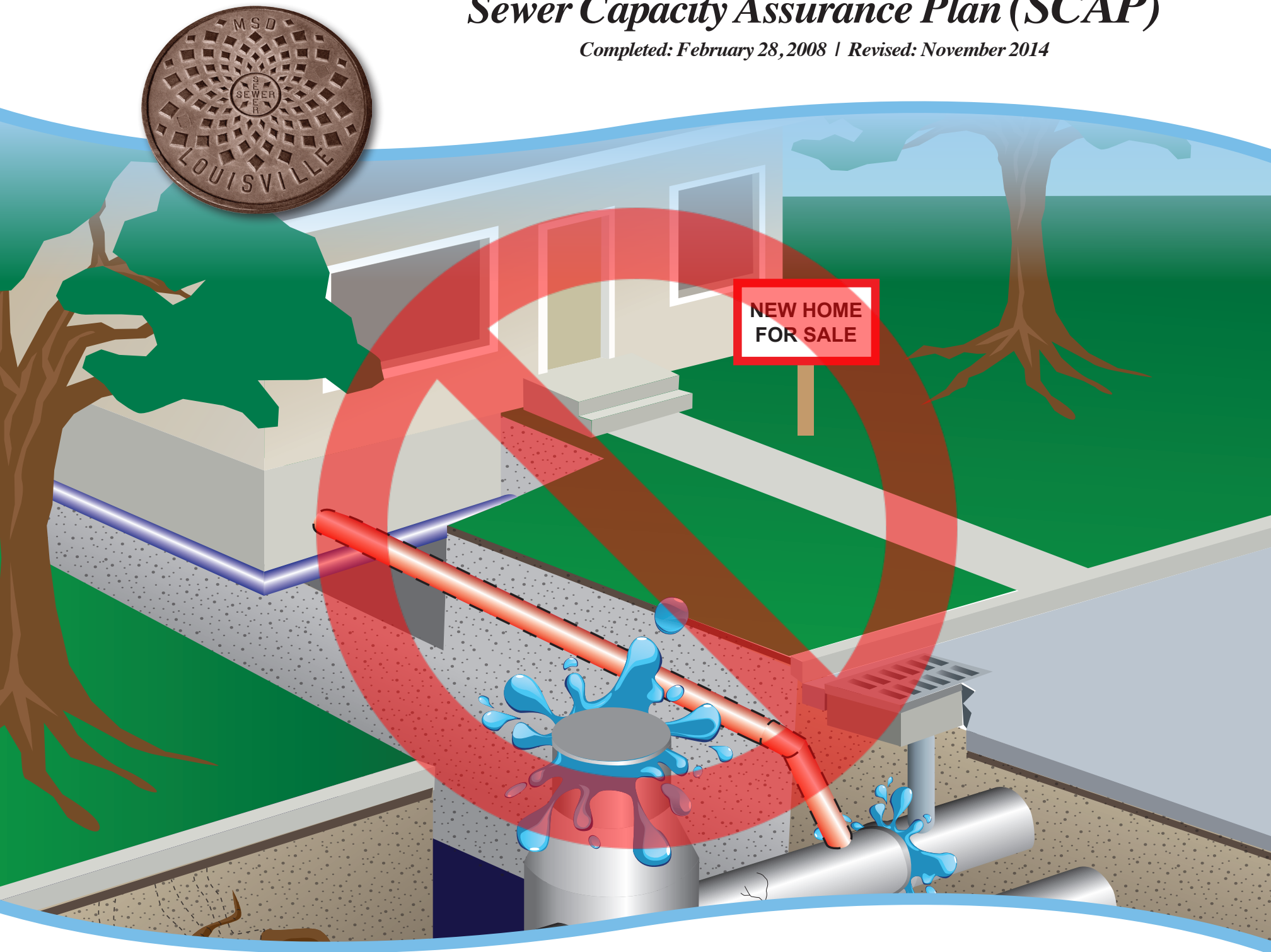


*Louisville and Jefferson County  
Metropolitan Sewer District*

# ***Sewer Capacity Assurance Plan (SCAP)***

*Completed: February 28, 2008 | Revised: November 2014*



A publication of  
MSD ProjectWIN



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Return Receipt Requested

Mr. Greg Heitzman  
Executive Director  
Louisville and Jefferson County Metropolitan Sewer District  
700 West Liberty Street  
Louisville, Kentucky 40203

Re: Approval of MSD's Sewer Capacity Assurance Plan, November 2014 Revision  
Amended Consent Decree, Civil Action No. 3:08-cv-00608-CRS  
DOJ Case No. 90-5-1-1-08254

Dear Mr. Heitzman:

The Kentucky Department for Environmental Protection (KDEP) and the U.S. Environmental Protection Agency (EPA) have reviewed the Metropolitan Sewer District's revised Sewer Capacity Assurance Plan (SCAP), dated November 2014. This document is hereby approved and will supersede and replace the SCAP document dated February 28, 2008.

If there are any questions, you may contact Mr. Courtney Seitz of KDEP at (502) 564-3410 ext. 4914, or you may contact Mr. Dennis Sayre of EPA at (404) 562-9756.

Sincerely,

Jeff Cummins, Director  
Division of Enforcement  
KY Department for Environmental Protection

Denisse D. Diaz, Chief  
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Subject: System Capacity Assurance Plan (SCAP) Review and Re-Submittal  
DOJ Case No. 90-5-1-1-08254

Attention Chief and Director:

MSD is providing this letter as certification of the re-submittal of the revised System Capacity Assurance Plan (SCAP), dated November 2014. This document was revised based on discussion and comments received on the May 2013 submittal.

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.

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

Sincerely,

Angela Akridge, PE  
Infrastructure Planning & Environmental Compliance Director

cc: Paula Purifoy  
File



*Beneficial Use of Louisville's Biosolids*  
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**Acronyms & Abbreviations**

|             |   |
|-------------|---|
| ADF         | Average Daily Flow  |
| CFR         | Code of Federal Regulations                                 |
| CIP         | Capital Improvement Program                                 |
| CMOM        | Capacity, Management, Operations, and Maintenance           |
| CS          | Collection System   |
| CSO         | Combined Sewer Overflow                                     |
| EPA         | Environmental Protection Agency                             |
| FEMA        | Federal Emergency Management Agency                         |
| GIS         | Geographic Information System                               |
| gpd         | Gallons Per Day   |
| I/I         | Inflow and Infiltration                                     |
| IMS         | Information Management System                               |
| KDOW        | Kentucky Division of Water                                  |
| KPDES       | Kentucky Pollutant Discharge Elimination System             |
| LOJIC       | Louisville/Jefferson County Information Consortium          |
| MGD         | Million Gallons Per Day                                     |
| MSD         | Louisville and Jefferson County Metropolitan Sewer District |
| O&M         | Operations and Maintenance                                  |
| SCAP        | System Capacity Assurance Plan                              |
| SOP         | Standard Operating Procedure                                |
| SSES        | Sanitary Sewer Evaluation Study                             |
| SSO         | Sanitary Sewer Overflow                                     |
| Project WIN | Waterway Improvements Now                                   |
| WQTC        | Water Quality Treatment Center                              |
| WWP         | Wet Weather Plan  |

**Definitions**

Average Daily Flow (ADF) – This is the average daily flow at a water quality treatment center calculated using daily flow records from a 2-year window of water quality treatment center influent flow data.

Credit Catchment – Defined area of the sewer system where capacity assurance credits are tracked for the Credit Banking System.

InfoWorks Integrated Catchment Model (ICM) – hydraulic modeling software developed by Innovyze used by MSD for collection system modeling.

MSD Development Team – The department within MSD's Engineering Division responsible for reviewing and approving new development plans and requests for sewer system capacity.

**Peak Wet Weather Flow** – The anticipated, calculated, or monitored maximum flow within the sewer system during an actual or synthetic rainfall event.

**Surcharge Condition** – The condition within the sewer when the water surface level is less than two feet from the manhole rim elevation. If the sewer system is in a residential area with historical capacity-related backup complaints, then a surcharge condition is considered to be a water surface level within five feet of the manhole rim.

### **Modeling and Flow Monitoring Basins**

BB—Buechel Branch

CC—Cedar Creek

FF—Floyds Fork

HC—Hite Creek

HP—Hikes Point

JT—Jeffersontown

MC—Mill Creek

MF—Middle Fork Beargrass Creek

ND—Northern Ditch

ORFM—Ohio River Force Main

PC—Pond Creek

Regional Water Quality Treatment Center (WQTC)

CCWQTC—Cedar Creek WQTC

FFWQTC—Floyds Fork WQTC

HCWQTC—Hite Creek WQTC

JTWQTC—Jeffersontown WQTC

MFWQTC—Morris Forman WQTC

DRGWQTC—Derek R Guthrie WQTC

### BACKGROUND AND SUMMARY

In areas of Louisville Metro with separate sanitary sewers, sanitary sewer overflows (SSOs) occur because of aged pipes that leak when the system is overloaded from rainfall or due to illicit connections to the sanitary sewer system such as sump pumps, roof drains, and foundation drains. Although new connections do not contribute to the root causes identified for sanitary sewer overflows, they do contribute additional flow that utilizes available capacity in the system. Since system capacity deficiencies have been identified as the cause for a significant portion of wet weather overflows, it is important for Louisville and Jefferson County Metropolitan Sewer District (MSD) to have a program to ensure new connections do not cause or contribute to sanitary sewer overflows.

In accordance with U. S. Environmental Protection Agency (EPA) requirements, MSD developed a Capacity, Management, Operations and Maintenance (CMOM) program in May 2006. MSD's CMOM Self-Assessment was conducted in an approach that exceeds the requirements of Paragraph 24(c) of the Kentucky Division of Water (KDOW) and EPA Region 4 2009 Amended Consent Decree.

The overall goal of the CMOM Self-Assessment Report was to determine if there are MSD programs or activities that should be recommended for improvement to enhance service or compliance performance and to recommend specific actions and an implementation schedule to complete the recommended improvements. Paragraph 24(c) of the Amended Consent Decree listed nine areas to be scrutinized in the CMOM Self-Assessment (one of which being system capacity). CMOM states that the System Capacity Assurance Plan (SCAP) should be the basis for applying capacity decision criteria to support each watershed's community values. The process should include a programmatic approach for items such as: confirming available capacity of water quality treatment centers (WQTC), pump stations, and conveyance system; creating capacity credits through system improvement and rehabilitation; identifying hydraulic constrictions; and proposing capacity improvements that support interim and long-term performance objectives.

Required improvements to the sewer system to accommodate system capacity will take years to implement. While these improvements are being implemented, developers, individual homeowners, and other entities continue making requests for additional flows to the system.

The CMOM Self-assessment specifies that MSD must respond to these requests for new connections to the sewer system and subsequent increases in flow through this SCAP.

The objective of the SCAP is to enable MSD to authorize new sewer service connections or increases in flow from existing sewer service connections while making system improvements to reduce inflow and infiltration and increase conveyance capacity to ensure that wet overflow volumes do not increase within any credit catchment (see Figure 4.3). As detailed in the plan, MSD assesses the peak flow capacity of all major system components (collector sewers, interceptor sewers, pump stations and treatment centers) and reviews requests for increased flow to the collection system.

The SCAP is a document that is intended to change and evolve due to various components including modeling improvements, map updates, process improvements, reporting automation, capital improvement projects, capacity requests, and other CMOM and MSD programs.

The document outlines MSD's procedure for authorizing additional flows through capacity-limited areas by removing infiltration and inflow from the system and creating capacity credits. This capacity credit banking through system rehabilitation is similar to approaches used in other cities.

### Organization of Report

This SCAP report is organized into four sections as listed below.

Section 1 provides an introduction to the SCAP describing Louisville Metro's sewer system, the SCAP purpose and goals, and an overview of MSD's information management system (IMS).

Section 2 provides a description and background of the existing capacity in the collection system using the hydraulic models and monitoring. Section 2 also establishes capacity assessment protocols for treatment facilities, pump stations, and collection lines. (Table 4.2: M-E-6 - Major Facility Capacity, and M-E-7 - Facility Capacity Protocol of the May 2006 CMOM Report.)

Section 3 details the current, committed, and requested flow methodology for system capacity as well as how LOJIC GIS and Hansen IMS will play a role in storing, tracking, and analyzing data related to system capacity. The main objective of Section 3 is to define the systematic process to determine current capacity limitations and the available capacity for the system to receive new flow. (Table 4.2 M-E-8 Current and Committed Capacity and M-E-9 Build-out Capacity of the May 2006 CMOM Report)

Section 4 documents the standard procedures for calculating and tracking flow credits. This section outlines procedures for estimating flow reduction from corrective actions, calculating credit, and entering and tracking credits in Hansen IMS. (Table 4.2: M-E-10 - Available Capacity Standard Operations Procedures (SOP) of the May 2006 CMOM Report)

### SECTION 1 INTRODUCTION AND SYSTEM CAPACITY OVERVIEW

#### 1.1 INTRODUCTION

Louisville Metro has over 3,200 miles of sewer, approximately 500 miles being over 100 years old. Currently, MSD serves 220,000 customer accounts and approximately 693,000 people. The system operated and maintained by MSD includes:

- 6 regional wastewater treatment facilities
- 9 small water quality treatment centers
- Approximately 280 pumping stations
- Ohio River Flood Protection System, including 16 flood pumping stations and 29 miles of floodwall

In areas of Louisville Metro with separate sanitary sewers, sanitary sewer overflows (SSO) occur because of aged pipes that leak when the system is overloaded from rainfall or due to illicit connections of sump pumps, roof drains, or foundation drains to the sanitary sewer system.

MSD initiated a Wet Weather Abatement Program in 1989. The first goal was to identify potential overflow points in the combined sewer system and in the fast growing sanitary sewer system. Both CSOs and SSOs occur most often during prolonged or intense rain storms. On the wettest days, millions of gallons of diluted sewage may discharge to local streams.

MSD's Integrated Overflow Abatement Plan (IOAP) includes these measures:

- Adding storage basins, conveyance capacity and treatment capacity to the sewer system
- Cleaning sewers of excess sand, gravel and mud to increase carrying capacity
- Removing unnecessary clean-water connections (downspouts and sump pumps)
- Repairing sewer leaks that allow groundwater into the sewer system

System capacity assurance is an important component of MSD's Project WIN (Waterway Improvements Now) initiative. Project WIN was initiated to address the challenges of improving Louisville's water quality. To meet these challenges, MSD has embarked on a comprehensive sewer improvement program that will eliminate major sources of water pollution throughout Louisville Metro. MSD has already completed more than \$1.4 billion in capital expansion and upgrades to wastewater and stormwater facilities.

### 1.2 SCAP PURPOSE

The SCAP is the basis for coordinating capacity decision criteria for each sewershed within the separate sanitary system. Providing wastewater collection, conveyance, and treatment capacity that meet the expansion needs of MSD's customers, while protecting the environment and meeting regulatory requirements, are top priorities of MSD's facility improvement and sewer capacity review efforts.

Due to existing wet weather capacity limitations and the time it will take to implement a complete sewer overflow abatement plan, the SCAP has been developed to enable MSD to authorize new sewer service connections or increases in flow from existing sewer service connections while making system improvements. These improvements will increase available capacity by removing I/I in accordance with the May 2006 CMOM recommendations, which state:

*“Develop a System Capacity Assurance Plan that implements the performance objectives that result from the Wet Weather Team and stakeholder group involvement in the development of the Wet Weather Plan [currently known as the IOAP as referenced in Section 1.1 above]. The System Capacity Assurance Plan will be the basis for coordinating capacity decision criteria for each watershed. The process should include a programmatic approach for items such as: confirming capacity of plants, pump stations, and conveyance system; identifying hydraulic constrictions; and proposing capacity improvements that support interim and WWP performance objectives. Review current connection protocols with the Metro Government and modify, if necessary, plumbing permit process or MSD capacity certification process, to ensure that capacity assurance is incorporated into permitting process. Implement capacity certification process through System Capacity Assurance Plan developed and updated under the supervision of a licensed professional engineer. Document and track using existing programs in Hansen.”*

The capacity assurance process applies to the separate sanitary sewer system. The program does not include the combined sewer areas. By design, the combined sewer system serves as the stormwater conveyance network as well as the sanitary waste collection and conveyance, and is meant to allow wet weather inflow into it. In addition, wet weather combined sewer overflow (CSO) discharges are permitted outfalls. As such, application of the SCAP process, which focuses on inflow and infiltration removal, is not appropriate within this area. However, MSD is currently implementing a Long Term Control Plan that will mitigate CSO typical year

discharge frequency and volume to a federally and state enforceable level of control. All development in the combined sewer area shall limit the 100 year post developed discharge to the 10 year pre-developed discharge. Connections to the combined sewer system shall be no less than 6 inches in diameter. If calculations show that a connection should be less than 6 inches, the difference of the two volumes must be compensated for in the pipe system. Development disturbing less than one half acre and without a storm drainage system shall be exempt from the pre 10 – post 100 requirement.

The SCAP process includes a programmatic approach for items such as confirming capacity of treatment centers, pump stations, and conveyance systems; generating sewer capacity credits; identifying hydraulic constrictions; and proposing capacity improvements to collection system components. The protocols and procedures for providing adequate average daily flow (ADF) capacity at WQTC are not covered within this plan.

### **1.3 CAPACITY ASSURANCE INFORMATION MANAGEMENT**

The protocols and procedures described within the SCAP require a significant amount of data management. Tracking this data along with process automation and standardization is vital to the success of the capacity assurance program and will improve as the program evolves.

The capacity assurance program utilizes MSD's current information management system (IMS), housed within Hansen, and the Louisville/Jefferson County Information Consortium (LOJIC) Geographic Information System (GIS) to track data and automate the processes outlined within the SCAP. MSD currently uses these systems to track existing, committed, and proposed flows as well as facilities and assets, capital projects, corrective actions (work orders), overflows and system deficiencies, and various other data sets relevant to system capacity.

Hansen IMS is utilized to track system capacity for treatment centers and pump stations, as well as capacity credits. These tools are utilized for a credit banking system as described in Section 4 to track both earned capacity credits from specific rehabilitation and capital improvement projects, and credit expenditures from approved increases and new additions in wastewater flows. Data from the InfoWorks Integrated Catchment Model (ICM) are housed within the GIS displaying current sewer capacity and system deficiencies. The following is a list of the major datasets that are tracked and housed within the Hansen IMS. Staff will develop additional datasets as the SCAP is implemented in combination with the existing databases.

- Hydraulic modeling results – sewer surcharging and deficiencies
- Sewer system monitoring data
- Designed, measured, and calculated capacities for sanitary sewer system assets
- Approved, committed, and pending requests for capacity
- Certification and approval documentation
- Sewer rehabilitation projects
- Capacity credits accounting system

## **SECTION 2    SYSTEM CAPACITY PROTOCOL**

Although new sewer connections do not contribute to the root causes identified for existing sanitary sewer overflows (SSO), they do contribute additional flow that utilizes available capacity within the system. If the sewers downstream of the capacity request have adequate design capacity, but display wet weather issues, MSD must remove I/I from the credit catchment to create capacity credits prior to the new flow actually being added to the system.

This section outlines the protocol for determining the current peak wet weather capacities for the wastewater collection system, pump stations, and the water quality treatment centers (WQTCs). These protocols, as well as associated data limitations, are discussed for each of the three system elements.

### **2.1    SYSTEM CAPACITY MODELING AND MONITORING**

To analyze sewer system capacity, many complex factors must be evaluated for each type of facility or asset within a collection system under different scenarios. To accomplish this task, MSD has developed hydraulic models for its entire service area using InfoWorks ICM modeling software. The goal of this modeling is to provide a computer model that mimics the function of the actual sewer system, including sanitary flow and I/I sources (as well as stormwater in the combined sewer area). The sewer system models contain pump stations, hydraulic structures, interceptors, and collector sewers<sup>1</sup> within the MSD service area.

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<sup>1</sup> For the separate sanitary sewer system all collector sewers 8-inch in diameter or larger were included in the hydraulic models. For the combined sewer system all sewers 18-inch and larger were included.

The hydraulic models were developed using LOJIC GIS data, historical hydraulic models, as-built record drawings, survey data, and field data. Model updates, calibration and validation is an ongoing and continuous activity. Changes to the models are based on projects, system needs and the best available data. The models were originally calibrated and validated using flow monitoring and rainfall data collected between January and June of 2007 and have been updated periodically. Within the flow monitoring period, dry weather periods were used to develop average daily user flows while wet weather events were used to analyze collection system response to wet weather and to determine the impacts of inflow and infiltration (I/I). Once calibrated to dry and wet weather data, the models are used to assess existing conditions, qualify and quantify deficiencies, and serve as a tool for future planning and capacity assurance reviews.

For the purposes of the SCAP and related to the IOAP, a 1.82-inch cloudburst<sup>2</sup> storm event was chosen as the minimum level of protection and applied to the Infoworks hydraulic models to analyze system capacity. These model runs serve as the basis for analyzing current sewer capacity, along with pump station testing, run time monitoring, and flow metering throughout the system. The following sections describe how modeling and monitoring data is used to evaluate capacity at MSD's water quality treatment centers, sanitary pump stations, and throughout MSD's sanitary sewer collection system.

## **2.2 WATER QUALITY TREATMENT CENTERS (WQTC) CAPACITY PROTOCOL**

Certification of adequate treatment plant capacity is critical because it confirms that at the time the WQTC receives the proposed increased flow, the WQTC will be in compliance for quarterly reporting, and that the new or increased flow will not result in bypasses or diversions prohibited by the National Pollutant Discharge Elimination System (NPDES) permits. Current peak treatment capacities and average daily flow (ADF) limits for MSD's six regional WQTCs and 9 small WQTCs have been established. Wet weather capacity at each WQTC is determined using design and monitoring data. ADF limits are established within each WQTC's current NPDES permit. Appendix B lists the current WQTC capacities, which are reviewed and updated annually to evaluate capacity and report evaluation updates.

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<sup>2</sup> A cloudburst event analysis for the Louisville area was developed using a statistical analysis of historical rainfall data using the methods explained in NOAA Atlas 14. This analysis also developed a typical storm distribution and duration (3 hours) for the Louisville area.

The existing wet weather flow at each WQTC is calculated using the hydraulic models with the peak design wet weather capacities coded into the model. For the purposes of the SCAP, a WQTC is determined to be at peak wet weather capacity when the hydraulic model shows a surcharge condition at the influent pump station or at manholes along the main interceptor leading to the treatment plant. A surcharge condition is defined as a water surface level less than two (2) feet from the top of the influent pump station wetwell or at a manhole (MH) rim along the main interceptor leading to the WQTC.

Current ADF is calculated using a 2-year window of WQTC influent flow data. This 2-year window of data is updated annually in Hansen. Between these updates, committed and requested capacity from new flow customers are tracked within a database using an estimated flow of 290 gpd per single-family equivalent (see Section 2.2.1 below for further discussion). A WQTC is considered to be at capacity when the monitored ADF plus the committed capacity (where capacity charges have been paid) equals or exceeds the permitted ADF. MSD uses the ADF data for future flow forecasting and planning of WQTC upgrades.

### **2.2.1 Average Daily Flow Evaluation**

According to the MSD Design Manual, the design of new infrastructure (collector sewers and small pump stations) is based on 10 State Standards at an average daily design flow of 400 gpd per single-family equivalent (100 gpcd X 4 people/house). This figure is highly conservative in that it is based on average household population sizes during the 1960's and is intended to consider appropriate sizing for future development flows that could potentially enter the system as well as some degree of inflow and infiltration.

For offsetting flows from new capacity requests, MSD developed a flow calculation that more accurately represents single family household discharges using updated average household populations. In order to determine a more accurate average daily design flow per single-family equivalent, MSD researched U.S. Census data (Average household size = 2.4 persons, 2000 US Census data) and past studies (Saturation = 2.9 persons /dwelling, 2011 Floyds Fork Action Plan Study) for more accurate household numbers. Review of this data utilizing 2010 Census data demonstrates that average household saturation in Louisville is 2.7 persons per dwelling, calculated by dividing the total population by the number of active property service connections in the community. Additionally, MSD reviewed influent flows at its regional treatment centers to evaluate these flows compared to design flows calculated from the corresponding contributing service area population.

Based on these studies, utilizing the most conservative, an average daily design flow of 290 gpd (100 gpcd x 2.9 people/house) has been determined to represent a more accurate, yet still conservative, wastewater production per single-family equivalent. Therefore, to calculate the credits needed to offset new flows upstream of capacity-limited areas, this factor of 290 gpd is used to scale the new development flows. For apartment and condominiums of various sizes (1 and 2 bedroom units), the actual population per unit is typically lower than that of a single-family equivalent. However, to calculate credit needs conservatively, MSD has chosen to utilize 2.9 people per unit regardless of unit size. For commercial and industrial, actual water usage records are typically utilized to determine new flow impacts on the sewer system.

### **2.3 WASTEWATER COLLECTION CAPACITY PROTOCOL**

Certification of adequate collection capacity is critical because it confirms that each gravity sewer through which the proposed additional flow will pass has adequate capacity to convey both the existing and proposed peak wet weather flows from all new or existing service connections, without causing a surcharge condition.

The existing wet weather peak flow of the collection system is calculated and evaluated using the 1.82-inch cloudburst storm simulation within the InfoWorks ICM hydraulic models. The models indicate areas of possible wet weather surcharging during the design storm simulation. For the purposes of the SCAP, a wet weather surcharge condition is defined as a water surface level within the sewer that is less than two (2) feet from the manhole rim elevation. If the sewer system is in a residential area with historical capacity-related backup complaints, then a

surcharge condition is considered to be a water surface level within five (5) feet of the manhole rim. However, if MSD has, pursuant to the SCAP, identified pipe segments or manholes designed to operate under a pressure condition (such as siphons), then the capacity of these pipe segments or manholes shall be evaluated based on their design criteria.

The current design capacity of the collection system is determined using the hydraulic models. Using design standard calculations per 10 State Standards as published by the Great Lakes – Upper Mississippi River Board, if adequate capacity to convey the proposed new peak flow is not available, the customer requesting capacity and MSD must coordinate and determine the measures needed to provide adequate capacity for the proposed new flow. If the sewers downstream of the capacity request have adequate design capacity, but display wet weather issues, MSD must remove I/I from the credit catchment to create capacity credits prior to the new flow actually being added to the system.

### **2.4 PUMP STATION AND FORCE MAIN CAPACITY PROTOCOL**

Certification of adequate pump station and force main capacity is critical because it confirms that each pump station and associated force main has adequate capacity to transmit the existing peak wet weather flow plus the proposed peak wet weather flow without causing a surcharge condition at the pump station or within the collection system served by the pump station.

The existing peak wet weather flow at each pump station is calculated and evaluated using the 1.82-inch cloudburst storm simulation within the InfoWorks ICM hydraulic models along with records of high wet wells or documented overflows upstream of the stations. The hydraulic models contain information on all MSD operated pump stations and force mains, which are gathered through a combination of capacity measurements, pump run time analysis, and design data reviews. Using the hydraulic models to simulate pump station and force main capacity provides MSD with a tool to dynamically evaluate all the factors associated with a pump station's capacity, such as wet well and collection system storage, multiple pump configurations, and timing of peak wet weather flows. Combined with the field data collected through monitors and sewer overflow response teams, MSD is able to evaluate the ability of a station to receive additional flow from new capacity requests.

Because capacity measurements, also known as pump drawdown tests, are the most accurate

and up-to-date information that can be obtained for pump stations, MSD periodically performs capacity measurements at pump stations, where possible. The capacity measurement consists of measuring a pump's ability to drawdown, or drop, in the pump station wet-well volume and the corresponding time. After accounting for inflow during the test, the average pump discharge is determined. If there are several pumps, each is tested individually and then in combination with each other. The drawdown tests results are compared to design data to note pump stations that are not performing at designed capacity. See Appendix D for a pump station drawdown test form.

