

# **Gravity Line Preventative Maintenance Program**

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**Lexington-Fayette Urban County Government  
Department of Environmental Quality  
Division of Water Quality  
December 2011**

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## **Lexington-Fayette Urban County Government Department of Environmental Quality Division of Water Quality**

**December 2011**

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## **Section 1: Executive Summary**

The Gravity Line Preventative Maintenance Program (GLPMP) has been developed by the Division of Water Quality (DWQ) of the Lexington-Fayette Urban County Government (LFUCG) to improve the operations and maintenance of the Gravity Sewer Line portion of the Sanitary Sewer System and optimize hydraulic performance. The GLPMP is a specific program under the Capacity, Management, Operations, and Maintenance (CMOM) program and is required by the Consent Decree negotiated with the U.S Environmental Protection Agency (EPA) and the Kentucky Energy and Environment Cabinet (EEC).

The GLPMP includes the following components:

- Routine Hydraulic Cleaning Program
- Routine Mechanical Cleaning Program
- Root Control Program
- Schedule of Implementation

The GLPMP provides for systematic and comprehensive maintenance of the gravity system by means of hydraulic cleaning, mechanical cleaning, and root control. These preventative maintenance procedures remove debris, deposits, roots and grease from the Gravity Sewer Lines, helping to maintain the hydraulic capacity of the system.

The Hydraulic Cleaning, Mechanical Cleaning, and Root Control components of the program all include provisions for the following:

- Needs determination
- Establishing priorities and scheduling
- Number of crews and personnel (including contract crews)
- Equipment to be used
- Standard maintenance procedures
- Standard forms
- Records and performance measures
- Information management system

Objectives of the GLPMP include the following:

- Identify and address areas of the gravity system needing increased frequency of cleaning and maintenance
- Provide a structured and consistent preventative maintenance cleaning procedure to prevent the occurrence and recurrence of line blockages and subsequent dry weather sanitary sewer overflows (SSOs)
- Identify structural and other system defects needing repair or rehabilitation
- Identify operational defects due to fats, oils, and grease (FOG) to assist DWQ personnel in inspection and/or enforcement activities related to the FOG program



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The Routine Hydraulic Cleaning Program includes annual inspection and maintenance cleaning, warranty inspection and cleaning of new gravity sewer lines, and Preventative Maintenance cleaning of Gravity Sewer Lines with chronic operational problems. The DWQ has established a goal of inspecting 650,000 linear feet (LF) of Gravity Sewer Lines on an annual basis under the Routine Hydraulic Cleaning Program. Line segments requiring maintenance will be cleaned as-needed.

The Preventative Maintenance cleaning activities are a proactive approach to addressing chronic problem areas within the Gravity Sewer Line system. The cleaning frequency is established based on the past history of operational problems and condition assessments by the cleaning and inspection crews in the field. The cleaning frequency ranges from one month to 36 months. A root cause analysis of operational or structural problems associated with the various line segments will be conducted by the DWQ to address defects and reduce the required Preventative Maintenance cleaning frequency.

Due to technological advances and the effectiveness of hydraulic cleaning, mechanical cleaning is no longer routinely used for gravity sewer preventative maintenance. Mechanical cleaning equipment is available for special cases where mechanical force may be needed to move debris to facilitate removal.

The Root Control Program includes mechanical and chemical root control activities. Mechanical root control is a specialized activity within the hydraulic cleaning program, primarily to remove roots at pipeline defects and joints. Special root cutter bodies and root cutting blades and attachments are used for root cutting and removal. Chemical root control is often used to control root intrusion at service connections and manholes. Chemical root control is typically done by outside contractors.

The Information Management System (IMS) utilized for the GLPMP is GIS-based and allows Work Orders and maintenance activities to be linked to the physical asset(s). LFUCG began implementation of new IMS software in August 2011.

Goals for maintenance frequency for the components of the GLPMP are presented in Table 1-1.

**Table 1-1  
GLPMP Frequency Goals**

Description	Frequency
Routine Hydraulic Cleaning	650,000 linear feet (LF) of Gravity Sewer Lines inspected annually and cleaned as needed.
Mechanical Cleaning	On as-needed basis only, when debris cannot be removed by hydraulic cleaning
Mechanical Root Control	As determined by annual inspection and maintenance and the Preventative Maintenance Cleaning Frequency Decision Tool (Table 3-2).
Chemical Root Control	Between 12 and 36 months, as determined by annual inspection and maintenance and follow-up inspection after initial chemical treatment.



The Schedule of Implementation Actions for the GLPMP is presented in Table 1-2.

**Table 1-2**  
**Schedule of Implementation Actions**

Action	GLPMP Section	Date to Begin Implementation
Develop employee training module for GLPMP activities	3.9.1	Within 18 months of EPA Approval of GLPMP
Establish Operations Center to centralize sewer monitoring and dispatching operations	3.9.1	Within 18 months of EPA Approval of GLPMP
Create cause analysis form and procedure for dry weather SSOs	3.9.1	Within 18 months of EPA Approval of GLPMP
Implement a root cause analysis procedure to be conducted after dry weather SSOs occur	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop additional menus for data management to track dates associated with GLPMP	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop improved mapping tools related to SSOs and GLPMP	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop QA/QC protocol for Routine Hydraulic Cleaning Program	3.9.1	Within 18 months of EPA Approval of GLPMP



## Section 2: Introduction

### 2.1 Background

The Gravity Line Preventative Maintenance Program (GLPMP) has been developed by the Division of Water Quality (DWQ) of the Lexington-Fayette Urban County Government (LFUCG) to improve the operations and maintenance of the Gravity Sewer Line portion of the Sanitary Sewer System and optimize hydraulic performance. The GLPMP is a specific program under the Capacity, Management, Operations, and Maintenance (CMOM) program and is required by the Consent Decree negotiated with the U.S. Environmental Protection Agency (EPA) and the Kentucky Energy and Environment Cabinet (EEC).

The GLPMP includes the following components:

- Routine Hydraulic Cleaning Program
- Routine Mechanical Cleaning Program
- Root Control Program
- Schedule of Implementation

The hydraulic cleaning, mechanical cleaning, and root control components of the program all include provisions for the following:

- Needs determination
- Establishing priorities and scheduling
- Number of crews and personnel (including contract crews)
- Equipment to be used
- Standard maintenance procedures
- Standard forms
- Records and performance measures
- Information management system

### 2.2 Definitions and Acronyms

This Section defines the commonly used terms and acronyms included in the GLPMP.

**Building Backup** A subcategory of SSOs which occurs when a wastewater backup occurs into a building and is caused by blockages, malfunctions, or flow conditions in the Sanitary Sewer System. A wastewater backup caused by a blockage or other malfunction of a Private Lateral is not a Building Backup.

**CCTV** Closed Circuit Television

**CDL** Commercial Drivers License

**CMOM** Capacity, Management, Operation, and Maintenance program. A flexible program of accepted industry practices to properly manage, operate and maintain sanitary wastewater collection, transmission and treatment systems, investigate capacity-constrained areas of systems, and respond to SSO events.



**DWQ** LFUCG Division of Water Quality

**EPA** U.S. Environmental Protection Agency, the federal agency responsible for enforcing the Clean Water Act and other federal Environmental regulations.

**EEC** The Kentucky Energy and Environment Cabinet, the Cabinet within state government responsible for protecting the environment.

**First Responder(s)** The first LFUCG employee(s) on the scene of an SSO who assumes initial responsibility for implementing SORP procedures. Typically an employee in the Sewer Line Maintenance or Pump Station Maintenance Sections.

**FOG** Fats, oils, and grease

**GIS** Geographic Information Systems

**GLPMP** Gravity Line Preventative Maintenance Program

**Gravity Sewer Line** A pipe that receives, contains and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity. Gravity sewers are typically not intended to flow full under normal operating conditions.

**Infiltration** Water other than wastewater that enters a sanitary sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes.

**Inflow** Water other than wastewater that enters a sanitary sewer system (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage.

**I/I** The total quantity of water from Infiltration and Inflow without distinguishing the source.

**LFUCG** Lexington-Fayette Urban County Government

**PACP** Pipeline Assessment and Certification Program

**Private Lateral** That portion of a sanitary sewer conveyance pipe, including that portion in the public right-of-way, that extends from the wastewater main to the single-family, multi-family, apartment, other dwelling unit, business, industry, institution or structure to which wastewater service is or has been provided. Private laterals do not include connector joints at LFUCG's sewer line.

**OSHA** Occupational Safety and Health Administration

**QA/QC** Quality Assurance and Quality Control

**Recurring SSO** An SSO that occurs in the same location more than once per twelve (12) month rolling period.





**Sanitary Sewer System (SSS)** The wastewater collection and transmission systems (WCTS) owned or operated by LFUCG designed to collect and convey municipal sewage (domestic, commercial and industrial) to a WWTP. The SSS does not include LFUCG's municipal separate storm sewer system.

**Sewershed** A section of LFUCG's WCTS that is a distinct drainage or wastewater collection area and designated as such by LFUCG.

**SLM** Sewer Line Maintenance

**SSO** Sanitary Sewer Overflow, any discharge to waters of the United States from the Sanitary Sewer System through point sources not identified in any KPDES permit (otherwise known as "Unpermitted Discharges"), as well as any release of wastewater from the Sanitary Sewer System to public or private property that does not reach waters of the United States, such as a release to a land surface or structure that does not reach waters of the United States; provided, however, that releases or wastewater backups into buildings that are caused by blockages, flow conditions, or malfunctions in a Private Lateral, or other piping or conveyance system that is not owned or operationally controlled by LFUCG are not SSOs. SSOs include any cross-connections between LFUCG's Sewer System and its municipal separate storm sewer system which allow wastewater to pass from the Sanitary Sewer System to the separate storm sewer system, but does not include exfiltration that does not reach waters of the United States, or land surface or structures.

**SORP** (Sanitary) Sewer Overflow Response Plan

## **2.3 Purpose and Goals**

Goals and objectives of the GLPMP include those of all CMOM programs. CMOM programs include many of the standard operation and maintenance activities routinely performed by the system owner or operator. Such activities are incorporated within a new set of information management requirements, in order to:

- Better manage, operate, and maintain the collection system
- Investigate capacity constrained areas of the collection system
- Proactively prevent sanitary sewer overflows (SSOs), protecting public health and the environment
- Respond to SSO events and reduce negative impacts
- Provide a high level of customer service
- Reduce regulatory noncompliance

A specific goal of the GLPMP is to improve the operations and maintenance of the Gravity Sewer Line component of the Sanitary Sewer System. This should reduce the occurrence of SSOs and reduce negative impacts on the environment and public health.

The GLPMP provides for systematic and comprehensive maintenance of the gravity system by means of hydraulic cleaning, mechanical cleaning, and root control. These preventative maintenance procedures remove debris, sedimentation, roots and grease from the Gravity Sewer Lines, helping to maintain the hydraulic capacity of the system. Other objectives of the GLPMP include the following:



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- Identify and address areas of the gravity system needing increased frequency of cleaning and maintenance
- Implement a structured and consistent preventative maintenance cleaning procedure to prevent the occurrence and recurrence of line blockages and resulting dry weather SSOs
- Identify structural and other system defects needing repair or rehabilitation
- Identify operational defects due to fats, oils, and grease (FOG) to assist DWQ personnel in inspection and/or enforcement activities related to the FOG program

The DWQ operates and maintains approximately 1,230 miles of gravity sewer lines, 6-inch to 54-inch in size, including approximately 33,400 manholes. The distribution of gravity lines by pipe size is presented in Table 2-1. The estimated distribution of gravity lines by pipe material is presented in Table 2-2.

**Table 2-1  
Gravity Sewer Lines by Pipe Size**

Pipe Size	Quantity (Miles)	Quantity (Linear Feet)	Percentage of Total
8" or Less	1,063	5,612,600	86.6
>8" to 18"	122	644,200	9.9
>18" to 36"	36	190,100	2.9
>36"	7	37,000	0.6
<b>Total</b>		<b>6,483,900</b>	<b>100.0</b>

**Table 2-2  
Gravity Sewer Lines by Pipe Material (Estimated)**

Pipe Material	Quantity (Miles)	Quantity (Linear Feet)	Percentage of Total
Vitrified Clay (VCP)	546	2,882,900	44.5
Reinforced Concrete (RCP)	22	116,200	1.8
Concrete (CP)	7	37,000	0.6
Polyvinyl Chloride (PVC)	610	3,221,000	49.7
Ductile Iron (DI)	20	105,600	1.6
Clay Tile	<1	<5,280	--
Unknown	22	115,920	1.8
<b>Total</b>		<b>6,483,900</b>	<b>100.0</b>



## **Section 3: Routine Hydraulic Cleaning Program**

### **3.1 Overview**

The Routine Hydraulic Cleaning Program is a preventative maintenance program to reduce the impact of operational defects in the Gravity Sewer Lines. Operational defects include roots, debris, sediment, fats, oils, and grease that reduce the hydraulic capacity of the sewer lines and contribute to line blockages and sanitary sewer overflows (SSOs).

Routine Hydraulic Cleaning Program activities are performed by the Sewer Line Maintenance (SLM) section within DWQ and by outside contractors. A copy of the DWQ organizational chart is included in Appendix A.

The Routine Hydraulic Cleaning Program includes the following activities:

- Annual inspection and cleaning of Gravity Sewer Line segments throughout the Sanitary Sewer System
- Warranty inspection and cleaning of new Gravity Sewer Lines installed for land developments or redevelopments within Lexington-Fayette County
- Preventative Maintenance cleaning of Gravity Sewer Line segments with chronic operational problems

The DWQ has established a goal of inspecting 650,000 linear feet (LF) of the Gravity Sewer Line system on an annual basis under the Routine Hydraulic Cleaning Program. Line segments requiring maintenance will be cleaned as needed. Lines cleaned during all of the above listed activities will be included in the total cleaning footage compiled annually.

### **3.2 Needs Determination**

#### **3.2.1 Annual Inspection**

Annual inspection and cleaning activities are completed by grouping the Sanitary Sewer System into sewersheds. The Consent Decree establishes three sewershed groups as follows:

- Group One: West Hickman, East Hickman, and Wolf Run
- Group Two: Cane Run and Town Branch
- Group Three: North Elkhorn and South Elkhorn

A sewershed location map is included in Appendix B.

Sanitary Sewer Assessment projects required by the Consent Decree include cleaning and CCTV inspection of approximately 20 percent of the Gravity Sewer Lines in each sewershed. This work is being completed by outside contractors. The DWQ is also involved in other sewer assessment work that may include hydraulic cleaning and inspection of Gravity Sewer Lines.

Besides the ongoing sewer assessment projects, the DWQ conducts routine CCTV inspections of Gravity Sewer Lines on an annual basis. This work is typically done by outside contractors but may be supplemented by DWQ crews. During the inspection, the line segments are field evaluated for operational defects such as roots, grease, and deposition. Hydraulic cleaning is completed as needed.



Lines requiring heavy cleaning, defined as three or more passes with hydraulic cleaning equipment, are referred to DWQ for inclusion on the Preventative Maintenance list for more frequent cleaning.

### **3.2.2 Warranty Inspections**

The warranty inspections apply to new Gravity Sewer Lines installed for land developments or redevelopments within Lexington-Fayette County. LFUCG regulations require the installations to be warranted for three years before they are accepted as part of the public sewer system. Gravity lines are typically inspected with CCTV by the developer within six (6) months of the expiration of the warranty period. The developer is responsible for repair of identified defects. Since the lines are new, they are not routinely cleaned during the CCTV inspection process. If the inspection identifies debris or other operational defects in the Gravity Sewer Lines, the sewer lines must be cleaned before the lines are accepted. After acceptance, the line segment and manhole information is added to the DWQ's physical inventory database.

### **3.2.3 Preventative Maintenance Cleaning**

The Preventative Maintenance cleaning activities are a proactive approach to addressing chronic problem areas within the Gravity Sewer Line system. The cleaning frequency is established based on the past history of operational problems and condition assessments by the cleaning and inspection crews in the field.

Line segments are added to the Preventative Maintenance cleaning list based on one or more of the following factors:

- Occurrence of a dry weather SSO or Building Backup
- Heavy cleaning or mechanical cleaning required during routine hydraulic cleaning activities
- Moderate to severe operational defects or obstructions including roots, grease, mineral deposits, rocks, or debris observed during routine inspection and/or cleaning activities

The DWQ maintains an active Preventative Maintenance cleaning list of line segments in need of frequent cleaning. The current list is included in Appendix E. A summary of line segments and linear footage of gravity sewer lines included on the current Preventative Maintenance cleaning list, by sewershed, is presented in Table 3-1.

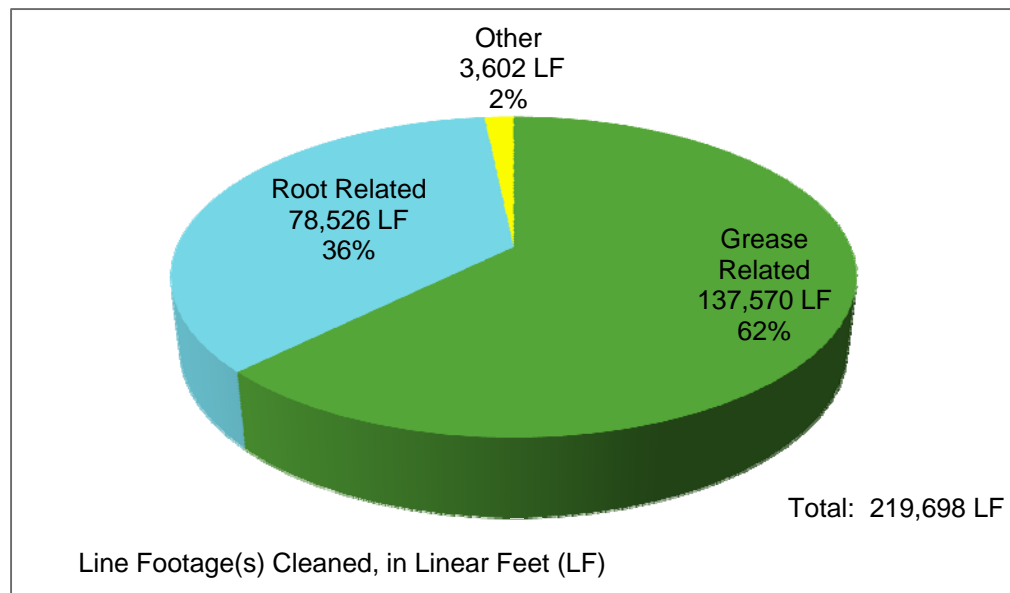
**Table 3-1  
Gravity Sewer Lines Included on Preventative Maintenance Cleaning List**

<b>Sewershed</b>	<b>No. of Line Segments</b>	<b>Total Line Footage (LF)</b>
Town Branch	147	28,047
West Hickman	130	25,562
Wolf Run	103	19,673
Cane Run	85	19,005
North Elkhorn	39	8,071
South Elkhorn	30	6,155
East Hickman	17	3,336
<b>Totals</b>	<b>551</b>	<b>109,849</b>



The total line footages associated with annual Preventative Maintenance cleaning activities are presented in Figure 3-1. The totals reflect a standard cleaning frequency of six months for line segments on the Preventative Maintenance list.

**Figure 3-1**  
**Preventative Maintenance Line Quantities**



The frequency of hydraulic cleaning of line segments included on the Preventative Maintenance cleaning list is determined based on the history of dry weather SSOs, the history of grease-related problems from upstream sources, and the general severity of defects or operational problems associated with the line segment. DWQ personnel and contractors engaged in hydraulic cleaning will assess the rate of debris, roots or grease accumulation in the sewer line as follows:

- Extreme = deposits exceeding 50% of the pipe cross-sectional area, to where blockage or overflow is imminent
- High = deposits between 33% and 50% of the pipe cross-sectional area
- Moderate = deposits from 2 inches up to 1/3 (33%) of the pipe's cross-sectional area
- Light = less than 2 inches depth of deposits at the pipe invert

A Preventative Maintenance cleaning frequency decision tool has been developed and is presented in Table 3-2. The decision tool will be used to assist the decision maker(s) within the DWQ in determining the appropriate cleaning frequency. It allows for decreasing the frequency of cleaning as problems diminish, with the eventual goal of removing line segments from the list. The frequency of Preventative Maintenance hydraulic cleaning ranges from one month to 36 months.



