

# City of Kinston

*Water Resources Department  
Fats, Oils and Grease Control Program*



August 1, 2008

# City of Kinston

## FOG Control Program

### Table of Contents

- I Introduction
- II Definitions
- III FOG Program Requirements
  - A. General Requirements
  - B. Requirements for Best Management Practices (BMPs)
  - C. Requirements for Grease Interceptors
    - 1. Under-Sink
    - 2. In-Ground
- IV Maintenance Requirements for Grease Interceptors
  - A. Under-sink
  - B. In-Ground
  - C. Grease Storage Bins
- V Compliance with FOG
- VI Prohibitions
- VII Variances
- VIII Inspections by the City of Kinston
- IX Appendices
  - A Best Management Practices
  - B Interceptor Maintenance Log
  - C Oil Collection Log
  - D Interceptor Detail
  - E Permit Form

## **Introduction**

Fats, oils and grease (FOG) are problem substances in wastewater that can be controlled by properly maintained interceptors. Correct grease interceptor maintenance lowers the number of grease stoppages in the City of Kinston collection system. Preventing FOG from entering the sewer system not only reduces sewer line maintenance but also allows the wastewater treatment plant's microbiological process to more effectively remove pollutants.

FOG are the leading cause of sanitary sewer overflows (SSO) in North Carolina. These overflows disrupt residential, commercial and industrial operations, and carry the potential for health risks which comes from contact with disease causing organisms.

The City requires that all food service establishments maintain a properly sized grease interceptor to keep excess FOG out of the sanitary sewer system.

The City's FOG program will be evaluated periodically and will be modified when necessary to maximize the effectiveness of the FOG program.

## **Definitions**

**Alternative Grease Removal Technology** - means an automatically operated mechanical device specifically designed to remove grease from the wastewater.

**Best Management Practices (BMP)** - any program, process, operating method or measure that controls, prevents, removes or reduces discharge of FOG.

**City** - means the City of Kinston.

**FOG** - means fats, oils, and grease which are groups of substances (triglyceride esters of fatty acids) with similar physical characteristics that are detectable quantitatively on the basis of their common solubility in an organic solvent, usually originating from animals or vegetables. All are sometimes referred to as "Grease" or "Greases".

**Food Service Establishment (FSE)** - Those establishments primarily engaged in activities of preparing, serving, and /or the cleanup of foodstuffs. This includes establishments that engage in the preparation and /or cleanup of precooked and frozen food materials and meat cutting preparation, including but not limited to the following: restaurants, bakeries, dairy shops, grocery stores, meat markets, hotels, factory and office building cafeterias, public and private schools, hospitals, nursing homes, commercial day care centers, churches, industrial facilities, catering services and any other facility which, in the opinion of the City, would require a grease trap installation by virtue of its operation.

**Grease Interceptor or Trap** - a device designed to collect, contain, and remove, food wastes and grease from the wastewater while allowing the remaining wastewater to be discharged to the City's wastewater collection system by gravity. They may be located underground and outside of a FSE or may be located inside and "under the counter".

**Maintenance** - means any structural repairs as warranted, plus the complete removal of all grease interceptor contents including floatable materials, wastewater, sludge, and solids. The interceptor must be thoroughly cleaned to remove grease and scum from inner walls and baffles.

**POTW** - means Publicly Owned Treatment Works.

**Director** - means the City of Kinston's Director of Public Services who manages the Publicly Owned Treatment Works (POTW) , or the person the Director may designate to carry out the functions set forth in the FOG program.

**Special Use Permit** -a completed and approved special use permit obtained through the City by a FSE requiring the installation and maintenance of a approved grease interceptor. Permits are granted by the City and are NONTRANSFERABLE. A new owner or operator of an existing FSE shall apply for and obtain a new permit.

**User** - means the owner or operator of a food service establishment or other facility that discharges wastewater into the City's sanitary sewer.

## GENERAL REQUIREMENTS

In order to reduce sewer blockages, FSEs that discharge into the City's sanitary sewer system MUST obtain a special use permit from the City and install a properly sized interceptor. The user shall have the preapproval of the City before installing the interceptor. Grease interceptors shall be required at the FSEs expense. Grease interceptors may be required by the Director in other commercial or industrial applications when necessary.

