



**APPENDIX E**  
Council Approved Revision May 5, 2015

**Fat, Oil, Grease and Wax (FOG) Control Program**  
**User Guidance Document and**  
**SRU Implementation Plan**

**TABLE OF CONTENTS**

	<b>Page</b>
<b>I. Introduction</b>	<b>1</b>
<b>II. Ordinances</b>	<b>2</b>
<b>A. BASIC GREASE INTERCEPTOR/TRAP REQUIREMENTS</b>	<b>2</b>
<b>B. INSPECTIONS, RECORDKEEPING, AND REPORTING</b>	<b>2</b>
<b>C. FOG PROGRAM COVERAGE</b>	<b>2</b>
<b>D. ENFORCEMENT</b>	<b>2</b>
<b>III. Implementation Plan</b>	<b>3</b>
<b>A. SRU Approval Process for Grease Interceptors and Traps</b>	<b>3</b>
<b>B. SRU Inspections Program</b>	<b>4</b>
<b>C. Maintenance Requirements</b>	<b>4</b>
<b>D. Recordkeeping Requirements</b>	<b>5</b>
<b>E. Enforcement</b>	<b>6</b>
<b>F. SRU FOG Education Program</b>	<b>7</b>
<b>(Frequently Asked FOG Questions)</b>	<b>7</b>
<b>IV. Design Structural and Installation Criteria for Grease Interceptors and Traps</b>	<b>9</b>
<b>I. INTRODUCTION</b>	

“FOG” stands for Fat, Oil, Grease and wax discharged to sanitary sewers maintained by the City of Salisbury’s Utilities Department (also called Salisbury-Rowan Utilities or SRU). The FOG Control Program, by ordinance, requires food service establishments or “FSEs” and sewer users that may discharge excessive FOG, to have, operate and maintain at their own expense SRU-approved grease interceptors or traps. Grease interceptors and traps are devices that remove FOG and related debris from wastewater and contain them until a septage management firm can properly dispose of them.

Salisbury’s FOG Control Program is mandated by federal and state government and is a requirement of the Wastewater Collection System Permit Number WQCS00019 issued to the City of Salisbury by the Department of Environment and Natural Resources. The FOG Control Program will help protect sewers against accumulations of FOG that can interfere with the operation and maintenance of sewers.

The FOG Control Program includes, among others, the following elements:

- City ordinances (discussed in Section II below)
- SRU Implementation Plan (Section III below)
- City of Salisbury Uniform Construction Standards (available from SRU)

## **II. ORDINANCES**

The Salisbury Code of Ordinances establishes the basic framework for the FOG Control Program. Presented below are excerpts from and references to some of the relevant ordinances. In general, SRU plans to satisfy the duties assigned by City ordinance and to exercise the authority delegated by City ordinance as set out in the Implementation Plan (Section III below). However, this document is not intended and shall not be construed to narrow or limit Salisbury or SRU authority.

### **A. Basic Grease Interceptor/Trap Requirements**

All new food service establishments (“FSEs”) and all users that discharge excessive FOG shall have SRU-approved grease interceptors or grease traps that are properly designed, sited, installed, operated, and maintained. Food service establishments (“FSEs”) in operation on April 7, 2009, shall comply with this requirement no later than April 7, 2012 (and sooner if necessary to remedy a sewer problem). If fixtures are added that discharge wastewater with FOG, the fixtures must be plumbed into an interceptor or trap and approved by SRU.

For more details please see, for example, City of Salisbury Code of Ordinances Sections 25-202(a)(2)n, 25-202(a)(2)b and 25-202(i).

### **B. Inspections, Recordkeeping, and Reporting**

SRU is authorized to conduct inspections and to require record-keeping and reporting by sewer users, including municipal users, for grease interceptors and grease traps. For more details please see, for example, City of Salisbury Code of Ordinances Sections 25-204(a), 25-202(i)(1)-(3), 25-206(b), 25-201(c)(1), 205(a)(2)(a)-(h) and 25-201(d).

### **C. FOG Program Coverage**

Sewer users both inside and outside the city limits, including municipal users, must comply with FOG-related requirements. For more details please see, for example, City of Salisbury Code of Ordinances Sections 25-87(f), 25-88, 25-89(f), 25-110, 25-114, and 25-204(a).

### **D. Enforcement**

SRU has various types of authority pursuant to the Salisbury Code of Ordinances, North Carolina statutes (including the Salisbury Charter and the General Statutes), and the common law to enforce the FOG Control Program, including but not limited to the following:

- Discontinuation of water and sewer service. For more details please see, for example, City of Salisbury Code of Ordinances Sections 25-65, 25-208(a)(5) and 25-202(a)(4).

- Assessment of civil penalties as outlined in the City of Salisbury Code of Ordinances. For more details please see, for example, City of Salisbury Code of Ordinances Chapter 8.5-1 and Section 25-208.
- Assessment of the City’s cleanup, repair and other costs of response to noncompliance. For more details please see, for example, City of Salisbury Code of Ordinances Section 25-208(b)(2)d and h.
- Coordinate prosecution for criminal violations, including falsification of records. For more details please see, for example, City of Salisbury Code of Ordinances Sections 25-208(c)(1) and (f).
- Abatement of a violation as a nuisance. For more details please see, for example, City of Salisbury Code of Ordinances Section 25-208.

### **III. IMPLEMENTATION PLAN**

This Section III is SRU’s FOG Control Program Implementation Plan that describes SRU’s plan for satisfying the duties assigned by City ordinance and for exercising the authority delegated by City ordinance. This FOG Control Program Implementation Plan will be amended from time to time by SRU, consistent with SRU’s assigned duties and delegated authority. However, this document, including this Section III, is not intended and shall not be construed to narrow or limit Salisbury or SRU authority.