**Table 3-2**  
**Preventative Maintenance Cleaning Frequency Decision Tool**

<b>Cleaning Frequency (Months)</b>	<b>Determining Factors</b>
1	<ul style="list-style-type: none"> <li>• Extreme rate of grease, roots, or debris accumulation</li> <li>• Pending grease control enforcement action at upstream food service establishment(s) or other source(s)</li> <li>• High risk of upstream flow exceeding system capacity</li> <li>• History of recurring SSOs</li> </ul>
3	<ul style="list-style-type: none"> <li>• High rate of grease, roots, or debris accumulation</li> <li>• Pending grease control enforcement action at upstream food service establishment(s) or other source(s)</li> <li>• Moderate to high risk of upstream flow exceeding system capacity</li> <li>• History of recurring SSOs</li> </ul>
6	<ul style="list-style-type: none"> <li>• Moderate rate of grease, roots, or debris accumulation</li> <li>• Pending grease control compliance action at upstream food service establishment(s) or other source(s)</li> <li>• Moderate risk of upstream flow exceeding system capacity</li> <li>• "Default" initial frequency following a blockage-related SSO</li> <li>• If blockages per mile of sewer pipe increase for a particular area, cleaning frequency will be increased to less than six months.</li> <li>• History of recurring SSOs</li> </ul>
12	<ul style="list-style-type: none"> <li>• Light rate of grease, roots, or debris accumulation</li> <li>• Pending grease control compliance action at upstream food service establishment(s) or other source(s)</li> <li>• Low risk of upstream flow exceeding system capacity</li> <li>• Time between SSO events more than 12 months</li> </ul>
18	<ul style="list-style-type: none"> <li>• Light rate of grease, roots, or debris accumulation</li> <li>• Pending grease control compliance action at upstream food service establishment(s) or other source(s)</li> <li>• Low risk of upstream flow exceeding system capacity</li> <li>• Time between SSO events more than 18 months</li> </ul>
24	<ul style="list-style-type: none"> <li>• Light rate of grease, roots, or debris accumulation</li> <li>• Pending grease control compliance action at upstream food service establishment(s) or other source(s)</li> <li>• Low risk of upstream flow exceeding system capacity</li> <li>• Time between SSO events more than 24 months</li> <li>• Time span for initial chemical root control application</li> </ul>
36	<ul style="list-style-type: none"> <li>• Light rate of grease, roots, or debris accumulation</li> <li>• Pending grease control compliance action at upstream food service establishment(s) or other source(s)</li> <li>• Low risk of upstream flow exceeding system capacity</li> <li>• Time between SSO events more than 36 months</li> <li>• Large diameter pipe</li> </ul>



The number of blockages experienced per mile of sewer pipe will be monitored on an annual basis and will be considered as a determining factor in the cleaning frequency. The number of blockages per mile of sewer line per year should ultimately decrease as a result of the GLPMP.

A root cause analysis of operational or structural problems associated with the various line segments will be conducted by DWQ to reduce the required Preventative Maintenance cleaning frequency. For problems related to fats, oils, and grease (FOG), the Compliance and Monitoring section of DWQ will follow procedures established in the FOG Program to investigate upstream food service establishments potentially contributing to the problem. CCTV inspection will be used to assess the effectiveness of FOG reduction efforts. This process of investigation and inspection will continue until the operational problems are reduced and the need for Preventative Maintenance cleaning is reduced.

For operational problems associated with structural defects, such as root intrusion through cracks and pipeline defects, the root cause analysis will identify corrective actions to restore the structural integrity of the pipeline(s). This will lead to an evaluation of pipeline repair or rehabilitation options for the affected Gravity Sewer Line areas, ultimately reducing the need for PM cleaning.

### **3.3 Establishing Priorities and Scheduling**

Annual inspection activities will be completed by grouping the work into sewersheds. The sewersheds will be prioritized based on the history of dry weather SSOs, the relative age of the gravity system, and the past maintenance history. The concentration of dry weather SSOs by sewershed is presented in Table 3-3.

**Table 3-3**  
**Concentration of Dry Weather SSOs by Sewershed**

<b>Sewershed</b>	<b>No. of Known Dry Weather SSOs (three-year period)</b>
West Hickman	55
Town Branch	54
Wolf Run	34
North Elkhorn	21
Cane Run	20
East Hickman	15
South Elkhorn	8

Priorities and scheduling for Preventative Maintenance cleaning is based on the established cleaning frequency. Line segments due for Preventative Maintenance cleaning in a given month are grouped together by sewershed and cleaned in a systematic fashion to maximize productivity.

### **3.4 Personnel**

Routine hydraulic cleaning associated with annual inspection activities will typically be completed by contract crews. The number of contract crews working at any particular time will vary depending on





the specific contract. It is estimated that two hydraulic cleaning crews will be needed to meet the annual goal for line footage. The LFUCG has programmed funding in their long-range budgets for outside contractors to do routine hydraulic cleaning. If necessary, DWQ crews will be utilized to assist in meeting the goals established in this report.

Typically, each contractor will have at least one three-person crew assigned to the hydraulic cleaning work in each project area. The productivity goal for routine hydraulic cleaning is to complete 2,000 linear feet per day, which is accepted as the industry standard. Each contractor will be required to have adequate personnel to ensure quality work and productivity to meet the obligations of their contract.

Preventative Maintenance cleaning is typically completed by DWQ personnel. Contract crews will be added as necessary to meet and maintain the scheduled cleaning frequency for line segments included on the list.

DWQ personnel currently available to assist with the Routine Hydraulic Cleaning Program are listed in Table 3-4.

**Table 3-4  
DWQ Hydraulic Cleaning Personnel**

Position Title	Number of Authorized Positions
Project Manager	1
Engineering Tech Sr.	1
Equipment Operator Sr.	3
Equipment Operator	4
Public Service Worker Sr.	2

Job descriptions for the various positions are as follows:

- **Project Manager:** *Responsible for planning and directing major sewer investigations, cleaning and repair projects within the Division of Water Quality.*
- **Engineering Tech Sr.:** *Works to identify and repair deficiencies in the collection system; manages day-to-day operations related to sanitary sewer mapping, as-built inventory, new development/utility support and special projects; supervises Before You Dig (BUD) location activities and service verification request activities; serves as DWQ liaison to developers' engineers relative to sanitary sewer infrastructure; conducts GIS data collection/quality control analysis for system infrastructure; responsible for field level inspections for capital construction and sewer rehabilitation projects; prepares inspection notes, quantity take-offs and spreadsheets for documentation of field activities; responds to customer complaints and works with contractors to facilitate orderly completion of construction activities.*
- **Equipment Operator Sr.:** *Responsible for operating heavy equipment that might include backhoe(s), bulldozer(s), dump truck(s), Vector truck(s), closed-circuit television (CCTV) mainline camera inspection system(s) and/or other equipment as necessary to assist the DWQ in its mission to clean, inspect and/or repair sewer lines and manholes. Serves as field crew leader.*





- **Equipment Operator:** Responsible for operating heavy motor equipment such as backhoe(s), dump truck(s), Vactor truck(s)(with appropriate CDL endorsement), CCTV mainline camera inspection system(s), and/or others as necessary to assist the DWQ in its mission to inspect, clean and/or repair sanitary sewer lines and manholes.
- **Public Service Worker Sr.:** Responsible for operating a variety of equipment and performing manual, semi-skilled and skilled tasks in connection with sanitary sewer line cleaning, inspection and/or repair; responsible for work of considerable difficulty in operating a variety of equipment and performing a variety of manual tasks in connection with public service activities in the wastewater collection and transmission systems.

### 3.5 Equipment

DWQ equipment used for routine hydraulic cleaning is summarized in Table 3-5.

**Table 3-5**  
**DWQ Equipment for Routine Hydraulic Cleaning Activities**

Equipment	Quantity	Make / Model #	Year
Vactor Trucks – Combination Cleaner	2	International/8254 Dura-Star, 8295 Work-Star	2009
CCTV Inspection Trucks	2	Freightliner/3500	2009

Equipment used by contract crews for routine hydraulic cleaning activities will vary depending on the size and scope of the specific contract. The equipment used typically includes the following:

- Combination Cleaner/Vacuum Truck (one per crew)
- CCTV Inspection Truck (one per crew)

### 3.6 Standard Maintenance Procedures

#### 3.6.1 Safety and Training

Before DWQ personnel engage in routine hydraulic cleaning activities, they are given training and instruction that includes the following areas:

- Equipment operation
- Work zone and traffic area safety
- Use of personal protective equipment (PPE)
- DWQ and LFUCG safety policies, including confined space entry
- Applicable OSHA safety regulations

PPE provided by the DWQ includes, but is not limited to, hard hats, safety glasses, hearing protection, safety-toed shoes, work gloves and Class III high visibility garments.



Classroom training is supplemented by field training and skills demonstrations. Training participation and successful completion is documented in each employee's training record maintained by DWQ. The DWQ will develop and implement an employee training module specifically for gravity line preventative maintenance activities (see Section 3.9.1).

Outside contractors are required to provide the DWQ with a copy of their safety policies or program for review. Contractors are expected to follow all DWQ safety policies and applicable OSHA regulations while performing contract work for LFUCG.

### **3.6.2 Hydraulic Cleaning Procedures**

Standard procedures for hydraulic cleaning activities are as follows:

- Any and all required traffic control signs, cones and other devices must be in place prior to initiating work activities in or around traffic
- DWQ crews are provided with daily Work Orders for hydraulic cleaning and CCTV inspection activities. Contract crews are provided with daily or weekly Work Orders by their respective employer.
- All hydraulic cleaning equipment is expected to be operated and maintained per the manufacturer's recommendations
- Potable water obtained from fire hydrants is generally used for hydraulic cleaning. The number of loads must be documented for DWQ to report to Kentucky-American Water Company. If cleaning near a WWTP, non-potable water may be available for use
- If accessing manholes, confined space entry equipment must be in use and procedures followed
- In freezing temperatures, if water is present on the road surface, salt shall be applied to the road surface.
- Hydraulic cleaning is completed in the upstream direction. Cleaning activities are performed in conjunction with vacuum removal of debris and cleaning water.
- Collected debris is transported to the nearest LFUCG Wastewater Treatment Plant, Town Branch or West Hickman, for proper disposal
- Cleaning of the entire line segment, from downstream manhole to upstream manhole, is required
- Crews are required to complete as many cleaning passes as necessary to thoroughly clean the line segment, based on visual observation of the cleaning water in the downstream manhole
- Three or more cleaning passes constitutes "heavy" cleaning of the line segment. For contract crews, heavy cleaning must be approved by a DWQ Project Manager. Line segments requiring heavy cleaning must be reported to the Sewer Line Maintenance Superintendent for inclusion on the Preventative Maintenance cleaning list. Line segments with significant root intrusion may also be reported for inclusion on the Preventive Maintenance list.
- All hydraulically cleaned line segments must be inspected via CCTV in a timely manner. In most cases, the inspection will be completed the same day or the next scheduled work day. The inspection should be completed within one week of the initial cleaning date.
- All manhole covers must be completely resealed after cleaning and CCTV inspection activities
- Following completion of the work, all traffic control devices shall be removed without delay



- Cleaning results and other pertinent information is recorded on Work Orders and daily time sheets for DWQ employees

### **3.6.3 Hydraulic Cleaning Procedures After a Dry Weather SSO**

Procedures for the hydraulic cleaning after a dry weather SSO are generally the same as those listed in Section 3.6.2, but with the following additional procedures:

- Sewer Overflow Response Plan (SORP) procedures must be followed. The First Responder(s) must confirm whether an overflow has occurred or is occurring by completing a "Level 1" assessment. If an overflow is confirmed, specific notification procedures are initiated. Response activities include overflow mitigation and cleanup (refer to LFUCG Sewer Overflow Response Plan, June 2011).
- Hydraulic cleaning and, if necessary, mechanical cleaning is used to remove the line blockage and restore flow. A minimum of three cleaning passes are made to completely remove the blockage, not merely to stop the overflow.
- Hydraulic cleaning is completed in an upstream direction to the source of the blockage and to the next upstream manhole. At least one line segment upstream of the blockage must also be cleaned. The field crew leader must determine if additional upstream line segments need cleaning to prevent further blockages and/or SSOs.
- Hydraulic cleaning is completed downstream of the blockage as necessary to prevent further blockages and/or SSOs. The extent of downstream cleaning is determined by the crew leader based on his/her field observations.
- Following necessary SSO abatement activities, line segments downstream of the blockage are cleaned to the nearest trunk sewer line or the next line segment on the preventative maintenance cleaning list. A follow-up line inspection of the blockage area by CCTV should be completed within one week of the cleaning. The follow-up inspection ensures removal of the blockage and flow constriction.
- Dry weather SSOs due to grease are reported to the DWQ Compliance and Monitoring Section for follow-up investigation and enforcement action if necessary.
- All new dry weather SSO locations shall be geocoded in the Information Management System.

Cleaning and televising within the first 72 hours of an SSO event will not be counted toward the annual linear footage goal. Cleaning and televising more than 72 hours after an SSO event and at least 1,000 linear feet away from the SSO location will be counted toward the annual linear footage goals.

### **3.7 Standard Forms**

Sewer line inspections using CCTV are recorded electronically on forms conforming to Pipeline Assessment and Certification Program (PACP) standards. PACP guidelines include inspection identification, standard defect codes and ratings, and a general format for reporting results. The current standard DWQ forms for CCTV inspection reporting are included in Appendix C.

Contract crews are required to submit CCTV inspection data digitally on DVDs and/or portable hard drives for inclusion in the DWQ database.



Standard forms currently utilized by DWQ personnel for routine hydraulic cleaning include the following:

- Work Orders
- Daily Time Sheets
- Combination Cleaner/Vacuum Truck Preventative Maintenance/Inspection Forms
- Printed Maps of Work Area
- Safety Meeting Sign-in Sheets and Documentation

Example copies of forms are included in Appendix D. Forms are subject to change due to implementation of a revised Information Management System.

### **3.8 Records and Performance Measures**

#### **3.8.1 Routine Hydraulic Cleaning**

Records of routine hydraulic cleaning activities are maintained in the DWQ's Work Order and pipe history databases.

For new lines accepted by LFUCG, the line segment and manhole physical asset information, as well as GIS mapping data, is added to the DWQ's physical inventory database. The CCTV inspection date is recorded and a target date for the inspection cycle and cleaning, if necessary, is established. Generally, this target date is within 10 years of the initial inspection date.

Likewise, CCTV data for line segments inspected and cleaned (if necessary) as part of the annual inspection and/or sewer assessment activities is uploaded to the pipe history database and a target date for the next inspection cycle is established.

For more information on DWQ records see Information Management System, Section 3.9.

Performance measures for routine hydraulic cleaning activities include the following:

- Linear feet (LF) per day cleaned
- LF of line segments cleaned by sewershed and sub-sewershed
- LF of lines cleaned per man-hour, for both DWQ crews and contract crews
- Cost per LF for both DWQ crews and contract crews
- Monthly progress toward yearly linear footage goal
- Number of blockages experienced per mile of sewer pipe

For contract cleaning crews, specifications for the project or contract establish performance measures and sometimes establish methods. Field inspection is utilized to check conformance with contract specifications.

Various reports can be generated from the current Information Management database to allow the DWQ to assess the results of the routine hydraulic cleaning program and the performance of individual work crews.



### **3.8.2 Preventative Maintenance Cleaning**

In addition to those listed in Section 3.8.1, the following records and performance measures are utilized for Preventative Maintenance cleaning:

- After a dry weather SSO occurrence, the affected line segment is added to the Preventative Maintenance list. If already on the list, the cleaning frequency is reviewed along with the line condition from the follow-up CCTV inspection. The cleaning frequency will generally be increased to prevent future SSOs.
- The date the line segment was added to the Preventative Maintenance list, and subsequent cleaning dates, are maintained in the DWQ information management system. The “default” cleaning frequency for line segments added to the list is six months.
- Once a line segment is added to the Preventative Maintenance cleaning list, it will remain on the list for a minimum of 12 months.
- Line segments may be removed from the Preventative Maintenance cleaning list if:
  - The line segment has been replaced or rehabilitated.
  - Inspection of the line segment verifies that structural or operational defects have been reduced or eliminated, and further problems are not anticipated.
  - For grease problems, a Fats, Oils and Grease (FOG) program investigation or enforcement action has eliminated the upstream source(s). Must be verified by CCTV inspection.
- Reductions in cleaning frequency must be approved by the SLM Superintendent.
- Following dry weather SSOs, a root cause analysis is conducted to determine the underlying cause of the SSO. Examples of underlying causes include FOG noncompliance and structural deficiencies. If possible, the long-term solution to prevent SSOs will be identified. When these solutions are successfully implemented, the corresponding line segments will be removed from the Preventative Maintenance (PM) list. The root cause analysis procedure will ultimately be extended to all line segments on the PM list.
- Performance measures include an assessment of dry weather SSO activity after Preventative Maintenance cleaning. If SSOs occur between cleaning dates, the lines should be cleaned more frequently.
- Performance measures include the number of line segments added to the Preventative Maintenance list from routine hydraulic cleaning activities, and the number of line segments removed from the Preventative Maintenance list due to FOG program action and/or capital rehabilitation projects.

### **3.9 Information Management System**

On July 18, 2011, LFUCG began implementation a commercial IMS software program that links GIS data, work order management, etc. in one visible geo-database format. This system will be used to manage workflow activities that occur in response to collection system asset management including manhole overflow events, preventative maintenance (PM) inspections and maintenance responses to events / inspections.

Implementation of the new IMS will standardize the PM inspection and cleaning protocols, by linking work orders and tracking in one integrated data system. Establishment of performance standards will then be more effective and easy to track.



The implementation of the new IMS, with its ability to track workflow from problem identification to resolution, will greatly enhance DWQ management's ability to trend outcomes and allocate resources needed for implementation of the Gravity Line Preventative Maintenance Program. Example menus and screens from the IMS system are included in Appendix D.

### **3.9.1 Implementation Actions**

The following actions related to the Routine Hydraulic Cleaning Program are planned for implementation by the DWQ:

1. Develop and implement an employee training module specifically for gravity line preventative maintenance (PM) activities.
2. Establish an Operations Center to centralize sewer monitoring and dispatching operations. The Operations Center will be responsible for entering and maintaining SSO data, Work Orders, and records related to routine hydraulic cleaning, mechanical cleaning, and root control activities.
3. Create a cause analysis form for tracking and addressing dry weather SSOs. The form will include the following information for dry weather SSOs in the gravity system:
  - Date of SSO
  - Overflow location (manhole #, building, other)
  - Reason for overflow (roots, grease, debris, other)
  - Address (if applicable), and geo-coded location
  - GIS map of affected line segments
  - Total number of line segments cleaned
  - Line segment identification numbers cleaned
  - Total line footage cleaned
4. Implement a root cause analysis procedure to be conducted after dry weather SSOs occur. Extend root cause analysis to all line segments on the PM list.
5. Develop additional menus for data management to track pertinent dates associated with the PM cleaning list, such as date added to the list, most recent cleaning date, next scheduled cleaning date, etc. Develop mapping tools to illustrate the relationship between PM cleaning activities, fats, oils, and grease (FOG) permittees, and dry weather SSOs. The mapping will assist the DWQ in developing targeted inspection and enforcement areas for the FOG program.
6. Develop QA/QC protocol for the Routine Hydraulic Cleaning Program. The protocol for PM cleaning will include follow-up CCTV inspections of a percentage of line segments cleaned to ensure the work meets DWQ standards.



## Section 4: Routine Mechanical Cleaning Program

### 4.1 Overview

The Routine Mechanical Cleaning Program addresses blockages due to large debris and sedimentation that cannot be removed with hydraulic cleaning equipment and techniques.

Due to the technological advances and specialized design of high velocity water jet cleaning nozzles, mechanical cleaning is rarely used and can no longer be considered routine. Hydraulic cleaning equipment has proven effective, with multiple passes, at removing nearly all debris and blockages that may be encountered in a gravity sewer system. Hydraulic cleaning generally achieves better performance and much higher productivity than mechanical cleaning. Mechanical cleaning equipment is available, however, for special cases where mechanical force may be needed to move debris to facilitate removal.

### 4.2 Needs Determination

The needs determination for mechanical cleaning is based on CCTV inspection data and insufficient debris movement or removal by hydraulic cleaning, even with multiple passes. Mechanical cleaning will be considered for large debris that is difficult to flush downstream and difficult to collect.

### 4.3 Establishing Priorities and Scheduling

Mechanical cleaning equipment will be used on an as-needed basis in specific cases where hydraulic cleaning was tried unsuccessfully. There is no routine procedure for establishing priorities and scheduling use of the equipment.

### 4.4 Personnel

Refer to Section 3.4 for personnel associated with mechanical cleaning activities.

### 4.5 Equipment

See Table 4-1 for DWQ equipment available for mechanical cleaning activities.

**Table 4-1**  
**DWQ Equipment Committed to Routine Mechanical Cleaning Activities**

Equipment	Quantity	Make and/or Model #
Sewer Drag	1	1991 SRECO





#### **4.6 Standard Maintenance Procedures**

Refer to Section 3.6.1 for standard safety and training procedures, and Section 3.6.2 for standard hydraulic cleaning procedures.

Procedures specific to mechanical cleaning include the following:

- Perform all cleaning in the downstream direction
- Observe and follow all manufacturers' operating instructions and/or maintenance procedures for the equipment
- Remove material from the downstream manhole
- Beware of the potential for mechanical cleaning equipment to become lodged in the sanitary sewer lines. This can increase the severity of the line blockage and result in the need for excavation and an emergency point repair to remove the equipment.
- Reseat all manhole covers after cleaning activities
- Secure all equipment, tools and/or other materials prior to leaving work area

#### **4.7 Standard Forms**

Refer to Section 3.7 for forms associated with mechanical cleaning.

#### **4.8 Records and Performance Measures**

Refer to Section 3.8 for records applicable to mechanical cleaning.

Performance measures include the following:

- Removal of material without getting equipment lodged in the sanitary sewer main line
- Sufficient removal of debris and material to eliminate the blockage and SSO potential
- Restoration of hydraulic capacity

#### **4.9 Information Management System**

Refer to Section 3.9 for discussion of the Information Management System.





## **Section 5: Root Control Program**

### **5.1 Overview**

The Root Control Program is the final component of the GLPMP. The root control program includes both mechanical and chemical root control methods.

