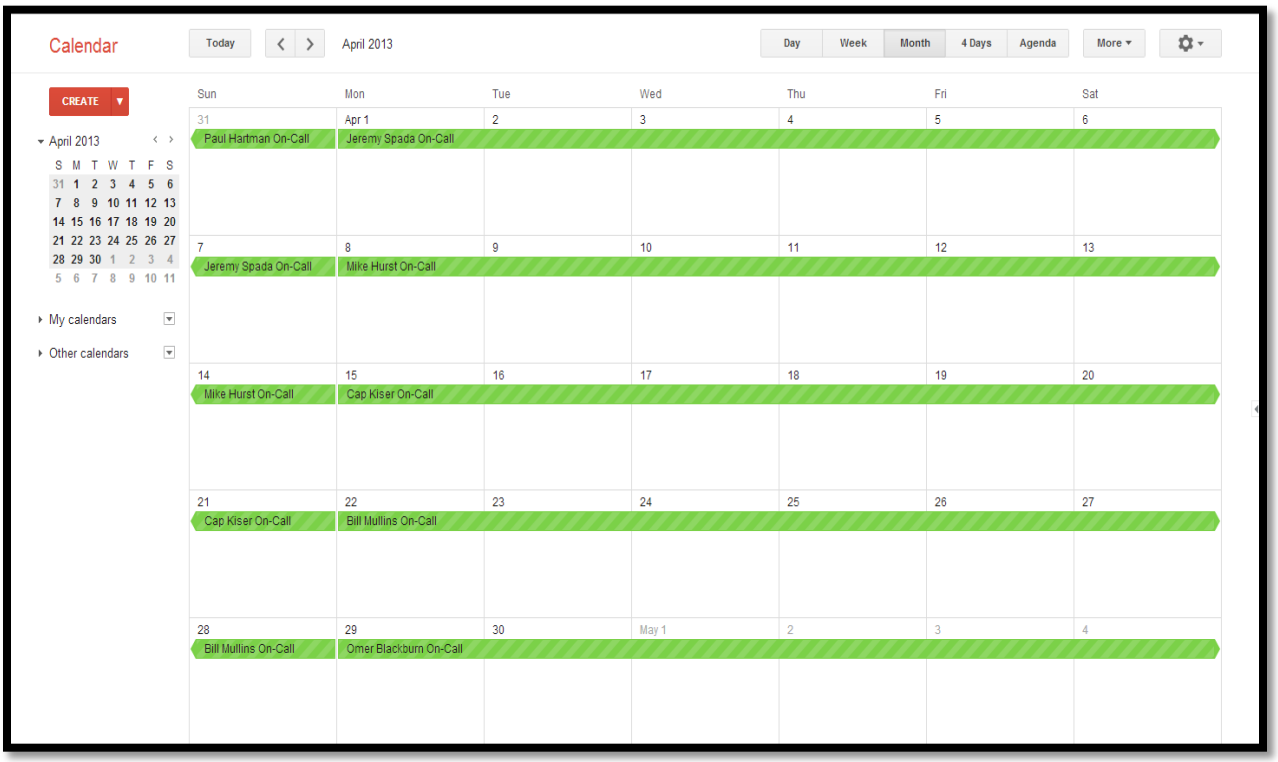


2013 SORP On-Call Schedule

March

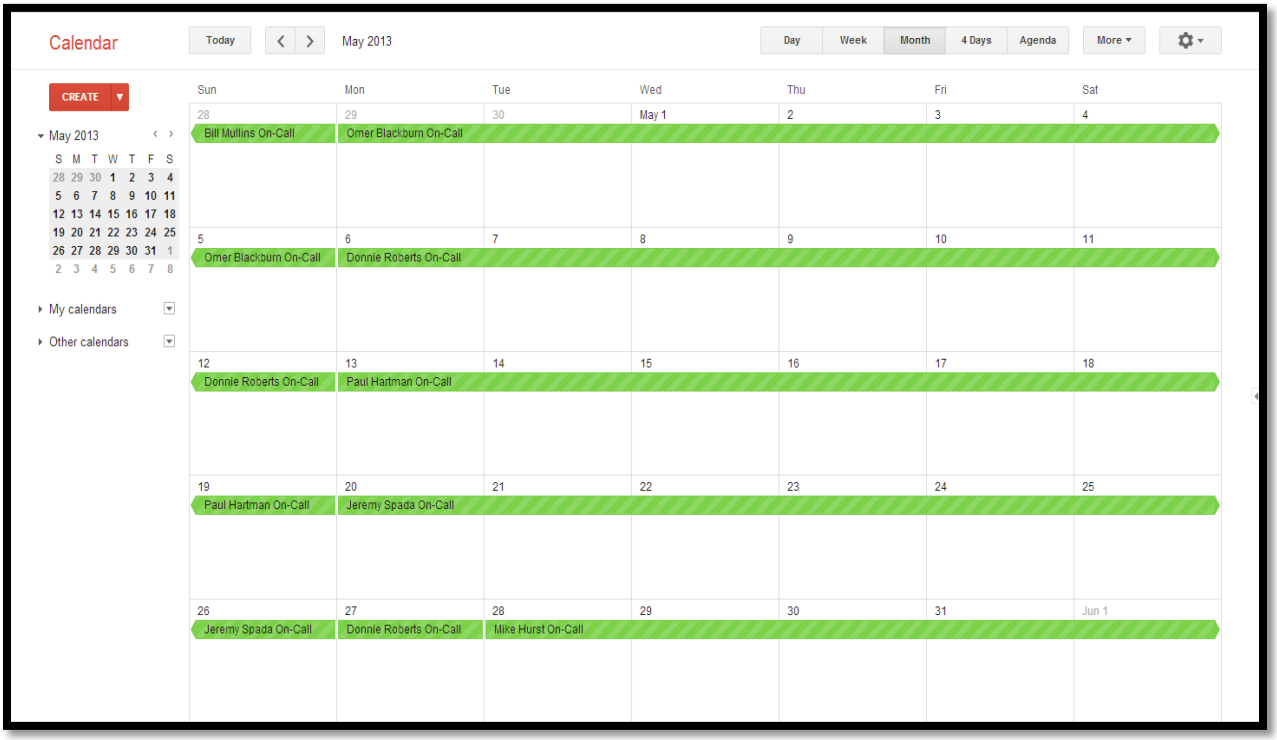


April



2013 SORP On-Call Schedule

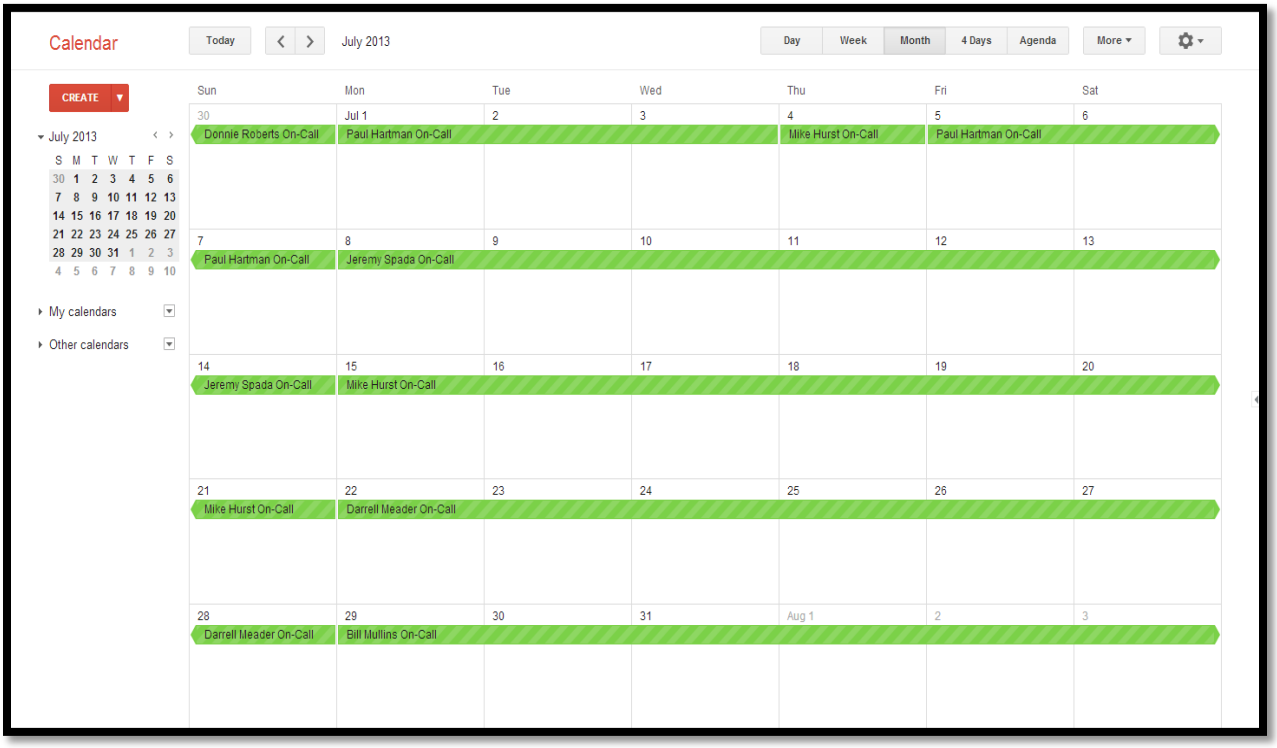
May



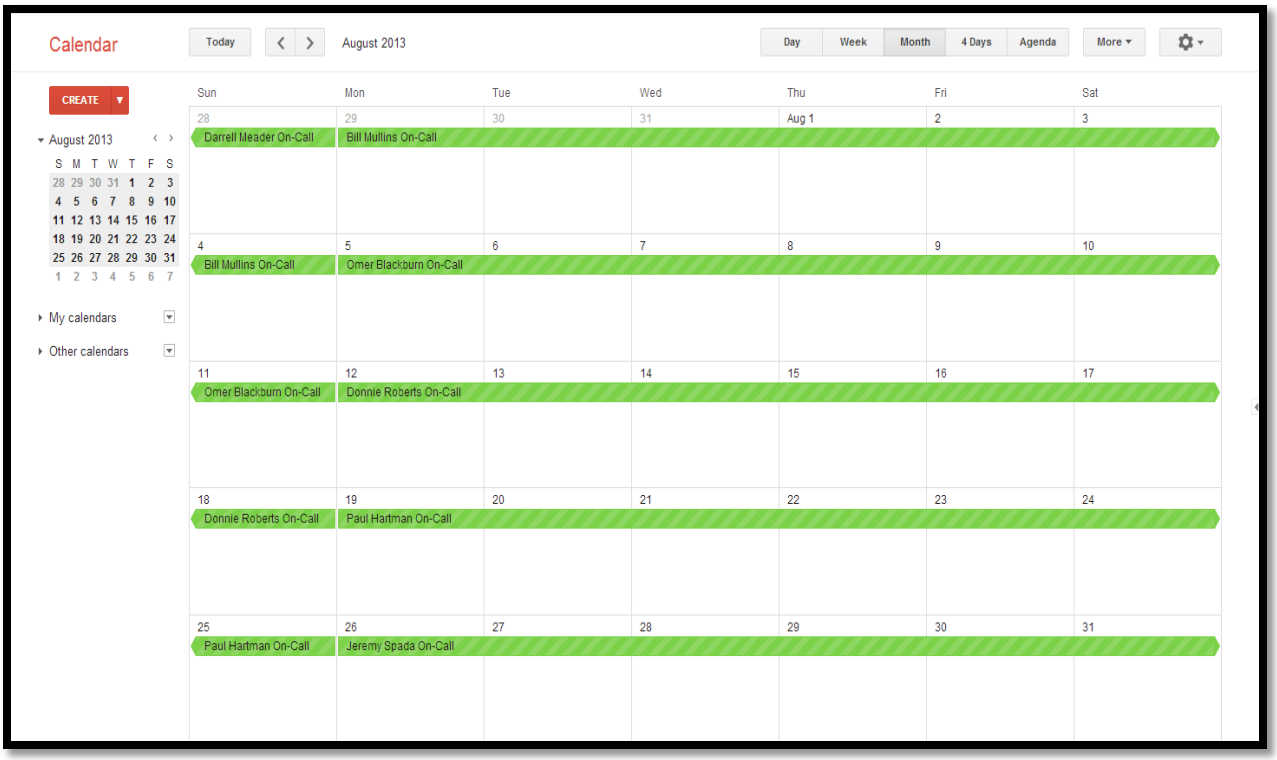
June

2013 SORP On-Call Schedule

July

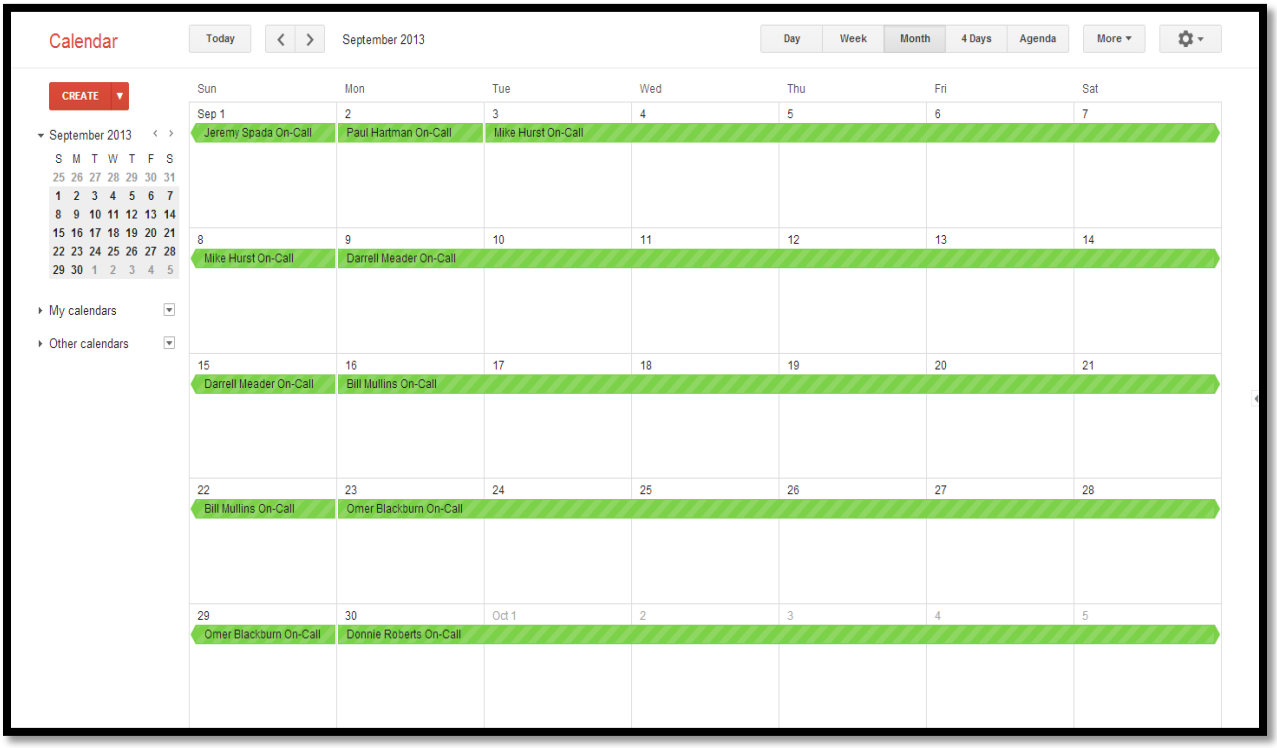


August

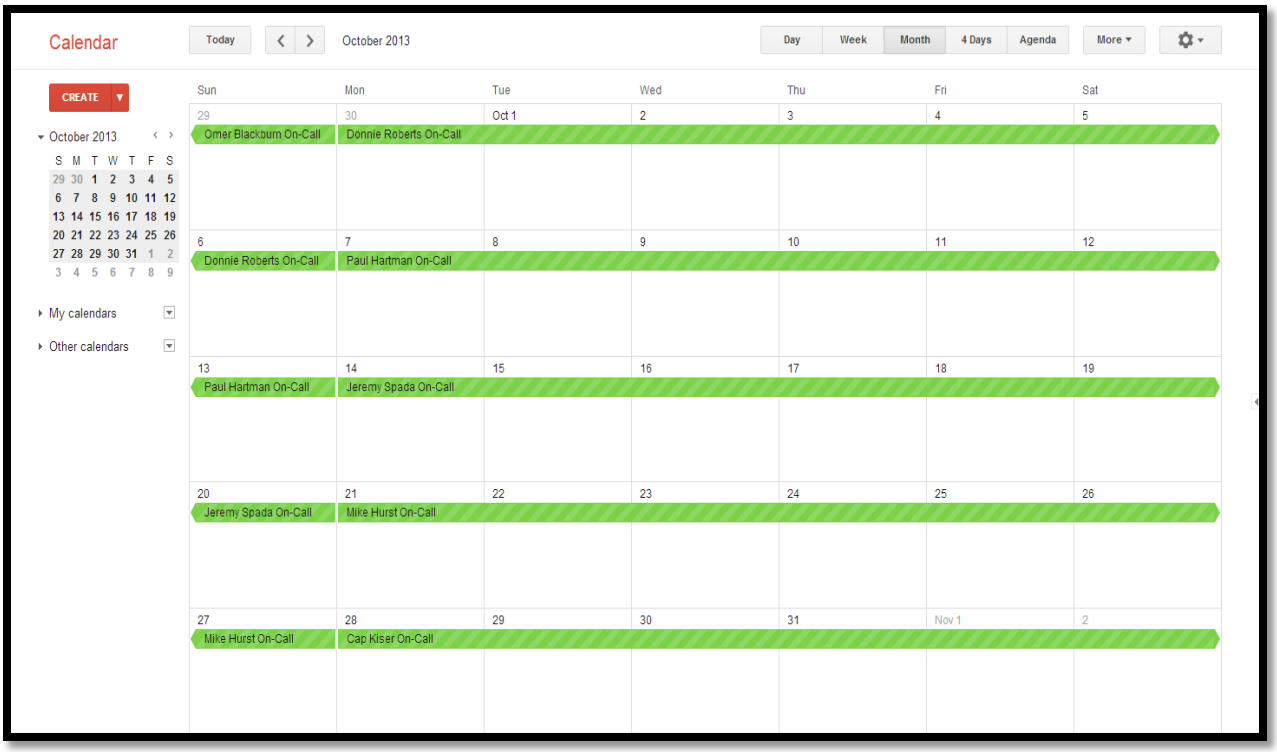


2013 SORP On-Call Schedule

September

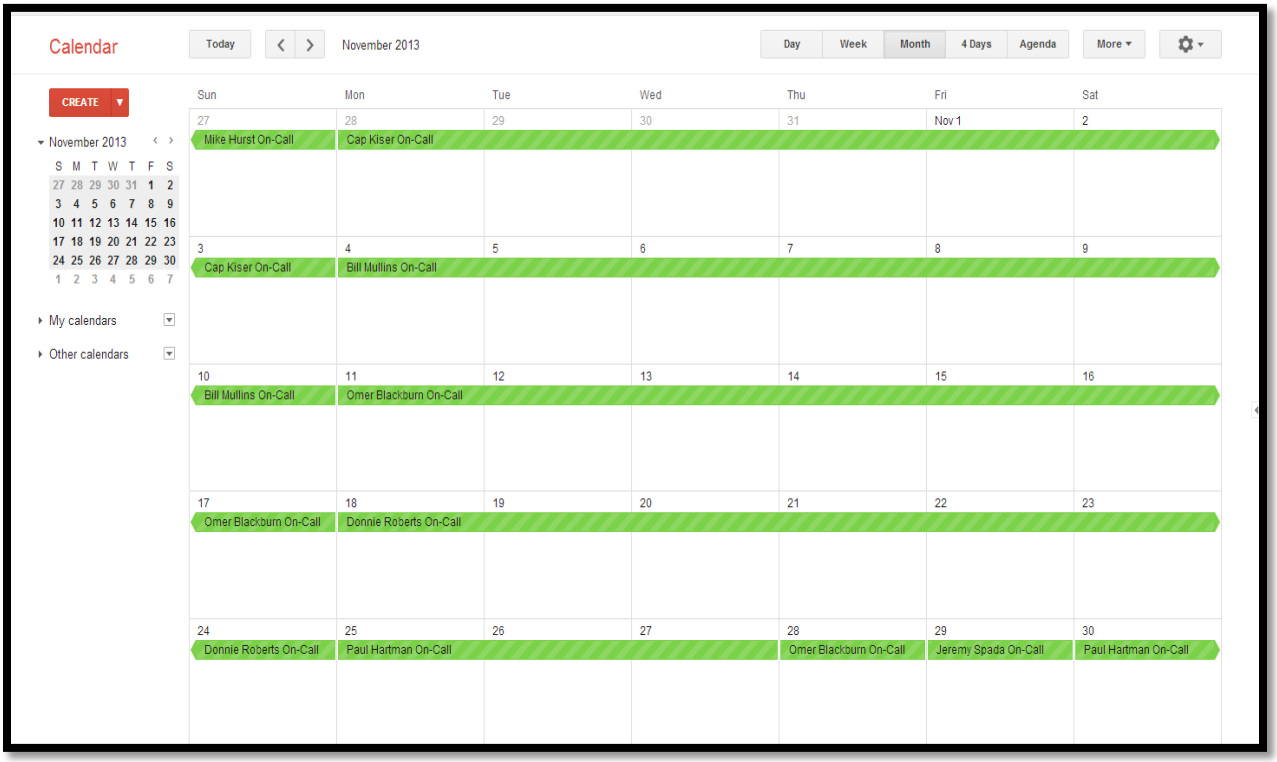


October

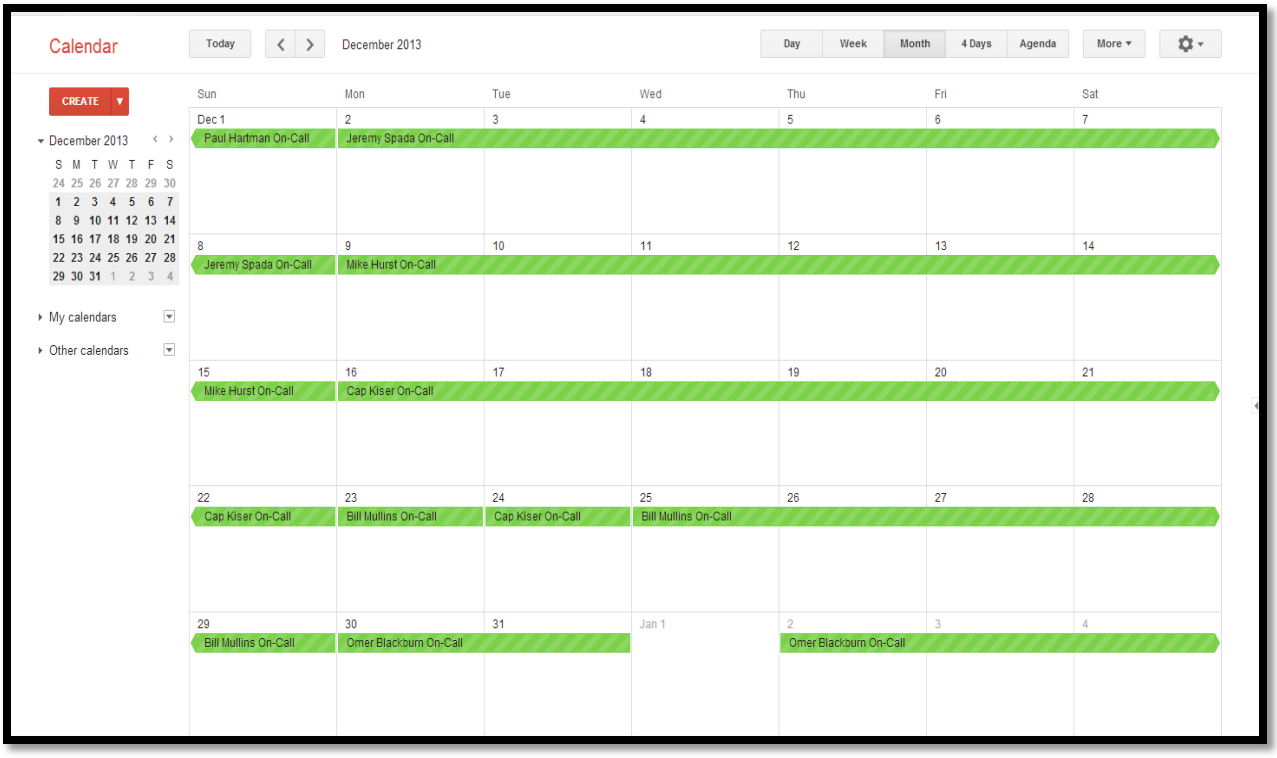


2013 SORP On-Call Schedule

November



December



Pump Station Inspection Schedule

Pump Stations Route A 11/10/2012
DRY CREEK

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Taylorsport	Fowler Ridge	Taylorsport	Mineola Pike	Taylorsport	Mineola Pike	Taylorsport
Wyndemere	Ashmont	Wyndemere	Airport Exch	Wyndemere	Airport Exch	Wyndemere
Sand Run	Wedgewood	Sand Run	Arbor Tech	Sand Run	Arbor Tech	Sand Run
Thornwilde	Catalpa	Thornwilde	Skyport	Thornwilde	Skyport	Thornwilde
Bullittsville	Eagle's L	Bullittsville	Air Park West	Bullittsville	Litton	Bullittsville
Allen Fork	Dublin #1	Allen Fork	Ridgefield	Allen Fork	I D I	Allen Fork
Burlington	Dublin #2	Burlington	Litton	Burlington	Orchard E	Burlington
American Sign	Lassing Green	American Sign	I D I	American Sign	Jonathan	American Sign
Levi	Evergreen	Levi	South Park	Levi	Youell	Levi
Kentucky Aire	Harvest Hill	Kentucky Aire	Cardinal Cove	Kentucky Aire	Brentwood	Kentucky Aire
Willow Bend	ICB	Red Stone V	Deer Creek #1	Lantern Way	Blackstone	
Lantern Way	Ind.Station R.	Gunpowder Tr	Deer Creek #2	Cinnamon R	Hampton R	
Cinnamon R	Golf Course	Leather's	Bloomin S	Arborwood	Saturn	
Arborwood		Ria Vista	Tree Tops			
Orchard E		Riverview	Willow Bend			
Jonathan						

