

**FATS, OIL AND GREASE (FOG)
BEST MANAGEMENT
PRACTICES FOR FOOD
SERVICE ESTABLISHMENTS**



CITY OF BAXTER, MINNESOTA

Adopted by the City Council on April 15, 2008

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DEFINITIONS

Administrative Authority: The Baxter Public Utilities Commission, Baxter Public Works Director, Baxter Building Official, or City staff member authorized by the Baxter City Council.

Best Management Practices: Schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the introduction of fats, oils and grease into the sanitary sewer facilities.

Fats, Oils and Grease (FOG): Any substance, such as vegetable, animal, or other product that is used in, or is a by-product of the cooking or food preparation process and that turns or may turn viscous or solidifies with a change in temperature or other condition or organic polar compounds derived from animal or plant sources that contain multiple carbon chain triglyceride molecules. These substances are detectable and measurable using analytical test procedures established in 40 CFR 136 as may be amended from time to time.

FOG Control Device: Any FOG Interceptor, FOG Trap or other mechanism, device or process, which attaches or is applied to wastewater plumbing fixtures and lines for the purpose of trapping, collecting or treating FOG prior to discharge to the sanitary sewer system. A FOG Control Device may also include other proven methods to reduce FOG subject to the prior approval of the City.

FOG Control Program: The FOG Control Program required and developed by the City to reduce the amount of FOG entering the sanitary sewer system.

FOG Design Manual: The “Fats, Oils and Grease Design Manual” setting forth City required design sizing methods for FOG Interceptors and FOG Traps.

FOG Discharge Manual: The City publication entitled “Fats, Oils and Grease Discharge Manual” setting forth Best Management Practices for Food Service Establishment Facilities to follow and reduce the amount of FOG being discharged into the sanitary sewer system to compliant levels.

FOG Interceptor: A multi-compartment device that is constructed in different sizes and is generally required to be located underground between the Food Service Establishment Facility and the connection to the sanitary sewer system. These devices primarily use gravity to separate FOG from the wastewater as it moves from one compartment to the next.

FOG Trap: A FOG Control Device that is used to serve individual plumbing fixtures. A FOG Trap usually has limited effect and is used in those cases where the use of a FOG Interceptor is determined to be impossible.

Food Grinder: Any device installed in the plumbing of a facility or sewage system for the purpose of grinding food waste or food preparation byproducts prior to disposal into the sanitary sewer system.

Food Service Establishment (FSE) Facility: A location, business or facility primarily engaged in preparing, serving or otherwise making food or food ingredients available for sale or consumption that uses one or more of the following preparation activities: cooking, whether by frying, baking, grilling, sautéing, rotisserie, boiling, blanching, roasting, toasting, poaching, infrared heating, searing or barbequing. FSE Facilities include cold dairy and frozen food stuff preparation locations, coffee shops that utilize dairy and non-dairy creams and any other food preparation activity or establishment that produces a food or drink product in or on a receptacle that requires washing.

Limited Food Service Establishment (LFSE) Facility: A location, business or facility, engaged only in reheating, hot holding or re-assembly of ready to eat food products that does not discharge waste from food preparation or clean-up qualifies as a LFSE Facility. A LFSE Facility can not include any operation or process that changes the form, flavor or consistency of food.

Sanitary Sewer: The system of pipes installed underground to convey wastewater from residences, businesses and industries to the wastewater treatment facility.

Storm Sewer: The system of pipes installed underground and related structures to convey storm water to receiving surface waters. No discharge other than the runoff of precipitation is allowed to enter the storm sewer.

Introduction

The City of Baxter operates a sanitary sewer collection system that receives wastewater from residences, commercial facilities and industries within the city limits of Baxter. This wastewater is pumped to the Brainerd Wastewater Treatment Plant (BWWTP) for removal of significant share of the contaminants before discharging the treated water to the Mississippi River.