Mechanical root control is a specialized activity within the routine hydraulic cleaning program, primarily to remove roots at pipeline defects and joints. Chemical root control is often used to control root intrusion at service connections and manholes. Gravity Sewer Line segments on the Preventative Maintenance cleaning list with roots as a primary operational defect and potential source of blockage will be treated on a periodic basis with a chemical application for root control.

### **5.2 Needs Determination**

During activities associated with routine hydraulic cleaning, Gravity Sewer Line segments with root intrusion will be identified. When necessary, mechanical root cutting attachments will be used with the hydraulic jet cleaning equipment to remove roots intruding at pipe defects and pipe joints.

Sewer line segments with blockages due to roots will also be identified from service calls or as part of the Preventative Maintenance cleaning activities. The lines will be cleaned and chemically treated for roots at a recurring frequency.

Chemical root control takes time to eliminate the root mass intrusion or reduce its size. Therefore, any line segment with significant blockage that potentially could result in an SSO should be root cut by mechanical or hydraulic means to address the problem for the near term. The Gravity Sewer Lines should be considered and evaluated for chemical root control and the vendor or contractor consulted regarding the application rate.

A post-treatment effectiveness evaluation of chemically treated Gravity Sewer Lines should be performed using CCTV inspection.

### **5.3 Establishing Priorities and Scheduling**

Priorities for root control for Preventative Maintenance cleaning are established based on the cleaning frequencies assigned to each particular line segment. Line segments due for cleaning are grouped by sewershed to maximize productivity. See Table 3-2 for Preventative Maintenance cleaning frequencies.

Root control associated with routine hydraulic cleaning activities is completed by grouping the work into sewersheds. The sewersheds are prioritized based on the history of dry weather SSOs and the relative age of the gravity system. See Table 3-3 for the concentration of dry weather SSOs by sewershed.

Line segments requiring repeated root control (mechanical or chemical) will be considered for capital rehabilitation projects using cured-in-place lining or other methods to eliminate root intrusion.



## **5.4 Personnel**

Refer to Section 3.4 for DWQ personnel involved in the root control program. Refer to Section 3.4 for contractor personnel involved in root control activities associated with annual inspection and maintenance.

Chemical root control applications will be completed by contract crews. Contract crews will vary depending on the specific contract terms for footages to be cleaned and chemically treated. DWQ personnel will monitor work completed by contract crews to ensure compliance with the contract(s).

## **5.5 Equipment**

Refer to Section 3.5 for major equipment available for mechanical root cutting activities. Root cutter bodies for use with combination cleaner trucks and special root cutting attachments for hydraulic jet cleaning equipment are used as necessary.

Chemical root control equipment is provided and operated by contract crews.

## **5.6 Standard Maintenance Procedures**

### **5.6.1 Mechanical Root Control**

Refer to Section 3.6 for mechanical root control maintenance procedures. Special root cutter bodies and root cutting blades and attachments are used instead of high velocity water jet cleaning nozzles. The following procedures apply:

- Mechanical root cutting should be avoided in gravity sewer lines with moderate to severe offset joints, due to the potential for equipment to get hung up in the pipeline.
- Care must be taken to prevent mechanical equipment from becoming lodged in the root mass or pipeline. Large root masses may require use of specialty cutting equipment to sufficiently cut and remove the mass.
- Mechanical root cutting equipment should **never** be used in a “blind” attempt to clear a main line blockage. Other utilities such as natural gas pipelines or electrical lines may have been bored through the sanitary sewer line. Cutting these lines with mechanical root cutting equipment could potentially result in an explosion or other dangerous condition for workers and/or the public.
- Use the appropriate size root cutter body and blade for the pipe diameter to be cleaned. Ensure blades are securely attached to root cutter bodies to prevent disengagement of the blades, which could result in a line blockage.
- Mechanical root cutting should proceed in the upstream direction.
- When using combination cleaning (Vactor) equipment, roots and debris should be removed using vacuum tubes. Roots too large for removal with vacuum equipment should be physically removed from manholes. DWQ procedures and OSHA regulations for confined space entry must be followed when accessing manholes for root removal.



### **5.6.2 Chemical Root Control**

- Chemical root control involves application of a foam herbicide. See Appendix F for information on chemicals used. The Vendor/Contractor must provide a copy of the Material Safety Data Sheet (MSDS) for the chemical(s) to the DWQ Laboratory for evaluation and approval. A copy of the MSDS must remain at the job site.
- Prior to chemical applications for root control, the Superintendent at the affected wastewater treatment plant (Town Branch WWTP or West Hickman WWTP) must be notified of the chemical and quantity of chemical being used. Plant personnel will monitor treatment processes for potential adverse effects and potential changes to wastewater chemistry (i.e., ammonia, CBOD) from the chemical application.
- Manufacturer's recommendations for PPE and safe handling practices must be followed by contract crews and DWQ monitoring personnel.
- Chemicals must remain in properly labeled containers, and manufacturer's recommendations for safe transport must be followed.
- The vendor/applicator is responsible for determining the best application method and rate for each application based on factors such as the size of root mass intrusion, pipe size, the ability to get through the line segment, and/or the need to treat the line segment from both ends.
- The chemical root control agent must stay in contact with the roots for at least one (1) hour to effectively kill the root within the pipeline.
- A time period of two to six months is necessary for treated roots to decay and drop off.
- DWQ personnel will inspect treated line segments within three to six months of initial treatment to ensure its effectiveness. The vendor provides a two-year warranty for effectiveness of the application.
- Line segments treated for root control will typically be scheduled for re-treatment within two (2) calendar years. This will kill re-growth while it is still young and help to further control roots outside the pipe.

### **5.7 Standard Forms**

Refer to Section 3.7 for standard forms associated with root control activities.

### **5.8 Records and Performance Measures**

- Refer to Section 3.8 for records and performance measures associated with root control activities.
- DWQ crews will inspect (via CCTV) all treated line segments for effectiveness within three to six months of the initial treatment.

### **5.9 Information Management System**

Refer to Section 3.9 for discussion of the Information Management System associated with mechanical and chemical root control.



## Section 6: Schedule of Implementation

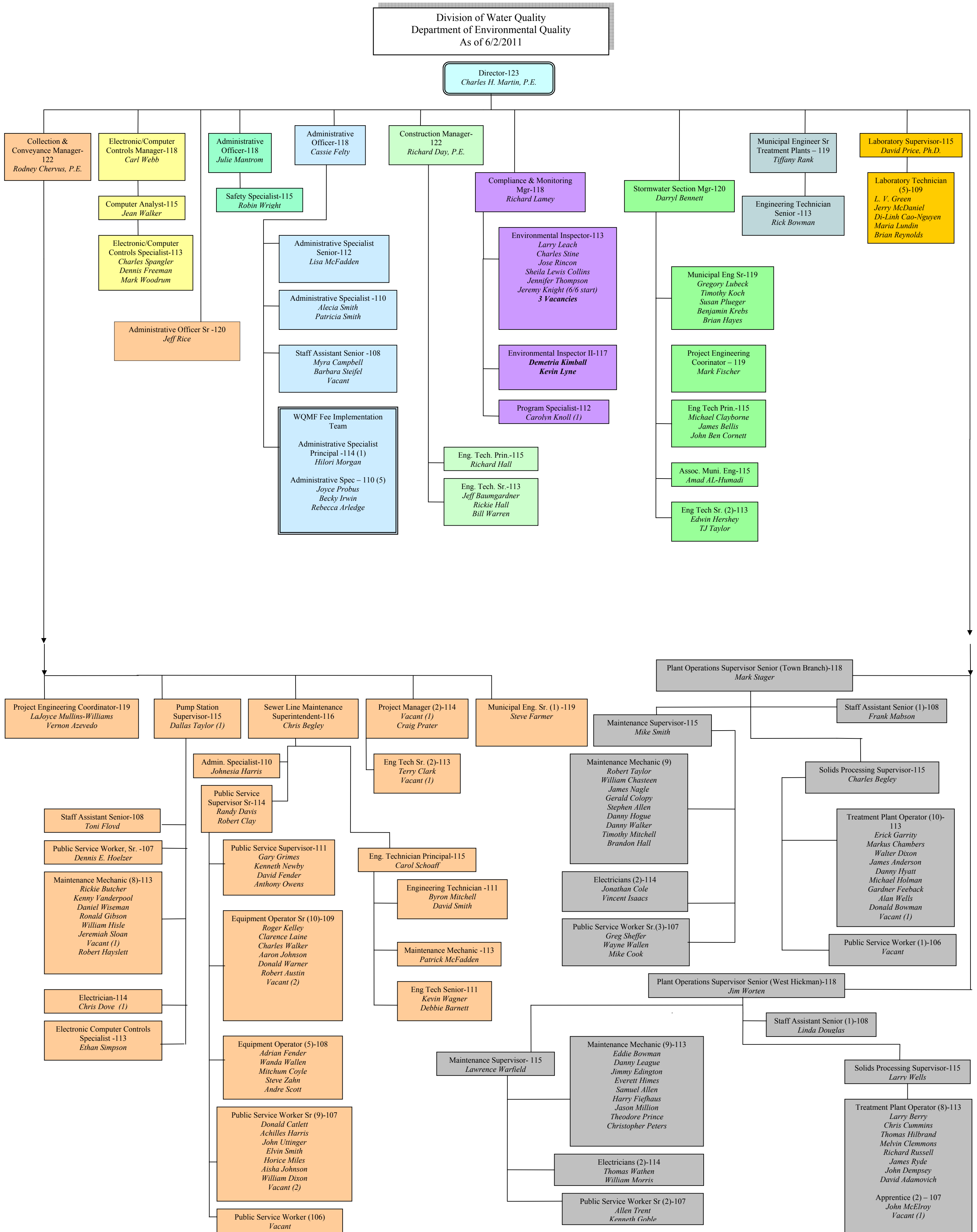
In accordance with the Consent Decree, a schedule has been developed for implementation actions included in the GLPMP. This schedule is presented in Table 6-1.

**Table 6-1**  
**Schedule of Implementation Actions**

Action	GLPMP Section	Date to Begin Implementation
Develop employee training module for GLPMP activities	3.9.1	Within 18 months of EPA Approval of GLPMP
Establish Operations Center to centralize sewer monitoring and dispatching operations	3.9.1	Within 18 months of EPA Approval of GLPMP
Create cause analysis form and procedure for dry weather SSOs	3.9.1	Within 18 months of EPA Approval of GLPMP
Implement a root cause analysis procedure to be conducted after dry weather SSOs occur	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop additional menus for data management to track dates associated with GLPMP	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop improved mapping tools related to dry weather SSOs and GLPMP	3.9.1	Within 18 months of EPA Approval of GLPMP
Develop QA/QC protocol for Routine Hydraulic Cleaning Program	3.9.1	Within 18 months of EPA Approval of GLPMP



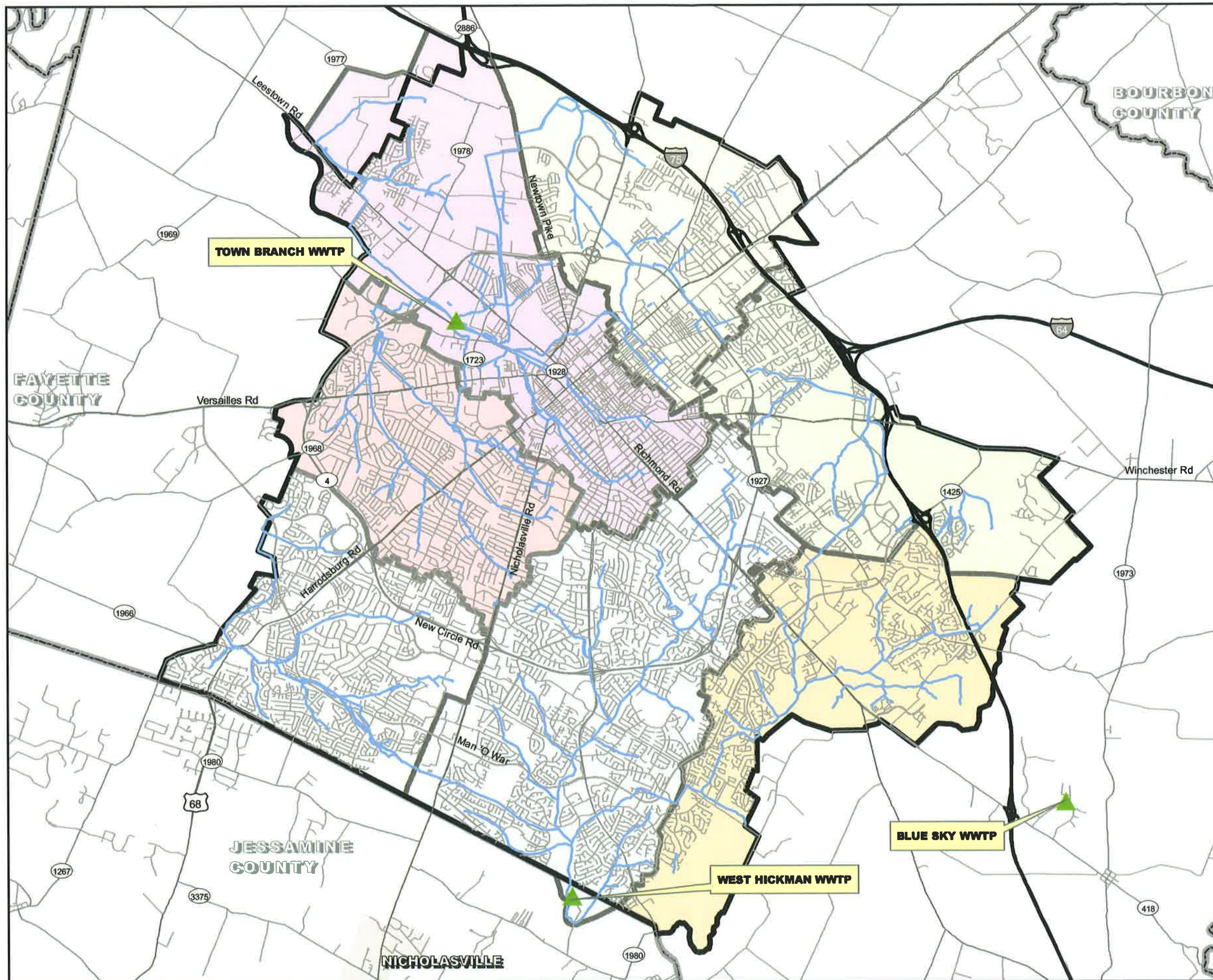
**Appendix A**  
**DWQ Organizational Chart**





**Appendix B  
Sewershed Location Map**





## LEGEND

- Wastewater Treatment Plant
- Sewer Line (12" or Larger)
- Interstate Highway
- US Highway
- State Route
- Local Road
- Sewersheds**
  - Cane Run
  - East Hickman
  - North Elkhorn
  - South Elkhorn
  - Town Branch
  - West Hickman
  - Wolf Run
  - Urban Service Boundary
  - County Boundary



1 inch equals 7,000 feet

0 3,500 7,000 14,000 Feet

Source: KY Transportation Cabinet, KY Office of Geographic Information, LFUGG base map provided by Hydromax USA

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# HDR

Figure B - 1  
Sewershed Location Map

Gravity Line Preventative Maintenance Program  
Lexington-Fayette Urban County Govt.  
December 2011





**Appendix C**  
**Sample CCTV Inspection Forms**

# Header Report

## PROJECT:

**Name:** 1083\_LexingtonKY\_November  
**Address:** Lexington, KY  
**Phone:** (502) 500-1399

**HYDROMAX USA**

## PROJECT

<b>City</b>	<b>Lexington</b>	<b>Date</b>	<b>2009/04/27</b>
<b>Owner</b>	<b>LFUCG</b>	<b>Time</b>	<b>10:48:41 AM</b>
<b>Customer</b>	<b>Stantec</b>	<b>Weather</b>	<b>Dry</b>
<b>PO Number:</b>	<b>1083</b>	<b>Media Label</b>	<b>SubCam</b>
<b>Surveyed By</b>	<b>JJK</b>	<b>Sheet:</b>	
<b>Certificate Number:</b>	<b>U-708-6551</b>		

## LOCATION

<b>Location (St. &amp; No.)</b>	<b>Greenbo</b>	<b>Upstream MH:</b>	<b>EH4_188</b>
<b>N/A</b>		<b>Downstream MH:</b>	<b>EH4_187</b>
<b>N/A</b>		<b>Pipe Segment Ref.:</b>	<b>EH4_188_EH4_187</b>
<b>N/A</b>		<b>Location Code</b>	<b>Easement/Right of Way</b>
<b>Fur. Loc. Details:</b>	<b>back yards</b>		

## PIPE

<b>Material</b>	<b>Vitrified Clay Pipe</b>	<b>Pre-Cleaning</b>	<b>Jetting</b>
<b>Shape</b>	<b>Circular</b>	<b>Date Cleaned</b>	<b>2009/04/23</b>
<b>Height (Diameter)</b>	<b>8</b>	<b>Total Length</b>	<b>331.9</b>
<b>Width</b>	<b>8</b>	<b>Length Surveyed</b>	<b>331.9</b>
<b>Pipe Joint Length</b>	<b>5</b>	<b>Dir of Survey:</b>	<b>Downstream</b>
<b>Flow Control</b>	<b>Not Controlled</b>		

## GENERAL INFORMATION

<b>Use of Sewer</b>	<b>Sanitary</b>	<b>Rim to Invert(U):</b>	<b>4.8</b>
<b>Purpose</b>	<b>Infiltration/Inflow Investigation</b>	<b>Grade to Invert(U):</b>	
<b>Sewer Category</b>		<b>Rim to Grade(U):</b>	
<b>Year Laid</b>		<b>Rim to Invert(D):</b>	<b>7.1</b>
<b>Year Reviewed</b>		<b>Grade to Invert(D):</b>	
<b>Lining Method</b>		<b>Rim to Grade(D):</b>	

## Remarks:

## Custom Header Fields For This Project Only

<b>N/A</b>	<b>N/A</b>
<b>N/A</b>	<b>N/A</b>
<b>N/A</b>	<b>N/A</b>
<b>N/A</b>	



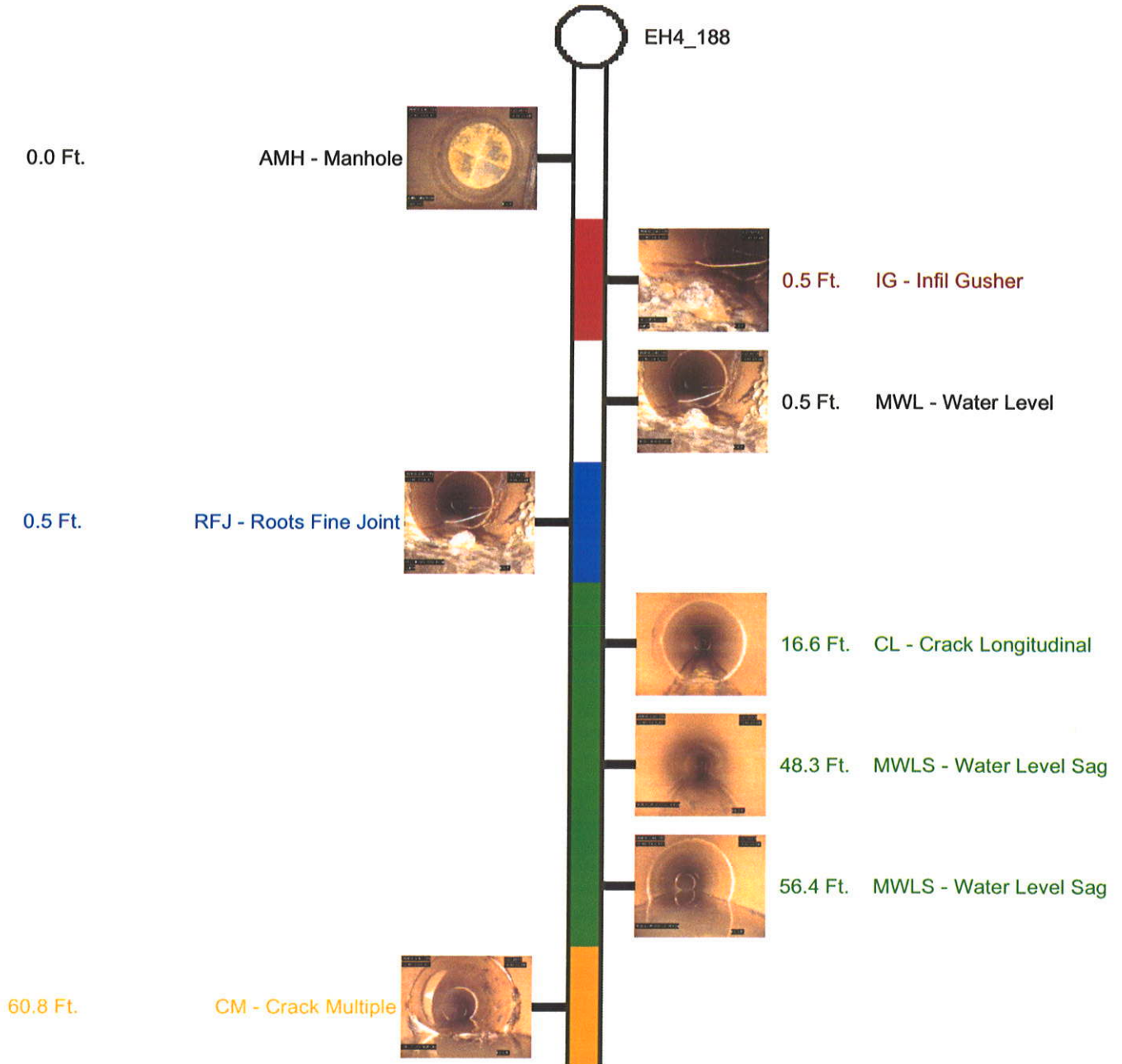
# Observation & Defect Listing

City <b>Lexington</b>	Surveyors Name <b>JJK</b>	Certificate # <b>U-708-6551</b>	Date <b>2009/04/27</b>	Sht. No. <b>2</b>
Location Code <b>Easement/Right of Way</b>	Location (Street and Number) <b>Greenbo</b>	Further Location Details <b>back yards</b>		
N/A	N/A	N/A	Upstream Manhole # <b>EH4_188</b>	Downstream Manhole # <b>EH4_187</b>
Pipe Seg. Ref. <b>EH4_188_EH4_187</b>	Material <b>Vitrified Clay Pipe</b>	Shape <b>Circular</b>	Height <b>8</b>	Width <b>8</b>
			Jt. Lgth. <b>5</b>	Total Lgth. <b>331.9</b>
				Lgth. Surv. <b>331.9</b>

