

# Murfreesboro Water Resources Department

## Fats, Oils & Grease Management Policy

### **Basis:**

The Murfreesboro Water Resources Department Fats, Oils and Grease Management Policy is based on the *Murfreesboro City Code, Chapter 33; Article III. Sewer Usage and Specifications, Section 33-36: Use of the Public Sewers, (A) Prohibited discharges, (B) Regulated discharges, (F) Local Limits*. In addition, the Environmental Protection Agency's Capacity, Management, Operation, and Maintenance (CMOM) Program criteria include the implementation and operation of a Fats, Oils and Grease (FOG) Management Program.

### **Scope & Purpose:**

To prevent sanitary sewer system blockages, obstructions, fouling of treatment equipment and processes; and sanitary sewer overflows that result from the contribution and accumulation of FOG from commercial FOG Generating Establishments (FGE's) such as restaurants and motor vehicle service establishments.

### **Definitions:**

1. Automatic Grease Recovery Device or Automatic Grease Recovery Unit (AGRD or AGRU): An electro-mechanical grease control device, which typically incorporates a heating element, a skimming mechanism and a strainer to separate and remove FOG and solid food particles from the wastewater stream prior to discharging to the sewerage system. This type of device is typically installed immediately downstream from a plumbing fixture's point of discharge. Automated function requires less intervention by the FOG Generating Establishment to ensure more efficient and effective operation.
2. Best Management Practices (BMP's): Schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the introduction of FOG to the sewerage system.
3. Black Water: Wastewater containing human waste from sanitary sewer plumbing drain fixtures such as toilets and urinals.
4. Brown Grease: Fats, oils and grease that are discharged to the grease or oil control equipment originating from FOG Generating Establishment wastewater.

5. Certified Grease Interceptor: Defined by MWRD as a passive, high performance grease control device certified by independent laboratories (NSF, PDI, UL, etc.) to perform to a prescribed minimum testing standard (PDI-G101, ASME A112.14.3). Most devices in this category exceed the minimum standards by a significant margin. Commonly referred to as a Hydro-Mechanical Grease Interceptor (HGI).
6. Change in Operations: Any change in the ownership, menu items, hours of operation, an increase in production or sales volume or operational procedures that have a potential to increase the volume of FOG generated and discharged by Food or Motor Vehicle Service Establishments in an amount that alone or collectively can cause or create a potential for increased loading on the publicly owned sewer collection system and treatment works.
7. Director: Shall mean the Director of the City of Murfreesboro Water Resources Department (MWRD) or their duly authorized agent, deputy or representative.
8. FOG: An acronym for Fats, Oils, & Grease, which has been derived from animal, vegetable or petroleum origins, which may interfere with the operation of the public sewer collection system or publicly owned treatment works (POTW); or become a removal problem in the sewer collection system or at the POTW. FOG is generated and discharged into the sewer collection system primarily by food service and motor vehicle service establishments, but also by other commercial entities and residential dwellings.
9. FGE: An acronym for FOG Generating Establishment which is defined by Murfreesboro Water Resources Department as any non-residential facility engaged in processes or services which has the potential to generate Fats, Oils and Grease (FOG) from both animal-vegetable and-or petroleum origins.
10. FSE: An acronym for Food Service Establishment, which is defined by Murfreesboro Water Resources Department as any non-residential facility engaged in cooking or preparing food for consumption. FSE's, such as restaurants, are the primary FOG generating establishments. However, other establishments including, but not limited to, convenience and grocery stores, food trucks, hotels and schools are also considered Food Service Establishments.
11. Gravity Grease Interceptor (GGI): Typically, a large, passive grease control device that relies primarily on volume, which allows for longer residence times, to produce the grease retention performance of the device. Gravity Grease Interceptors are typically not certified for performance. Commonly referred to as a grease interceptor.

12. Gray Water: Refers to all wastewater except black water as defined in this section.
13. Grease Control Equipment (GCE): A device for removing Fats, Oils and Grease from wastewater discharged by FOG Generating Establishments prior to the FOG laden wastewater entering the City's sanitary sewer collection system. GCE is designed to separate and retain or "trap" fats, oils and grease to prevent these substances from entering the City's sewer collection system. Devices include grease interceptors, grease traps, oil-water separators and other devices as approved by the Director.
14. Grease Interceptor (GI): Large capacity grease control device that is passive in operation and is typically installed underground. GI's may be equipped with a baffle wall that separates the inlet and outlet chambers. GI's utilize inlet and outlet Tee's as the primary means of flow control. However, some high-performance designs have eliminated the baffle wall and incorporate modern inlet and outlet Tee designs to control the rate of flow.
15. Grease Recycling Bin or Container: A bin or container used exclusively for the storage of yellow grease.
16. Hydro-mechanical Grease Interceptor (HGI): See Certified High-Performance Grease Interceptor.
17. Motorized Vehicle or Outdoor Power Service Establishment: Any commercial establishment engaged in the sales and-or service of any and all motorized equipment or vehicles powered by an internal combustion engine and-or lubricated with petroleum products. This category includes dealers, retail parts and repair-service facilities serving agriculture, automotive, aviation, off-road recreational, property maintenance and powered construction.
18. NAICS: Is an acronym for the North American Industry Classification System. NAICS provides comparable industry and service industry classifications. FOG Generating Establishments shall be classified by NAICS codes for the purpose of requiring comparable FOG control for comparable FOG Generating Establishments.
19. Oil Interceptor (OI): Large capacity oil control device that is passive in operation and is typically installed underground. This type of device may or may not be equipped with a baffle wall, but typically utilizes inlet and outlet Tee's as the primary means of flow control. However, oil control equipment may also incorporate coalescing devices or media to enhance oil-water separation by promoting globule adhesion.