Pump Station Inspection Schedule

Pump Stations Route B 11/10/2012
EASTERN

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Reily Road	Reily Road	Reily Road	Reily Road	Reily Road	Reily Road	Reily Road
Alex Licking	Alex Licking	Alex Licking	Alex Licking	Alex Licking	Alex Licking	Alex Licking
Pond Creek	Pond Creek	Pond Creek	Pond Creek	Pond Creek	Pond Creek	Pond Creek
Parkside #1	Kahn's G. Trap	Keavy Road	Parkside #1	Kahn's G. Trap	Paul Lane	Sunset
Parkside #2	Barrs Branch	Meadow Lane	Parkside #2	Maple Avenue	Ridgewood V	Macke
Center Plex	Paul Lane	Ridgeway Drive	Center Plex	Twin Lakes	Center Plex	Kees
Cold Spring Cr	Ridgewood V	Wolf Road	Cold Spring Cr	Ashford Village	Cold Spring Cr	Douglas James
Cold Spring Pz	Brookwood	Mafred	Cold Spring Pz	Marshall Road	Cold Spring Pz	Meyer Road
Wolpert	Stillwater	Brandtly Ridge	Wolpert	Alderbrook	Wolpert	Cedar Point
Bunning Lane	Sunset	Maple Avenue	Bunning Lane	CPC	Crestview	Wimters Ln.
Crestview	Macke	Cedar Avenue	Crestview	Shadow Lake	Silver Grove	St. Annes
Silver Grove	Kees	Jericho	Darma Ct.	Brook Stone Cr	Highland H.	Carlisle
Highland H.	Douglas James	Twin Lakes	Silver Grove		Wilder	Harrison Harbor
Wilder	Meyer Road	Taylor Mill Road	Highland H.		Army Reserve	Gerard
Newport Steel	Enzweiler	Saylor Woods	Wilder		Lamp Hill	Ohio
Shadow Lake		Millhouse Cros	Overlook			Jefferson
Brook Stone Cr		Ashford Village				Rosewood
		Marshall Road				Overlook

Pump Station Inspection Schedule

Route C
FLOOD
STATIONS

11/10/2012

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	Columbia St.			Columbia St.		
	Court St.			Court St.		
	24th. St.			24th. St.		
	8th. St.			8th. St.		
	4th. St			4th. St		
	Kennedy St.			Kennedy St.		
	Main St Day			Main St Day		
	Main St Cov			Main St Cov		
	McKinney St.			McKinney St.		
	19th. St.			19th. St.		
	Pleasant St.			Pleasant St.		
	Patton St.			Patton St.		
	Russell St.			Russell St.		
	Washington			Washington		
	Willow Run			Willow Run		

Route D
LARGE
PUMP
STATIONS

11/10/2012

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Lakeview	Lakeview	Lakeview	Lakeview	Lakeview	Lakeview E/R	Lakeview E/R
Bromley	Bromley	Bromley	Bromley	Bromley		
Narrows Rd.	Narrows Rd.	Narrows Rd.	Narrows Rd.	Narrows Rd.	Narrows Rd. DC	Narrows Rd. DC
Richwood	Shaft #1	Richwood	Shaft #1	Richwood	Reily Rd. E/R	Reily Rd. E/R
Second Street	2nd. St. Barscreens	Second Street	2nd. St. Barscreens	Second Street		
Eighth Street	Airport Tower	Eighth Street	Airport Tower	Eighth Street		
Patton Street	Airport Term.	Patton Street	Airport Term.	Patton Street		
Banklick		Banklick		Banklick		

APPENDIX G:

Sewer Lateral and Illegal Connection Inspection and Enforcement Policy

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SANITATION DISTRICT NO. 1
SEWER LATERAL REPAIR AND ILLEGAL CONNECTION INSPECTION AND ENFORCEMENT POLICY

BACKGROUND

Since the consolidation of the sanitary sewer system in 1995, the Sanitation District No. 1 (SD1) policy relating to ownership and maintenance of building sewers (also known as sewer laterals) was stated in Article 7, Section 701.1.G, of SD1's Rules and Regulations:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer.

This regulation fully complies with Kentucky law. Nevertheless, the result of this regulation was that in certain instances, property owners were being required to perform excavation and repair work beneath public roadways. Accordingly, SD1 provided some assistance to property owners faced with this difficult and costly situation with subsequent revisions to Article 7, Section 701.1.G, of SD1's Rules and Regulations and sewer lateral Policy amendments made between 1995 and 2004. Article 7, Section 701.1.G, of the Rules and Regulations currently states:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer unless the building sewer is located under a public roadway. If the building sewer is damaged under the paved roadway, SD1 will share in the cost repair as determined by the Board of Directors.

At the November 21, 2006 Board Meeting, the Board of Directors adopted, as an interpretation of Section 701.1.G, the following Sewer Lateral Policy:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer**.** However, if a property owner conclusively demonstrates, in accordance with the guidelines set out in the Sewer Lateral Repair Policy, that the private sewer lateral is not functioning as a result of a structural problem occurring at a section of the private lateral located beneath the public roadway, the Sanitation District will repair the structural problem of the private lateral from the public sewer to the edge of the public roadway at no cost to the property owner.

At the March 25, 2008 and August 19, 2008 Board Meetings, the Board of Directors revised the Policy to more comprehensively address the repair and maintenance of laterals to help protect waterways by addressing illegal storm water connections into the

sanitary sewer system that can overload sanitary sewers and contribute to sanitary sewer overflows. The revised Policy applies to lateral defects and illegal connections identified by property owners and/or SD1.

On August 19, 2008, the Board of Directors adopted, as a revised interpretation of Section 701.1.G, the following Sewer Lateral Policy:

> The owner of the premises served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer**.** However, if a property owner conclusively demonstrates, in accordance with the guidelines set out in the Sewer Lateral Repair Policy, that the private sewer lateral is not functioning as a result of a problem occurring at a section of the private lateral located beneath the public roadway that cannot be corrected through routine sewer cleaning or similar maintenance activities, the Sanitation District will repair the problem of the private lateral from the public sewer to the edge of the public roadway at no cost to the property owner.

I. Definitions

A. Illegal Connections: Defined by Article 3, Sections 302.1 and 302.2, of SD1's Rules and Regulations as the direct or indirect discharge of surface water, groundwater, roof runoff, subsoil drains or subsurface drainage to the sanitary sewer system.

B. Inflow and Infiltration (I/I): Refers to rainwater and groundwater that enters the sanitary sewer system from a variety of sources such as defective private sewer laterals, roof downspouts, yard drains, foundation drains, stairwell drains, and sump pumps.

C. Private Sewer Lateral: This policy shall only apply to private laterals 6 inches in diameter and smaller.

D. Property Owner: Refers to both commercial and residential property owners.

E. Public Roadway: Defined as the public road from edge of pavement to edge of pavement, including the abutting street curb or the abutting sidewalk, if present, and excluding segments of driveways within the right-of-way.

II. Lateral Problem Within Public Roadway Identified by Property Owner

A. Purpose: To provide some assistance to property owners faced with the obligation to perform excavation and repair work of private laterals beneath public roadways.

B. Applicability: This section of the Policy only applies when SD1 has been notified by the property owner that the sewer lateral is not functioning properly and when it is conclusively demonstrated to SD1, in accordance with the provisions of this Policy, that the malfunction is a result of a problem with the private sewer lateral at a point beneath the public roadway that cannot be corrected through routine sewer cleaning or similar maintenance activities. Ownership and maintenance responsibilities shall remain with the individual property owner from the building to the public sewer, including the length of sewer lateral beneath the public roadway. SD1 may, in its sole discretion, approve projects that do not meet the above-mentioned criteria.

C. Problem Identification: The property owner is responsible for hiring a licensed plumber to identify the location of the lateral line and, specifically, the location of the problem. Locating the problem should be accomplished through the use of a "locating device." Measuring distances to the problem is not considered an adequate method to locate the problem. Once the location of the problem has been identified, the plumber should clearly mark the location on the surface of the ground with spray paint or by other appropriate means.

If requested, the plumber will provide SD1 with a videotape of the sewer lateral, which clearly shows the problem causing the sewer lateral malfunction.

SD1 may, in its sole discretion, waive the problem identification requirements on a case-by-case basis.

Note: *In all cases, the property owner is responsible for 100% of the costs associated with locating the private sewer lateral problem.*

D. SD1 Review: SD1 will review the available information, and determine if the information provided is in accordance with the requirements of this Policy. If the information is sufficient, SD1 will approve the project for repair. If additional information is required, SD1 representatives will notify the property owner of the additional requirements.

E. Performance of Repair Work: SD1 will perform the necessary repair work within the public roadway. As part of the repair work SD1 may televise the lateral and perform all necessary smoke and/or dye testing to assess the condition of the lateral and the presence of any illegal connections.

If the work necessary to repair the problem extends beyond the public roadway, SD1 will notify the property owner that he/she must hire a licensed plumber to perform the work outside the roadway at the owner's expense. If SD1 discovers any illegal connections during its assessment of the lateral, SD1 may notify owner that these connections must be removed in accordance with SD1's Sanitary Rules and Regulations and Section III of this Policy.

Note: *In all cases, SD1 reserves the right to require the installation of a vertical cleanout riser near the edge of pavement.*

F. Indemnity: The property owner must agree to indemnify and hold SD1 harmless from any causes of action, claims, liability, judgment or expenses, including attorneys' fees and the costs of investigation and litigation, arising out of the project.

III. SD1 Illegal Connection Inspection and Enforcement Program

A. **Purpose:** The elimination of inflow and infiltration (I/I) into the separate sanitary sewer system from surface water, groundwater, roof runoff, subsoil drains, and subsurface drainage is essential to the efficient operation of SD1's collection, transmission, and treatment systems. SD1's Illegal Connection Inspection and Enforcement Program is intended to proactively and aggressively control and eliminate I/I through system testing, repair and replacement of defective private laterals and removal of illegal connections. The health, safety, welfare and best interests of SD1's ratepayers requires that such sources of I/I be eliminated as expeditiously as possible to aid in eliminating sanitary sewer overflows and water quality degradation. Only those property owners that cooperate in the timely repair of the lateral or elimination of the illegal connections shall be eligible for financial assistance in the form of financing and/or grant money (See Section IV of this Policy).

B. **Applicability**: This Section of the Policy applies to all illegal connections such as defective private laterals, roof downspouts, yard drains, foundation drains, stairwell drains and sump pumps. In non-roadway areas within the areas depicted in red on Attachment A, the sewer lateral connection and up to and including ten (10) feet of private sewer lateral will be replaced in conjunction with public sewer replacement or rehabilitation, at the sole cost and determination of SD1. Any portion of sewer lateral beyond ten (10) feet from the point of connection to the sewer main will be subject to the articles of this policy. Sewer laterals in roadway areas will be replaced according to Section II of this Policy. This Section applies only to the separate sanitary sewer system. While inflow and infiltration (I/I) is a serious issue for SD1, it is generally not an area of concern in the combined sewer system because there is typically not a separate storm sewer system to receive flow from disconnected I/I sources (downspouts, driveway drains, etc.).

C. **Authority:** SD1 has authority to implement and enforce this program pursuant to KRS 220.320, KRS 220.322, KRS 220.510 and Articles 3, 7, 9 and 10 of SD1's Sanitary Rules and Regulations.[1]

D. **Inspection:** In conjunction with SD1's normal operation and maintenance practices or construction activities, SD1 may notify property owners that the private lateral must be inspected. SD1 shall attempt to obtain written permission to inspect

the private lateral via smoke/dye testing and/or Closed Circuit Television Inspection (CCTV).

If property owner refuses to grant permission, he/she becomes ineligible for financial assistance. SD1 will either attempt to obtain evidence of the violation using an unobtrusive method such as smoke testing, visual observation of the flow in the lateral during a rain event, etc. or shall document the property owner's refusal to grant permission. The property owner shall then be informed that should SD1 discover an illegal connection and/or should the property owner experience a structural failure in the future, the property owner shall be responsible for all costs of maintenance, operation, cleaning, repair and reconstruction of the private lateral from the building to the point of connection with the public sewer, including that portion located within the public roadway.

E. **Notification and Enforcement:**

1. After identification of a defect(s) and/or illegal connection(s), SD1 may give written notice to the property owner of the property where such source is located or to the occupant thereof by first class mail or hand delivery, in accordance with Section 701.2.B of the Rules and Regulations. It shall be sufficient if the notice is addressed to and mailed or delivered to the person or persons in whose name application was made for water service for that location.
2. If the defect(s) in the private lateral is located beneath the public roadway, Section II of this Policy may apply.
3. If the defect(s) and/or illegal connection(s) to the private lateral are located outside the public roadway, the person or persons so notified shall within thirty (30) calendar days of the date of mailing or delivery of such notice deliver to SD1, 1045 Eaton Drive, Ft Wright, Kentucky 41017, a plan, prepared by a licensed plumber, to address the defect(s) and/or remove the illegal connection(s). The plan shall include a detailed description of the work to be performed, a drawing showing the defect(s) and/or illegal connection(s) and the method of its elimination if feasible and a cost estimate for the work. If elimination is deemed not possible or practicable, the plan shall provide a written demonstration of infeasibility (repair costs alone are insufficient to demonstrate infeasibility of elimination).
4. SD1 staff shall review each plan and approve or deny same within thirty (30) calendar days after receipt. Notice of this action shall be promptly communicated to the person submitting the plan. If the submitted plan is denied by SD1 staff, the notified person or persons shall submit a revised plan acceptable to SD1 within thirty (30) calendar days for review and approval.
5. After receipt of notification of plan approval, the person submitting same shall have sixty (60) calendar days in which to complete the work outlined in the approved plan and notify SD1 of such completion. Upon receipt of notice of completion, SD1 shall inspect the work and retest the lateral and system.

6. Failure to comply: If the property owner fails to comply within the time frames indicated above and fails to request and receive an extension of time pursuant to section 7 below, SD1 may utilize any of the following enforcement actions:
   a. In accordance with Section 302.3 of the Rules and Regulations, "Should the owner of such an illegally connected premises fail to remove the illegal connection within 90 days of being notified by the Executive Director to do so, the Executive Director may cause the connection to be removed and the cost thereof to be billed to the owner of the premises."
   b. Assess administrative fines of up to $1,000 per day pursuant to KRS 220.320 and Section 1001.2.A of the Rules and Regulations.
   c. Institute an action in court pursuant to KRS 220.320 and Section 1001.2.B of the Rules and Regulations. The available remedies shall include:
      1. Injunctive relief;
      2. Cost recovery to recover the cost associated with noncompliant acts of a user;
      3. Civil penalties of up to $1,000 per day per violation; and
      4. Termination of wastewater treatment service.
   d. If SD1 incurs costs for services rendered, it may, by notice in writing, shut off water service to said premises in accordance with KRS 220.510. Furthermore, KRS 220.322(4) states that **"**Charges [for disconnections, reconnections, or relocations of sewers] not paid when due may cause the board of directors to compel payment in the manner authorized in this chapter and the rules and regulations of SD1."
7. Extensions of time: The Executive Director may, for good cause shown, grant an extension of any of the deadlines set out in this Policy, provided that the request for the extension is received prior to the expiration of the deadline. The extension shall be issued in writing and shall specify the date of its termination.

IV. Financing and Grant Program for Defective Private Lateral Repairs and Removal of Illegal Connections Outside Public Roadway

A. **Purpose:** To provide financing and/or funds to eligible property owners faced with the obligation to perform excavation and repair work of private laterals outside public roadways.

B. **Financing:** For removal of illegal connections and/or repairs to damaged laterals outside the "public roadway" as defined above, the property owner will obtain the services of a licensed plumber. SD1 may at its discretion advance funds for payment of the plumber's invoice and offer a finance option to allow the property owner to repay SD1 with interest at a rate of two basis points above prime rate at the time that financing is initiated with a minimum interest rate of six (6) percent and a maximum interest rate of ten (10) percent over a term not to exceed fifteen (15) years. Furthermore, the property owner shall grant a consensual lien to SD1 to be placed on the property in order to guarantee payment recovery.

C. **SD1 Grant Program for Sanitary Service Improvement Projects**: As part of its Consent Decree with the U.S. EPA and Commonwealth of Kentucky, SD1 has developed a program to reimburse qualified residential property owners for a portion of the cost of certain sanitary sewer improvement projects. Candidate projects would include the repair or replacement of failing sanitary service laterals and the installation of new sanitary service connections to SD1 sewer mains. Approved residential property owners may be eligible to receive grants of up to $5,000 towards such projects, depending on their income level. Routine operation and maintenance projects such as root-cutting or cleaning are not included in this program. Per the Consent Decree, this program will expire in April 2012.

D. **Eligibility:**

1. Financing - Property owners that cooperate in the timely repair of the lateral or elimination of the illegal connections are eligible for financing.
2. Grant Program – Residential property owners with incomes at or below the low income level as established by the U.S. Department of Housing and Urban Development (HUD) are eligible to apply for funding through this program. Proof of income documentation must be included with the project application.

V. Cost-Share Program for Defective Private Lateral Repairs and Removal of Illegal Connections Outside of Public Roadway

A. **Purpose:** To encourage property owners to voluntarily repair private systems that are located in priority areas determined by SD1 to have excessive amounts of I/I. Section III of this policy shall govern how the repairs are properly performed.

B. **Cost Share:** This policy allows SD1 to reimburse property owners 50% of the costs to properly remove the I/I, with a total contribution of $2,500 per property.

C. **Eligibility:** The property must be found to have excessive amounts of I/I as determined by SD1 and be located within one of the areas depicted in red on the attached map (attachment A). It must also be determined by SD1 that removal of I/I on the property will further compliance with SD1's Consent Decree.

D. **Duration:** The program was approved to be permanent June 21, 2011 with no renewal required by SD1's Board of Directors. SD1 will provide the Board with monthly updates on outcomes and benefits of the program.

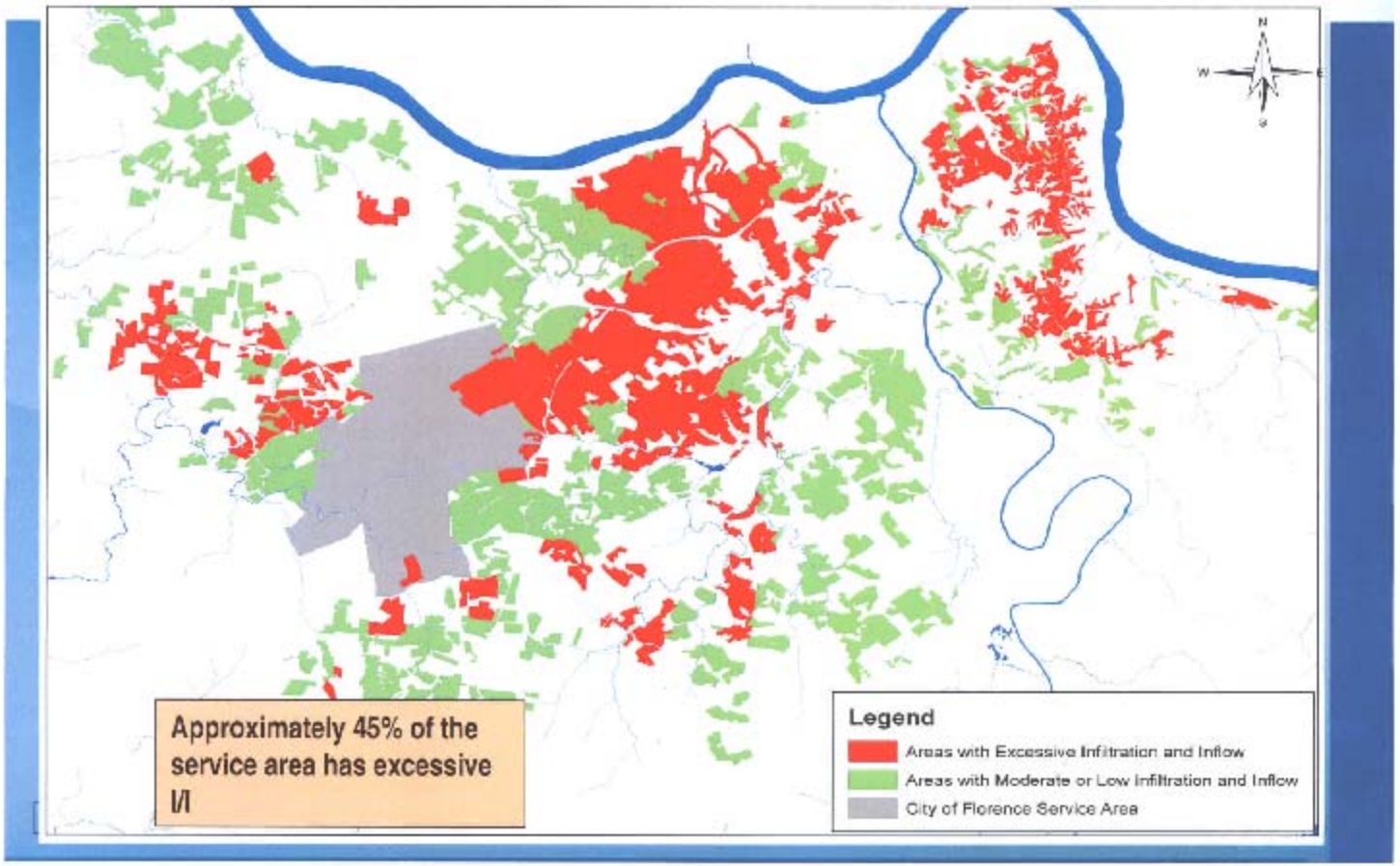
VI. History/Revision Dates:

Board Approval: November 13, 2000
March 5, 2001
July 29, 2004
March 25, 2008
August 19, 2008

October 13, 2008
September 15, 2009
December 15, 2009
June 15, 2010
March 22, 2011
June 21, 2011

Attachment A

Areas with Excessive I/I



[1] PRIVATE SEWER LATERAL AND ILLEGAL CONNECTION ENFORCEMENT AUTHORITY

KRS 220.322(1)(a). The board may adopt rules requiring owners of property to disconnect storm water inflows to sanitary sewers maintained and operated by the district and not operated as a combined sewer, or to connections with these sewers.
KRS 220.322(2). Any inflow required to be disconnected under a rule adopted pursuant to this chapter shall constitute a nuisance subject to injunctive relief and abatement.
KRS 220.322(4). The board shall require in its rules regarding disconnections, reconnections, or relocations of sewers the reimbursement of moneys expended. This shall be done by the district assessing a charge to the property owner for immediate payment or payments in installment with interest as determined by the board not to exceed 10%.
KRS 220.322(4). Charges for disconnections, reconnections, or relocations of sewers not paid when due may cause the board of directors to compel payment in the manner authorized in this chapter and the rules and regulations of the district.
KRS 220.510. "In case of failure of any user to pay for services rendered, the board may compel payment and may enjoin further use until the payment is made, or it may institute an action in any court having jurisdiction …or the board may, by notice in writing, signed by the chairman or any member of said board, notify the [entity] which furnishes water to the user's premises, to shut off the water service to said premises, until such time as all delinquent charges, plus a reasonable charge for turning off the water service, against said user, are paid in full."