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	AMH - Manhole					<input type="checkbox"/>			
Remarks: EH4_188									
0.5 ft.	IG - Infil Gusher					<input checked="" type="checkbox"/>	6		5
Remarks: in MH									
0.5 ft.	MWL - Water Level				5	<input type="checkbox"/>			
0.5 ft.	RFJ - Roots Fine Joint					<input checked="" type="checkbox"/>	12	4	1
Remarks: in MH									
16.6 ft.	CL - Crack Longitudinal					<input checked="" type="checkbox"/>	11		2
48.3 ft.	MWLS - Water Level Sag				15	<input type="checkbox"/>			2
56.4 ft.	MWLS - Water Level Sag				25	<input type="checkbox"/>			2
60.8 ft.	CM - Crack Multiple					<input checked="" type="checkbox"/>	1	4	3
60.8 ft.	RFJ - Roots Fine Joint					<input checked="" type="checkbox"/>	4	6	1
60.8 ft.	OBM - Obstacle Pipe Material				5	<input type="checkbox"/>	6	7	2
61.4 ft.	TFA - Tap Factory Active		6			<input type="checkbox"/>	9		
65.6 ft.	MWL - Water Level				5	<input type="checkbox"/>			
96.7 ft.	MWLS - Water Level Sag				10	<input type="checkbox"/>			2
104.4 ft.	MWL - Water Level				5	<input type="checkbox"/>			
111.0 ft.	MWLS - Water Level Sag				10	<input type="checkbox"/>			2
115.8 ft.	MWL - Water Level				5	<input type="checkbox"/>			
170.3 ft.	TFA - Tap Factory Active		6			<input type="checkbox"/>	9		
176.1 ft.	IG - Infil Gusher					<input checked="" type="checkbox"/>	12	12	5
176.1 ft.	FM - Fracture Multiple					<input checked="" type="checkbox"/>	12	12	4
181.3 ft.	MWLS - Water Level Sag				10	<input type="checkbox"/>			2

# Defect Listing Plot with Images

City <b>Lexington</b>		Surveyors Name <b>JKK</b>		Certificate # <b>U-708-6551</b>	Date <b>2009/04/27</b>	Sht. No. <b>4</b>		
Location Code <b>Easement/Right of Way</b>		Location (Street and Number) <b>Greenbo</b>		Further Location Details <b>back yards</b>				
N/A		N/A		N/A		Upstream Manhole # <b>EH4_188</b>		Downstream Manhole # <b>EH4_187</b>
Pipe Seg. Ref. <b>EH4_188_EH4_187</b>	Material <b>Vitrified Clay Pipe</b>	Shape <b>Circular</b>	Height <b>8</b>	Width <b>8</b>	Jt. Lgth. <b>5</b>	Total Lgth. <b>331.9</b>	Lgth. Surv. <b>331.9</b>	





# Observation & Defect Images

<b>City</b> Lexington	<b>Surveyors Name</b> JJK	<b>Certificate #</b> U-708-6551	<b>Date</b> 2009/04/27	<b>Sht. No.</b> 8
<b>Location Code</b> Easement/Right of Way	<b>Location (Street and Number)</b> Greenbo	<b>Further Location Details</b> back yards		
N/A	N/A	N/A	<b>Upstream Manhole #</b> EH4_188	<b>Downstream Manhole #</b> EH4_187
<b>Pipe Seg. Ref.</b> EH4_188_EH4_187	<b>Material</b> Vitrified Clay Pipe	<b>Shape</b> Circular	<b>Height</b> 8	<b>Width</b> 8
			<b>Jt. Lgth.</b> 5	<b>Total Lgth.</b> 331.9
				<b>Lgth. Surv.</b> 331.9



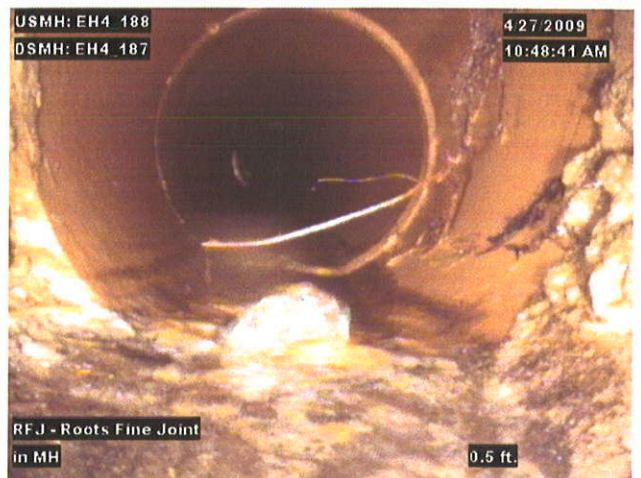
**Distance:** 0.0 Ft. **Grade:** 0  
**Condition:** AMH - Manhole  
**Remarks:** EH4\_188



**Distance:** 0.5 Ft. **Grade:** 5  
**Condition:** IG - Infil Gusher  
**Remarks:** in MH



**Distance:** 0.5 Ft. **Grade:** 0  
**Condition:** MWL - Water Level  
**Remarks:**



**Distance:** 0.5 Ft. **Grade:** 1  
**Condition:** RFJ - Roots Fine Joint  
**Remarks:** in MH

## Condition Grades

City		Surveyors Name		Certificate #		Date		Sht. No.							
Lexington		JJK		U-708-6551		2009/04/27		16							
Location Code		Location (Street and Number)			Further Location Details										
Easement/Right of Way		Greenbo			back yards										
N/A		N/A		N/A		Upstream Manhole #		Downstream Manhole #							
						EH4_188		EH4_187							
Pipe Seg. Ref.		Material		Shape		Height		Width		Jt. Lgth.		Total Lgth.		Lgth. Surv.	
EH4_188_EH4_187		Vitrified Clay Pipe		Circular		8		8		5		331.9		331.9	

[illegible]



**Appendix D**  
**Standard Forms for Routine Hydraulic Cleaning**

Accela Automation® - Windows Internet Explorer

https://accela.lexingtonky.gov/jetspeed/portal/media-type/html/user/LEXXY.CHMARTIN\_UTF8\_ENCODED/page/de

File Edit View Favorites Tools Help

Accela Automation®

Charles Martin AMS Admin Alerts (1) Console Options Sign Out

HOME NAVIGATION MAPS

Home Assets Inspections PM Schedules APO Professionals Contacts GIS V360 Admin AA Admin Condition Assessment Reports

Global Search

Preference

Submit Reset

Preference Change

Default Module \*  
AMS

Default Console  
--Select--

My Navigation

Record Summary  
Edit Record Detail  
View ASI  
View ASIT  
View Assets  
View Inspections  
Update Workflow  
Related Records  
Documents

Reports

Alerts

Menu Delete Help

Message

SR# 11-SR-2663 assigned to SLM has received an update from LexCall.

Work Orders

Menu Search New Create From Model GIS View Log Help My QuickQueries

Record #	Work Order Type	Reference	Opened Date	Status	Status Date
11-CLM-0129	SLM Clean Main- Sanitary Sewer		11/11/2011	Open	11/11/2011
11-CLM-0130	SLM Clean Main- Sanitary Sewer		11/11/2011	Open	11/11/2011
11-SR-2638	LexCall		11/11/2011	Complete	11/14/2011
11-SR-2639	LexCall		11/11/2011	Updated By LexCall	11/14/2011
11-TVM-0115	SLM CCTV- Lateral	11-SR-2569	11/11/2011	Pending	11/11/2011

Local intranet 100%

Figure D.1 Home Page of IMS



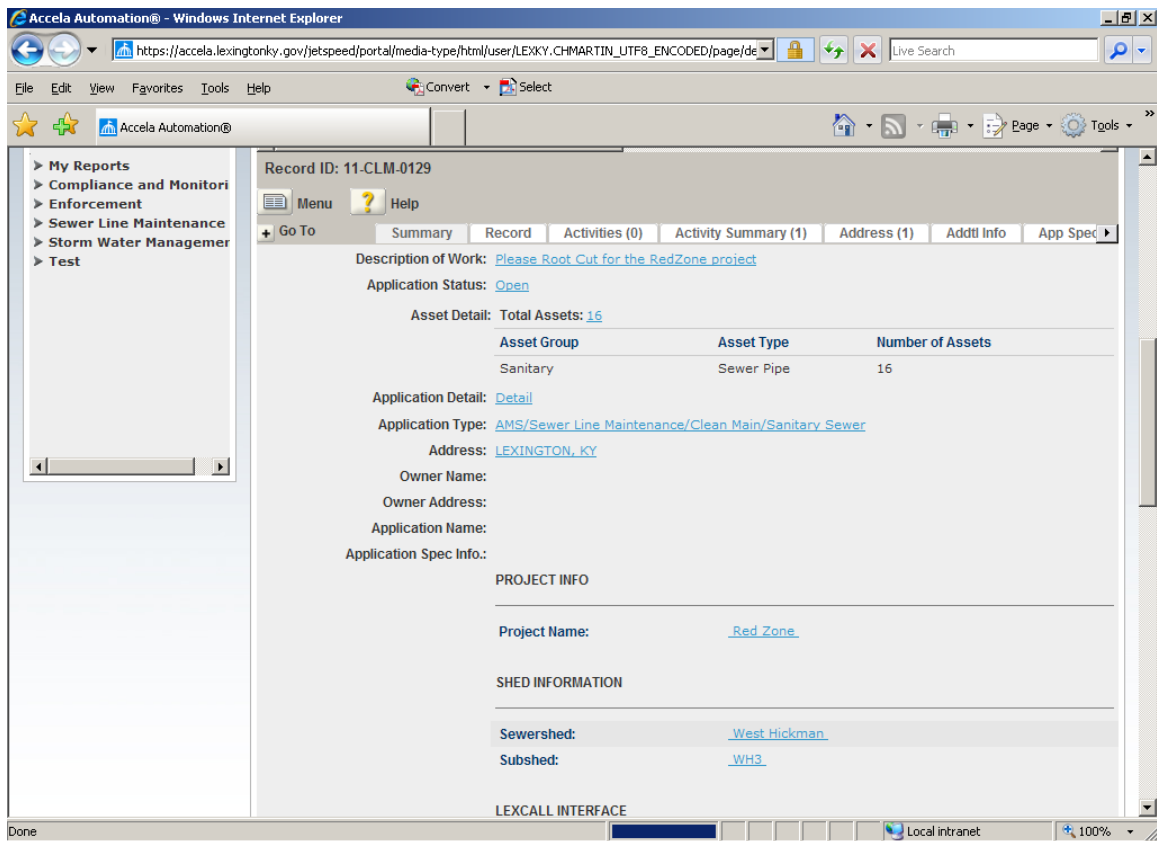


Figure D.2 Summary Tab - Open Root Cut Work Order

Accela Automation® - Windows Internet Explorer

https://accela.lexingtonky.gov/jetspeed/portal/media-type/html/user/LEKX.CHMARTIN\_UTF8\_ENCODED/page/de

File Edit View Favorites Tools Help

Accela Automation®

My Reports  
Compliance and Monitoring  
Enforcement  
Sewer Line Maintenance  
Storm Water Management  
Test

Record ID: 11-CLM-0129

Menu Save Reset Summary Help

Go To Summary Record Activities (0) Activity Summary (1) Address (1) Addtl Info App Specific

Record Type	AMS/Sewer Line Maintenance/Clean Main/Sanitary Sewer		Status	Open	Priority	Medium
ALT ID	11-CLM-0129	Balance	0.00	Channel Reported	LFUCG Staff	Created By ACA
Reference						
Detailed Description						
Please Root Cut for the RedZone project						
Created by Department	Current Department	Created by Staff	Current User	Created Date		
Sewer Line Maintenance		Kevin Wagner				
Assigned to Department	Current Department	Assigned to Staff	Current User	Assigned Date	Scheduled Date	
Sewer Line Maintenance		Robert Clay		11/11/2011	11/11/2011	
Closed by Department	Current Department	Closed by Staff	Current User	Closed Date		
--Select--		--Select--				

AMS Record Detail Form

My Tasks

My Task Searching

Menu Assign Claim Release Help My QuickQueries --Select--

Workflow Tasks (0) Inspections (0) Documents (0)

https://accela.lexingtonky.gov/portlets/cap/capDetail.do?mode=view&isRedirect=false&module=AMS

Local intranet 100%

Figure D.3 Record Tab - Open Root Cut Work Order

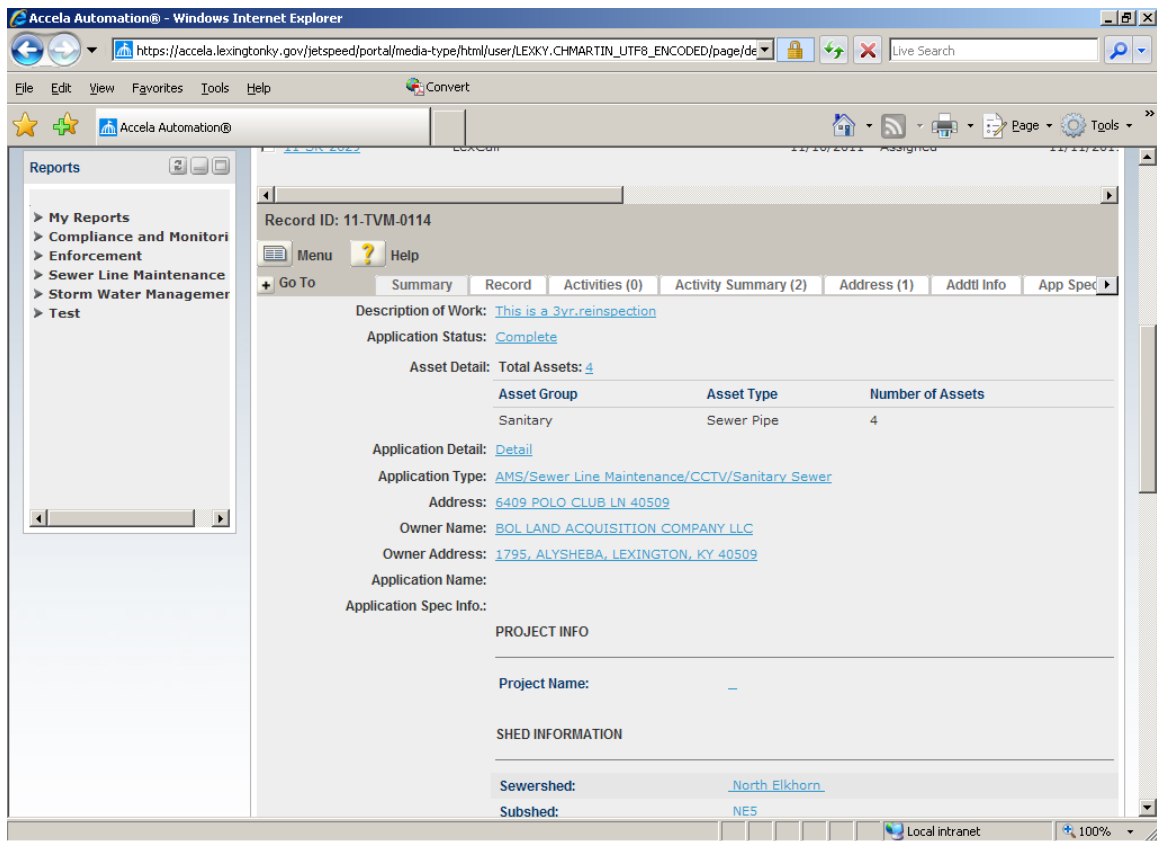


Figure D.4 Summary Tab – Completed 3-year CCTV Inspection

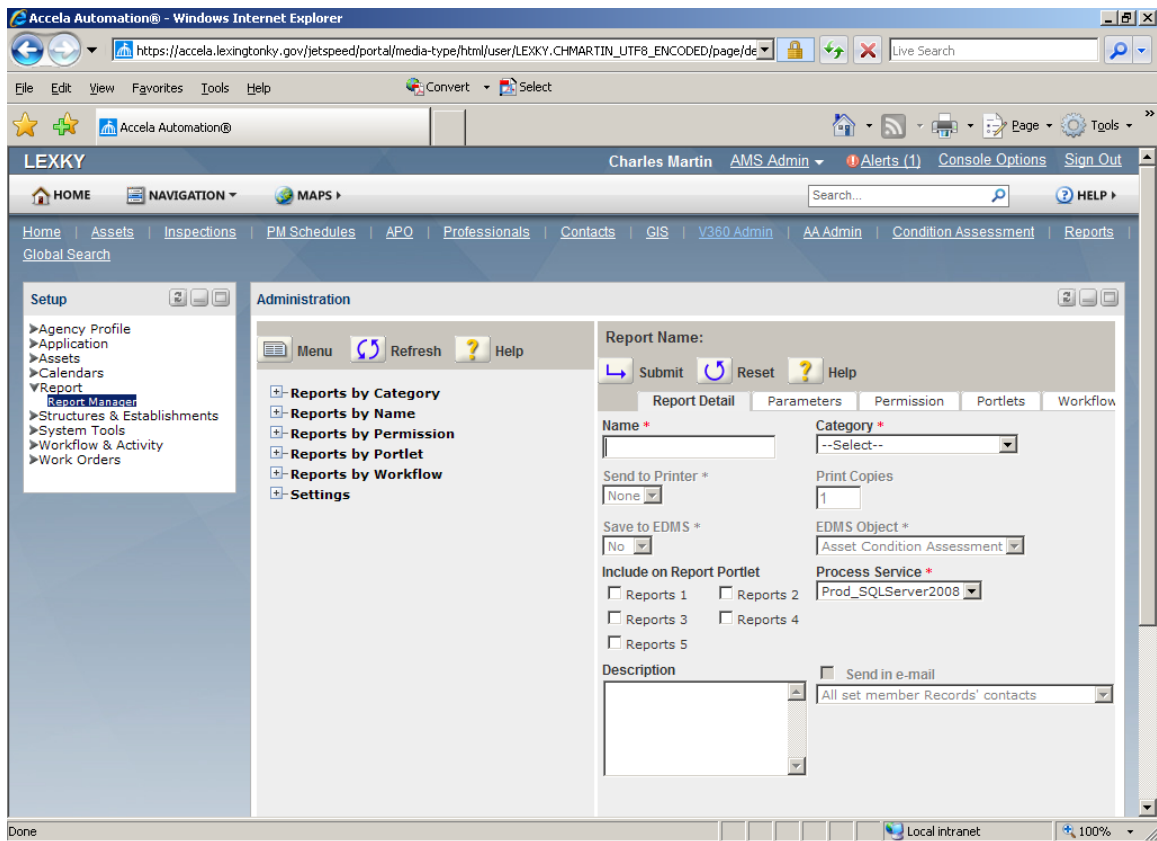


Figure D.5 Management Level Reporting Function Screen

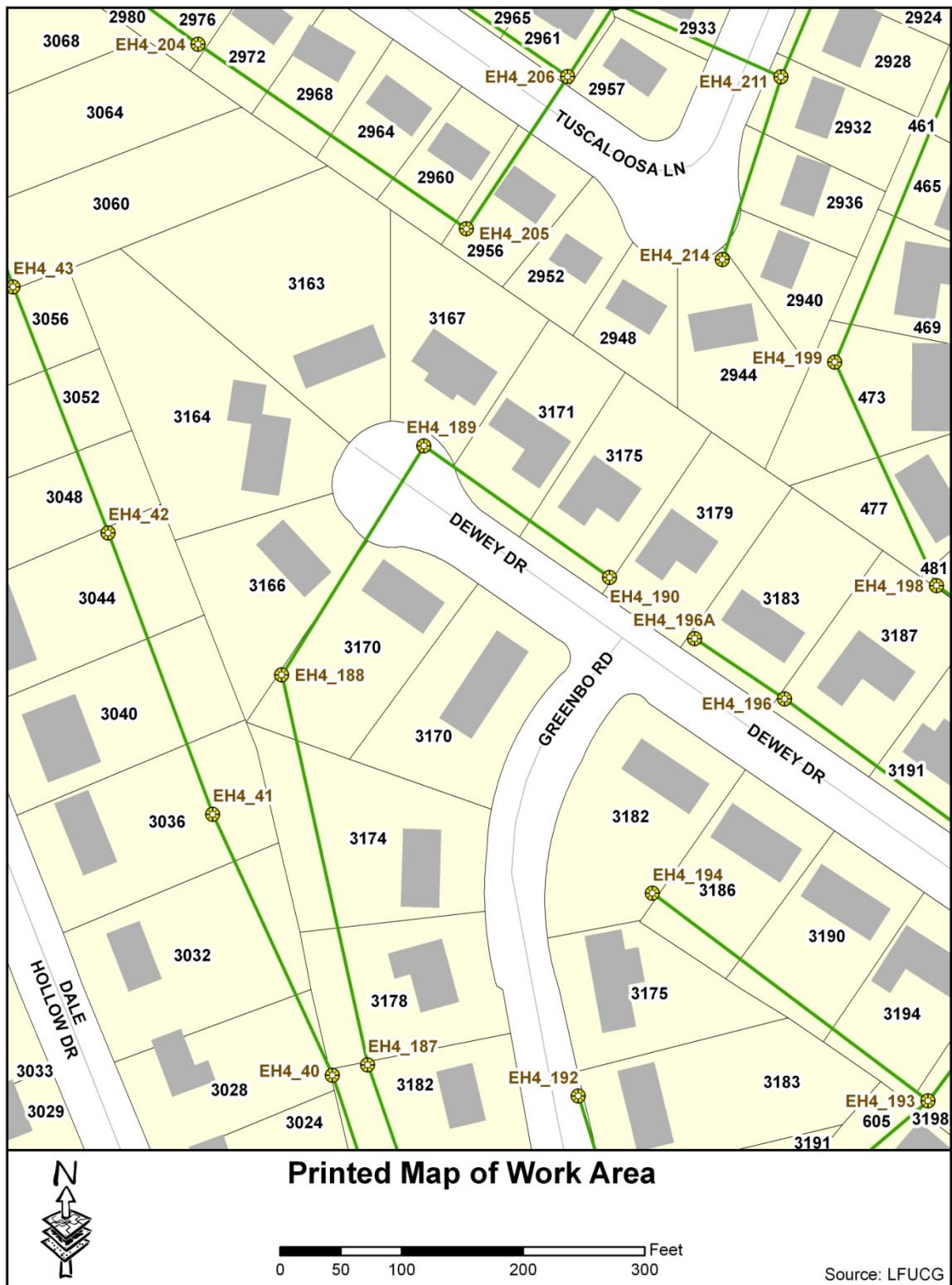


Figure D.6: Sample Sanitary Sewer Work Order Area Map

**Lexington-Fayette Urban County Government**  
**WEEKLY/MONTHLY SAFETY MEETING / TRAINING REPORT**  
**DIVISION: Water Quality**