#### **A. SRU Approval Process for Grease Interceptors and Traps**

Food service establishments (“FSEs”) and other sewer users required by Salisbury Code of Ordinances Section 25-202(i) to have grease interceptors or traps must obtain SRU approval for their interceptors/traps and for any changes in design, operation, or modification to existing grease interceptors/traps. This requirement applies to both existing and new interceptors and traps.

Requests for approval should be submitted well in advance of any applicable deadline for installation. FSEs in existence on or before April 7, 2009 that do not have a grease interceptor/trap may be eligible for financial assistance from SRU if a grease interceptor/trap is installed before April 7, 2012. To find out more about possible financial assistance, please call SRU Environmental Services Division at (704) 638-5375.

#### **1. New grease interceptor/traps**

a. **User Request.** Requests for SRU approval of new grease interceptors/traps must include the following:

- Plans that meet all applicable federal, state, and local requirements, including City of Salisbury Uniform Construction Standards
- Site plan showing the location of the grease interceptor/trap, grease waste line, and sanitary sewer line
- Plumbing plans including all kitchen fixtures connected to the grease interceptor/trap, plumbing elevations and the sizing criteria used to size the device.
- Standard grease interceptor/trap construction detail

b. **SRU Response.** SRU will approve or deny plans and will work with users to develop acceptable plans. NOTE: A grease interceptor or trap may be installed only after SRU has granted approval. A user with a new grease interceptor or trap that has not received SRU approval will not be allowed to discharge wastewater to the sewer.

## 2. Existing grease interceptor/traps

a. **User Request.** Requests for SRU approval of existing grease interceptors/traps must include the following:

- o Grease Interceptor/Trap Verification Form completed by a licensed NC septage management firm, a NC licensed plumber or NC professional engineer, and providing the required information, including the volume and condition of the existing interceptor/trap. To obtain a Grease Interceptor/Trap Verification Form, please call SRU Environmental Services Division at (704) 638-5375.

b. **SRU Response.** Based on information provided in a Grease Interceptor/Trap Verification Form and an onsite evaluation by SRU, SRU will notify the owner/operator that the existing grease interceptor/trap is:

- (1) Currently satisfactory; or
- (2) Not satisfactory and that corrective actions (such as installing/adding devices and performing maintenance and repairs) must be accomplished by a specified date.

## B. SRU Inspections Program For Grease Interceptors And Traps

SRU will conduct mandatory inspections of every food service establishment connected to the sanitary sewer system, and at other sewer user locations and times as SRU deems appropriate. If FOG is responsible for a sewer blockage, all food service establishments (and other sewer user locations as deemed appropriate by SRU) upstream from the blockage will be inspected.

Based on the results of inspections SRU will notify users of any required corrective actions and deadlines for compliance.

## C. Maintenance Requirements.

**1. General Maintenance Requirements.** All grease interceptors and traps shall be maintained by the owner and/or operator's expense so as to be in continuously effective operation. The use of enzymes or biological grease interceptor/trap additives is not prohibited; however, they shall not be used as an alternative to the pumping of a grease interceptor/trap, nor as a primary method of grease interceptor/trap maintenance.

**2. Implementation of Best Management Practices.** Following best management practices to reduce the discharge of fats, oils, and grease into the sanitary sewer system will help reduce sanitary sewer overflows caused from grease blockages and may help protect your own facility from damage caused by sewer line backup.

- a. **Train kitchen staff:** Kitchen staff should be trained on best management practices routinely, especially if your facility has a high turnover rate.
- b. **“Dispose of food waste by recycling and/or solid waste removal.**
- c. **Dry wipe” pots, pans, and dishware prior to washing.**

- d. **Use a three-sink dishwashing system:** Utilize sinks for washing, rinsing, and sanitizing. Pot wash sink should be plumbed to a grease trap or interceptor.
- e. **Recycle waste cooking oil-Never pour oil down sinks or drains!** Rendering companies provide a waste bin and some will even pay your facility for the deep fryer waste oil. Ensure grease rendering bins are properly maintained and lids are kept closed at all times, reducing the risk of grease overflows or spillage. If an overflow or spillage occurs, promptly clean up with an oil-absorbent material and dispose of properly.
- f. **Routinely clean kitchen exhaust system filters.**
- g. **Have the grease interceptor/trap pumped by a NC Permitted Grease Hauler per the minimum maintenance requirements:** The requirements are located in Sec. III (C) and (C)(5) of the Salisbury-Rowan Utilities Fat, Oil, Grease and Wax (FOG) Control Program User Guidance Document and Implementation Plan, or as otherwise directed by SRU personnel.
- h. **Witness all grease interceptor or trap cleaning and maintenance:** A representative from your facility should verify that the trap or interceptor has been pumped completely dry (both chambers if applicable) and all surfaces scraped of accumulated grease and solids. All solids should be completely removed from the bottom of trap.

**3. Pumping/Cleaning Requirements.** Pumping/cleaning of grease interceptors and traps shall include the complete removal of all contents, including floatable materials, wastewater, sludge, and solids and must comply with the requirements and procedures administered by the North Carolina Division of Waste Management and all other applicable requirements. All waste removed from each grease interceptor/trap shall be properly and lawfully removed, transported, and disposed of at a facility permitted by the North Carolina Division of Waste Management to receive such waste.

**4. Improper (Prohibited) Activities.** Improper activities that are harmful to the sewer system and are likely to trigger enforcement action against responsible persons include the following:

- o Hot water running continuously through grease interceptor/trap.
- o Discharge into a grease interceptor/trap of concentrated alkaline or acidic solutions, concentrated detergents, etc.
- o Separation, decanting or back flushing of the grease interceptor/trap or its wastes.
- o Any discharge of grease interceptor/trap waste to the sanitary sewer or wastewater treatment facilities.