20. Oil - Water Separator (OWS): See Oil Interceptor
21. Passive: Shall mean a specific operating principle incorporated into grease and oil control equipment designs that utilize a difference in specific gravity applied over a specified amount of time (detention time) as the primary means of separation of FOG from the waste stream to occur.
22. Passive Grease Trap: Grease Control Equipment identified as an “under the sink” or a “floor” trap. Passive grease traps are typically small capacity containers usually with flow ratings below 50 gallons per minute and are generally installed inside the facility. Requires diligent maintenance performed or initiated by the FSE for consistently efficient and effective operation.
23. RF Monitoring Device: An electronic data sampling device installed in a grease interceptor tank to remotely monitor activity.
24. Remodeling: A physical change or change in operations which has the potential to increase the amount of FOG generated by the FOG Generating Establishment. A physical change includes any one of the following:
- (1) A change to any part of the building or premises requiring a building permit.
  - (2) Under slab plumbing in the food processing area.
  - (3) An increase in the net public seating area.
  - (4) An increase in the size of the kitchen area.
  - (5) Any change in the size or type of the food preparation equipment. A change in operations may include but not limited to a change in hours of operation, increased sales or change in menu; see definition above.
25. SSO: Sanitary Sewer Overflow.
26. Service Lateral: The main waste plumbing drainpipe which conveys wastewater from its point of origin (building) to its intended destination (public sewerage system).
27. Tee (Inlet and Outlet): A Tee shaped (like the letter “T”) plumbing fixture fitted to the termination point of the inlet or outlet pipe penetration inside the grease interceptor tank. Tee’s are extended from the grease waste service lateral elevation below grade into the grease or oil interceptor to a prescribed depth allowing recovery (discharge) of the water layer (clear zone) located under the layer of FOG.
28. Yellow Grease: Fats, Oils and Grease (FOG) that has not been in contact or contaminated from other sources (water, wastewater, solid waste, etc...) and can be recycled.

## **FOG Discharge Limitations, Prohibitions and Requirements General:**

FOG Discharge Prohibition - No FOG Generating Establishment shall discharge or cause FOG to be discharged into the City of Murfreesboro sanitary sewerage system that exceeds the applicable concentration level specified in Section 33-36 of the Murfreesboro City Code; or to accumulate and - or cause or contribute to blockages in the sewer collection system or the sewer system lateral which connects the FOG Generating Establishment to the sewer system or in the building sewer.

FOG Generating Establishment Prohibitions - The following prohibitions shall apply to *all* FOG Generating Establishments:

- (1) Installation and - or the utilization of food grinders-garbage disposal units in the plumbing system of newly constructed or established Commercial FOG Generating Establishment's is prohibited. Existing food grinders – garbage disposal units must be removed.
- (2) Introduction of any additives into a commercial wastewater system for the purpose of emulsifying FOG is prohibited, unless a specific written authorization from the Director is obtained.
- (3) Disposal of any Fats, Oils and Grease into drainage pipes connected to the City's sewer collection system is prohibited. All waste cooking oils and used motor oil shall be collected and stored properly in receptacles for recycling or other acceptable methods of disposal.
- (4) Discharge of wastewater with temperatures in excess of 140° F to any grease or oil control device, including grease traps, grease interceptors and Oil Interceptors - Oil-Water Separators is prohibited unless a specific written authorization from the Director is obtained.
- (5) Discharge of wastes from toilets, urinals, and other fixtures containing fecal materials to sewer lines intended for grease or oil control equipment service is prohibited.
- (6) Discharge of any waste including FOG and solid materials removed from the grease or oil control device to the wastewater collection system is prohibited.
- (7) Increasing the use of water or in any other manner attempting to dilute a discharge as a partial or complete substitute for treatment to achieve compliance with this policy is prohibited.

Best Management Practices required – FOG Generating Establishments shall implement Best Management Practices in their operation to minimize the discharge of FOG to the sewer system. Best Management Practices include but are limited to those found in appendix A.

**General Requirements and Recordkeeping:**

- (1) All FOG Generating Establishments are required to have grease control equipment installed and properly maintained.
- (2) All FOG Generating Establishments shall be required to maintain records of cleaning and maintenance of grease control equipment at the FOG Generating Establishment location. Grease control equipment maintenance records include, at a minimum, the date of cleaning, company or person conducting the cleaning, and the amount or volume of grease wastewater removed. A grease waste or oil recycling hauler completed manifest will satisfy this requirement.
- (3) Grease control equipment maintenance records will be maintained at the FOG Generating Establishment premises, so they are available to Murfreesboro Water Resources Department personnel or their representative; or the Tennessee Department of Environment and Conservation upon request during normal business hours. The FOG Generating Establishment shall maintain grease control equipment maintenance records current for three (3) years.
- (4) No FOG Generating Establishment will discharge FOG in concentrations or in a manner which exceeds that which is prohibited in Section 33-36 (c) and (f) of the Murfreesboro City Code.
- (5) All FOG Generating Establishments are required to store and dispose of yellow grease or used motor oil in such a manner that the contents will not be discharged to any storm water grate, drain or conveyance. Pouring or discharging yellow grease, or any fats, oils or grease into the FOG Generating Establishment sewer lines or the City of Murfreesboro wastewater collection system is a violation of this ordinance.

**Requirements for new FOG Generating Establishments, change of ownership or upgrading of an existing FOG Generating Establishment including changes in operation or remodeling:**

Any new FOG Generating Establishment, upgrading of an existing FOG Generating Establishment including but not limited to; additional kitchen equipment or plumbing drain fixtures - system, changes in operation, remodeling, an increase of the quantity and - or frequency of FOG discharge or a change in FOG generating Establishment ownership will be required to submit a ***Wastewater Grease Interceptor Trap or Oil Interceptor Water-Separator Application*** form.

Any new FOG Generating Establishment shall submit a FOG Control Plan including a design for an appropriate grease control device in addition to the Grease Interceptor-Trap or Oil-Water Separator application. Any existing FOG Generating Establishment, which has been required to submit an application, may also be required to submit a FOG Control Plan.

***Wastewater Grease Interceptor Trap or Oil Interceptor Water-Separator Applications*** are available by request or in electronic form by visiting the Department's web page. The Department will review the application and FOG Control Plan, verify grease control equipment sizing and either approve or make changes as necessary.

All FOG Generating Establishments shall become in compliance with this policy no later than ninety (90) days after being given notice of the requirement to become compliant. This time may be extended by the Director for extenuating circumstances.

#### **Grease Control Equipment Installation Requirements – FOG Generating Establishment**

- Automatic Grease Recovery Device or Unit (AGRD or AGRU): At the Director's discretion, some FOG Generating Establishments may be permitted to install an AGRD type of grease control device located on the interior of the establishment. Where necessary, multiple unit AGRD installations may be required to provide adequate protection at all points of discharge. For a FOG Generating Establishment that has been approved to install an AGRD, the minimum size requirement is a 20 gallon per minute flow rating with a 40-pound storage capacity. All AGRD's must include the manufacturer's flow control device and must be vented on the upstream side of the unit. Passive type grease control equipment SHALL NOT BE PERMITTED for installation on the interior of any new or existing FOG Generating Establishment.
- Grease Interceptor: The default minimum grease control equipment for all FOG Generating Establishments is a Hydro-mechanical Grease Interceptor (HGI; MWRD approved manufacturer and model) or an equivalent 1,000 gallon, nominally sized monolithic unit, located in close proximity to the kitchen and installed underground on the exterior, unless approved otherwise by the Director.