Baxter City Code 8-2-16, "Regulation of Fats, Oils and Grease" regulates the discharge of fats, oils and grease (FOG) into the sanitary sewer system by food service establishments (FSE). FSE's generate thousands of pounds of cooking oil, grease and food wastes each day in Baxter. Experience has shown that if this waste is not managed properly, it can result in several problems for the City sewer system and the wastewater treatment plant. The FOG will clog sewers resulting in sewer blockage and backups. Once at the wastewater treatment plant, the food wastes impart a significant load on the wastewater treatment processes, resulting in increased costs for treatment of the wastewater and decreased capacity for other users. The food wastes in the wastewater also contain significant pollutants that can impact the water quality in the Mississippi River.

SEWER CLOGS

Animal and vegetable based oils and greases often enter the sanitary sewer system in the liquid form. The oils and greases separate and float on the water in the pipe and, as they cool down, solidify. This grease then coats the sewer pipe walls in a build-up that eventually clogs the pipes. Clogging of the sewer can cause sewer back-ups, overflows and loss of service. Back-ups are a potential health hazard that can result in significant expense to clean up.

TREATMENT COST

Food wastes that are discharged directly to sanitary sewer without having the FOG intercepted or through food grinders (garbage disposals) result in a higher strength sewage that requires more treatment than typical wastewater. These wastes have higher organic material and nutrient levels that results in higher costs for collection and treatment. These costs add up to more than one dollar per pound. This is significantly more than the cost of disposing of these wastes in a landfill. The additional costs to treat these wastes are passed on to the residents and businesses of Baxter in the form of higher sewer rates.

ENVIRONMENTAL EFFECTS

The water quality in the lakes and rivers throughout the Baxter area is an important resource to the people of the area as well as to the economy of the area. Discharging wastes to the sewer and ultimately the Mississippi river results in degradation of these important resources. It is important that food wastes, including FOG and food scraps, be disposed of as solid wastes to landfills to the extent possible. This will minimize the potential for contamination of the surface water resources. Food wastes contain significant nutrients such as phosphorus and nitrogen which can encourage the growth of algae in surface waters. The wastewater treatment plant can remove some, but not all of these nutrients from the wastewater.

A. PURPOSE OF MANUAL

This manual is written to provide restaurant and food service related business managers and owners with information about FOG discharge prevention techniques. These techniques have been proven effective in reducing costs for owners and preventing oil and grease discharges to the sanitary sewer system. The discharge of FOG to the sanitary sewer system is illegal in Baxter, as it is in most Minnesota cities. Ensuring that the proper FOG interceptor devices are properly installed, and most importantly properly maintained, is the key to avoiding enforcement action against your business. This manual focuses on the methods to prevent a great portion of the FOG from being discharged into the drain as well as trapping the FOG that does get down the drain before it gets to the sanitary sewer.

This manual includes an overview of the City Code regulating FOG, instructions for maintenance of FOG interceptors and inspection checklists for food service establishments and inspectors.

Baxter City Code 8-2-16 mandates the use of a FOG interceptor for all FSE's, as well as the use of best management practices for preventing FOG from entering the sanitary sewer system. A copy of the code is available at City Hall or on the City web site www.ci.baxter.mn.us.

B. FREQUENTLY ASKED QUESTIONS

WHAT IS A FOG INTERCEPTOR AND HOW DOES IT WORK?

A FOG interceptor is a buried vault with a capacity of about 1000 gallons located outside the building. A FOG interceptor is also commonly referred to as just a “grease

interceptor” in the industry. The vault contains a minimum of two compartments and flow between the compartments is through a configuration of holes and baffles designed to allow solids to settle and to retain FOG. The capacity of the interceptor provides adequate detention time so that the wastewater has time to cool, allowing FOG to separate and rise to the surface. The FOG then remains floating on the surface until it is removed by a pumper.

DO I NEED A FOG INTERCEPTOR?

Any food service establishment that discharges wastewater containing FOG into the sewer system is required to install and maintain a FOG interceptor. This FOG interceptor must comply with the Minnesota Plumbing Code and the City of Baxter’s FOG Interceptor Design Manual.

WHO DETERMINES IF I NEED A FOG INTERCEPTOR?

All FSE’s are required to have a FOG interceptor if food is prepared on site or food service or preparation containers are washed on site. City code defines the type of establishments that need an interceptor but the City Building Department will make a final determination of whether FOG interceptor is required.

DO I HAVE A FOG INTERCEPTOR OR FOG TRAP?