**5. Pump/Cleaning Frequency:**

- a. **Grease Interceptors.** Grease interceptors shall be pumped and cleaned:

Anytime the floatable grease layer exceeds six inches in depth as measured by an approved dipping method; and

Anytime the settleable solids layer exceeds eight inches in depth as measured by an approved dipping method; and

Anytime the total volume of captured grease and solid material displaces more than 25 percent of the capacity of the interceptor as calculated using an approved dipping method; and

Anytime the interceptor is not retaining/capturing FOG; and

**Per the minimum maintenance frequency for the FSE Level identified by SRU:**

**LEVEL I FSE: Grease Interceptors – once every 120 days (or more frequently as identified by SRU)**

**FSE’s meeting the following criteria:**

- Equipment is generally limited to, freezers/coolers (ie. for dairy, deli, etc.), blenders, coffee/cappuccino machines, convection/microwave ovens or other equipment used for blending, cooling, and/or warming purposes. (NOT stoves/ovens, fryers, griddles, grills, and other equipment used for food prep, warming and cooking purposes.)
- Food products are precooked.
- Grease interceptor is not shared with another establishment.
- Best Management Practices are being continuously and properly implemented and maintained as outlined in this documentation.
- Maintenance and record keeping requirements shall remain compliant at all times. If at any time the minimum maintenance and record keeping requirements are not being met, additional requirements may apply.
- There are no other factors that make a shorter period (higher frequency) appropriate.

**LEVEL II FSE: Grease Interceptors – once every 90 days (or more frequently as identified by SRU)**

**FSE’s meeting the following criteria:**

- Equipment generally includes stoves/ovens, fryers, griddles, grills, and other such equipment identified for food prep, warming and cooking purposes.
- Best Management Practices are being continuously and properly implemented and maintained as outlined in this documentation.
- Maintenance and record keeping requirements shall remain compliant at all times. If at any time the minimum maintenance and record keeping requirements are not being met, additional requirements may apply.

**b. Grease Traps.** Grease traps shall be pumped and cleaned:

Anytime the total volume of captured grease and solid material displaces more than 25 percent of the total volume of the trap; and

**Per the minimum maintenance frequency for the FSE Level identified by SRU:**

**LEVEL I FSE: Grease Traps – once every 60 days (or more frequently as identified by SRU)**

**FSE's meeting the following criteria:**

- Equipment is generally limited to, freezers/coolers (ie. for dairy, deli, etc.), blenders, coffee/cappuccino machines, convection/microwave ovens or other equipment used for blending, cooling, and/or warming purposes. (NOT stoves/ovens, fryers, griddles, grills, and other equipment used for food prep, warming and cooking purposes.)
- Food products are precooked.
- Best Management Practices are being continuously and properly implemented and maintained as outlined in this documentation.
- Maintenance and record keeping requirements shall remain compliant at all times. If at any time the minimum maintenance and record keeping requirements are not being met, additional requirements may apply.
- There are no other factors that make a shorter period (higher frequency) appropriate.

**LEVEL II FSE: Grease Traps – once every 30 days (or more frequently as identified by SRU)**

**FSE's meeting the following criteria:**

- Equipment generally includes stoves/ovens, fryers, griddles, grills, and other such equipment identified for food prep, warming and cooking purposes.
- Best Management Practices are being continuously and properly implemented and maintained as outlined in this documentation. Maintenance and record keeping requirements shall remain compliant at all times. If at any time the minimum maintenance and record keeping requirements are not being met, additional requirements may apply.

**6. No obstruction of Access.** Grease interceptors and traps are to be kept free from obstructions that would hinder or prevent inspection and/or maintenance activities at all times. Obstructions include but are not limited to vehicles, dumpsters, waste oil bins, landscaping plants, sink drains/plumbing, and stored kitchen supplies.

## **D. Recordkeeping Requirements**

**1. Program Acknowledgement Certificate.** The owner/operator shall keep a current, properly completed and signed, Program Acknowledgement Certificate on the premises, posted in plain view of employees. To request a Program Acknowledgement Certificate, please contact SRU Environmental Services Division at (704) 638-5375.

**2. Septage Permit.** The owner/operator of a grease interceptor/trap who cleans and maintains a grease interceptor or trap shall maintain a septage permit (annual renewal) as required by the North Carolina Division of Waste Management, and the septage permit shall be available for inspection by SRU at all times.

### **3. Maintenance Records.**

The owner/operator shall maintain a written record of grease interceptor/trap maintenance for three (3) years. All such records shall be available for inspection by SRU at all times. Records submittal may be required by the Director on a case-by-case basis. These records shall include:

1. Establishment/facility name and physical location
2. Date of grease interceptor/trap service
3. Time of grease interceptor/trap service
4. Name of grease interceptor/trap service provider
5. Name and signature of grease interceptor/trap service provider agent performing said service
6. Established service frequency
7. Number and size of each grease interceptor/trap serviced at establishment/facility location
8. Approximated amount, per best professional judgment of service provider, of grease and solids removed from each grease interceptor/trap
9. Total volume of waste removed from each grease interceptor/trap (including liquids)
10. Destination of removed wastes, food solids, and wastewater disposal
11. Signature and date of establishment/facility personnel confirming service completion

## **E. Enforcement**

SRU may bring enforcement actions for noncompliance with the FOG Program, as authorized by the Salisbury Code of Ordinances. Such enforcement actions may include, but are not limited to the following:

- Discontinuation of water and sewer service.
- Assessment of civil penalties as outlined in the City of Salisbury Code of Ordinances.
- Assessment of the City's cleanup, repair and other costs of response to noncompliance
- Coordinate prosecution for criminal violations, including falsification of records.
- Abatement of a violation as a nuisance.