For the purposes of the SCAP, a wet weather surcharge condition at a pump station is defined as water surface level less than two (2) feet from the top of the pump station wetwell or at any manhole rim within the upstream collection system served by the pump station. If the collection system served by the pump station is in a residential area with historical capacity-related backup complaints, then a surcharge condition is considered a water surface level within five (5) feet of the top of the wetwell or at any manhole rim within the upstream collection system served by the pump station.

Adequate design capacity is determined by comparing the Peak User Flow against the pump station Firm Measured Capacity found in Hansen IMS (see Figure 2.1). If the Peak User Flow is less than the Firm Measured Capacity then the pump station has available capacity for additional proposed peaked flows. If adequate capacity is not available, the developer and MSD's Development Team must determine the measures needed to provide adequate capacity for the proposed peak flow.<sup>3</sup>

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<sup>3</sup> For pump stations with unique designs, functions, or setups, such as combination flood and sanitary stations, specific capacity conditions may apply that fall outside of the pump station and force main capacity protocols outlined in this section. Capacity at these facilities will be determined based on factors most applicable to each unique situation.

The screenshot shows the 'Sewer Lift Station InfoViewer' application. The main window displays information for lift station 'MSD0042-PS' located at 'SONNE AVE'. The 'Additional Data' section includes fields for Record Drawing Status (F), Depth (17.0000), SAP Functional Location (SONNEA), OPS ID (SONN), Acquired date (2/28/1962), Operations Shift (BSHIFTWEST), and Maintenance Shift (BSHIFTWEST). The 'Capacity/Flow Info' section is circled in red and contains the following data:

|                        | Flow (gpd) | Last Update    |
|------------------------|------------|----------------|
| Firm Design Capacity   | 216800     | 2/5/2010 00:00 |
| Firm Measured Capacity | 285120     | 2/5/2010 00:00 |
| Maximum Pumping Rate   | 306720     | 2/5/2010 00:00 |
| Current Peak User Flow | 0          | // :           |

Figure 2.1 – Pump Station Capacity Information found in Hansen IMS

Additional design capacity reviews required for pump stations include reviewing the current Lateral Extension Report for each downstream pump station affected by the new flow. The total flow committed for requests with paid capacity charges plus the Maximum Pumping Rate should not exceed the Firm Design Capacity of the Pump Station. Figure 2.2 represents a Pump Station Report generated from Hansen IMS documenting the pump station design capacity, new customer information, and total requested flow upstream of that pump station.

| CHENOWETH RUN                 |                             | MSD0196-PS                      |                              |                                   |                  |
|-------------------------------|-----------------------------|---------------------------------|------------------------------|-----------------------------------|------------------|
| Firm Design Capacity: 828,000 |                             | Firm Measured Capacity: 515,520 |                              | Maximum Pumping Capacity: 552,960 |                  |
| Current Dry Weather Flow: 0   |                             |                                 |                              |                                   |                  |
| <u>APNO</u>                   | <u>APNAME</u>               | <u>WORKTYPE</u>                 | <u>NOTICE TO<br/>PROCEED</u> | <u>Response Letter</u>            | <u>FLOW</u>      |
| 180600                        | BOLLING BROOK SUBDIVISION   | LEHIST                          | 1/20/05                      |                                   | 22,000.00        |
| 180581                        | CARRINGTON GREEN            | LEHIST                          | 7/20/05                      |                                   | 20,400.00        |
| 178587                        | LORENZ - CHENOWETH RUN SUBD |                                 |                              | 11/13/2007                        | 3,600.00         |
|                               |                             |                                 |                              | <b>Total</b>                      | <b>46,000.00</b> |

Figure 2.2 – Pump Station Report with LE request data

## **SECTION 3 CAPACITY CERTIFICATION DETERMINATION PROCEDURES**

The objective of capacity certification is to ensure that system capacity is available starting at the new flow entry point, downstream through the collection system, and ending at the WQTC. Capacity availability must be verified using two different methods, summarized in Section 3.1 and 3.2.

### **3.1 PEAKED DRY WEATHER FLOW VERIFICATION**

First, dry weather capacity for the new flow must be verified for the system downstream of the new capacity request utilizing the methodology for peak dry weather flow as outlined in MSD's Design Manual and the *10 States Standards*. In cases where the capacity request flows are large or the existing system is suspected to be close to capacity, MSD runs modeling simulations to assess the impact on the downstream system.

If the system can convey this peak flow with no adverse affects, MSD approves the capacity request with all necessary charges. However, if the new flow will cause new problems in the system including at the receiving WQTC, MSD and the developer must determine actions that will mitigate this impact to allow the new flow into the system upon which MSD will issue a conditional approval. If remedial action cannot be agreed upon, MSD will deny the capacity request.

### **3.2 WET WEATHER VERIFICATION**

Once MSD verifies that peak dry weather capacity is available, MSD must then review the capacity request location to see if wet weather SSOs occur downstream of the new flow location. If a documented overflow exists downstream of the capacity request, MSD is then required to create capacity credits through system improvement and rehabilitation at a ratio of 3 credit gallons for every new gallon approved (3:1 ratio), assuming 290 gallons per single family equivalent.

#### **3.2.1 Flow and Credit Tracking & Planning**

MSD tracks credits and flows for two different purposes. One purpose is to demonstrate that actual flow added to the system from approved capacity requests have been offset at the correct 3:1 ratio through completed system and rehabilitation efforts. MSD's objective is to

never allow a negative balance develop between actual new flow in the system in relation to the capacity credit balance within each defined capacity credit catchment. Quarterly, MSD updates the actual build out of active developments and the construction completion percentage of MSD rehabilitation or system improvement projects and updates the flow to credit balance sheet for each credit catchment.

MSD's second purpose for flow tracking and credit planning is to project flow build out for approved capacity requests upstream of known overflows, and then facilitating the planning and implementation of capital projects that will generate capacity credits before the new flow is discharged into the system.

For residential, commercial and industrial capacity requests, MSD utilizes the sewer release date of the capacity request for flow contribution. Utilizing these projections, MSD can identify areas in which new rehabilitation or improvement projects must be completed to keep the 'actual' credit balance positive. Therefore, if the 'planned' flows exceed the 'planned' credits, MSD will initiate additional rehabilitation or improvement efforts in the appropriate credit catchments accordingly. In summary, MSD's process for tracking and creating credits must ensure that, prior to new flow from a capacity request actually entering the system, a sufficient number of credits have been created through completed rehabilitation or system upgrades to maintain a positive credit catchment balance.

### **3.2.2 Jeffersontown Water Quality Treatment Center**

As stated in MSD's Amended Consent Decree signed April 2009, until the Composite Correction Plan for the Jeffersontown WQTC has been fully implemented and the Jeffersontown WQTC has either been eliminated or achieved full compliance with its KPDES permit, MSD will only certify new flow requests from existing sewer service connections upstream of the Jeffersontown WQTC in the following cases:

- 1) MSD may certify new flow requests for each of the five new flow customers listed in the Amended Consent Decree provided the new flow request certification process is consistent with MSD's SCAP procedures and is limited to the remaining gallons per day of sewer flow subject to approval as listed in the Amended Consent Decree.

2) MSD may certify a new flow request only if, as a direct result of the project involving the new flow request, an equal or greater amount of flow from an existing sewer service connection is eliminated prior to certification of the new request with the purpose being to not increase the total flow to the Jeffersontown WQTC. Additionally, the new flow requests certification process should be consistent with MSD's SCAP procedures.

### **3.2.3 Sanitary Sewers Located in the Combined Sewer System**

As stated previously, combined sewers are not subject to SCAP requirements; however, separate sanitary sewers that flow into the combined system must adhere to SCAP requirements. The procedures for certification and credit banking in these areas will be reviewed and conducted on a case-by-case basis.

### **3.3 LOJIC GIS AND HANSEN IMS**

The System Capacity Assurance Process requires utilization of the LOJIC GIS and the Hansen IMS system to store, track, and analyze data related to system capacity.

MSD has established LOJIC GIS layers and databases for analyzing system capacity that include:

- Documented SSOs
- Sanitary Sewer Collection lines
- Pump Station and Transmission Components
- Water Quality Treatment Centers
- System Monitoring Locations
- Sewershed Boundaries
- Hydraulic Modeling Results for Surcharging and Deficiencies

As MSD's Development and Capacity Review Team evaluates each new flow request, Hansen IMS is utilized to document the capacity assurance process and record the pertinent information from the review. In addition, databases within Hansen IMS will document the new flow customers' location, system capacity requirements, as well as the capacity of the WQTCs, pump stations, and the collection system downstream. When the system is incapable of conveying new flows, Hansen IMS will track these deficient areas and the actions necessary to approve future new flow requests.

### **3.4 SPECIAL CONDITIONS**

#### **3.4.1 Certification Exceptions**

In some cases, MSD may authorize a request for additional flow to the system even if adequate capacity cannot be certified and credits are not available at the anticipated time of flow initiation. These cases include the following:

- The request eliminates illicit discharges of wastewater to the stormwater system.
- The request is made for an essential service facility. Essential services are defined as critical or essential facilities such as, healthcare facilities, public safety facilities, public schools, other government facilities, or in cases where a pollution or sanitary nuisance (as determined by the Louisville Metro Public Health and Wellness Department) will be eliminated in relation to on-site septic systems.
- A request or internal capital project that diverts existing flow from one sewershed provides an environmental benefit.

However, a subtraction shall be made from the credit bank in an amount equal to the average projected flow from the correction of the illicit wastewater discharge, essential service facility, or diversion of flow. Credits for these exceptions will be generated as quickly as possible.

#### **3.4.2 Redevelopment of Existing Facilities**

In some instances, a request will be received requesting flow for a new structure replacing an existing structure that previously contributed flow to the separate sanitary sewer system. In these cases, the previous flow will be subtracted from the projected flow and the residual flow will be assessed according to credit banking procedures.

## **SECTION 4    STANDARD PROCEDURES FOR CALCULATING & TRACKING FLOW CREDITS**

The SCAP requires a standard operating procedure to revise and implement processes to determine if capacity is available in the system. The following sections explain how MSD will accumulate capacity credits through I/I removal projects and estimated flow reduction from these projects, how credits are calculated from I/I removal, and how credits are tracked and distributed to new flow requests within the Hansen IMS.

### **4.1    Sewer System Rehabilitation and I/I Removal**

As described in Section 3, new capacity requests upstream of documented SSOs will generally require 3 capacity credits for every new gallon approved, assuming 290 gpd per single family equivalent. Commercial and industrial capacity requests typically utilize actual flows from water records of similar developments. The SCAP goal is to ensure new flows do not exacerbate existing system overflow volumes within each credit catchment; therefore, the tracking of I/I removal is very important. MSD continues to execute inspection and rehabilitation projects to remove I/I from the sanitary sewer system. A current list of known overflows and projects is submitted in each Consent Decree Quarterly Report beginning October 2014. An example of this list is included as Appendix F. MSD's Continuing Sanitary Sewer Assessment (CSSA) Program outlines the implementation process for the inspection, identification, prioritization, and rehabilitation of sewer line defects. Through this program and other CMOM efforts, capacity restoration projects and capital projects are ongoing and include sewer line replacement, pump station upgrades, main line repairs, and remediation of sewer lines, manholes, and service laterals. All of these projects increase peak wet weather capacity within the sanitary sewer system by removing I/I. With this in mind, the SCAP serves as the platform for tracking flow reduction credits and increasing peak flow conveyance capacity and tracking them against approved capacity requests, deducting credits at a 3:1 ratio within each credit catchment.<sup>4</sup>

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<sup>4</sup> MSD has been performing rehabilitation and system improvements associated with the terms of the Consent Decree with KDOW and EPA. To capture the credits earned as a result of these improvements the effective retroactive date for credit claims is August 12, 2005, the date the Consent Decree went into effect.

As MSD continues to repair, replace, and remediate the sanitary sewer system, credits are accrued on a one capacity credit per one gallon of I/I removal basis. Calculations for estimating I/I removal from various types of repairs and remediation are explained in the following section.

### 4.2 Estimated Flow Reduction from System Rehabilitation

In order to calculate capacity credits for corrective actions, the flow reduction or added capacity from the corrective actions must be estimated. The following types of corrective actions are anticipated: mainline sewer rehabilitation; pump station rehabilitation and upgrades, storage basin construction, new sewer conveyance construction, manhole rehabilitation, downspout connection removals, foundation drain (sump pump) connection removals, area drain connection removals, and rehabilitation of private sewer service laterals. For sewer and manhole rehabilitation and illicit connection removal, the estimated flow reduction listed in this section is based on values presented in the SCAP by MSD of Greater Cincinnati. Any alternative methods for estimating flow reduction are subject to review by MSD's capacity review team. The calculation of estimated flow reduction, or capacity increase, from each type of corrective action is discussed below. As MSD continues to implement various system improvement projects and gathers I/I reduction data, the credit amounts listed below may be adjusted to reflect updated reduction projections. Such adjustments will include the appropriate technical documentation and will constitute a newly revised date for the SCAP document.

#### 4.2.1 Manhole Rehabilitation

Primary repair mechanisms for manholes include chimney seals, frame and lid replacement, full lining, and mechanical or chemical treatment. The estimated peak flow reduction is determined by severity and number of defects identified during inspection, as well as the location of the manhole and its susceptibility to inundation by rainwater during wet weather as defined below.

**Paved Areas** - Manholes in paved areas that do not meet the "along a stream" definition.

**Non-Paved Areas** - Manholes in non-paved areas that do not meet the "along a stream" definition.

**Along a Stream** - Manholes will be considered to be “along a stream” when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.

**(Source: American Society of Civil Engineers, Manual Practice No. 92)**

Tables 4.1 through 4.3 provide the typical peak flow reduction for manhole rehabilitation in paved areas, non-paved areas, and along a stream.

Table 4.1 – Peak Flow Reduction for Manholes in Paved Areas

| Manhole Section | Reduction Values in Gallons Per Day (gpd) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 78  | 156          | 311       | 622        |
| Chimney         | 78  | 156          | 311       | 622        |
| Cone            | 78  | 156          | 311       | 622        |
| Wall            | 39  | 78           | 156       | 311        |
| Pipe Seal       | 39  | 78           | 156       | 311        |
| Bench           | 39  | 78           | 156       | 311        |
| Channel         | 39  | 78           | 156       | 311        |

Table 4.2 – Peak Flow Reduction for Manholes in Non-Paved Areas

| Manhole Section | Reduction Values in Gallons Per Day (gpd) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 328                                       | 656          | 1,313     | 2,626      |
| Chimney         | 328                                       | 656          | 1,313     | 2,626      |
| Cone            | 328                                       | 656          | 1,313     | 2,626      |
| Wall            | 164                                       | 328          | 656       | 1,313      |
| Pipe Seal       | 164                                       | 328          | 656       | 1,313      |
| Bench           | 164                                       | 328          | 656       | 1,313      |
| Channel         | 164                                       | 328          | 656       | 1,313      |

Table 4.3 – Peak Flow Reduction for Manholes Along a Stream

| Manhole Section | Reduction Values in Gallons Per Day (gpd) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 864                                       | 1,728        | 3,456     | 6,912      |
| Chimney         | 864                                       | 1,728        | 3,456     | 6,912      |
| Cone            | 864                                       | 1,728        | 3,456     | 6,912      |
| Wall            | 432                                       | 864          | 1,728     | 3,456      |
| Pipe Seal       | 432                                       | 864          | 1,728     | 3,456      |
| Bench           | 432                                       | 864          | 1,728     | 3,456      |
| Channel         | 432                                       | 864          | 1,728     | 3,456      |

#### 4.2.2 Removal of Illicit Connections to the Sanitary Sewer System

Illicit connections to the sanitary sewer system are direct stormwater inflow sources. Disconnection of these sources can provide significant increases in capacity. The following are estimated peak flow reductions due to the removal of typical illicit connections.

|                  |           |
|------------------|-----------|
| Area Drain       | 6,000 gpd |
| Downspout        | 4,000 gpd |
| Foundation Drain | 4,000 gpd |
| Sump Pump        | 4,000 gpd |

#### 4.2.3 Rehabilitation of Deteriorated Mainline Sewers and Sewer Service Lateral Corrections

The estimated peak flow reductions for mainline sewer rehabilitation or replacement (including service laterals) are as follows in gpd per inch diameter-mile (IDM) of pipe rehabilitated:

|                                      |                  |
|--------------------------------------|------------------|
| Stream Inundation / High Groundwater | 34,000 gpd / IDM |
| Non- Inundation / Low Groundwater    | 60 gpd / IDM     |

#### 4.2.4 Pump Station Rehabilitation and Upgrades

Credits for pump station rehabilitation and upgrades will be calculated by measuring the pre-

construction station capacity and post-construction station capacity. The credit amount will be equal to the difference of the two capacities.

### **4.2.5 New Sewer Conveyance and Storage**

Credits for new sewer conveyance will be equal to the full pipe capacity of the new sewer line. Credits for new storage will be equal to the full storage basin capacity.

## **4.3 CREDIT CALCULATIONS**

In order to accrue and track capacity credits for corrective actions, the estimated flow reduction or added capacity from the corrective actions must be calculated. Appendix F provides detailed instructions for calculating rehab credits for sewer lines and manholes.

Figure 4.1 shows an example Rehabilitation Credits Calculation sheet from an actual Interceptor Rehabilitation project. In this example, only rehabilitation of mainline sewers and manholes took place. The Project Total Credits summarized at the bottom of the sheet are the credits applied to the catchment(s) for the credit banking purposes.

## System Capacity Assurance Rehabilitation Credits Calculation Sheet

Project Name: Sinking Fork Interceptor Rehabilitation

Budget ID: H07294

Record No.: 15442

Anticipated Date: 12/23/2008

Completed Date: 12/23/08 & 3/30/09

Credit Catchment: Middle Fork

Calculated By: Josh Dickerson

Checked By: Tony Marconi

### Removal of Illicit Connections to the Sanitary Sewer System

|                   | Quantity |   | Credit       | = | Total    |         |
|-------------------|----------|---|--------------|---|----------|---------|
| Downspouts        | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |
| Area Drains       | <u>0</u> | x | <u>6,000</u> | = | <u>0</u> | Gallons |
| Foundation Drains | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |
| Sump Pumps        | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |

### Rehabilitation of Mainline Sewers and Sewer Service Lines

Total from Line Credits Entry Sheet 352,152 Gallons

### Manhole Rehabilitation

Total from Manhole Credits Entry Sheet 85,815 Gallons

**Project Total Credits** 437,967 Gallons

Figure 4.1 – Rehabilitation Credits Calculation Sheet

## 4.4 ENTERING AND TRACKING CREDITS IN HANSEN IMS

The Hansen IMS is used to enter credits from I/I removal or capacity restoration projects. As the rehabilitation projects are completed, the associated credits will be made available in the capacity credit ledger for each capacity credit basin. System rehabilitation performed by MSD will be reviewed on an annual basis and credits will be updated in catchment areas accordingly. Appendix G provides credit ledgers by catchment area.

Figure 4.2 represents an example SCAP credit form where estimated flow reduction is entered into Hansen IMS after an I/I removal project is completed.

**Building Application Information - Windows Internet Explorer**

PREVIOUS NEXT ACTION PRINT HARP DOCUMENTS REPORTS HELP CLOSE

**INFORMATION - APPLICATION# 217235**

Application Type SCAPCREDIT SCAP I Credit Project Application is Open.  
 Primary Applicant Current milestone is EB & GIS Update.  
 Address Current unpaid amount of \$0.00.

Location  
 SINKING FORK INTERCEPTOR FROM GREEN MEADOW CIRCLE TO  
 CONFLUENCE WITH MIDDLE FORK INTERCEPTOR NEAR THE  
 INTERSECTION OF BOWLING BLVD AND SHERBURN LANE.

**Job Description**

Application Details  
 Reviews  
 Inspections  
 Conditions  
 Required Licenses  
 Fees  
 Bonds  
 Valuations  
 Applicants  
 Sites  
 Employees  
 Related Records  
 Logs  
 Attachments

**Status Dates**

|           |    |   |    |  |         |    |
|-----------|----|---|----|--|---------|----|
| Processed | // | : | by |  | Expires | // |
| Issued    | // | : | by |  |         |    |
| Final     | // | : | by |  |         |    |
| Temp COO  | // | : | by |  |         |    |
| COO       | // | : | by |  |         |    |

☒ Create eB Container

**Job Description**

|                  |                                |                            |                    |        |
|------------------|--------------------------------|----------------------------|--------------------|--------|
| <b>Work Type</b> | SCPRJ                          | SCAP Credit Single Project | # of Plans         | 0      |
| Type             |                                |                            | # of Pages         | 0      |
| <b>A/P Name</b>  | SINKING FORK ICA PHASE I REHAB |                            | Declared Valuation | \$0.00 |
| Square Footage   | 0.00                           |                            | Actual Valuation   | \$0.00 |

**Description of Work** This rehab project was listed in the interim SSDP and defects were identified based on inspection work performed under the ICA (interceptor conditions assessment) Phase I project. The original project scope was completed on 12/23/08. Additional manhole work was performed with remaining funds and completed on 3/30/09.

Figure 4.2 – Example SCAP Credit Form

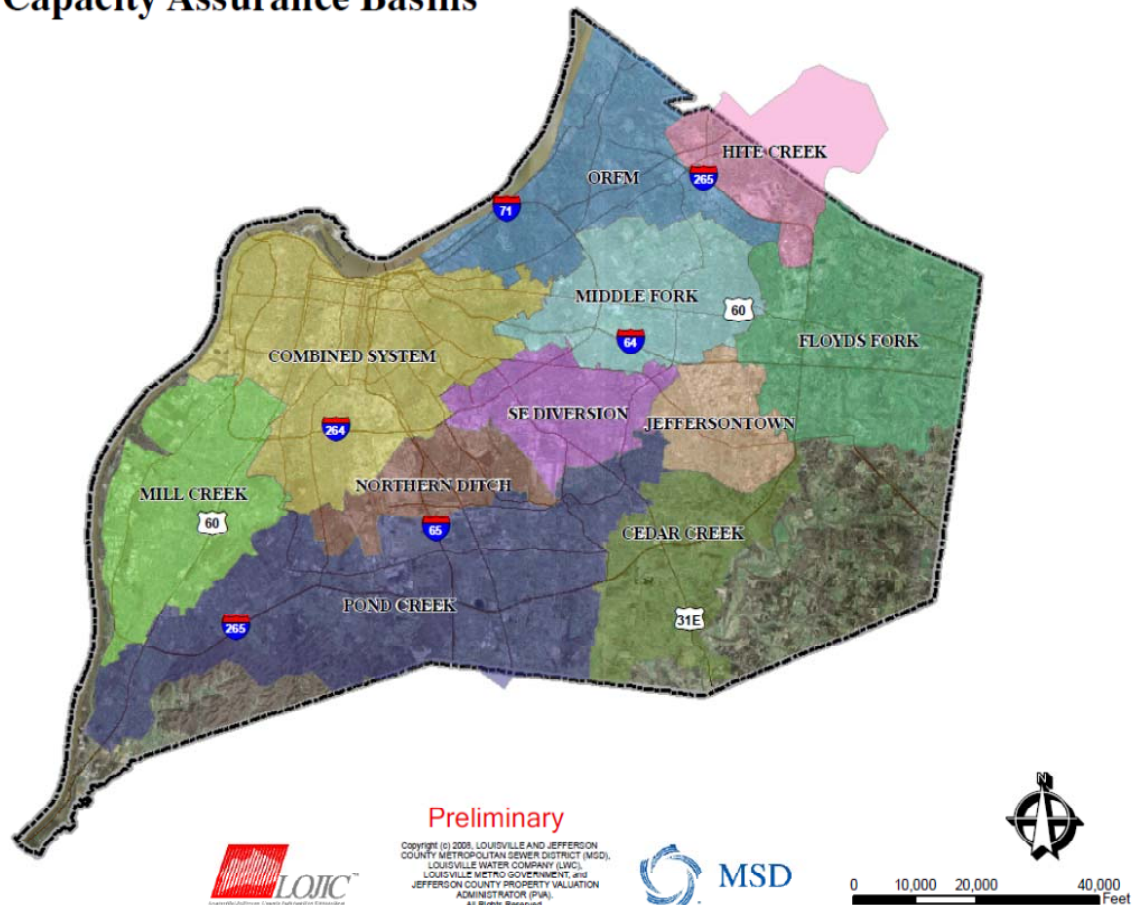
The Hansen IMS is also used to track where each capacity credit is being used, and where the new flow request credits apply.

#### 4.5 CAPACITY CREDIT CATCHMENTS & CREDIT REPORTING

MSD will track the balance of new flows coming into the sanitary collection system versus the number of capacity credits available. The credit balances will be tracked per capacity credit

basins as depicted in Figure 4.3. In each Consent Decree Quarterly Report, MSD will submit an updated capacity credit ledger per basin to demonstrate that sufficient credits were available as the new flows from approved capacity requests actually begin discharging into the collection system. Capacity ledgers are included in Appendix G as examples.

## MSD Capacity Assurance Basins



**Figure 4.3 - Capacity Credit Basins**

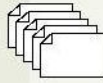
Appendix A – Lateral Extension Procedures, Forms, and Process

1. Lateral Extension Just In Time Submittals Process
2. Lateral Extension Procedures Description
3. Downstream Facilities Capacity Request Form
4. Hansen LE Request Data Entry Process

# LATERAL EXTENSION JUST IN TIME SUBMITTALS

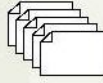
## CUSTOMER

### SUBMITTAL 1 CAPACITY



REQUEST FOR SANITARY  
SEWER CAPACITY FORM  
SITE LOCATION MAP

### SUBMITTAL 2 DESIGN



**APPROVED** REQUEST FOR  
SANITARY SEWER CAPACITY  
FORM  
APPLICATION FOR APPROVAL  
OF CONSTRUCTION  
DOCUMENT PLANS  
DIV. OF WATER SEWERAGE  
APPLICATION WITH:  
APPLICATION FEE  
USGS QUAD MAP  
SERVICE AREA MAP  
DESIGN PLANS  
SUMMARY OF PROPERTY TYPE  
AND UNITS TO BE SERVED  
COMPUTATION SHEET FOR  
SANITARY SEWER DESIGN  
PROPOSED PROJECT PLAN  
SPECIAL PROVISIONS  
ROADWAY PLANS (if needed)  
COPIES OF LETTERS  
TRANSMITTING PLANS TO  
VARIOUS UTILITIES  
(if needed)  
PUMP STATION SERVICE  
AREA MAP WITH FLOWS  
CALCULATIONS  
SPECIFICATIONS  
(if needed)  
RESERVATION OF  
CAPACITY (if needed)

CAPACITY  
APPROVAL

DESIGN  
APPROVAL

### SUBMITTAL 3 MYLARS



MYLARS

MYLARS  
APPROVAL

## PERMITS, CONTRACTS & PAYMENTS

### SUBMITTAL 4



LETTER OF APPROVAL  
FROM METRO HEALTH  
LETTER OF APPROVAL  
FROM THE DOW  
SITE DISTURBANCE FORM  
RAILROAD CROSSING  
PERMIT APPLICATION  
(if needed)  
KTC ENCROACHMENT  
PERMIT APPLICATION  
(if needed)  
LATERAL EXTENSION OF  
BOUNDARIES AGREEMENT WITH:  
PROPERTY DEED  
• PERFORMANCE BOND WITH  
POWER OF ATTORNEY  
• MAINTENANCE BOND WITH  
POWER OF ATTORNEY  
• CERTIFICATE OF LIABILITY  
INSURANCE  
• ACCEPTED BID PROPOSAL  
SIGNED WITH ENCROACH-  
MENT DATA  
• EASEMENT PLATS  
OR  
EXTENSION OF BOUNDARIES  
AGREEMENT WITH:  
• PROPERTY DEED

NOTICE TO  
PROCEED

### SUBMITTAL 5



CAPACITY CHARGE PAYMENT  
(or LETTER OF CREDIT)  
LETTER OF APPROVAL  
FROM FIRST CLASS CITY  
(if needed)  
DOW STREAM CROSSING  
PERMIT (if needed)  
CORPS OF ENGINEERS  
STREAM CROSSING  
PERMIT (if needed)  
RECAPTURE CHARGE  
(if needed)  
TELEMETRY PAYMENT  
(if needed)  
METRO ENCROACH-  
MENT PERMIT  
(if needed)

### SUBMITTAL 6 CONSTRUCTION



SWORN STATEMENT OF  
FINAL PAYMENT – CONTRACTOR  
SWORN STATEMENT OF  
FINAL PAYMENT – DEVELOPER  
AS BUILT CERTIFICATION  
LETTER TO DOW  
AS BUILT DRAWINGS

SEWER  
RELEASE

## MSD

IDENTIFY AND DOCUMENT  
DOWNSTREAM SSOs, PUMP  
STATIONS, WQTCs  
EVALUATE FIRM DESIGN  
CAPACITY OF COLLECTION  
SYSTEM FOR CONVEYING  
PROPOSED PEAK FLOW  
EVALUATE FIRM DESIGN  
CAPACITY OF PUMP  
STATIONS FOR CONVEYING  
PROPOSED PEAK FLOW  
EVALUATE THE CAPACITY  
OF THE RECEIVING WQTC  
DETERMINE IF THE NEW  
FLOW IS UPSTREAM OF A  
DOCUMENTED OVERFLOW

# LATERAL EXTENSION PROCEDURES

The construction of new sanitary facilities requires the approval of the following public agencies:

## A. Jefferson County

1. Louisville & Jefferson County Metropolitan Sewer District (MSD)
2. Louisville Metro Health Department (HD)
3. Kentucky Division of Water (DOW)
4. Louisville Metro
5. Fourth Class Cities

## B. Oldham County (for sewers that flow to MSD treatment plants)

1. Louisville & Jefferson County Metropolitan Sewer District (MSD)
2. Kentucky Division of Water (DOW)
3. City of Crestwood or Oldham County Environmental Authority depending on location

The purpose of this document is to provide developers, engineers, and others with a list of the items required in order to approve plans and special provisions for a Lateral Extension (LE) or a Private Sewer project. All lateral extensions (as defined by 401KAR5:005.8) which will become a part of MSD's system require the execution of a Wastewater Facilities Lateral Extension Contract or approval from MSD for the proposed project. Sanitary projects which connect to systems which are not owned by MSD are subject to the same review and approval procedures, but do not require the execution of a contract with MSD (in these cases, the owner of the system must certify that the system has the capacity to transport and treat the proposed flow). In general, sewers that serve a single property can be classified as private; however, MSD will determine how a lateral extension is classified

MSD has prepared a number of documents which are available to the engineer for wastewater projects. They include a Design Manual, Standard Drawings, Standard Specifications, Special Provisions, and a Pre-Approved Products List. Additionally, the engineer should refer to the "Just in time diagram for lateral extension" that can be found on the MSD web site. Engineers

not familiar with the MSD lateral extension approval process are encouraged to review the process with MSD personnel.