The Sanitary Rules and Regulations outline SD1's procedures for inspection and rehabilitation of private sewer laterals and the appeals and enforcement processes.
Article 3, Section 302.1. "No person shall discharge or cause to be discharged, either directly or indirectly, to the sanitary sewer system, surface water, groundwater, roof runoff, subsoil drains or subsurface drainage."
Article 3, Section 302.2. "Any such connections made … shall be considered illegal and shall be subject to immediate removal by the owner of the premises so connected and at such owner's expense."
Article 3, Section 302.3. "Should the owner of such an illegally connected premises fail to remove the illegal connection within 90 days of being notified by the General Manager to do so, the General Manager may cause the connection to be removed and the cost thereof to be billed to the owner of the premises."
Article 7, Section 701.2.B. "No person or public corporation shall make direct connection of roof downspouts, exterior or interior foundation drains, area drains or other sources of surface runoff or groundwater directly to a public sanitary sewer. Upon discovery of such improper sources, SD1 may notify the property owner to remove any improper connection within 30 days of notification and return the public sewer and associated appurtenances to a satisfactory condition."

General Enforcement Authority
KRS 220.320. Authorizes the board to recover by civil action from any person or public corporation violating the regulations a penalty of $100 to $1,000 for each offense, plus costs. The Board may enforce by mandamus or otherwise all necessary and authorized regulations made by them, and may remove any improper construction or close any connections made improperly or in violation of the regulations.
Article 9, Section 901.4. "The General Manager and other employees of SD1 shall have the authority to serve notices of violation of these Rules and Regulations. The General Manager shall be responsible for the enforcement of these Rules and Regulations and shall have authority to issue orders and impose penalties as authorized therein, …and shall have any other powers or authority necessary and proper for the enforcement and the achievement of the goals of these Rules and Regulations."
Article 10, Section 1001.1.A. If any person or public corporation is found to be violating any provision of these Rules and Regulations, the General Manager may:
(1) Enforce these regulations by mandamus or otherwise;
(2) Remove any improper construction or close any connections made improperly or in violation of these regulations;
(3) Revoke any permit issued pursuant to these regulations;
(4) Recover by civil action from any person or public corporation violating any regulation, a sum of not less than $100 nor more than $5,000 for each offense, together with costs.

Administrative Enforcement Remedies

Pursuant to Article 10, Section 1001.2.A of the Rules and Regulations, SD1 may invoke the following remedies:

(1) Notice of Violation (NOV)
(2) Administrative Orders such as:
    - Cease and Desist Orders
    - Show Cause Orders
(3) Administrative Fines
    - General Manager may assess a penalty of up to $1,000 per day for each violation of SD1's Rules and Regulations

Judicial Enforcement Remedies

Judicial remedies may be sought pursuant to Article 10, Section 1001.2.B in the following situations: (1) when notices of violation and administrative orders have proven ineffective in returning the violating user to compliance; (2) when emergency situations require injunctive relief to halt or prevent discharges which threaten human health or the environment or interfere with the treatment system or (3) to impose civil penalties and recover losses incurred due to noncompliance. All judicial administrative remedies will be sought at the discretion of the General Manager. The available remedies include:

(1) Injunctive Relief - where an administrative order does not achieve compliance;
(2) Cost Recovery - to recover the cost associated with noncompliant acts of a user;
(3) Civil Penalties - $1,000 per violation for individuals and $5,000 per violation for corporations; and
(4) Termination of Wastewater Treatment Service – the General Manager may terminate or cause to be terminated wastewater treatment system service to any premise if a violation is found to exist.

APPENDIX H:

FY 2012 Organizational Charts

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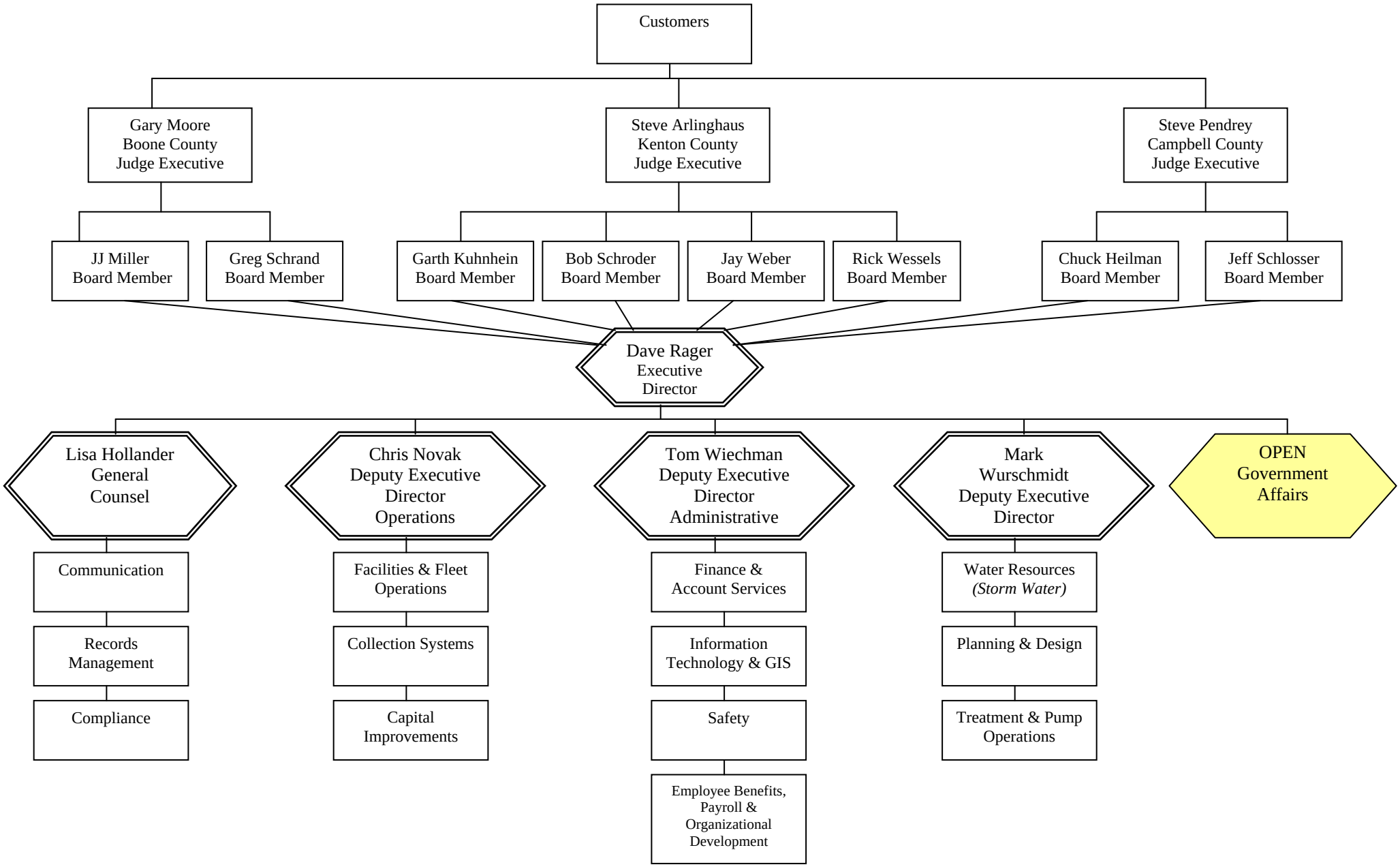
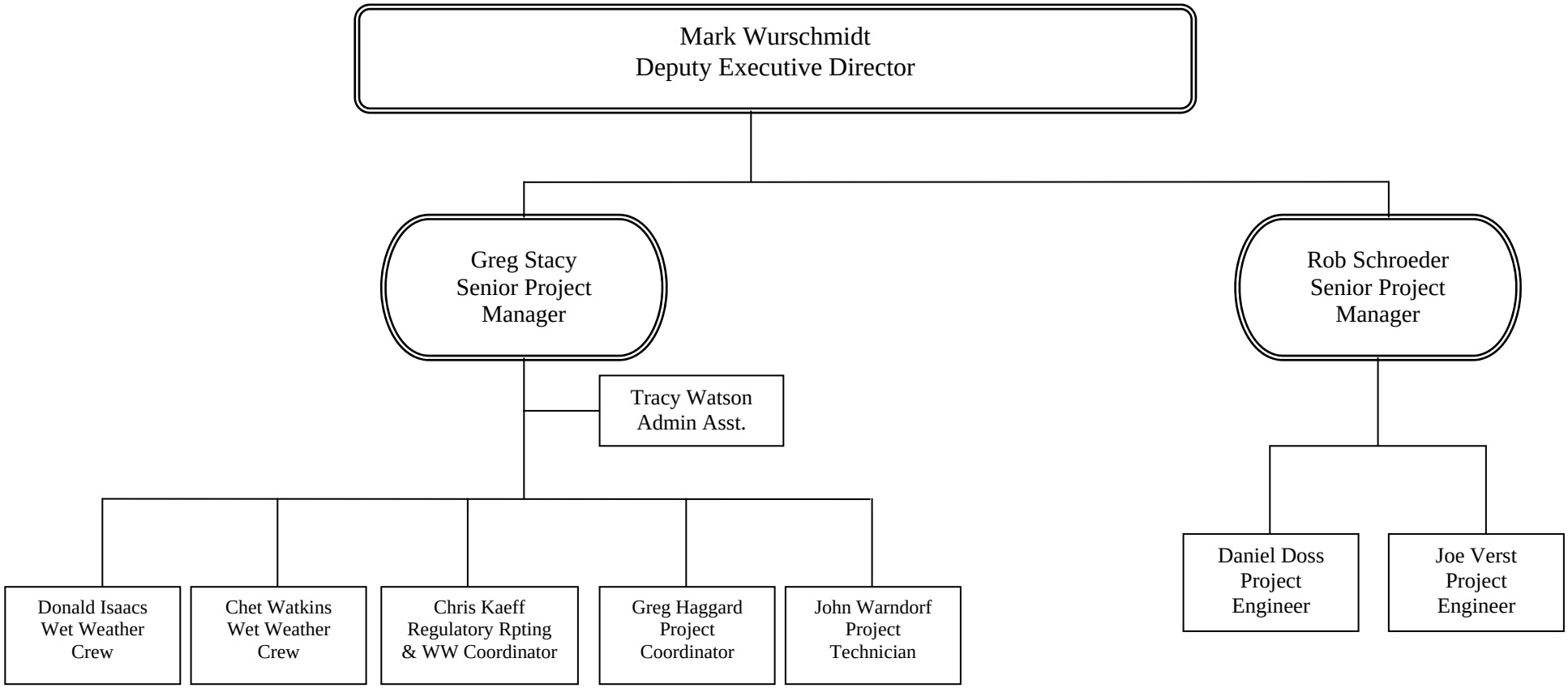
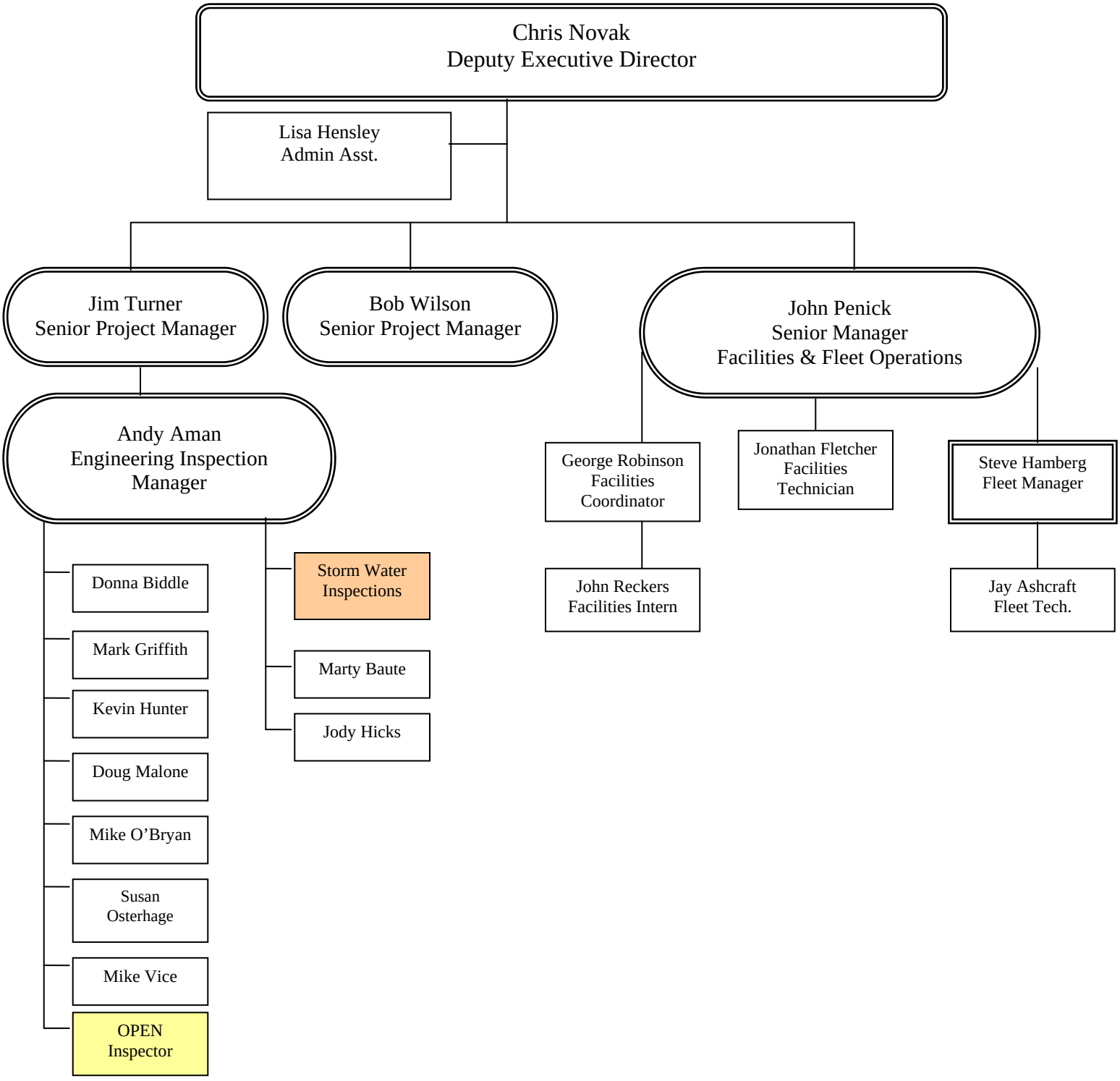
SD1
Overall Structure & Direct Report to Executive Director



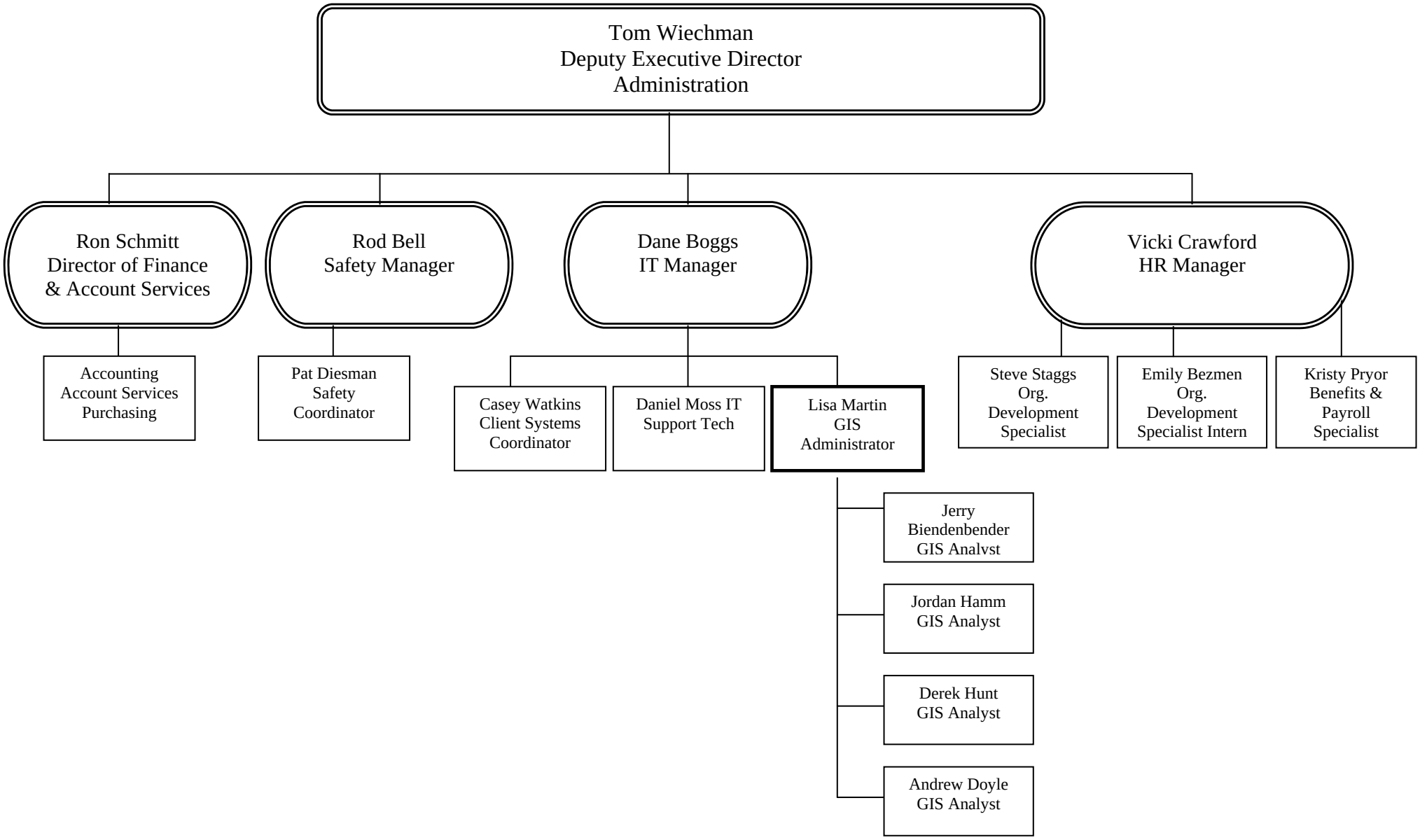
SD1
Engineering
Planning & Design
Department 5



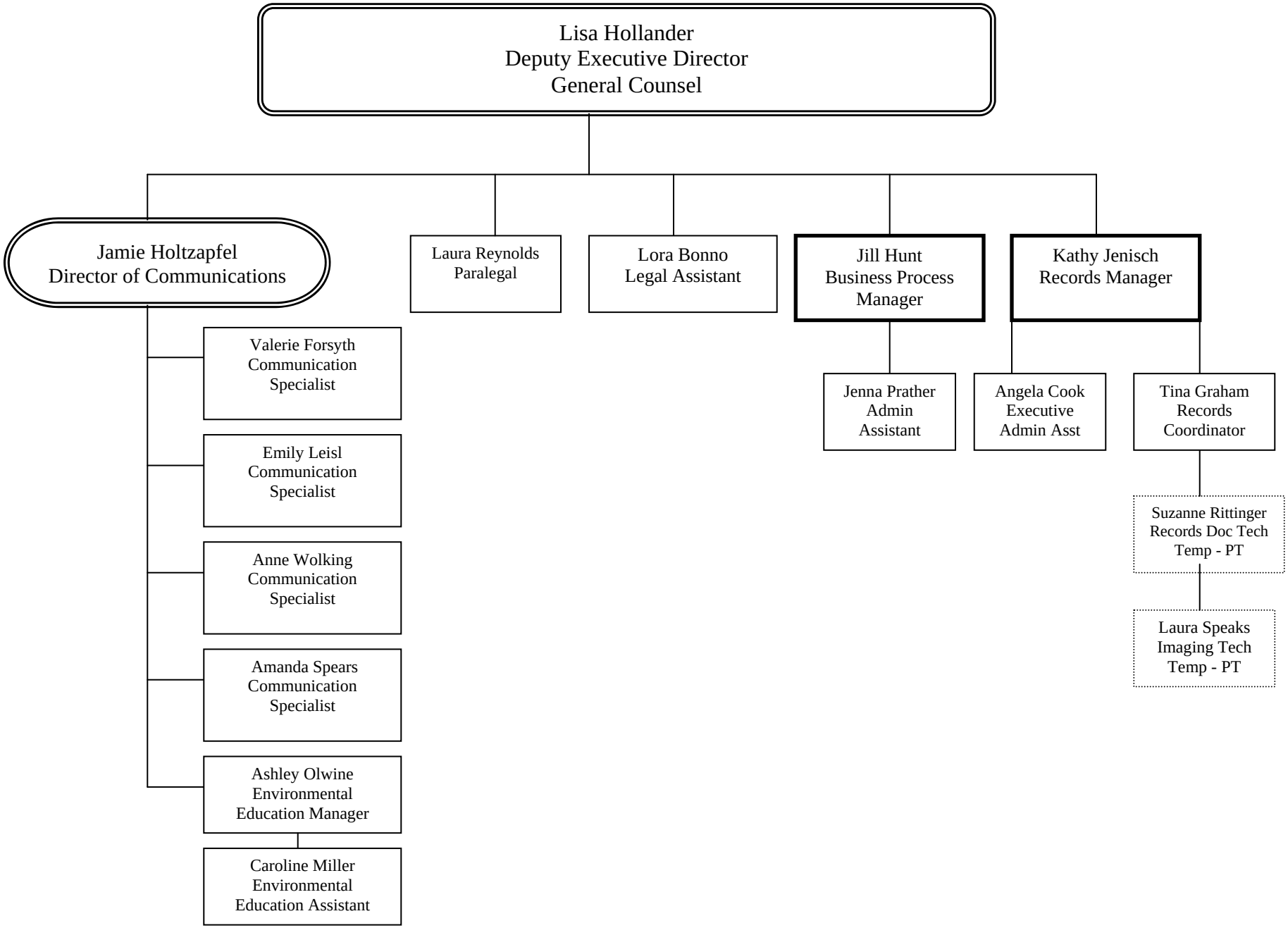
SD1
Engineering
Capital Improvements
Department 5