The SRU director or his designee will use his discretion in making enforcement decisions.

**Penalties.** In the assessment of penalties, the director will usually assess smaller penalties (generally \$500 or less) for minor violations and larger penalties (generally more than \$500 and up to the maximum amount authorized by ordinance) for major violations.

Minor violations may include the following:

- a. Failure to maintain and/or submit records
- b. Inspection hindrance (parked vehicles over interceptors, supplies or stored items blocking grease trap lid, etc.)
- c. Failure to maintain grease interceptor/trap
- d. Failure to repair necessary equipment (sanitary tees, grease interceptor not watertight, baffles, etc.)

Major violations may include the following:

- a. Failure to install grease interceptor or trap
- b. Causing or contributing to sewer blockage
- c. Causing or contributing to sanitary sewer overflow
- d. Falsification of maintenance records

Description of Violations	Violations Penalty Range	
	Grease Trap (generally under 500 gals)	Grease Interceptor (generally over 500 gals)
Failure to maintain and/or submit records <i>(if provided within 5 business days - fees waived)</i>	\$100.00 per missing record	\$100.00 per missing record
Inspection Hindrance	\$100.00	\$100.00
Failure to maintain grease device	\$100.00 per maintenance event skipped	\$500.00 per maintenance event skipped
Failure to repair necessary equipment <i>(fees double for each corrective action deadline not met)</i>	\$100.00	\$250.00
Failure to install grease interceptor/trap	Up to \$5,000.00	Up to \$25,000.00
Causing or contributing to sewer blockage	Up to \$5,000.00	Up to \$25,000.00
Causing or contributing to a sanitary sewer overflow	Up to \$5,000.00	Up to \$25,000.00
Falsification of records	\$100.00 per instance	\$100.00 per instance
<b>**Chronic non-compliance may be subject to the discontinuation of water/sewer services in addition to the above noted penalties.</b>		

**NOTE:** Enforcement actions are not limited to grease interceptor/trap violations. For example, grease interceptors/traps are not required for apartment buildings and/or high density residential units; however, if an apartment building and/or high density residential area is found to be responsible for causing or

contributing to a blockage or sanitary sewer overflow, enforcement action may include: ordering the cleaning of all sanitary waste lines throughout the property, assessment of penalties, and other actions.

**Appeals.** Appeals procedures are provided by the City of Salisbury Code of Ordinances.

## **F. Education Program**

SRU semi-annually distributes FOG educational materials. SRU also sends educational materials on an as-needed basis to targeted areas or users based on the occurrence of grease-related blockages in the SRU sewer system. The educational materials may include helpful tips for reducing the discharge of FOG to the sanitary sewer and the impacts of FOG to the sanitary sewer.

### **Frequently Asked FOG Questions**

#### **Q: What is FOG?**

**A:** FOG stands for Fat, Oil, Grease and wax that are discharged to the sanitary sewer – most often from food preparation activities.

#### **Q: What are the impacts of FOG?**

**A:** FOG can clog sanitary sewer lines and cause overflows that can affect public health and the environment and increase operating costs. The majority of sanitary sewer backups occur in private drain lines between homes or businesses and the City's sanitary sewer system. The property owner is responsible for these private lines. Improper management of FOG by sewer users, primarily restaurants and other food service establishments has become a significant problem for wastewater collection and treatment systems. FOG can coat, congeal in, and accumulate in pipes, pumps, and equipment. By 2008, according to the North Carolina Division of Water Resources (DWR), about 500 sanitary sewer overflows (SSOs) per year in NC were attributed to the effects of FOG. When SSOs occur, raw sewage spills onto the ground and sometimes reaches waterways. As a result of the increasing number of SSOs caused by FOG, the Environmental Protection Agency and the DWR have developed new requirements for municipalities that operate collection systems.

#### **Q: Why was the FOG Control Program created?**

**A:** Salisbury's FOG Control Program is a state and federal mandate and is required by the Wastewater Collection System Permit Number WQCS00019 issued to the City of Salisbury by the State. The FOG Control Program will help protect sewers against harmful accumulations of FOG. The FOG Control Program is discussed in a document (available from SRU) called the FAT, OIL, GREASE AND WAX (FOG) CONTROL PROGRAM USER GUIDANCE DOCUMENT AND SRU IMPLEMENTATION PLAN.

#### **Q: What are the Elements of the FOG Control Program?**

**A:** The Program includes, among others, the following elements:

- City ordinances
- City of Salisbury Uniform Construction Standards for grease interceptors and grease traps
- The SRU Implementation Plan that outlines the SRU plan for complying with its collection system permit and for satisfying the duties assigned by City ordinance and exercising its authority delegated by City ordinance

The Program requires all food service establishments (and other sewer users that discharge excessive FOG) to operate and maintain an SRU-approved grease interceptor or trap at their own expense. Grease interceptors and traps are designed to capture FOG, solids, and other debris before they enter a

sewer, where they become a problem by clogging sewers and disrupting water flow. The grease interceptors/traps capture those wastes and contain them until a septage management firm can properly dispose of them.

**Q. "Do I have a grease trap or interceptor?"**

A. If you are not sure, please contact a local plumber for assistance.

**Q. "Do I need a grease trap or interceptor?"**

A. Grease interceptors or traps are required for all food service establishments (not just restaurants) and all sewer users that discharge excessive FOG.