## **CAPACITY PHASE**

The engineer should submit a downstream facilities capacity request form. The form and instructions for filling it out are available on the MSD web site. MSD will use the information provided to evaluate the wastewater system downstream of the proposed development to ensure that there is sufficient capacity to transport and treat the flows that will be generated.

If capacity is available, MSD will issue a capacity approval letter which ensures capacity for the project for 90 days. This approval may be contingent upon a number of factors such as the payment of applicable fees, construction of a pump station and/or downstream improvements. If capacity is not available, MSD and the engineer can discuss a strategy for providing service to the development.

## **PROJECT FEES**

Most new development will be subject to one-time fees based on the volume of flow that will be generated. The applicable fees that can apply to the project are capacity charges, inflow and infiltration fees and recapture fees. A detailed description of the applicable fees can be found in MSD's current Wastewater Service Charges document.

## **PLANNING PHASE**

Prior to, during or after the capacity phase of the project, the engineer and MSD should discuss the available alternatives for servicing the development. Issues that may need to be addressed are the location of MSD's existing facilities and access to those facilities, the need for a pump station, opportunities to eliminate a pump station and sizing of facilities to accommodate upstream of the development. For developments that require a pump station, an economic analysis of costs as laid out in MSD's design manual may be required.

## **DESIGN PHASE**

Specific items which must be submitted to MSD as part of the design review submittal process are identified below. They must be submitted in the sequence and format detailed in

the “just in time diagram for lateral extension”. Any submittal made to MSD with missing or incorrect information will be returned un-reviewed:

- 1. Application For Approval Of Contract Documents for Sanitary Sewer Projects.** This provides basic information about the project, along with the terms and conditions of the approval. It should be noted that MSD's approval is only valid for a period of one year.
- 2. Minimum Requirements Checklist for Sanitary Sewer Construction Plans.** This form provides the Applicant with a listing of items normally required for MSD to complete its review of the material.
- 3. Construction Plans.** Plan drafting standards (required) and design criteria are covered in MSD's Design Manual. Example plan sheets, CAD files and templates are available on MSD's website. Final plans must be submitted on double-matte, 24" x 36" sheet mylar, with a minimum thickness of 3 mils. Review transmittal copies may be standard blue-line or black-line prints. Two (2) copies are required for each submission. The title sheet should include a location map, a sheet index, the name, address and telephone number of the engineer who prepared the plans, the name, address and telephone number of the developer, the name, address and telephone number of the owner, the surveyor's certification block with a Professional Surveyor's seal, signature and date, a legend, standard and special notes, the Professional Engineer's seal, signature and date, and an approval block for MSD. All sheets must include the project name, the developer's information, the owner's information, the engineer's information, sheet title, submittal date, Professional Engineer seal/signature/date, and Professional Land Surveyor seal/signature/date. The seals and signatures of the engineer and the surveyor (both of whom must be currently licensed in the Commonwealth of Kentucky) must be originals. The Professional Engineer's seal/signature/date is required on all sheets and the Professional Land Surveyor's seal/signature/date is required on all sheets with boundaries shown.
- 4. Special Provisions.** Special provisions shall be submitted and shall be adjusted to address the specifics of the project. The engineer shall cross out sections of the provisions that do not apply. The special provisions shall not be modified without specific approval by MSD.

- 6. Design Calculations.** The proposed development, along with all upstream or tributary areas must be shown on a topographic map at an appropriate scale. The expected saturation population, based on current zoning, should be used to size the proposed sewers. Population based on zoning can be found in Chapter 8 of MSD's Design Manual. It should be noted that MSD may require improvements to downstream facilities in order to accommodate the flow from proposed developments. This will be determined on a case-by-case basis. Reference should be made to Chapter 8 of the Design Manual for the required "Computations for Sanitary Sewer Design" format and instructions.
- 7. Easement Plats (if required).** Plats must meet minimum standards for land surveying in Kentucky. They must be certified and sealed by a Professional Land Surveyor currently licensed in the Commonwealth of Kentucky. Two (2) copies are required for each submission, and the original plats must be included with the final submission of documents. MSD will be responsible for recording all easements for public sewers in Jefferson County. In Oldham County, MSD must be provided a copy of the recorded easement. See Chapter 7 of MSD's Design Manual for easement plat preparation guidelines.
- 8. Record Plat.** A copy of the record plat (recorded or unrecorded) is acceptable. This must be submitted in order for MSD to determine whether or not additional sewer and drainage easements will be required. Before MSD will allow sanitary sewers to be accepted and put into service, all public sewers must be in public rights of way or in a public easement.
- 9. Preliminary Subdivision Plans.** A copy of the approved preliminary subdivision plans should be submitted with the original submission if available.
- 10. Roadway Plans (if applicable).** A copy of the roadway plans should be submitted in order for MSD to determine if sufficient cover will be available and to ensure that there are no conflicts with any other proposed facilities. Although MSD will attempt to identify conflicts during review, it is the design engineers responsibility to ensure all potential conflicts are addressed.
- 11. Contacting Other Utilities.** Documentation must be provided showing that potential conflicts with existing utilities have been addressed to the satisfaction of the utility company. MSD must be copied on all letters and transmittals to and from the various utility companies.

- 12. City/County/State Permits.** If proposed sewers will be located within, or crossing the right of way of existing roads, or if proposed sewers will be located outside of the pavement of proposed roads, but still within the right of way, an encroachment permit is needed from the appropriate agency. MSD will apply for state roadway encroachment permits. All other encroachment permits shall be obtained by the developer or contractor as required by the governing agency. The approved plans shall be used to obtain the necessary permits. The Design Drawings and Special Provisions provided by the Design Engineer must include the requirements set forth by the governing agency. It is assumed that the Design Engineer has been in contact with the Regulating Agency prior to submittal of the Encroachment Permit. If a state encroachment permit is required, seven (7) sets of plans are needed for the submittal. Original copies of any encroachment permits required must be provided to MSD.
- 13. Small City Permits.** If the proposed facilities will be located within the corporate limits of any third or fourth class cities, completed permits showing MSD as the Applicant must be included. The developer/engineer is also responsible for complying with any additional ordinances (e.g. tree cutting) which may be required by third or fourth class cities. Approved permits must be included with the final submittal of plans to MSD. Fifth and sixth class cities will be notified of the proposed project by MSD. Any other requirements by the 5th and 6th class cities shall be handled on a case-by-case basis. MSD must be copied on all correspondence to and from the small city.
- 14. Railroad Crossings.** If proposed sewers will be located within, or crossing, the right of way of existing railroads, executed easement plats must be included for each occurrence. Permits will not be acceptable. MSD must be copied on all correspondence to and from the governing railroad. Applicant is responsible for payment of all fees.
- 15. Miscellaneous Permits.** If proposed sewers will be located within, or crossing, the right of way of any other existing facilities (e.g. Texas Gas), completed permits showing MSD as the Applicant must be included in the final submittal of plans to MSD. MSD must be copied on all correspondence to and from the agency.
- 16. Proposed Project Plan.** An 8 1/2" x 14" drawing showing the proposed project must be submitted to MSD. In order to provide consistency in the appearance of project plans, a template is provided on the web site and in the design manual.

**17. Erosion/Sediment Control Plan.** The Engineer must submit a plan for erosion and sediment control meeting the requirements of the design manual. A Notice of Intent permit should be submitted to DOW 72 hours before construction starts.

**18. Wastewater Facilities Lateral Extension of Boundaries Agreement.** This document is the legal agreement between the developer and MSD regarding the construction of sanitary sewerage facilities. It conveys the sewerage facilities to MSD, upon completion and acceptance by MSD. The developer agrees to construct the project according to the plans, special provisions and specifications, to employ an engineer to be available during construction, to review shop drawing submittals and other services as the developer's representative, to commence the project within one year, and to furnish record information once the job is finished. MSD agrees to inspect the work, and to accept ownership of the facilities, along with operation and maintenance responsibilities once construction is completed. Please refer to the lateral extension of boundaries agreement preparation instructions to ensure that the agreement is prepared correctly. Incorrectly prepared agreements will be returned.

**19. Accepted Bid Proposal.** MSD requires that the lump sum cost for the construction of the sanitary sewers be submitted. The lump sum amount shown on the form shall be the same as the amount shown on the Performance Bond. The bid proposal shall be dated the same as the third paragraph of the bonds.

**20. Bonds.** MSD requires that a Performance Bond be posted covering the cost of sewer facilities construction cost.

If the proposed sanitary facilities will be located under any pavement (roads, streets, parking lots, driveways of any material besides earth), MSD will also require that a Maintenance Bond be posted in the amount calculated by the engineer in accordance with the guidelines indicated in the Special Provisions (\$5,000.00 minimum, \$4 per LF under Pavement county Road, \$50 per LF under State Maintained Road).

After the project has been accepted by MSD, a two-year warranty period begins. If there are no problems with the facilities after one year, MSD will release the bonds.

**21. Pump Stations –** The following items must be submitted, for either a public or private pump station, before the review will take place.

Service Area Map - A topographic map showing the proposed development, along with all upstream or tributary areas shown. The expected saturation population, based on current zoning, should be shown in each area of the map. The service area map shall be shown on the construction plan.

Calculations - The calculations should be for both the initial and the ultimate conditions. All calculations shall be presented in a neat and orderly manner. A summary of the data shall be shown on the plans.

Specifications - MSD's standard specifications for both the grinder and the solid-passing pumps shall be used. The appropriate modifications and spaces need to be filled-in before submitting for review.

Construction Drawings – Construction drawings shall be drawn to scale.

#### EPANet Model

22. **Plan Review and Approval.** MSD will review the information submitted and usually return comments to the contact person as specified on the "Application for Approval of Contract Documents for Sanitary Sewer Projects," within ten (10) working days. If a meeting is in order, MSD and the project engineer will discuss the project in detail. After revisions have been made and returned along with all MSD "mark-ups", MSD will review the submittal and if everything is in order, issue a Design Approval letter. When MSD receives written approval from other governing agencies, the engineer submits the original mylars to MSD along with any corrected copies of all items, including the completed developer signed LE Contract, the appropriate bonds, and all other required documents. Note: If there are any revisions to the plans, prior to construction, new mylars must be submitted before the project will be released for construction.

## **CONSTRUCTION PHASE**

After receiving the completed design documents, all required permits and easements, performance and maintenance bonds, drawings on mylar, special provisions and other agency approvals, MSD will issue a Notice-To-Proceed letter for construction and assign an inspector to the job (if applicable). This process will normally take five (5) working days. Construction

must commence within one year of the Notice-To-Proceed date. After completion of the sewer installation the following items must be completed prior to the release of the sewer for connection:

- An initial air and deflection test
- A second air and deflection test after all other utilities are installed
- Installation of chimney seals (after pavement placed)
- Vacuum testing
- Restoration of disturbed areas
- Payment of fees
- Preparation and approval of as-built drawings (see below)
- Preparation and approval of PSC inlet sheets
- Sworn Statements (Developer and Contractor)
- KDOW Certification Letter
- Available for Connections from Inspector

Physical connection to the sewers requires health department approval

**Revisions During Construction.** If minor changes to the project are necessary during construction, the developer's engineer should try to resolve the matter by discussing it with MSD's inspector. MSD's inspector will determine whether or not additional review is required. If additional review is required, the developer's engineer must submit a "red-line" drawing of the proposed changes to MSD who will make a decision on the matter as soon as possible and will notify the developer's engineer of the changes approval. The developer's engineer will then submit four (4) copies of the "red-line" drawings to MSD for distributing them to the field. "Significant" changes may require HD and DOW approval.

**Record Drawings.** Once construction is completed, the developer's engineer/surveyor must provide as-built mylars to accurately reflect the size, location, depth, etc. of the facilities, the location of property service connections and easement data. PSC information which must be shown on the drawings includes the location of the PSC in relation to the sewer along with the length and size of the PSC and any other information referenced in the special provisions under the "Stakes and Final Record Drawing" section. This information should also be shown on the "Property Service Connections Inlet Sheet".



FOR MSD USE ONLY

## DOWNSTREAM FACILITIES CAPACITY REQUEST

**Date:**

MM/DD/YYYY

**Sewer Service Area:**

**Name of Development:**

**Address of Development:**

**Block & Lot of Development:**

---

**Owner/Developer:**

**Name:**

**Company:**

**Street:**

**City, State, Zip:**

**Telephone #:**

**E-Mail Address:**

---

**Design Firm/Contact:**

**Name:**

**Company:**

**Street:**

**City, State, Zip:**

**Telephone #:**

**E-Mail Address:**

---

**Closest Sewer Connection:**

**Record Number:**

**Manhole Number:**

**Wastewater Treatment Plant Service Area:**

**Attach Map with Site Labels & Manhole (SUBMITTALS WITHOUT A MAP WILL BE REJECTED)**

---

## Show Calculation:

Amount of Flow (Based on MSD Standards): GPD

Number of: Homes:

Apts.: One BDR: Two BDR: Three BDR:

Condos: One BDR: Two BDR: Three BDR:

Commercial (Describe):

Industrial (Describe):

Pump Station Needed: Yes ☐ No ☐ Recapture Area: Yes ☐ No ☐

ADDITIONAL COMMENTS:

---

### For MSD Projects Only:

Budget ID # \_\_\_\_\_

Estimated Completion Date: \_\_\_\_\_



## DOWNSTREAM FACILITIES CAPACITY REQUEST

FOR MSD USE ONLY

LE Record Number: \_\_\_\_\_

IOAP Project Area: ☐

Enterprise Zone: ☐

SCAP Basin: \_\_\_\_\_

### Capacity Determination:

- ☐ **Approved**
- ☐ **Conditional Approval with downstream Inflow and Infiltration Fees**
- ☐ **Conditional Approval:**

\_\_\_\_\_  
\_\_\_\_\_

**Flow:** \_\_\_\_\_

**Until:** \_\_\_\_\_

*If you wish to reserve capacity beyond the 90-day reservation period, please call the Development Team Manager)*

☐ **Not Approved:**

**MSD:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Please retain this form to submit with Application for Approval of Sanitary Sewer Projects

Comments:

# Downstream Facilities Capacity Request

## Submittal Assistance Document

The Downstream Facilities Capacity Request (DFCR) is submitted for the purpose of determining if capacity exists for your Lateral Extension Project. Included with the submittal of the DFCR must be a Site Location Map with the parcel(s) to be served noted.

**MSD seeks to provide a prompt definitive determination of capacity on your project. Diligent submittal of information on the DFCR and Site Location Map documents is essential. Submittals that include omissions and/or erroneous information can lead to delayed determination of capacity on your project. Anywhere there is information requested on the DFCR form, and that information does not apply to your project, at a minimum insert "NA". A short explanation of why information is not included on the DFCR maybe helpful in making a prompt capacity determination on your project.**

Below is information that will help you provide the essential information needed to determine capacity for your project.

1. **Date** - is the date that the form is completed for submittal to MSD. (MSD will stamp the document with the received date upon reception of the submittal at MSD).
2. **Name of Development** - if the development does not currently have a name, or will not be named, reference the development by street name accompanied with the word which best describes the development type. For instance, East Broadway Commercial Development, Grandview Apartments, Bardstown Road Condos, etc.
3. **Address/Tax Block/ Lot of Development** – please provide both the property address, and Tax Block / Lot number. If a valid address does not exist, tax block and lot will suffice. If the project will exist on more than one address, please provide those addresses also.
4. **Owner/Developer's Name** –include an owner or developer contact name. Inclusion of the Owner/Developer name will assist MSD in communications that may eliminate delays.
5. **Owner/Developer's Address** – address where Owner/Developer contact name will receive mail.
6. **Owner/Developer's Tel. No.** – include the telephone number that will most likely lead to immediate contact of Owner/Developer Contact Name. Inclusion of more than one telephone number is welcomed.
7. **Closest Sewer Connection:**
  - Record Number
  - Manhole Number
  - Wastewater Treatment Plant Service Area

This information is readily attainable in the MSD Sewer Atlas. For information on how to attain a MSD Sewer Atlas, call MSD Customer Relations at 587-0603. The Closest Sewer Connection information is also attainable by calling MSD Customer Relations at 587-0603 and speaking to a Customer Relations agent.

8. **Amount of Flow** – the MSD Design Manual, pages 8-18 through 8-20, include the information needed to calculate the amount of flow from the development to the MSD system. The Design Manual Information can be retrieved from MSD's website at <http://www.msdlouky.org/insidemsd/pdfs/designmanual02/Chapt08-2000.pdf>.
9. **Pump Station needed** – the designation of whether a pump station is needed is required to assess if your project can be developed.
10. **Recapture Area** – if you do not know whether your project resides in a recapture area, you may call MSD Customer Relations at 587-0603 to get the answer.

## **Downstream Facilities Capacity Request Site Location Map**

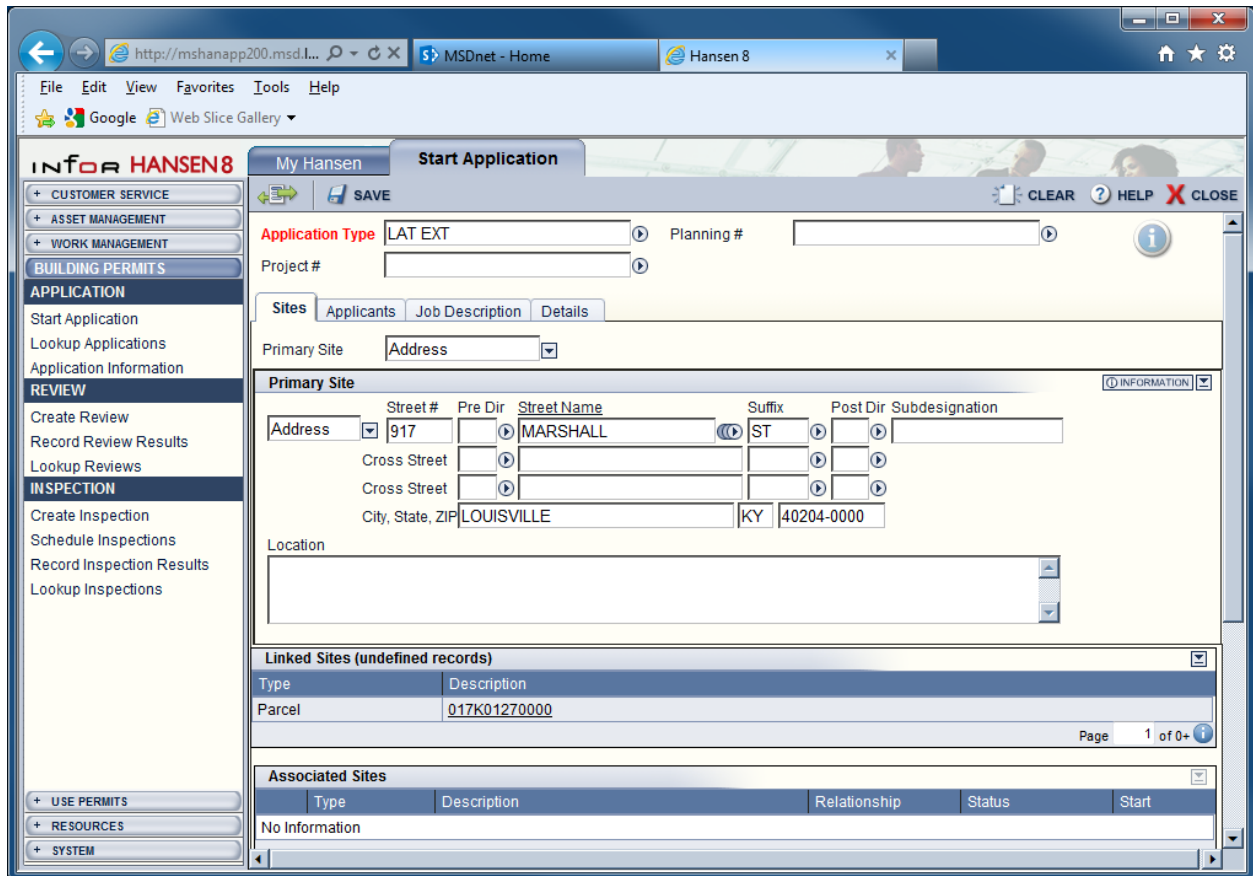
The Site Location Map (SLM) is used to determine the general location of the project for which sanitary sewer capacity is sought. The SLM may be a copy of a USGS map, Sewer Atlas map, Topographical map, MapsCo map, or any similar map which can easily depict the location of your project in MSD's service area.

The SLM must include a North arrow designation and drawn boundaries of the development site.

In the building applications tab, click start application

Set application type as LAT EXT

Enter Address



The screenshot shows the Infor Hansen8 web application interface. The browser address bar displays 'http://mshanapp200.msd.l...'. The application has a navigation menu on the left with categories: CUSTOMER SERVICE, ASSET MANAGEMENT, WORK MANAGEMENT, BUILDING PERMITS, APPLICATION, REVIEW, and INSPECTION. The 'APPLICATION' section is expanded, showing 'Start Application', 'Lookup Applications', 'Application Information', 'REVIEW', 'Create Review', 'Record Review Results', 'Lookup Reviews', 'INSPECTION', 'Create Inspection', 'Schedule Inspections', 'Record Inspection Results', and 'Lookup Inspections'. The 'Start Application' form is displayed with the following fields:

- Application Type:** LAT EXT
- Planning #:** [Empty]
- Project #:** [Empty]
- Primary Site:** Address [Dropdown]
- Primary Site Details:**
  - Street #: 917
  - Pre Dir: [Empty]
  - Street Name: MARSHALL
  - Suffix: ST
  - Post Dir: [Empty]
  - Subdesignation: [Empty]
  - Cross Street: [Empty]
  - Cross Street: [Empty]
  - City, State, ZIP: LOUISVILLE KY 40204-0000
  - Location: [Empty]
- Linked Sites (undefined records):**

| Type   | Description  |
|--------|--------------|
| Parcel | 017K01270000 |
- Associated Sites:**

| Type           | Description | Relationship | Status | Start |
|----------------|-------------|--------------|--------|-------|
| No Information |             |              |        |       |

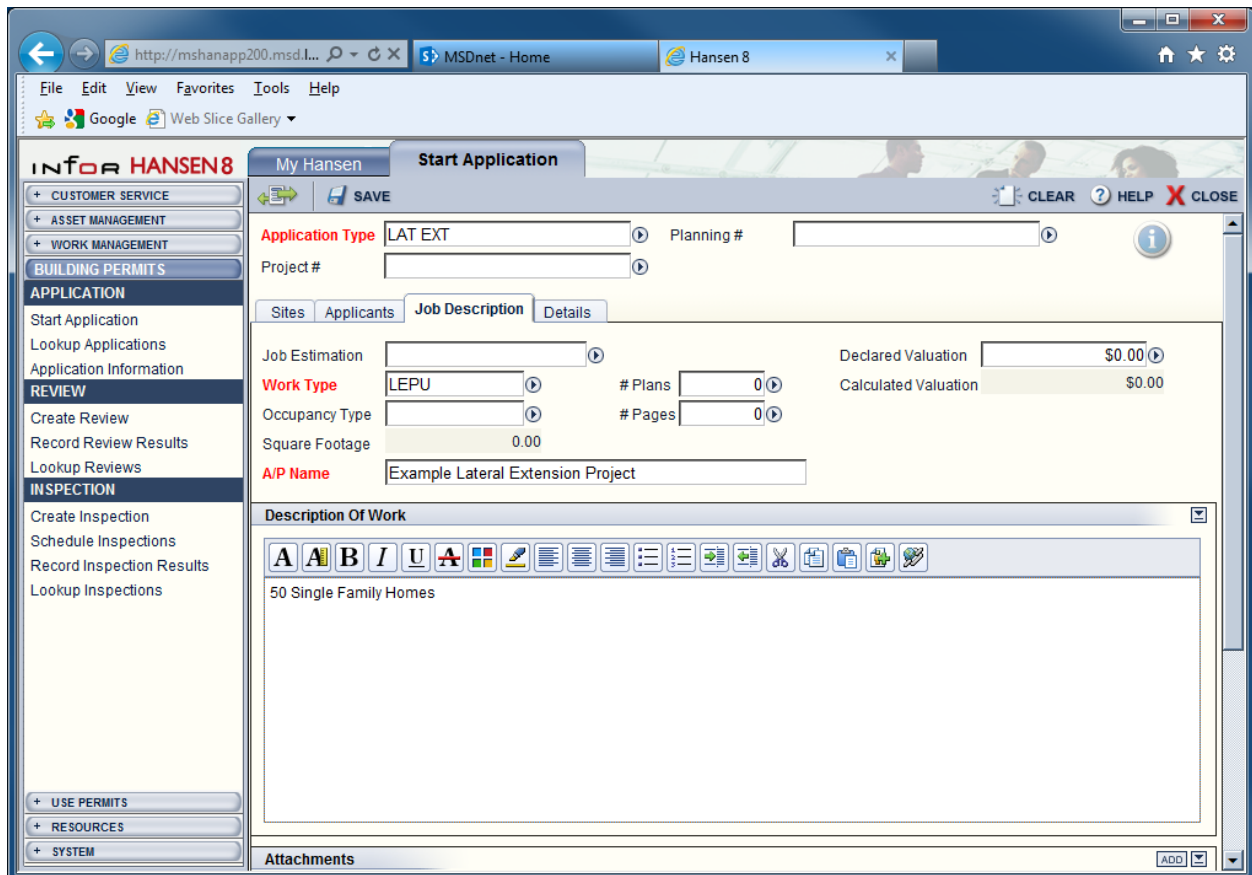
Go to the Job Description tab

Set work type as LEPR (Private Sewers), LEPU (Public Sewers), LECON (connection only)

Enter the AP Name

Add a Site Description

Save



The screenshot shows the Hansen8 software interface in a web browser. The browser address bar shows the URL: <http://mshanapp200.msd.net>. The browser tabs include "MSDnet - Home" and "Hansen 8". The software interface has a menu bar with "File", "Edit", "View", "Favorites", "Tools", and "Help". Below the menu bar is a navigation pane on the left with categories: "CUSTOMER SERVICE", "ASSET MANAGEMENT", "WORK MANAGEMENT", "BUILDING PERMITS", "APPLICATION", "REVIEW", "INSPECTION", "USE PERMITS", "RESOURCES", and "SYSTEM". The "APPLICATION" category is expanded, showing sub-items: "Start Application", "Lookup Applications", "Application Information", "Create Review", "Record Review Results", "Lookup Reviews", "Create Inspection", "Schedule Inspections", "Record Inspection Results", and "Lookup Inspections". The main window has a title bar "My Hansen" and a "Start Application" button. Below the title bar is a "SAVE" button and a "CLEAR" button. The main form area has tabs: "Sites", "Applicants", "Job Description", and "Details". The "Job Description" tab is active. It contains fields for "Application Type" (set to "LAT EXT"), "Planning #", "Project #", "Job Estimation", "Work Type" (set to "LEPU"), "# Plans" (set to "0"), "Occupancy Type", "# Pages" (set to "0"), "Square Footage" (set to "0.00"), "Declared Valuation" (set to "\$0.00"), "Calculated Valuation" (set to "\$0.00"), and "A/P Name" (set to "Example Lateral Extension Project"). Below these fields is a "Description Of Work" section with a rich text editor containing the text "50 Single Family Homes". At the bottom of the form is an "Attachments" section with an "ADD" button.