The Baxter City Building Department will be in contact with all FSE’s to inspect FOG interceptors and FOG traps and determine whether they comply with the city requirements. A FOG trap, commonly called a grease trap, is a much smaller trap, installed indoors and typically serving a single sink. A FOG trap is allowed in some circumstances in Baxter, where the potential to discharge FOG to the sanitary sewer is limited by type of food preparation or food service capacity.

HOW OFTEN DO FOG INTERCEPTORS NEED TO BE CLEANED?

Based on historical inspection observations and established best management practices, most FOG interceptors need to be cleaned every 60 to 90 days. Some establishments will find it necessary to clean their interceptors more often. In some instances, light menu, low volume facilities may be able to clean less frequently. Rarely does a facility have to pump less often than every six months. The City Code requires that FOG interceptors be inspected by the FSE every 90 days. If the FOG interceptor is full at this interval, a more frequent cleaning interval will be required. The FSE may request a less frequent cleaning interval if it demonstrates to the City through accurate record keeping that a less frequent cleaning schedule will not cause solids or FOG accumulation greater than 25% of the FOG interceptors full capacity.

WHAT IF I DON'T TAKE CARE OF MY FOG INTERCEPTOR?

City Code requires that a record of the inspection and pumping of the FOG interceptor be submitted annually for the food service license application. **Failure to submit this documentation may result in refusal of the renewal application.**

Additionally, if the FSE fails to adequately maintain its interceptor, it will eventually encounter maintenance problems and plugged sewer lines. The blockage can create a sewer backup resulting in lost hours of operation, expensive clean-up costs and ultimately a health issue with the FSE.

C. BEST MANAGEMENT PRACTICES (BMP'S)

Control of FOG starts with implementing processes that prevent a great share of the FOG from entering the sewer in the first place. Simple kitchen procedures can significantly reduce the amount of FOG getting to the sewer as well as extending the maintenance interval for the FOG interceptor. The following Best Management Practices (BMP's) should be implemented at each food service establishment to comply with City Code:

BMP 1: Train Kitchen Staff on How to Minimize FOG and Food Waste Disposal to the Sanitary Sewer.

People are more willing to support an effort if they understand the basis for it. All of the benefits of the BMP's will have a better chance of being implemented if the reasons for it are understood. Train employees on the BMP's that have been adopted for their establishment. All FSE's should instruct employees not to pour FOG down the drain and not to use sinks to dispose of food scraps.

BMP 2: Post "No Grease" Signs

Post "No Grease" signs above sinks and on the front of dishwashers. Signs serve as a constant reminder for staff working in the kitchen. These reminders help minimize FOG discharge to the FOG interceptor and reduce the cost of cleaning and disposal.

BMP 3: Dry Wipe Pots, Pans and Dishware Prior to Dishwashing

Dry wipe the grease and food that remains on pots, pans and dishware results in the waste going to the landfill, not down the sanitary sewer. This will reduce the amount of material going down to the FOG interceptor and ultimately, the sanitary sewer. Use rubber scrapers to remove food particles, fats, oils and grease from cookware, utensils and

serving ware, then place the removed food particles in the garbage. Install fine meshed screens in the drain of each kitchen and hand sink to prevent drains from being used to flush food waste down the drain.

BMP 4: Dispose of Food Waste By Recycling and/or Solid Waste Removal

Some recyclers will take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed of as solid waste in landfills by garbage haulers. This is more effective in preventing pollution and reducing disposal costs than discharging to the sanitary sewer.

If solid food wastes are discharged to the sanitary sewer, the wastes will fill the FOG interceptor quicker or carry through the FOG interceptor to the wastewater treatment plant. Food wastes discharged to the sanitary sewer cost significantly more to treat and reduces available treatment capacity at the treatment plant.

BMP 5: Use Absorbent Pads to Clean Up Spilled Material

Absorbent pads can help clean up grease and oil that is spilled on the ground and prevent it from being discharged to the sanitary sewer. Prior to washing deep fat fryers, use a rubber spatula to squeegee down the sides while grease and oils are still warm. Wipe the fryer with paper towels and dispose of in the garbage. Before washing grill and roaster/broiler drip pans, empty their contents into a waste FOG container and then wipe them clean with paper towels.