Conducting Meeting: \_\_\_\_\_

(Please Print and Sign Name) \_\_\_\_\_

Date: \_\_\_\_\_

Supervisor/Trainer: \_\_\_\_\_

Section Name: \_\_\_\_\_

Section Number: \_\_\_\_\_

Topic: \_\_\_\_\_

Is this training for OSHA Compliance? Yes / No

Duration: \_\_\_\_\_ minutes

Signature	Employee #	Signature	Employee #
1. _____	_____	10. _____	_____
2. _____	_____	11. _____	_____
3. _____	_____	12. _____	_____
4. _____	_____	13. _____	_____
5. _____	_____	14. _____	_____
6. _____	_____	15. _____	_____
7. _____	_____	16. _____	_____
8. _____	_____	17. _____	_____
9. _____	_____	18. _____	_____

**COMMENTS:** Employees were asked and reported any safety problems with their work activities \_\_\_\_ YES \_\_\_\_ NO  
Below, briefly describe the points covered, the involvement of employees, recommendations, level of interest, etc. **Training for OSHA Compliance should include include an agenda or attachment of items covered.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Original: Safety, Health & Environmental Compliance, Risk Management (within two days of meeting)  
Copy: Division Director and /or Divisional File

**Lexington-Fayette Urban County Government**  
**WEEKLY/MONTHLY SAFETY MEETING / TRAINING REPORT**  
**DIVISION: Water Quality**

Conducting Meeting: \_\_\_\_\_  
(Please Print and Sign Name) \_\_\_\_\_ Date: \_\_\_\_\_

Supervisor/Trainer: \_\_\_\_\_ Section Name: \_\_\_\_\_  
Section Number: \_\_\_\_\_

Topic: \_\_\_\_\_

Is this training for OSHA Compliance? Yes / No                      Duration: \_\_\_\_\_ minutes

Signature	Employee #	Signature	Employee #
19. _____	_____	30. _____	_____
20. _____	_____	31. _____	_____
21. _____	_____	32. _____	_____
22. _____	_____	33. _____	_____
23. _____	_____	34. _____	_____
24. _____	_____	35. _____	_____
25. _____	_____	36. _____	_____
26. _____	_____	37. _____	_____
27. _____	_____	38. _____	_____
28. _____	_____	39. _____	_____
29. _____	_____	39. _____	_____

**COMMENTS:** Employees were asked and reported any safety problems with their work activities \_\_\_\_ YES \_\_\_\_ NO  
Below, briefly describe the points covered, the involvement of employees, recommendations, level of interest, etc. **Training for OSHA Compliance should include include an agenda or attachment of items covered.**

DATE: \_\_\_\_\_ DAY: \_\_\_\_\_

NAME	TOTAL HRS.	TIME CALLED IN; DESCRIPTION
------	------------	-----------------------------

NAME		
NAME		
NAME		

**Personnel on call.**

**DESCRIPTION OF JOB:**This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

VEHICLE #	MILEAGE
S07080	
S08004	
S08005	

**FOREMAN** \_\_\_\_\_

**ACTING** \_\_\_\_\_





**Appendix E**  
**Preventative Maintenance Cleaning List**

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
400 BL.OF BAMBERGER	TB1 388 TB1 471	215.15	Root	6 Months		JUNE-DECEMBER
	TB1 471 TB1 489A	199.85	Root	6 Months		JUNE-DECEMBER
	TB1 489A TB1 489	66.42	Root	6 Months		JUNE-DECEMBER
	TB1 489 TB1 393	151.00	Root	6 Months		JUNE-DECEMBER
	TB1 393 TB1 392	86.78	Root	6 Months		JUNE-DECEMBER
		<b>719.20</b>				
PENNEBAKER DRIVE 1015-1025	CR2 154A CR2 161	166.17	Grease	6 Months		FEBRUARY-AUGUST
	CR2 161 CR2 162	146.39	Grease	6 Months		FEBRUARY-AUGUST
	CR2 162 CR2 163	305.10	Grease	6 Months		FEBRUARY-AUGUST
	CR2 163 CR2 164	303.61	Grease	6 Months		FEBRUARY-AUGUST
	CR2 164 CR2 155A	161.78	Grease	6 Months		FEBRUARY-AUGUST
	CR2 155A CR2 165	77.42	Grease	6 Months		FEBRUARY-AUGUST
	CR2 165 CR2 294	326.04	Grease	6 Months		FEBRUARY-AUGUST
	CR2 294 CR2 292	118.19	Grease	6 Months		FEBRUARY-AUGUST
		<b>1,604.70</b>				
WARD DRIVE 934	CR2 210 CR2 209	345.67	Grease	6 Months		FEBRUARY-AUGUST
	CR2 209 CR2 197	298.60	Grease	6 Months		FEBRUARY-AUGUST
		<b>644.27</b>				
LOUDON AVENUE 109-130	CR3 18B CR3 18C	297.40	Grease	6 Months		FEBRUARY-AUGUST
	CR3 18C CR3 18D	180.66	Grease	6 Months		FEBRUARY-AUGUST
	CR3 18D CR3 18A	210.55	Grease	6 Months		FEBRUARY-AUGUST
	CR3 18A CR3 18	69.99	Grease	6 Months		FEBRUARY-AUGUST
		<b>758.60</b>				
100 & 200 BLOCK DEVONIA AVE	CR3 136A CR3 136	219.81	Root	6 Months		FEBRUARY-AUGUST
	CR3 141 CR3 136A	204.66	Root	6 Months		FEBRUARY-AUGUST
	CR3 141 CR3 142	195.56	Root	6 Months		FEBRUARY-AUGUST
	CR3 142 CR3 143	200.16	Root	6 Months		FEBRUARY-AUGUST
	CR3 143 CR3 144	214.25	Root	6 Months		FEBRUARY-AUGUST
	CR3 144 CR3 144A	133.43	Root	6 Months		FEBRUARY-AUGUST
	CR3 144A CR3 145	107.11	Root	6 Months		FEBRUARY-AUGUST
	CR3 145 CR3 146	256.39	Root	6 Months		FEBRUARY-AUGUST
	CR3 135A CR3 135	296.91	Root	6 Months		FEBRUARY-AUGUST
	CR3 155 CR3 135B	183.96	Root	6 Months		FEBRUARY-AUGUST
	CR3 155 CR3 156A	275.62	Root	6 Months		FEBRUARY-AUGUST
	CR3 156 CR3 157	250.93	Root	6 Months		FEBRUARY-AUGUST
	CR3 156A CR3 156	101.46	Root	6 Months		FEBRUARY-AUGUST
	CR3 157 CR3 157A	80.74	Root	6 Months		FEBRUARY-AUGUST
	CR3 157A CR3 158	332.22	Root	6 Months		FEBRUARY-AUGUST
		<b>3,053.21</b>				
PIERSON DRIVE -2217-700	CR4 180A CR4 175	333.47	Root	6 Months		FEBRUARY-AUGUST
	CR4 176 CR4 175	189.26	Root	6 Months		FEBRUARY-AUGUST
	CR4 175 CR4 174	104.28	Root	6 Months		FEBRUARY-AUGUST
	CR4 174 CR4 162	160.27	Root	6 Months		FEBRUARY-AUGUST
	CR4 162 CR4 161	256.58	Root	6 Months		FEBRUARY-AUGUST
		<b>1,043.86</b>				
GRIFFIN GATE 1500-1500	CR7 252 CR7 251	247.92	Grease	6 Months		JUNE-DECEMBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	CR7_251_CR7_250	252.61	Grease	6 Months		JUNE-DECEMBER
	CR7_250_CR7_242	154.01	Grease	6 Months		JUNE-DECEMBER
	CR7_242_CR7_241	167.67	Grease	6 Months		JUNE-DECEMBER
	CR7_241_CR7_188	139.40	Grease	6 Months		JUNE-DECEMBER
		<b>961.61</b>				
DEEPWOOD DRIVE 16-11	CR5_26 to CR5_25	143.10	Root	6 Months		FEBRUARY-AUGUST
	CR5_25 to CR5_24	282.14	Root	6 Months		FEBRUARY-AUGUST
	CR5_24 to CR5_23	130.73	Root	6 Months		FEBRUARY-AUGUST
	CR5_29C_CR5_29B	320.25	Root	6 Months		FEBRUARY-AUGUST
	CR5_29B_CR5_29A	318.90	Root	6 Months		FEBRUARY-AUGUST
		<b>1,195.12</b>				
NEWTOWN CIRCLE 805-808	CR7_126_CR7_125	226.64	Root	6 Months		JUNE-DECEMBER
	CR7_125_CR7_123	296.85	Root	6 Months		JUNE-DECEMBER
	CR7_123_CR7_121	254.56	Root	6 Months		JUNE-DECEMBER
	CR7_121_CR7_120	269.56	Root	6 Months		JUNE-DECEMBER
	CR7_120_CR7_119	271.01	Root	6 Months		JUNE-DECEMBER
	CR7_119_CR7_80	396.35	Root	6 Months		JUNE-DECEMBER
		<b>1,714.97</b>				
STANTON WAY 1946-1927 7 Lines	CR7_139_CR7_138	108.33	Grease	6 Months		JUNE-DECEMBER
	CR7_138_CR7_137	298.25	Grease	6 Months		JUNE-DECEMBER
	CR7_137_CR7_134	284.36	Grease	6 Months		JUNE-DECEMBER
	CR7_134_CR7_134A	45.55	Grease	6 Months		JUNE-DECEMBER
	CR7_134A_CR7_135	228.58	Grease	6 Months		JUNE-DECEMBER
	CR7_135_CR7_132	244.13	Grease	6 Months		JUNE-DECEMBER
	CR7_132_CR7_140	245.42	Grease	6 Months		JUNE-DECEMBER
		<b>1,454.62</b>				
SUMMERHILL DR	EH3_710_EH3_709	181.34	Grease	6 Months		JANUARY-JULY
	EH3_709_EH3_708	323.94	Grease	6 Months		JANUARY-JULY
	EH3_708_EH3_707	280.31	Grease	6 Months		JANUARY-JULY
	EH3_707_EH3_700	108.67	Grease	6 Months		JANUARY-JULY
	EH3_700_EH3_519	84.63	Grease	6 Months		JANUARY-JULY
	EH3_519_EH3_518	203.45	Grease	6 Months		JANUARY-JULY
	EH3_518_EH3_516	68.19	Grease	6 Months		JANUARY-JULY
	EH3_516_EH3_515	204.03	Grease	6 Months		JANUARY-JULY
	EH3_515_EH3_510	160.33	Grease	6 Months		JANUARY-JULY
	EH3_510_EH3_509	305.26	Grease	6 Months		JANUARY-JULY
	EH3_509_EH3_500	362.64	Grease	6 Months		JANUARY-JULY
	EH3_500_EH3_499	118.99	Grease	6 Months		JANUARY-JULY
	EH3_499_EH3_498	232.96	Grease	6 Months		JANUARY-JULY
	EH3_498_EH3_454	112.37	Grease	6 Months		JANUARY-JULY
		<b>2,747.11</b>				
1784-1788 FARMVIEW DR	EH2_10_EH2_1	119.45	Grease	6 Months		JANUARY-JULY
	EH2_2_EH2_1	169.94	Grease	6 Months		JANUARY-JULY
	EH2_1_EH2_233	299.35	Grease	6 Months		JANUARY-JULY
		<b>588.74</b>				
DARTMOOR DR.	NE1_248_NE1_247	355.63	Roots	6 Months		JANUARY-JULY

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	NE1_247_NE1_246A	81.39	Roots	6 Months		JANUARY-JULY
	NE1_246A_NE1_246	276.65	Roots	6 Months		JANUARY-JULY
	NE1_246_NE1_245	364.59	Roots	6 Months		JANUARY-JULY
	NE1_245_NE1_202A	203.49	Roots	6 Months		JANUARY-JULY
	NE1_202A_NE1_202	102.50	Roots	6 Months		JANUARY-JULY
	NE1_203_NE1_202	357.41	Roots	6 Months		JANUARY-JULY
	NE1_202_NE1_200	112.80	Roots	6 Months		JANUARY-JULY
	NE1_200_NE1_199	142.82	Roots	6 Months		JANUARY-JULY
	NE1_199_NE1_116	110.96	Roots	6 Months		JANUARY-JULY
		<b>2,108.24</b>				
JINGLE BELL LANE 1454-1526	NE2_155_NE2_154	113.03	Grease	6 Months		JANUARY-JULY
	NE2_154 to NE2_153	8.80	Grease	6 Months		JANUARY-JULY
	NE2_153_NE2_157	232.71	Grease	6 Months		JANUARY-JULY
	NE2_157_NE2_151	199.08	Grease	6 Months		JANUARY-JULY
	NE2_151_NE2_150	224.09	Grease	6 Months		JANUARY-JULY
	NE2_150_NE2_31D	101.91	Grease	6 Months		JANUARY-JULY
	NE2_31D_NE2_31C	187.66	Grease	6 Months		JANUARY-JULY
	NE2_31C_NE2_31	192.22	Grease	6 Months		JANUARY-JULY
	NE2_31_NE2_31B	354.81	Grease	6 Months		JANUARY-JULY
	NE2_31B to NE2_31A	75.93	Grease	6 Months		JANUARY-JULY
		<b>1,690.24</b>				
1708 JENNIFER RD-PHOENIX APTS.	NE2_76_NE2_75	234.18	Roots	6 Months		JANUARY-JULY
	NE2_75_NE2_24	315.81	Roots	6 Months		JANUARY-JULY
		<b>549.99</b>				
FOR 1893 MARIETTA DR	NE3_133_NE3_135	162.94	Roots	6 Months		JANUARY-JULY
	NE3_136_NE3_135	322.09	Roots	6 Months		JANUARY-JULY
	NE3_135_NE3_138	226.96	Roots	6 Months		JANUARY-JULY
	NE3_140_NE3_139	352.07	Roots	6 Months		JANUARY-JULY
	NE3_139_NE3_138	261.36	Roots	6 Months		JANUARY-JULY
	NE3_138_NE3_146	336.20	Roots	6 Months		JANUARY-JULY
		<b>1,661.62</b>				
641-632 CARDIFF LN	SE7_43_SE7_36	274.21	Roots	6 Months		JANUARY-JULY
	SE7_42_SE7_36	172.84	Roots	6 Months		JANUARY-JULY
	SE7_37_SE7_36	234.05	Roots	6 Months		JANUARY-JULY
	SE7_36_SE7_33	177.14	Roots	6 Months		JANUARY-JULY
	SE7_33_SE7_32	261.81	Roots	6 Months		JANUARY-JULY
		<b>1,120.05</b>				
RETRAC ROAD	SE7_226_SE7_225	294.25	Roots	6 Months		JANUARY-JULY
	SE7_225_SE7_214	274.67	Roots	6 Months		JANUARY-JULY
	SE7_214_SE7_213	265.97	Roots	6 Months		JANUARY-JULY
	SE7_213_SE7_212	352.58	Roots	6 Months		JANUARY-JULY
	SE7_212_SE7_211	200.39	Roots	6 Months		JANUARY-JULY
	SE7_379_SE7_377	317.97	Roots	6 Months		JANUARY-JULY
	SE7_378_SE7_377	176.56	Roots	6 Months		JANUARY-JULY
	SE7_377_SE7_376	331.05	Roots	6 Months		JANUARY-JULY
		<b>2,213.44</b>				