All fixtures, equipment and drain lines located in a facility's food preparation and clean up areas, which are sources of FOG, shall be connected to a grease interceptor. The following equipment and fixtures have been identified as potential sources of FOG and shall be connected to an in-ground grease interceptor: **pre-rinse and/or pre-wash sinks or sinks in dishwashing areas; two or three compartment sinks; self-cleaning stove ventilation/exhaust hoods; floor drains; floor sinks; mop sinks; food prep sinks.**

Wastewater from sanitary facilities (bathrooms, sinks) shall not be introduced into any grease interceptor.

Devices using hot water in excess of 140 degrees (dish washers, sanitizers) shall not be introduced into any grease interceptor.

The use of biological additives is conditionally permissible, upon prior written approval by the Director.

The City requires that all floor drains have permanently fixed screens, with maximum 1/4 inch openings, to prevent pass through of larger solids into the grease interceptor and/or wastewater collection system.

New FSE's will not be allowed to initiate operations until a grease interceptor is approved and inspected by the City. Existing facilities must comply with these regulations within one year of notification.

Any facility with an existing grease interceptor that anticipates expanding food handling or preparation operations must receive approval from the POTW Director.

### **Requirements for Best Management Practices (BMPs)**

All FSEs shall develop and implement Best Management Practices (BMPs) to minimize the discharge of FOG to the sanitary sewer system. Controlling grease at its source is the best way to prevent blockages and backups that result from grease build up. Appendix A is a fact sheet for BMPs for commercial establishments.

### **Grease Interceptor Design Guidelines**

Detailed plans, showing the grease interceptor facilities and operating procedures, must be approved by the City of Kinston. The review and approval by the City shall in no way relieve the User from the responsibility of meeting effluent discharge limitations or properly maintaining the device.

### **Grease Interceptor (under-sink)**

Under sink interceptors may be allowed for **existing facilities** if the installation of a suitable outdoor grease interceptor is infeasible, a “hardship” is acknowledged, and a variance is approved by the POTW Director.

### **Grease Interceptor (in-ground)**

For new and existing facilities, outside in-ground grease interceptors are required, unless a variance is granted by the POTW Director. The grease interceptor should be as close to the source as possible and in a manner that is fully accessible for regular safe maintenance, cleaning, and sampling without creating a nuisance. It shall have the ability and volume required to effectively intercept and retain Greases from grease-laden waste water to achieve discharge limitations.

Minimum design criteria for grease interceptors is included in Appendix D.

Each FSE must own and maintain their own grease interceptor.

A licensed North Carolina Plumbing Contractor shall install all grease interceptors in compliance with the latest edition of the Uniform Plumbing Code.

The City of Kinston Plumbing Inspector and the FOG Program Coordinator must approve any variations from the above recommendations before installation.

If a interceptor is determined to need a volume greater than 1,500 gallons, then additional grease interceptors should be installed in series.

## **Alternative Grease Removal Technologies**

Due to documented space constraints, if an outdoor underground grease interceptor is not feasible, the FSE may request an **alternative location or alternative grease removal technology**. The request must then be approved by the POTW Director. Any FSE using this technology shall operate the system in such a manner that attainment of the grease wastewater discharge limit, as measured from the unit's outlet, is consistently achieved.

## **Maintenance Requirements for Grease Interceptors**

Grease interceptors must be cleaned as frequently as necessary to meet the grease wastewater discharge limit of 100 mg/L in the effluent, with cleaning intervals not exceeding 30 days. Grease interceptors *may require more frequent cleaning*.

The User is responsible for the proper removal and disposal of the grease interceptor waste. It is the User's responsibility to ensure that proper cleaning of grease control devices is being performed.

All FSEs shall maintain written records on-site of grease interceptor maintenance. A copy of an approved maintenance form is provided in Appendix B. Maintenance records, which include pumping receipts, must be kept ON SITE for THREE YEARS and shall be provided upon request. Failure to provide maintenance records upon request shall be considered a violation.