BMP 6: Use Water Temperatures Less Than 140 Degrees F

Use water temperatures less than 140 degrees F in all sinks, especially the pre-rinse sink before the mechanical dishwasher. The mechanical dishwasher uses temperatures higher than 140, but the plumbing code prohibits discharge of water from automatic dishwashers through FOG interceptors. Temperatures of 140 degrees will dissolve grease, but grease can congeal or solidify in the sanitary sewer system as the water cools causing maintenance and treatment problems.

BMP 7: Use a Three Sink Dishwashing System

Use a three-sink dishwashing system, which includes sinks for washing, rinsing and sanitizing. Proper use of the three-sink process can reduce the discharge of FOG to sewer by 25%. Pour all liquid grease and oils from pots and pans into a waste FOG container

that is stored at the pot washing sink, and then scrape out the solidified FOG prior to washing.

BMP 8: Recycle Waste Cooking Oil

There are several waste cooking oil recyclers in the area. In most cases, the FSE will be paid for the used oil. Never dispose of fryer fat waste, waste oils and fats by pouring them down the drain for reasons already mentioned, plus, this material is usually clean enough to be recycled. Collect and store this waste in a rendering tank. Most recyclers will provide outside receptacles for storage until pickup.

BMP 9: Witness All FOG Interceptor Cleaning and Maintenance

FOG interceptor pumpers may take shortcuts. It is recommended that the owner or business manager inspect the cleaning operation and insures that it is consistent with the procedures established in this manual, then they are assured of getting the proper service for their money.

BMP 10: Keep a Maintenance Log

The maintenance log serves as a record of the frequency of cleaning and volume of material removed during cleaning of the interceptor. It is required that these records be submitted to the City with the annual food service license application. The record of FOG level and solids level will help the establishment manager optimize the frequency of cleaning. City code requires inspection every 90 days, so an entry in the log every 90 days will be expected unless previous approval for less frequent inspections has been given by the City.

D. PROHIBITIONS

Section 8-2-16 of the Baxter City Code includes the following prohibitions:

FOG discharge: No wastewater shall be discharged to the Baxter sanitary sewer that contains more than 100 milligrams per liter of FOG.

FOG Interceptor: Fixtures that discharge greasy waste must be piped to the FOG interceptor. In accordance with Minnesota Plumbing Code, automatic dishwashers shall not be discharged through FOG interceptors. No restroom wastewater shall be discharged to a FOG interceptor.

Waste Materials: No waste materials removed from a FOG interceptor shall be discharged to a city sanitary sewer.

Food Grinder: No food grinders are allowed to be installed or utilized within a FSE.

E. HOW FOG INTERCEPTORS WORK

The installation and maintenance of a FOG interceptor is a most important measure in ensuring that a FSE is minimizing their discharge of FOG to the wastewater collection and treatment system. A FOG interceptor is an outside, underground multi-compartment tank that reduces the amount of FOG in the wastewater. FOG interceptors apply a physical separation process to detain wastewater and allow FOG to separate from the water by floating and settling. The separated FOG floats to the top, the heavier solids settle to the bottom and the water flows over and under baffles to the sewer system. The detention capacity of the unit decreases as the interceptor fills with FOG. Therefore, regular pumping, cleaning and maintenance of FOG interceptors is essential to ensure proper operation. For FOG interceptors to be effective, the units must be properly sized, constructed and installed in a location that provides for easy access for inspection and cleaning. FOG interceptors are plumbing devices that are subject to plan submission and operations requirements of the City Code.

F. INSTALLATION REQUIREMENTS

Individual FOG interceptors are required for FSE's whether the facilities are located in a separate structure or occupy a space in a building or structure that is occupied by other businesses. If the volume or nature of food service provided by the establishment dictates significant food preparation, a discharge of FOG is highly likely. There are some exceptions to the requirement for those establishments that sell food, but do not prepare it on the premises.

Each FOG interceptor that is installed will be required to meet criteria of the Minnesota Plumbing Code and the City of Baxter FOG Interceptor Design Manual. The Baxter Building Department will review and approve all installations.