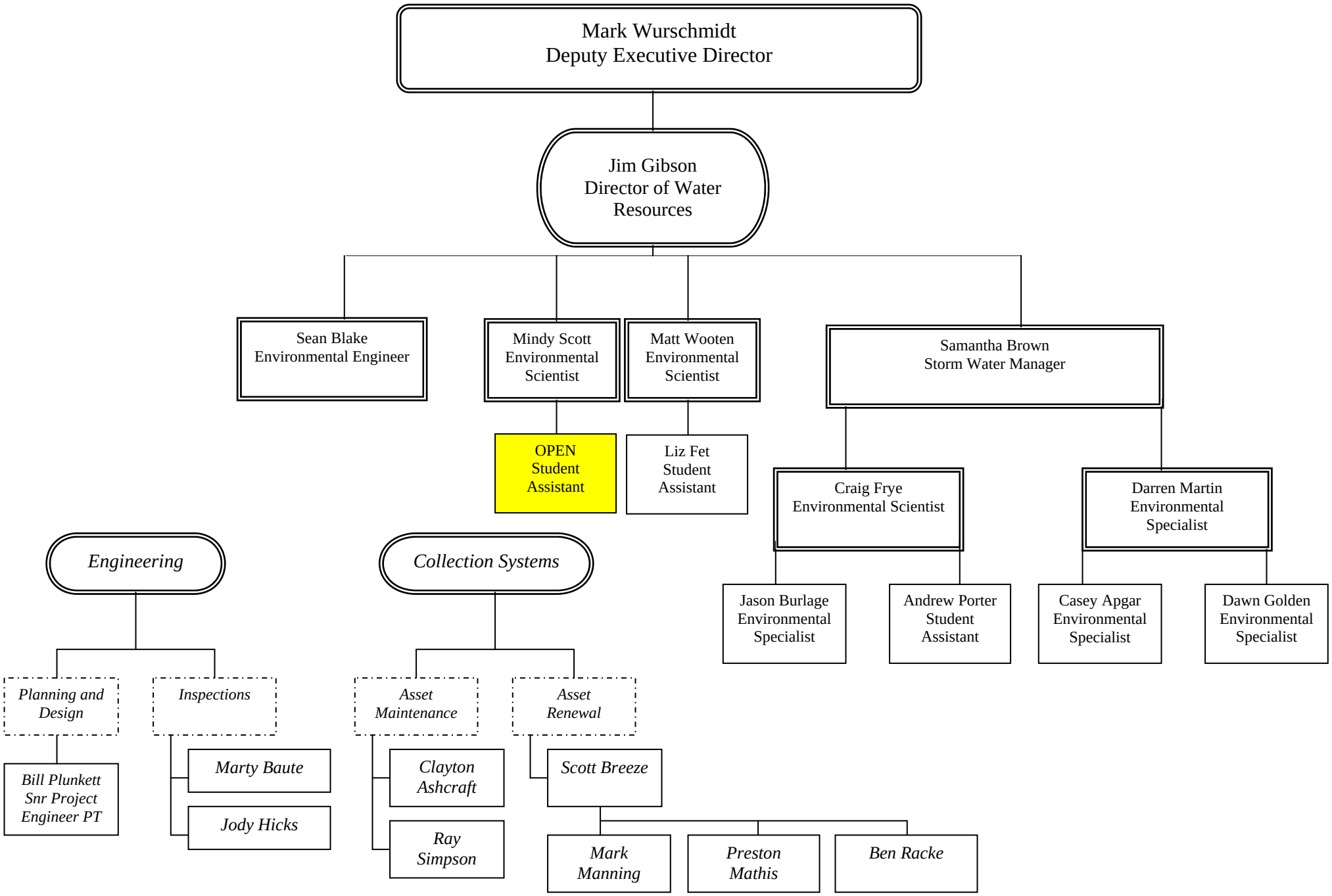
SD1
Administration
Department 3



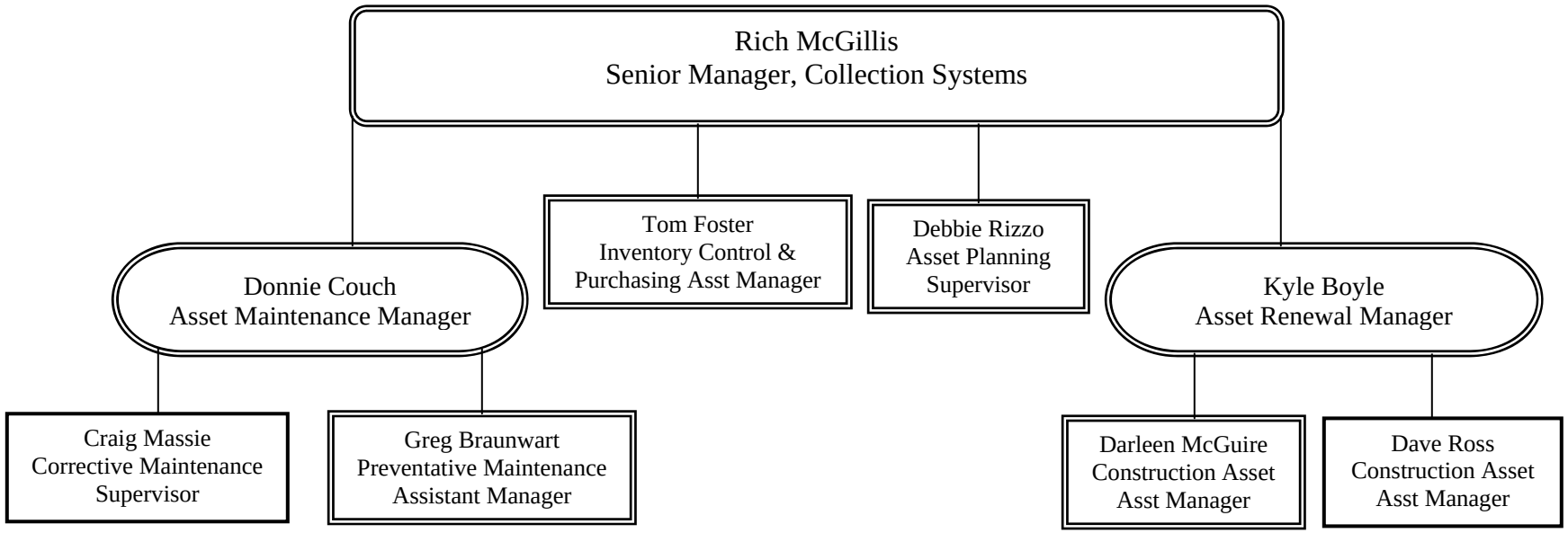
SD1
Administration- Legal
Department 3



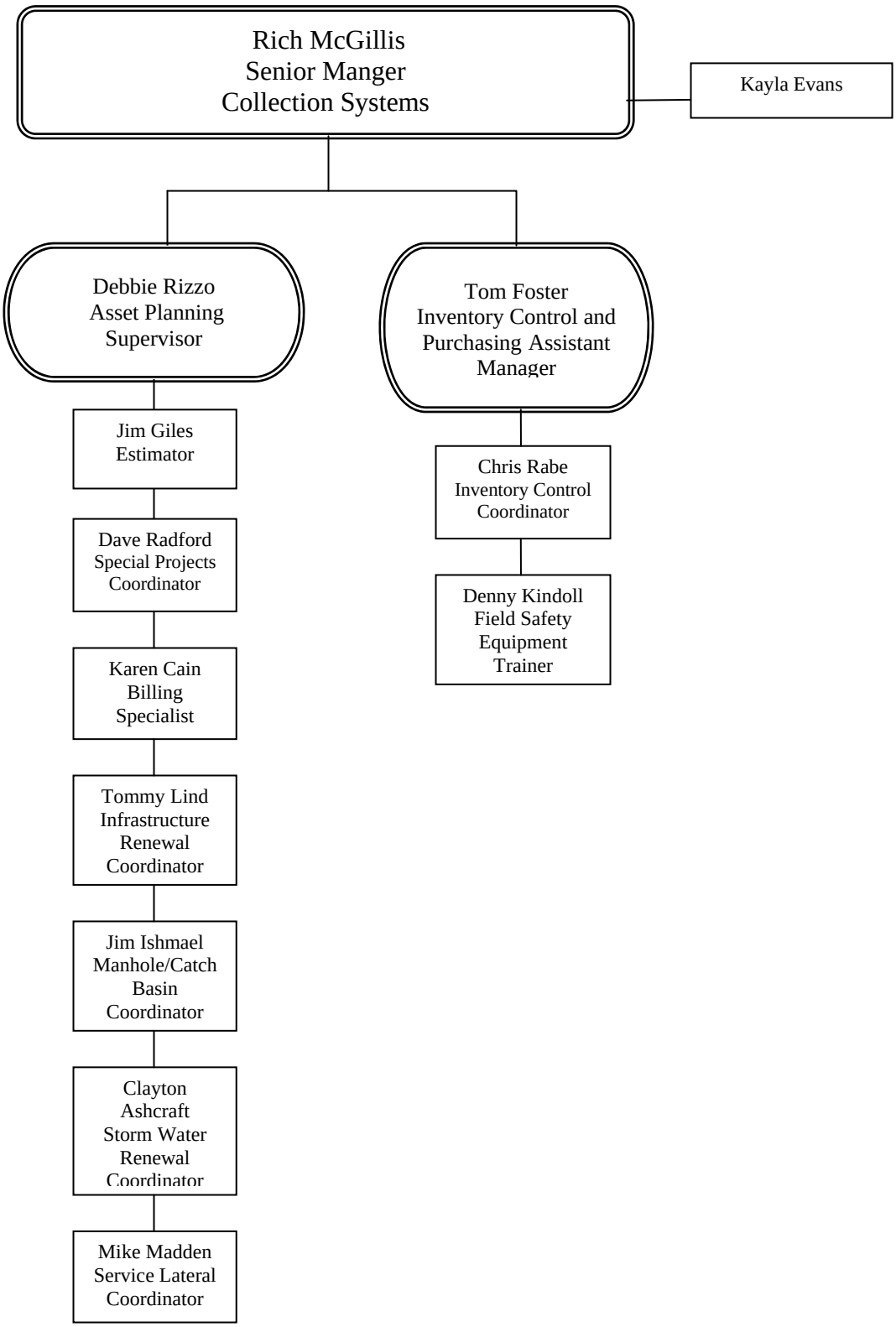
SD1
Water Resources
(Storm Water)
Department 6



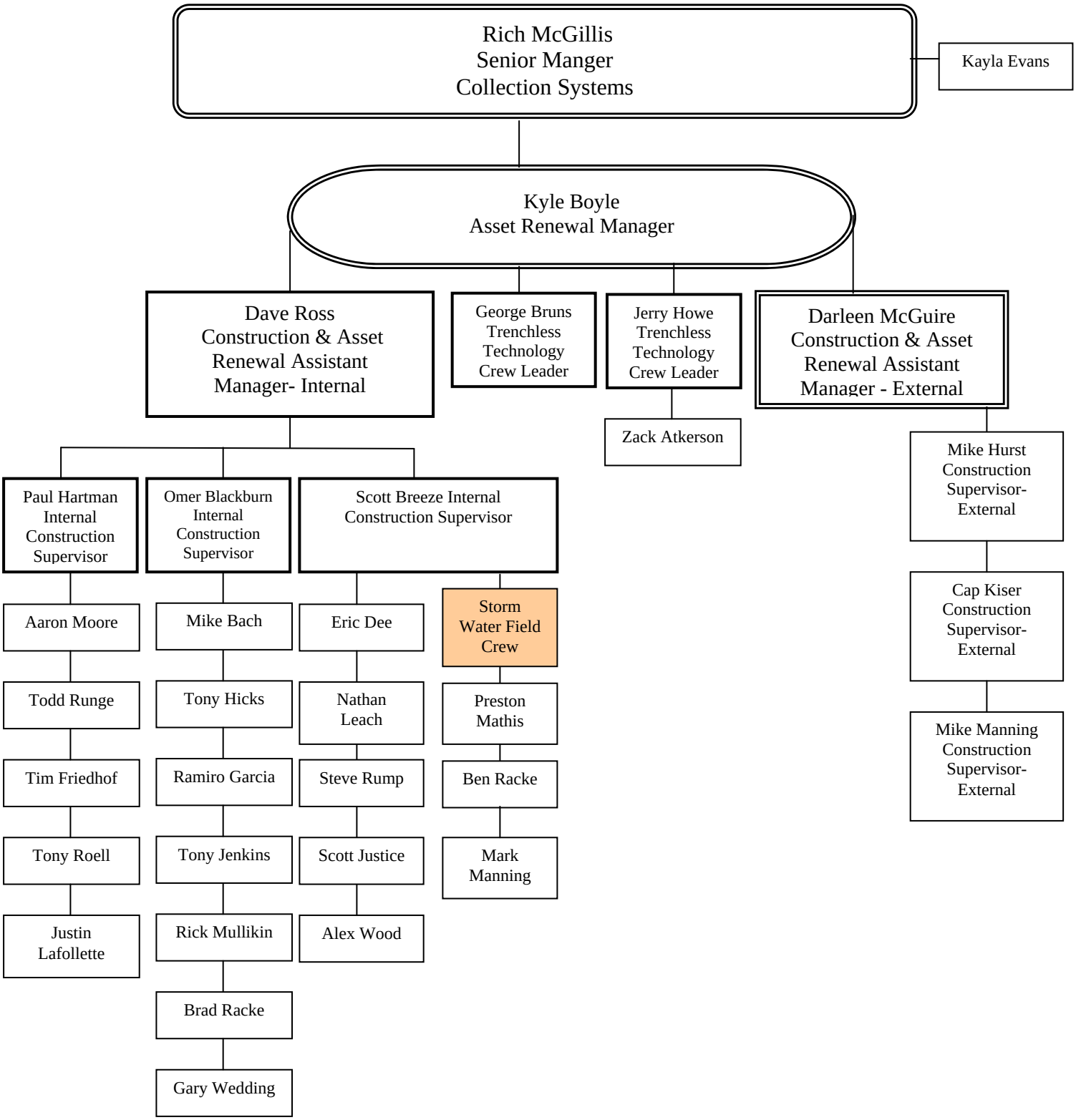
SD1
Collection Systems - Management Team



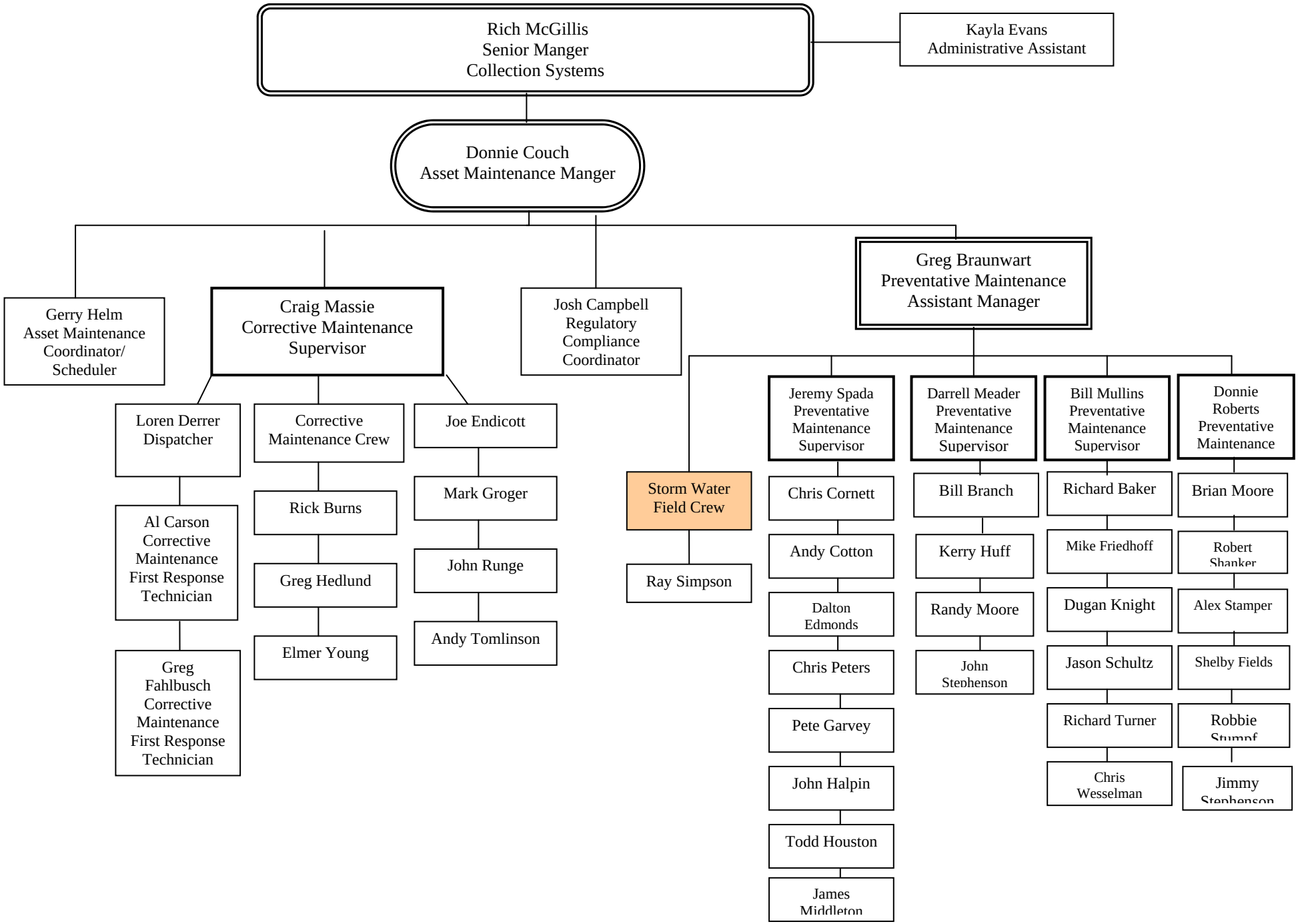
SD1
Asset Planning and Inventory
Department 2



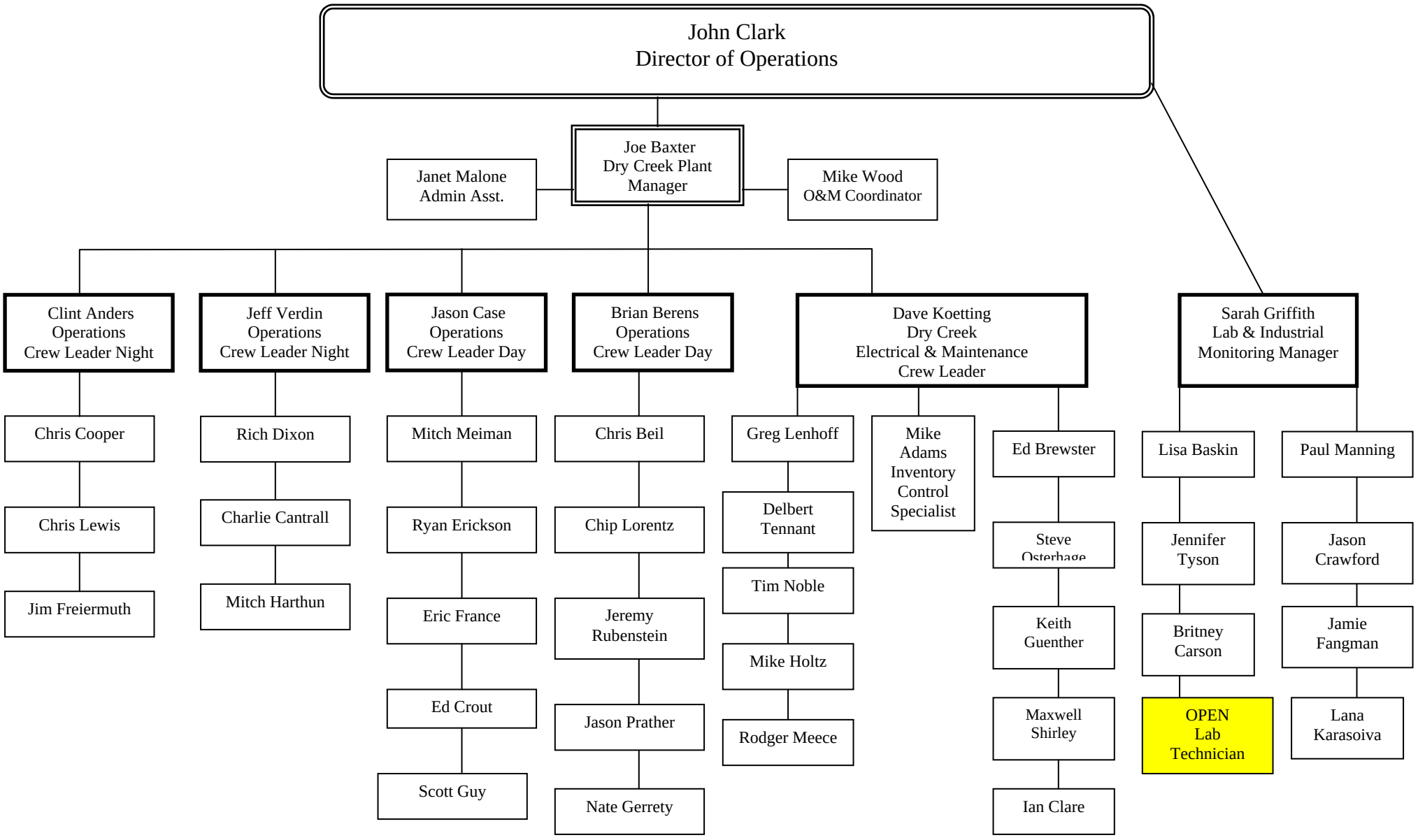
SD1
Asset Renewal
Department 2



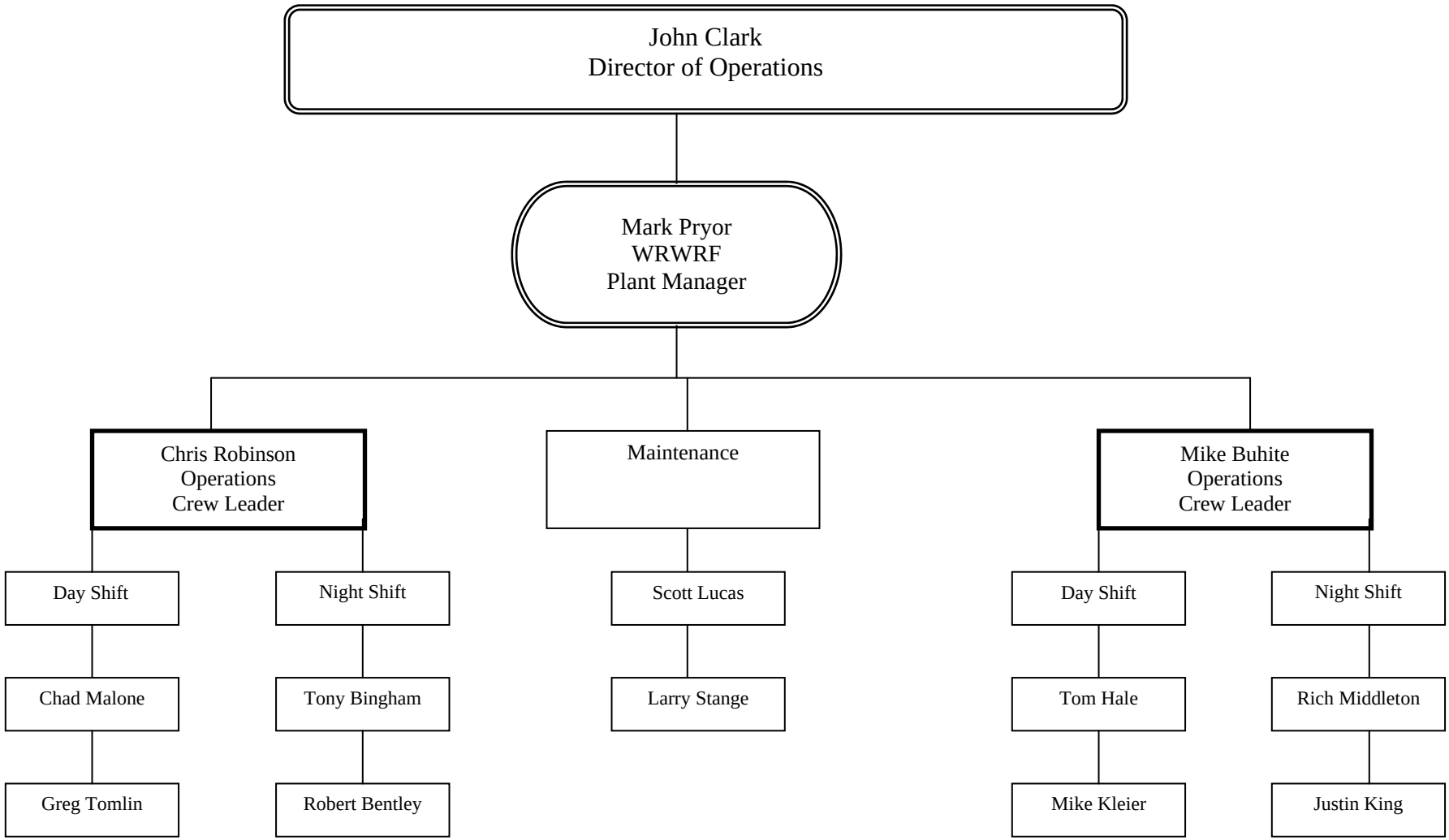
SD1
Asset Maintenance
Department 2



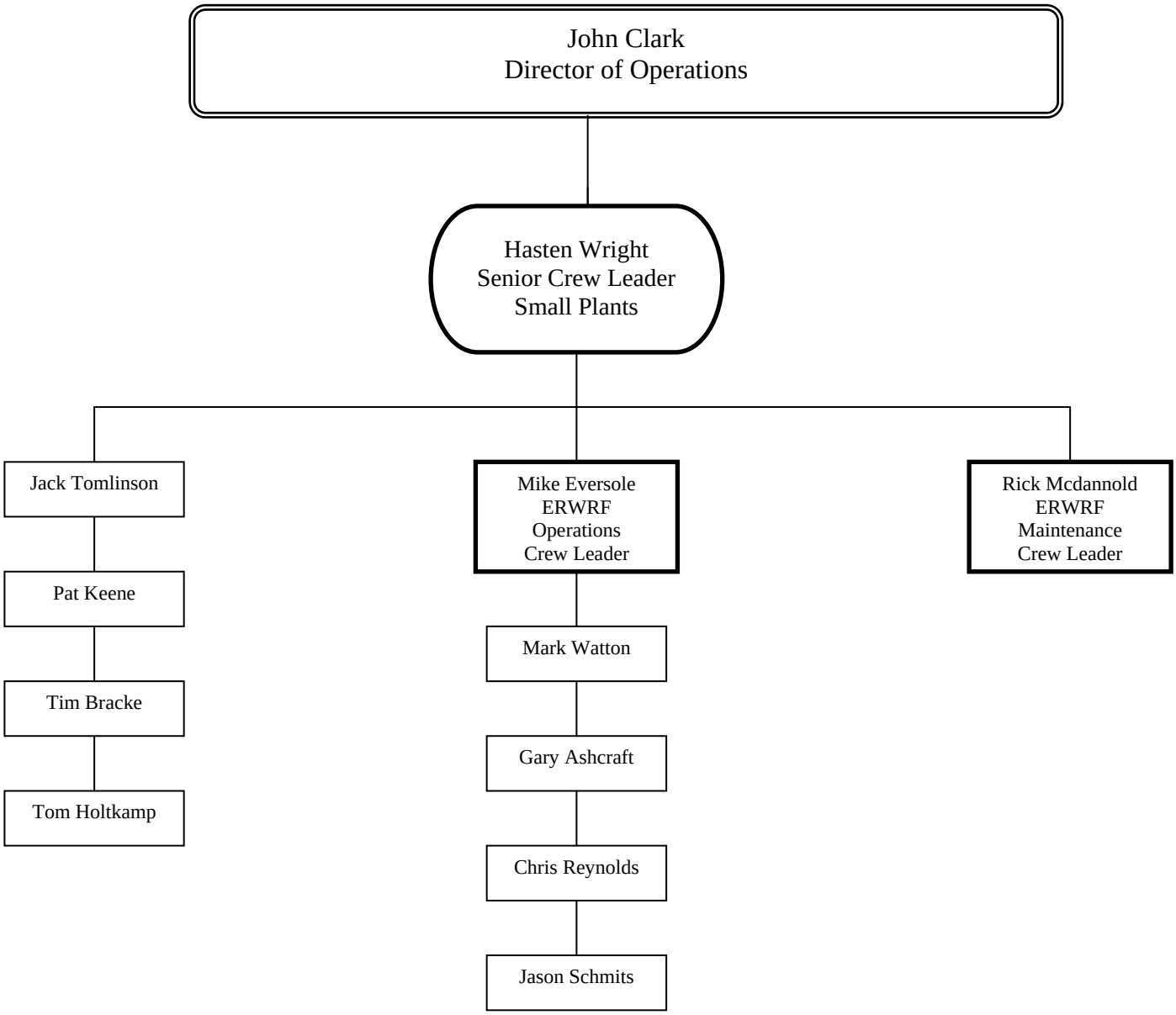
SD1
Dry Creek
Operations and Maintenance
Department 1