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
RUSSELL AVE./E BELL CT TO FOREST AVE	TB3 598 TB3 597	168.81	Grease	6 Months		MARCH-SEPTEMBER
	TB3 597 TB3 596	252.43	Grease	6 Months		MARCH-SEPTEMBER
	TB3 596 TB3 594	110.92	Grease	6 Months		MARCH-SEPTEMBER
	TB3 594 TB3 590	208.59	Grease	6 Months		MARCH-SEPTEMBER
	TB3 590 TB3 588	146.49	Grease	6 Months		MARCH-SEPTEMBER
	TB3 588 TB3 582	174.63	Grease	6 Months		MARCH-SEPTEMBER
	TB3 584 TB3 583	202.62	Grease	6 Months		MARCH-SEPTEMBER
	TB3 583 TB3 582	262.47	Grease	6 Months		MARCH-SEPTEMBER
	TB3 582 TB3 570A	183.33	Grease	6 Months		MARCH-SEPTEMBER
	TB3 570A TB3 570	49.65	Grease	6 Months		MARCH-SEPTEMBER
	TB3 570 TB3 569	111.96	Grease	6 Months		MARCH-SEPTEMBER
	TB3 569 TB3 568	269.76	Grease	6 Months		MARCH-SEPTEMBER
START HERE	TB3 568 TB3 567	151.49	Grease	6 Months		MARCH-SEPTEMBER
	TB3 567 TB3 566	138.60	Grease	6 Months		MARCH-SEPTEMBER
	TB3 566 TB3 565A	86.39	Grease	6 Months		MARCH-SEPTEMBER
	TB3 565A TB3 565	114.12	Grease	6 Months		MARCH-SEPTEMBER
	TB3 565 TB3 564	82.11	Grease	6 Months		MARCH-SEPTEMBER
	TB3 563A TB3 695	145.68	Grease	6 Months		MARCH-SEPTEMBER
	TB3 580 TB3 579	237.37	Grease	6 Months		MARCH-SEPTEMBER
	TB3 579 TB3 578	105.43	Grease	6 Months		MARCH-SEPTEMBER
	TB3 578 TB3 576	253.59	Grease	6 Months		MARCH-SEPTEMBER
		<b>3,456.44</b>				
GEORGETOWN ST WHITE TO ELM & GEORGETOWN ST TO CHARLES ON ELM	TB1 346 TB1 347	246.61	Grease	6 Months		JUNE-DECEMBER
	TB1 347 TB1 348	216.72	Grease	6 Months		JUNE-DECEMBER
	TB1 348 TB1 349	89.23	Grease	6 Months		JUNE-DECEMBER
	TB1 349 TB1 366	182.77	Grease	6 Months		JUNE-DECEMBER
	TB1 366 TB1 334	74.21	Grease	6 Months		JUNE-DECEMBER
	TB1 334 TB1 333	151.15	Grease	6 Months		JUNE-DECEMBER
	TB1 333 TB1 296A	48.25	Grease	6 Months		JUNE-DECEMBER
	TB1 296A TB1 296	183.83	Grease	6 Months		JUNE-DECEMBER
	TB1 296 TB1 297A	48.35	Grease	6 Months		JUNE-DECEMBER
	TB1 297A TB1 297	248.58	Grease	6 Months		JUNE-DECEMBER
	TB1 297 TB1 298A	206.56	Grease	6 Months		JUNE-DECEMBER
	TB1 298A TB1 298	50.22	Grease	6 Months		JUNE-DECEMBER
	TB1 298 TB1 301	169.11	Grease	6 Months		JUNE-DECEMBER
	TB1 302 to TB1 301	248.13	Grease	6 Months		JUNE-DECEMBER
	TB1 301 TB1 303	115.83	Grease	6 Months		JUNE-DECEMBER
	TB1 306 to TB1 304	171.19	Grease	6 Months		JUNE-DECEMBER
	TB1 304 to TB1 303A	12.41	Grease	6 Months		JUNE-DECEMBER
	TB1 303A to TB1 303	163.96	Grease	6 Months		JUNE-DECEMBER
	TB1 303 TB1 307	399.88	Grease	6 Months		JUNE-DECEMBER
	TB1 307 TB1 308	247.07	Grease	6 Months		JUNE-DECEMBER
		<b>3,274.06</b>				
W. THIRD ST 277-MARYLAND-277-600-277-709	TB1 274 to TB1 275	410.84	Grease	6 Months		JUNE-DECEMBER
	TB1 275 to TB1 276	222.74	Grease	6 Months		JUNE-DECEMBER
	TB1 193 to TB1 275	7.77	Grease	6 Months		JUNE-DECEMBER
	TB1 279 to TB1 278	192.98	Grease	6 Months		JUNE-DECEMBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	TB1 278 to TB1 277	153.10	Grease	6 Months		JUNE-DECEMBER
	TB1 277 to TB1 276	136.26	Grease	6 Months		JUNE-DECEMBER
		<b>1,123.69</b>				
LEXINGTON CEMETERY	TB1 441 TB1 440A	350.68	Grease	6 Months		JUNE-DECEMBER
	TB1 440A TB1 440	301.31	Grease	6 Months		JUNE-DECEMBER
	TB1 440 TB1 439	35.32	Grease	6 Months		JUNE-DECEMBER
	TB1 443 TB1 442	208.22	Grease	6 Months		JUNE-DECEMBER
	TB1 442 TB1 439	47.38	Grease	6 Months		JUNE-DECEMBER
	TB1 439 TB1 444	198.47	Grease	6 Months		JUNE-DECEMBER
	TB1 444 TB1 445	313.59	Grease	6 Months		JUNE-DECEMBER
	TB1 445 TB1 446	255.64	Grease	6 Months		JUNE-DECEMBER
	TB1 446 TB1 447	352.38	Grease	6 Months		JUNE-DECEMBER
	TB1 447 TB1 448	348.80	Grease	6 Months		JUNE-DECEMBER
	TB1 448 TB1 450	160.71	Grease	6 Months		JUNE-DECEMBER
	TB1 450 TB1 451	358.75	Grease	6 Months		JUNE-DECEMBER
		<b>2,931.25</b>				
N.LIME-FROM 3RD ST.-4TH ST.	TB3 200 TB3 116	192.90	Grease	6 Months		JUNE-DECEMBER
	TB3 116 TB3 115A	187.18	Grease	6 Months		JUNE-DECEMBER
	TB3 115A TB3 115	395.41	Grease	6 Months		JUNE-DECEMBER
	TB3 115 TB3 203	40.13	Grease	6 Months		JUNE-DECEMBER
	TB3 203 TB3 202	134.79	Grease	6 Months		JUNE-DECEMBER
	TB3 202 TB3 90	195.41	Grease	6 Months		JUNE-DECEMBER
		<b>1,145.82</b>				
MILL ST/MAXWELL TO HIGH/DONE BY TV CREW	TB3 29 TB3 28A	310.86	Grease	6 Months		JUNE-DECEMBER
	TB3 28A TB3 28	166.35	Grease	6 Months		JUNE-DECEMBER
	TB3 28 TB3 27A	136.62	Grease	6 Months		JUNE-DECEMBER
	TB3 27A TB3 26	323.12	Grease	6 Months		JUNE-DECEMBER
		<b>936.95</b>				
NELSON AVENUE	TB3 486 TB3 485	315.40	Grease	6 Months		JUNE-DECEMBER
	TB3 485 TB3 484	351.39	Grease	6 Months		JUNE-DECEMBER
		<b>666.79</b>				
UPPER ST - MAXWELL TO EUCLID AVE BELLA ROSE	TB2 234 TB2 235	306.92	Grease	6 Months		JUNE-DECEMBER
	TB2 235 TB2 236	357.05	Grease	6 Months		JUNE-DECEMBER
	TB2 236 TB2 219	251.53	Grease	6 Months		JUNE-DECEMBER
		<b>915.50</b>				
M.L.KING BLVD 4TH TO 5TH ST	TB3 216 TB3 213	7.81	Grease	6 Months		JUNE-DECEMBER
	TB3 213 TB3 212	215.47	Grease	6 Months		JUNE-DECEMBER
	TB3 212 TB3 211	240.18	Grease	6 Months		JUNE-DECEMBER
	TB3 211 TB3 210	144.55	Grease	6 Months		JUNE-DECEMBER
	TB3 210 TB3 209	189.95	Grease	6 Months		JUNE-DECEMBER
		<b>797.96</b>				
W.MAIN ST/BRDWY TO FELIX & FESTIVAL MARKET	TB3 152A TB3 152	169.21	Grease	6 Months		JUNE-DECEMBER
	TB3 152 TB3 157	130.63	Grease	6 Months		JUNE-DECEMBER
	TB3 157 TB3 157A	148.42	Grease	6 Months		JUNE-DECEMBER
	TB3 157A TB3 158	174.70	Grease	6 Months		JUNE-DECEMBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
		<b>622.96</b>				
S. LIMESTONE MAXWELL TO EUCLID	TB4_226_TB4_226A	39.90	Grease	6 Months		JUNE-DECEMBER
	TB4_226A_TB4_225A	220.30	Grease	6 Months		JUNE-DECEMBER
	TB4_225A_TB4_225B	142.12	Grease	6 Months		JUNE-DECEMBER
	TB4_225B_TB4_225C	116.96	Grease	6 Months		JUNE-DECEMBER
	TB4_225C_TB4_225	305.46	Grease	6 Months		JUNE-DECEMBER
	TB4_225_TB4_224	28.16	Grease	6 Months		JUNE-DECEMBER
	TB4_224_TB4_223	296.50	Grease	6 Months		JUNE-DECEMBER
	TB4_223_TB4_222	255.01	Grease	6 Months		JUNE-DECEMBER
	TB4_222_TB4_221D	233.38	Grease	6 Months		JUNE-DECEMBER
	TB4_221D_TB4_221	217.90	Grease	6 Months		JUNE-DECEMBER
		<b>1,855.69</b>				
PARK AVENUE 445-441	TB5_103_TB5_102A	309.15	Root	6 Months		MARCH-SEPTEMBER
	TB5_102B_TB5_102A	161.94	Root	6 Months		MARCH-SEPTEMBER
	TB5_102A_TB5_102	100.99	Root	6 Months		MARCH-SEPTEMBER
	TB5_102_TB5_101	203.11	Root	6 Months		MARCH-SEPTEMBER
	TB5_252_TB5_251	161.15	Root	6 Months		MARCH-SEPTEMBER
	TB5_251_TB5_101	106.37	Root	6 Months		MARCH-SEPTEMBER
	TB5_101_TB5_100	30.17	Root	6 Months		MARCH-SEPTEMBER
	TB5_100_TB5_112A	44.05	Root	6 Months		MARCH-SEPTEMBER
	TB5_112A_TB5_112	215.64	Root	6 Months		MARCH-SEPTEMBER
		<b>1,332.57</b>				
COLONY BOULEVARD CALL JUDY KEATING 269-5643	TB5_208_TB5_209B	134.47	Grease	6 Months		MARCH-SEPTEMBER
	TB5_209B_TB5_209	239.04	Root	6 Months	JUDY KEATING 269-	MARCH-SEPTEMBER
	TB5_209_TB5_210C	248.27	Root	6 Months		MARCH-SEPTEMBER
	TB5_210C_TB5_210	111.13	Root	6 Months		MARCH-SEPTEMBER
	TB5_210_TB5_205E	196.75	Root	6 Months		MARCH-SEPTEMBER
	TB5_205E_TB5_205B	104.71	Root	6 Months		MARCH-SEPTEMBER
	TB5_205B_TB5_205D	26.15	Root	6 Months		MARCH-SEPTEMBER
	TB5_205G_TB5_205D	34.61	Root	6 Months		MARCH-SEPTEMBER
	TB5_205D_TB5_205C	114.67	Root	6 Months		MARCH-SEPTEMBER
	TB5_207_TB5_206A	232.84	Root	6 Months		MARCH-SEPTEMBER
	TB5_206A_TB5_206	199.08	Root	6 Months		MARCH-SEPTEMBER
	TB5_206_TB5_205C	311.07	Root	6 Months		MARCH-SEPTEMBER
	TB5_205C_TB5_205	308.89	Root	6 Months		MARCH-SEPTEMBER
	TB5_205_TB5_204	73.91	Root	6 Months		MARCH-SEPTEMBER
		<b>2,335.59</b>				
350 HENRY CLAY BLVD./J.R.EWAN SCH. 6"	TB5_529_TB5_528	277.73	Grease	6 Months		MARCH-SEPTEMBER
		<b>277.73</b>				
4557 SARON DR	WH1_398_WH1_356	117.56	Grease	6 Months		MAY-NOVEMBER
	WH1_356_WH1_355	92.70	Grease	6 Months		MAY-NOVEMBER
	WH1_355_WH1_338	118.09	Grease	6 Months		MAY-NOVEMBER
		<b>328.35</b>				
4001 Nicholasville Rd to Tulane	WH10_236_WH10_235	337.32	Root	6 Months		MAY-NOVEMBER
	WH10_244_WH10_235	193.97	Root	6 Months		MAY-NOVEMBER
	WH10_239_WH10_238	412.60	Root	6 Months		MAY-NOVEMBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	WH10_238_WH10_235	241.47	Root	6 Months		MAY-NOVEMBER
	WH10_235_WH10_234	211.19	Root	6 Months		MAY-NOVEMBER
	WH10_234_WH10_233	166.73	Root	6 Months		MAY-NOVEMBER
	WH10_233_WH10_232	191.43	Root	6 Months		MAY-NOVEMBER
	WH10_232_WH10_221	279.45	Root	6 Months		MAY-NOVEMBER
	WH10_230_WH10_229	204.90	Root	6 Months		MAY-NOVEMBER
	WH10_229_WH10_228	226.48	Root	6 Months		MAY-NOVEMBER
	WH10_228_WH10_227	277.70	Root	6 Months		MAY-NOVEMBER
	WH10_227_WH10_221	184.94	Root	6 Months		MAY-NOVEMBER
	WH10_221_WH10_219	264.30	Root	6 Months		MAY-NOVEMBER
		<b>3,192.48</b>				
	WH10_457_WH10_456	413.60	Grease	6 Months		MAY-NOVEMBER
	WH10_456_WH10_453	51.29	Grease	6 Months		MAY-NOVEMBER
	WH10_455_WH10_454	284.93	Grease	6 Months		MAY-NOVEMBER
	WH10_454_WH10_453	253.66	Grease	6 Months		MAY-NOVEMBER
	WH10_453_WH10_452	248.86	Grease	6 Months		MAY-NOVEMBER
	WH10_452_WH10_451	248.33	Grease	6 Months		MAY-NOVEMBER
	WH10_451_WH10_450	198.26	Grease	6 Months		MAY-NOVEMBER
	WH10_450_WH10_401	127.35	Grease	6 Months		MAY-NOVEMBER
	WH10_736_WH10_735	242.94	Grease	6 Months		MAY-NOVEMBER
	WH10_735_WH10_734	355.73	Grease	6 Months		MAY-NOVEMBER
	WH10_734_WH10_733	270.43	Grease	6 Months		MAY-NOVEMBER
	WH10_733_WH10_732	280.27	Grease	6 Months		MAY-NOVEMBER
	WH10_732_WH10_731	112.73	Grease	6 Months		MAY-NOVEMBER
	WH10_731_WH10_730	180.30	Grease	6 Months		MAY-NOVEMBER
	WH10_730_WH10_729	155.82	Grease	6 Months		MAY-NOVEMBER
	WH10_729_WH10_728	249.31	Grease	6 Months		MAY-NOVEMBER
	WH10_728_WH10_727	230.06	Grease	6 Months		MAY-NOVEMBER
	WH10_727_WH10_726	104.01	Grease	6 Months		MAY-NOVEMBER
	WH10_726_WH10_725	307.76	Grease	6 Months		MAY-NOVEMBER
	WH10_725_WH10_404	58.47	Grease	6 Months		MAY-NOVEMBER
	WH10_404_WH10_403	272.65	Grease	6 Months		MAY-NOVEMBER
	WH10_403_WH10_402	308.73	Grease	6 Months		MAY-NOVEMBER
	WH10_402A_WH10_401	208.02	Grease	6 Months		MAY-NOVEMBER
	WH10_402_WH10_402A	101.89	Grease	6 Months		MAY-NOVEMBER
	WH10_401_WH10_398	242.04	Grease	6 Months		MAY-NOVEMBER
	WH10_398_WH10_397	141.08	Grease	6 Months		MAY-NOVEMBER
	WH10_397_WH10_396	152.32	Grease	6 Months		MAY-NOVEMBER
	WH10_396_WH10_395	311.85	Grease	6 Months		MAY-NOVEMBER
	WH10_395_WH10_391	239.95	Grease	6 Months		MAY-NOVEMBER
	WH10_391_WH10_390	128.19	Grease	6 Months		MAY-NOVEMBER
	WH10_390_WH10_385	162.65	Grease	6 Months		MAY-NOVEMBER
	WH10_388_WH10_387	111.19	Grease	6 Months		MAY-NOVEMBER
	WH10_387_WH10_386	132.79	Grease	6 Months		MAY-NOVEMBER
	WH10_386_WH10_385	84.92	Grease	6 Months		MAY-NOVEMBER
	WH10_385_WH10_243	198.21	Grease	6 Months		MAY-NOVEMBER
	WH10_243_WH10_242	84.53	Grease	6 Months		MAY-NOVEMBER
	WH10_242_WH10_241	318.65	Grease	6 Months		MAY-NOVEMBER
	WH10_241_WH10_238	228.70	Grease	6 Months		MAY-NOVEMBER



## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
		<b>7,802.47</b>				
133-145 MALIBU DR	WH4_245C WH4_245B	143.90	Grease	6 Months		MAY-NOVEMBER
	WH4_245B WH4_245	175.97	Grease	6 Months		MAY-NOVEMBER
	WH4_245 WH4_244	124.88	Grease	6 Months		MAY-NOVEMBER
	WH4_244 WH4_243	266.39	Grease	6 Months		MAY-NOVEMBER
	WH4_243 WH4_242	163.33	Grease	6 Months		MAY-NOVEMBER
	WH4_242 WH4_181	338.49	Grease	6 Months		MAY-NOVEMBER
	WH4_178 WH4_179	222.12	Grease	6 Months		MAY-NOVEMBER
	WH4_179 WH4_180	216.87	Grease	6 Months		MAY-NOVEMBER
	WH4_180 WH4_181	282.40	Grease	6 Months		MAY-NOVEMBER
	WH4_181 WH4_182	189.62	Grease	6 Months		MAY-NOVEMBER
	WH4_182 WH4_183	216.32	Grease	6 Months		MAY-NOVEMBER
	WH4_183 WH4_184	162.42	Grease	6 Months		MAY-NOVEMBER
	WH4_184 WH4_185	269.88	Grease	6 Months		MAY-NOVEMBER
	WH4_185 WH4_186	282.59	Grease	6 Months		MAY-NOVEMBER
	WH4_186 WH4_187	265.18	Grease	6 Months		MAY-NOVEMBER
		<b>3,320.36</b>				
667 TATESWOOD DR @ RAINTREE/& BEECHMONT @ RAINTREE	WH5_336A WH5_336	102.52	Root	6 Months		MAY-NOVEMBER
	WH5_336 WH5_335	213.42	Root	6 Months		MAY-NOVEMBER
	WH5_335 WH5_334	163.93	Root	6 Months		MAY-NOVEMBER
	WH5_334 WH5_333	157.53	Root	6 Months		MAY-NOVEMBER
	WH5_333 WH5_332	107.40	Root	6 Months		MAY-NOVEMBER
	WH5_332 WH5_331	67.32	Root	6 Months		MAY-NOVEMBER
	WH5_331 WH5_330	176.27	Root	6 Months		MAY-NOVEMBER
	WH5_395A WH5_395	193.68	Root	6 Months		MAY-NOVEMBER
	WH5_395 WH5_394	198.35	Root	6 Months		MAY-NOVEMBER
	WH5_394 WH5_393	277.76	Root	6 Months		MAY-NOVEMBER
	WH5_393 WH5_391	268.24	Root	6 Months		MAY-NOVEMBER
	WH5_391 WH5_389	266.22	Root	6 Months		MAY-NOVEMBER
	WH5_389 WH5_388	196.58	Root	6 Months		MAY-NOVEMBER
	WH5_388 WH5_342	159.02	Root	6 Months		MAY-NOVEMBER
	WH5_342 WH5_323C	228.53	Root	6 Months		MAY-NOVEMBER
	WH5_323C WH5_330	18.96	Root	6 Months		MAY-NOVEMBER
		<b>2,795.73</b>				
PEPPERHILL RD.	WH5_100E WH5_100D	209.88	Root	6 Months		JANUARY-JULY
	WH5_100D WH5_100C	199.13	Root	6 Months		JANUARY-JULY
		<b>409.01</b>				
MONTAVESTA ROAD 1065-1081	WH5_8 WH5_7	210.64	Root	6 Months		JANUARY-JULY
	WH5_7 WH5_6	188.63	Root	6 Months		JANUARY-JULY
	WH5_6 WH5_9B	69.51	Root	6 Months		JANUARY-JULY
	WH5_9B WH5_9A	85.99	Root	6 Months		JANUARY-JULY
	WH5_9A WH5_5	354.09	Root	6 Months		JANUARY-JULY
	WH5_5 WH5_3A	187.61	Root	6 Months		JANUARY-JULY
	WH5_9 WH5_5	154.77	Root	6 Months		JANUARY-JULY
	WH5_4B WH5_4A	57.39	Root	6 Months		JANUARY-JULY
	WH5_4A WH5_5	112.45	Root	6 Months		JANUARY-JULY
		<b>1,421.08</b>				