G. FOG INTERCEPTOR AND TRAP MAINTENANCE

Proper operation and maintenance of FOG interceptors and traps includes routine inspection, cleaning, pumping and repair as described in this section. These units are less effective if FOG and solids occupy greater than 25% of the unit's capacity. It is recommended that the FSE inspect FOG interceptors at least every three months and inspect FOG traps every week.

During each inspection of an interceptor, it is recommended that the FSE document the measurement of the FOG layer, in inches, in both compartments by pushing a garden hose through the FOG layer or using a “sludge judge”. During each inspection of the FOG interceptor, it is recommended that both manholes be opened to confirm that baffles and tees are intact.

Most likely, inspections of interceptors will be done by a contract pumper. The owner or manager of the FSE should be present while the inspection and pumping is being done to confirm and document the work done.

If the FOG and solids occupy greater than 25% of the interceptor’s capacity, the FSE is required to perform a full cleaning of the FOG interceptor. Cleaning must be performed by a licensed pumper. Both vaults of a FOG interceptor shall be left completely empty upon completion of the pumping operation. The FOG mat, liquids, sludge and scrapings from the interior walls must be removed. Under no circumstances, shall the pumper reintroduce the removed water or materials into the interceptor or the sanitary sewer system. Flushing the interceptor with hot water or the use of chemicals or other agents to dissolve or emulsify the FOG to allow it to flow into the sewer is prohibited.

Since the FSE is the generator of the FOG waste, it is liable for the condition of the FOG interceptor, the fate of the waste, and the activities of the pumper so that waste does not go down the sanitary sewer during cleaning. Therefore, the FSE should have a knowledgeable representative present during the cleaning operation. The following are pumping practices that should be performed:

Step 1: Skim the entire FOG cap and debris from the top of the FOG interceptor. The FOG interceptor may need to be agitated slightly to loosen the FOG cap.

Step 2: Place the vacuum hose all the way into the tank to withdraw remaining solids from the bottom.

Step 3: Vacuum all the water out of the FOG interceptor.

Step 4: Clean the sides and bottom of the FOG interceptor. This may be done by “back flowing” the water from the pump truck or by using a separate water source to hose down the interceptor. Make sure the FOG interceptor is completely clean of FOG and solids.

Step 5: Vacuum the remaining water out of the FOG interceptor.

Step 6: Check that the baffles and tees in the inlet and outlet sides are free of all FOG, and are not loose or missing.

Step 7: Inspect the interceptor tank for any cracks or other defects.

Step 8: Check that the lids are securely and properly sealed after completion of the pumping.

Step 9: Get a copy of the receipt from the licensed pumper detailing what was done and send to the City of Baxter.

FOG traps, also known as grease traps, have a much smaller capacity for FOG and solids than an interceptor and must be inspected much more frequently. Weekly inspections are recommended by employees of the FSE. The following steps are recommended for inspection and cleaning of a grease trap:

Step 1: Bail out any water in the trap. The water may be discharged into the sanitary sewer system.

Step 2: Remove the baffles, if possible.

Step 3: Dip the accumulated grease out of the interceptor and deposit in a watertight container.

Step 4: Scrape the sides, lid and baffles with a putty knife to remove as much of the grease as possible, and deposit in a watertight container.

Step 5: Contact a hauler or recycler for grease pick up or place in trash for pick up.

Step 6: Replace the baffle and the lid.

Step 7: Record the date, employee name and volume of grease removed on the record keeping log.

H. RECORD KEEPING

It is required that the FSE maintain a written record of every time a FOG interceptor is inspected and cleaned. It is a violation of City Code when the FSE fails to maintain up-to-date and accurate records of all service and maintenance.

Inspection records should document the date of inspection, name of company and person performing the service, estimated volume of FOG present and the signature of the manager or designee of the FSE. An example of this record is provided at the back of this manual.

It is required that inspection and cleaning records be kept on the premises until the end of each year, when they must be submitted to the City with the annual food service license renewal application.

I. ENFORCEMENT

Failure to comply with the requirements of the City Code Section 8-2-16 regulating FOG discharge to the sanitary sewer may have its food license revoked, and/or the city water shut off and/or be subject to fines.