#### **Grease Control Equipment Installation Requirements – Motor Vehicle Service Establishment**

Oil Interceptor and Oil-Water Separator size and type will be determined and specified by MWRD.

**Variance to Grease Interceptor Installation:** At the Director's discretion, a FOG Generating Establishment may receive a variance in lieu of the required installation of the default minimum grease control equipment where unusual circumstances, such as space constraints or in the interest of historical preservation, would render an otherwise typical grease interceptor installation impractical or unreasonable.

Final specifications for the capacity and type of all new grease control equipment for all new or existing FOG Generating Establishment equipment - plumbing fixture configurations will be determined by MWRD. All grease control equipment must be approved by MWRD prior to installation.

**Variance from Grease Interceptor Requirements for Alternative Equipment or Conditional Variance:**

At the Director's discretion, a variance from the grease interceptor requirements to allow alternative pretreatment technology that is at least equally effective in controlling the FOG discharge in lieu of the required grease interceptor may be granted to FOG Generating Establishments demonstrating that it is impossible or impracticable to install, operate or maintain a grease interceptor. The applicant shall bear the burden of demonstrating that the alternative method of disposal is at least equally effective. The Director's determination to grant a variance will be based upon, but not limited to, evaluation of the following conditions:

- (1) There is not adequate space for installation and - or maintenance of a grease interceptor.
- (2) There is not adequate slope for gravity flow between kitchen plumbing fixtures, the grease interceptor and the private collection lines or the public sewer.
- (3) The FOG Generating Establishment has justified that the alternative grease control equipment is equivalent to or better than a grease interceptor in controlling its FOG discharge. In addition, after installation of the alternative grease control equipment, the Food Service Establishment must be able to demonstrate its effectiveness to control FOG discharges through downstream visual monitoring of the sewer system for at least three months at its own expense. The variance may be rescinded if the alternative equipment is not found to be effective in maintaining FOG discharges to the sanitary sewerage system in concentrations below the limitations as established in Section 33-36 of the Murfreesboro City Code.

The Director's determination to grant or revoke a conditional variance shall be based upon, but not limited to, evaluation of the following conditions:



- (1) Quantity of FOG discharge as measured or as indicated by the size of FOG Generating Establishment based on seating capacity, number of meals served, menu, water usage, amount of on-site consumption of prepared food and other conditions that may reasonably be shown to contribute to FOG discharges.
- (2) A MWRD approved grease control device is properly installed and operated.
- (3) Adequacy of implementation of Best Management Practices and compliance history.
- (4) Sewer size, grade, condition based on visual information. FOG deposition in the sewer by the FOG Generating Establishment, and history of maintenance and sewage spills in the receiving sewer system.
- (5) Changes in operations that significantly affect FOG discharge.
- (6) Any other condition deemed reasonably related to the generation of FOG discharges by the Director.

#### Waiver from Grease Control Equipment Installation with Grease Disposal Mitigation Fee

For FOG Generating Establishments where the installation of grease interceptor is not feasible and no equivalent alternative grease control equipment can be installed, a waiver from the grease control equipment requirement may be granted with the imposition of a Grease Disposal Mitigation Fee as described herein. The Department's determination to grant the waiver with a Grease Disposal Mitigation Fee will be based upon, but not limited to, evaluation of the following conditions:

- (1) There is no adequate space for installation and - or maintenance of a grease control device.
- (2) There is no adequate slope for gravity flow between kitchen plumbing fixtures and the grease control equipment and - or between the grease control equipment and the private collection lines or the public sewer.
- (3) A variance from grease interceptor installation to allow alternative grease control equipment cannot be granted.

#### Application for Variance or Waiver of Requirement for Grease Interceptor

A FOG Generating Establishment may submit an application for variance or waiver from the grease interceptor requirement to the Director. The FOG Generating Establishment bears the burden of demonstrating, to the Director's reasonable satisfaction, that the installation of a grease interceptor is not feasible.

Upon determination by the Director that reasons are sufficient to justify a variance or waiver, terms and conditions for issuance of the variance or waiver shall be set forth in writing. A variance or waiver may be revoked at any time when any of the terms and conditions for its issuance is not satisfied or if the conditions upon which it was based change so that the justification no longer exists.

#### Grease Disposal Mitigation Fee

FOG Generating Establishments that operate without a grease control device may be required to pay an annual Grease Disposal Mitigation Fee to equitably cover the costs of increased maintenance of the sewer system as a result of the FOG Generating Establishment's inability to adequately remove FOG from its wastewater discharge. This section shall not be interpreted to allow the new construction of FOG Generating Establishments, or existing FOG Generating Establishments undergoing remodeling or change in operations, to operate without an approved grease control device unless the Director has determined that it is impossible or impracticable to install or operate a grease control device for the subject facility and has issued a waiver.

The Grease Disposal Mitigation Fee shall be established by resolution of the Board of Directors; and shall be based on the BOD and suspended solids contributed by FOG Generating Establishment operating without a grease control device.

#### Grease Interceptor Serving Multiple FOG Generating Establishments on a Single Parcel

Property owners of commercial properties or their official designee(s) shall be responsible for the installation and maintenance of any grease interceptor serving multiple FOG Generating Establishments that are located on a single parcel.

#### Food Service Establishment Classifications:

Class 1- NAICS 722515 Snack and Non-Alcoholic Beverage Bars including but not limited to deli, ice cream and frozen yogurt shops and NAICS 722330 Mobil Food Services

Class 2- NAICS 722513 Limited Service Restaurants

Class 3- NAICS 722511 Full-Service Restaurants

Class 4- NAICS 722514 Cafeterias, Grills, and Buffets

Class 5- NAICS 722310 Food Service Contractors for institutional, governmental, commercial, or industrial locations and 722320 Caterers transporting food to an event and banquet halls with catering staff.

#### **Grease Control Equipment Sizing and Specifications:**

## Sizing

Grease control equipment shall be sized specifically for each FOG Generating Establishment based on MWRD sizing calculations. However, the default minimum grease control equipment for all FOG Generating Establishments is a Certified High-Performance Grease Interceptor (Schier Products GB-250; Canplas Endura XL 100; Thermaco Trapzilla TZ-1826-GCA) or equivalent 1,000 gallon nominally sized, monolithic unit installed on the exterior.