**Q. "What is the difference between grease traps and interceptors?"**

A. Both grease interceptors and traps are designed to remove FOG from the wastewater before it enters the City's sanitary sewer collection system. The main difference between the two is their size. An interceptor is normally 500 gallons or larger and typically located outside. A grease trap is normally 100 gallons or smaller and can be located either outside or indoors.

**Q. "How often should I service my grease interceptor?"**

A. The requirements are located in Sec. III (C) and (C)(5) of the Salisbury-Rowan Utilities Fat, Oil, Grease and Wax (FOG) Control Program User Guidance Document and Implementation Plan, or as otherwise directed by SRU personnel.

**Q. "What size grease trap should I have?"**

A. SRU requires that grease interceptors provide a minimum of 24 minutes hydraulic detention time between the influent and effluent baffles with 25 percent of the total volume of the grease interceptor being allowed for sludge storage. Details are found in the City's Uniform Construction Standards Manual.

**Q. "What kinds of problems do oil and grease cause?"**

A. Oil and grease build up in sewer lines reduces the system's capacity and can cause a blockage. Blockages may result in sewer backups and overflows, increased maintenance costs, and equipment downtime and possible property damage.

**Q. "Isn't my business grand-fathered in under the old rules?"**

A. A food service establishment in operation on April 7, 2009 has until April 7, 2012, to install a grease interceptor or trap, unless an earlier date is necessary to remedy interference with the operation or maintenance of a sewer.

**Q. "Will a garbage disposal affect a grease interceptor?"**

A. Absolutely. The ground-up solids that go through the disposal will settle to the bottom of the grease interceptor and reduce its efficiency. The increased loading will also lead to increased maintenance frequency and cost.

**Q. "My restaurant doesn't have space to install an exterior in-ground grease interceptor. Are there other options?"**

A. Although grease interceptors are preferred based on ease of operation, maintenance, and reliability, this Program also allows for the use of grease traps where appropriate.

**Q. "How do I have an interceptor or trap installed?"**

A. Most NC licensed plumbers and plumbing contractors install grease interceptors and traps. All grease interceptors and traps must be approved by the City prior to installation.

**Q. “If I own an apartment complex, will I be required to install a grease interceptor?”**

A. Maybe. If there is an excessive discharge of FOG, an interceptor or trap will be required. In addition, other measures may be required to address FOG problems, such as distribution to residents of educational materials.

**Q. “Who do I contact for questions and information regarding this Program and other FOG issues?”**

A. Please contact Salisbury-Rowan Utilities, Environmental Services Division at (704) 638-5375.

**IV. DESIGN, STRUCTURAL AND INSTALLATION CRITERIA FOR GREASE INTERCEPTORS AND TRAPS**

- Grease Interceptor - A device utilized to effect the separation of grease and oils in wastewater effluent. Such interceptors may be of the "outdoor" or "underground" type normally of a 500 gallons or more capacity.
- Grease Trap - A device utilized to effect the separation of grease and oils in wastewater effluent. Such traps are the "under-the-counter" type normally 100 gallons or less capacity.

**GREASE INTERCEPTOR SIZING CRITERIA**

How to Determine the Size of an Exterior, In-ground Grease Interceptor Using the Manning Formula:  
The formula for calculating grease interceptor sizing is:

Gallons of interceptor = [[GPM/fixture x total # fixture ratings of grease-laden waste streams] + direct flow from a dishwasher, can wash, mop sink (in GPM)] x 24 minute retention time  
or Gallons of interceptor = [(A x B) + C] x D

*Components of equation:*

**A = GPM/fixture (drain line)** – This is derived from the Manning Formula. It takes into account the slope, roughness of the pipe (plastic) used, and pipe diameter size. When applying the Manning Formula, we arrive at the drainage rates of various pipe diameter sizes:

- 0.5 inch pipe diameter = 0.8 GPM/fixture (drain line)
- 1.0 inch pipe diameter = 5.0 GPM/fixture (drain line)
- 1.5 inch pipe diameter = 15 GPM/fixture (drain line)
- 2.0 inch pipe diameter = 33 GPM/fixture (drain line)
- 2.5 inch pipe diameter = 59 GPM/fixture (drain line)
- 3.0 inch pipe diameter = 93 GPM/fixture (drain line)

**B = Fixture Ratings of Grease-Laden Waste Streams:** Fixtures that have more grease in their waste stream received higher values while less grease corresponds to a lower value. The table is shown below:  
Table of Common Commercial Kitchen Fixtures and their Corresponding Rating (each):

- 2, 3, or 4 compartment pot sink = 1.0
- 1 or 2 compartment meat prep sink = 0.75
- Pre-rinse sink = 0.5
- 1 or 2 compartment vegetable prep sink = 0.25

**C = Direct Flow from Dishwasher, Can Wash, and Mop Sink (in GPM):** Use the following gpm values: Dishwasher = 10 GPM, can wash and mop sink = 6 GPM.

**D = (24) Twenty-four minute retention time**

**Example #1:** A restaurant has the following fixtures in their kitchen:

- (1) 3-compartment pot sink, 1.5 inch waste drain
- 1 pre-rinse sink, 1.5 inch waste drain
- (1) 1-compartment meat prep sink, 1.5 inch waste drain
- (1) 1-compartment vegetable prep sink, 1.5 inch waste drain
- (1) can wash (use 6 gpm)

Using the formula to size exterior grease interceptors, we get:

Gallons needed for grease interceptor  
 = [15 GPM x [1 + 0.5 + 0.75 + 0.25] + 6 GPM] x 24 minutes  
 = [[15 GPM x 2.50] + 6 GPM] x 24 minutes  
 = [37.5 GPM + 6 GPM] x 24 minutes  
 = 43.5 GPM x 24 minutes  
 = 1,044 gallons Use 1,000 gallon interceptor size