Enter the newly created building application

In the application details tab click Lateral Extension

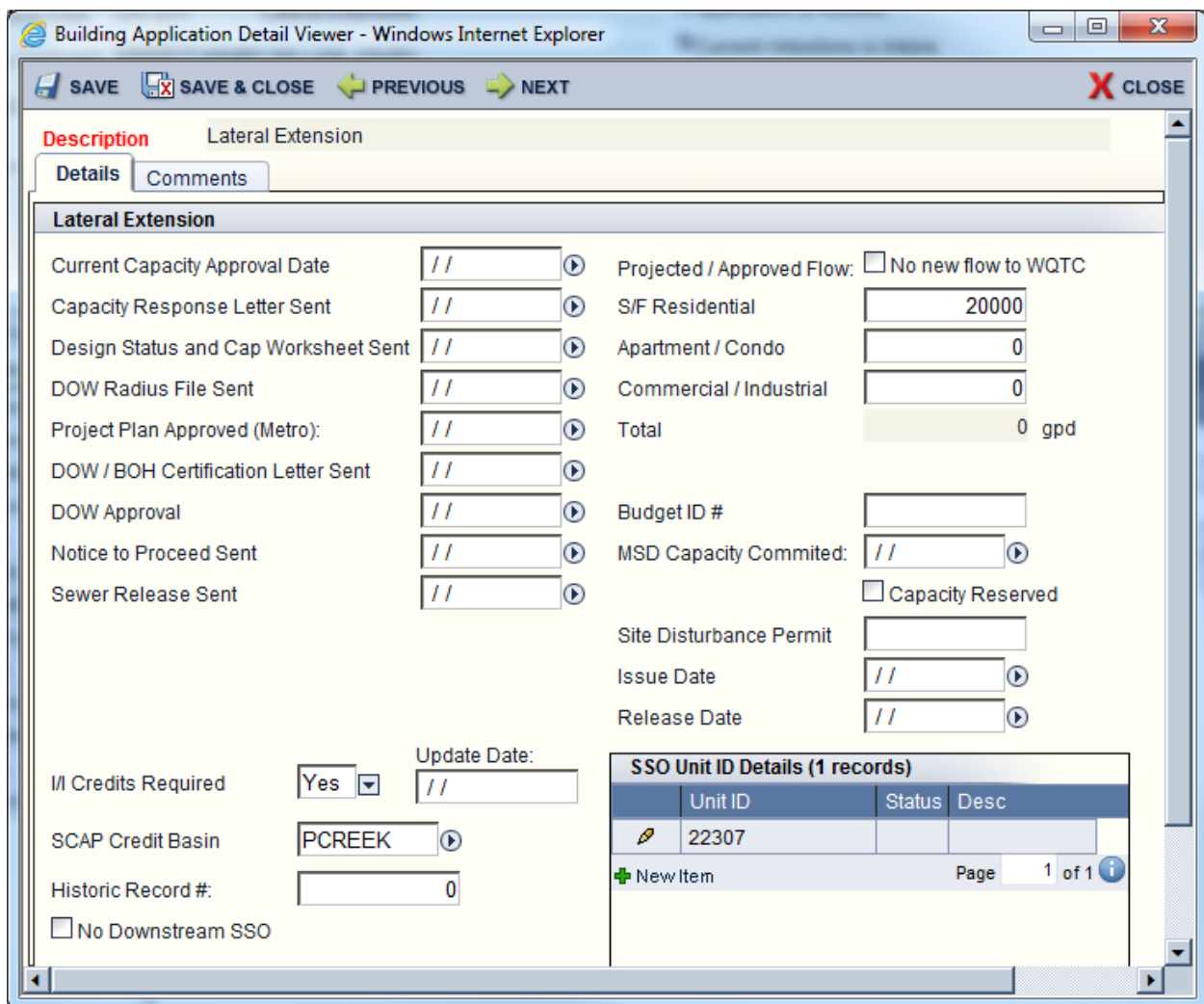
Enter the Flow

Select Yes/No for Credits Required

Select SCAP Basin

Enter SSO's

Save and Close



**Building Application Detail Viewer - Windows Internet Explorer**

SAVE SAVE & CLOSE PREVIOUS NEXT CLOSE

**Description** Lateral Extension

**Details** Comments

**Lateral Extension**

Current Capacity Approval Date //

Capacity Response Letter Sent //

Design Status and Cap Worksheet Sent //

DOW Radius File Sent //

Project Plan Approved (Metro): //

DOW / BOH Certification Letter Sent //

DOW Approval //

Notice to Proceed Sent //

Sewer Release Sent //

Projected / Approved Flow: ☐ No new flow to WQTC

S/F Residential 20000

Apartment / Condo 0

Commercial / Industrial 0

Total 0 gpd

Budget ID #

MSD Capacity Committed: //

☐ Capacity Reserved

Site Disturbance Permit

Issue Date //

Release Date //

Update Date: //

I/I Credits Required Yes

SCAP Credit Basin PCREEK

Historic Record #: 0

☐ No Downstream SSO

**SSO Unit ID Details (1 records)**

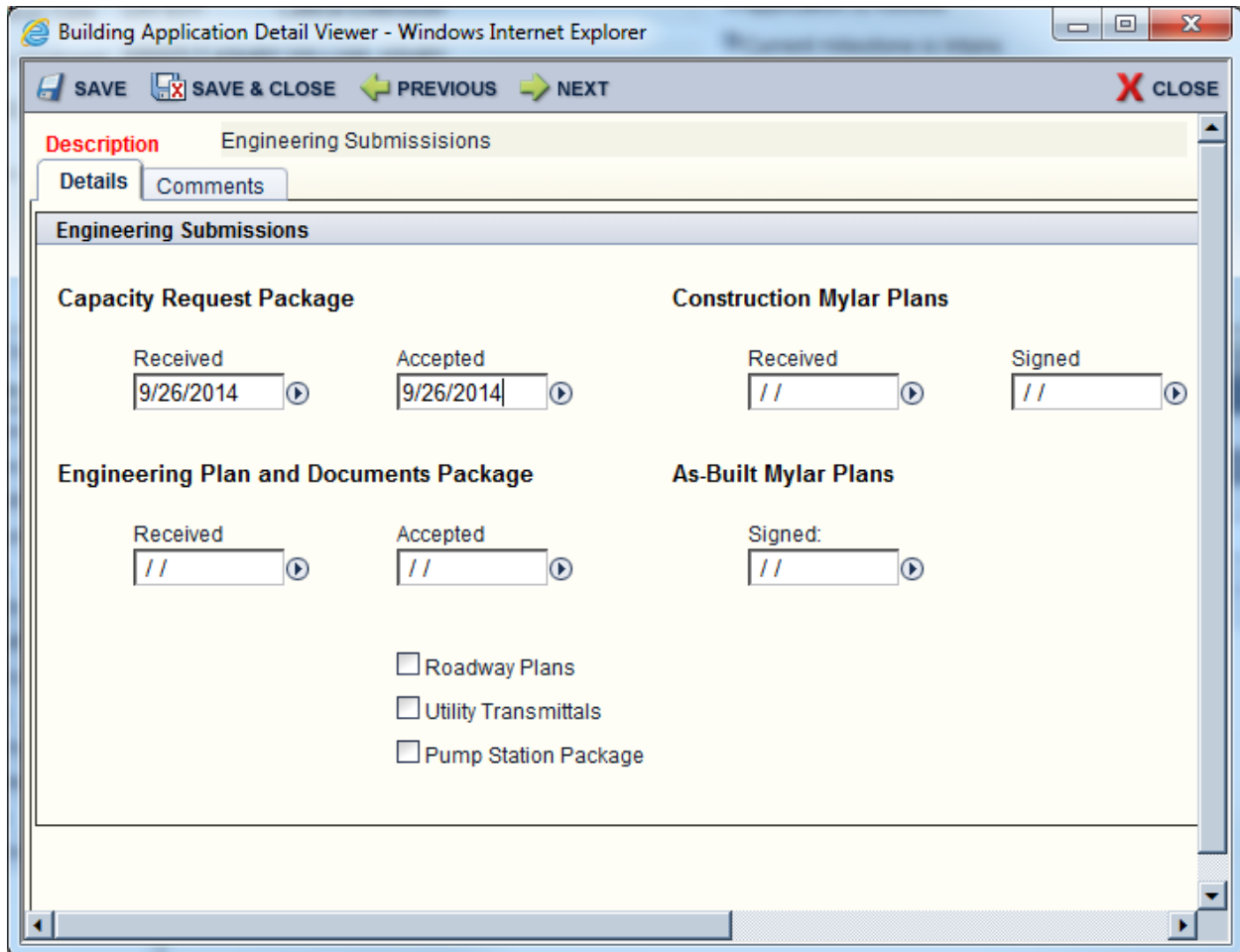
| Unit ID | Status | Desc |
|---------|--------|------|
| 22307   |        |      |

+ New Item Page 1 of 1

Click Engineering Submissions

Enter Dates for Received and Accepted

Save and Close



The screenshot shows a web browser window titled "Building Application Detail Viewer - Windows Internet Explorer". The browser's address bar is empty. The page has a toolbar with buttons for "SAVE", "SAVE & CLOSE", "PREVIOUS", "NEXT", and "CLOSE". The main content area is titled "Engineering Submissions" and has two tabs: "Details" (selected) and "Comments". The "Details" tab contains the following sections:

- Capacity Request Package**
  - Received: 9/26/2014
  - Accepted: 9/26/2014
- Construction Mylar Plans**
  - Received: //
  - Signed: //
- Engineering Plan and Documents Package**
  - Received: //
  - Accepted: //
- As-Built Mylar Plans**
  - Signed: //

Below these sections, there are three checkboxes:

- ☐ Roadway Plans
- ☐ Utility Transmittals
- ☐ Pump Station Package

Enter Sites Tab

Under Associated Sites click new item

Building Application Information - Windows Internet Explorer

ACTION PRINT HARP DOCUMENTS REPORTS ? HELP X CLOSE

**INFORMATION - APPLICATION# LE917712**

Application Type LAT EXT Lateral Extension Application is Review.  
 Primary Applicant KRISTI T ASHBY WILLIAM ASHBY Current milestone is Intake.  
 Address 917 MARSHALL ST LOUISVILLE KY 40204-0000 Current unpaid amount of \$0.00.  
 Location

Job Description  
 Application Details  
 Reviews  
 Inspections  
 Conditions  
 Required Licenses  
 Fees  
 Bonds  
 Valuations  
 Applicants  
**Sites**  
 Employees  
 Related Records  
 Logs  
 Attachments

**Linked Sites (1 records)** EXPORT

| Type   | Description  |
|--------|--------------|
| Parcel | 017K01270000 |

Page 1 of 1

**Associated Sites** EXPORT VIEW

| Type           | Description | Relationship | Status | Start |
|----------------|-------------|--------------|--------|-------|
| No Information |             |              |        |       |
| + New Item     |             |              |        |       |

Add the receiving MH# as an asset – save

Select an Associated Site -- Webpage Dialog

SAVE
CLOSE

Site Type
Asset
Relationship
Start
//
End
//
Status

Comments

Site

Asset
Sewer Manhole
56497

Repeat to Add the receiving Treatment Plant and Pump Stations (if applicable) – Save

Building Application Information - Windows Internet Explorer

ACTION PRINT HARP DOCUMENTS REPORTS ? HELP X CLOSE

**INFORMATION - APPLICATION# LE917712**

Application Type LAT EXT Lateral Extension

Primary Applicant KRISTI T ASHBY WILLIAM ASHBY

Address 917 MARSHALL ST LOUISVILLE KY 40204-0000

Location

Application is Review.

Current milestone is Intake.

Current unpaid amount of \$0.00.

Job Description

Application Details

Reviews

Inspections

Conditions

Required Licenses

Fees

Bonds

Valuations

Applicants

**Sites**

Employees

Related Records

Logs

Attachments

**Linked Sites (1 records)**
EXPORT

| Type   | Description  |
|--------|--------------|
| Parcel | 017K01270000 |

Page 1 of 1

**Associated Sites (3 records)**
EXPORT VIEW

|   | Type                  | Description | Relationship | Status | Start |
|---|-----------------------|-------------|--------------|--------|-------|
| X | Sewer Manhole         | 56497       |              |        |       |
| X | Sewer Treatment Plant | MSD0277     |              |        |       |
| X | Sewer Lift Station    | MSD0143-PS  |              |        |       |

+ New Item

## In the Applicants Tab

### Click Action

In the drop down menu, choose **Change Applicants**

Edit Item (pencil icon)

Set applicant as Other

## Change Capacity to APPL

Make sure primary applicant box is checked

### Enter the contact info

## Change Contact type to customer

| Building Applicant -- Webpage Dialog                                |   |                |  | X CLOSE                          |
|---|---|----------------|--|----------------------------------|
| <b>SAVE</b>   |   |                |  |                                  |
| Applicant Type  | <input type="text" value="Other Contact"/>            | Effective Date | <input type="text" value="9/26/2014"/> |                                  |
| Capacity  | <input type="text" value="APPL"/>                     | Expire Date    | <input type="text" value="//"/>        |                                  |
| <input checked="" type="checkbox"/> Primary Applicant               |   |                |  |                                  |
| <b>Contact</b>  |   |                |  |                                  |
| Name  | <input type="text" value="ASHBY"/>                    |                |  |                                  |
| First, MI   | <input type="text" value="KRISTI T ASHBY WILLIAM J"/> | Title          | <input type="text"/>                   | <input type="checkbox"/> Foreign |
| Address   | <input type="text" value="917 MARSHALL ST"/>          |                |  |                                  |
| City  | <input type="text" value="LOUISVILLE"/>               | Co. Name       | <input type="text"/>                   |                                  |
| State/Province  | <input type="text" value="KY"/>                       | Ref #          | <input type="text"/>                   |                                  |
| ZIP/PC  | <input type="text" value="40204-1036"/>               | Country        | <input type="text"/>                   |                                  |
| Day Phone   | <input type="text" value="(502)540-6417"/>            |                |  |                                  |
| Evening Phone   | <input type="text" value="( ) - x"/>                  |                |  |                                  |
| Fax   | <input type="text" value="( ) - x"/>                  |                | PIN                                    | <input type="text"/>             |
| Pager   | <input type="text" value="( ) - x"/>                  |                |  |                                  |
| Mobile  | <input type="text" value="( ) - x"/>                  |                |  |                                  |
| E-mail  | <input type="text" value="joey.ashby@twc.com"/>       |                |  |                                  |
| Contact Type  | <input type="text" value="customer"/>                 |                |  |                                  |
| <b>Comments</b>   |   |                |  |                                  |
| <br><br><div style="height: 150px; border: 1px solid black;"></div> |   |                |  |                                  |

Enter engineer as other and set as customer

Finish

Change Applicants - Windows Internet Explorer

✓ FINISH ? HELP X CLOSE

A/P # LE917712

Building Application Applicants (2 records) EXPORT VIEW

|     | Primary | Applicant Type | Capacity | Last Name | First Name                     | Professional ID | Primary DBA | Effective | Expire |
|-----|---------|----------------|----------|-----------|--------------------------------|-----------------|-------------|-----------|--------|
| ✎ ✕ | True    | Other Contact  | APPL     | ASHBY     | KRISTI T<br>ASHBY<br>WILLIAM J |                 |             | 9/26/2014 |        |
| ✎ ✕ | False   | Other Contact  | ENGR     | MARSHALL  | JOSEPH                         |                 |             |           |        |

+ New Item

If the current milestone is Capacity Assurance, then data entry is complete. If not, check to make sure all data is entered correctly.

Building Application Information - Windows Internet Explorer

ACTION PRINT HARP DOCUMENTS REPORTS ? HELP X CLOSE

**INFORMATION - APPLICATION# LE917712**

Application Type LAT EXT Lateral Extension Application is Review.  
 Primary Applicant KRISTI T ASHBY WILLIAM ASHBY Current milestone is Capacity Assurance.  
 Address 917 MARSHALL ST LOUISVILLE KY 40204-0000 Current unpaid amount of \$0.00.  
 Location

Job Description  
 Application Details  
 Reviews  
 Inspections  
 Conditions  
 Required Licenses  
 Fees  
 Bonds  
 Valuations  
 Applicants  
 Sites  
 Employees  
 Related Records  
 Logs  
 Attachments

**Contact Information**

Title Expiration Date //

Name ASHBY

First Name, MI KRISTI T ASHBY WILLIAM J

Contact Type CUSTOMER

Address 917 MARSHALL ST

City LOUISVILLE State/Province KY

Postal Code 40204-1036 Country

☐ Foreign

Day Phone (502)540-6417

Evening Phone ( ) - x

Appendix B – WQTC Permitted ADFs and Designed Peak Capacities

## Appendix B – WQTC Permitted ADFs and Designed Peak Capacities

### Current Regional WQTC Capacities

| WTP              | Rated Capacity (MGD) | Peak Design (MGD) |
|------------------|----------------------|-------------------|
| CEDAR CREEK      | 7.5                  | 18.0              |
| DEREK R. GUTHRIE | 30.0                 | 200.0             |
| FLOYDS FORK      | 6.5                  | 17.68             |
| HITE CREEK       | 6.0                  | 9.5               |
| JEFFERSONTOWN    | 4.0                  | 7.0               |
| MORRIS FORMAN    | 120.0                | 325.0             |

*\*Current as of 9/26/2014*

### Current Small WQTC Capacities

| WTP                 | Rated Capacity (GPD) | Peak Hour Capacity (GPD) |
|---------------------|----------------------|--------------------------|
| Bancroft            | 80,000               | 183,000                  |
| Berrytown           | 75,000               | 275,000                  |
| Hunting Creek North | 358,000              | 792,000                  |
| Hunting Creek South | 251,000              | 630,000                  |
| Ken Carla           | 10,000               | 50,000                   |
| McNeely Lake        | 205,000              | 282,000                  |
| Shadow Wood         | 85,000               | 162,000                  |
| Starview            | 100,000              | 288,000                  |
| Timberlake          | 200,000              | 646,000                  |

*\*Current as of 12/8/2014*

Appendix C – SCAP Credit Ledger Definitions

Capacity Credit Balance Sheet per Credit Basin

System Capacity Planning Projected Credit Needs

# SCAP CREDIT LEDGER DEFINITIONS



APPLICATION TYPE  
(CREDIT/DEBIT)

REQUESTED  
FLOW

SEWER RELEASE DATE  
OR CREDIT DATE

CREDIT/DEBIT REQUIREMENT

Capacity Credit Balance Sheet per Credit Basin

PROJECT NAME

SCAP BASIN

APPLICATION NUMBER

CREDIT BALANCE

| APNO          | APNAME                                     | APTYPE     | FLOW   | Release Date | Approved<br>Credit Required/<br>Flow Reduction | Running Total |
|---------------|--|------------|--------|--------------|--|---------------|
| <b>CCREEK</b> |  |            |        |              |  |               |
| 235533        | CEDAR CK IFP WORK AUG05-NOV08              | SCAPCREDIT |        | 11/1/08      | 6,521  | 6,521         |
| 236380        | FAIRMOUNT ROAD MH REHAB                    | SCAPCREDIT |        | 6/5/09       | 10,734   | 17,255        |
| 362688        | CCRK IFP ACTIVITY NOV08-MAY12              | SCAPCREDIT |        | 5/1/12       | 2,161  | 19,416        |
| 362689        | CCRK IFP ACTIVITY JUN12-AUG12              | SCAPCREDIT |        | 8/31/12      | 2,047  | 21,463        |
| 320989        | LITTLE CEDAR CREEK I/I REHABIL             | SCAPCREDIT |        | 9/27/12      | 652,907  | 674,370       |
| 263934        | ST JAMES CROSSINGS                         | LAT EXT    | 9,000  | 11/30/12     | -19,575  | 654,795       |
| 196827        | SONIC SPRINGS                              | LAT EXT    | 3,600  | 12/5/12      | -7,830   | 646,965       |
| 14SC1000      | FY13 IFP ACTIVITY FIRST HALF - CEDAR CREEK | SCAPCREDIT |        | 12/31/13     | 2,048  | 649,013       |
| <b>FFORK</b>  |  |            |        |              |  |               |
| 235557        | FLOYDSFRK IFP WORK AUG05-NOV08             | SCAPCREDIT |        | 11/1/08      | 14,540   | 14,540        |
| 362638        | FY09 IFP ACTIVITY FIRST HALF               | SCAPCREDIT |        | 12/31/08     | 1  | 14,541        |
| 362647        | FY09 IFP ACTIVITY SECOND HALF              | SCAPCREDIT |        | 6/30/09      | 4  | 14,545        |
| 362651        | FY10 IFP ACTIVITY FIRST HALF               | SCAPCREDIT |        | 12/31/09     | 524  | 15,069        |
| 230379        | SHAKES RUN SECTION 4                       | LAT EXT    | 3,770  | 1/5/10       | -8,200   | 6,869         |
| 362655        | FY10 IFP ACTIVITY SECOND HALF              | SCAPCREDIT |        | 6/30/10      | 81   | 6,950         |
| 362661        | FY11 IFP ACTIVITY FIRST HALF               | SCAPCREDIT |        | 12/31/10     | 14,155   | 21,105        |
| 362669        | FY11 IFP ACTIVITY SECOND HALF              | SCAPCREDIT |        | 6/30/11      | 22,707   | 43,812        |
| 242480        | CLAIBOURNE CROSSINGS PHASE 2               | LAT EXT    | 0      | 10/17/11     | 0  | 43,812        |
| 359320        | CALENDAR 2011 SUMP PUMP CREDIT             | SCAPCREDIT |        | 12/31/11     | 4,000  | 47,812        |
| 362674        | FY12 IFP ACTIVITY FIRST HALF               | SCAPCREDIT |        | 12/31/11     | 2  | 47,814        |
| 362678        | FY12 IFP ACTIVITY SECOND HALF              | SCAPCREDIT |        | 6/30/12      | 331  | 48,145        |
| 332823        | SINGLE FAMILY HOME                         | LAT EXT    | 400    | 7/13/12      | -870   | 47,275        |
| 315945        | BROOKFIELD SEC 3                           | LAT EXT    | 12,800 | 10/26/12     | -27,840  | 19,435        |

June 13, 2014

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# SCAP CREDIT LEDGER DEFINITIONS

- **PROJECT NAME** – The name of the development or SCAP credit project as entered into MSD's tracking database.
- **SCAP BASIN** – Basin where the debit or credit will be applied.
- **APPLICATION NUMBER** – Unique application number given by MSD's database.
- **APPLICATION TYPE (CREDIT/DEBIT)** – Indicates the type of project. SCAPCREDIT will be a credit in the ledger as generated by system rehabilitation, LAT EXT will be a debit in the ledger as related to new flow to be added to the system.
- **REQUESTED FLOW** – Flow required based on 10 State Standards 400 gpcd.
- **SEWER RELEASE DATE OR CREDIT DATE** – Lateral Extension capacity release date or credit project completion date.
- **CREDIT/DEBIT REQUIREMENT** – Total credits generated by capital improvements or debits based on requested flow (based on calculations defined in SCAP Documentation).
- **CREDIT BALANCE** – Balance based on credits generated by capital improvements or debits based on requested flow (based on calculations defined in SCAP Documentation).



## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>   | <u>APNAME</u>                              | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|---------------|--|---------------|-------------|---------------------|---|----------------------|
| <b>CCREEK</b> |  |               |             |                     |   |                      |
| 235533        | CEDAR CK IFP WORK AUG05-NOV08              | SCAPCREDIT    |             | 11/1/08             | 6,521   | 6,521                |
| 236380        | FAIRMOUNT ROAD MH REHAB                    | SCAPCREDIT    |             | 6/5/09              | 10,734  | 17,255               |
| 362688        | CCRK IFP ACTIVITY NOV08-MAY12              | SCAPCREDIT    |             | 5/1/12              | 2,161   | 19,416               |
| 362689        | CCRK IFP ACTIVITY JUN12-AUG12              | SCAPCREDIT    |             | 8/31/12             | 2,047   | 21,463               |
| 320989        | LITTLE CEDAR CREEK I/I REHABIL             | SCAPCREDIT    |             | 9/27/12             | 652,907   | 674,370              |
| 263934        | ST JAMES CROSSINGS                         | LAT EXT       | 9,000       | 11/30/12            | -19,575   | 654,795              |
| 196927        | SONIC SPRINGS                              | LAT EXT       | 3,600       | 12/5/12             | -7,830  | 646,965              |
| 14SC1000      | FY13 IFP ACTIVITY FIRST HALF - CEDAR CREEK | SCAPCREDIT    |             | 12/31/13            | 2,048   | 649,013              |
| <b>FFORK</b>  |  |               |             |                     |   |                      |
| 235557        | FLOYDSFRK IFP WORK AUG05-NOV08             | SCAPCREDIT    |             | 11/1/08             | 14,540  | 14,540               |
| 362638        | FY09 IFP ACTIVITY FIRST HALF               | SCAPCREDIT    |             | 12/31/08            | 1   | 14,541               |
| 362647        | FY09 IFP ACTIVITY SECOND HALF              | SCAPCREDIT    |             | 6/30/09             | 4   | 14,545               |
| 362651        | FY10 IFP ACTIVITY FIRST HALF               | SCAPCREDIT    |             | 12/31/09            | 524   | 15,069               |
| 230379        | SHAKES RUN SECTION 4                       | LAT EXT       | 3,770       | 1/5/10              | -8,200  | 6,869                |
| 362655        | FY10 IFP ACTIVITY SECOND HALF              | SCAPCREDIT    |             | 6/30/10             | 81  | 6,950                |
| 362661        | FY11 IFP ACTIVITY FIRST HALF               | SCAPCREDIT    |             | 12/31/10            | 14,155  | 21,105               |
| 362669        | FY11 IFP ACTIVITY SECOND HALF              | SCAPCREDIT    |             | 6/30/11             | 22,707  | 43,812               |
| 242480        | CLAIBOURNE CROSSINGS PHASE 2               | LAT EXT       | 0           | 10/17/11            | 0   | 43,812               |
| 359320        | CALENDAR 2011 SUMP PUMP CREDIT             | SCAPCREDIT    |             | 12/31/11            | 4,000   | 47,812               |
| 362674        | FY12 IFP ACTIVITY FIRST HALF               | SCAPCREDIT    |             | 12/31/11            | 2   | 47,814               |
| 362678        | FY12 IFP ACTIVITY SECOND HALF              | SCAPCREDIT    |             | 6/30/12             | 331   | 48,145               |
| 332823        | SINGLE FAMILY HOME                         | LAT EXT       | 400         | 7/13/12             | -870  | 47,275               |
| 315945        | BROOKFIELD SEC 3                           | LAT EXT       | 12,800      | 10/26/12            | -27,840   | 19,435               |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>   | <u>APNAME</u>                         | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|---------------|---------------------------------------|---------------|-------------|---------------------|---|----------------------|
| 361689        | LAKE FOREST REHAB PH1                 | SCAPCREDIT    |             | 12/18/12            | 174,769   | 194,204              |
| 362683        | FY13 IFP ACTIVITY FIRST HALF - FFORK  | SCAPCREDIT    |             | 12/31/12            | 3   | 194,207              |
| 331397        | BROOKFIELD SEC 2A                     | LAT EXT       | 14,400      | 5/8/13              | -31,320   | 162,887              |
| <b>HCREEK</b> |                                       |               |             |                     |   |                      |
| 235561        | HITE CK IFP WORK AUG05-NOV08          | SCAPCREDIT    |             | 11/1/08             | 6,404   | 6,404                |
| 362641        | FY09 IFP ACTIVITY FIRST HALF          | SCAPCREDIT    |             | 12/31/08            | 2   | 6,406                |
| 362648        | FY09 IFP ACTIVITY SECOND HALF         | SCAPCREDIT    |             | 6/30/09             | 8   | 6,414                |
| 362652        | FY10 IFP ACTIVITY FIRST HALF          | SCAPCREDIT    |             | 12/31/09            | 8   | 6,422                |
| 362657        | FY10 IFP ACTIVITY SECOND HALF         | SCAPCREDIT    |             | 6/30/10             | 329   | 6,751                |
| 295322        | FLOYDSBURG RD I/I INVEST/REHAB        | SCAPCREDIT    |             | 12/17/10            | 28,437  | 35,188               |
| 320906        | FLOYDSBURG ROAD I/I REHABILITA        | SCAPCREDIT    |             | 12/17/10            | 28,437  | 63,625               |
| 362662        | FY11 IFP ACTIVITY FIRST HALF          | SCAPCREDIT    |             | 12/31/10            | 3   | 63,628               |
| 362670        | FY11 IFP ACTIVITY SECOND HALF         | SCAPCREDIT    |             | 6/30/11             | 5   | 63,633               |
| 246638        | CHAPMAN COURT S/S                     | LAT EXT       | 800         | 9/28/11             | -1,740  | 61,893               |
| 362675        | FY12 IFP ACTIVITY FIRST HALF          | SCAPCREDIT    |             | 12/31/11            | 332   | 62,225               |
| 362679        | FY12 IFP ACTIVITY SECOND HALF         | SCAPCREDIT    |             | 6/30/12             | 5,002   | 67,227               |
| 290181        | CAMDEN WOOD APARTMENTS                | LAT EXT       | 12,400      | 8/31/12             | -26,970   | 40,257               |
| 304536        | MAGNOLIA SPRINGS EAST PRIV P/S        | LAT EXT       | 9,500       | 12/1/12             | -20,663   | 19,595               |
| 335610        | ROCK SPRINGS FARM SEC 4B              | LAT EXT       | 6,400       | 12/7/12             | -13,920   | 5,675                |
| 362684        | FY13 IFP ACTIVITY FIRST HALF - HCREEK | SCAPCREDIT    |             | 12/31/12            | 3   | 5,678                |
| <b>JTOWN</b>  |                                       |               |             |                     |   |                      |
| 235563        | J-TOWN IFP WORK AUG05-NOV08           | SCAPCREDIT    |             | 11/1/08             | 6,203   | 6,203                |
| 359323        | CALENDAR 2008 SUMP PUMP CREDIT        | SCAPCREDIT    |             | 12/31/08            | 4,000   | 10,203               |
| 254871        | LAKESIDE BAPT CHURCH PRIV PS          | LAT EXT       | 2,500       | 8/10/10             | -5,438  | 4,766                |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>   | <u>APNAME</u>                                | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|---------------|--|---------------|-------------|---------------------|---|----------------------|
| 340213        | JEFFERSONTOWN ENG REHAB                      | SCAPCREDIT    |             | 8/11/11             | 997,448   | 1,002,214            |
| 359324        | CALENDAR 2011 SUMP PUMP CREDIT               | SCAPCREDIT    |             | 12/31/11            | 4,000   | 1,006,214            |
| 337261        | SINGLE FAMILY 2909 PELHAM CT                 | LAT EXT       | 400         | 5/28/13             | -870  | 1,005,344            |
| 13LE1010      | SWOPE HR & TRAINING BLDG                     | LAT EXT       | 400         | 6/28/13             | -870  | 1,004,474            |
| 13LE1092      | BALE EQUIPMENT                               | LAT EXT       | 450         | 10/25/13            | -979  | 1,003,495            |
| 14SC1002      | FY13 IFP ACTIVITY FIRST HALF - JEFFERSONTOWN | SCAPCREDIT    |             | 12/31/13            | 3,458   | 1,006,953            |
| 13LE1098      | UNIPAK                                       | LAT EXT       | 720         | 2/27/14             | -1,566  | 1,005,387            |
| 13LE1067      | PARK COMMUNITY                               | LAT EXT       | 2,220       | 12/31/14            | -4,829  | 1,000,558            |
| <b>MCREEK</b> |  |               |             |                     |   |                      |
| 359380        | CALENDAR 2005 DOWNSPOUT CREDIT               | SCAPCREDIT    |             | 12/31/05            | 12,000  | 12,000               |
| 359381        | CALENDAR 2007 DOWNSPOUT CREDIT               | SCAPCREDIT    |             | 12/31/07            | 24,000  | 36,000               |
| 235568        | MILL CK IFP WORK AUG05-NOV08                 | SCAPCREDIT    |             | 11/1/08             | 51,530  | 87,530               |
| 359382        | CALENDAR 2008 DOWNSPOUT CREDIT               | SCAPCREDIT    |             | 12/31/08            | 16,000  | 103,530              |
| 362642        | FY09 IFP ACTIVITY FIRST HALF                 | SCAPCREDIT    |             | 12/31/08            | 93  | 103,623              |
| 362649        | FY09 IFP ACTIVITY SECOND HALF                | SCAPCREDIT    |             | 6/30/09             | 1,507   | 105,130              |
| 236614        | DEVEROES                                     | LAT EXT       | 960         | 9/9/09              | -2,088  | 103,042              |
| 362653        | FY10 IFP ACTIVITY FIRST HALF                 | SCAPCREDIT    |             | 12/31/09            | 25,272  | 128,314              |
| 359383        | CALENDAR 2009 DOWNSPOUT CREDIT               | SCAPCREDIT    |             | 12/31/09            | 32,000  | 160,314              |
| 253586        | KINGSFORD RETAIL CENTER                      | LAT EXT       | 480         | 1/6/10              | -1,044  | 159,270              |
| 238421        | 6840 DIXIE HWY OUTLOT                        | LAT EXT       | 2,100       | 4/28/10             | -4,568  | 154,703              |
| 362658        | FY10 IFP ACTIVITY SECOND HALF                | SCAPCREDIT    |             | 6/30/10             | 6,213   | 160,916              |
| 259408        | FAMILY DOLLAR 5105 DIXIE                     | LAT EXT       | 1,200       | 7/2/10              | -2,610  | 158,306              |
| 264294        | SAINT PETER THE APOSTLE CATHOL               | LAT EXT       | 2,000       | 7/23/10             | -4,350  | 153,956              |
| 276215        | FAMILY DOLLAR - KRISTIN WAY                  | LAT EXT       | 400         | 10/12/10            | -870  | 153,086              |
| 362664        | FY11 IFP ACTIVITY FIRST HALF                 | SCAPCREDIT    |             | 12/31/10            | 22,740  | 175,826              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                            | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|--|---------------|-------------|---------------------|---|----------------------|
| 359384      | CALENDAR 2010 DOWNSPOUT CREDIT           | SCAPCREDIT    |             | 12/31/10            | 4,000   | 179,826              |
| 359325      | CALENDAR 2010 SUMP PUMP CREDIT           | SCAPCREDIT    |             | 12/31/10            | 8,000   | 187,826              |
| 320916      | SONNE AVE PS REHABILITATION -            | SCAPCREDIT    |             | 6/30/11             | 120,800   | 308,626              |
| 362671      | FY11 IFP ACTIVITY SECOND HALF            | SCAPCREDIT    |             | 6/30/11             | 11,615  | 320,241              |
| 299399      | FAMILY DOLLAR - GREENWOOD RD             | LAT EXT       | 800         | 10/4/11             | -1,740  | 318,501              |
| 309018      | PRP PERFORMING ARTS ADDITION             | LAT EXT       | 1,134       | 11/9/11             | -2,466  | 316,034              |
| 359385      | CALENDAR 2011 DOWNSPOUT CREDIT           | SCAPCREDIT    |             | 12/31/11            | 12,000  | 328,034              |
| 362676      | FY12 IFP ACTIVITY FIRST HALF             | SCAPCREDIT    |             | 12/31/11            | 3,245   | 331,279              |
| 359326      | CALENDAR 2011 SUMP PUMP CREDIT           | SCAPCREDIT    |             | 12/31/11            | 12,000  | 343,279              |
| 318096      | CRACKER BARREL OLD COUNTRY               | LAT EXT       | 6,000       | 1/19/12             | -13,050   | 330,229              |
| 262545      | DIXIE MANOR SHOPPING CENTER              | LAT EXT       | 965         | 5/21/12             | -2,099  | 328,130              |
| 300374      | FORT KNOX FEDERAL CREDIT UNION           | LAT EXT       | 400         | 6/26/12             | -870  | 327,260              |
| 362680      | FY12 IFP ACTIVITY SECOND HALF            | SCAPCREDIT    |             | 6/30/12             | 2,807   | 330,067              |
| 361693      | FY12 MILL CREEK REHAB                    | SCAPCREDIT    |             | 6/30/12             | 81,675  | 411,742              |
| 231800      | PIONEER MOBILE HOME PARK                 | LAT EXT       | 11,200      | 7/24/12             | -24,360   | 387,382              |
| 237457      | WAVERLY HILLS                            | LAT EXT       | 400         | 9/18/12             | -870  | 386,512              |
| 341883      | NHK SPRING PRECISION                     | LAT EXT       | 17,800      | 10/19/12            | -38,715   | 347,797              |
| 334997      | BEECHLAND BAPTIST CHURCH                 | LAT EXT       | 2,715       | 12/5/12             | -5,905  | 341,892              |
| 359327      | CALENDAR 2012 SUMP PUMP CREDIT           | SCAPCREDIT    |             | 12/31/12            | 148,000   | 489,892              |
| 362685      | FY13 IFP ACTIVITY FIRST HALF - MCREEK    | SCAPCREDIT    |             | 12/31/12            | 3,458   | 493,350              |
| 359386      | CALENDAR 2012 DOWNSPOUT CREDIT           | SCAPCREDIT    |             | 12/31/12            | 4,000   | 497,350              |
| 343763      | SOUTHEAST CHRISTIAN CHURCH SW            | LAT EXT       | 6,000       | 1/18/13             | -13,050   | 484,300              |
| 224875      | ASHBY GREEN APARTMENT HOMES              | LAT EXT       | 36,400      | 3/20/13             | -79,170   | 405,130              |
| 265944      | RIVERPORT PHASE 4A - MICHELIN            | LAT EXT       | 400         | 6/6/13              | -870  | 404,260              |
| 314887      | DAYTON FREIGHT                           | LAT EXT       | 1,200       | 9/10/13             | -2,610  | 401,650              |
| 13LE1014    | LOUISVILLE FREE PUBLIC LIBRARY SOUTHWEST | LAT EXT       | 8,200       | 9/26/13             | -17,835   | 383,815              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>  | <u>APNAME</u>                      | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|--------------|------------------------------------|---------------|-------------|---------------------|---|----------------------|
| 357140       | FAMILY DOLLAR CANE RUN ROAD        | LAT EXT       | 832         | 10/3/13             | -1,810  | 382,005              |
| 13LE1171     | SINGLE FAMILY HOME 3700 ROMANIA DR | LAT EXT       | 400         | 1/29/14             | -870  | 381,135              |
| <b>MFORK</b> |                                    |               |             |                     |   |                      |
| 359400       | CALENDAR 2007 DOWNSPOUT CREDIT     | SCAPCREDIT    |             | 12/31/07            | 84,000  | 84,000               |
| 359328       | CALENDAR 2007 SUMP PUMP CREDIT     | SCAPCREDIT    |             | 12/31/07            | 20,000  | 104,000              |
| 235566       | MID FORK IFP WORK AUG05-NOV08      | SCAPCREDIT    |             | 11/1/08             | 43,779  | 147,779              |
| 359329       | CALENDAR 2008 SUMP PUMP CREDIT     | SCAPCREDIT    |             | 12/31/08            | 8,000   | 155,779              |
| 236517       | ANCHOR ESTATES MH REHAB            | SCAPCREDIT    |             | 1/16/09             | 15,552  | 171,331              |
| 217235       | SINKING FORK ICA PHASE I REHAB     | SCAPCREDIT    |             | 3/30/09             | 437,967   | 609,298              |
| 235376       | MIDDLE FORK INT REHAB PH1          | SCAPCREDIT    |             | 5/15/09             | 487,744   | 1,097,042            |
| 179246       | SHADY GLEN OF LYNDON PERSONAL      | LAT EXT       | -500        | 5/26/09             | 1,088   | 1,098,130            |
| 250572       | 1316 WITAWANGA AVE                 | LAT EXT       | 400         | 11/4/09             | -870  | 1,097,260            |
| 359331       | CALENDAR 2009 SUMP PUMP CREDIT     | SCAPCREDIT    |             | 12/31/09            | 24,000  | 1,121,260            |
| 359401       | CALENDAR 2009 DOWNSPOUT CREDIT     | SCAPCREDIT    |             | 12/31/09            | 4,000   | 1,125,260            |
| 197432       | ALMOST HOME KENNELS - ALL PET      | LAT EXT       | 3,700       | 3/16/10             | -8,048  | 1,117,212            |
| 260064       | OXMOOR GOLF FRONT 9                | LAT EXT       | 400         | 4/15/10             | -870  | 1,116,342            |
| 260065       | OXMOOR GOLF BACK 9                 | LAT EXT       | 400         | 4/15/10             | -870  | 1,115,472            |
| 229834       | THE BROOK HOS- DUPONT ADDITION     | LAT EXT       | 1,763       | 4/27/10             | -3,835  | 1,111,637            |
| 265723       | Z-XPRESS CAR WASH                  | LAT EXT       | 5,449       | 7/2/10              | -11,852   | 1,099,786            |
| 255793       | HERR LANE APARTMENTS - 4 PLEX      | LAT EXT       | 1,200       | 7/14/10             | -2,610  | 1,097,176            |
| 255792       | HERR LANE APARTMENTS - 8 PLEX      | LAT EXT       | 2,400       | 7/14/10             | -5,220  | 1,091,956            |
| 274303       | FARM CREDIT SERVICES               | LAT EXT       | 525         | 9/9/10              | -1,142  | 1,090,814            |
| 278015       | METROPOLITAN UROLOGY               | LAT EXT       | 400         | 12/15/10            | -870  | 1,089,944            |
| 359402       | CALENDAR 2010 DOWNSPOUT CREDIT     | SCAPCREDIT    |             | 12/31/10            | 8,000   | 1,097,944            |
| 359333       | CALENDAR 2010 SUMP PUMP CREDIT     | SCAPCREDIT    |             | 12/31/10            | 12,000  | 1,109,944            |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                  | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|--------------------------------|---------------|-------------|---------------------|---|----------------------|
| 285637      | SHELBYHURST OFFICE BUILDING 1  | LAT EXT       | 6,600       | 1/20/11             | -14,355   | 1,095,589            |
| 313465      | DORSEY POINTE/CODOMINIUMS 8-13 | LAT EXT       | 2,400       | 1/27/11             | -5,220  | 1,090,369            |
| 291263      | BROWNS LANE BUILDING           | LAT EXT       | 400         | 4/14/11             | -870  | 1,089,499            |
| 293400      | FOUR PLEX APARTMENTS           | LAT EXT       | 1,200       | 6/14/11             | -2,610  | 1,086,889            |
| 330019      | FY11 ANCHOR ESTATES REHAB      | SCAPCREDIT    |             | 8/11/11             | 1,359   | 1,088,248            |
| 310046      | EL NAPEL - MCMAHAN CENTER      | LAT EXT       | 3,100       | 10/31/11            | -6,743  | 1,081,506            |
| 314591      | CHOCOLATE MARTINI BAR/REST     | LAT EXT       | 3,275       | 11/29/11            | -7,123  | 1,074,382            |
| 320983      | HURSTBOURNE I/I INVESTIGATION  | SCAPCREDIT    |             | 12/27/11            | 1,408,279   | 2,482,661            |
| 359335      | CALENDAR 2011 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/11            | 16,000  | 2,498,661            |
| 321228      | SINGLE FAMILY UNIT             | LAT EXT       | 400         | 2/15/12             | -870  | 2,497,791            |
| 321647      | SINGLE FAMILY                  | LAT EXT       | 400         | 3/27/12             | -870  | 2,496,921            |
| 328074      | SINGLE FAMILY-703 FOUNTAIN AVE | LAT EXT       | 400         | 6/22/12             | -870  | 2,496,051            |
| 193195      | CEDAR LAKE LODGE WASHBURN      | LAT EXT       | 1,900       | 8/20/12             | -4,133  | 2,491,919            |
| 320923      | ST MATTHEWS I/I REHABILITATION | SCAPCREDIT    |             | 8/23/12             | 20,841  | 2,512,760            |
| 337796      | CHAMPPS                        | LAT EXT       | 635         | 9/5/12              | -1,381  | 2,511,379            |
| 347126      | ADVANCE PRODUCTION SYSTEMS     | LAT EXT       | 400         | 12/28/12            | -870  | 2,510,509            |
| 359336      | CALENDAR 2012 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/12            | 92,000  | 2,602,509            |
| 339367      | BAPTIST RADIATION ONCOLOGY     | LAT EXT       | 1,500       | 1/4/13              | -3,263  | 2,599,246            |
| 340778      | PANDA RESTAURANT               | LAT EXT       | 1,725       | 1/16/13             | -3,752  | 2,595,494            |
| 349044      | BLAIRWOOD POOL ADDITION        | LAT EXT       | 400         | 1/29/13             | -870  | 2,594,624            |
| 328659      | SINGLE FAMILY HOME - 6911 AMBR | LAT EXT       | 400         | 2/4/13              | -870  | 2,593,754            |
| 352805      | POOL HOUSE 9213 REIGATE COURT  | LAT EXT       | 200         | 2/20/13             | -435  | 2,593,319            |
| 14LE1001    | MIRANDA LAGRANGE RD            | LAT EXT       | 400         | 3/19/13             | -870  | 2,592,449            |
| 350246      | SINGLE FAMILY - 218 BLISS AVE  | LAT EXT       | 400         | 3/20/13             | -870  | 2,591,579            |
| 349974      | SINGLE FAMILY 205 N WATTERSON  | LAT EXT       | 400         | 3/26/13             | -870  | 2,590,709            |
| 342433      | SHELBYHURST 700 OFFICE BLDG    | LAT EXT       | 7,500       | 4/15/13             | -16,313   | 2,574,397            |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>   | <u>APNAME</u>                              | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|---------------|--|---------------|-------------|---------------------|---|----------------------|
| 350340        | JARED THE GALLERY OF JEWELRY               | LAT EXT       | 770         | 4/16/13             | -1,675  | 2,572,722            |
| 13LE1009      | Single family 11716 Wetherby Ave           | LAT EXT       | 400         | 6/7/13              | -870  | 2,571,852            |
| 13SC1000      | FY14 STARVIEW REHABILITATION               | SCAPCREDIT    |             | 6/30/13             | 14,183  | 2,586,035            |
| 13LE1001      | Single Family 835 Fountain Ave             | LAT EXT       | 400         | 8/28/13             | -870  | 2,585,165            |
| 355162        | PROPOSED RESTAURANT                        | LAT EXT       | 7,540       | 9/10/13             | -16,400   | 2,568,766            |
| 13LE1045      | SINGLE FAMILY 8325 WHIPPS MILL RD          | LAT EXT       | 400         | 9/30/13             | -870  | 2,567,896            |
| 319292        | WATERMARK ON HURSTBOURNE                   | LAT EXT       | 71,600      | 10/22/13            | -155,730  | 2,412,166            |
| 331542        | DENTAL/MEDICAL OFFICE BLDG                 | LAT EXT       | 400         | 10/28/13            | -870  | 2,411,296            |
| 13LE1128      | SINGLE FAMILY HOME 1327 ETAWAH AVE         | LAT EXT       | 400         | 11/5/13             | -870  | 2,410,426            |
| 13LE1144      | SINGLE FAMILY 1329 ETAWAH AVE              | LAT EXT       | 400         | 11/5/13             | -870  | 2,409,556            |
| 13LE1165      | SINGLE FAMILY 8504 LORE LANE               | LAT EXT       | 400         | 11/25/13            | -870  | 2,408,686            |
| 13LE1146      | CITY OF ST MATTHEWS COMMUNITY CTR PARI     | LAT EXT       | 1,500       | 11/26/13            | -3,263  | 2,405,423            |
| 13LE1099      | NICKLIES - ST MATTHEWS                     | LAT EXT       | 1,920       | 12/11/13            | -4,176  | 2,401,247            |
| 353963        | DORSEY COMMONS TRACTS 1.2.3                | LAT EXT       | 4,335       | 12/18/13            | -9,429  | 2,391,819            |
| 14SC1003      | FY13 IFP ACTIVITY FIRST HALF - MIDDLE FORK | SCAPCREDIT    |             | 12/31/13            | 3,230   | 2,395,049            |
| 352026        | MCMAHAN PLAZA PHASE II BLDG B              | LAT EXT       | 766         | 12/31/13            | -1,666  | 2,393,382            |
| 13LE1117      | THE VININGS                                | LAT EXT       | 850         | 4/10/14             | -1,849  | 2,391,534            |
| 14LE1128      | WALDORF SCHOOL OF LOUISVILLE               | LAT EXT       | 400         | 6/30/14             | -870  | 2,390,664            |
| <b>NDITCH</b> |  |               |             |                     |   |                      |
| 359404        | CALENDAR 2007 DOWNSPOUT CREDIT             | SCAPCREDIT    |             | 12/31/07            | 28,000  | 28,000               |
| 235569        | N.DITCH IFP WORK AUG05-NOV08               | SCAPCREDIT    |             | 11/1/08             | 11,147  | 39,147               |
| 236363        | NORTHERN DITCH INT REHAB PH1               | SCAPCREDIT    |             | 11/25/08            | 108,760   | 147,907              |
| 359339        | CALENDAR 2009 SUMP PUMP CREDIT             | SCAPCREDIT    |             | 12/31/09            | 4,000   | 151,907              |
| 234678        | THE LIGHTHOUSE PROMISE COMPLEX             | LAT EXT       | 2,825       | 3/5/10              | -6,144  | 145,763              |
| 284728        | SUBWAY - NEW CUT RD                        | LAT EXT       | 1,314       | 12/21/10            | -2,858  | 142,905              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                              | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|--|---------------|-------------|---------------------|---|----------------------|
| 359340      | CALENDAR 2010 SUMP PUMP CREDIT             | SCAPCREDIT    |             | 12/31/10            | 4,000   | 146,905              |
| 320908      | PARKVIEW ESTATES REHABILITATIO             | SCAPCREDIT    |             | 6/28/11             | 36  | 146,941              |
| 312810      | WILLOW PLACE APT COMMUNITY CEN             | LAT EXT       | 400         | 11/11/11            | -870  | 146,071              |
| 359341      | CALENDAR 2011 SUMP PUMP CREDIT             | SCAPCREDIT    |             | 12/31/11            | 24,000  | 170,071              |
| 359405      | CALENDAR 2011 DOWNSPOUT CREDIT             | SCAPCREDIT    |             | 12/31/11            | 12,000  | 182,071              |
| 315723      | JCPS EARLY CHILDHOOD DEVELOP               | LAT EXT       | 6,000       | 1/26/12             | -13,050   | 169,021              |
| 312057      | DOLLAR GENERAL - MEDALLION CT              | LAT EXT       | 400         | 3/21/12             | -870  | 168,151              |
| 312659      | KROGER L-350 FUEL STATION                  | LAT EXT       | 400         | 8/20/12             | -870  | 167,281              |
| 359343      | CALENDAR 2012 SUMP PUMP CREDIT             | SCAPCREDIT    |             | 12/31/12            | 24,000  | 191,281              |
| 13LE1147    | CARLON ROOFING                             | LAT EXT       | 992         | 12/5/13             | -2,158  | 189,123              |
| 13LE1126    | JENNINGS CROSSING TRACT 3                  | LAT EXT       | 2,100       | 12/12/13            | -4,568  | 184,556              |
| 14SC1004    | FY13 IFP ACTIVITY FIRST HALF - NORTHERN DI | SCAPCREDIT    |             | 12/31/13            | 329   | 184,885              |