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
2072-2065 LAKESIDE DR	WH6_123_WH6_122A	30.64	Root	6 Months		MARCH-SEPTEMBER
	WH6_122A_WH6_122	141.37	Root	6 Months		MARCH-SEPTEMBER
	WH6_122_WH6_121	194.31	Root	6 Months		MARCH-SEPTEMBER
	WH6_121_WH6_120	177.85	Root	6 Months		MARCH-SEPTEMBER
	WH6_120_WH6_119	281.83	Root	6 Months		MARCH-SEPTEMBER
		<b>826.00</b>				
ELDERBERRY COURT 2405	WH7_158_WH7_157	194.90	Root	6 Months		JANUARY-JULY
	WH7_157_WH7_156	72.60	Root	6 Months		JANUARY-JULY
	WH7_156_WH7_155	95.36	Root	6 Months		JANUARY-JULY
		<b>362.86</b>				
LONDONDERRY DR. FOR SAVOY RD	WR1_73_WR1_78	288.78	Root	6 Months		APRIL-OCTOBER
	WR1_78_WR1_81A	294.83	Root	6 Months		APRIL-OCTOBER
	WR1_81A_WR1_81	58.22	Root	6 Months		APRIL-OCTOBER
	WR1_81_WR1_71	331.92	Root	6 Months		APRIL-OCTOBER
	WR1_71_WR1_291	153.02	Root	6 Months		APRIL-OCTOBER
	WR1_291_WR1_290	217.26	Root	6 Months		APRIL-OCTOBER
	WR1_290_WR1_289	186.61	Root	6 Months		APRIL-OCTOBER
	WR1_289_WR1_288A	161.21	Root	6 Months		APRIL-OCTOBER
	WR1_288A_WR1_288	259.47	Root	6 Months		APRIL-OCTOBER
	WR1_288_WR1_285B	276.15	Root	6 Months		APRIL-OCTOBER
	WR1_285B_WR1_285A	250.96	Root	6 Months		APRIL-OCTOBER
		<b>2,478.43</b>				
PINE MEADOWS RD.1403-1429	WR1_213B_WR1_210	316.92	Grease	6 Months		APRIL-OCTOBER
	WR1_210_WR1_209	294.37	Grease	6 Months		APRIL-OCTOBER
	WR1_209_WR1_213A	301.17	Grease	6 Months		APRIL-OCTOBER
	WR1_213A_WR1_207A	192.51	Grease	6 Months		APRIL-OCTOBER
	WR1_207A_WR1_207	328.17	Grease	6 Months		APRIL-OCTOBER
	WR1_207_WR1_206	306.20	Grease	6 Months		APRIL-OCTOBER
	WR1_206_WR1_205	298.42	Grease	6 Months		APRIL-OCTOBER
	WR1_205_WR1_204	229.18	Grease	6 Months		APRIL-OCTOBER
	WR1_204_WR1_203	113.02	Grease	6 Months		APRIL-OCTOBER
	WR1_203_WR1_202	82.70	Grease	6 Months		APRIL-OCTOBER
		<b>2,462.66</b>				
1500 BLK.ROANOKE DRIVE	WR2_70_WR2_64A	174.02	Root	6 Months		APRIL-OCTOBER
	WR2_64A_WR2_64	244.14	Root	6 Months		APRIL-OCTOBER
	WR2_67A_WR2_67	232.03	Root	6 Months		APRIL-OCTOBER
	WR2_67_WR2_66	320.33	Root	6 Months		APRIL-OCTOBER
	WR2_66_WR2_65	188.76	Root	6 Months		APRIL-OCTOBER
	WR2_65_WR2_64	96.80	Root	6 Months		APRIL-OCTOBER
	WR2_64_WR2_58	307.88	Root	6 Months		APRIL-OCTOBER
	WR2_58_WR2_214	131.50	Root	6 Months		APRIL-OCTOBER
	WR2_214_WR2_213B	175.88	Root	6 Months		APRIL-OCTOBER
	WR2_213B_WR2_51	37.16	Root	6 Months		APRIL-OCTOBER
	WR2_60_WR2_59	284.43	Root	6 Months		APRIL-OCTOBER
	WR2_59A_WR2_58B	271.13	Root	6 Months		APRIL-OCTOBER
	WR2_59_WR2_59A	301.47	Root	6 Months		APRIL-OCTOBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	WR2_58B_WR2_58	32.78	Root	6 Months		APRIL-OCTOBER
		<b>2,798.31</b>				
VERSAILLES RD./BEHIND BURGER KING	WR2_27N_WR2_27S	203.23	Grease	6 Months		APRIL-OCTOBER
	WR2_27S_WR2_27MM	45.75	Grease	6 Months		APRIL-OCTOBER
	WR2_27MM_WR2_27M	152.74	Grease	6 Months		APRIL-OCTOBER
	WR2_27M_WR2_27L	122.65	Grease	6 Months		APRIL-OCTOBER
	WR2_27L_WR2_27I	78.01	Grease	6 Months		APRIL-OCTOBER
	WR2_27J_WR2_27I	87.39	Grease	6 Months		APRIL-OCTOBER
	WR2_27I_WR2_27H	200.66	Grease	6 Months		APRIL-OCTOBER
	WR2_27H_WR2_32	188.35	Grease	6 Months		APRIL-OCTOBER
	WR2_36_WR2_35A	158.17	Grease	6 Months		APRIL-OCTOBER
	WR2_35A_WR2_35	249.38	Grease	6 Months		APRIL-OCTOBER
	WR2_35_WR2_32	201.74	Grease	6 Months		APRIL-OCTOBER
	WR2_32_WR2_27C	37.93	Grease	6 Months		APRIL-OCTOBER
	WR2_27C_WR2_27	67.87	Grease	6 Months		APRIL-OCTOBER
		<b>1,793.87</b>				
POPPY LANE 2107-2108	WR3_103B_WR3_103A	246.54	Root	6 Months		APRIL-OCTOBER
	WR3_103A_WR3_3000	129.46	Root	6 Months		APRIL-OCTOBER
	WR3_3000_WR3_104	20.08	Root	6 Months		APRIL-OCTOBER
	WR3_104_WR3_102A	24.71	Root	6 Months		APRIL-OCTOBER
	WR3_102A_WR3_102	218.30	Root	6 Months		APRIL-OCTOBER
		<b>639.09</b>				
225 WESTWOOD COURT	WR4_64_WR4_63	170.72	Root	6 Months		MAY-NOVEMBER
	WR4_63_WR4_62	197.16	Root	6 Months		MAY-NOVEMBER
	WR4_62_WR4_61	160.78	Root	6 Months		MAY-NOVEMBER
	WR4_61_WR4_60	299.18	Root	6 Months		MAY-NOVEMBER
		<b>827.84</b>				
TERRACE VIEW DRIVE 758-PINE MEADOWS PARK	WR1_183B_WR1_183A	229.26	Grease	6 Months		APRIL-OCTOBER
	WR1_183A_WR1_183	55.67	Grease	6 Months		APRIL-OCTOBER
	WR1_183_WR1_182	253.45	Grease	6 Months		APRIL-OCTOBER
	WR1_182_WR1_180	186.15	Grease	6 Months		APRIL-OCTOBER
	WR1_180_WR1_174A	147.57	Grease	6 Months		APRIL-OCTOBER
	WR1_174A_WR1_174	78.90	Grease	6 Months		APRIL-OCTOBER
	WR1_174_WR1_171A	185.82	Grease	6 Months		APRIL-OCTOBER
		<b>1,136.82</b>				
STANLEY AVE.TO ELAINE DR.(17 LINES)	WR6_101B_WR6_101A	372.62	Grease	6 Months		JANUARY-JULY
	WR6_101A_WR6_100	158.49	Grease	6 Months		JANUARY-JULY
	WR6_100_WR6_99	22.69	Grease	6 Months		JANUARY-JULY
	WR6_99_WR6_100A	286.77	Grease	6 Months		JANUARY-JULY
	WR6_100A_WR6_98D	200.46	Grease	6 Months		JANUARY-JULY
	WR6_98D_WR6_98	38.28	Grease	6 Months		JANUARY-JULY
	WR6_98_WR6_97	194.82	Grease	6 Months		JANUARY-JULY
	WR6_97_WR6_96	378.85	Grease	6 Months		JANUARY-JULY
	WR6_96_WR6_95	299.08	Grease	6 Months		JANUARY-JULY
	WR6_95_WR6_94A	137.28	Grease	6 Months		JANUARY-JULY
	WR6_94A_WR6_94	215.82	Grease	6 Months		JANUARY-JULY

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	WR6_94_WR6_93	246.62	Grease	6 Months		JANUARY-JULY
	WR6_93_WR6_92	129.73	Grease	6 Months		JANUARY-JULY
	WR6_92_WR6_91	100.47	Grease	6 Months		JANUARY-JULY
		<b>2,781.98</b>				
2220-2134 NICHOLASVILLE RD	WR7_128M_WR7_128L	290.60	Grease	6 Months		MAY-NOVEMBER
	WR7_128L_WR7_128E	124.17	Grease	6 Months		MAY-NOVEMBER
	WR7_128E_WR7_128D	109.06	Grease	6 Months		MAY-NOVEMBER
	WR7_128D_WR7_128C	30.02	Grease	6 Months		MAY-NOVEMBER
	WR7_128C_WR7_128B	156.17	Grease	6 Months		MAY-NOVEMBER
	WR7_128B_WR7_128A	266.70	Grease	6 Months		MAY-NOVEMBER
	WR7_128A_WR7_128	267.43	Grease	6 Months		MAY-NOVEMBER
		<b>1,244.15</b>				
2552 NICHOLASVILLE RD/MOORE DR TO DENNIS DR	WR7_168_WR7_169	278.02	Grease	6 Months		MAY-NOVEMBER
	WR7_169_WR7_166	223.07	Grease	6 Months		MAY-NOVEMBER
	WR7_166_WR7_165	265.22	Grease	6 Months		MAY-NOVEMBER
	WR7_165_WR7_163A	218.48	Grease	6 Months		MAY-NOVEMBER
	WR7_163A_WR7_163	275.07	Grease	6 Months		MAY-NOVEMBER
	WR7_163_WR7_162A	133.49	Grease	6 Months		MAY-NOVEMBER
	WR7_162A_WR7_162	227.51	Grease	6 Months		MAY-NOVEMBER
	WR7_162_WR7_160	32.54	Grease	6 Months		MAY-NOVEMBER
	WR7_160_WR7_159	268.40	Grease	6 Months		MAY-NOVEMBER
	WR7_159_WR7_158	195.47	Grease	6 Months		MAY-NOVEMBER
	WR7_158_WR7_148	99.72	Grease	6 Months		MAY-NOVEMBER
	WR7_148_WR7_147	180.65	Grease	6 Months		MAY-NOVEMBER
	WR7_147_WR7_147B	82.88	Grease	6 Months		MAY-NOVEMBER
	WR7_147B_WR7_147A	208.96	Grease	6 Months		MAY-NOVEMBER
		<b>2,689.48</b>				
905 MCCLAIN DR	CR3_26_CR3_25	312.22	Grease	6 Months		FEBRUARY-AUGUST
	CR3_25_CR3_24	264.71	Grease	6 Months		FEBRUARY-AUGUST
	CR3_24_CR3_23	233.88	Grease	6 Months		FEBRUARY-AUGUST
	CR3_23_CR3_22	151.29	Grease	6 Months		FEBRUARY-AUGUST
		<b>962.10</b>				
900 RUSSELL CAVE RD	CR3_39A_CR3_39	180.52	Grease	6 Months		FEBRUARY-AUGUST
	CR3_39_CR3_38	296.72	Grease	6 Months		FEBRUARY-AUGUST
	CR3_38_CR3_28	299.81	Grease	6 Months		FEBRUARY-AUGUST
	CR3_28_CR3_22A	198.16	Grease	6 Months		FEBRUARY-AUGUST
	CR3_22A_CR3_22	384.08	Grease	6 Months		FEBRUARY-AUGUST
		<b>1,359.29</b>				
1002 KEES RD	CR3_37_CR3_36	330.78	Grease	6 Months		FEBRUARY-AUGUST
	CR3_36_CR3_32	183.73	Grease	6 Months		FEBRUARY-AUGUST
	CR3_32_CR3_31	155.75	Grease	6 Months		FEBRUARY-AUGUST
	CR3_31_CR3_30	104.89	Grease	6 Months		FEBRUARY-AUGUST
	CR3_30_CR3_29A	301.32	Grease	6 Months		FEBRUARY-AUGUST
	CR3_29A_CR3_29	272.67	Grease	6 Months		FEBRUARY-AUGUST
	CR3_29_CR3_28	133.43	Grease	6 Months		FEBRUARY-AUGUST
		<b>1,482.57</b>				

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
295 N. CIRCLE RD (JALAPEÑOS)	CR4_14B_CR4_14A	75.72	Grease	6 Months		FEBRUARY-AUGUST
	CR4_14C_CR4_14A	172.95	Grease	6 Months		FEBRUARY-AUGUST
	CR4_14D_CR4_14B	188.75	Grease	6 Months		FEBRUARY-AUGUST
	CR4_14A_CR4_14	65.68	Grease	6 Months		FEBRUARY-AUGUST
		<b>503.10</b>				
1115 ANDERSON ST	TB1_157_TB1_156	92.46	Grease	6 Months		APRIL-OCTOBER
	TB1_158_TB1_157	198.67	Grease	6 Months		APRIL-OCTOBER
	TB1_163_TB1_157	290.17	Grease	6 Months		APRIL-OCTOBER
	TB1_162_TB1_163	153.81	Grease	6 Months		APRIL-OCTOBER
	TB1_164_TB1_163	301.89	Grease	6 Months		APRIL-OCTOBER
	TB1_166_TB1_164	333.80	Grease	6 Months		APRIL-OCTOBER
	TB1_165_TB1_164	223.53	Grease	6 Months		APRIL-OCTOBER
		<b>1,594.33</b>				
711 CONTRACT ST	CR6_157_CR6_156	265.88	Rags	6 Months		MARCH-SEPTEMBER
	CR6_157A_CR6_157	303.85	Rags	6 Months		MARCH-SEPTEMBER
		<b>569.73</b>				
800 MEADOW LN	CR6_155_CR6_154	347.17	Rags	6 Months		MARCH-SEPTEMBER
		<b>347.17</b>				
1163 FLOYD DR	NE1_122_NE1_121	337.11	Grease	6 Months		MARCH-SEPTEMBER
	NE1_123_NE1_122	72.74	Grease	6 Months		MARCH-SEPTEMBER
	NE1_122A_NE1_122	101.95	Grease	6 Months		MARCH-SEPTEMBER
	NE1_122B_NE1_122A	110.32	Grease	6 Months		MARCH-SEPTEMBER
	NE1_124_NE1_123	95.98	Grease	6 Months		MARCH-SEPTEMBER
	NE1_125_NE1_124	309.50	Grease	6 Months		MARCH-SEPTEMBER
		<b>1,027.60</b>				
401 EMERSON	CR5_105_CR5_104	204.25	Slush	6 Months		MARCH-SEPTEMBER
	CR5_106_CR5_105	346.03	Slush	6 Months		MARCH-SEPTEMBER
	CR5_107_CR5-106	334.33	Slush	6 Months		MARCH-SEPTEMBER
		<b>884.61</b>				
2366 ALLEN DR	CR4_404_CR4_403	256.60	Grease	6 Months		FEBRUARY-AUGUST
	CR4_405_CR4_404	209.15	Grease	6 Months		FEBRUARY-AUGUST
		<b>465.75</b>				
2051 RICHMOND RD	WH7_419A_WH7_419	251.88	Grease	6 Months		MARCH-SEPTEMBER
	WH7_420_WH7_419A	244.09	Grease	6 Months		MARCH-SEPTEMBER
	WH7_422_WH7_420	284.21	Grease	6 Months		MARCH-SEPTEMBER
	WH7_420A_WH7_420	162.87	Grease	6 Months		MARCH-SEPTEMBER
	WH7_431_WH7_420A	178.00	Grease	6 Months		MARCH-SEPTEMBER
		<b>1,121.05</b>				
2048 LARKSPUR DR	WR3_80_WR3_76	233.34	Roots	6 Months		APRIL-OCTOBER
	WR3_77_WR3_76	157.69	Roots	6 Months		APRIL-OCTOBER
	WR3_78_WR3_77	295.48	Roots	6 Months		APRIL-OCTOBER
	WR3_79_WR3_78	134.22	Roots	6 Months		APRIL-OCTOBER
		<b>820.73</b>				
1825 HOPEMONT CT	SE5_69_SE5_68	349.30	Roots	6 Months		APRIL-OCTOBER

## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	SE5_76 SE5_69	372.90	Roots	6 Months		APRIL-OCTOBER
	SE5_68 SE5_58	315.43	Roots	6 Months		APRIL-OCTOBER
		<b>1,037.63</b>				
3908 PALOMAR COVE	SE1_149 SE1_148	167.55	Grease	6 Months		APRIL-OCTOBER
	SE1_150 SE1_149	106.31	Grease	6 Months		APRIL-OCTOBER
	SE1_148 SE1_146	114.39	Grease	6 Months		APRIL-OCTOBER
	SE1_146 SE1_143	101.22	Grease	6 Months		APRIL-OCTOBER
	SE1_143 SE1_144	119.70	Grease	6 Months		APRIL-OCTOBER
	SE1_143 SE1_142	24.41	Grease	6 Months		APRIL-OCTOBER
	SE1_142 SE1_141	210.51	Grease	6 Months		APRIL-OCTOBER
	SE1_135 SE1_134	119.45	Grease	6 Months		APRIL-OCTOBER
	SE1_141 SE1_135	127.49	Grease	6 Months		APRIL-OCTOBER
	SE1_134 SE1_132	191.10	Grease	6 Months		APRIL-OCTOBER
	SE1_132 SE1_131	158.11	Grease	6 Months		APRIL-OCTOBER
	SE1_131 SE1_130	129.11	Grease	6 Months		APRIL-OCTOBER
	SE_130 SE1_129	96.26	Grease	6 Months		APRIL-OCTOBER
	SE1_129 SE1_5013	118.01	Grease	6 Months		APRIL-OCTOBER
		<b>1,783.62</b>				
3124 OLD CROW CT	WH5_65A WH5_112B	239.99	Roots	6 Months		JANUARY-JULY
	WH5_112A WH5_112B	54.63	Roots	6 Months		JANUARY-JULY
	WH5_112 WH5_112A	123.91	Roots	6 Months		JANUARY-JULY
	WH5_113 WH5_112	282.28	Roots	6 Months		JANUARY-JULY
	WH5_110 WH5_112	136.61	Roots	6 Months		JANUARY-JULY
	WH5_65 WH5_65A	188.57	Roots	6 Months		JANUARY-JULY
	WH5_68B WH5_65	214.64	Roots	6 Months		JANUARY-JULY
	WH5_68 WH5_68B	243.20	Roots	6 Months		JANUARY-JULY
	WH5_65A WH5_64	223.62	Roots	6 Months		JANUARY-JULY
		<b>1,707.45</b>				
1050 CREEKWOOD DR	WH6_759A WH6_759	66.58	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759B WH6_759A	82.13	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759C WH6_759B	218.63	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759D WH6_759C	259.13	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759E WH6_759D	235.94	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759F WH6_759E	167.27	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759G WH6_759F	183.94	Grease	6 Months		MARCH-SEPTEMBER
	WH6_759H WH6_759G	188.08	Grease	6 Months		MARCH-SEPTEMBER
		<b>1,401.70</b>				
219 CATALPA RD	TB5_364 TB5_390	313.78	Grease	6 Months		MARCH-SEPTEMBER
	TB5_389 TB5_390A	304.76	Grease	6 Months		MARCH-SEPTEMBER
	TB5_390A TB5_390	255.55	Grease	6 Months		MARCH-SEPTEMBER
	TB5_390 TB5_392A	201.00	Grease	6 Months		MARCH-SEPTEMBER
	TB5_392A TB5_393	156.17	Grease	6 Months		MARCH-SEPTEMBER
		<b>1,231.26</b>				
500 CULPEPPER	WH7_485 WH7_484	191.71	Grease	6 Months		MARCH-SEPTEMBER
	WH7_486 WH7_485	200.98	Grease	6 Months		MARCH-SEPTEMBER
	WH7_487 WH7_486	235.27	Grease	6 Months		MARCH-SEPTEMBER



## Annual PM List

Address	From MH to Manhole	GIS Length (LF)	Type	Frequency	Prior Contact	Month Due
	WH7_488_WH7_487	245.58	Grease	6 Months		MARCH-SEPTEMBER
		<b>873.54</b>				
306 DUDLEY RD	TB5_372A_TB5_372	294.24	Grease	6 Months		MARCH-SEPTEMBER
	TB5_372_TB5_376	175.89	Grease	6 Months		MARCH-SEPTEMBER
		<b>470.13</b>				
322 GIVENS AVE	TB3_459_TB3_458A	181.47	Grease	6 Months		MARCH-SEPTEMBER
	TB3_458A_TB3_458	219.11	Grease	6 Months		MARCH-SEPTEMBER
	TB3_458_TB3_457	27.70	Grease	6 Months		MARCH-SEPTEMBER
	TB3_457_TB3_454	265.21	Grease	6 Months		MARCH-SEPTEMBER
		<b>693.49</b>				
233 ESPLANADE	TB3_256_TB3_256B	346.53	Grease	6 Months		MARCH-SEPTEMBER
		<b>346.53</b>				
269 CHEAPSIDE	TB3_111_TB3_146	128.83	Grease	6 Months		MARCH-SEPTEMBER
	TB3_146_TB3_145	152.20	Grease	6 Months		MARCH-SEPTEMBER
	TB3_145A_TB3_145	186.53	Grease	6 Months		MARCH-SEPTEMBER
	TB3_143_TB3_145	139.42	Grease	6 Months		MARCH-SEPTEMBER
		<b>606.98</b>				
1985 GREENLEAF DR	NE3_163_NE3_162	244.99	Roots	6 Months		JANUARY-JULY
	NE3_164_NE3_163	255.93	Roots	6 Months		JANUARY-JULY
	NE3_165_NE3_164	237.38	Roots	6 Months		JANUARY-JULY
	NE3_166_NE3_165	143.65	Roots	6 Months		JANUARY-JULY
	NE3_167_NE3_166	151.24	Roots	6 Months		JANUARY-JULY
		<b>1,033.19</b>				
315 OHIO ST	TB3_291-TB3_250	299.18	Grease	6 Months		JUNE-DECEMBER
	TB3_292-TB3_291	413.12	Grease	6 Months		JUNE-DECEMBER
		<b>712.30</b>				

Total PM Footage per 6 Mth Prd	109,849.41	LF
Total PM Footage per Year	219,698.82	LF
Avg PM Length Day (See Below)	976.44	LF
(Based on 50 weeks * 4.5 days/week)		



## **Appendix F**

### **Chemical Root Control Product Information**

## RAZOROOTER II™

For use to control tree root intrusions in  
sanitary sewers, storm drains, and other drainage systems.

### ACTIVE INGREDIENT:

Diquat dibromide [6,7-dihydrodipyrido (1,2-a:2',1'-c) pyrazinediium dibromide].....	By Weight 37.3%
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OTHER INGREDIENTS .....	62.7%
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TOTAL.....	100.0%
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This product contains 2-lbs. diquat cation per gal. as 3.73 lbs. salt per gal.

## KEEP OUT OF REACH OF CHILDREN WARNING

### FIRST AID

#### IF SWALLOWED

- Give water or milk to drink and induce vomiting by inserting finger in throat.
- Take person and product container to the nearest hospital or physician fast.
- PROMPT TREATMENT IS ESSENTIAL TO COUNTERACT POISONING and should be initiated before signs and symptoms of injury appear.

#### IF ON SKIN OR CLOTHING

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

#### IF IN EYES

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

#### IF INHALED

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

**NOTE TO PHYSICIAN:** Call Prosar at 800-291-7661 at any hour to obtain toxicology information and a diquat analysis. To be effective, **treatment for diquat poisoning must begin IMMEDIATELY.** Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis

**FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE CALL PROSAR AT 800-291-7661**

**See Side Panel For Additional Precautionary Statements**

EPA Reg. No. 64898-8  
EPA Est. No. \_\_\_\_\_

Made in U.S.A.  
Sewer Sciences, Inc. (SSI)  
1020 Hiawatha Blvd. West  
Syracuse, NY 13204

Net Contents \_\_\_\_\_

## PRECAUTIONARY STATEMENTS

### Hazards to Humans

#### WARNING

May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Causes substantial but temporary eye injury. Causes skin irritation. Contact with irritated skin, or a cut, or repeated contact with intact skin may result in poisoning. Do not get in eyes or on skin or clothing. Avoid breathing vapor or spray mist.

### Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Either coveralls over a short-sleeved shirt and short pants, or coveralls over a long-sleeved shirt and long pants.
- Waterproof gloves.
- Chemical-resistant footwear plus socks.
- Protective eyewear.
- Chemical-resistant apron when cleaning equipment, mixing or loading.

The following protective equipment must be immediately available at all times for each person operating and monitoring application equipment.

- A dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water.

Keep and wash PPE separately from other laundry.

**EXCEPTION:** If a closed system is used during mixing, dilution, product transportation, and cleaning, *and* applications will be made to closed, subsurface sewers and drains, *and* the product will be diluted in the closed system with water at a ratio of at least 1 part product to 50 parts water prior to use, then applicators, mixers, loaders, and other handlers may wear:

- Short sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves
- Protective eyewear

### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
- Do not enter manholes or other confined space areas adjacent to treated areas until all foam or spray has dried and always use full Federal and State OSHA mandated procedures for confined space entry.

### **Environmental Hazards**

This pesticide is toxic to aquatic invertebrates. Keep out of lakes, ponds, and streams. Do not apply directly to water bodies, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Keep off lawns and plants, as they may be severely injured. Foam should be shoveled off planted areas immediately rather than washing off with water.

Notify appropriate wastewater agency prior to use of this product so that it may monitor the operations of the wastewater treatment plant.

### **Emergency Information**

For spill, leak, fire, exposure, or accident call CHEMTREC at **1-800-424-9300**.

## PRODUCT INFORMATION

RAZOROOTER II™ is uniquely suited to sewer applications. RAZOROOTER II™ is a soluble liquid designed to control tree roots in sewers, on contact. RAZOROOTER II™ is a non-selective herbicide, which works on all varieties of tree roots and will not harm above-ground vegetation, when applied according to label instructions. RAZOROOTER II™ is not volatile, and will not produce toxic gases.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not use in potable water systems. Do not use in storm, field or other drains unless effluent is treated in a sanitary sewer system.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. Refer to the personal protective equipment information under Precautionary Statements and use all required protective clothing and equipment.

RAZOROOTER II™ may be applied directly to sewers either as a high-pressure spray or as a foam. RAZOROOTER II™ may be applied in conjunction with herbicides, surfactants and foaming agents available through [Sewer Sciences, Inc. \(SSI\)](#). RAZOROOTER II™ is not compatible with anionic surfactants.

Consider pipe size, sewer flow, lateral conditions, line obstructions, and severity of root intrusion in selecting proper application technique.

## Mixing Instructions

Before mixing, determine the scope of work, including pipe size and overall lineal footage, while assessing field conditions. Using the charts below as guidance, determine the amount of solution required for the job.

### Small Diameter Pipes

Total Gallons Prepared Solution	Treatment Area (Lineal Feet) Per Pipe Diameter				
	4"	6"	8"	10"	12"
10	300'	140'	80'	50'	35'
100	3000'	1400'	800'	500'	350'
200	6000'	2800'	1600'	1000'	700'
300	9000'	4200'	2400'	1500'	1050'

### Large Diameter Pipes

Total Gallons Prepared Solution	Treatment Area (Lineal Feet) Per Pipe Diameter								
	48"	15"	18"	21"	24"	27"	30"	36"	42"
10	35	27	23	20	17	15	12	11	10
100	350	270	230	200	170	150	120	110	100
200	700	540	460	400	340	300	240	220	200
300	1050	810	690	600	510	450	360	330	300

Prepare solution by mixing at a rate of 2 quarts of RAZOROOTER II™ per 100 gallons of water. Use only clean, fresh water to prepare the solution. Prepare enough solution to complete the job, or to fill the solution tank, whichever is less. Use solution promptly after mixing.



If foaming method will be used, add the amount of foaming agent required to produce 20 gallons of foam per gallon of solution, as prepared above. Only use foam-making equipment approved by SSI, and additives approved by SSI which specifically state "for use with RAZOROOTER II™" on the label. RAZOROOTER II™ is not compatible with anionic surfactants.

### **Spray Application**

Prepared RAZOROOTER II™ solution may be sprayed into sewers at various pressures and flow rates, depending upon the capabilities of the application equipment. Do not exceed the equipment manufacturer's recommendations for pressures and flow rates.

Begin at downstream sections of the area to be treated. Insert the spray discharge hose through the length of the pipeline intended for treatment. Spray the prepared RAZOROOTER II™ solution under pressure as the hose is retrieved. Retrieve the discharge hose at a rate sufficient to contact and saturate all root masses in the pipeline with RAZOROOTER II™ solution, applying to the point of runoff. Monitor tank level and solution flow rate to calibrate discharge hose retrieval rate, in order to evenly apply all prepared solution.

Treat large pipes (15" or larger in diameter) with a hose fitted with skids designed to elevate the discharge nozzle. This will center the discharge nozzle in the pipe and enhance performance. Contact SSI to obtain skids, if needed.

Treat manholes by retrieving hose vertically while spraying walls to the point of runoff. Do not re-enter manholes until sprays have dried.

### **Foam Application**

Mixing prepared RAZOROOTER II™ solution with foam during application extends contact time of roots with product, and helps product to reach roots in lateral connections. Foam application equipment used with RAZOROOTER II™ must be approved by SSI and used only by applicators trained to operate the equipment. Training in RAZOROOTER II™ application by foam is available from SSI.

Begin at downstream sections of the area to be treated. Insert the spray discharge hose through the length of the pipeline intended for treatment. Spray the prepared RAZOROOTER II™ solution and foam under pressure as the hose is retrieved.

Treat manholes by applying a 3" layer of foam to walls while retrieving hose vertically. Do not re-enter manholes until foam has dried.

**Building Laterals:** Building laterals may be treated using the foaming method by injecting the foam via flow-through inflatable cleanout plugs. Cap or plug all drain lines, cleanouts, and fixtures that tie into the line being treated. Determine the lateral pipe size and length and operate equipment for the time it takes to produce the required amount of foam. Use caution to prevent plug blow out.

## STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Open dumping is prohibited.

**Storage:** Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Do not contaminate feed, foodstuffs or drinking water. Do not store or transport near feed or food. Store at temperature above 32°F. For help with any spill, leak, fire or exposure involving this material, call CHEMTREC (1-800-424-9300).

**Pesticide Disposal:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**Container Disposal:** Do not reuse empty container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Container Disposal For Bulk and Mini-bulk Containers:** Reseal container and offer for reconditioning, or triple rinse (or equivalent) and offer for recycling or reconditioning, or clean in accordance with manufacturers instructions.

**Container Precautions:** Before refilling, inspect thoroughly for damage, such as cracks, punctures, bulges, dents, abrasions and damaged or worn threads on closure devices.

**Refill Only With RAZOROOTER II™.** The contents of this container cannot be completely removed by cleaning. Refilling with materials other than RAZOROOTER II™ will result in contamination and may weaken container.

After filling and before transporting, check for leaks.

Do not refill or transport damaged or leaking container.

**CONTAINER IS NOT SAFE FOR FOOD, FEED OR DRINKING WATER.**

## WARRANTY STATEMENT

[Sewer Sciences Inc.](#) and Seller warrant that this product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with the directions and instructions specified on the label under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to [Sewer Sciences, Inc.](#) or Seller, and buyer assumes the risk of any such use.

RAZOROOTER II™ is a trademark of [Sewer Sciences, Inc.](#)


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## Label 5 Gal.

### SANAFOAM VAPOROOTER II

#### RESTRICTED USE PESTICIDE DUE TO ACUTE TOXICITY

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

#### A FOAMING FUMIGANT RIDS SEWER LINES OF ROOTS WILL NOT HARM TRESS, NON-SYSTEMIC

##### 1. SANAFOAM VAPOROOTER II liquid concentrate

☐Active Ingredients	% by weight
Metam-Soudim (sodium methylthiocarbamate)	30.0%
☐Inert Ingredients (includes foaming agent)	70.0%
☐Total	100.0%

##### 2. DRY INGREDIENTS

☐Active Ingredients	
Dichlobenil 50W (2,6-dichlorobenzonitrile)	50.0%
☐Inert Ingredients	50.0%
☐Total	100.0%

#### KEEP OUT OF REACH OF CHILDREN

#### DANGER

#### CAUSES SKIN IRRITATION. SEE OTHER LABEL PRECAUTIONS

Si Usted no entiende la etiqueta, busque a su supervisor para que se a explique a usted en detalle. (If you don't understand the label, find your supervisor to explain it to you in detail).

#### STATEMENT OF PRACTICAL TREATMENT

**IF INHALED:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

**IF ON SKIN:** Wash with plenty of soap and water. Get medical attention.

**IF SWALLOWED:** Drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available drink large quantities of water. Avoid alcohol. Do not induce vomiting or give anything by mouth to and unconscious person.

**IF IN EYES:** Flush with plenty of water for at least 15 minutes. Call a physician if irritation persists

#### SEE PRECAUTIONARY STATEMENTS ON SIDE PANELS SEE ADDITIONAL PRECAUTIONARY STATEMENTS ON CONTAINERS INSIDE THIS PACKAGE

EPA Reg. No. 1015-70 EPA Est. No. 1015-MO-1

Net Contents:

1. SANAFOAM VAPOROOTER II liquid concentrate 5 gal
2. DRY INGREDIENTS (dichlobenil 50W) 30 oz.

#### DOUGLAS PRODUCTS & PACKAGING

1550 Old 210 Highway  
Liberty, MO 64068-9459

#### DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Refer to the protective clothing and equipment information under PRECAUTIONARY STATEMENTS and use all required protective clothing and equipment. The metam-sodium and dichlobenil may be used only in combination and with a foaming agent (contained in the liquid concentrate) to control roots in sewer systems according to the directions for use.

#### DIRECTIONS FOR USE OF SANAFOAM VAPOROOTER II WITH FOAMAKER GENERATORS

#### DIRECTIONS WHICH OF THE COLLECTION LINES HAVE KNOWN ROOT PROBLEMS

##### 1. SURVEY TREATMENT AREA

Confirm the line size and length. Evaluate slope, flow, lateral connections, line length, outfall, line obstructions, terrain and other field conditions. A thorough evaluation prior to starting will assure safe

and accurate application of SANAFOAM VAPOROOTER II.

## 2. DETERMINE QUANTITY OF FOAM NEEDED

From Table 1 compute the quantity of foam required to fill the length of pipe (in feet) to be treated.

**TABLE 1: Foam Requirements and Hose Retrieval Rates for SANAFOAM VAPOROOTER II APPLICATIONS**

PIPE I.D. (INCHES)	FOAM CAPACITIES (gal/ft.)	RETRIEVAL RATE (sec/10ft)
4	0.7	4.2
6	1.5	9.0
8	2.5	15.0
9	3.3	20.0
10	4.1	24.0
12	5.9	36.0
15	9.2	55.0

**Example:** An 8" pipe requires 2.5 gallons of foam per foot to fill the pipe. Therefore, 3750 gallons of foam are required to fill an 8" pipe 1500 feet in length (1500 ft X 2.5 gal/ft = 3750 gal).

## 3. MEASUREMENT DIRECTIONS TO PRODUCE DESIRED QUANTITY OF FOAM

(See Table 2)

**TABLE 2: Mixing Instructions For Diluting SANAFOAM VAPOROOTER II LIQUID CONCENTRATE**

FOAM REQUIREMENT	TOTAL MIX VOLUME	WATER	SANAFOAM VAPOROOTER II
125 gal	6.25 gal	6 gal	1.0 qt
250 gal	12.50 gal	12 gal	0.5 gal
500 gal	25 gal	24 gal	1.0 gal
1250 gal	62.5 gal	60 gal	2.5 gal
2500 gal	125 gal	120 gal	5.0 gal
3750 gal	187.5 gal	180 gal	7.5 gal
5000 gal	250 gal	240 gal	10.0 gal

**Example:** 180 gallons of water plus 7.5 gallons of Sanafoam Vaporooter II solution will produce 3750 gallons of foam. (See Users Manual for mixing instructions when using Jet-Set Equipment).

## 4. MIXING PROCEDURES

- Fill the Foamaker Equipment mix tank    to    full of clean water leaving room in the tank for the rinse water to be used as described below.
- Open outer fiberboard container and remove plastic tube containing the dichlobenil herbicide.
- Remove the 5-gallon inner containers containing the Sanafoam Vaporooter II Liquid Concentrate as needed.
- Remove the Dichlobenil 50W bag and empty contents into the water in the mix tank as needed.
- Allow about 7 minutes for the powder to thoroughly mix.
- Transfer the liquid from the 5-gallon containers as necessary into the Foamaker solution mix tank using the suction pump system on the Foamaker.
- Triple rinse the 5-gallon liquid container (again using the suction pump system to add the rinse water to the mix tank).
- Add to the mix tank the remainder of the required water and mix thoroughly.
- Dispose of containers in accordance with disposal instructions.

**USE SOLUTION PROMPTLY AFTER MIXING.** Wash and flush all equipment with water after each day's use.

**KEEP OFF DESIRABLE LAWNS AND PLANTS.** If spillage occurs on the street or other paved areas near growing plants, immediately flush the spill thoroughly with water at moderate pressure into the sewer line.

## APPLICATION GUIDELINES FOR SANAFOAM VAPOROOTER II

**1. TO APPLY FOAM TO MAIN LINES:** Insert foam discharge hose through entire section of line to be treated. Start foam generating equipment and withdraw discharge hose at a rate calibrated to fill the pipeline to capacity (as listed in Table 1), until foam appears at input manhole. Use appropriate foam application equipment designed to produce required foam volume.

You may multiply the retrieval rates in Table 1 by 1.10 to allow for some treatment of laterals (about 3-6 feet) and to allow more foam to push into cracks and broken joints.

**2. IF TREATING A BUILDING LATERAL:** Be sure foam application discharge hose is also of a specialized type and is securely positioned into and inflated in the clean-out to prevent foam overflow and/or plug blowout. Operate foam generating equipment until required amount of foam has been produced, as calculated from information in Table 1.

**CAUTION:** Care should be taken not to overfill lateral.

FOAMAKER Generators produce 20 gallons of foam from each gallon of Sanafoam Vaporooter II mixed solution.

FOAMAKER Generators are manufactured for Douglas Products & Packaging to our specifications and are available from Douglas. For additional information on special applications, see User's Manual or contact sales representative of manufacturer. All application procedures must be in accordance with established methods and systems as developed by Douglas Products & Packaging.

#### **SPECIAL NOTICE**

Douglas Products & Packaging makes no warranty, expressed or implied, including the warranties of merchantability and/or fitness for any particular purpose, concerning this material, except for those which are contained on this label.

#### **PRECAUTIONARY STATEMENTS DANGER**

#### **HAZARDS TO HUMAN AND DOMESTIC ANIMALS**

Corrosive, causes skin irritation. May be harmful or fatal if absorbed through skin or inhaled. Harmful if swallowed. Causes eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Do not get in eyes, on skin or on clothing. Do not breathe vapor or spray mist. A mask or pesticide respirator jointly approved by the Mining Enforcement and Safety Administration and the National Institute for Enforcement and Safety Administration and the National Institute for Occupational Safety and Health must be available for use in case of an emergency. Wear protective clothing and chemical resistant gloves. Wash thoroughly with soap and water after handling and before eating or smoking. Remove contaminated clothing and wash before reuse.

Keep all unprotected persons, children, livestock and pets away from treated area or where there is danger of drift, such as a spill.

Do not rub eyes or mouth with hands. If you feel sick in any way, STOP work and get help immediately. See Statement of Practical Treatment.

#### **PROTECTIVE CLOTHING AND EQUIPMENT REQUIREMENTS**

1. The following protective clothing and equipment are required to be used by persons actually engaged in carrying out any operations that are likely to involve direct contact with metam-sodium including mixing, loading, equipment calibrations or adjustments, cleaning and repair of application equipment, entering into treated areas, sampling, clean up of spills, rinsate disposal, or any other activities likely to result in direct contact with the product. This protective equipment must also be used for any operations that are carried out within six feet of unshielded, pressurized hosed containing metam-sodium solutions.

- a. Splash resistant eye protection.
  - b. Body covering including shirt and long pants or long sleeved clothing. When a closed system is not used, mixers and loader must also wear a chemical resistant apron or cloth coveralls.
  - c. Chemical resistant gauntlet-type gloves and boots.
2. The following protective equipment must be worn at all times by persons operating or monitoring application equipment.

- a. Chemical resistant footwear.
  - b. Body covering including shirt and long pants or long sleeved clothing.
3. The following protective clothing and equipment must be immediately available at all times for use by persons operating or monitoring application equipment.

- a. A properly fit tested NIOSH or MSHA approved half face respirator with organic vapor cartridge(s). This equipment must be worn in case of emergencies or leads when the pungent, rotten egg or sulfur-like odor of metam-sodium is detected.
- b. Chemical resistant gauntlet-type gloves. These must be worn when a person is engaged in carrying out any operation that is likely to involve direct contact with the product, including the operations listed in paragraph No. 1 above.

#### **USE PRECAUTIONS**

Consideration must be given to all sewer service lines and building elevations and basements for the possibility of foam coming up out of drains. Consideration must be given to distance between houses and sewers to be treated, depth of sewers compared to drains in buildings, line obstructions, broken and empty traps. Drains which may be subject to backup and flooding must be plugged. Follow the directions for measurement and use carefully to avoid using excess foam that may be forced up lateral lines to building drains. Do not use to storm, field or other drains unless effluent is treated in a sanitary sewer system. Building occupants should exit structures if the rotten egg or sulfur-like odor of metam-sodium is detected. Open windows and ventilate with fans. Flush drains with ample water if the odor comes from them. Use a squeegee, dust pan or wet vacuum and garbage bags for spills or backups and dispose of foam and liquid, wash area of soil or back up with water and detergent and flush down drain. If rugs or cloth are contacted, take outside and dry before laundering separately.

Do not use in confined areas without adequate ventilation. Avoid any entry into manholes or confined areas. When absolutely necessary to enter these areas, be sure to use all safety protection equipment and procedures as required by law.

### ENVIRONMENTAL HAZARDS

Keep out of lakes, ponds or streams. Toxic to fish and aquatic life. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Equipment washwaters and wastes resulting from the use of this product may be disposed of on site according to label directions or at an approval waste disposal facility. Do not use in portable sewer systems. Do not use in storm, field or other drains unless effluent is treated in a sanitary sewer system. Keep off lawns and plants as they may be severely injured. Foam should be shoveled off planted areas immediately rather than washing off with water.

### ENVIRONMENTAL USE PRECAUTIONS

High concentrations of these chemicals in wastewater may adversely affect the biological sewage breakdown process in wastewater treatment plants. Large scale to sewage collection systems in proximity to a sewage treatment plant should be divided into smaller sectional treatments done at one or two day intervals to minimize effects on the sewage treatment process. Inform appropriate wastewater treatment plant officials prior to use so they may check for any unusual rotten egg or sulfur-like odor of metam-sodium above that of sewage and monitor the performance of filter beds or digesters. If the odor is detected at the sewage treatment plant or the biological breakdown process is adversely affected, root control applications should cease until normal conditions are established. Subsequent treatments should be reduced in size or volume and spread over greater time intervals.

**NOTE:** Never exceed the daily use of more than 15 gallons of Sanafoam Vaporooter II Liquid Concentrate for each million gallons of sewage flow (MGD) into the wastewater treatment plant (WWTP). Example: Inflow into the WWTP is 2.4 MGD, therefore, use a maximum of 36 gallons (2.4 x 15) of Sanafoam Vaporooter II per day. When Vaporooter within one mile distance of the WWTP or when applying at night reduce the maximum application use by 50% to 18 gallons (36 x 5). The above maximum daily use must extend over and eight hour work period.

### PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flames.

### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**STORAGE:** Do not store near food or feed,, seed, bulbs, tubers, nursery stock or other vegetative matter. Do not store near pet or livestock quarters. Store in a cool, dry, and well ventilated area. Keep containers tightly closed when not in use.

**DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site by discharging into sewer pipes being treated or at and approved waste disposal facility.

**PLASTIC CONTAINERS:** Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**PLASTIC BAGS:** Then Disposal of empty outer tube in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**OUTER BOX:** Dispose of empty box in a sanitary landfill or by incineration or, if allowed by state and local law, by burning. If burned, stay out of smoke.

### PRODUCT INFORMATION

**SANAFOAM VAPOROOTER II** is a foaming, surface-active formulation of metam-sodium plush DICHLOBENIL 50W for dilution in water.

**SANAFOAM VAPOROOTER II** is a non-systemic chemical for control of roots in sewer mains and drain lines. Only the roots and organic deposits in the sewer lines are affected by Sanafoam Vaporooter II liquid concentrate.

**SANAFOAM VAPOROOTER II** is packaged to contain separate units within an outer fiberboard container; a plastic tube of dichlobenil herbicide powder and a plastic container holding the Sanafoam Vaporooter II Liquid Concentrate.

**SANAFOAM VAPOROOTER II** should not be used to treat roots in storm sewers or other drains where the wastewater will not be treated or controlled.

[BACK](#)