**Example #2:** A restaurant has the following fixtures:

	GPM x Grease Factor
• (1) 3 Compartment Pot Sink, 2.0 inch waste drain	33x1.0 = 33.00 GPM
• (1) 1 Compartment Prep Sink (Meat), 1.5 inch waste drain	15x0.75= 11.25 GPM
• (1) 1 Compartment Prep Sink (Vegetable), 1.5 inch waste drain	15x0.25= 3.75 GPM
• (1) Pre-rinse Sink, 2.0 inch waste drain	33x0.5 = 16.50 GPM
• (1) Dishwasher (use 10 gpm)	10.00 GPM
• (1) Mop Sink, 3 inch waste drain (use 6 gpm)	<u>6.00 GPM</u>
	Total 80.50 GPM

Using the formula to size exterior grease interceptors, we get:

Total GPM x 24 minutes = 1,932 gallons Use 2,000 gallon interceptor size

Interceptor sizes less than 1,000 gallons, round up to the nearest tank size available. Interceptor sizes greater than 1,000 gallons, round to the nearest tank size available, but no more than 10% smaller.

**MINIMUM DESIGN AND STRUCTURAL CRITERIA FOR EXTERIOR GREASE INTERCEPTORS**

All Food Service Establishments and other users as required by ordinance shall have grease-handling facilities installed and maintained, at the user’s expense. Common grease interceptors, or grease interceptors that receive FOG laden wastewater from more than one establishment, are prohibited.

**Note: Contact the Rowan County Building Inspections Department at (704) 216-8619 and the Rowan County Health Department at (704) 216-8525 for requirements that this activity may be subject to.**

Exterior, in-ground grease interceptors are the preferred device for grease retention in food service facilities. Grease traps will be allowed in cases where exterior, in-ground grease interceptors are infeasible to install (see FOG Control Program User Guidance Document and SRU Implementation Plan, Section III.C). Approval from the Director must be received prior to installation.

Strip Centers with the Potential for Food Service Establishments: All new buildings or strip centers containing sections designated for commercial enterprise of the strip center are encouraged to provide a stub-out for a separate waste line for future grease interceptor installation. The owner of a new strip center shall consider suitable physical property space and sewer gradient that will be conducive for the installation of an exterior, in-ground grease interceptor(s) for any flex space contained within the strip center. Physical Property Restrictions and sewer gradient shall not be a defense for new strip centers that fail to install an exterior, in-ground grease interceptor. A lack of proper planning for future installations of exterior, in-ground grease interceptors could result in a significant increase in costs due to retrofitting facilities for the installation of a grease interceptor. In addition, facilities that may not be required to install a grease trap or interceptor initially, may be required to install such devices in the future, per Section 25-202(i), Article VIII, Chapter 25 of the Code of the City of Salisbury, and are encouraged to consider the installation of a grease trap or interceptor during construction due to the costs of retrofitting facilities.

New exterior, in-ground grease interceptors shall be constructed in accordance with the criteria as set forth in this Plan unless otherwise approved by the Director.

Grease Interceptors shall conform to Chapter 10, Sec. 1003 of the North Carolina Plumbing Code and shall be designed and constructed according to the latest publications of ASTM C 1613 Standard Specification for Precast Concrete Grease Interceptor Tanks or ASTM F 2649 Standard Specification for Corrugated High Density Polyethylene (HDPE) Grease Interceptor Tanks except for the following requirements or other designs specifically approved by the Director:

1. Grease interceptors shall receive kitchen wastes. Kitchen wastes include, but are not limited to: 2, 3 and 4-compartment sinks, pot sinks, prep. sinks, can wash, and floor drains and any other fixtures with the potential to discharge grease-laden wastewater. Domestic wastelines shall not be connected to grease interceptor service.
2. Interceptors shall be sized according to the Grease Interceptor Sizing Criteria.
3. At least one baffle wall shall be provided and shall be located a distance from inlet wall of 2/3 to 3/4 of the total length of the interceptor.
4. Each grease interceptor shall have inlet and outlet tees. The outlet tee shall be submerged to a depth of 12 inches above the tank floor. It shall extend a minimum of 5 inches above the liquid level.
5. Grease interceptors may not be installed in drive thru lanes and parking spaces unless prior approval is granted by the Director.
6. Cleanouts shall be installed on the inlet and outlet sides of the interceptor and extended to grade. Cleanouts shall be installed in accordance with the latest edition of the NC Plumbing Code.
7. Grease interceptors shall be vented in accordance with the NC Plumbing Code with a minimum 2" diameter vent piping.
8. Cast-in-place and masonry tanks shall be designed by a professional engineer licensed in the state of North Carolina.

See "STANDARD DRAWINGS" section below.

### MINIMUM DESIGN CRITERIA FOR GREASE TRAPS

For cases in which exterior type grease interceptors are infeasible to install, there must be installed a grease trap sufficient to properly treat the wastewater from all fixtures that have the potential to discharge wastewater that contains fat, oil, grease, or wax. Approval to install a grease trap in lieu of a grease interceptor must be granted by the Director prior to installation.

All grease trap plans and specifications shall be approved by SRU prior to installation.

**Note: Contact the Rowan County Building Inspections Department at (704) 216-8619 and the Rowan County Health Department at (704) 216-8525 for requirements that this activity may be subject to.**

Grease traps shall conform to Chapter 10, Sec. 1003 of the North Carolina Plumbing Code when being designed and constructed and shall be installed in accordance with the manufacturer's instructions.

See "STANDARD DRAWINGS" section below.

All grease traps shall be sized according to table 1003.3.4.1 of the North Carolina Plumbing Code (see table below).