### ORFM

|        |                                |            |        |          |         |        |
|--------|--------------------------------|------------|--------|----------|---------|--------|
| 359433 | CALENDAR 2007 DOWNSPOUT CREDIT | SCAPCREDIT |        | 12/31/07 | 56,000  | 56,000 |
| 359344 | CALENDAR 2007 SUMP PUMP CREDIT | SCAPCREDIT |        | 12/31/07 | 4,000   | 60,000 |
| 235572 | ORFM IFP WORK AUG05-NOV08      | SCAPCREDIT |        | 11/1/08  | 19,826  | 79,826 |
| 362643 | FY09 IFP ACTIVITY FIRST HALF   | SCAPCREDIT |        | 12/31/08 | 2       | 79,828 |
| 362650 | FY09 IFP ACTIVITY SECOND HALF  | SCAPCREDIT |        | 6/30/09  | 3,836   | 83,664 |
| 362654 | FY10 IFP ACTIVITY FIRST HALF   | SCAPCREDIT |        | 12/31/09 | 7,322   | 90,986 |
| 263548 | SINGLE FAMILY CONNECTION       | LAT EXT    | 400    | 5/18/10  | -870    | 90,116 |
| 213488 | NORTHEAST CHRISTIAN CHURCH     | LAT EXT    | 10,000 | 6/28/10  | -21,750 | 68,366 |
| 362660 | FY10 IFP ACTIVITY SECOND HALF  | SCAPCREDIT |        | 6/30/10  | 6,630   | 74,996 |
| 362665 | FY11 IFP ACTIVITY FIRST HALF   | SCAPCREDIT |        | 12/31/10 | 165     | 75,161 |
| 362672 | FY11 IFP ACTIVITY SECOND HALF  | SCAPCREDIT |        | 6/30/11  | 4,124   | 79,285 |
| 280837 | SPRINGHURST TOWNE CTR LOT C    | LAT EXT    | 400    | 9/20/11  | -870    | 78,415 |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                       | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|-------------------------------------|---------------|-------------|---------------------|---|----------------------|
| 320920      | SHADOW WOOD I/I REHABILITATION      | SCAPCREDIT    |             | 9/30/11             | 14,279  | 92,694               |
| 311412      | SPRINGHURST CHEVROLET               | LAT EXT       | 855         | 10/14/11            | -1,860  | 90,834               |
| 359345      | CALENDAR 2011 SUMP PUMP CREDIT      | SCAPCREDIT    |             | 12/31/11            | 16,000  | 106,834              |
| 359434      | CALENDAR 2011 DOWNSPOUT CREDIT      | SCAPCREDIT    |             | 12/31/11            | 16,000  | 122,834              |
| 362677      | FY12 IFP ACTIVITY FIRST HALF        | SCAPCREDIT    |             | 12/31/11            | 7,258   | 130,092              |
| 320921      | DERINGTON COURT I/I REHABILITA      | SCAPCREDIT    |             | 3/1/12              | 56,208  | 186,300              |
| 187028      | GLENVIEW PARK SUBD SECTION 1        | LAT EXT       | 4,400       | 3/5/12              | -9,570  | 176,730              |
| 213450      | GLENVIEW PARK SUB. SEC 2            | LAT EXT       | 5,600       | 3/5/12              | -12,180   | 164,550              |
| 322455      | FIRST LADY NAILS                    | LAT EXT       | 400         | 3/12/12             | -870  | 163,680              |
| 362681      | FY12 IFP ACTIVITY SECOND HALF       | SCAPCREDIT    |             | 6/30/12             | 18,220  | 181,900              |
| 292239      | SPRINGHURST RESTAURANT/ RETAIL      | LAT EXT       | 3,440       | 7/5/12              | -7,482  | 174,418              |
| 323821      | TIRE DISCOUNTERS WESTPORT RD        | LAT EXT       | 400         | 12/11/12            | -870  | 173,548              |
| 363238      | FY13 PROSPECT MANHOLE REHAB         | SCAPCREDIT    |             | 12/18/12            | 72,703  | 246,251              |
| 341319      | RAISING CANES RETAIL CENTER         | LAT EXT       | 1,225       | 12/18/12            | -2,664  | 243,587              |
| 359346      | CALENDAR 2012 SUMP PUMP CREDIT      | SCAPCREDIT    |             | 12/31/12            | 24,000  | 267,587              |
| 363235      | FY13 MUDDY FORK MH REHAB            | SCAPCREDIT    |             | 12/31/12            | 41,653  | 309,240              |
| 362686      | FY13 IFP ACTIVITY FIRST HALF - ORFM | SCAPCREDIT    |             | 12/31/12            | 1,148   | 310,388              |
| 360262      | SINGLE FAMILY 3419 HILLVALE RD      | LAT EXT       | 400         | 5/13/13             | -870  | 309,518              |
| 343729      | RETAIL & RESTAURANT                 | LAT EXT       | 3,500       | 6/21/13             | -7,613  | 301,906              |
| 334154      | GLENVIEW PARK SUBD SEC 4            | LAT EXT       | 3,600       | 11/7/13             | -7,830  | 294,076              |
| 352634      | BAUER PROPERTY                      | LAT EXT       | 2,920       | 11/21/13            | -6,351  | 287,725              |
| 13LE1024    | Overlook at Beech Spring Farm Sec 4 | LAT EXT       | 5,600       | 12/31/13            | -12,180   | 275,545              |
| 199896      | SPRINGDALE OFFICE BUILDING          | LAT EXT       | 4,210       | 3/11/14             | -9,157  | 266,388              |
| 225863      | SPRING FARM LAKES SEC 1             | LAT EXT       | 4,800       | 5/16/14             | -10,440   | 255,948              |
| 177756      | SUMMIT GARDENS PHASE 1              | LAT EXT       | 32,000      | 9/22/14             | -69,600   | 186,348              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>   | <u>APNAME</u>                  | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|---------------|--------------------------------|---------------|-------------|---------------------|---|----------------------|
| <b>PCREEK</b> |                                |               |             |                     |   |                      |
| 235574        | POND CRK IFP WORK AUG05-NOV08  | SCAPCREDIT    |             | 11/1/08             | 71,782  | 71,782               |
| 359347        | CALENDAR 2008 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/08            | 4,000   | 75,782               |
| 359438        | CALENDAR 2008 DOWNSPOUT CREDIT | SCAPCREDIT    |             | 12/31/08            | 4,000   | 79,782               |
| 359439        | CALENDAR 2009 DOWNSPOUT CREDIT | SCAPCREDIT    |             | 12/31/09            | 12,000  | 91,782               |
| 359348        | CALENDAR 2009 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/09            | 4,000   | 95,782               |
| 192513        | BANNON CROSSINGS SECTION 3A-1  | LAT EXT       | 800         | 2/17/10             | -1,740  | 94,042               |
| 261115        | EMERGENCY RESTORATION          | LAT EXT       | 400         | 4/27/10             | -870  | 93,172               |
| 276977        | DADISMAN BUILDERS-POPLAR TREE  | LAT EXT       | 400         | 10/13/10            | -870  | 92,302               |
| 266833        | THORNTONS @ PRESTON HWY        | LAT EXT       | 400         | 12/1/10             | -870  | 91,432               |
| 280751        | NOTTINGTON HILLS SEC 1         | LAT EXT       | 4,400       | 12/29/10            | -9,570  | 81,862               |
| 359350        | CALENDAR 2010 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/10            | 12,000  | 93,862               |
| 187739        | GLENGARRY INDUSTRIAL PARK      | LAT EXT       | 4,300       | 1/13/11             | -9,353  | 84,510               |
| 277777        | TIRE DISCOUNTERS - BOERSTE WAY | LAT EXT       | 2,960       | 3/21/11             | -6,438  | 78,072               |
| 304408        | UPS SUPPLY CHAIN SOLUTIONS #7  | LAT EXT       | 2,250       | 9/14/11             | -4,894  | 73,178               |
| 320918        | EDSEL I/I REHABILITATION - FY1 | SCAPCREDIT    |             | 9/27/11             | 106,700   | 179,878              |
| 313444        | PLANET FITNESS - JEFF BLVD     | LAT EXT       | 1,600       | 11/4/11             | -3,480  | 176,398              |
| 312391        | LONGHORN STEAKHOUSE RESTAURANT | LAT EXT       | 4,840       | 11/29/11            | -10,527   | 165,871              |
| 320919        | LANTANA I/I REHABILITATION - F | SCAPCREDIT    |             | 12/29/11            | 5,000   | 170,871              |
| 359351        | CALENDAR 2011 SUMP PUMP CREDIT | SCAPCREDIT    |             | 12/31/11            | 20,000  | 190,871              |
| 310845        | ZAXBY'S RESTAURANT             | LAT EXT       | 3,750       | 2/28/12             | -8,156  | 182,715              |
| 255044        | ISA-RECYCLING CENTER           | LAT EXT       | 400         | 3/13/12             | -870  | 181,845              |
| 312814        | MILLER TRANSPORTATION          | LAT EXT       | 1,800       | 3/19/12             | -3,915  | 177,930              |
| 324554        | NORTONS TEMPORARY OFFICE       | LAT EXT       | 900         | 4/16/12             | -1,958  | 175,972              |
| 234102        | ETHOS AT VALLEY FARM SR LIVING | LAT EXT       | 7,050       | 6/19/12             | -15,334   | 160,638              |
| 322367        | SHEPHERDS CARE MEMORY HOME     | LAT EXT       | 2,000       | 6/21/12             | -4,350  | 156,288              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                               | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|---|---------------|-------------|---------------------|---|----------------------|
| 307332      | LOUISVILLE INDUSTRIAL BLDG B                | LAT EXT       | 2,520       | 8/6/12              | -5,481  | 150,807              |
| 279860      | BANNON CROSSINGS SEC 3B-2                   | LAT EXT       | 9,600       | 8/10/12             | -20,880   | 129,927              |
| 312053      | DOLLAR GENERAL - CLEARWATER FA              | LAT EXT       | 400         | 8/13/12             | -870  | 129,057              |
| 343455      | SINGLE FAMILY 1812 GREYLING DR              | LAT EXT       | 400         | 10/12/12            | -870  | 128,187              |
| 243109      | OVERBROOK APARTMENTS                        | LAT EXT       | 41,200      | 11/9/12             | -89,610   | 38,577               |
| 359354      | CALENDAR 2012 SUMP PUMP CREDIT              | SCAPCREDIT    |             | 12/31/12            | 56,000  | 94,577               |
| 329624      | COPART                                      | LAT EXT       | 400         | 2/20/13             | -870  | 93,707               |
| 346082      | ZAXBYS                                      | LAT EXT       | 2,065       | 5/2/13              | -4,491  | 89,216               |
| 320924      | LEA ANN WAY INTERCEPTOR I&I RE              | SCAPCREDIT    |             | 6/30/13             | 1,017,423   | 1,106,639            |
| 335385      | HARRISON LOW PRESSURE S/S                   | LAT EXT       | 1,600       | 7/2/13              | -3,480  | 1,103,159            |
| 320940      | 4 RESIDENCE SFU 7821 MANSCLICK              | LAT EXT       | 400         | 8/16/13             | -870  | 1,102,289            |
| 361336      | RENAISSANCE SOUTH BUSINESS                  | LAT EXT       | 540         | 9/6/13              | -1,175  | 1,101,114            |
| 324886      | PNC BANK                                    | LAT EXT       | 400         | 9/6/13              | -870  | 1,100,244            |
| 13LE1083    | SINGLE FAMILY HOME 5402 (H) E MANSCLICK RE  | LAT EXT       | 400         | 9/26/13             | -870  | 1,099,374            |
| 353125      | PEGASUS TRANSPORTATION                      | LAT EXT       | 250         | 12/9/13             | -544  | 1,098,831            |
| 341439      | PRESTON GARDENS APTS                        | LAT EXT       | 22,200      | 12/10/13            | -48,285   | 1,050,546            |
| 308206      | APPLEGATE FARMS                             | LAT EXT       | 57,200      | 12/10/13            | -124,410  | 926,136              |
| 14SC1005    | FY13 IFP ACTIVITY FIRST HALF - POND CREEK   | SCAPCREDIT    |             | 12/31/13            | 21,344  | 947,480              |
| 13LE1179    | TIMBERBEND SUBDIVISION SEC 5B               | LAT EXT       | 6,400       | 2/14/14             | -13,920   | 933,560              |
| 13LE1035    | RENAISSANCE SOUTH BUSINESS PARK TRACT       | LAT EXT       | 5,415       | 4/10/14             | -11,778   | 921,782              |
| 348014      | ASHTON PARK TOWN HOMES                      | LAT EXT       | 9,000       | 4/24/14             | -19,575   | 902,207              |
| 280180      | LOUISVILLE INDUSTRIAL CTR F                 | LAT EXT       | 2,480       | 5/16/14             | -5,394  | 896,813              |
| 14LE1085    | Williams Properties - Self Storage Facility | LAT EXT       | 400         | 5/28/14             | -870  | 895,943              |
| 13LE1034    | 6300 GEIL LANE WAREHOUSE                    | LAT EXT       | 720         | 6/9/14              | -1,566  | 894,377              |
| 284215      | HURSTBOURNE POINTE APTS                     | LAT EXT       | 9,600       | 7/7/14              | -20,880   | 873,497              |
| 344230      | AUSTIN PARK APARTMENTS PH6                  | LAT EXT       | 27,600      | 8/25/14             | -60,030   | 813,467              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u>  | <u>APNAME</u>                  | <u>APTTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|--------------|--------------------------------|----------------|-------------|---------------------|---|----------------------|
| <b>SEDIV</b> |                                |                |             |                     |   |                      |
| 359355       | CALENDAR 2007 SUMP PUMP CREDIT | SCAPCREDIT     |             | 12/31/07            | 8,000   | 8,000                |
| 359440       | CALENDAR 2007 DOWNSPOUT CREDIT | SCAPCREDIT     |             | 12/31/07            | 128,000   | 136,000              |
| 235575       | SE DIV IFP WORK AUG05-NOV08    | SCAPCREDIT     |             | 11/1/08             | 71,472  | 207,472              |
| 236214       | GOLDSMITH BUECHB ICA PHI REHAB | SCAPCREDIT     |             | 12/22/08            | 314,808   | 522,280              |
| 236296       | BEARGRASS INT REHAB PH1 SEDIV  | SCAPCREDIT     |             | 12/22/08            | 122,688   | 644,968              |
| 359441       | CALENDAR 2008 DOWNSPOUT CREDIT | SCAPCREDIT     |             | 12/31/08            | 16,000  | 660,968              |
| 359356       | CALENDAR 2008 SUMP PUMP CREDIT | SCAPCREDIT     |             | 12/31/08            | 4,000   | 664,968              |
| 229854       | TINY HANDS DAYCARE             | LAT EXT        | 1,225       | 10/20/09            | -2,664  | 662,304              |
| 359357       | CALENDAR 2009 SUMP PUMP CREDIT | SCAPCREDIT     |             | 12/31/09            | 12,000  | 674,304              |
| 359443       | CALENDAR 2009 DOWNSPOUT CREDIT | SCAPCREDIT     |             | 12/31/09            | 8,000   | 682,304              |
| 235291       | SULLIVAN COLLEGE OF TECHNOLOGY | LAT EXT        | 900         | 2/11/10             | -1,958  | 680,346              |
| 238328       | LOUISVILLE COLLEGIATE SPORTS   | LAT EXT        | 400         | 3/1/10              | -870  | 679,476              |
| 241759       | FRISCHS BIG BOY RESTAURANT     | LAT EXT        | 2,400       | 3/5/10              | -5,220  | 674,256              |
| 257275       | LOUISVILLE JUNIOR ACADEMY      | LAT EXT        | 520         | 4/16/10             | -1,131  | 673,125              |
| 320993       | BEARGRASS CREEK PHASE II - FY1 | SCAPCREDIT     |             | 12/14/10            | 10,368  | 683,493              |
| 359358       | CALENDAR 2010 SUMP PUMP CREDIT | SCAPCREDIT     |             | 12/31/10            | 4,000   | 687,493              |
| 359444       | CALENDAR 2010 DOWNSPOUT CREDIT | SCAPCREDIT     |             | 12/31/10            | 24,000  | 711,493              |
| 286513       | GARDINER POINT RESIDENCE HALL  | LAT EXT        | 10,800      | 2/16/11             | -23,490   | 688,003              |
| 276378       | TIRE DISCOUNTERS - BARDSTOWN   | LAT EXT        | 1,500       | 5/6/11              | -3,263  | 684,741              |
| 287888       | BEVERAGE WAREHOUSE             | LAT EXT        | 1,180       | 5/30/11             | -2,567  | 682,174              |
| 296295       | KEN TOWERY -3800 S HURSTBOURNE | LAT EXT        | 400         | 7/1/11              | -870  | 681,304              |
| 359445       | CALENDAR 2011 DOWNSPOUT CREDIT | SCAPCREDIT     |             | 12/31/11            | 8,000   | 689,304              |
| 359359       | CALENDAR 2011 SUMP PUMP CREDIT | SCAPCREDIT     |             | 12/31/11            | 64,000  | 753,304              |
| 307018       | HOOK PROPERTY FAMILY DOLLAR    | LAT EXT        | 400         | 8/10/12             | -870  | 752,434              |

## Capacity Credit Balance Sheet per Credit Basin

| <u>APNO</u> | <u>APNAME</u>                               | <u>APTYPE</u> | <u>FLOW</u> | <u>Release Date</u> | <u>Approved<br/>Credit Required/<br/>Flow Reduction</u> | <u>Running Total</u> |
|-------------|---|---------------|-------------|---------------------|---|----------------------|
| 359361      | CALENDAR 2012 SUMP PUMP CREDIT              | SCAPCREDIT    |             | 12/31/12            | 68,000  | 820,434              |
| 359446      | CALENDAR 2012 DOWNSPOUT CREDIT              | SCAPCREDIT    |             | 12/31/12            | 4,000   | 824,434              |
| 187741      | BROOKSTONE SENIOR APARTMENTS                | LAT EXT       | 16,800      | 3/11/13             | -36,540   | 787,894              |
| 232601      | RAINTREE/MARIAN CT P/S ELIM                 | LAT EXT       | 105,800     | 6/14/13             | -230,115  | 557,779              |
| 330437      | COLLEGIATE ATHLETIC FIELD                   | LAT EXT       | 800         | 11/26/13            | -1,740  | 556,039              |
| 14SC1006    | FY13 IFP ACTIVITY FIRST HALF - SE DIVERSION | SCAPCREDIT    |             | 12/31/13            | 20,623  | 576,662              |



## System Capacity Planning Projected Credit Needs

| <u>Credit Basin</u> | <u>Projected Credit Need</u> |
|---------------------|------------------------------|
| <b>CCREEK</b>       | <b>50,460</b>                |
| <b>FFORK</b>        | <b>7,439</b>                 |
| <b>HCREEK</b>       | <b>40,890</b>                |
| <b>JTOWN</b>        | <b>5,970</b>                 |
| <b>MCREEK</b>       | <b>1,631</b>                 |
| <b>MFORK</b>        | <b>28,928</b>                |
| <b>ORFM</b>         | <b>31,755</b>                |
| <b>PCREEK</b>       | <b>392,881</b>               |
| <b>SEDIV</b>        | <b>26,785</b>                |
|                     | <b>586,739</b>               |

Appendix D – Pump Station Drawdown Test Form

Drawdown Test Form  
**Field Data Sheet**

PUMP STATION NAME: Terrier Lane DATE 10/17/2007  
 ADDRESS \_\_\_\_\_  
 MSD FACILITY NUMBER: 0013  
 PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 1 of 2

**I. BASE INFORMATION**

|                   |                             |            |               |                      |       |
|-------------------|-----------------------------|------------|---------------|----------------------|-------|
| PUMP MANUFACTURER | <u>Davco by Gorman Rupp</u> | LEAD LEVEL | <u>48 in.</u> | FFE                  | _____ |
| MODEL             | <u>6BA</u>                  | LAG LEVEL  | _____         | (Finish Floor Elev.) |       |
| SERIAL NUMBER     | <u>297700</u>               | LAG LEVEL  | _____         |                      |       |
| HP                | _____                       | HIGH ALARM | _____         |                      |       |
| IMPELLER SIZE     | _____                       | PUMP OFF   | <u>30</u>     |                      |       |

PUMP DESIGN 750 GPM        TDH (Ft)

| DIAMETER<br>OR<br>LENGTH | WIDTH        | AREA       | GALLON<br>PER |
|--------------------------|--------------|------------|---------------|
| (FEET)                   | (FEET)       | SQ FEET    | VERT FT       |
| <u>10.50</u>             | <u>10.50</u> | <u>110</u> | <u>825</u>    |

WET WELL DIAMETER (LENGTH x WIDTH)

AREA OF WET WELL (0.785 x Diameter ^2) OR L X W

**II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)**

**A. DETERMINE AVERAGE INFLOWS**

(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

|       | TEST 1                     |        |                                   |         | TEST 2    |        |                                   |         | TEST 3    |        |                                   |         |
|-------|----------------------------|--------|-----------------------------------|---------|-----------|--------|-----------------------------------|---------|-----------|--------|-----------------------------------|---------|
|       | HEIGHT                     |        | TIME                              |         | HEIGHT    |        | TIME                              |         | HEIGHT    |        | TIME                              |         |
|       | FEET                       | INCHES | MINUTES                           | SECONDS | FEET      | INCHES | MINUTES                           | SECONDS | FEET      | INCHES | MINUTES                           | SECONDS |
|       |                            |        |                                   |         |           |        |                                   |         |           |        |                                   |         |
| START |                            | 48     | 0.0                               | 0.0     |           | 48     | 0.0                               | 0.0     |           |        | 0.0                               | 0.0     |
| END   |                            | 31     | 23                                | 43      |           | 30     | 22                                | 47      |           |        |                                   |         |
| TOTAL | 1.42 FEET                  |        | 23.72 MINUTES                     |         | 1.50 FEET |        | 22.78 MINUTES                     |         | 0.00 FEET |        | 0.00 MINUTES                      |         |
|       | 49                         |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         | 54        |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         |           |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         |
|       | 52 GPM AVERAGE INFLOW RATE |        |                                   |         |           |        |                                   |         |           |        |                                   |         |

**B. DETERMINE AVERAGE PUMP DOWN FLOWS**

(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

|                          | TEST 1                    |        |                                       |         | TEST 2    |        |                                       |         | TEST 3    |        |                                       |         |
|--------------------------|---------------------------|--------|---------------------------------------|---------|-----------|--------|---------------------------------------|---------|-----------|--------|---------------------------------------|---------|
|                          | HEIGHT                    |        | TIME                                  |         | HEIGHT    |        | TIME                                  |         | HEIGHT    |        | TIME                                  |         |
|                          | FEET                      | INCHES | MINUTES                               | SECONDS | FEET      | INCHES | MINUTES                               | SECONDS | FEET      | INCHES | MINUTES                               | SECONDS |
| START (High Level Alarm) |                           | 28.8   | 0.0                                   | 0.0     |           | 30     | 0.0                                   | 0.0     |           |        | 0.0                                   | 0.0     |
| END                      |                           | 48     | 4                                     | 11      |           | 48     | 3                                     | 58      |           |        |                                       |         |
| TOTAL                    | 1.60 FEET                 |        | 4.18 MINUTES                          |         | 1.50 FEET |        | 3.97 MINUTES                          |         | 0.00 FEET |        | 0.00 MINUTES                          |         |
|                          | 365                       |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         | 361       |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         |           |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         |
|                          | 363 GPM AVERAGE PUMP RATE |        |                                       |         |           |        |                                       |         |           |        |                                       |         |

Note: Pump 1 pushes back through pump 2, no check valve.

CELLS THAT SHOW UP IN RED ARE FORMULAS

Drawdown Test Form  
**Field Data Sheet**

PUMP STATION NAME: Terrier Lane DATE 10/17/2007  
 ADDRESS \_\_\_\_\_  
 MSD FACILITY NUMBER: 0013  
 PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 2 of 2

**I. BASE INFORMATION**

|                   |                             |            |       |                      |       |
|-------------------|-----------------------------|------------|-------|----------------------|-------|
| PUMP MANUFACTURER | <u>Davco by Gorman Rupp</u> | LEAD LEVEL | _____ | FFE                  | _____ |
| MODEL             | <u>6BA</u>                  | LAG LEVEL  | _____ | (Finish Floor Elev.) |       |
| SERIAL NUMBER     | <u>265003</u>               | LAG LEVEL  | _____ |                      |       |
| HP                | _____                       | HIGH ALARM | _____ |                      |       |
| IMPELLER SIZE     | _____                       | PUMP OFF   | _____ |                      |       |

PUMP DESIGN 750 GPM        TDH (Ft)

|   | DIAMETER<br>OR<br>LENGTH | WIDTH        | AREA       | GALLON<br>PER |
|---|--------------------------|--------------|------------|---------------|
|   | (FEET)                   | (FEET)       | SQ FEET    | VERT FT       |
| WET WELL DIAMETER (LENGTH x WIDTH)              | <u>10.50</u>             | <u>10.50</u> | <u>110</u> | <u>825</u>    |
| AREA OF WET WELL (0.785 x Diameter ^2) OR L X W |                          |              |            |               |

**II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)**

**A. DETERMINE AVERAGE INFLOWS**

(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

|       | TEST 1                                |        |                                   |         | TEST 2      |        |                                   |         | TEST 3      |        |                                   |         |
|-------|---------------------------------------|--------|-----------------------------------|---------|-------------|--------|-----------------------------------|---------|-------------|--------|-----------------------------------|---------|
|       | HEIGHT                                |        | TIME                              |         | HEIGHT      |        | TIME                              |         | HEIGHT      |        | TIME                              |         |
|       | FEET                                  | INCHES | MINUTES                           | SECONDS | FEET        | INCHES | MINUTES                           | SECONDS | FEET        | INCHES | MINUTES                           | SECONDS |
|       |                                       |        |                                   |         |             |        |                                   |         |             |        |                                   |         |
| START |                                       | 48     | 0.0                               | 0.0     |             |        | 0.0                               | 0.0     |             |        | 0.0                               | 0.0     |
| END   |                                       | 30.8   | 20                                | 2       |             |        |                                   |         |             |        |                                   |         |
| TOTAL | 1.43 FEET                             |        | 20.03 MINUTES                     |         | 0.00 FEET   |        | 0.00 MINUTES                      |         | 0.00 FEET   |        | 0.00 MINUTES                      |         |
|       | <div>59</div>                         |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         | <div></div> |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         | <div></div> |        | GPM INFLOW RATE<br>(HEIGHT /TIME) |         |
|       | <div>59</div> GPM AVERAGE INFLOW RATE |        |                                   |         |             |        |                                   |         |             |        |                                   |         |

**B. DETERMINE AVERAGE PUMP DOWN FLOWS**

(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

|                          | TEST 1                               |        |                                       |         | TEST 2      |        |                                       |         | TEST 3      |        |                                       |         |
|--------------------------|--------------------------------------|--------|---------------------------------------|---------|-------------|--------|---------------------------------------|---------|-------------|--------|---------------------------------------|---------|
|                          | HEIGHT                               |        | TIME                                  |         | HEIGHT      |        | TIME                                  |         | HEIGHT      |        | TIME                                  |         |
|                          | FEET                                 | INCHES | MINUTES                               | SECONDS | FEET        | INCHES | MINUTES                               | SECONDS | FEET        | INCHES | MINUTES                               | SECONDS |
| START (High Level Alarm) |                                      | 30     | 0.0                                   | 0.0     |             |        | 0.0                                   | 0.0     |             |        | 0.0                                   | 0.0     |
| END                      |                                      | 48     | 1                                     | 39      |             |        |                                       |         |             |        |                                       |         |
| TOTAL                    | 1.50 FEET                            |        | 1.65 MINUTES                          |         | 0.00 FEET   |        | 0.00 MINUTES                          |         | 0.00 FEET   |        | 0.00 MINUTES                          |         |
|                          | <div>809</div>                       |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         | <div></div> |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         | <div></div> |        | (HEIGHT /TIME+GPM AVE<br>INFLOW RATE) |         |
|                          | <div>809</div> GPM AVERAGE PUMP RATE |        |                                       |         |             |        |                                       |         |             |        |                                       |         |

Note: \_\_\_\_\_

CELLS THAT SHOW UP IN RED ARE FORMULAS

Drawdown Test Form  
**Field Data Sheet**

PUMP STATION NAME: Terrier Lane DATE 10/17/2007  
 ADDRESS \_\_\_\_\_  
 MSD FACILITY NUMBER: 0013  
 PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 1&2 of 2

**I. BASE INFORMATION**

|                   |  |            |  |                      |  |
|-------------------|--|------------|--|----------------------|--|
| PUMP MANUFACTURER |  | LEAD LEVEL |  | FFE                  |  |
| MODEL             |  | LAG LEVEL  |  | (Finish Floor Elev.) |  |
| SERIAL NUMBER     |  | LAG LEVEL  |  |                      |  |
| HP                |  | HIGH ALARM |  |                      |  |
| IMPELLER SIZE     |  | PUMP OFF   |  |                      |  |

PUMP DESIGN 2@750 GPM        TDH (Ft)

|   | DIAMETER OR LENGTH |        | WIDTH  | AREA    | GALLON PER |
|---|--------------------|--------|--------|---------|------------|
|   | (FEET)             | (FEET) | (FEET) | SQ FEET | VERT FT    |
| WET WELL DIAMETER (LENGTH x WIDTH)              | 10.50              | 10.50  |        | 110     | 825        |
| AREA OF WET WELL (0.785 x Diameter ^2) OR L X W |                    |        |        |         |            |