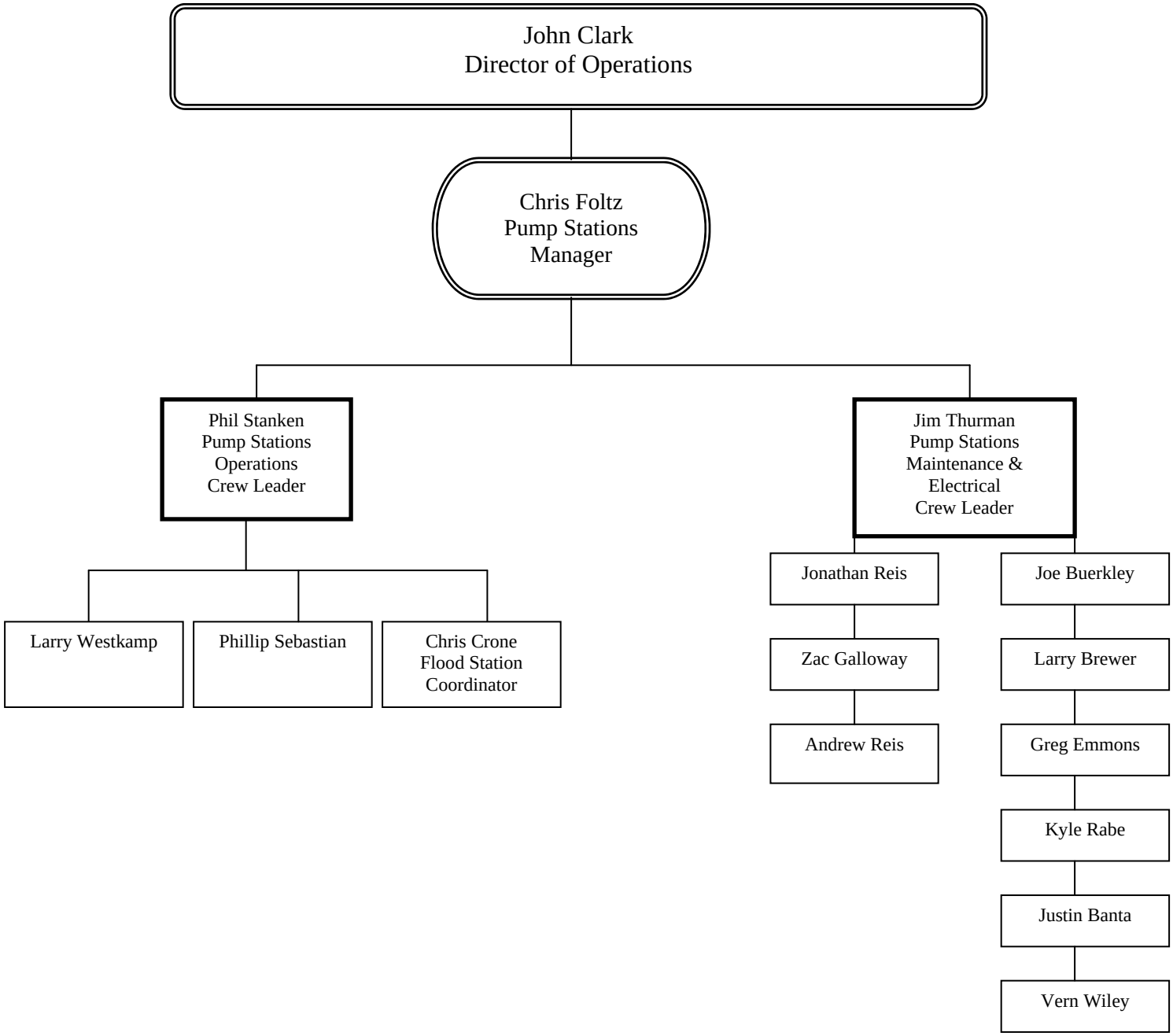
SD1
Western Regional
Department 9



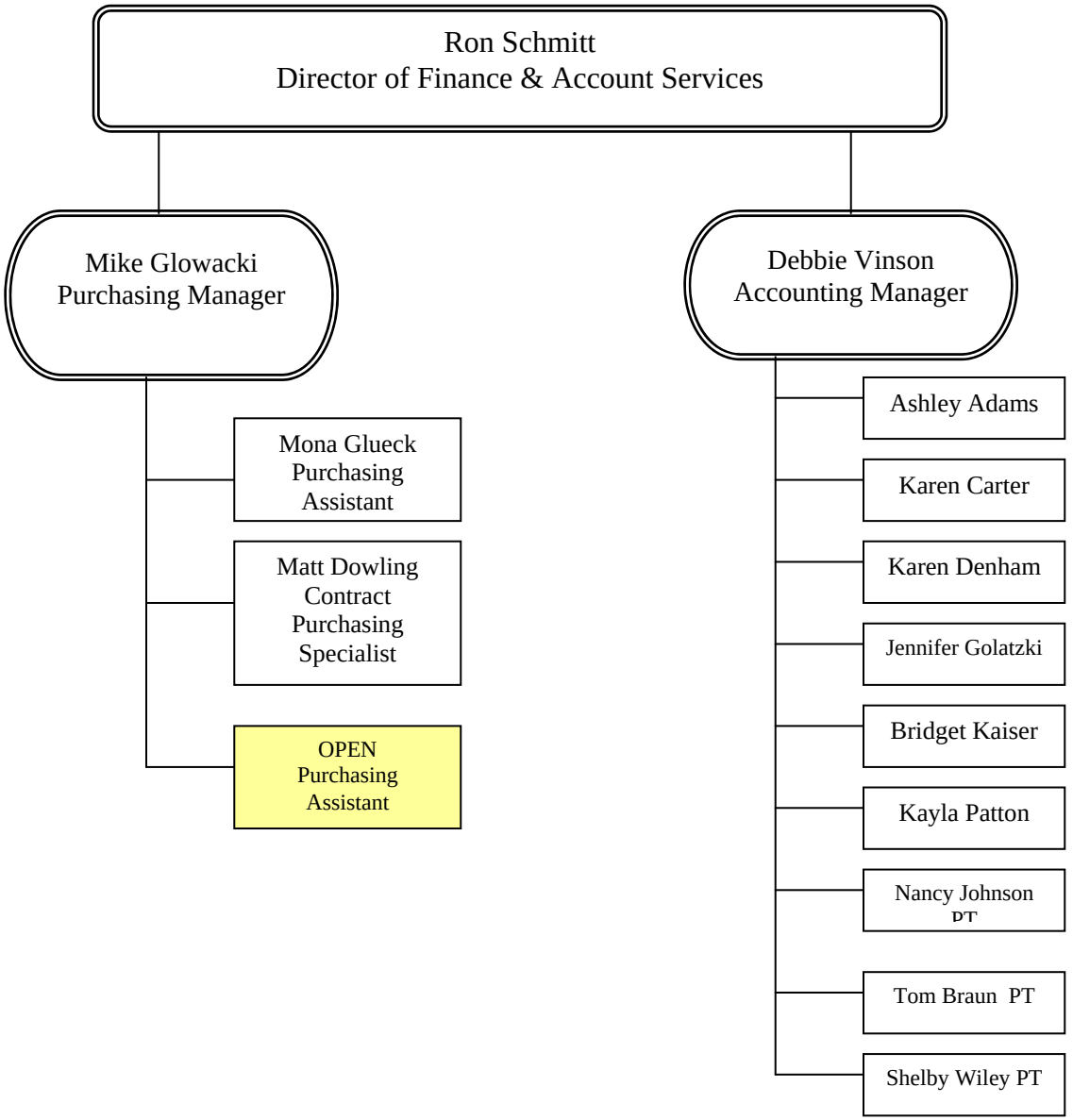
SD1
Eastern Regional & Small Plants
Department 8



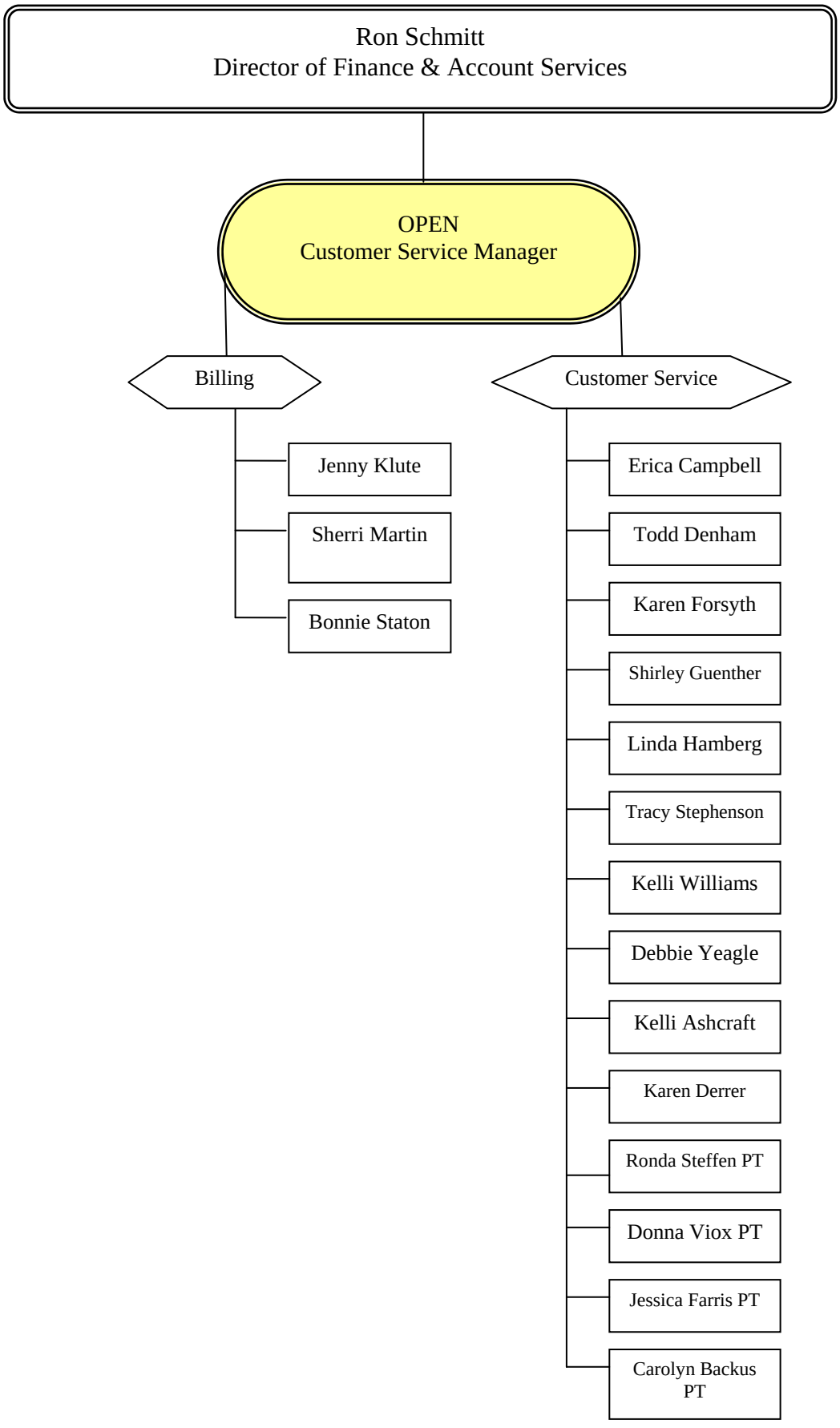
SD1
Pump Stations
Department 7



SD1
Finance and Purchasing
Department 3



SD1
Account Services
Department 3



APPENDIX I:

FY 2012 Safety Training Catalog

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SD1

Fiscal Year 2012
Safety Training Schedule and Calendar of Events

Introduction

In order to ensure the overall health and safety of each SD1 employee and to satisfy the requirements of SD1, the training described and assigned in this document has been chosen based on job hazard analyses performed as required by OSHA Standards Parts 1910 (General Industry) and 1926 (Construction Industry) as adapted and promulgated by Kentucky Revised Statute Chapter 338

This document is intended to be used as a planning tool as well as a source of information for individual employees to ensure that each are aware of the safety training expectations held by SD1 concerning various positions, job descriptions, and certification requirements.

This calendar includes, but is not limited to:

- Courses offered
- Course elements
- Class Dates
- Class duration and size limits
- Descriptions of job categories that have required safety training
- SD1 Instructors and Subject Matter Experts

SD1 Instructors/Subject Matter Experts

Chris Beil
- Hazard Communication

Rod Bell
- Electrical Safety
- Hazard Communication
- Permit Required Confined Space Entry Rescue
- Traffic
- Forklift
- Office Safety
- Contract Employer Responsibilities
- Fire Safety Emergency Action Planning
- Swift Water Awareness
- Scaffolding and Ladders / Powered Platforms
- Hazardous Waste Operations and Emergency Response: Operations Level
- Excavation / Trenching Safety

Brian Berens
- First Aid
- Hazard Communication
- Swift Water Awareness
- Permit Required Confined Space Entry Rescue

Scott Breeze
- Excavation / Trenching Safety

George Bruns
- Permit Required Confined Space Entry Rescue
- Fire Safety Emergency Action Planning

Josh Campbell
- Fire Safety Emergency Action Planning

Donnie Couch
- First Aid
- Permit Required Confined Space Entry Rescue
- Fire Safety Emergency Action Planning

Jason Crawford
- Hazard Communication

Pat Diesman
- First Aid
- Electrical Safety
- Hazard Communication
- Permit Required Confined Space Entry Rescue
- Traffic
- Forklift
- Office Safety
- Contract Employer Responsibilities
- Fire Safety Emergency Action Planning
- Swift Water Awareness
- Scaffolding and Ladders / Powered Platforms
- Excavation / Trenching Safety

Chris Foltz
- Electrical Safety

John Halpin
- First Aid
- Traffic

Donald Isaacs
- Permit Required Confined Space Entry Rescue

Dennis Kindoll
- Traffic
- Forklift
- Excavation / Trenching Safety

Dugan Knight
- Forklift

(open)
- Hazard Communication

Brian Moore
- Fire Safety Emergency Action Planning

Steve Osterhage
- Electrical Safety

Donnie Roberts
- Permit Required Confined Space Entry Rescue

Vern Wiley
- Hazard Communication
- Swift Water Awareness
- Permit Required Confined Space Entry Rescue
- Scaffolding and Ladders / Powered Platforms

Notes

- Supervisors will be required to independently complete online NIMS Training Courses 100 and 700;
- The following training/tests are administered at the St. Elizabeth Business Health Center and are scheduled on an as-needed and/or when-required basis. These events are for designated employees with occupational exposure:
    - Pulmonary Function Test, Respirator Fit Testing/Training, and Audiometric Testing/Training;
    - Department of Transportation Random Drug and Alcohol Screening;
    - Department of Transportation Physical Certification;
    - Department of Transportation Reasonable Suspicion Drug and Alcohol Screening;
    - Other Medical Screening as required.
- The training schedule for the Sanitation District No.1 Emergency Response Team (SD1ERT) is subject to the schedule(s) of the Northern Kentucky Technical Rescue Team, the Northern Kentucky Hazardous Materials Response Team, and the Greater Cincinnati Hazardous Materials Response Team. Because 2011 training schedules for these organizations have not yet been released, the SD1ERT schedule will be announced on a later date.
- The following classes (and any other additional classes) are not listed. However, as much advance notice as possible will be given:
    - WINNs Grant Training – Gateway Community College
    - OSHA 10 hour Construction and General Industry Safety Standards for Designated Subject Matter Experts

Calendar Color Legend

Red Text = SD1 General
Blue Text = SD1 General Make-Up
Green Text = ERT and other Specialized Training for Designated Employees based upon Job Hazard Analysis

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Safety Department Mission Statement

The Sanitation District Safety Department believes in an employee based, proactive safety program. Our belief is that our safety initiative should be based on the following principles: Responsibility, Accountability, Involvement, and Employee Ownership at all levels.

Our goal is to provide the Sanitation District with technical support and services that are related to compliance at all levels: Safety, Health, and our Environmental Responsibilities.

We are responsible and accountable for the well being of our employees, our communities, and the equipment to which we work with. We promote a work environment that is safe and free from all known and recognized hazards.

We based our program on a management philosophy that our employees are our most valuable assets.

Our goal is to provide our employees the necessary leadership for compliance training, education, equipment, and administrative support with service.

All incidents and accidents are preventable

July 2011
(FY 2012)

Safe Driving:

July 11th – July 15th

Make-up: July 27th

- **Elements**
  - Vehicle Housekeeping
  - Accident Prevention: Signs & Tags
  - Removal From Service - Lockout /Tag Out
- **Duration:** 4.0 hours
- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Operations (Designated Operators)
    - Maintenance (Designated Operators)
    - Field Technical Services
      - Operations (Designated Operators)
      - Maintenance (Designated Operators)
  - **Collection System – Department 2**
    - Customer Service (Designated Operators)
    - Construction (Designated Operators)
  - **Administration – Department 3**
    - Safety (Designated Operators)
    - Facilities (Designated Operators)
  - **Engineering**
    - Flow Monitoring (Designated Operators)
    - Inspectors (Designated Operators)
    - Storm Water - Illicit Discharge (Designated Operators)
- **Maximum Class Size: 30**

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 (Independence Day)	5	6	7	8	9
10	11 Safe Driving 4.0 hr.	12 Safe Driving 4.0 hr.	13 Safe Driving 4.0 hr.	14 Safe Driving 4.0 hr.	15 Safe Driving 4.0 hr.	16
17	18	19 Safety Committee Meeting	20	21	22	23
24	25	26	27 Safe Driving 4.0 hr. (make-up)	28	29	30
31						

August 2011
(FY 2012)

Swift Water Awareness:

August 26th

- **Elements**
  - Understanding Hazards
  - Accident Prevention: Signs & Tags
  - Locations Found
  - Working Around
  - Rescue
  - Throw Ropes
  - Life Rings
  - Personal Flotation Devices
  - Personal Protective Equipment

- **Duration:** 4.0 hours

- **Required:** annually

- **Employees required to attend:**
  - **Administration – Department 3**
    - Facilities
  - **Engineering – Department 5**
    - Flow Monitoring
    - Storm Water - Illicit Discharge
  - **SD1 Emergency Response Team**

- **Maximum Class Size: 25**

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16 Safety Committee Meeting	17	18	19	20
21	22	23	24	25	26 Swift Water Awareness 4.0 hr.	27
28	29	30	31			

September 2011
(FY 2012)

Forklift:

September 12th through June 16th

Make-up: September 27th and September 29th

Forklift (Powered Industrial Trucks),

- **Elements**
  - Authorized operators
  - Types
  - Capacities
  - Loading
  - Traveling
  - Attachments
  - Pre-use inspection
  - Roll over / Tip over
  - Safety operating areas
  - Removal From Service - Lockout /Tag Out

- **Duration 4.0 hrs.**
  - 4.0 hr – Powered Industrial Lift Trucks

- **Required:** semi-annually

- **Employees required to attend:**
  - **Dry Creek WWTP**
    - Operations
    - Maintenance
    - Any other Designated Employees from Operations & Maintenance
  - **Collection System**
    - Customer Service (Designated Operators)
    - Construction (Designated Operators)
  - **Field Technical Services**
    - Operations
    - Maintenance

- **Maximum Class Size: 20**

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5 (Labor Day)	6	7	8	9	10
11	12 Forklift 4.0 hr.	13 Forklift 4.0 hr.	14 Forklift 4.0 hr.	15 Forklift 4.0 hr.	16 Forklift 4.0 hr.	17
18	19	20 Safety Committee Meeting	21	22	23	24
25	26	27 Forklift 4.0 hr. (make-up	28	29 Forklift 4.0 hr. (make-up	30	

October 2011
(FY 2012)

Fire Safety:

October 10th through October 14th

Make-up October 26th and October 28th

- **Elements**
  - Portable Fire Extinguishers
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Emergency action plan – Egress - Exit
  - Employee alarm systems
  - Fire detection systems
  - Emergency action and notification plan
  - National Incident Management System
  - Emergency communication
  - Fire prevention
  - Flammable and combustible storage

- **Duration:** 2 hours

- **Required:** annually

- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1 - All**
  - **Collection System – Department 2 - All**
  - **Administration – Department 3- All**
  - **Engineering – Department 5 - All**

- **Maximum Class Size: 50**

October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10 Fire Safety 2.0 hr.	11 Fire Safety 2.0 hr.	12 Fire Safety 2.0 hr.	13 Fire Safety 2.0 hr.	14 Fire Safety 2.0 hr.	15
16	17	18 Safety Committee Meeting	19	20	21	22
23	24	25	26 Fire Safety 2.0 hr. (make-up)	27	28 Fire Safety 2.0 hr. (make-up)	29
30	31					

November 2011
(FY 2012)

Excavation Safety:

November 7th through November 9th

Make-up: November 16th

- **Elements**
  - Trench and Shoring
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Call before you dig
  - Underground lines – Color Coding
  - Overhead lines
  - Rescue Notification Awareness
  - Public Safety
  - Housekeeping
  - Slips / Trips / Falls
  - Ladder Safety
  - Contract Employer Responsibilities
  - Some atmospheric monitoring
  - Traffic Control / Excavation Permit
  - Record Keeping
  - Hot Work Permit – Flammable / Spark Producing
  - Atmospheric Sampling – Confined Space
  - Cold Weather Training

- **Duration:** 6 hours

- **Required:** annually

- **Employees required to attend:**
  - **Collection System – Department 2**
    - Construction
  - **Engineering – Department 5**
    - Inspectors
    - Project Managers
  - **SD #1 Emergency Response Team (ERT)**

- **Maximum Class Size: 20**

November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7 Excavation Safety 6.0 hr.	8 Excavation Safety 6.0 hr.	9 Excavation Safety 6.0 hr.	10	11	12
13	14	15 Safety Committee Meeting	16 Excavation Safety 6.0 hr. (make-up)	17	18	19
20	21	22	23	24 (Thanksgiving)	25 (Day After Thanksgiving)	26
27	28	29	30			

December 2011
(FY 2012)

Hazardous Waste Operations:
December 13th and December 15th
Make-up: December 21st