To calculate the appropriate size grease control equipment, the FOG Generating Establishment owner, engineer, architect or contractor should submit a Wastewater Grease Interceptor Trap (GrIT) application or Oil-Water Separator application along with waste plumbing drawings and the equipment - plumbing fixture schedules to MWRD's FOG Division. To assist with *estimating* their grease control equipment sizing, applicants may also utilize MWRD's Grease Control Equipment Sizing Worksheet (available on the MWRD's Development web page).

The Department will review grease control equipment sizing information received from the Wastewater Grease Interceptor-Trap application or Oil-Water Separator application completed by the FOG Generating Establishment's owner or other duly authorized representative. The Department will approve or require additional grease control equipment volume, based on the type of FOG Generating Establishment, the number of fixture units, and additional calculations. The formula used by MWRD for calculating GCE capacity requirements is based on the U.S. Environmental Protection Agency's EPA Procedure 2 Model, which has been modified to meet WERF specifications. Grease interceptor capacity should not exceed 2,000 gallons for each nominally sized interceptor tank. In the event that the total grease interceptor capacity should exceed the capacity of a single tank, the FOG Generating Establishment shall install an additional interceptor of the appropriate size. If additional interceptors are required, they shall be connected in series.

Multiple-tank Grease Interceptor configurations shall always be installed in such a manner as to ensure positive flow between the tanks. Therefore, tanks shall be installed in series with the inlet invert of each successive tank set at a minimum of two (2) inches below the outlet invert of the preceding tank.

### **Grease Control Equipment Specifications**

Grease Control Equipment must remove fats, oils, and grease to a level at or below that which is required by Sections 33-36 (A) and 33-36 (B) of the Murfreesboro City Code. Failure to comply will require enforcement action in accordance with the Murfreesboro Water Resources Department's Food Service Establishment Enforcement Response Guide.

## **Grease Control Equipment - Interior**

### **Automatic Grease Recovery Device (AGRD)**

New or replacement grease control equipment installations on the interior of FOG Generating Establishments shall be at the discretion of the Director; and when permitted shall be of the Automatic Grease Recovery Device type. Under no circumstances will MWRD permit the use of passive style grease control equipment on the interior of any FOG Generating Establishment.

- (1) **All** AGRD's must be equipped with the manufacturer's flow control device and must be properly vented, both on the upstream side of the unit. Failure to have the flow restrictor and venting will be considered a violation.
- (2) The minimum flow rating and storage capacity for AGRD's is twenty (20) gallons per minute with forty (40) pounds of storage capacity.
- (3) Existing Passive-style Grease Traps will be cleaned completely of fats, oils, and grease and food solids at a minimum of every two (2) weeks, unless an alternate cleaning interval is authorized by the Director. If the FOG and food solid content of the grease trap is greater than twenty-five percent (25%), then the grease trap must be cleaned every week, or as frequently as needed to prevent twenty-five percent (25%) of liquid capacity displaced by FOG and food solids. More commonly referred to as the Twenty-five Percent (25 %) Rule.
- (4) Automatic Grease Recovery Devices shall be cleaned per the manufacturer's recommendations, which typically includes the disposal of FOG and removal of food solids from the strainer basket daily and weekly maintenance of the skimming mechanism.
- (5) AGRD waste should be mixed with an oil absorbent material; or sealed in a container to prevent leachate from leaking and then lawfully disposed of.
- (6) AGRD waste should not be mixed with yellow grease in the grease recycling bin.

## **Grease Control Equipment - Exterior**

### **Hydro-mechanical Grease Interceptor**

#### Tank Design

MWRD currently accepts Hydro-mechanical Grease Interceptors for use on the exterior from three manufacturers:

- Schier Products GB-250, GB-500 and GB-1000
- Canplas XL100
- Thermaco TZ-1826-GCA (in ground option)

## Gravity Grease Interceptor

Gravity Grease Interceptor tanks shall be designed and constructed as a monolithic (one-piece tank base and walls) unit. MWRD will not accept bisected tank designs or any other tank design which places the joint between the base and the lid below the water line at the outlet, as these tank designs are prohibited for use by any FOG Generating Establishment connected to the City of Murfreesboro's public sewer collection system, whether for new construction or replacement.

### Grease Waste Plumbing Design

- (1) A two-way (combination Tee with single opening at top) cleanout shall be installed immediately upstream of the grease interceptor inlet. A two-way combination Tee is not required to be installed downstream of the outlet side of the last tank in series for grease interceptors equipped with sampling ports.
- (2) The minimum inlet pipe diameter shall be four (4) inches ID and shall enter the receiving chamber at a minimum of two and one-half (2½) inches above the invert of the outlet piping. The minimum outlet pipe diameter shall be at minimum four (4) inches ID and shall be no smaller than the inlet piping.
- (3) Gravity Grease Interceptors shall be equipped with plumbing Tee's installed vertically and shall include a pipe (nipple) installed in the top of the Tee to extend within a range between two (2) inches but not more than six (6) inches from the interceptor ceiling. The bottom of the inlet Tee shall extend to within eighteen (18) inches of the tank floor. The bottom of the outlet Tee shall extend to within twelve (12) inches of the tank floor.
- (4) Hydro-mechanical Grease Interceptors are equipped with internal flow control plumbing by the manufacturer. No additional plumbing is necessary on the interior of Hydro-mechanical Grease Interceptors.
- (5) All pipe penetrations and connections between the grease waste plumbing and the interceptor with associated appurtenances (two-way combination Tee cleanouts and sampling ports) shall be made with resilient connectors. Openings in the sidewall of precast, concrete grease interceptor tanks for pipe penetrations shall be precast or cored. The opening shall be of a size to allow for lateral or vertical adjustments through 20 degrees.
- (6) A resilient connector, such as Kor-N-Seal or another approved alternative, shall be installed in the precast or cored (concrete) opening. The resilient connector shall be molded from an EDPM or polyisoprene compound meeting the requirements set forth in ASTM C923. An external corrosion resistant stainless-steel band shall be used to seal around the pipe. Where applicable, the void between the pipe and the connector shall be filled (on the inside only) with grout or a flexible gasket material such as RUB-R-NEK LTM or an approved equivalent.