**II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)**

**A. DETERMINE AVERAGE INFLOWS**

(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

|       | TEST 1                            |        |                                |         | TEST 2    |        |                                |         | TEST 3    |        |                                |         |
|-------|-----------------------------------|--------|--------------------------------|---------|-----------|--------|--------------------------------|---------|-----------|--------|--------------------------------|---------|
|       | HEIGHT                            |        | TIME                           |         | HEIGHT    |        | TIME                           |         | HEIGHT    |        | TIME                           |         |
|       | FEET                              | INCHES | MINUTES                        | SECONDS | FEET      | INCHES | MINUTES                        | SECONDS | FEET      | INCHES | MINUTES                        | SECONDS |
| START |                                   | 48     | 0.0                            | 0.0     |           | 48     | 0.0                            | 0.0     |           |        | 0.0                            | 0.0     |
| END   |                                   | 30     | 16                             | 10      |           | 30     | 13                             | 44      |           |        |                                |         |
| TOTAL | 1.50 FEET                         |        | 16.17 MINUTES                  |         | 1.50 FEET |        | 13.73 MINUTES                  |         | 0.00 FEET |        | 0.00 MINUTES                   |         |
|       | <u>77</u>                         |        | GPM INFLOW RATE (HEIGHT /TIME) |         | <u>90</u> |        | GPM INFLOW RATE (HEIGHT /TIME) |         |           |        | GPM INFLOW RATE (HEIGHT /TIME) |         |
|       | <u>83</u> GPM AVERAGE INFLOW RATE |        |                                |         |           |        |                                |         |           |        |                                |         |

**B. DETERMINE AVERAGE PUMP DOWN FLOWS**

(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

|                          | TEST 1                            |        |                                    |         | TEST 2      |        |                                    |         | TEST 3    |        |                                    |         |
|--------------------------|-----------------------------------|--------|------------------------------------|---------|-------------|--------|------------------------------------|---------|-----------|--------|------------------------------------|---------|
|                          | HEIGHT                            |        | TIME                               |         | HEIGHT      |        | TIME                               |         | HEIGHT    |        | TIME                               |         |
|                          | FEET                              | INCHES | MINUTES                            | SECONDS | FEET        | INCHES | MINUTES                            | SECONDS | FEET      | INCHES | MINUTES                            | SECONDS |
| START (High Level Alarm) |                                   | 30     | 0.0                                | 0.0     |             | 30     | 0.0                                | 0.0     |           |        | 0.0                                | 0.0     |
| END                      |                                   | 48     | 1                                  | 2       |             | 48     | 1                                  | 2       |           |        |                                    |         |
| TOTAL                    | 1.50 FEET                         |        | 1.03 MINUTES                       |         | 1.50 FEET   |        | 1.03 MINUTES                       |         | 0.00 FEET |        | 0.00 MINUTES                       |         |
|                          | <u>1274</u>                       |        | (HEIGHT /TIME+GPM AVE INFLOW RATE) |         | <u>1274</u> |        | (HEIGHT /TIME+GPM AVE INFLOW RATE) |         |           |        | (HEIGHT /TIME+GPM AVE INFLOW RATE) |         |
|                          | <u>1274</u> GPM AVERAGE PUMP RATE |        |                                    |         |             |        |                                    |         |           |        |                                    |         |

Note:

CELLS THAT SHOW UP IN RED ARE FORMULAS

## Appendix E – IOAP Project Crosswalk

# IOAP Project Crosswalk

|  | PROGRAM | ASSET ID   | PROJECT ID                |
|--|---------|------------|---------------------------|
| Avanti PS Elimination  | IOAP    | 21229-W    | S_PO_WC_PC07_M_01_A       |
| Sinking Fork Relief Sewer  | ISSDP   | 21103      | SFRS                      |
| Sinking Fork Relief Sewer  | ISSDP   | 63319      | SFRS                      |
| Sinking Fork Relief Sewer  | ISSDP   | 25012      | SFRS                      |
| Beargrass Interceptor Rehab Ph. 2  | IOAP    | 51594      | S_SD_MF_NB06_S_13_C       |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | 108958     | S_HC_HC_MSD1086_M_07_C_A  |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | 108956     | S_HC_HC_MSD1086_M_07_C_A  |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | MSD1086-PS | S_HC_HC_MSD1086_M_07_C_A  |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | 90776      | S_HC_HC_MSD1086_M_07_C_A  |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | 108957     | S_HC_HC_MSD1086_M_07_C_A  |
| Floydsburg Rd. I/I Investigation & Rehabilitation                            | IOAP    | 108953     | S_HC_HC_MSD1086_M_07_C_A  |
| Running Fox PS Elimination   | IOAP    | MSD1080-LS | S_CC_CC_MSD1080_S_01_C    |
| Beechwood Village Sanitary Sewer Replacement                                 | ISSDP   | 21153      | BVSSR                     |
| Beechwood Village Sanitary Sewer Replacement                                 | ISSDP   | 21101      | BVSSR                     |
| Beechwood Village Sanitary Sewer Replacement                                 | ISSDP   | 21156      | BVSSR                     |
| Beechwood Village Sanitary Sewer Replacement                                 | ISSDP   | 21061      | BVSSR                     |
| Hazelwood PS I/I Investigation & Rehabilitation                              | IOAP    | 55667      | S_MC_MF_55665_S_07_C      |
| Hazelwood PS I/I Investigation & Rehabilitation                              | IOAP    | 55665      | S_MC_MF_55665_S_07_C      |
| Parkview Estates I/I Investigation & Rehabilitation                          | IOAP    | 47250      | S_SD_MF_NB03_S_07_C       |
| Sonne PS I/I Investigation & Rehabilitation                                  | IOAP    | MSD0042-PS | S_OR_MF_42007_S_07_C      |
| Woodland Hills PS Diversion  | IOAP    | 33003      | S_FF_FF_NB01_S_01_C_A     |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                      | IOAP    | 0057-W     | S_MI_MF_NB06_M_01_A_A - 1 |
| Northern Ditch Diversion Interceptor   | ISSDP   | MSD0271    | NDDI                      |
| Edsel PS I/I Investigation & Rehabilitation                                  | IOAP    | MSD1048-PS | S_PO_WC_PC11_M_07_C       |
| Edsel PS I/I Investigation & Rehabilitation                                  | IOAP    | 94009      | S_PO_WC_PC11_M_07_C       |
| Edsel PS I/I Investigation & Rehabilitation                                  | IOAP    | 92098      | S_PO_WC_PC11_M_07_C       |
| Edsel PS I/I Investigation & Rehabilitation                                  | IOAP    | 92099      | S_PO_WC_PC11_M_07_C       |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 13946      | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 44396      | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 66349      | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 51301      | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 36763      | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 8717       | S_SF_MF_30917_M_09_A      |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation | IOAP    | 44397      | S_SF_MF_30917_M_09_A      |

# IOAP Project Crosswalk

|  | PROGRAM | ASSET ID | PROJECT ID           |
|--|---------|----------|----------------------|
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation   | IOAP    | 13931    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation   | IOAP    | 99259    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation   | IOAP    | 104223   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation   | IOAP    | 13943    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation   | IOAP    | 104231   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 44397    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 104223   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 104231   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 13946    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 13931    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 66349    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 51301    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 99259    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 36763    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 13943    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 44396    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 1 - SSES                                 | IOAP    | 8717     | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 13943    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 13931    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 66349    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 8717     | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 13946    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 99259    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 51301    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 36763    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 104223   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 104231   | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 44397    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation | IOAP    | 44396    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize       | IOAP    | 44397    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize       | IOAP    | 51301    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize       | IOAP    | 99259    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize       | IOAP    | 13943    | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize       | IOAP    | 8717     | S_SF_MF_30917_M_09_A |

# IOAP Project Crosswalk

|  | PROGRAM | ASSET ID   | PROJECT ID           |
|--|---------|------------|----------------------|
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 13946      | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 13931      | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 44396      | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 104223     | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 36763      | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 66349      | S_SF_MF_30917_M_09_A |
| Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize | IOAP    | 104231     | S_SF_MF_30917_M_09_A |
| Hurstbourne I/I Investigation & Rehabilitation                           | IOAP    | 67535      | S_MI_MF_NB07_S_07_C  |
| Hurstbourne I/I Investigation & Rehabilitation                           | IOAP    | 47650      | S_MI_MF_NB07_S_07_C  |
| Hurstbourne I/I Investigation & Rehabilitation                           | IOAP    | 47656      | S_MI_MF_NB07_S_07_C  |
| Hurstbourne I/I Investigation & Rehabilitation                           | IOAP    | 1793       | S_MI_MF_NB07_S_07_C  |
| Lantana PS #1 I/I Investigation and Rehabilitation                       | IOAP    | 25484      | S_PO_WC_PC05_M_07_C  |
| Lantana PS #1 I/I Investigation and Rehabilitation                       | IOAP    | MSD0101-PS | S_PO_WC_PC05_M_07_C  |
| Lantana PS #1 I/I Investigation and Rehabilitation                       | IOAP    | 93719      | S_PO_WC_PC05_M_07_C  |
| Derington Ct. PS I/I Investigation & Rehabilitation                      | IOAP    | MSD0095-PS | S_OR_MF_NB03_S_07_C  |
| Derington Ct. PS I/I Investigation & Rehabilitation                      | IOAP    | 20155      | S_OR_MF_NB03_S_07_C  |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 72571-X    | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 30704      | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 30702      | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 63779      | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 8426       | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 8427       | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 8431       | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 49647      | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 8430       | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 18654      | SDSI                 |
| Southeastern Diversion Structure and Interceptor                         | ISSDP   | 30701      | SDSI                 |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | MSD0277    | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 32688      | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 59169      | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 22307      | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 22385      | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 22370      | DRGWQTC              |
| Derek R. Guthrie WQTC Wet Weather Facility                               | ISSDP   | 32682      | DRGWQTC              |

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID   | PROJECT ID              |
|---|---------|------------|-------------------------|
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18370      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18434      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 30681      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | MSD0012-PS | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 49673      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 49236      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18483      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 49224      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18134      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18471      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18318-W    | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18505      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18595      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 73111      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 49672      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 17571      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18302      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18297      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 18299      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 30680      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 48886      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 48888      | HLIHSPS                 |
| Hikes Lane Interceptor and Highgate Springs                                     | ISSDP   | 48885      | HLIHSPS                 |
| Lake Forest PS SSO Investigation  | IOAP    | MSD1169-LS | S_FF_LF_NB01_S_13_C_A   |
| Meadow Stream Pump Station & Force Main Upgrade                                 | IOAP    | MSD1082-PS | S_HC_HC_MSD1082_S_09A_C |
| Meadow Stream Pump Station & Force Main Upgrade                                 | IOAP    | 91087      | S_HC_HC_MSD1082_S_09A_C |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | 41374      | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | MSD0007-PS | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | MSD0024-PS | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | 26752      | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | MSD0023-PS | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | MSD0010-PS | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | 24472      | S_OR_MF_NB01_M_01_B     |
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements | IOAP    | MSD0006-PS | S_OR_MF_NB01_M_01_B     |

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID   | PROJECT ID                |
|---|---------|------------|---------------------------|
| Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements           | IOAP    | 24152-W    | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | MSD0007-PS | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | 24472      | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | 41374      | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | 26752      | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | MSD0023-PS | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | MSD0024-PS | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | 24152-W    | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | MSD0010-PS | S_OR_MF_NB01_M_01_B       |
| Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination | IOAP    | MSD0006-PS | S_OR_MF_NB01_M_01_B       |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | MSD0057-LS | S_MI_MF_NB06_M_01_A_A - 2 |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | 00056-W    | S_MI_MF_NB06_M_01_A_A - 2 |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | 817        | S_MI_MF_NB06_M_01_A_A - 2 |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | 0057-W     | S_MI_MF_NB06_M_01_A_A - 2 |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | 746        | S_MI_MF_NB06_M_01_A_A - 2 |
| Anchor Estates PS Elimination 1 - Vannah PS Elimination                                   | IOAP    | 1106       | S_MI_MF_NB06_M_01_A_A - 2 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 47583      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 47604      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 47603      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 2933       | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 2935       | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 8537       | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 72289      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 30376      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 45796      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 115183     | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 84155      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 23211      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 40559      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 51160      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 51180      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 47582      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 47034      | S_MISF_MF_NB01_M_01_C_A1  |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin | IOAP    | 72288      | S_MISF_MF_NB01_M_01_C_A1  |

## IOAP Project Crosswalk

[illegible]

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID    | PROJECT ID               |
|---|---------|-------------|--------------------------|
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 8537        | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 90700       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 2932        | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 47034       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 72288       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 47593       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 30376       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 84155       | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 115183      | S_MISF_MF_NB01_M_01_C_A1 |
| Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and | IOAP    | 45835       | S_MISF_MF_NB01_M_01_C_A1 |
| Fairway View PS Improvements  | IOAP    | MSD1065-PS  | S_HC_HS_NB01_S_03_C_A    |
| Riding Ridge PS Improvements  | IOAP    | MSD1060-LS  | S_HC_HN_NB01_S_03_C_A    |
| Shively Interceptor   | IOAP    | MSD0047-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | 4498        | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0049-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | 4542        | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | 81814-W     | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0016-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0044-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0048-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0050-PS  | S_MC_WC_NB01_M_01_A      |
| Shively Interceptor   | IOAP    | MSD0043-PS  | S_MC_WC_NB01_M_01_A      |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | 92061       | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | 86052       | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | MSD0263     | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | MSD1043-PS  | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | MSD0196-PS  | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | 64096       | S_JT_JT_NB01A_M_03_C     |
| Chenoweth Hills WQTC Elimination & PS Improvements  | IOAP    | MSD0263A-PS | S_JT_JT_NB01A_M_03_C     |
| Fairmount Road Pump Station Off-Line Storage  | IOAP    | 81316       | S_FF_CC_81316_M_03_C_A   |
| Fairmount Road Pump Station Off-Line Storage  | IOAP    | 97362       | S_FF_CC_81316_M_03_C_A   |
| Jeffersontown WQTC Elimination  | IOAP    | 28391       | S_JT_JT_NB01_M_01_C_A    |
| Jeffersontown WQTC Elimination  | IOAP    | 64505       | S_JT_JT_NB01_M_01_C_A    |
| Jeffersontown WQTC Elimination  | IOAP    | 28392       | S_JT_JT_NB01_M_01_C_A    |

# IOAP Project Crosswalk

|                                 | PROGRAM | ASSET ID   | PROJECT ID            |
|---------------------------------|---------|------------|-----------------------|
| Jeffersontown WQTC Elimination  | IOAP    | 28395      | S_JT_JT_NB01_M_01_C_A |
| Jeffersontown WQTC Elimination  | IOAP    | ISO28-SI   | S_JT_JT_NB01_M_01_C_A |
| Jeffersontown WQTC Elimination  | IOAP    | 31733      | S_JT_JT_NB01_M_01_C_A |
| Jeffersontown WQTC Elimination  | IOAP    | 28551      | S_JT_JT_NB01_M_01_C_A |
| Jeffersontown WQTC Elimination  | IOAP    | MSD0255    | S_JT_JT_NB01_M_01_C_A |
| Jeffersontown WQTC Elimination  | IOAP    | 28173      | S_JT_JT_NB01_M_01_C_A |
| Klondike Interceptor            | IOAP    | 26651      | S_SD_MF_NB04_S_01_B_A |
| Klondike Interceptor            | IOAP    | 26650      | S_SD_MF_NB04_S_01_B_A |
| Klondike Interceptor            | IOAP    | 20644      | S_SD_MF_NB04_S_01_B_A |
| Klondike Interceptor            | IOAP    | 66232      | S_SD_MF_NB04_S_01_B_A |
| Klondike Interceptor            | IOAP    | 49513      | S_SD_MF_NB04_S_01_B_A |
| Klondike Interceptor            | IOAP    | 25676      | S_SD_MF_NB04_S_01_B_A |
| Lea Ann Way System Improvements | IOAP    | MSD1200-PS | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | 29933      | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | 31074      | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | 31073      | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | 57874      | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | 29948      | S_PO_WC_PC08_M_01_C   |
| Lea Ann Way System Improvements | IOAP    | MSD1010-PS | S_PO_WC_PC08_M_01_C   |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD0192-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD1063-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD0123-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD0193-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 40870      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD1044-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | MSD0183-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 22436      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 40872      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 40871      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 65635      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 42680      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 89791      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 89646      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations | IOAP    | 40879      | S_OR_MF_NB04_M_03_B_B |

# IOAP Project Crosswalk

|  | PROGRAM | ASSET ID   | PROJECT ID            |
|--|---------|------------|-----------------------|
| Prospect #1 - WQTC Eliminations        | IOAP    | 42675      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations        | IOAP    | 40880      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations        | IOAP    | MSD0186-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations        | IOAP    | 65633      | S_OR_MF_NB04_M_03_B_B |
| Prospect #1 - WQTC Eliminations        | IOAP    | 65623      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 40870      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 89791      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 65623      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD0123-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD1044-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 89646      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 40879      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 40880      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD0186-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD1063-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD0192-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD0183-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 65633      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 22436      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 42675      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 40872      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 65635      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | MSD0193-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 40871      | S_OR_MF_NB04_M_03_B_B |
| Prospect #2 - Harrods Creek PS and FM  | IOAP    | 42680      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 40871      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 65635      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 22436      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 89646      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 40879      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | 40880      | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | MSD0193-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | MSD0183-PS | S_OR_MF_NB04_M_03_B_B |
| Prospect #3 - ORFM System Improvemetns | IOAP    | MSD1063-PS | S_OR_MF_NB04_M_03_B_B |

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID   | PROJECT ID                |
|---|---------|------------|---------------------------|
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | MSD0192-PS | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 42675      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 40872      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 65633      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | MSD1044-PS | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | MSD0186-PS | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | MSD0123-PS | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 40870      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 65623      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 42680      | S_OR_MF_NB04_M_03_B_B     |
| Prospect #3 - ORFM System Improvemetns                                    | IOAP    | 89791      | S_OR_MF_NB04_M_03_B_B     |
| Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination | IOAP    | 1106       | S_MI_MF_NB06_M_01_A_A - 1 |
| Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination | IOAP    | MSD0057-LS | S_MI_MF_NB06_M_01_A_A - 1 |
| Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination | IOAP    | 817        | S_MI_MF_NB06_M_01_A_A - 1 |
| Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination | IOAP    | 00056-W    | S_MI_MF_NB06_M_01_A_A - 1 |
| Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination | IOAP    | 746        | S_MI_MF_NB06_M_01_A_A - 1 |
| Caven Ave Pump Station Elimination  | IOAP    | 70212      | S_PO_WC_PC09_M_09B_C      |
| Caven Ave Pump Station Elimination  | IOAP    | 61667      | S_PO_WC_PC09_M_09B_C      |
| Caven Ave Pump Station Elimination  | IOAP    | MSD0133-PS | S_PO_WC_PC09_M_09B_C      |
| Caven Ave Pump Station Elimination  | IOAP    | 17724      | S_PO_WC_PC09_M_09B_C      |
| Caven Ave Pump Station Elimination  | IOAP    | 61687      | S_PO_WC_PC09_M_09B_C      |
| Caven Ave Pump Station Elimination  | IOAP    | 27116      | S_PO_WC_PC09_M_09B_C      |
| Ashburton PS Improvements & Diversion                                     | IOAP    | MSD0165-PS | S_FF_FF_NB03_M_01_C_A     |
| Bardstown Rd. PS Improvements   | IOAP    | 88545      | S_CC_CC_MSD1025_S_03_B    |
| East Rockford PS Relocation   | IOAP    | 04699-W    | S_MC_WC_NB02_S_03_C       |
| Fox Harbor Inline Storage   | IOAP    | 62769      | S_HC_HN_NB03_S_09A_A_A    |
| Gunpowder PS Inline Storage   | IOAP    | MSD1055-LS | S_HC_HN_NB02_S_09A_C_B    |
| Lucas Lane PS Inline Storage  | IOAP    | MSD0199-LS | S_FF_BT_NB01_S_09A_C_A    |
| Raintree and Marian Ct 1 - PS Elimination                                 | IOAP    | 28395A     | S_JT_JT_NB03_M_01_C       |
| Raintree and Marian Ct 1 - PS Elimination                                 | IOAP    | 28719      | S_JT_JT_NB03_M_01_C       |
| Raintree and Marian Ct 1 - PS Elimination                                 | IOAP    | 28729-W    | S_JT_JT_NB03_M_01_C       |
| Raintree and Marian Ct 1 - PS Elimination                                 | IOAP    | MSD0149-PS | S_JT_JT_NB03_M_01_C       |
| Raintree and Marian Ct 2 - Pipe Upgrades                                  | IOAP    | MSD0149-PS | S_JT_JT_NB03_M_01_C       |
| Raintree and Marian Ct 2 - Pipe Upgrades                                  | IOAP    | 28395A     | S_JT_JT_NB03_M_01_C       |

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID   | PROJECT ID             |
|---|---------|------------|------------------------|
| Raintree and Marian Ct 2 - Pipe Upgrades  | IOAP    | 28719      | S_JT_JT_NB03_M_01_C    |
| Raintree and Marian Ct 2 - Pipe Upgrades  | IOAP    | 28729-W    | S_JT_JT_NB03_M_01_C    |
| St. Rene Rd. PS Inline Storage  | IOAP    | 94187      | S_FF_CH_NB01_S_09A_C_A |
| Charleswood Interceptor Extension   | IOAP    | 25480      | S_PO_WC_PC03_M_01_C    |
| Charleswood Interceptor Extension   | IOAP    | 25479      | S_PO_WC_PC03_M_01_C    |
| Charleswood Interceptor Extension   | IOAP    | 25477      | S_PO_WC_PC03_M_01_C    |
| Charleswood Interceptor Extension   | IOAP    | MSD0130-PS | S_PO_WC_PC03_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28415      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 98564      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28250      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 99649      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28416      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28340      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 104289     | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28414      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28417      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28413      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28249      | S_JT_JT_NB02_M_01_C    |
| Dell Rd and Charlane Pkwy Interceptor Improvements                                  | IOAP    | 28336      | S_JT_JT_NB02_M_01_C    |
| Leven PS Elimination  | IOAP    | 36419      | S_PO_WC_PC10_M_01_C    |
| Monticello PS Elimination   | IOAP    | 27969      | S_JT_JT_NB04_M_01_A    |
| Monticello PS Elimination   | IOAP    | MSD0151-PS | S_JT_JT_NB04_M_01_A    |
| Cinderella PS Elimination   | IOAP    | MSD1013-PS | S_PO_WC_PC04_M_01_C    |
| Cinderella PS Elimination   | IOAP    | 60679      | S_PO_WC_PC04_M_01_C    |
| Cinderella PS Elimination   | IOAP    | 35309      | S_PO_WC_PC04_M_01_C    |
| Idlewood Inline Storage   | IOAP    | 63094      | S_CC_CC_70158_M_09A_C  |
| Idlewood Inline Storage   | IOAP    | 63095      | S_CC_CC_70158_M_09A_C  |
| Idlewood Inline Storage   | IOAP    | 70158      | S_CC_CC_70158_M_09A_C  |
| Idlewood Inline Storage   | IOAP    | 28984      | S_CC_CC_70158_M_09A_C  |
| Idlewood Inline Storage   | IOAP    | 28998      | S_CC_CC_70158_M_09A_C  |
| Sutherland Interceptor  | IOAP    | 16649      | S_SD_MF_NB05_M_01_A    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 43472      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | MSD1024-PS | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 105936     | S_MI_MF_NB04_M_03_B    |

# IOAP Project Crosswalk

|   | PROGRAM | ASSET ID   | PROJECT ID             |
|---|---------|------------|------------------------|
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 62418      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 62420      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 21628-W    | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 91630      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 46891      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage | IOAP    | 91629      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 62420      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 91629      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 46891      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | MSD1024-PS | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 62418      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 43472      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 91630      | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 105936     | S_MI_MF_NB04_M_03_B    |
| Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades            | IOAP    | 21628-W    | S_MI_MF_NB04_M_03_B    |
| Government Center PS Elimination  | IOAP    | 94541      | S_PO_WC_PC06_M_01_C    |
| Government Center PS Elimination  | IOAP    | MSD0180-PS | S_PO_WC_PC06_M_01_C    |
| Government Center PS Elimination  | IOAP    | 94542      | S_PO_WC_PC06_M_01_C    |
| Kavanaugh Rd. PS Improvements   | IOAP    | MSD1085-PS | S_HC_HC_MSD1085_S_03_A |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 67997      | S_CC_CC_67997_M_01_C   |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 89197      | S_CC_CC_67997_M_01_C   |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 89196      | S_CC_CC_67997_M_01_C   |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 86423      | S_CC_CC_67997_M_01_C   |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 89195      | S_CC_CC_67997_M_01_C   |
| Little Cedar Creek Interceptor Improvements   | IOAP    | 86424      | S_CC_CC_67997_M_01_C   |
| Eden Care PS SSO Investigation  | IOAP    | MSD1105-PS | S_FF_FF_NB02_S_13_C    |
| Leland Road SSO Investigation   | IOAP    | 96020      | S_OR_MF_NB02_S_13_C    |

Appendix F – I/I Removal Capacity Credit Calculation Instructions and Examples

## Instructions for Rehab Credits Excel Sheet

1. Open the blank EXCEL sheet called “Rehab Credits Calc Sheet” in the folder W:\DATA\Consent Decree\CMOM\CapacityAssurance\Credits. Save-As this sheet under a new name so that the original is not changed.
2. Once opened the first sheet is labeled “Credits Calc Sheet”, seen below. Column B Rows 4-9 need to be filled out; which is the Project Name, Budget ID, Record No., Anticipated Date, Completed Date, and Credit Catchment. The number of Illicit Connections to a sanitary sewer that were removed need to be reported under “Quantity”, Column B Rows 14-17. All other boxes will automatically be updated on this sheet.

|    | A  | B        | C | D      | E | F     | G       | H | I | J |
|----|--|----------|---|--------|---|-------|---------|---|---|---|
| 1  | <b>System Capacity Assurance</b>                                   |          |   |        |   |       |         |   |   |   |
| 2  | <b>Rehabilitation Credits Calculation Sheet</b>                    |          |   |        |   |       |         |   |   |   |
| 3  |  |          |   |        |   |       |         |   |   |   |
| 4  | Project Name:  |          |   |        |   |       |         |   |   |   |
| 5  | Budget ID:   |          |   |        |   |       |         |   |   |   |
| 6  | Record No.:  |          |   |        |   |       |         |   |   |   |
| 7  | Anticipated Date:  |          |   |        |   |       |         |   |   |   |
| 8  | Completed Date:  |          |   |        |   |       |         |   |   |   |
| 9  | Credit Catchment:  |          |   |        |   |       |         |   |   |   |
| 10 |  |          |   |        |   |       |         |   |   |   |
| 11 | <b>Removal of Illicit Connections to the Sanitary Sewer System</b> |          |   |        |   |       |         |   |   |   |
| 12 |  |          |   |        |   |       |         |   |   |   |
| 13 |  | Quantity |   | Credit |   | Total |         |   |   |   |
| 14 | Downspouts   | 0        | x | 4,000  | = | 0     | Gallons |   |   |   |
| 15 | Area Drains  | 0        | x | 6,000  | = | 0     | Gallons |   |   |   |
| 16 | Foundation Drains  | 0        | x | 4,000  | = | 0     | Gallons |   |   |   |
| 17 | Sump Pumps   | 0        | x | 4,000  | = | 0     | Gallons |   |   |   |
| 18 |  |          |   |        |   |       |         |   |   |   |
| 19 | <b>Rehabilitation of Mainline Sewers and Sewer Service Lines</b>   |          |   |        |   |       |         |   |   |   |
| 20 |  |          |   |        |   |       |         |   |   |   |
| 21 | Total from Line Credits Entry Sheet                                |          |   |        |   | 0     | Gallons |   |   |   |
| 22 |  |          |   |        |   |       |         |   |   |   |
| 23 |  |          |   |        |   |       |         |   |   |   |
| 24 | <b>Manhole Rehabilitation</b>                                      |          |   |        |   |       |         |   |   |   |
| 25 |  |          |   |        |   |       |         |   |   |   |
| 26 | Total from Manhole Credits Entry Sheet                             |          |   |        |   | 0     | Gallons |   |   |   |
| 27 |  |          |   |        |   |       |         |   |   |   |
| 28 |  |          |   |        |   |       |         |   |   |   |
| 29 |  |          |   |        |   |       |         |   |   |   |

### Credits Calc Sheet

3. For the “Manhole Credits Entry” page, list all manholes that have been rehabbed under “MH ID”, column A. The next step is to fill in the “Location” column; this box will have a drop down menu with three choices to choose from (Paved, Non- Paved, & Along Stream). The definitions for each category are on the “Manhole Defs” page.