## **Compliance with FOG Control Program**

A FSE shall be considered in violation of its special use permit if any of the following conditions exist:

- FOG concentrations are found to exceed 100 mg/L as measured by either method EPA 1664A or EPA Method 413.
- Maximum average build up of FOG and solids exceeds eight inches (8") for interceptors less than 800 gallons, twelve inches (12") for interceptors 800 to 1,300 gallons, and sixteen inches (16") for interceptors greater than 1,300 gallons.
- Maintenance cleaning has not been accomplished every 30 days.
- Failure to maintain on site records.
- Failure to maintain interceptors in proper working order.
- Source of sewer blockage.
- Source of sanitary sewer overflow.
- Falsification of records.
- Found to be a source of pollutants ( including FOG ) in the Storm Drainage System.

## **Prohibitions**

No user shall contribute or cause to be contributed into the City sewer system directly or indirectly, any pollutant or wastewater which may cause obstruction to the flow or other interference with the operation of the collection system or the wastewater treatment process.

*The practice known as “Hot Flushing” (the running of HOT water for extended period to flush the interceptor) is strictly prohibited.*

Discharge of concentrated alkaline or acidic solutions or detergents into a FOG interceptor or the City sewer system is prohibited.

Disposal of fryer oil to the City sewer system or storm water system is specifically prohibited. A cooking oil collection log is provided in Appendix C.

The practice of reintroducing waste and/or wastewater pumped from FOG interceptors back into the interceptor is strictly prohibited. Interceptors must be serviced and emptied of the waste content as required for their efficient operation.

Wastes removed from grease interceptors are prohibited from being discharged into the sanitary sewer.

## **Variances**

Variances to the design and maintenance requirements contained herein may be requested. The User must submit sufficient documentation as required by the POTW Director or his/her designee that explains the need to vary from design or maintenance requirements. The City will notify in writing of acceptance or denial of variance request. The City reserves the right to revoke the variance when deemed necessary.

## **Notification of Change of Ownership or Closure**

A change in ownership of a FSE shall be reported to the FOG Coordinator in writing within 30 days of the ownership change.

Any FSE that goes out of business shall report such closure to the FOG Coordinator in writing within 30 days of closure and shall ensure that any grease interceptor is thoroughly pumped/cleaned before the building is vacated.

## **Inspections**

Grease interceptors shall be inspected at a minimum of once per quarter, but as often as deemed necessary by the City of Kinston. Users shall allow City personnel ready access at all reasonable times to all parts of the premises for the purpose of inspection, sampling, and records examination. The City shall have the right to set up on the User's property such devices as are necessary to conduct sampling, inspection, and compliance monitoring operations. Denial of the City's access to the User's property shall be deemed a violation.

## **Enforcement**

If a grease interceptor fails an inspection a Notice of Violation shall be issued and maintenance shall be performed within a specified time. If the violation is cleaning was not performed, or something similar that can be rectified immediately, the specified time will reflect that and will be no more than 3 days.

Any grease interceptor which receives three (3) Notices of Violation within a 24 month period shall be deemed a nuisance by the POTW Director, who shall require corrective actions to cure the nuisance, including, if deemed necessary termination of all discharges to the Sanitary Sewer System.

When an FOG related obstruction and/or Sanitary Sewer Overflow occurs , the records of all the FSEs that discharge into the affected sanitary sewer line may be reviewed. Any FSE found to be in noncompliance with the required interceptor cleaning frequency shall be deemed a responsible party. The responsible party could be assessed fines and penalties in accordance with the City of Kinston Sewer Use Ordinance, PLUS costs for cleanup, in addition to any fines dispensed from the State of North Carolina .

# *Appendix A*

Best Management Practices



## **City of Kinston**

**WATER RESOURCES DIVISION  
FOG PROGRAM**

# A FACT SHEET FOR Best Management Practices for Fats, Oils, and Grease



*Residual fats, oils, and grease (FOG) are byproducts that food service establishments must constantly manage. Typically, FOG enter a facility's plumbing system from water washing, floor cleaning, and equipment sanitation. Sanitary sewer systems are neither designed nor equipped to handle the FOG that accumulates on the interior of the municipal sewer collection system pipes. Over 50% of North Carolina's 1999 sanitary sewer overflows were the result of pipe blockages from FOG accumulation from residential, institutional and commercial sources. The best way to manage FOG is to keep the material out of the plumbing systems. The following are suggestions for proper FOG management.*