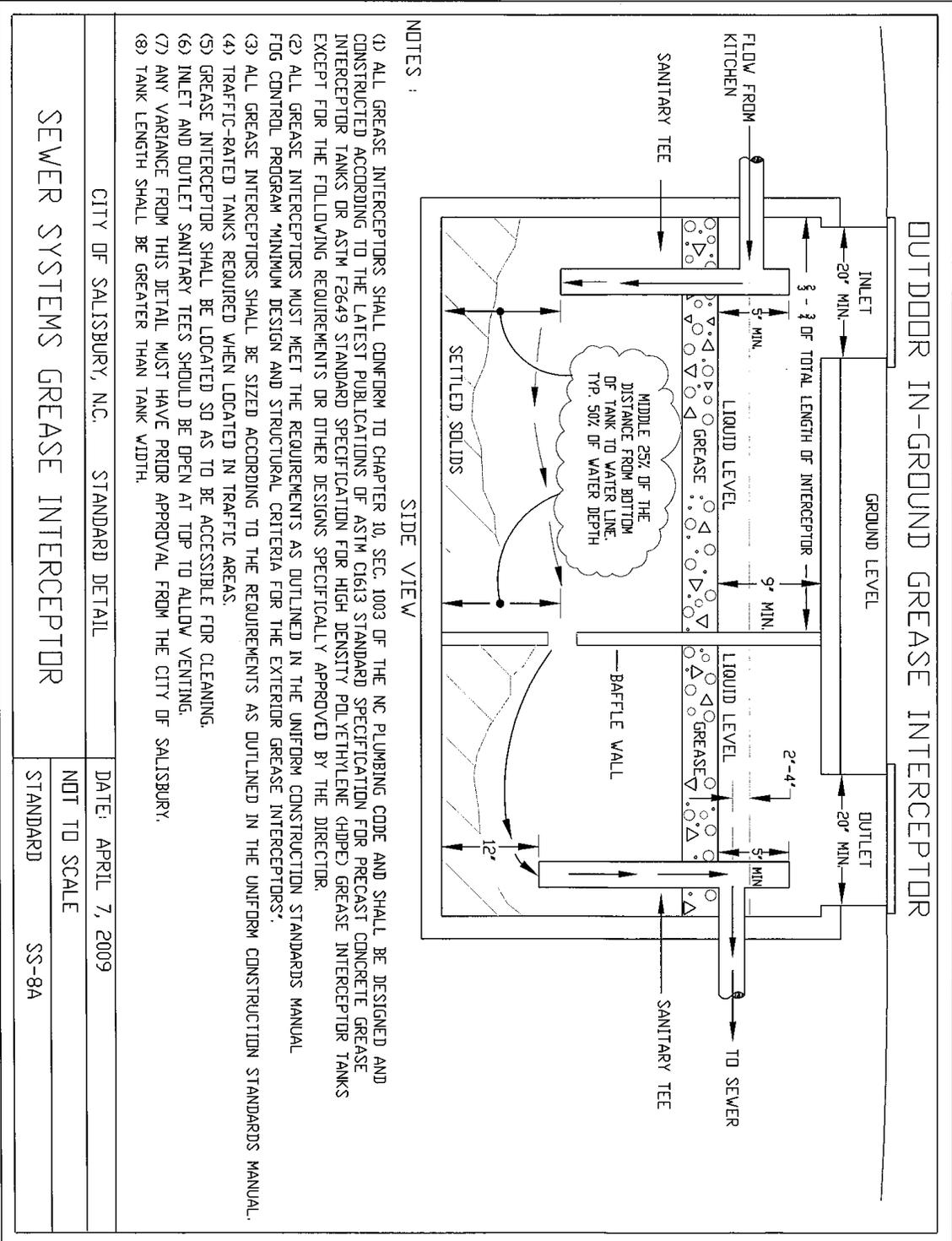
**Table 1003.3.4.1 North Carolina Plumbing Code  
Capacity of Grease Traps**

Total Flow-through Rating (gpm)	Grease Retention Capacity (pounds)
4.....	8
6.....	12
7.....	14
9.....	18
10.....	20
12.....	24
14.....	28
15.....	30
18.....	36
20.....	40
25.....	50
35.....	70
50.....	100

### INSTALLATION REQUIREMENTS FOR GREASE INTERCEPTORS AND TRAPS

All grease interceptors and traps shall be installed by a licensed North Carolina Plumbing Contractor and installed in accordance with the manufacturer's instructions. Grease interceptors and traps shall be installed in such a way as to be readily accessible at all times for inspection and/or maintenance.