Along Stream: Manholes will be considered to be along a stream when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.

Non-Paved: Manholes in non-paved areas that do not meet the “along a stream” definition.

Paved: Manholes in paved areas that do not meet the “along a stream” definition.

|   | A            | B               | C               | D               | E            |
|---|--------------|-----------------|-----------------|-----------------|--------------|
| 1 |              |                 | <b>Frame</b>    |                 |              |
| 2 | <b>MH ID</b> | <b>Location</b> | <b>Repaired</b> | <b>Severity</b> | <b>Credi</b> |
| 3 |              |                 |                 |                 | 0            |
| 4 |              | Paved           |                 |                 | 0            |
| 5 |              | Non-Paved       |                 |                 | 0            |
| 6 |              | Along Stream    |                 |                 | 0            |
| 7 |              |                 |                 |                 | 0            |
| 8 |              |                 |                 |                 | 0            |
| 9 |              |                 |                 |                 | 0            |

4. After filing in the first two columns (MH ID, Location), you need to look and find out what work was done to the manhole. If any work was done on one of the sections labeled at the top (Frame, Chimney, Cone, Wall, ect...) the Repaired column needs to be filled in. The Repaired column as a drop down box giving you two choices, YES or NO. If no work was done to this section of the manhole fill in NO.

| C        | D        | E      | F        | G        | H      | I        | J        | K      |    |
|----------|----------|--------|----------|----------|--------|----------|----------|--------|----|
| Frame    |          |        | Chimney  |          |        | Cone     |          |        |    |
| Repaired | Severity | Credit | Repaired | Severity | Credit | Repaired | Severity | Credit | Re |
|          |          | 0      |          |          | 0      |          |          | 0      |    |
| YES      |          | 0      |          |          | 0      |          |          | 0      |    |
| NO       |          | 0      |          |          | 0      |          |          | 0      |    |
|          |          | 0      |          |          | 0      |          |          | 0      |    |
|          |          | n      |          |          | n      |          |          | n      |    |

5. The next step is to fill in the Severity of the I/I in each section. This information should come from a report or field inspection. The Severity column also has a drop down box with 4 choices (Minor, Moderate, Heavy, & Severe). The definitions for each category are on the “Manhole Defs” page. All other boxes on this sheet update automatically.

|   | A     | B        | C        | D        | E      | F        | G        | H      |
|---|-------|----------|----------|----------|--------|----------|----------|--------|
| 1 |       |          | Frame    |          |        | Chimney  |          |        |
| 2 | MH ID | Location | Repaired | Severity | Credit | Repaired | Severity | Credit |
| 3 |       |          |          |          | 0      |          |          | 0      |
| 4 |       |          |          | Minor    | 0      |          |          | 0      |
| 5 |       |          |          | Moderate | 0      |          |          | 0      |
| 6 |       |          |          | Heavy    | 0      |          |          | 0      |
| 7 |       |          |          | Severe   | 0      |          |          | 0      |
| 8 |       |          |          |          | n      |          |          | n      |

| SCAP     | Hansen - I/I Quantity         | PACP Infiltration (I) |  |
|----------|-------------------------------|-----------------------|--|
| Minor    | D - Evidence I/I              | Weeper                | Refers to slow ingress of water through a defect. No visible drips.          |
| Moderate | A - Light I/I seen occurring  | Dripper               | Refers to water dripping through a defect. Not a continuous flow.            |
| Heavy    | B - Medium I/I seen occurring | Runner                | Refers to water running through a defect. A continuous flow will be visible. |
| Severe   | C - Heavy I/I seen occurring  | Gusher                | Refers to water entering the pipe "under pressure" through a defect.         |

6. Moving on to the “Line Credits Entry” sheet. Column A is the “SEG\_ID” or segment id of the sewer line, this is given by two numbers with a hyphen in between them. The first number is from the upstream manhole or node and the second is from the downstream manhole or node.

7. Next the “Length” and the “Length Repaired” needs to be labeled. The “Length” is the length of each individual pipe segment and the “Length Repaired” is just simply the length of the pipe segment that is being or has been repaired.

8. The 4<sup>th</sup> column “D” is “Diameter.” This need to be filled in for each segment and is merely the Diameter of the segment of pipe.

9. The last thing to fill in is the “Along Stream” column. This is filled in the same way as the Along Stream on the “manhole Credits Entry” sheet. And also has a drop down box in which you can choose “Yes” or “No”.

|   | A           | B      | C               | D        | E            | F            | G      | H |
|---|-------------|--------|-----------------|----------|--------------|--------------|--------|---|
|   | SEG_ID      | Length | Length Repaired | Diameter | IDM Repaired | Along Stream | Credit |   |
| 1 |             |        |                 |          |              |              |        |   |
| 2 | 16105-16106 | 357    | 357             | 10       | 0.676        | No           | 41     |   |
| 3 |             |        |                 |          | 0.000        | Yes          | 0      |   |
| 4 |             |        |                 |          | 0.000        | No           | 0      |   |

10. The final total of credits will be given on the 1<sup>st</sup> sheet “Credits Calc Sheet” under “Project Total Credits.” Check boxes that were filled in to make sure the total credits are accurate.

# EXAMPLE CALCULATION

## System Capacity Assurance

## Rehabilitation Credits Calculation Sheet

Project Name: Sinking Fork Interceptor Rehabilitation  
 Budget ID: H07294  
 Record No.: 15442  
 Anticipated Date: 12/23/2008  
 Completed Date: 12/23/08 & 3/30/09  
 Credit Catchment: Middle Fork  
 Calculated By: Josh Dickerson  
 Checked By: Tony Marconi

### Removal of Illicit Connections to the Sanitary Sewer System

|                   | Quantity |   | Credit       |   | Total    |         |
|-------------------|----------|---|--------------|---|----------|---------|
| Downspouts        | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |
| Area Drains       | <u>0</u> | x | <u>6,000</u> | = | <u>0</u> | Gallons |
| Foundation Drains | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |
| Sump Pumps        | <u>0</u> | x | <u>4,000</u> | = | <u>0</u> | Gallons |

### Rehabilitation of Mainline Sewers and Sewer Service Lines

Total from Line Credits Entry Sheet 0 Gallons

### Manhole Rehabilitation

Total from Manhole Credits Entry Sheet 171,630 Gallons

**Project Total Credits** 171,630 Gallons

Lines Credit Entry

| SEG_ID      | Length | Length<br>Repaired | Diameter | IDM<br>Repaired | Along<br>Stream | Credit   |
|-------------|--------|--------------------|----------|-----------------|-----------------|----------|
| 63323_63322 | 83     | 83                 | 18       | 0.283           | Yes             | 9,620 x  |
| 46717_63340 | 400    | 400                | 8        | 0.606           | Yes             | 20,606 x |
| 63340_63326 | 110    | 110                | 8        | 0.167           | Yes             | 5,667 x  |
| 63326_63341 | 238    | 238                | 10       | 0.451           | Yes             | 15,326 x |
| 63341_63328 | 347    | 347                | 8        | 0.526           | Yes             | 17,876 x |
| 24638_63327 | 222    | 222                | 8        | 0.336           | Yes             | 11,436 x |
| 63327_63323 | 220    | 220                | 10       | 0.417           | Yes             | 14,167 x |
| 25012_63321 | 174    | 174                | 18       | 0.593           | Yes             | 20,168 x |
| 47035_47034 | 281    | 281                | 24       | 1.277           | Yes             | 43,427 x |
| 45440_45441 | 407    | 407                | 27       | 2.081           | Yes             | 70,763 x |
| 45442_45443 | 345    | 345                | 27       | 1.764           | Yes             | 59,983 x |
| 45443_45444 | 363    | 363                | 27       | 1.856           | Yes             | 63,113 x |
|             |        |                    |          | 0.000           |                 | 0        |

TOTAL LINE CREDITS  
352,152

| MH ID | Location     | Repaired | Frame    | Severity | Credit | Repaired | Chimney  | Severity | Credit | Repaired | Cone     | Severity | Credit | Repaired | Wall     | Severity | Credit | Repaired | Pipe Seal | Severity | Credit | Repaired | Bench | Severity | Credit | Channel | Severity | Credit | Total | Credits | Comments                      |
|-------|--------------|----------|----------|----------|--------|----------|----------|----------|--------|----------|----------|----------|--------|----------|----------|----------|--------|----------|-----------|----------|--------|----------|-------|----------|--------|---------|----------|--------|-------|---------|-------------------------------|
| 63320 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | None     | 0      | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | None      | None     | 0      | 864      | YES   | Moderate | 864    | NO      | NO       | 0      | 3456  | 0       | Dog house manhole             |
| 63329 | Along Stream | YES      | Minor    | 1728     | 864    | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | Moderate | 864      | 0      | YES      | None      | None     | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 1728  | 0       | Dog house manhole             |
| 63326 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | None      | None     | 0      | 864      | YES   | Moderate | 864    | NO      | NO       | 0      | 2592  | 0       | Dog house manhole             |
| 63325 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | Minor    | None     | 864    | YES      | None     | None     | 0      | YES      | Moderate  | 864      | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 4320  | 0       | Dog house manhole             |
| 63341 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | Minor    | None     | 864    | YES      | None     | None     | 0      | YES      | Moderate  | 864      | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 3456  | 0       | Dog house manhole             |
| 63324 | Along Stream | YES      | Minor    | 864      | 864    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 864    | YES      | Minor    | Minor    | 432    | YES      | Moderate  | 864      | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 3024  | 0       | Dog house manhole             |
| 63328 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | Minor    | None     | 864    | YES      | None     | None     | 0      | YES      | Moderate  | 864      | 0      | 864      | YES   | Moderate | 864    | NO      | NO       | 0      | 3456  | 0       | Dog house manhole             |
| 63323 | Along Stream | YES      | Minor    | 864      | 864    | YES      | Minor    | Minor    | 864    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | None      | None     | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 2592  | 0       |                               |
| 63322 | Non-Paved    | YES      | Minor    | 328      | 328    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 328    | YES      | Minor    | Minor    | 164    | YES      | None      | None     | 0      | 328      | YES   | None     | None   | NO      | NO       | 0      | 820   | 0       |                               |
| 25009 | Non-Paved    | YES      | Minor    | 328      | 328    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 328    | YES      | Moderate | Moderate | 78     | YES      | None      | None     | 0      | 328      | YES   | None     | None   | NO      | NO       | 0      | 984   | 0       |                               |
| 25008 | Paved        | NO       | None     | 0        | 78     | YES      | Minor    | None     | 0      | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 78     | YES      | None      | None     | 0      | 39       | YES   | None     | None   | NO      | NO       | 0      | 195   | 0       |                               |
| 25012 | Along Stream | NO       | Minor    | 0        | 864    | YES      | Minor    | None     | 0      | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | None      | None     | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 864   | 0       |                               |
| 63321 | Along Stream | YES      | Minor    | 864      | 864    | YES      | Minor    | None     | 0      | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 864    | YES      | None      | None     | 0      | 864      | YES   | None     | None   | NO      | NO       | 0      | 1728  | 0       |                               |
| 63320 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | NO       | NO       | None     | 0      | YES      | Moderate | Moderate | 328    | NO       | NO        | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 1640  | 0       | Severly based off field visit |
| 63319 | Along Stream | YES      | Heavy    | 3456     | 3456   | YES      | None     | None     | 0      | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 3888     | YES   | None     | None   | NO      | NO       | 0      | 3888  | 0       | Severly based off TVI notes   |
| 96957 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | Minor    | Moderate | 864    | YES      | Moderate | Moderate | 864    | YES      | None      | None     | 0      | 4320     | YES   | None     | None   | NO      | NO       | 0      | 4320  | 0       |                               |
| 63318 | Non-Paved    | YES      | Minor    | 328      | 328    | YES      | Minor    | Minor    | 328    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 164    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 984   | 0       | Severly based off field visit |
| 63317 | Non-Paved    | YES      | Minor    | 328      | 328    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 328      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       | Severly based off field visit |
| 63316 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 328      | YES   | None     | None   | NO      | NO       | 0      | 328   | 0       |                               |
| 63315 | Non-Paved    | YES      | Minor    | 328      | 328    | YES      | Minor    | Minor    | 328    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 164    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 21171 | Non-Paved    | NO       | Moderate | 0        | 156    | YES      | Minor    | Moderate | 156    | NO       | Moderate | Moderate | 0      | NO       | Severe   | Severe   | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 0     | 0       |                               |
| 47034 | Paved        | NO       | Moderate | 0        | 156    | YES      | Moderate | Moderate | 156    | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21156 | Non-Paved    | NO       | Minor    | 0        | 0      | YES      | None     | None     | 0      | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 0     | 0       |                               |
| 45438 | Paved        | NO       | Moderate | 0        | 156    | YES      | Moderate | Moderate | 156    | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 45439 | Paved        | YES      | Minor    | 78       | 78     | NO       | Moderate | Moderate | 156    | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 78    | 0       |                               |
| 45440 | Paved        | NO       | Minor    | 0        | 78     | YES      | Moderate | Moderate | 156    | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 45441 | Paved        | NO       | Minor    | 0        | 78     | YES      | Minor    | Minor    | 78     | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 78    | 0       |                               |
| 45442 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | NO       | NO       | None     | 0      | YES      | Moderate | Moderate | 328    | NO       | NO        | None     | 0      | 984      | YES   | None     | None   | NO      | NO       | 0      | 984   | 0       |                               |
| 45443 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 864    | YES      | None      | None     | 0      | 3456     | YES   | None     | None   | NO      | NO       | 0      | 3456  | 0       |                               |
| 45444 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 3024     | YES   | None     | None   | NO      | NO       | 0      | 3024  | 0       |                               |
| 45445 | Paved        | YES      | Minor    | 0        | 0      | NO       | Minor    | None     | 0      | NO       | NO       | None     | 0      | NO       | Moderate | Moderate | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 0     | 0       |                               |
| 45446 | Along Stream | YES      | Heavy    | 3456     | 3456   | YES      | None     | None     | 0      | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 0        | NO    | None     | None   | NO      | NO       | 0      | 3456  | 0       | Severly based off field visit |
| 45426 | Along Stream | YES      | Heavy    | 3456     | 3456   | YES      | Moderate | Moderate | 1728   | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 5184     | NO    | None     | None   | NO      | NO       | 0      | 5184  | 0       | Severly based off field visit |
| 63342 | Along Stream | YES      | Heavy    | 3456     | 3456   | YES      | Moderate | Moderate | 1728   | NO       | NO       | None     | 0      | NO       | Minor    | Minor    | 0      | NO       | None      | None     | 0      | 1728     | NO    | None     | None   | NO      | NO       | 0      | 1728  | 0       | Severly based off field visit |
| 24638 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Minor    | Minor    | 864    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 3024     | YES   | None     | None   | NO      | NO       | 0      | 3024  | 0       |                               |
| 63339 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 656    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 24645 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 656    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 24637 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 656    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 21478 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 156    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21480 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 156    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 63335 | Non-Paved    | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Moderate | Moderate | 156    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 24641 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Moderate | Moderate | 1728   | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 3456     | YES   | None     | None   | NO      | NO       | 0      | 3456  | 0       |                               |
| 63332 | Along Stream | YES      | Moderate | 1728     | 864    | YES      | Moderate | Moderate | 1728   | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 1728     | YES   | None     | None   | NO      | NO       | 0      | 1728  | 0       |                               |
| 24631 | Non-Paved    | YES      | Minor    | 0        | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 24631 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 24635 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 21476 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21477 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21481 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21482 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 21483 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 63338 | Non-Paved    | YES      | Moderate | 656      | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 24632 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 24630 | Paved        | YES      | Minor    | 0        | 156    | YES      | Moderate | Moderate | 156    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 156      | YES   | None     | None   | NO      | NO       | 0      | 156   | 0       |                               |
| 63334 | Non-Paved    | YES      | Minor    | 0        | 656    | YES      | Moderate | Moderate | 656    | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 656      | YES   | None     | None   | NO      | NO       | 0      | 656   | 0       |                               |
| 24643 | Along Stream | YES      | Minor    | 0        | 1728   | YES      | Moderate | Moderate | 1728   | YES      | None     | None     | 0      | YES      | Minor    | Minor    | 432    | YES      | None      | None     | 0      | 1728     | YES   | None     | None   | NO      | NO       | 0      | 1728  | 0       |                               |
| 24640 | Non-Paved    | YES      | Minor    | 0        | 656    | YES      | Moderate | Moderate | 656    | YES      |          |          |        |          |          |          |        |          |           |          |        |          |       |          |        |         |          |        |       |         |                               |

## Manhole Credits Definitions

### Item #1 - Location of Manhole

Along a Stream: Manholes will be considered to be along a stream when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.

Non-Paved Areas: Manholes in non-paved areas that do not meet the along a stream definition.

Paved Areas: Manholes in paved areas that do not meet the along a stream definition.

### Item #2 - Defect Severity

| SCAP     | Hansen - I/I Quantitiy       | PACP Infiltration (I) |  |
|----------|------------------------------|-----------------------|--|
| Minor    | D - Evidence I/I             | IW - Weeper           | Refers to slow ingress of water through a defect. No visible drips.          |
| Moderate | A - Light I/I seen occuring  | ID - Dripper          | Refers to water dripping through a defect. Not a continuous flow.            |
| Heavy    | B - Medium I/I seen occuring | IR - Runner           | Refers to water running through a defect. A continuous flow will be visible. |
| Severe   | C - Heavy I/I seen occuring  | IG - Gusher           | Refers to water entering the pipe "under pressure" through a defect.         |

### Item #3 - Credit Value

Table 5.1 – Peak Flow Reduction for Manholes in Paved Areas

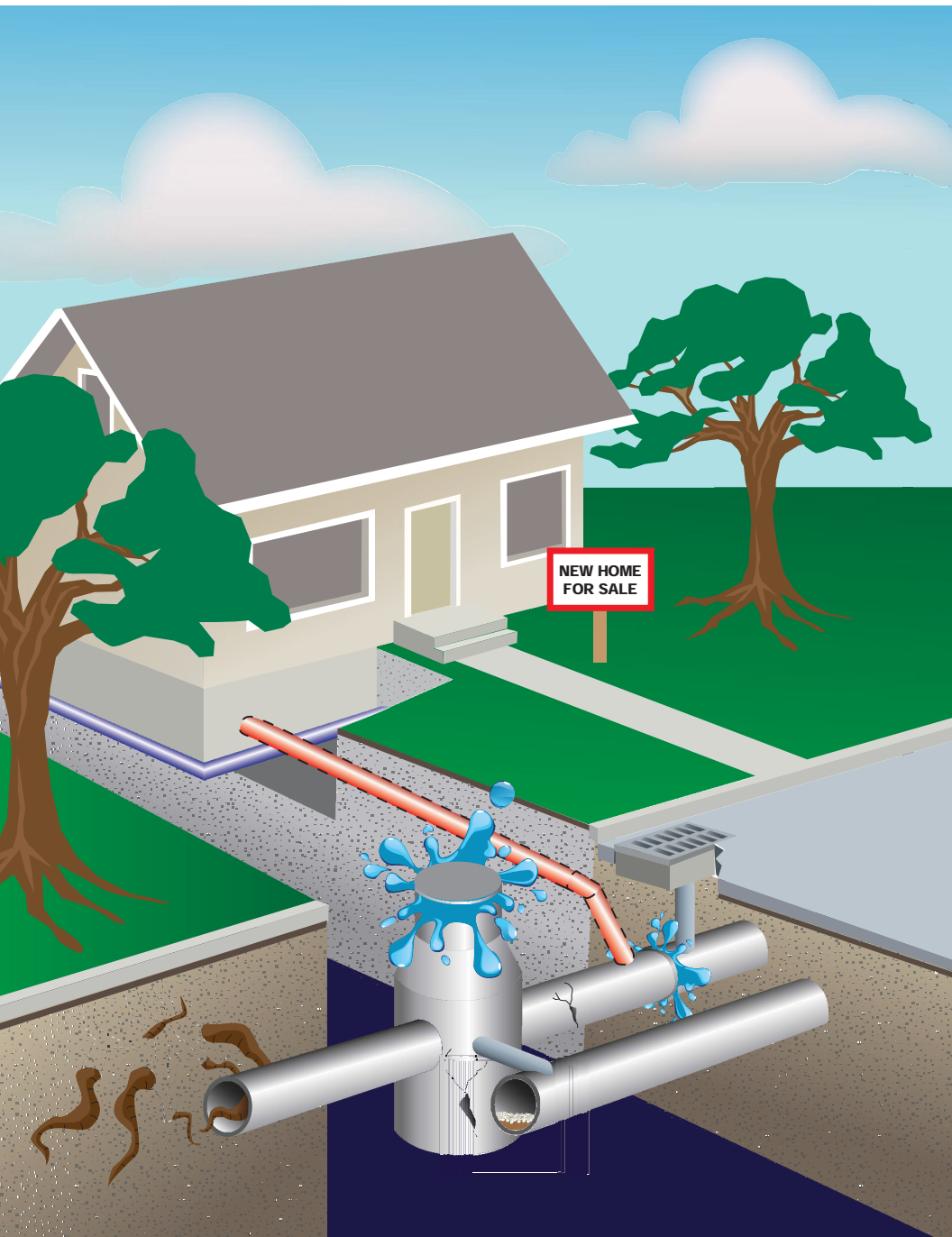
| Manhole Section | Reduction Values in Gallons Per Day (GPD) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 78  | 156          | 311       | 622        |
| Chimney         | 78  | 156          | 311       | 622        |
| Cone            | 78  | 156          | 311       | 622        |
| Wall            | 39  | 78           | 156       | 311        |
| Pipe Seal       | 39  | 78           | 156       | 311        |
| Bench           | 39  | 78           | 156       | 311        |
| Channel         | 39  | 78           | 156       | 311        |

Table 5.2 – Peak Flow Reduction for Manholes in Non-Paved Areas

| Manhole Section | Reduction Values in Gallons Per Day (GPD) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 328                                       | 656          | 1,313     | 2,626      |
| Chimney         | 328                                       | 656          | 1,313     | 2,626      |
| Cone            | 328                                       | 656          | 1,313     | 2,626      |
| Wall            | 164                                       | 328          | 656       | 1,313      |
| Pipe Seal       | 164                                       | 328          | 656       | 1,313      |
| Bench           | 164                                       | 328          | 656       | 1,313      |
| Channel         | 164                                       | 328          | 656       | 1,313      |

Table 5.3 – Peak Flow Reduction for Manholes Along a Stream

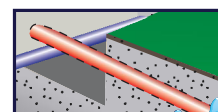
| Manhole Section | Reduction Values in Gallons Per Day (GPD) |              |           |            |
|-----------------|---|--------------|-----------|------------|
|                 | Minor I/I                                 | Moderate I/I | Heavy I/I | Severe I/I |
| Frame Seal      | 864                                       | 1,728        | 3,456     | 6,912      |
| Chimney         | 864                                       | 1,728        | 3,456     | 6,912      |
| Cone            | 864                                       | 1,728        | 3,456     | 6,912      |
| Wall            | 432                                       | 864          | 1,728     | 3,456      |
| Pipe Seal       | 432                                       | 864          | 1,728     | 3,456      |
| Bench           | 432                                       | 864          | 1,728     | 3,456      |
| Channel         | 432                                       | 864          | 1,728     | 3,456      |



# SCAP

## Sewer Capacity Assurance Plan

The Sewer Capacity Assurance Plan (SCAP) works on a 3:1 ratio, meaning for every (1) gallon of flow added from a proposed sewer connection, a minimum of (3) gallons of flow must be removed to create more capacity and reduce overflows. Gallons of flow can be removed by rehabilitating pipes and manholes or removing illicit stormwater connections.



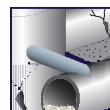
PROPOSED LATERAL SEWER EXTENSION

### SEWER DEFECTS & ILLICIT CONNECTIONS



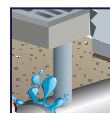
#### Leaky Manhole, Chimney or Cone

| Range of I/I Removed (GPD) |       |          |       |        |
|----------------------------|-------|----------|-------|--------|
|                            | Minor | Moderate | Heavy | Severe |
| Paved Area                 | 78    | 156      | 312   | 622    |
| Non-Paved Area             | 328   | 656      | 1,312 | 2,626  |
| Along Stream               | 432   | 1,728    | 3,456 | 6,912  |



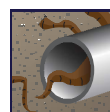
#### Illegal Storm Cross-Connection

| Range of I/I Removed (GPD) |                          |          |       |        |
|----------------------------|--------------------------|----------|-------|--------|
|                            | Minor                    | Moderate | Heavy | Severe |
| Paved Area                 | 6,000 or Calculated Flow |          |       |        |
| Non-Paved Area             |                          |          |       |        |
| Along Stream               |                          |          |       |        |



#### Downspouts, Foundation Drains & Sump Pumps

| Range of I/I Removed (GPD) |            |          |       |        |
|----------------------------|------------|----------|-------|--------|
|                            | Minor      | Moderate | Heavy | Severe |
| Paved Area                 | 4,000 Each |          |       |        |
| Non-Paved Area             |            |          |       |        |
| Along Stream               |            |          |       |        |



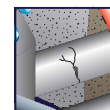
#### Root Intrusion Into Sewer Line

| Range of I/I Removed (GPD) |  |          |       |        |
|----------------------------|--|----------|-------|--------|
|                            | Minor  | Moderate | Heavy | Severe |
| Paved Area                 | No Capacity Credits. Removal is a CMOM Requirement |          |       |        |
| Non-Paved Area             |  |          |       |        |
| Along Stream               |  |          |       |        |



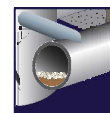
#### Deteriorated Manhole Wall, Pipe Seal, Bench & Channel

| Range of I/I Removed (GPD) |       |          |       |        |
|----------------------------|-------|----------|-------|--------|
|                            | Minor | Moderate | Heavy | Severe |
| Paved Area                 | 39    | 78       | 156   | 311    |
| Non-Paved Area             | 164   | 328      | 656   | 1313   |
| Along Stream               | 432   | 864      | 1728  | 3456   |



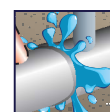
#### Deteriorated Pipe With I/I

| Range of I/I Removed (GPD)            |                   |
|---------------------------------------|-------------------|
|                                       |                   |
| Non-Inundation / Low Ground Water     | 60 GPD / IDM*     |
| Stream Inundation / High Ground Water | 34,000 GPD / IDM* |



#### Sedimentation Build-Up

| Range of I/I Removed (GPD) |  |          |       |        |
|----------------------------|--|----------|-------|--------|
|                            | Minor  | Moderate | Heavy | Severe |
| Paved Area                 | No Capacity Credits. Removal is a CMOM Requirement |          |       |        |
| Non-Paved Area             |  |          |       |        |
| Along Stream               |  |          |       |        |



#### Leaky Sewer Lateral Connection

| Range of I/I Removed (GPD)            |                   |
|---------------------------------------|-------------------|
|                                       |                   |
| Non-Inundation / Low Ground Water     | 60 GPD / IDM*     |
| Stream Inundation / High Ground Water | 34,000 GPD / IDM* |

\* (GPD / IDM) Gallons Per Day per Inch Diameter-Mile. The unit value of flow used in capacity calculations for a sewer with sources of I/I.



*Achieving Clean, Safe Waterways  
for a Healthy and Vibrant Community*

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