- **Elements**
  - Chemical Protective Clothing & Levels of Protection
  - Chemical Profiling (MSDS)
  - Air Monitoring (AMI) Overview
  - Spill Control and Containment (SPCC)
  - Emergency Response Guide (current edition)
  - NIOSH
  - CAMEO

- **Duration:** 4 hours

- **Required:** annually

- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Maintenance
    - Operations
    - Industrial Monitoring
    - Certified Pesticide Applicators
    - Field Technical Services
      - Operations
      - Certified Pesticide Applicators
  - **Administration – Department 3**
    - Facilities
      - Certified Pesticide Applicators
  - **Engineering – Department 5**
    - Stormwater – Illicit Discharge
  - **Optional:** SD1 Emergency Response Team Members

- **Maximum Class Size: 20**

December

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
				1	**2**	**3**
4	**5**	**6**	**7**	**8**	**9**	**10**
11	**12**	**13** **Hazardous Waste Operations 4.0 hr.**	**14**	**15** **Hazardous Waste Operations 4.0 hr.**	**16**	**17**
18	**19**	**20** **Safety Committee Meeting**	**21** **Hazardous Waste Operations 4.0 hr. (make-up)**	**22**	**23** (Christmas Eve)	**24**
25	**26** (Christmas Day)	**27**	**28**	**29**	**30**	**31**

January 2012

CPR/AED/Bloodborne Pathogens:
January 9th through 13th
Make-up: January 24th, through 26th

First Aid:
(TBD)

CPR/AED/Bloodborne Pathogens

- **Elements**
  - Adult CPR with AED
  - Bloodborne Pathogens
  - Personal Protective Equipment
  - Myclyns Wound Sanitizer
- **Duration**: 6 hours
- **Required:** annually
- **Employees required to attend:**
  Any employee who is one of the following:
  - Confined Space Entry Qualified
  - Electricians
  - Emergency Response Team
  - Emergency Action Plan (EAP) Designated First Responders (plant and office)

Maximum class size: 20

First Aid

- **Elements**
  - Adult First Aid
  - Bloodborne Pathogens
  - Personal Protective Equipment
- **Duration:** 2 hours
- **Required:** every 3 years, offered annually
- **Employees required to attend:**
  Any employee who is one of the following:
  - Confined Space Entry Qualified
  - Electricians
  - Emergency Response Team
  - Emergency Action Plan (EAP) Designated First Responders (plant and office)
- **Maximum class size:** 40

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	**2** (New Years Day - 2012)	**3**	**4**	**5**	**6**	**7**
8	**9** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**10** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**11** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**12** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**13** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**14**
15	**16** ***(MLK Jr. Day?)***	**17** **Safety Committee Meeting**	**18**	**19**	**20**	**21**
22	**23**	**24** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**25** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**26** **CPR/AED/BBP 6.0 hr.** **First Aid 2.0 hr.**	**27**	**28**
29	**30**	**31**				

February 2012

Traffic Control - Update :

February 13th through 17th

Make-up: February 28th and March 1st

Traffic Control :

- **Elements**
  - Traffic control / Excavation Permit
  - Record Keeping
  - Flagging
  - Signaling
  - Hot Weather Training
  - Work Zone Setup
  - Signs
  - Accident Prevention: Signs & Tags
  - Changing Conditions
  - Short-term v/s Long-term
  - Speed Classification
  - Personal Protective Equipment (employees to bring equipment for audit)

- **Duration**
  - 8.0 hrs. for regular class (even numbered years)
  - 4.0 hrs. for update class (odd numbered years)

- **Required:** Semi-annually

- **Employees required to attend:**

  Any employee who is one of the following:
  - Dry Creek – Designated Personnel
  - Electricians
  - Collection Systems Construction and Customer Service
  - Flow Monitoring
  - Engineering Inspectors
  - Emergency Response Team
  - Inmate supervisors

- **Maximum Class Size: 40**

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13 Traffic Control	14 Traffic Control	15 Traffic Control	16 Traffic Control	17 Traffic Control	18
19	20	21 Safety Committee Meeting	22	23	24	25
26	27	28 Traffic Control 8.0 hr. (Make-up)	29	Traffic Control 8.0 hr. (Make-up)		

March 2012

Lockout – Tagout: March 12th through 16th
Make-up: March 27th and March 29th

Electrical Safety: March 12th through 16th
Make-up: March 27th and March 29th

Lockout – Tagout

- **Elements**
  - Lockout / Tagout Program
  - Housekeeping
  - Personal Protective Equipment
- **Duration:** 1.0 hr.
- **Required:** annually
- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Operations
    - Maintenance
    - Small Plants
    - Eastern Regional WRF
    - Field Technical Services
      - Operations
      - Maintenance
  - **Collection System – Department 2**
    - Customer Service
    - Construction
- **Maximum Class Size: 40**

Electrical Safety

- **Elements**
  - Assured Grounding
  - Arc Flash NFPA 70E (overview)
  - Housekeeping
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Lockout / Tagout (overview)
- **Duration:** 3.0 hrs.
- **Required:** annually
- **Arc Flash Personal Protective Equipment: Attendees to bring arc flash PPE for Demonstration/audit purposes**
- **Employees required to attend:**
  Any employee who is one of the following:
  - Electricians and Maintenance personnel. Also Operations personnel who completed electronics or electrical components training (WINNS grant training at Gateway Community College)
- **Maximum Class Size: 30**

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Traffic Control 8.0 hr. (Make-up)	2	3
4	5	6	7	8	9	10
11	12 Lockout-Tagout 1.0 hr. Electrical Safety 3.0 hr.	13 Lockout-Tagout 1.0 hr. Electrical Safety 3.0 hr.	14 Lockout-Tagout 1.0 hr. Electrical Safety 3.0 hr.	15 Lockout-Tagout 1.0 hr. Electrical Safety 3.0 hr.	16 Lockout-Tagout 1.0 hr. Electrical Safety 3.0 hr.	17
18	19	20 Safety Committee Meeting	21	22	23	24
25	26	27 Lockout-Tagout 1.0 hr. (make-up) Electrical Safety 3.0 hr. (make-up)	28	29 Lockout-Tagout 1.0 hr. (make-up) Electrical Safety 3.0 hr. (make-up)	30	31

April 2012

Hazard Communication: April 9th through April 13th
Make-up: April 24th and 26th

Lab Safety: April 9th through April 13th
Make-up: April 24th and 26th

Hazard Communication

- **Elements**
  - Damming and Dykes
  - Safe Handling of Hazardous Chemicals
  - Accident prevention/housekeeping
  - Material Safety Data Sheets / Locations
  - Temporary Use Containers
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Housekeeping
  - Storage of Flammable and Combustible Liquids
  - Spill Prevention Control & Countermeasures & Storm Water Pollution Prevention Plan Kit Locations
  - Understanding National Fire Protection Association Hazard Recognition Labels

- **Duration:** 2.0 hrs.

- **Required:** annually

- **Employees required to attend:**
  Any employee who is one of the following:
  - **Dry Creek WWTP – Department 1**
    - Operations, Maintenance, Lab / Industrial Monitoring, Small Plants
    - Eastern Regional WRF
    - Field Technical Services – Operations and Maintenance
  - **Collection System – Department 2**
    - Customer Service
    - Construction
  - **Administration – Department 3**
    - Safety and Facilities
  - **Engineering – Department 5**
    - Flow Monitoring

- **Maximum Class Size: 40**

Lab Safety

- **Elements**
  - Safe Handling of Hazardous Chemicals
  - Accident prevention
  - Material Safety Data Sheets / Locations
  - Temporary Use Containers
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Housekeeping
  - Storage of Flammable and Combustible Liquids
  - Understanding National Fire Protection Association Hazard Recognition Labels
- **Duration:** 1.0 hrs.

- **Required:** annually

- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Lab / Industrial Monitoring
- **Maximum Class Size: 20**

April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9 Hazard Communication 2.0 hr. Lab Safety 1.0 hr.	10 Hazard Communication 2.0 hr. Lab Safety 1.0 hr.	11 Hazard Communication 2.0 hr. Lab Safety 1.0 hr.	12 Hazard Communication 2.0 hr. Lab Safety 1.0 hr.	13 Hazard Communication 2.0 hr. Lab Safety 1.0 hr.	14
15	16	17 Safety Committee Meeting	18	19	20	21
22	23	24 Hazard Communication 2.0 hr. (make-up) Lab Safety 1.0 hr. (make-up)	25	26 Hazard Communication 2.0 hr. (make-up) Lab Safety 1.0 hr. (make-up)	27	28
29	30					

May 2012

Confined Space Entry and Rescue:
May 7th through May 11th
Make-up: May 22nd and May 24th

- **Elements**
  - Confined space – permit required Program
  - Fall protection / fall prevention
  - iTX atmospheric monitoring
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Lock-out / Tag-out
  - Hazard Communication
  - Entry Equipment - Simulator
  - Communication
  - Rescue/SKED
  - Permit Required Confined Space Forms
  - Self Contained Breathing Apparatus /Supplied Air Respirator
  - Ventilation
  - Open Surface Tanks
  - Personal Protection
  - Entry/Dispatch
  - Hot Work Permit
  - Emergency Rescue Permit
  - Compressed Gasses
  - Housekeeping
  - Traffic Control / Flagger

- **Duration:** 8.0 hrs.

- **Required:** annually

- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Operations
    - Maintenance
    - Lab / Industrial Monitoring
    - Eastern Regional WRF
    - Field Technical Services
      - Operations
      - Maintenance
  - **Collection System – Department 2**
    - Customer Service
    - Construction
  - **Administration – Department 3**- Safety
  - **Engineering**
    - Flow Monitoring
    - Inspectors
    - Storm Water - Illicit Discharge

- **Maximum Class Size: 40**

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7 Confined Space Entry and Rescue 8.0 hr.	8 Confined Space Entry and Rescue 8.0 hr.	9 Confined Space Entry and Rescue 8.0 hr.	10 Confined Space Entry and Rescue 8.0 hr.	11 Confined Space Entry and Rescue 8.0 hr.	12
13	14	15 Safety Committee Meeting	16	17	18	19
20	21	22 Confined Space Entry and Rescue 8.0 hr. (make-up)	23	24 Confined Space Entry and Rescue 8.0 hr. (make-up)	25	26
27	28 *(Memorial Day?)*	29	30	31		

June 2012

Cranes, Hoists, and Rigging:

June 11th through 15th

Make-up: June 26th and June 28th

Scaffolding, Ladders, and Powered Platforms:

June 11th through 15th

Make-up: June 26th and June 28th

- **Elements**
  - Emergency Action Planning
  - Personal Protective Equipment
  - Accident Prevention: Signs & Tags
  - Contractor Safety
  - Hazardous Conditions
  - Wet Conditions
  - Carbon Monoxide
  - Dust
  - Confined Spaces
  - Guarding
  - Protective Guards
  - Inspection
  - Storage
  - Generators, transformers, and Rectifiers
  - Operating Controls and Switches
  - Cords and Plugs
  - Power Operated Hand Tools
  - Electric Tools Pneumatic Tools Liquid Fuel Tools Powder-Actuated Tools Hydraulic Power Tools
  - Portable Abrasive Wheel Tools

- **Duration:** 3.0 hrs.

- **Required:** semi-annually

- **Employees required to attend:**
  - **Dry Creek WWTP – Department 1**
    - Operations
    - Maintenance
    - Lab / Industrial Monitoring
    - Eastern Regional WRF
    - Field Technical Services
      - Operations
      - Maintenance
  - **Collection System – Department 2**
    - Customer Service
    - Construction
  - **Administration – Department 3**
    - Safety
    - Facilities
  - **Engineering - Department 5**
    - Flow Monitoring
    - Inspectors

- **Maximum Class Size: 40**

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11 Cranes . . . 4.0 hr. Scaffolds . . . 3.0 hrs.	12 Cranes . . . 4.0 hr. Scaffolds . . . 3.0 hrs.	13 Cranes . . . 4.0 hr. Scaffolds . . . 3.0 hrs.	14 Cranes . . . 4.0 hr. Scaffolds . . . 3.0 hrs.	15 Cranes . . . 4.0 hr. Scaffolds . . . 3.0 hrs.	16
17	18	19 Safety Committee Meeting	20	21	22	23
24	25	26 Cranes. . .(make-up) 4.0 hr. Scaffolds..(make-up) 3.0 hrs.	27	28 Cranes. . .(make-up) 4.0 hr. Scaffolds..(make-up) 3.0 hrs.	29	30

APPENDIX J:

Grease Control Program Updates and FOG Management Policy

Grease Control Program: Phased Implementation Tasks

Cateogry	Task	Status/Activity
Grease Control Phase 1 Tasks / Completed January 2008 - January 2009		
Conduct Self Assessment	SD1 will acquire a list of FSEs within the service area that are permitted by the Kentucky Health Department. This will aid in determining the magnitude of FSEs that have the potential to discharge FOG to the SSS. This information will also help establish mailing addresses and points of contact for the FSEs.	**Complete**
	Field crew personnel currently determine when collection system problems are caused by FOG during a trouble call. This process will be evaluated to determine if the causes of trouble calls are being classified accurately.	**Complete**
	Field crew personnel enter trouble call evaluations into GBA. The process of entering information into GBA will be evaluated to ensure data is accurate, accessible and manageable.	**Complete**
	SD1 currently uses a geographical information mapping system called Arc Viewer. One of the primary functions of Arc Viewer is to show the locations of sanitary sewer lines in the service area. This system will be evaluated to find possible mapping capabilities for areas with FOG problems within the collection system.	**Complete**
Review Rules and Regulation / Enforcement Response Plan	A review of the SD1's Rules and Regulations and ERP is being conducted. This review will identify any deficiencies in the legal authority to control the discharge of grease into the SSS. It will also identify deficiencies in the enforcement program. If found, the deficiencies will indicate revisions to be made in Phase 2 of this program.	**Complete**
Design Criteria	SD1 will review the effectiveness of other publicly owned treatment works (POTWs) Rules and Regulations and ERPs (i.e. Cincinnati MSD, Louisville MSD, and Knoxville Utilities Board). This will provide insight into what is working for utilities in the surrounding area.	**Complete**
	SD1will seek the development of design criteria for grease reduction device standards by the Kentucky Division of Plumbing, Kentucky Health Department and Kentucky Environmental and Public Protection Cabinet.	**Complete**

Grease Control Program: Phased Implementation Tasks

Cateogry	Task	Status/Activity
Grease Control Phase 1 Tasks (Continued) / Completed January 2008 - January 2009		
FSE Education	Over the last year, SD1has created and distributed BMP posters to be displayed in permitted FSEs and will continue to distribute such posters. The FSEs are required to display these posters in areas where there is potential for FOG to be discharged to the SSS.	**Complete**
	SD1will create and send out BMP brochures to all FSEs. The brochure will focus on the harmful effects of FOG in sewer lines and proper grease handling techniques used to minimize the release of FOG into the collection system. These brochures can also be distributed during site visits.	**Complete**
	SD1will begin researching a compliance assistance workshop for FSEs. An evaluation of other FOG workshops will be conducted to determine content and effectiveness. This workshop will provide FSEs with a comprehensive overview of the Grease Control Program. The workshop will be initiated when all specifics of the program have been established.	**Complete**
FSE Education	SD1has met with members of the Kentucky Restaurant Association (KRA) and the Northern Kentucky Restaurant Association (NKRA) to open channels of communication with key stakeholders. SD1will continue to work to educate these key stakeholders. Their participation and cooperation is valuable. We will encourage the KRA and NKRA to include grease control program information in their newsletters.	**Complete**
Public Education	Over the last year, SD1has created and distributed door hangers to inform customers when there has been a blockage or obstruction due to FOG in their area. These informational pieces focus on the harmful effects of FOG in sewer lines and proper grease handling techniques used to minimize the release of FOG into the collection system. SD1will continue to distribute door hangers and letters to customers in areas impacted by FOG related overflows.	**Complete**
	SD1will create and send out additional bill inserts to all customers within the service area. The bill stuffers will spotlight the harmful effects of FOG in sewer lines and proper grease handling techniques used to minimize the release of FOG into the collection system.	**Complete**
	SD1will research the “Trap the Grease Program.” This program involves supplying residences with a container for grease rather than pouring it down the drain.	**Complete**

Grease Control Program: Phased Implementation Tasks

Cateogry	Task	Status/Activity
Grease Control Phase 2 Tasks / Completed January 2009 - January 2010		
Conduct Self Assessment	GBA will be modified and field crew personnel will be trained to ensure data is entered accurately and that the data is accessible and manageable.	**Complete**
	SD1will create a list of collection system areas experiencing problems with FOG in the sanitary sewers. This list will be created using the information established in GBA in Phase 1.	**Complete**
	SD1will create a list of FSEs that may be contributing to FOG problem areas. This list will be created using information provided from the Kentucky Health Department in Phase 1.	**Complete**
Revise Rules and Regulation / Enforcement Response Plan	If necessary, SD1will begin drafting revisions to the District's Rules and Regulations and ERP to ensure proper legal authority and enforcement.	**Complete**
Design Criteria	SD1will continue to coordinate with the Kentucky Division of Plumbing, Kentucky Health Department and Kentucky Environmental and Public Protection Cabinet on the development of design criteria for grease reduction device standards.	**Complete**
FSE Education	SD1will continue developing the compliance assistance workshop for FSEs and will maintain the distribution of the BMP posters to permitted FSEs.	**Complete**
	SD1will distribute letters and other informational pieces to residential customers in areas impacted by FOG related overflows. These pieces will be evaluated and updated as needed on a regular basis.	**Complete**
Develop Inspection Protocol	SD1will begin developing an inspection protocol for plumbing plans, installation and final inspection. This will ensure the proper installation of appropriate grease control devices.	**Complete**
	Inspection frequency and inspection report forms will be developed to determine if the FSE is in compliance with the Grease Control Program.	**Complete**
Modify Food Service Discharge Permit	SD1 will revise the Food Service Discharge Permit to ensure the permit coincides with changes made to the Rules and Regulations and Emergency Response Plan. The permit will address grease control device management, operation and maintenance standards, onsite record keeping requirements, cleaning frequency, cleaning standards, additives and ultimate disposal.	**Complete**
	SD1 will evaluate and revise, if necessary, the Restraunt/Food Service Grease Questionnaire to ensure the proper information is supplied about grease handling procedures.	**Complete**

Grease Control Program: Phased Implementation Tasks

Cateogry	Task	Status/Activity
Grease Control Phase 3 Tasks / To be completed January 2010 - January 2011		
Revise Domestic Holding Tank Waste Hauler Manifest	SD1 will evaluate and revise, if necessary, the Domestic Holding Tank Waste Hauler Manifest to better monitor the method and disposal of grease.	**Complete**
Evaluate Staffing and Equipment Requirements	SD1 will evaluate staffing levels and employ additional personnel, if necessary, to ensure requirements of the FOG program are being met.	**Complete**
FSE Education	SD1 will continue developing the compliance assistance workshop for FSEs.	**Complete**
	SD1 will maintain the distribution of the BMP poster to permitted FSEs.	**On-going** - distributed during FSE inspections. Brochures and pamphlets are also distributed during monthly FSE compliance assistance workshops.
Approval for Rules and Regulations / Enforcement Response Plan	SD1 will read publicly the modifications to the Rules and Regulations on two separate occassions at SD1's board meetings. A public comment period will begin with the first reading. SD1 will then submit revisions to SD1's Board of Directors for approval, then to the Cabinet for approval.	**Complete**
Public Education	SD1 will expand the grease control section of its website. The expansion will contain additional information for th public, FSEs and sludge haulers. Documents and forms will be made available for viewing and printing.	**Complete**
	SD1 will distribute letters and other informational pieces to residential customers in areas impacted by FOG related overflows. These pieces will be evaluated and updated as needed on a regular basis.	**On-going** - distributed to residents in areas that experience overflows or in areas where inspection data reveal a grease problem.

Grease Control Program: Phased Implementation Tasks

Cateogry	Task	Status/Activity
Grease Control Phase 4 Tasks / To be completed January 2011 - January 2012		
Public Readings of Rules and Regulations/Enforcement Response Plan	SD1 will publicly read the modifications on two separate occasions at SD1 board meetings. The revisions will be published when Phase 4 is complete.	**Complete**
Evaluate Staffing and Equipment Needs	The Industrial Monitoring Department will be responsible for all the activities associated with the Grease Control Program, and will be provided with necessary equipment. If the workload becomes too great for the current staff, SD1 will employ and additional Industrial Monitoring Specialist to ensure requirements of the program are being met.	**Complete**
Performance Indicators	GBA will be used to determine the number of trouble calls due to grease, number of lines being PM's and the number of SSOs due to FOG.	**Complete**
	Linko FOG will be used to track permits, inspections, violations and correspondence on all permitted FSEs.	**Complete**
Permitting	All previously permitted FSEs will undergo a re-evaluation using the modifications to the Grease Control Program conducted in the previous phases.	**Complete**
	Any FSEs in new grease problem areas will be evaluated using the modifications in the previous phases.	**On-going** - any FSEs in new grease problem areas are evaluated using the modifications in the previous phase.
	All new FSEs will be evaluated using the modifications from the previous phases.	**On-going** - any new FSEs in will be evaluated using the modifications in the previous phase.
FSE/Public Education	SD1 will require all permitted FSEs to attend a compliance assitance workshop and will maintain the distribution of the BMP posters to permitted FSEs.	**On-going** - compliance workshop meetings are held on a monthly basis. FOG brochures and pamphlets are also distributed during monthly FSE compliance assistance workshops. BMP posters are provided during inspections.
	SD1 will distribute letters and other informational pieces to residential customers in areas impacted by FOG related overflows. These pieces will be evaluated and updated as needed on a regular basis.	**On-going** - letters will continue to go out to any residence that experiences a backup due to FOG or where an overflow has occurred due to a blockage of FOG.

Updated: January 30, 2012

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Fats, Oils & Grease (FOG) Management Policy

Purpose:

The purpose of this policy is to protect Sanitation District No. 1 (SD1) collection systems, pumping stations and treatment works from the discharge of excess fats, oil and grease (FOG) by ensuring that Food Service Establishments (FSE) are in compliance with the requirements of the SD1 Rules and Regulations, as well as commitments made by SD1 in the Capacity, Management, Operations and Maintenance (CMOM) Self-Assessment conducted under SD1 Consent Decree signed by SD1, the Environmental Protection Agency (EPA) Region 4 and the Kentucky Department of Environmental Protection (KDEP), in April 2007.

The accumulation of FOG in the collection system causes blockages which may lead to Sanitary Sewer Overflows (SSO). SSOs can lead to the degradation of water quality in the receiving waterbody, adversely impact SD1 operations and cause violations of the Clean Water Act (CWA) and/or the provisions contained in the Consent Decree. FOG blockages may also cause sewer back-ups into homes and businesses thereby causing property damage and the disruption of business activities.

Authority:

The intent of this policy is to authorize SD1 staff to establish clear design standards and/or procedures and/or guidelines to regulate FSE operations, as well as the disposition of FOG wastes pumped from FSE Grease Control Equipment (GCE) during routine maintenance. The authority for this policy is contained in SD1 Rules and Regulations. Enforcement actions taken under this policy will be in accordance with SD1 Enforcement Response Plan (ERP).

Pretreatment of Wastewater

FSEs shall install and maintain appropriately sized GCE in accordance with the provisions of this policy and its related design standards, guidelines and/or procedures. GCE shall be installed, operated, properly maintained and repaired at the sole expense of the FSE owner/operator.

Schedule for Compliance with the FOG Management Policy:

As users discharging to the SD1 sewer system, FSEs shall comply with all requirements of the SD1 Rules and Regulations.

FSEs discharging to the SD1 collection system are subject to the FOG Management Policy and related design standards and/or procedures and/or guidelines, as well as the SD1 ERP.
New construction of FSEs shall be in full compliance with the policy before commencing operations. New construction of FSEs shall have separate sanitary (restroom) and kitchen process lines. The kitchen process lines, including mop sinks, dishwashers and kitchen floor drains, shall be plumbed to appropriately sized GCE.

FSEs undergoing significant remodeling shall be in full compliance with the policy before recommencing operations after the remodeling work is completed.

FSEs in existence prior to the effective date of this policy may be allowed to continue current operations without significant modifications until such time as:

1. Significant remodeling is performed at the FSE facility, and/or

2. The facility's existing GCE is deemed to be of substandard size and/or design, and/or

3. The FSE is shown to be the cause of a FOG blockage in the SD1 collection system.

4. Any other reason deemed by SD1 as appropriate for significant modifications.

Existing FSEs found to be in noncompliance with this policy will be subject to the provisions of the ERP and shall be required to take immediate action pursuant to this policy and/or related procedures and/or guidelines.

SD1 or their designees will make the determination of whether a FSE has caused or contributed to a blockage in the collection system, as well as what actions will be required of the FSE to return to compliance.