## Baffles

- (1) Grease and Oil Interceptors equipped with an integral baffle shall have a non-flexing (i.e. concrete, steel, etc.) baffle the full width of the interceptor, sealed to the walls and the floor, and extend from the floor to within two (2) inches, but not more than six (6) inches from the ceiling. The baffle shall have an opening consisting of either a slot type opening (preferable) with a minimum height of six (6) inches and a minimum width of twenty-four (24) inches; or a minimum of five (5) six-inch ID openings. The openings shall be centered between the tank floor and the top of the liquid depth at the outlet. ***See illustration.***
- (2) The baffle shall divide the Grease or Oil Interceptor as follows: The inlet compartment shall contain two thirds (2/3) of the total liquid capacity and the outlet compartment shall contain one third (1/3) of the total liquid capacity of the tank.
- (3) Grease and Oil Interceptors designed to use a device other than a baffle as the primary means for flow control must be certified by the NSF or Plumbing Drainage Institute.

## Access Openings (Manholes)

- (1) Access to Grease and Oil Interceptors shall be provided by a minimum of 1 manhole per interceptor division (baffle chamber) and of 24-inch minimum dimensions terminating 1 inch above finished grade or 2 inches above finished grade when located in greenspace areas such as grass or landscape beds with a cast iron frame and cover. One manhole shall be located above the influent (inlet) Tee hatch and the other manhole shall be located above the effluent (outlet) Tee hatch. A minimum of 24" of clear opening above each manhole access shall be maintained to facilitate maintenance, cleaning, pumping, and inspections.
- (2) The maximum height of all risers below the manhole frame combined shall be 12". One 2" iron manhole frame extension ring may be used for finish grade adjustment in greenspace areas.
- (3) The manholes are to be accessible for inspection by the Department or other authorities having jurisdiction at all times.

## Sampling Port

A sampling port will be installed immediately after the outlet pipe of the Grease Interceptor. Sampling ports must be constructed to be water-tight from materials such as High-Density Polyethylene (HDPE) or precast concrete.

Concrete sampling ports must be constructed as monolithic units. The minimum access opening for precast concrete sampling ports will consist of a cast iron frame and cover with a minimum opening of eleven (11) inches X thirteen (13) inches to allow sampling using a one (1)-liter glass container. The drop from the Grease Interceptor outlet pipe to the bottom of the sampling port will be a minimum of four (4) inches, unless approved otherwise by the Director.

#### Access Openings (Manholes)

- (1) Access to Grease and Oil Interceptors shall be provided by a minimum of 1 manhole per interceptor division (baffle chamber) with a minimum diameter of twenty-four (24) inches. Manhole frames and covers must be constructed of cast iron; and the top of the casting must terminate at least one (1) inch above finished grade in paved or traffic designated areas; or two (2) inches above finished grade when located in greenspace areas such as grass or landscape beds. Grease interceptors must be equipped with two (2) manhole openings - one (1) manhole opening shall be located above the inlet Tee and one (1) manhole opening shall be located above the outlet Tee. The Tee's shall be located as near as possible to the inlet or outlet, but fully within the manhole opening. The space above the manhole opening shall be unobstructed and unrestricted to facilitate service (cleaning, pumping, repairs) and inspections.
- (2) Concrete risers must be constructed or precast as a monolithic unit, then field cut to achieve finish grade. One two (2) inch iron manhole frame extension ring may be used for finish grade adjustment in greenspace areas.
- (3) Grease Interceptor manholes are to be accessible for inspection by the Department or other authorities having jurisdiction (TDEC, U.S. EPA, etc.) at all times.

#### Additional Requirements

**Testing** – Grease and Oil Interceptors and sampling ports shall be constructed to be watertight in accordance with Section 5.1.2 of the American National Standard for precast concrete Gravity Grease Interceptors, IAPMO Z1000-Z1001 and ASTM C1719. A hydrostatic water test (IAPMO Z1000-Z1001) or vacuum test (ASTM C1719) shall be conducted by the installer and scheduled to permit visual verification by the Department.

## Hydrostatic Water Test

Preparation for the hydrostatic water test should include pre-testing by filling the tank to the prescribed levels twenty-four (24) hours prior to the scheduled test date and time. The hydrostatic water test shall be conducted in accordance with IAPMO Z1000-Z1001 and consist of the following procedures:

- (1) Plug the inlet of the tank (or first tank in series, if applicable) and the outlet of the last tank in series or sampling port.
- (2) Fill the tank(s) with water to a level above the top of the crown of the inlet and outlet pipe penetrations. The sampling port shall be filled to a level above the parting seam between the port and the iron access casting.
- (3) No visible leakage or drop in the water level in the tank(s) over a period of eight to ten (8-10) hours.

## Vacuum Test

Vacuum testing shall be in accordance with ASTM C1719. Vacuum testing shall be conducted in the field by the plumbing installation contractor in the presence of Department personnel using the following procedure(s):

- (1) Prepare for the vacuum test by introducing a negative pressure of four (4) inches Hg.
- (2) Allow the pressure to stabilize (hold) then disconnect vacuum source.
- (3) Test is passed when the tank holds four (4) inches Hg for five (5) minutes with no loss in pressure during the five (5) minute test period.

**Location** – Grease Interceptors shall be located to be readily accessible for cleaning, maintenance and inspections. They should be located close to the FOG point of discharge and in a location approved by the Director. Grease Interceptors may not be located behind barricades, fences or limited access-secure areas unless approved by the Director. Owners of Grease Interceptors – Oil Water Separators located in limited access areas must provide the Department with means of unimpeded access (codes, lock keys, etc.); or may be required to install RF Monitoring equipment and provide the Department with access to the RF monitor manufacturer’s data-logging service-server.