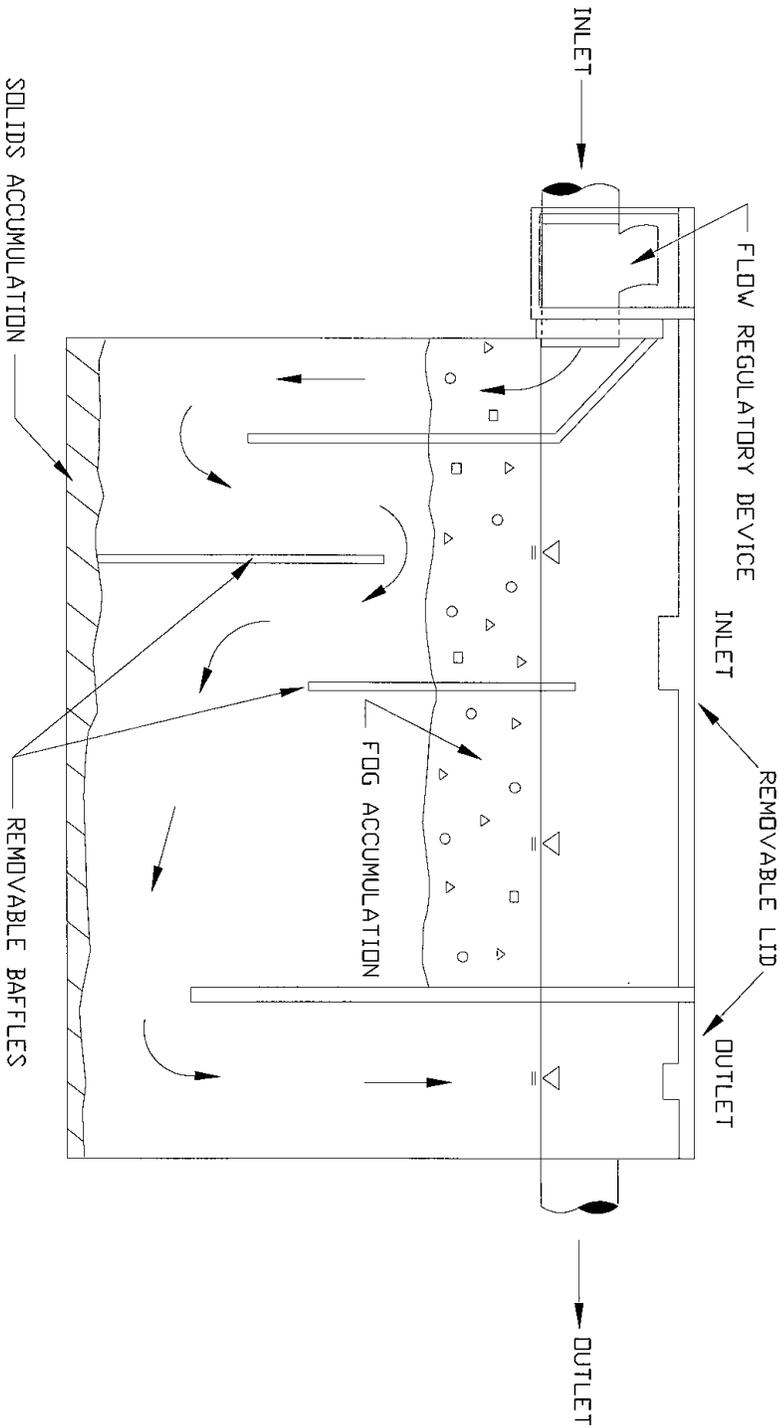
STANDARD DRAWINGS



- NOTES :
- (1) ALL GREASE INTERCEPTORS SHALL CONFORM TO CHAPTER 10, SEC. 1003 OF THE NC PLUMBING CODE AND SHALL BE DESIGNED AND CONSTRUCTED ACCORDING TO THE LATEST PUBLICATIONS OF ASTM C1613 STANDARD SPECIFICATION FOR PRECAST CONCRETE GREASE INTERCEPTOR TANKS OR ASTM F2649 STANDARD SPECIFICATION FOR HIGH DENSITY POLYETHYLENE (HDPE) GREASE INTERCEPTOR TANKS EXCEPT FOR THE FOLLOWING REQUIREMENTS OR OTHER DESIGNS SPECIFICALLY APPROVED BY THE DIRECTOR.
  - (2) ALL GREASE INTERCEPTORS MUST MEET THE REQUIREMENTS AS OUTLINED IN THE UNIFORM CONSTRUCTION STANDARDS MANUAL FOG CONTROL PROGRAM \*MINIMUM DESIGN AND STRUCTURAL CRITERIA FOR THE EXTERIOR GREASE INTERCEPTORS\*.
  - (3) ALL GREASE INTERCEPTORS SHALL BE SIZED ACCORDING TO THE REQUIREMENTS AS OUTLINED IN THE UNIFORM CONSTRUCTION STANDARDS MANUAL.
  - (4) TRAFFIC-RATED TANKS REQUIRED WHEN LOCATED IN TRAFFIC AREAS.
  - (5) GREASE INTERCEPTOR SHALL BE LOCATED SO AS TO BE ACCESSIBLE FOR CLEANING.
  - (6) INLET AND OUTLET SANITARY TEES SHOULD BE OPEN AT TOP TO ALLOW VENTING.
  - (7) ANY VARIANCE FROM THIS DETAIL MUST HAVE PRIOR APPROVAL FROM THE CITY OF SALISBURY.
  - (8) TANK LENGTH SHALL BE GREATER THAN TANK WIDTH.

CITY OF SALISBURY, NC.	STANDARD DETAIL	DATE: APRIL 7, 2009
SEWER SYSTEMS GREASE INTERCEPTOR		NOT TO SCALE
STANDARD		SS-8A

TYPICAL GREASE TRAP DESIGN (DESIGN WILL VARY BY MANUFACTURER)



NOTES :

- (1) GREASE TRAPS SHALL CONFORM TO CHAPTER 10, SEC. 1003 OF THE NORTH CAROLINA PLUMBING CODE WHEN BEING DESIGNED AND CONSTRUCTED.
- (2) GREASE TRAPS SHALL CONFORM TO THE PLUMBING AND DRAINAGE INSTITUTE STANDARD PDI G101, THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS STANDARD ASME A112.14.3 OR STANDARD ASME A112.14.4 FOR AUTOMATIC GREASE REMOVAL DEVICES.
- (3) ALL GREASE TRAPS SHALL BE SIZED ACCORDING TO TABLE 1003.3.4.1 OF THE NORTH CAROLINA PLUMBING CODE.

CITY OF SALISBURY, NC. STANDARD DETAIL		DATE: APRIL 7, 2009
SEWER SYSTEMS GREASE TRAP		NDT TO SCALE
STANDARD	SS-8B	