FSEs Responsibilities:

1. GCE design and construction plans shall be submitted, reviewed and approved by SD1 Plan Review Department.

2. GCE shall meet the minimum requirements for GCE contained in SD1 Design Criteria

3. Waste and/or wastewater removed from FSE GCE shall be disposed of at a properly permitted facility that is authorized to accept such waste/wastewater in accordance with applicable federal, state and local laws and regulations. Waste/wastewater removed from GCE shall not be discharged to a private or public sewer unless permitted to accept said waste/wastewater.

4. FSEs shall not discharge FOG in amounts that contribute to a blockage in the collection system.

5. FSEs shall provide facilities and institute procedures in accordance with the SD1 FOG Management Policy and/or procedures and/or guidelines as are reasonably necessary to prevent or minimize the potential for accidental discharge of FOG into the sewage collection system. This includes implementation of "Best Management Practices (BMP)" protocols.

6. All FOG Permitted FSEs in SD1 jurisdiction shall have a SD1 Certified Grease Waste Hauler complete a GCE certification annually.

7. "Additives" shall be prohibited for use as grease management and control except as described in SD1 Fats, Oils & Grease Management Guidelines.

8. FSE facilities that permanently close for business shall completely pump out and clean all GIs on the premises and shall fill the GI with water. Pumping/cleaning of the GI prevents odors and deterioration of the GI from the weak acid FOG wastewater. Filling the out of service GI with water provides weight for the GI not to shift position, and provides a barrier from exposure to further deterioration.

SD1 Responsibilities:

1. SD1 staff will develop and maintain definitions, design criteria and/or procedures and/or guidelines that are consistent with this policy.

2. SD1may issue FOG permits to FSEs to control FOG discharges to the SD1 sewer system, prevent obstruction and interference to SD1 collection system, pump stations and/or treatment plants, as well as prevent sanitary sewer overflows. SD1 may establish FSE FOG permit classifications, or issue general FOG permits to FSEs.

3. SD1 may require that the FSE install monitoring equipment and/or additional GCE deemed necessary for compliance with this policy, and/or related design standards, procedures and/or guidelines and/or the SD1 Rules and Regulations.

4. SD1 and/or their authorized representatives may conduct inspections of FSEs for GCE installation and maintenance, review of best management practices, and to gather information regarding FOG discharge impacts.

5. SD1 and/or their authorized representative, has the right to enter the FSE's premises to determine impacts to the SD1 sewer system.

6. SD1 and/or their authorized representative may conduct monitoring of the effluent from FSE GCE for the purpose of determining compliance with this policy and/or related procedures and/or guidelines and/or SD1 Rules and Regulations and/or to assess a surcharge to the FSE.

7. SD1 may charge inspection, monitoring, assessment, impact and permit fees to FSEs to obtain reimbursement for FOG program costs.

8. SD1 will administer a Certified Hauler program that includes training for those entities that pump, transport and dispose of FOG- waste/wastewater from FSEs.

FSE GCE Haulers Responsibilities:

1. Haulers wishing to transport GCE waste to an approved SD1 facility must complete the Certified Hauler Program. These haulers shall:

    - Participate in certification classes conducted by SD1 in order to become a listed "Approved Hauler" by SD1.

    - At SD1's request, submit specific information regarding FSEs in a format specified by SD1.

DEFINITIONS

1. Additives: Include but are not limited to products that contain solvents, emulsifiers, surfactants, caustics, acids, enzymes and bacteria.

2. Certified Waste Hauler: Individuals or entities that have successfully completed the SD1 certification classes.

3. Significant Remodeling: Modifications made to an existing FSE sufficient to require issuance of a building permit or the temporary closure of the FSE for building renovation or as deemed needed by SD1.

4. Fats, Oils, & Grease (FOG): Organic polar compounds derived from animal and/or plant sources. FOG may be referred to as "grease" or "greases" in this section.

5. Food Service Establishment (FSE): Any establishment, business, facility or user engaged in preparing, serving or making food available for consumption. Single family residences are not a FSE. Under the discretion of SD1, FSEs will be classified as follows:

   Class 1: Day Care Facilities, Deli, Ice Cream shops, Coffee Shops, Beverage Bars – engaged in the sale of cold-cut and microwaved sandwiches/subs with no frying or grilling on site, defined by North American Industry Classification System (NAICS) 722213. SD1 reserves the right to add or subtract categories of the NAICS from this class at its discretion.

   Class 2: Limited-Service Restaurants - (i.e. Fast Food Facilities) as defined by NAICS 722211, Caterers as defined by NAICS 722320, Supermarkets and other Grocery (except Convenience) Stores that engage in the on-site preparation of food as defined by NAICS 445110 , both Convenience Stores and Gasoline Stations with Convenience Stores that engage in the on-site preparation of food as defined by NAICS 445120 and 447110, respectively, and Discount Department Stores that engage in the on-site preparation of food as defined by NAICS 452112. SD1 reserves the right to add or subtract categories of the NAICS from this class at its discretion.

   Class 3: Full Service Restaurants - as defined by NAICS 722110. SD1 reserves the right to add or subtract categories of the NAICS from this class at its discretion.

   Class 4: Buffet and Cafeteria Facilities - as defined by NAICS 72212. SD1 reserves the right to add or subtract categories of the NAICS from this class at its discretion.

   Class 5: Institutions (i.e. Schools, Hospitals, Prisons, etc) - as defined by NAICS 722310. SD1 reserves the right to add or subtract categories of the NAICS from this class at its discretion.

6. Exemption: A release from the requirement to install GCE Exemptions are approved by SD1 based on responses to questions on the SD1 Request for Exemption form.

7. Alternative Design: A release from the requirement to install GCE meeting the Design Criteria of the FOG Management Policy with the substitution of GCE of an alternate design. Alternative Designs will be approved by SD1 based on responses to questions on the SD1 Request for Alternative Design Form.

8. Garbage Disposal: A kitchen appliance designed to grind food particles to a small enough size to dispose to a sink drain.

9. Grease (Brown): Fats, oils and grease that is discharged to the grease control equipment, or is from kitchen or food prep wastewater.

10. Grease (Yellow): Fats, oils and grease that has not been in contact or contaminated from other sources (water, wastewater, solid waste, etc) and can be recycled.

11. Grease Control Equipment (GCE): Devices for separating and retaining FSE wastewater FOG prior to entering the SD1 sewer system. The GCE is constructed to separate and trap or hold fats, oils and grease substances from entering the SD1 sewer system. GCE should only receive kitchen wastewater. Devices include grease interceptors, grease traps, or other devices approved by SD1.

12. Grease Interceptor (GI): GCE identified as a large multi-compartment tank, usually 1,000 gallon to 2,000 gallon capacity with proper inlet and outlet T's, and other necessary components, that provides FOG control for a FSE. No sanitary wastewater (black water) line should be connected to the grease interceptor. Grease interceptors will be located outside the FSE.

13. Grease Trap (GT): GCE identified as an "under the sink" trap, a small container with baffles, or a floor trap. For a FSE approved to install a grease trap, the minimum size requirement is the equivalent of a 25-gallon per minute/50 pound capacity trap. Grease traps shall have flow control restrictor and a vent pipe. No sanitary wastewater (black water) line shall be allowed to be connected to a "under the sink" or floor grease trap. A separate grease trap is required for each commercial dishwasher. The size of the trap is determined by the GPM discharge rate of the dishwasher as specified by the manufacturer. Select proper interceptor of equivalent or next higher rate from Table 8.3.2 of the Plumbing and Drainage Institute publication titled **Standard PDI-G 101 Testing and Rating Procedure for Grease Interceptors – Revised March 2010.**

14. Grease Recycle Container: A container used for the storage of yellow grease.

15. Multi-Unit Facility: A single building or facility with multiple separate but adjoining units, each with separate plumbing and possibly other utilities.

16. NAICS: North American Industry Classification System. The website is found at: (http ://www.census.gov/epcd/www/naics.html)

17. Series (Grease Interceptors Installed in Series): Grease interceptor tanks are installed one after another in a row and are connected by plumbing pipe.

18. Single Service Kitchen: A FSE that does not prepare food onsite (heat and serve only) and which uses only disposable serviceware (utensils and dishes).

19. Tee or T (Influent & Effluent): A T-shaped pipe extending from the ground surface below grade into the grease interceptor to a depth allowing recovery (discharge) of the water layer located under the layer of FOG. Influent & effluent T's are recommended to be made of PVC – schedule 40 or equivalent material. Influent T's should extend 2/3 of the grease interceptor water depth, and effluent T's should extend to within 12" to 15" of the bottom of the interceptor tank to prevent short-circuiting.

20. User: Any person that contributes, causes, or permits the contribution or introduction of wastewater or pollutants into the SD1 sanitary or combined sewer system and / or stormwater into the Municipal Separate Storm Sewer System (MS4), whether intentional or unintentional, and whether direct or indirect.

21. Water (Black): Wastewater containing human waste, from sanitary fixtures such as toilets and urinals.

22. Water (Gray): Wastewater other than black water as defined in this section.

23. Sanitary Sewer Overflow (SSO): A condition whereby untreated sewage is released into the environment prior to reaching treatment facilities thereby escaping wastewater treatment.

REQUIREMENTS

1. GCE shall be designed and constructed in accordance with the provisions of the FOG Management Policy, these guidelines and/or SD1's Design Manual.

    A. Final GCE sizing determination will be made by FSE's engineer, architect or contractor based on criteria such as, but not limited to, flow rate, discharge rate, fixture ratings and wastewater retention time.

    B. **Minimum** acceptable size of GCE for each FSE Classification will be as follows:

        i. Class 1: Deli, Ice Cream shops, Beverage Bars, Coffee Shops, - 25 gallons per minute / 50 pound.
        ii. Class 2: Limited-Service Restaurants / Caterers / Supermarkets, other Grocery Stores and Discount Department Stores with on-site food preparation – 1,000 gallon GI
        iii. Class 3: Full Service Restaurants - 1,000 gallon GI
        iv. Class 4: Buffet and Cafeteria Facilities - 1,500 gallon GI
        v. Class 5: Institutions (Schools, Hospitals, Prisons, etc) - 2,000 gallon GI or two 1000 gallon GI installed in series.

    C. SD1 will review GCE sizing information received from the FSE's engineer, architect or contractor. SD1 will make a decision to approve, or require additional GCE volume, based on the type of FSE, the number of fixture units, and additional calculations. Grease interceptor capacity should not exceed 2,000 gallons for each interceptor tank. In the event that the grease interceptor calculated capacity needs to exceed 2,000 gallons, the FSE shall install an additional interceptor of the appropriate size. If additional interceptors are required, they shall be installed in series.

    D. Grease interceptors that are installed in series shall be installed in such a manner to ensure positive flow between the tanks at all times. Therefore, tanks shall be

installed so that the inlet invert of each successive tank shall be a minimum of 2 inches below the outlet invert of the preceding tank.

E. Grease interceptors that are installed in series shall include adaptors, gaskets or flexible transition couplings of minimum of schedule 40 PVC pipe.

2. Property service connections shall be sized based on fixture units with a minimum size of a 6-inch connection to GCE

3. New FSEs (class 2 – 5), as well as existing facilities (class 2 – 5) that are undergoing significant remodeling shall install and maintain at a minimum, an approved 1,000 gallon grease interceptor located outside the FSE building.

4. New FSEs (class 1), as well as existing facilities (class 1) that are undergoing significant remodeling shall install and maintain, at a minimum, a GT whose size is rated at 25 gallons per minute / 50 pounds capacity.

5. New construction of FSEs shall have separate sanitary (restroom) and kitchen process lines. The kitchen process lines shall be plumbed to appropriately sized GCE. Kitchen process lines and sanitary lines may combine prior to entering the public sewer; however the lines cannot be combined until after the GCE. Sanitary wastewater, or black water, cannot be connected to GCE.

6. When an existing building and/or building's plumbing is being renovated and the facility is a FSE, internal plumbing shall be reconstructed to separate sanitary (restroom) flow from kitchen process flow. Sanitary flow and kitchen process discharges shall be approved separately by SD1 and shall discharge from the building separately. The kitchen process line(s) shall be plumbed to appropriately sized GCE. Kitchen process lines and sanitary lines may combine prior to entering the public sewer; however the lines cannot be combined until after the GCE.

7. New multi-unit facility, or new "strip mall" facility, owners shall contact SD1 prior to conducting private plumbing work at the multi-unit facility site. Multi-unit facility owners, or their designated contractor, shall have plans for separate private wastewater lines for kitchen and sanitary wastewater for each "individual" unit. In addition, the plans shall identify "stub-out" locations to accommodate a minimum 1,000 gallon grease interceptor for each unit of the multi-unit facility. New multi-unit facility, or new "strip mall" facility owners shall consider suitable physical property space and sewer gradient that will be conducive to the installation of an exterior, in-ground GI when determining the building location.

8. SD1 Plan Review Group will review plans for any FSE in classes 1 through 5 as part of the building permit acquisition process.

A. FSE owners or their designee shall submit 2 sets of FSE facility plans to:
SD1
Plan Review Group
1045 Eaton Dr
Ft. Wright KY, 41017
for review and approval by SD1.

B. Facility plans shall include the following sheets: a floor plan detailing kitchen prep equipment and showing how greasy waste lines discharge to GCE, plumbing (P1 & P2) sheets, and a GCE specification sheets.

C. Plumbing sheets shall include identification of all cooking and food preparation equipment (i.e. fryers, grills, woks, etc…); the number and size of dishwashers, sinks, floor drains, and other plumbing fixtures; greasy waste bearing plumbing lines, the location of GCE, and specifications for GCE. The discharge from the following fixtures shall be plumbed to GCE: all sinks (3-comparment, vegetable prep, mop, etc), dishwashers, floor drains in food preparation and storage areas, garbage disposals, and other fixtures through which grease may be discharged such as woks and soup ladles.

D. SD1 Plan Review Group personnel will review the plumbing plans and GCE sizing; and approve, or make changes as necessary to aid in the protection of a FOG discharge from the FSE.

E. If the plans are approved by SD1, an Approval Letter will be issued to the FSE.

F. Personnel from SD1 Inspection Group will inspect the GCE. Call 859-578-7460 forty-eight (48) hours prior to installation to schedule the inspection. SD1 will not approve GCE that has not been inspected and approved by SD1.

G. If the installed GCE is approved by SD1, an Acceptance Letter will be issued to the FSE.

9. Single service kitchens with no onsite food preparation (heat and serve only), and which use only disposable service ware (utensils) may not be required to install GCE. The FSE owner or designee must complete and submit a Request for Exemption form in order to be considered for an exemption. However, if kitchen practices change in an exempted FSE, or if the exempted FSE is found to directly cause or contribute to a grease blockage or SSO in SD1's collection system, the exemption will become null and void. Call the Industrial Monitoring Department at 859-331-6674 or visit www.SD1.org/fog to obtain a Request for Exemption form.

10. Substandard GCE - In the event an existing FSE's GCE is deemed by SD1 to be either undersized or substandard in design, the FSE owner(s) will be notified in writing by SD1 of the deficiencies and required improvements, and given a compliance deadline not to exceed six (6) months to comply.

11. Prohibitions

    A. FSEs shall not contribute or cause to be contributed into the SD1 collection system the following:
        i. Hot water running continuously through GCE;
        ii. Discharge of concentrated alkaline or acidic solutions into GCE;
        iii. Discharge of concentrated detergents into GCE.

12. SD1 Certified Waste Hauler Program

    A. All GCE waste haulers wishing to transport GCE waste to an SD1 approved facility shall:
        i. Attend annual hauler certification training sessions presented by SD1.

ii. Agree to conduct GCE certifications in the manner presented by SD1 in training sessions by SD1 personnel.
iii. Agree to provide information on GCE certifications to SD1 in a timely manner.
iv. Agree to completely evacuate FOG from GCE when servicing such GCE at FSEs; unless prior written approval is granted by SD1. If the volume of the GCE is greater than the tanker capacity, the hauler agrees to provide additional tankers so that the GCE is fully evacuated within a 24-hour period.
v. Agree to provide information relative to FOG removed at FSEs in format required by SD1.
vi. Dispose of FOG waste at an SD1 approved facility that is authorized to receive such waste in accordance with applicable federal, state and local laws and regulations.
vii. Perform GCE maintenance in accordance with these guidelines.

B. SD1 will:
i. Provide certification training to the haulers wishing to participate in the program.
ii. Provide a listing of all certified haulers to FSEs
iii. Require minimum GCE maintenance frequencies of FSEs

C. Annual Requirement for Grease Interceptor or Grease Trap Certification (GCE)
i. FSEs under SD1 jurisdiction must have their grease interceptor or grease trap inspected and certified annually. Certification of the interceptor or trap must be conducted by a SD1 Certified Grease Waste Hauler to verify that all necessary components of the grease interceptor or grease trap are properly installed and in proper working condition. If a grease interceptor or grease trap "passes" the certification requirement, then no further action is required. If a grease interceptor or grease trap "fails" the certification requirement, then the SD1 Industrial Monitoring Department will issue the FSE a Notice of Violation. (NOV).
ii. Failure of GCE Certification:
The FSE owner or authorized representative is responsible for submitting an NOV Response no later than the due date indicated in the original NOV. The NOV Response must address all matters detailed in the original NOV. Failure to submit the NOV Response by the indicated due date and/or failure to address all requirements stated in the original NOV may result in additional enforcement actions, up to and including, Administrative Fines and/or the termination of the FOG Wastewater Discharge Permit. NOV Responses must be submitted to:

SD1
Industrial Monitoring Department
2999 Amsterdam Rd
Villa Hills KY, 41017

iii. FSEs who service their own GCE shall maintain a Maintenance Log of the pumping/cleaning maintenance activities performed for all GCE on the premises. GCE Maintenance Log records shall include, at a minimum, the date of cleaning/maintenance, person conducting the cleaning/maintenance and specific volume of grease wastewater removed from the GCE.

iv. GCE Maintenance Logs shall be available at the FSE premises so they can be provided to SD1 personnel or their representative. The FSE shall maintain GCE maintenance records onsite for two (2) years.

v. Each GCE shall be fully evacuated (complete pumpout of GI contents) unless the volume is greater than the tank capacity of the pumper vehicle in which case the hauler shall arrange for additional transportation capacity so that the GCE is fully evacuated within a 24 hour period.

vi. The return of gray water back into the GCE from which the waste was removed is prohibited, unless the Certified Waste Hauler has received prior written permission from SD1.

vii. Waste removed from GCE shall be disposed of at an SD1 approved facility that is authorized to receive such waste in accordance with applicable federal, state and local laws and regulations. Pumped waste shall not be discharged to a private or public sewer unless as permitted above.

13. FSEs shall observe Best Management Practices (BMPs) for controlling the discharge of FOG from their facility.

14. Grease Interceptor (GI) Cleaning/Maintenance Requirements

A. Grease interceptors must be pumped-in-full when the total accumulations of surface FOG (including floating solids) and settled solids reaches twenty-five percent (25%) of the grease interceptor's overall liquid depth. This criterion is referred to as the "25 Percent Rule". At no time shall the cleaning frequency of the grease interceptor exceed 90 days unless approved by SD1. Some existing FSEs in Class 2 through 5 will need to consider a 30 day pumping frequency or a 60 day pumping frequency to meet the 25 Percent Rule requirement. SD1 requires that an SD1 Certified Grease Waste Hauler perform all GCE servicing for all FOG Permitted FSE's, unless GCE servicing is performed by an FSE employee.

B. Partial pump of interceptor contents or on-site pump & treatment of GI contents will not be allowed without prior written SD1 approval to reintroduction of fats, oils and grease to the interceptor and pursuant to the Code Federal Regulation 40 CFR403.5(b)(8), which states "Specific prohibitions. In addition, the following pollutants shall not be introduced into a POTW: Any trucked or hauled pollutants, except at discharge points designated by the POTW".

C. Special pumping frequency approval may be granted and/or required by SD1, on a case by case basis, for unusual circumstances.

D. All FOG Permitted FSEs in the SD1 jurisdiction must have a SD1 Certified Grease Waste Hauler complete a grease interceptor certification annually. The grease interceptor certification must be signed by the FSE owner or authorized representative. If a GI passes the certification, no further action is required on the part of the FSE. If a GI fails a certification, the SD1 Industrial Monitoring Department will issue the FSE an NOV detailing follow-up actions and requirements.

i. Grease interceptor effluent-T shall be inspected during all routine cleaning and maintenance and the condition noted by the grease waste hauler's company or individual conducting the maintenance. Effluent-T's that are

loose, defective, or not attached must be repaired or replaced as soon as possible.

E. SD1 shall monitor the method and location of grease removed from accepted GCE.

All grease removed from permitted FSE's must be disposed of in accordance with all federal, state and local regulations, as well as, the SD1 Waste Hauler Permit. SD1's Industrial Monitoring Department will review disposal locations on a case by case basis.

15. Grease Trap (GT) Cleaning/Maintenance Requirements

A. GTs shall be completely cleaned of fats, oils, and grease (FOG) and food solids at a minimum of every two (2) weeks, unless more or less cleaning frequency is authorized/required by SD1. If the FOG and food solids content of the grease trap is greater than 25% of the water depth capacity of the grease trap, then the grease trap shall be cleaned every week, or as frequently as needed to prevent 25% of capacity being occupied with FOG and food solids.

FSEs in the SD1 jurisdiction shall have a SD1 certified grease waste hauler complete a grease trap certification annually. The grease trap certification shall be signed by the FSE owner or authorized representative. If a GT passes the certification, no further action is required on the part of the FSE. If a GT fails a certification, the SD1 Industrial Monitoring Department will issue the FSE an NOV detailing follow-up actions and requirements.

i. During all routine cleanings of the grease trap, the flow restrictor shall be checked to ensure it is attached and operational.

B. Grease Trap waste shall be sealed or placed in a container to prevent leachate from leaking, and then disposed of properly.

C. Grease Trap waste shall not be mixed with yellow grease in the grease recycle container.

16. "Additives" are prohibited for use as grease management and control.

A. If SD1 identifies an FSE that is using "additives" and is contributing FOG to the SD1 sewer system, or has caused any interference to the sewer system, the FSE shall immediately stop use of the "additive".

B. At no time shall additives be used just prior to under the sink or floor grease traps.

C. The use of additives is prohibited with the following exceptions:
   i. If the product used can be proven to contain 100% bacteria, with no other additives. Approval of the use of the product must come from SD1, and the FSE must submit a full disclosure Material Safety Data Sheet and certified sample results from the manufacturer of the product.

D. The use of approved additives shall in no way be considered as a substitution to the maintenance procedures required per this policy.

17. Right of Entry – Inspection and Monitoring

    A. SD1 shall have the right to enter the premises of FSEs to determine whether the FSE is complying with the requirements of this policy and/or SD1 Rules and Regulations. FSEs shall allow SD1 personnel, upon presentation of proper credentials, full access to all parts of the premises for the purpose of inspection, monitoring, and/or records examination. Unreasonable delays in allowing SD1 personnel access to the FSE premises shall be a violation of this policy and the SD1 Rules and Regulations.

    B. SD1 may require that the FSE install monitoring or additional pretreatment equipment deemed necessary for compliance with this policy and/or SD1 Rules and Regulations.

18. Enforcement Action

    A. Enforcement action or a Notice of Violation may be issued to an FSE for instances that include, but not limited to, failure to clean or pump grease control equipment, failure to maintain grease control equipment including inspection and installation of properly functioning effluent-T and baffles, failure to install grease control equipment, failure to control FOG discharge from the FSE, contributing to a sewer line blockage or obstruction, contributing to a Sanitary Sewer Release, failure to submit a Notice of Violation Response and use of additives in such quantities so that FOG is pushed downstream of the FSE. Enforcement actions will be based on the SD1 Enforcement Response Plan.

SD1 Design Specifications for Grease Control Equipment

Grease Interceptor (GI) Design and Installation for FSE established after January 1, 2012:

<u>Piping Design</u>

1. Inlet, outlet and baffle piping shall have 2-way cleanout T's installed.

2. Inlet piping shall enter the receiving chamber 2 1/2" above the invert of the outlet piping.

3. On the inlet pipe, inside the receiving chamber, a sanitary T of the same size pipe in the vertical position with the top unplugged shall be provided as a turndown. To provide air circulation and to prevent "air lock", a pipe installed in the top T shall extend to a minimum of 6" clearance from the interceptor ceiling, but not less that the inlet pipe diameter. A pipe installed in the bottom of the T shall extend to a point of 2/3 the depth of the tank. . See illustration on page 9.