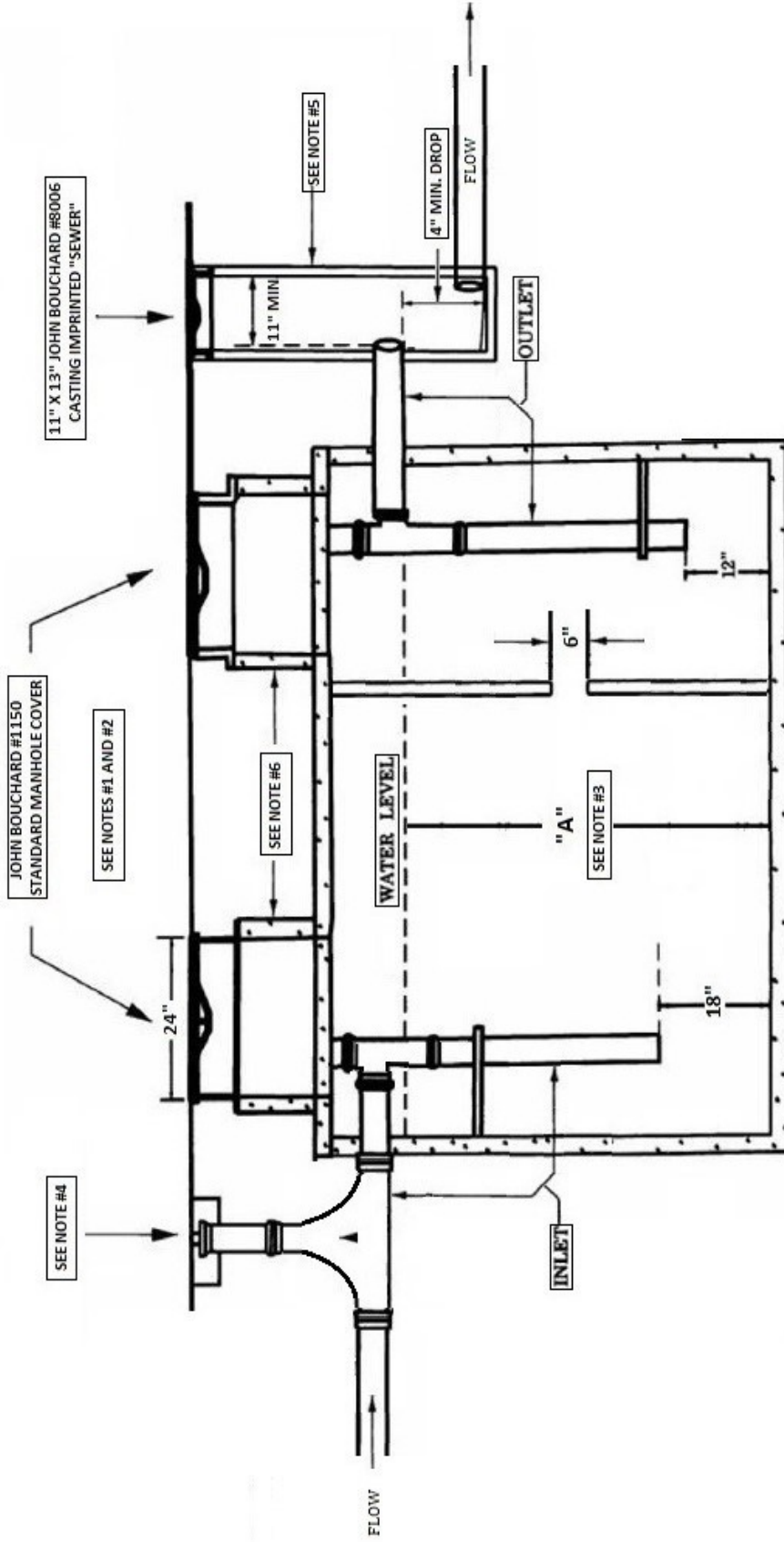
**Responsibility** – Removal of the grease or oil from the wastewater routed to a public or private sanitary system; and maintenance of the structural integrity of the grease control device (traffic rated, water-tight, etc.) is the responsibility of the FOG generator for Grease Interceptors serving individual tenant spaces; or the property owner-manager for Commonly Shared Grease Interceptors.



In the absence of the FOG generator, the owner or other duly authorized representative of any such real property shall assume all responsibilities for maintenance of all grease control equipment, which includes preparing grease control equipment (cleaning, repair, service) and ensuring that grease control equipment is acceptable to the Department prior to entering into subsequent lease agreements with a FOG generating tenant.

**Construction Material** – Grease and Oil Interceptors shall be constructed of sound durable materials, not subject to excessive corrosion or decay, and shall be water and gas tight. Each Interceptor and other associated appurtenances (e.g. exterior cleanouts, sampling ports, etc.) shall be designed to withstand any anticipated load to be placed on the Interceptor or any component of the assembly as imposed by the location such as traffic designated areas rated for pedestrian use, vehicular parking, service or driving areas; or of a design approved by the Director.

# PRECAST CONCRETE GRAVITY GREASE INTERCEPTOR WITH SAMPLING PORT



- NOTES:**
1. CONCRETE TANKS MUST BE PRECAST MONOLITHIC UNITS WITH THE LID ATTACHED ABOVE THE PIPE PENETRATIONS.
  2. THE MAXIMUM CAPACITY FOR ANY SINGLE TANK IS 2,000 GALLONS. SECONDARY TANKS MUST BE CONNECTED IN SERIES IF ADDITIONAL CAPACITY IS REQUIRED.
  3. "A" = THE CENTERLINE FROM THE BOTTOM OF THE OUTLET TO THE TANK FLOOR WITH THE BAFFLE WALL OPENING CENTERED ON DIMENSION "A". THE MINIMUM HEIGHT OF THE OPENING IS SIX (6) INCHES.
  4. ALL GREASE INTERCEPTORS MUST INCLUDE A TWO-WAY COMBINATION TEE CLEANOUT ON THE INLET SIDE OF THE TANK.
  5. ALL GREASE INTERCEPTORS MUST BE EQUIPPED WITH A SAMPLING PORT. SAMPLING PORTS MUST BE MOLDED OR PRECAST AS A MONOLITHIC UNIT. FIELD CUT TO ESTABLISH FINAL GRADE.
  6. MANHOLE FRAME RISERS MUST BE PRECAST AS A MONOLITHIC UNIT. FIELD CUT TO ESTABLISH FINAL GRADE.

## Grease Interceptor Cleaning - Maintenance Requirements

- Grease Interceptors must be pumped in full (completely evacuated) at minimum every 90 days, more often as needed or when the total accumulations of floating FOG (including floating solids) and settled solids has displaced twenty-five percent (25%) of the grease interceptor's overall liquid depth at the outlet. This criterion is referred to as the "25 Percent Rule". At no time, shall the capacity exceed the 25% limit for displaced liquid capacity; or the cleaning frequency exceed 90 days unless an alternate cleaning frequency has been approved by the Director. Secondary Grease Interceptor tanks (multiple Grease Interceptor tanks connected in series – i.e. primary tank followed by secondary tank) and Oil Interceptors must be serviced at minimum once per calendar year; more often as needed.
- Partial pumping of Grease or Oil Interceptor contents; or on-site pump & treatment of Interceptor contents will **not** be allowed due to reintroduction of fats, oils and grease to the Interceptor and pursuant to the Code Federal Regulation (CFR) § 403.5 (b) (8), which states "*Specific prohibitions*. In addition, the following pollutants shall not be introduced into a POTW: Any trucked or hauled pollutants, except at discharge points designated by the POTW".
- Grease and Oil Interceptors should be serviced when FOG Generating Establishment personnel are present to verify that the Interceptor has been evacuated completely (all solids removed with only minor residual liquids) and that the outlet Tee (if applicable) is present.
- Grease and Oil Interceptor outlet Tee will be inspected during cleaning and maintenance and the condition noted by the grease waste or recycled oil hauler's company or individual conducting the service. Outlet Tee's that are loose, not extended to the proper depth (within 12" of the bottom floor), not attached or missing must be repaired or replaced immediately.
- Grease and Oil Interceptors must have access manholes over the inlet Tee and outlet Tee for inspection and ease of cleaning-maintenance. Manholes will be provided for all separate compartments of Interceptors to facilitate complete cleaning. All manhole openings are to be accessible at all times.
- A record of all servicing of the Grease or Oil Interceptor shall be kept on file at the FSE for a minimum period of three (3) years; and shall be accessible to City inspectors during normal business hours.