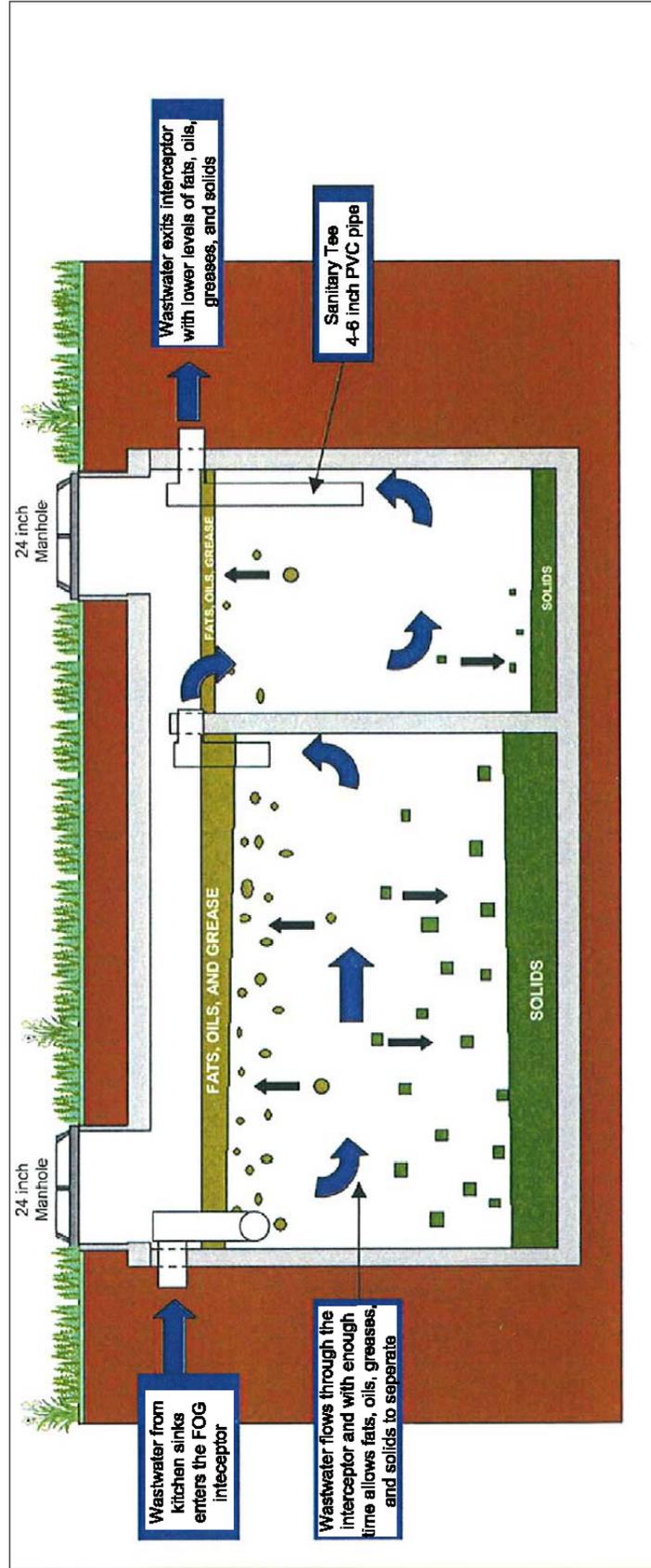
J. APPENDICES

Compliance Inspection and Installation Checklist

Interceptor Cleaning Log

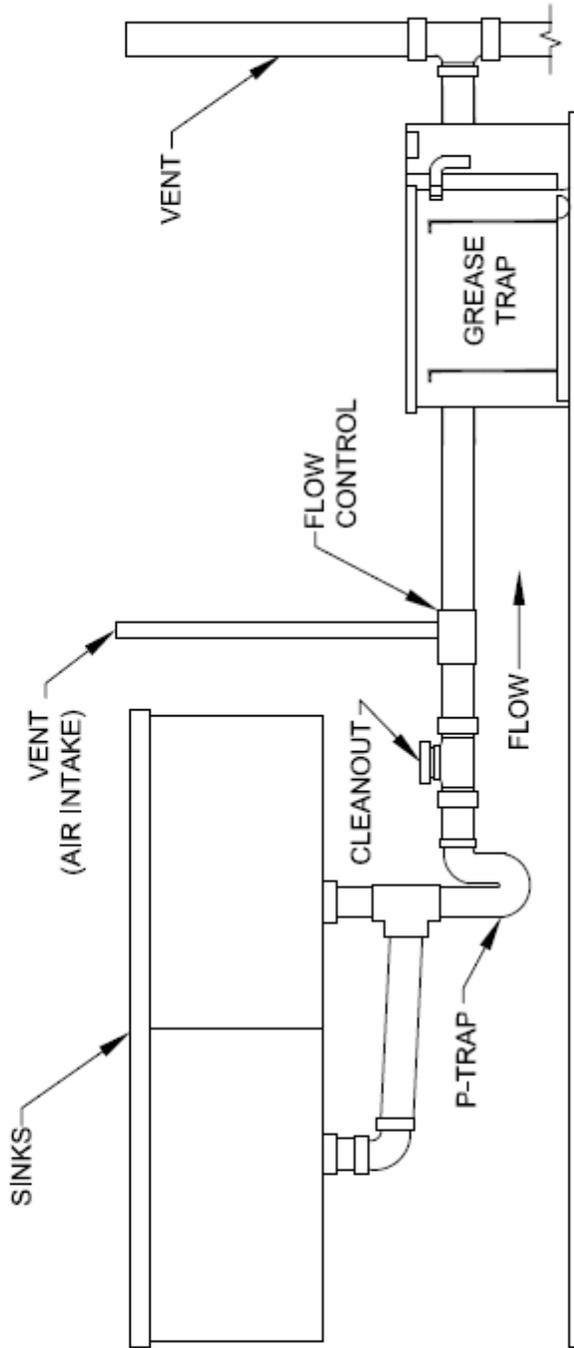
HOW A FOG INTERCEPTOR WORKS

A FOG interceptor is a passive control device that is designed to help reduce fats, oils, greases, and solids from entering the sanitary sewer collection and treatment system. FOG interceptors hold the fats, oils, greases, and solids until they can be removed and disposed of by recycling, rendering, or land application.



- FOG interceptors allow wastewater flows to slow down
- With sufficient time fats, oils, greases, and solids separate from wastewater
- Fats, oils, and greases are less dense than water and float
- Solids are denser than water and sink
- FOG interceptors are designed in a variety of sizes, shapes, and constructed of various materials

FOG TRAP TYPICAL INTERIOR INSTALLATION



NOTE:
FOG TRAP MAY BE USED IN LIEU OF A FOG
INTERCEPTOR ONLY UPON APPROVAL BY THE
BAXTER BUILDING DEPARTMENT



Compliance Inspection and Installation Checklist

The following table describes the steps that City Inspectors will use to evaluate food services facilities:

Compliance Checklist

Item	Items Description	Field Data	Compliance Status
1.	The establishment has implemented a training program to ensure that the BMPs are followed.		
2.	"No Grease" signs are posted in appropriate locations.		
3.	The establishment recycles waste cooking oil and can provide records of this.		
4.	Water temperatures at all sinks, especially the pre-rinse sink before the mechanical dishwasher or the sinks in the tree-sink system are less than 140° F. Measure and record temperature.		
5.	The establishment "dry wipes" pots, pans, and dishware prior to rinsing and washing.		
6.	Food waste is disposed of by recycling or solid waste removal and is not discharged to the FOG traps or interceptors.		
7.	FOG interceptor is cleaned regularly. Note and record the frequency of cleaning.		
8.	FOG interceptor cleaning frequency is documented on a maintenance log.		
9.	FOG interceptor does not contain greater than 1/3 the depth in FOG accumulation. Estimate and record amount of FOG in interceptor.		
10.	FOG interceptor does not contain greater than 1/4 the depth in sediment accumulation. Estimate and record amount of sediment in interceptor if possible.		
11.	Food grinders do not exist.		
NOTES			

Inspector: _____
 Signature: _____
 Date: _____
 Time Inspection Started: _____
 Time Inspection Completed: _____

Establishment: _____
 Address: _____
 Contact Name: _____
 Phone: _____