4. The outlet piping shall be no smaller than the inlet piping, but in no case smaller than 4" inner diameter (ID).

5. The outlet piping shall extend to 12" above the floor of the GI and shall be made of a non-collapsible material. The top of the outlet T pipe should be no less than 4" above the static water line. T's must be anchored securely at the bottom.

6. The outlet piping shall contain a T installed vertically with a pipe installed in the top of the T to extend to a minimum of 6" clearance from the interceptor ceiling, but not less that the pipe diameter, with the top open. See illustration on page 17.

Design Baffles

1. The inlet compartment shall be 2/3 of the total liquid capacity with the outlet compartment at 1/3 liquid capacity of the GI.

2. The GI shall have a non-flexing (i.e. concrete, steel, etc.) baffle the full width of the interceptor, sealed to the walls and the floor, and extended from the floor to within 6" of the ceiling. The baffle shall have a sanitary T located on the receiving side of the baffle wall which shall extend through the baffle into the outlet compartment. The baffle wall piping shall be installed vertically with a pipe installed in the top of the T to extend to the height of the baffle wall. The baffle wall piping shall extend from the bottom of the T to 12" above the floor of the GI. The baffle wall piping shall be at least equal in diameter size to the inlet piping, but in no case less than 6" ID. The baffle wall shall be sealed to the T and the baffle wall piping secured to the baffle wall. All baffle wall piping shall be made of a non-collapsible material. See illustration on page 17.

Access Openings (Manholes)

1. Access to GIs shall be provided by a minimum of one manhole per GI division (baffle chamber) and of 24" minimum dimensions terminating 1"above finished grade with cast iron frame and cover. If manhole access exists in a paved area, a slope of greater than or equal to 0.2 may be used to achieve the 1" terminating manhole access requirement. An 8" thick concrete pad extending a minimum of 12'' beyond the outside dimension of the manhole frame shall be provided. One manhole shall be located above the inlet T hatch and the other manhole shall be located above the outlet T hatch, so as to provide a clear view of both the inlet and outlet T for inspection. 1000 gallon GI's that possess a manhole access opening over only the inlet and outlet must possess a 6" cleanout access located over the baffle wall. A minimum 24" of clear opening above each manhole access. GI's 1500 gallons and larger must possess a minimum of 3 manholes; one above the influent, one above the effluent and one above the baffle.

2. Access openings (manholes) shall be maintained to facilitate maintenance, cleaning, pumping, and inspections.

3. Access openings (manholes) shall be mechanically sealed and gas tight to contain odors and bacteria and to exclude vermin and ground water, in a manner that permits regular reuses.

4. Manhole covers shall be secure, watertight, sturdy and able to withstand vehicle traffic.

Leak Testing

GIs shall comply with one of the following:

1. Water test - Seal the interceptor, fill with water raised to a level that will submerge all inlet and outlet points of the manhole, and let stand for a minimum of 4 hour. There shall be no visible leakage. Prefabricated concrete gravity grease Interceptors shall not be rejected for damp spots due to condensation on the exterior surface.

Note: It is highly recommended that the water remain in the GI prior to initiation of usage. The GI will function better if it contains water upon initiation of usage.

2. Air test - Air test procedure shall follow STI F 921 and PEI RP 100 Section 3.

Note: The regulated air supply test pressure used for this test is not to be less than 3 psig (21 kPa) nor more than 5 psig (35 kPa). Use only calibrated diaphragm type air pressure gauges with a zero to 10 psig dial span. Set pressure relief valve in test air supply line at 4.5 psig.

Temporarily plug, cap or seal of all tank openings to hold pressure. Install air supply piping to appropriate tank penetration with air supply piping, over pressure relief device, air isolation valve and pressure gauge. Close air isolation valve to tank and turn on air supply. Slowly open air isolation valve to pressure primary tank. Pressure gauge should read minimum 3 psig to 5 psig maximum. Record the pressure reading. Close air isolation valve and disconnect air supply line to tank.

Note: A steady drop in pressure indicates there may be a leak in the primary tank.

Hold primary air test for 1 hour minimum. No leaks shall be allowed.

If the tank(s) fails to meet the testing described above, it shall be repeated with new samples. Test reports shall show total number of tanks tested, number passing, number failing, and reason for failure.

Location

1. GIs shall be located so as to be readily accessible for cleaning, maintenance, and inspections. GIs shall be located close to the fixture(s) discharging the greasy wastestream(s).

2. GIs shall not be installed in “drive-thru” lanes or a parking area. GIs shall never be paved over.

3. GIs shall be installed at a minimum distance of 10’ from sinks and dishwashers to allow adequate cooling of wastewater. The influent to GIs shall not exceed 140 degrees Fahrenheit (140° F).

Size

1. Without prior written approval, GI minimum size shall be 1,000 gallon capacity, and maximum size will be 2,000 gallon capacity. If additional capacity is required, the FSE shall install multiple GIs in series. SD1 retains the right to take all factors into consideration for determination of final GI sizing. Upon consideration of special conditions SD1 may approve the use of GIs smaller than 1,000 gallons with a corresponding increase in pumping frequency. SD1 will review special conditions on a case by case basis.

2. GIs installed in series shall be installed in such a manner to ensure positive flow between the GIs at all times. Therefore GIs shall be installed so that the inlet invert of each successive GI shall be a minimum of 2 inches below the outlet invert of the preceding GI.

3. GIs installed in series shall have adaptors or gaskets or flexible transition couplings used as piping connections between the GIs installed in series. The adaptors or gaskets or flexible transition couplings shall be constructed of a minimum of schedule 40 PVC.

Construction Material

1. GIs shall be constructed of sound durable materials, not subject to excessive corrosion or decay, and shall be water and gas tight. Each GI shall be structurally designed to withstand any anticipated load to be placed on the GI (i.e. vehicular traffic in parking or driving areas). Concrete is the standard material approved by SD1, however, SD1 will consider other materials, such as fiberglass or plastic grease interceptors, if a professional engineer (PE) provides calculations and evidence that the device will meet SD1 requirements and not be a danger to the public, or environment.

   Note: Concrete materials and other grease interceptor materials shall meet the American National Standards Institute, Inc. (ANSI) and International Association of Plumbing and Mechanical Officials (IAPMO) standards.
   ANSI and IAPMO Concrete Materials Requirements as per IAPMO/ANSI Z1001-2007 document are:

   • **Concrete**: Material requirements shall comply with the "Materials and Manufacture" section of ASTM C 1613 and shall have a minimum compressive strength of 4000 psi (28 MPa) at 28 days of age and shall have a maximum water to cementitious ratio (w/c) of 0.45.

   • **Sealants**: Flexible sealants employed in the manufacture or installation of GIs shall comply with ASTM C 990. Rigid (mortar) sealing or grout sealant of GI sections shall not be permitted.

   • **Lifting**: Lifting devices, embedded or otherwise attached to the GI, shall comply with the requirements of ASTM C 890.

   • **Synthetic fiber-reinforced concrete GIs**: Polypropylene or polyolefin fibers are only permitted as a secondary reinforcing material, at the manufacturer's option, in precast concrete GIs. For the purposes of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Only fibers of Type III conforming to the requirements of ASTM C 1116 shall be accepted.

   • **Steel fiber-reinforced concrete GIs**: Steel fibers are only permitted as a secondary reinforcing material, at the manufacturer's option, in prefabricated GIs. For the purpose of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Steel fibers shall meet the requirements of ASTM A 820.

   • **Fiberglass-reinforced polyester**: Fiberglass reinforced polyester prefabricated gravity GIs shall comply with the requirements for fiberglass – reinforced polyester septic tanks in paragraph 4.2 of IAPMO/ANSI Z1000.

   • **Gaskets**: Gaskets shall be of a resilient material, resistant to attack by acids or alkalis that may be present in soils or sewage. The manufacturer shall specify the appropriate ASTM standards that the gasket material meets and the acids or alkalis that the material is resistant to.

• **Polyethylene**: Polyethylene prefabricated gravity GIs shall comply with the requirements for polyethylene septic tanks in paragraph 4.3 of IAPMO/ANSI Z1000.
• **Coated steel**: Interior steel GI walls shall be coated with material complying with the requirements of UL 58 and UL 1746 and manufactured per the requirements of the Steel Tank Institute (STI).

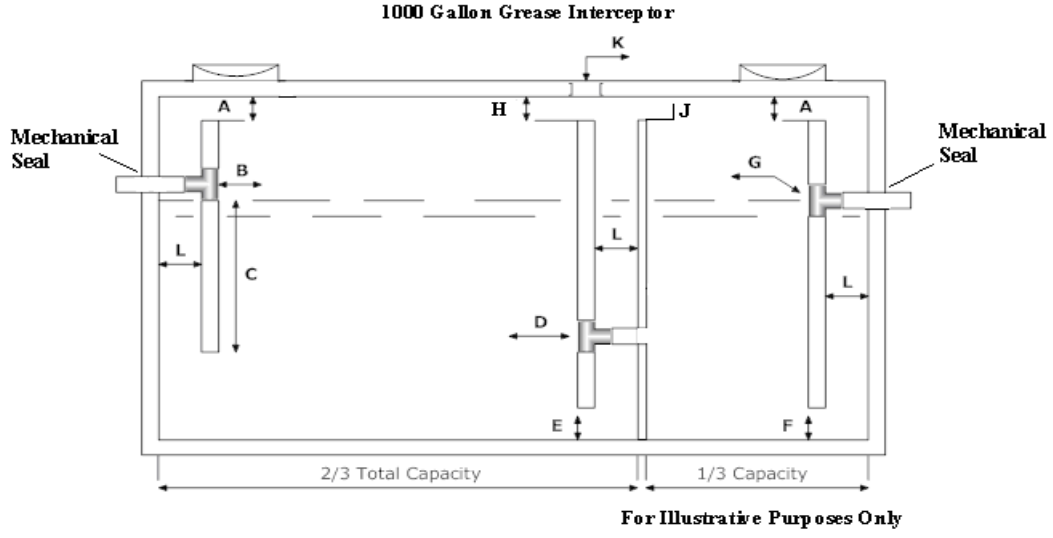
Marking and Identification

1. Prefabricated gravity GIs shall be permanently and legibly marked with the following:
   • Manufacturer's name or trademark, or both
   • Model number
   • Capacity
   • Month and year of manufacture
   • Load limits and maximum recommended depth of earth cover in feet; and Inlet and outlet.

2. The marking shall appear on a plate that has been permanently attached, molded, cast, or wet set onto the GI, located either on the left hand side of the inlet or on top of the GI near the inlet. Permanent markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the GI.

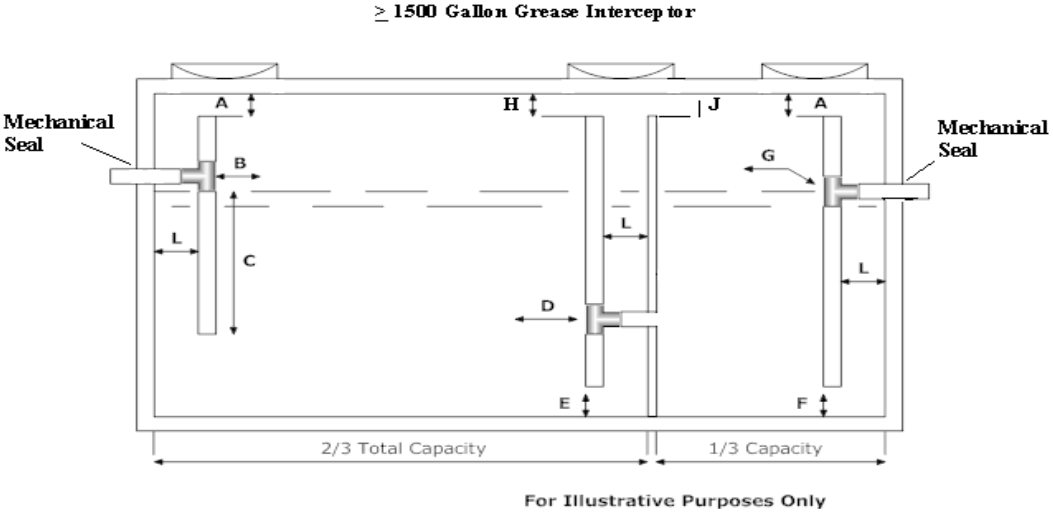
3. Each GI shall be accompanied by manufacturer’s installation instructions.

SD1 Design Specifications for 1000 Gallon Grease Interceptor



A) Minimum 6", but not less than pipe diameter
B) Inlet pipe invert to be 2 1/2" above liquid surface
C) Inlet pipe to terminate 2/3 depth of water level
D) Baffle T
E) 12" from floor to end of baffle pipe
F) 12" from floor to end of outlet pipe
G) Outlet pipe no smaller than inlet pipe
H) Top of baffle pipe terminates no lower than baffle height
I) Inlet chamber is 2/3 total capacity; outlet chamber 1/3 total capacity
J) 6" minimum distance from ceiling
K) Minimum 6" cleanout

SD1 Design Specifications for ≥1000 Gallon Grease Interceptor



A) Minimum 6", but not less than pipe diameter
B) Inlet pipe invert to be 2 1/2" above liquid surface
C) Inlet pipe to terminate 2/3 depth of water level
D) Baffle T
E) 12" from floor to end of baffle pipe
F) 12" from floor to end of outlet pipe
G) Outlet pipe no smaller than inlet pipe
H) Top of baffle pipe terminates no lower than baffle height
I) Inlet chamber is 2/3 total capacity; outlet chamber 1/3 total capacity
J) 6" minimum distance from ceiling

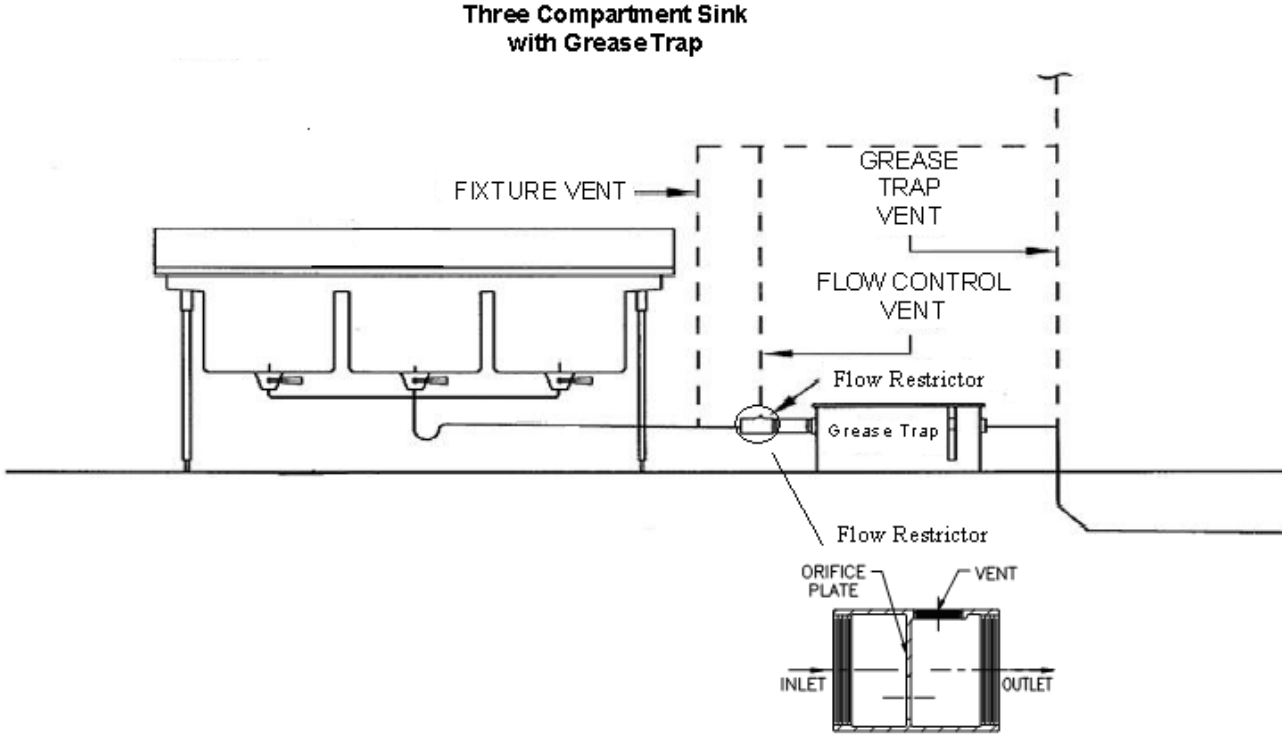
Grease Trap (GT) Design and Installation:

1. GTs shall have the Kentucky State Plumbing Code certification. The **minimum** acceptable size is rated at 25 gallons per minute / 50 pounds capacity. All GTs shall be installed as per manufacturer's specifications, which include the flow restrictor and venting prior to the discharge entering the GT.

2. GTs shall have flow control restrictor and be vented.

3. A separate grease trap is required for each commercial dishwasher. The size of the trap is determined by the GPM discharge rate of the dishwasher as specified by the manufacturer. Select proper interceptor of equivalent or next higher rate from Table 8.3.2 of the Plumbing and Drainage Institute publication titled **Standard PDI-G 101 Testing and Rating Procedure for Grease Interceptors – Revised March 2010.**

4. Any floor GT must be an approved "floor" trap that is able to be installed below the floor level. Many standard "under-the-sink" units are not made of proper materials that allow an in-floor installation. Unapproved floor trap units will rust and leak within a few months of operation.



APPENDIX K:

Pump Station Backup Power Updates

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Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of December 2012
Category 1 Projects (4 total projects)						
Alex Licking	East	Permanent Generator	n/a	2008	2008	Complete
American Sign	West	Permanent Generator	n/a	2008	2008	Complete
Riley Road	East	Permanent Generator	n/a	2009	2009	Complete
Sunset	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010	2010	Complete
Category 2 Projects (21 total projects)						
Kahns	East	PS Elimination	n/a	2007	2007	Complete
Meadow Hill	Central	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2012 - 2015	2010	
Riley Road No. 1	East	PS Elimination	n/a	2009	2009	Complete
Riley Road No. 2						
Riverwatch PS	North	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2012 - 2015	2008	Complete
South Park Industrial	North	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008	2008	Complete
				2012 - 2015	2010	Complete
Wedgewood Dr	Central	PS Elimination Study	Evaluating Solutions	Study - 2008	2008	Complete
				2015	n/a	Evaluating Solutions
Willow Bend No. 2	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2013	n/a	Construction
Army Reserve	East	PS Elimination Study	Evaluating Solutions	Study - 2008	2008	Complete
				2015	n/a	Evaluating Solutions
Eagles Landing	West	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2013	n/a	In Progress
Evergreen	Central	PS Elimination Study	Evaluating Solutions	Study - 2008	2008	Complete
				2015	n/a	Evaluating Solutions
Lamphill	East	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2011	2011	Complete
Mill House Crossing	Central	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008	2008	Complete
				2012	2012	Complete
Ridgefield	North	PS Elimination Study	Evaluating Solutions	Study - 2008	2008	Complete
				2015	n/a	Evaluating Solutions

Updated: December 1, 2012

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of December 2012
Category 2 Projects (continued)						
War Admiral	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2012 - 2015	2011	Complete
Blackstone	West	PS Elimination Study	Evaluating Solutions	Study - 2008	2008	Complete
				2015	n/a	Evaluating Solutions
Dublin Green No. 1	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2015	2012	Complete
Fowler Creek	West	PS Elimination	These stations will be eliminated after the Western Regional collection system is operational.	2013	2011	Complete
Gammon Calmet	West	PS Elimination		2013	2012	Complete
Gunpowder	West	PS Elimination		2013	2012	Complete
Union	West	PS Elimination		2013	2012	Complete
CIP Title	**Basin**	**Original Proposed Solution**	**Updated Proposed Solution**	**Scheduled Completion Date**	**Actual Completion Date**	**Status as of December 2012**
Category 3 Projects (24 total projects)						
Airport Exchange Ind Park	North	Permanent Generator	n/a	2009	2009	Complete
Barrs Branch	East	Permanent Generator	Portable Generator	2009	2009	Complete
Cedar Point	East	Permanent Generator	n/a	2009	2009	Complete
Bullitsville	North	Permanent Generator	n/a	2008	2008	Complete
Catalpa	Central	Permanent Generator	n/a	2009	2009	Complete
Centerplex	East	Permanent Generator	n/a	2008	2008	Complete
Hempsteade	West	Permanent Generator	n/a	2009	2009	Complete
Highland Heights	East	Portable Generator	n/a	2009	2009	Complete
Dublin Green No. 2	West	Permanent Generator	n/a	2009	2009	Complete
Brookwood	East	Permanent Generator	n/a	2009	2009	Complete
Ky Aire	West	Permanent Generator	n/a	2008	2007	Complete
Levi	West	Permanent Generator	n/a	2008	2007	Complete
Maple Ave	Central	Permanent Generator	n/a	2009	2009	Complete
Sand Run	North	Permanent Generator	n/a	2008	2008	Complete
Saturn	West	Permanent Generator	n/a	2009	2009	Complete
Second Street	Central	Permanent Generator	n/a	2009	2009	Complete
Skyport	North	Permanent Generator	n/a	2008	2008	Complete
South Hampton	West	Permanent Generator	n/a	2008	2007	Complete
Thornwilde	North	Permanent Generator	n/a	2008	2008	Complete
Bunning Lane	East	PS Elimination Study	Evaluating Solutions	2015	n/a	Evaluating Solutions
Kees	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2011	2011	Complete
Overlook	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Riverview Farms	North	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Stillwater	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of December 2012
Category 4 Projects (50 total projects)						
Banklick	Central	Permanent Generator	n/a	2009-2014	2009	Complete
Cedar	Central	Permanent Generator	n/a	2009-2014	2009	Complete
Fowler Ridge	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Lassing Green	West	Permanent Generator	n/a	2009-2014	2009	Complete
Leathers Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Marshall Rd	Central	Permanent Generator	n/a	2009-2014	2010	Complete
Mineola Pike	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Newport Steel Mill	East	Permanent Generator	n/a	2009-2014	2009	Complete
Paul Rd	East	Permanent Generator	Portable Generator	2009-2014	2010	Complete
Rosewood Lane	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Shadow Lake	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2009	Complete
Wolf Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2009	Complete
Air Park West	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Arbortech	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Arborwood	North	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Brandtly Ridge	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Brentwood	North	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Brushup Lane	West	Permanent Generator	PS Elimination	2012	2012	Complete
Carlisle Ave	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Cinnamon Ridge	West	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Cold Spring Crossing	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Cold Spring Plaza	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Darma Ct	East	Permanent Generator	Electrical hook up for portable generator	2013	n/a	In Progress
Deer Creek No. 1	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Deer Creek No. 2	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Eighth Street	Central	Connect to Grid Power	Evaluating Solutions	2015	n/a	Evaluating Solutions
Gerrard Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Golf Course	Central	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress
Hampton Ridge	West	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Harrison Harbor	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of December 2012
Category 4 Projects (continued)						
Harvest Hill	Central	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
ICH	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
IDI	North	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress
Independence Station Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Jefferson Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Jericho Rd	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Jonathan	West	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Litton	North	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress
Ohio Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Orchard Estates	West	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Parkside No. 2	East	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress
Patton Street	Central	Dual Utility Power Feed	Evaluating Solutions	2015	n/a	Evaluating Solutions
Ria Vista	North	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Silver Grove	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
St Annes	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Sycamore	West	Permanent Generator	PS Elimination	2015	2012	Complete
Taylor Mill Rd	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Wilder	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Wyndemere	North	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress
Youell Rd	West	Permanent Generator	Electrical hook up for portable generator	2012	n/a	In Progress

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of December 2012
Category 5 Projects (6 total projects)						
Keavy	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010-2015	2010	Complete
Meadow Lane	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010-2015	2009	Complete
Cardinal Cove	North	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Crestview	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
Ripple Creek	East	PS Elimination Study	PS Elimination	2010-2015	2010	Complete
Winters Lane No. 2	East	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions
CIP Title	**Basin**	**Original Proposed Solution**	**Updated Proposed Solution**	**Scheduled Completion Date**	**Actual Completion Date**	**Status as of December 2012**
Category 6 Projects (5 total projects)						
Enzweiller	East	Permanent Generator	n/a	2012-2015	2009	Complete
Mafred	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012-2015	2009	Complete
Ridgeway	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012-2015	2009	Complete
Richwood	West	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Twin Lakes	Central	Permanent Generator	Evaluating Solutions	2015	n/a	Evaluating Solutions

Progress Summary	Number
2007 Complete Projects	4
2008 Complete Projects	8
2009 Complete Projects	24
2010 Complete Projects	10
2011 Complete Projects	16
2012 Complete Projects	12
Total Complete	**74**
2012 Active Projects	6
2013 Active Projects	3
Total Project Activity	**83**