Such records shall include the dates, quantities pumped, condition, any repairs and the identity of the person or business that conducted the service. The Director may require such records to be submitted directly to the Department.

## **Food Service Establishment Inspections and Surveillance**

Based on Murfreesboro City Code Section 33-39, the Murfreesboro Water & Resources Department Director and other duly authorized employees of the City, the Tennessee Department of Conservation and Environment or the U.S. Environmental Protection Agency, bearing proper credentials and identification, shall be permitted to enter upon all properties during normal business hours for the purpose of inspection, observation, measurement, sampling and testing. The Murfreesboro Water Resources Department will conduct inspections of the FOG Generating Establishment operation, including Grease Control Equipment inspection, inspection of records, inventory of kitchen equipment and plumbing fixtures, and conduct or require the FOG Generating Establishment to conduct any additional monitoring of the FOG Generating Establishment to determine compliance with the FOG Management Policy.

### Falsifying Information or Tampering with Process

It shall be unlawful to make any false statement, representation, record, report, plan or other document that is filed with the Department, or to tamper with or knowingly render inoperable any grease control device, monitoring device, method or access point required under this policy.

## **Fees**

As necessary and as approved by the City Council, the Murfreesboro Water Resources Department may charge FOG Generating Establishments for monitoring - surveillance fees, inspection fees and for reimbursement for the FOG program costs. This in addition to reimbursement of costs related to unclogging blockages as allowed by City Code.

## **Enforcement Action**

Enforcement action against the FOG Generating Establishment may be taken for various reasons including but not limited to:

- Failure to clean or pump grease control equipment.
- Failure to maintain grease control equipment including inspection and installation of properly functioning effluent-Tee and baffles.
- Failure to install Grease Control Equipment.

- Failure to control FOG discharge from the FOG Generating Establishment; contributing to a sewer line blockage or obstruction; contributing to a Sanitary Sewer Overflow; use of additives in such quantities so that FOG is pushed downstream of the FOG Generating Establishment.
- Enforcement action and penalties for FOG Generating Establishments that are not in compliance with the Fats, Oils and Grease Management Policy are provided in the Department's FOG Generating Establishment Enforcement Response Guide.

Based on *Murfreesboro City Code, Section 33-40. Penalties and damages*, the following apply:

Fats, Oils and Grease blockage in sewer line caused by a Food Service Establishment:

- (1) First offense – All costs associated with cleaning the sewer lines and restoring service to the affected areas, plus any damages as may be assessed under Section 33-43.
- (2) Successive occurrences within twelve months of the previous occurrence - A One Thousand Dollar (\$1,000.00) penalty plus all costs associated with cleaning the sewer lines and restoring service to the affected areas, plus any damages as may be assessed under Section 33-43.

Food Service Establishment failure to maintain GCE after Notification or NOV due date:

Whenever it is determined that the frequency of pumping of a Grease Interceptor is inadequate, the Director shall notify the establishment of the intent of the Department to have the grease interceptor pumped at a specified date, generally ten (10) working days from the notice if not pumped by the FSE prior to the specified date. Whenever the Grease Interceptor is pumped by the Department or its contractor, the customer shall be charged twice the actual cost of pumpage. Charges shall be added to the customer's regular bill for sewer service or may be billed separately.

Additional Enforcement Actions and Penalties

Enforcement action and penalties for food service establishments with deficiencies and not in compliance with the Department's FOG Management Policy will be as per the ***Murfreesboro Water Resources Food Service Establishment Enforcement Response Guide***.

**Fats, Oil, and Grease (FOG) Best Management Practices (BMP's)**

*Prevent FOG Blockages in the Sanitary Sewer System*

Best Management Practice	Purpose	Benefits
Train kitchen staff and other employees about how they can help ensure BMPs are implemented.	People are more willing to support an effort if they understand the basis for it.	All of the subsequent benefits of BMPs will have a better chance of being implemented.
Post " <b>No Grease</b> " signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	These reminders will help minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.
Use water temperatures less than 140°F in all sinks, especially in pre-rinse sinks before a mechanical dishwasher, which requires a minimum temperature of 160°F.	Temperatures in excess of 140°F will dissolve grease, but grease can re-congeal or solidify in the sewer collection system as the water cools.	The food service establishment will reduce its costs for the energy – gas or electric – for heating the water.
Use a three-compartment sink dishwashing system, which includes sinks for washing, rinsing, and sanitizing in a 50-100 ppm bleach solution. Water temperatures are less than 140°F. (See above)	The three-compartment sink system uses water temperatures less than 140°F where a mechanical dishwasher requires a minimum temperature of 160°F. (See above)	The food service establishment will reduce its costs for the energy - gas or electric - for heating the water for the mechanical dishwasher and for operating the dishwasher.
Recycle waste cooking oil.	This is a cost recovery opportunity.	The FSE is paid for the waste material and it reduces the amount of garbage paid be hauled away.
"Dry wipe" pots, pans, and dishware prior to dishwashing.	The grease and food that remains in pots, pans, and dishware will likely go to the landfill instead of the grease traps and interceptors.	This will reduce the amount of material going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs
Dispose of food waste by recycling and/or solid waste removal.	Some recyclers take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed as solid waste in landfills by solid waste haulers.	Recycling of food wastes will reduce the cost of solid waste disposal.  Disposal by solid waste reduces the frequency and cost of grease trap/interceptor cleaning.

APPENDIX A

**Fats, Oil, and Grease (FOG) Best Management Practices (BMPs)**

***Properly Maintain Devices to Prevent Introduction into the Sewer System***

<b>BMP</b>	<b>Reason</b>	<b>Benefits</b>
<p>Observe all grease trap or interceptor cleaning / maintenance activities to ensure the device is properly operating and serviced.</p>	<p>Pumpers may take shortcuts. By monitoring the cleaning operation, the FSE manager can ensure that it is consistent with the correct cleaning procedures.</p>	<p>The FSE ensured it is getting full value for the cost of cleaning. Otherwise the establishment may be paying more often than necessary.</p>
<p>Clean undersink and floor grease traps (GT's) at a minimum of every 2 weeks, more often as needed.</p> <p>If grease traps are more than 25% full when cleaned bi-weekly, the cleaning frequency needs to be increased.</p> <p>Mix grease trap wastes with a dry oil absorbent material such as "kitty litter" before disposal.</p>	<p>Undersink and floor GT's have less volume than Grease Interceptors (GI's). Bi-weekly cleaning of undersink and floor GT will reduce the FOG concentration level being discharged</p> <p>If the FSE does not have a GI, an undersink trap is the only means of controlling grease. Unless there is adequate protection, MWSD requires installation of a GI.</p> <p>The disposal of liquid wastes with solid waste is prohibited.</p>	<p>This will reduce the FOG concentration level being discharged to the City's sanitary sewerage system.</p> <p>This will help maintain FOG concentration levels that are below the maximum allowable FOG discharge limit established by the Murfreesboro City Code.</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>
<p>Clean Grease Interceptors (GI's) at a minimum of every 90 days, more often as needed.</p> <p>Follow the " 25% Rule"</p> <p>Do not allow the GI top grease layers and the bottom food solids layers in combination to exceed 25% of the total GI liquid capacity at any time.</p>	<p>GIs must be cleaned at a minimum of every 90 days to ensure that the grease accumulation does not cause the interceptor to discharge concentrations of FOG that exceed the maximum allowable limit established by the MWSD FOG Policy.</p> <p>Cleaning frequency is determined by the type of establishment, interceptor size, and the volume of flow discharged by the FSE.</p>	<p>Routine cleaning prevents clogging of the FSE sewer drain line and the City's sewer lines, avoiding the high costs associated with a blockage or overflow. The FSE will incur all costs associated with clearing both private and public sewer lines of FOG related blockages and cleanup of overflows.</p>
<p>Keep a maintenance log.</p>	<p>A log serves as a record of the frequency of cleaning the interceptor. It is required by MWSD to ensure that maintenance is performed on a regular basis.</p>	<p>The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce cost.</p>

**Fats, Oil, and Grease (FOG) Best Management Practices (BMPs)**

***Prevent FOG from Entering Creeks and Streams Through the Storm Drain System***

<b>BMP</b>	<b>Reason</b>	<b>Benefits</b>
<p>Cover outdoor grease recycling containers.</p> <p>The City of Murfreesboro is required to enforce a Storm water Runoff Management Program.</p>	<p>Uncovered grease recycling containers can collect rainwater. Since grease floats, accumulated rainwater can cause it to overflow onto the ground and into the stormwater system and nearby streams.</p>	<p>Reducing FOG discharge to storm drains helps to improve the water quality of receiving streams</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>
<p>Locate grease recycling containers away from storm drain catch basins.</p>	<p>The farther from the catch basin, the more time someone has to clean up spills or drainage prior to entering storm drains.</p> <p>Be aware of FOG spilled while carrying waste to the grease recycling containers as well as any that may drip from the grease recycling containers.</p>	<p>Reducing FOG discharge to storm drains helps to improve the water quality of receiving streams</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>
<p>Use absorbent pads or other material in the catch basins if grease containers are nearby.</p> <p>Do not use free-flowing absorbents such as "kitty litter" or sawdust.</p>	<p>Absorbent pads and other materials can serve as an effective barrier to grease and oil entering the storm drain system.</p>	<p>Reducing FOG discharge to storm drains helps to improve the water quality of receiving streams</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>
<p>Use absorbent pads or other material to clean up spills around outdoor equipment, containers or dumpsters.</p> <p>Do not use free-flowing absorbents such as "kitty litter" or sawdust.</p>	<p>Absorbent pads or materials can help clean up FOG spilled on the ground and prevent it from flowing to the storm drain system.</p> <p>Free-flowing absorbents may wash into the storm drain system.</p>	<p>Reducing FOG discharge to storm drains helps to improve the water quality of receiving streams</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>
<p>Routinely clean kitchen exhaust system filters.</p>	<p>If FOG escapes through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains.</p>	<p>Reducing FOG discharge to storm drains helps to improve the water quality of receiving streams</p> <p>The FSE can avoid the high costs associated with the containment and cleanup of FOG spills and overflows and penalties or fines that may result from an illegal discharge.</p>



**General Prohibitions Relating to Discharge of FOG**

Prohibition	Basis
Do not discharge FOG in concentrations that will cause an obstruction in a sewer; or pass through or interference at a wastewater treatment facility.	Grease can solidify and trap other solid particles to completely plug the wastewater collection system.
Do not discharge grease, shredded garbage, animal guts or tissues, paunch manure, bones, hide, hair, or entrails.	These materials in combination or alone can cause blockages and other operations and maintenance problems in the wastewater collection and treatment system.
Do not discharge wastewater with temperatures in excess of 140°F to any grease control device. This includes water from mechanical dishwashers that have a minimum required temperature of 160°F.	<p>Temperatures in excess of 140°F will dissolve grease, which may re-congeal as the water cools and cause blockages in the collection system.</p> <p>High temperature water, such as from a dishwasher, may be discharged to a GI if there is sufficient volume to allow time for the grease and water to separate and be retained therein.</p> <p>The high volume also provides dilution of the detergents in the dishwasher waste.</p>
Do not discharge food wastes and scraps into any type of grease removal device.	Food wastes will greatly reduce the capacity of the device for retaining grease and may increase the possibility of blockages.
Do not discharge caustics, acids, solvents, or other emulsifying agents.	<p>Though emulsifying agents can dissolve solidified grease, the grease can re-congeal further downstream in the sewer collection system.</p> <p>These substances can have harmful effects on the wastewater treatment system and can be a hazard to employees working in the collection system.</p>
Do not discharge FOG containing substances that will become viscous between 32°F (0°C) and 150°F (65°C).	The temperatures shown are temperatures that can occur in the wastewater collection and treatment system. If these substances congeal, solidify, or become too viscous, they can cause blockages and other operations and maintenance problems.
Do not utilize biological agents for grease remediation.	The agents may disrupt the biological treatment process at the wastewater treatment plant.
Do not clean equipment outdoors in an area where water can flow to the gutter, storm drain, or street.	Grease and dirt will be washed off the equipment and enter the storm drain system and flow to nearby streams.