## Dry Clean-Up

Practice dry clean-up. Remove food waste with "dry" methods such as scraping, wiping, or sweeping before using "wet" methods that use water. Wet methods typically wash the water and waste materials into the drains where it eventually collects on the interior walls of the drainage pipes. Do not pour grease, fats or oils from cooking down the drain and do not use the sinks to dispose of food scraps. Likewise it is important to educate kitchen staff not to remove drain screens as this may allow paper or plastic cups, straws, and other utensils to enter the plumbing system during clean up. The success of dry clean up is dependent upon the behavior of the employee and availability of the tools for removal of food waste before washing. To practice dry clean up:

- Use rubber scrapers to remove fats, oils and grease from cookware, utensils, chafing dishes, and serving ware.
- Use food grade paper to soak up oil and grease under fryer baskets.
- Use paper towels to wipe down work areas. Cloth towels will accumulate grease that will eventually end up in your drains from towel washing/rinsing.

## Spill Prevention

Preventing spills reduces the amounts of waste on food preparation and serving areas that will require clean up. A dry workplace is safer for employees in avoiding slip, trips, and falls. For spill prevention:

- Empty containers before they are full to avoid spills.
- Use a cover to transport interceptor contents to rendering barrel.
- Provide employees with the proper tools (ladles, ample containers, etc.) to transport materials without spilling.

## Maintenance

Maintenance is key to avoiding FOG blockages. For whatever method or technology is used to collect, filter and store FOG, ensure that equipment is regularly maintained. All staff should be aware of and trained to perform correct cleaning procedures, particularly for under-sink interceptors that are prone to break down due to improper maintenance. A daily and weekly maintenance schedule is highly recommended.

- Contract with a management company to professionally clean large hood filters. Small hoods can be hand-cleaned with spray detergents and wiped down with cloths for cleaning. Hood filters can be effectively cleaned by routinely spraying with hot water with little or no detergents over the mop sink that should be connected to a grease trap. After hot water rinse (separately trapped), filter panels can go into the dishwasher. For hoods to operate properly in the removal of grease-laden vapors, the ventilation system will also need to be balanced with sufficient make-up air.



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PRETREATMENT CONSORTIUM



- Skim/filter fryer grease daily and change oil when necessary. Use a test kit provided by your grocery distributor rather than simply a "guess" to determine when to change oil. This extends the life of both the fryer and the oil. Build-up of carbon deposits on the bottom of the fryer act as an insulator that forces the fryer to heat longer, thus causing the oil to break down sooner.
- Collect fryer oil in an oil rendering tank for disposal or transport it to a bulk oil rendering tank instead of discharging it into a grease interceptor or waste drain.
- Cleaning intervals depend upon the type of food establishment involved. Some facilities require monthly or once every two months cleaning. Establishments that operate a large number of fryers or handle a large amount of fried foods such as chicken, along with ethnic food establishments may need at least monthly cleanings. Full-cleaning of grease traps (removing all liquids and solids and scraping the walls) is a worthwhile investment. Remember, sugars, starches and other organics accumulate from the bottom up. If sediment is allowed to accumulate in the trap, it will need to be pumped more frequently.
- Develop a rotation system if multiple fryers are in use. Designate a single fryer for products that are particularly high in deposits, and change that one more often.

## Oil & Grease Collection/Recycling & Food Donations

FOG are commodities that if handled properly can be treated as a valuable resource.

- Begin thinking of oil and grease as a valuable commodity. Some rendering companies will offer services free-of-charge and others will give a rebate on the materials collected. Note that these companies must be properly permitted by the Division of Waste Management, Solid Waste Section at 919.733.0692, in order to remove FOG from a facility. A list of grease collectors can be found in the *Directory of Markets for Recyclable Materials* at [www.p2pays.org/DMRM](http://www.p2pays.org/DMRM) or by calling DPPEA at 1.800.763.0136.
- Use 25-gallon rendering barrels with covers for onsite collection of oil and grease other than from fryers. Educate kitchen staff on the importance of keeping outside barrels covered at all times. During storms, uncovered or partially covered barrels allow storm water to enter the barrel resulting in oil running onto the ground and possibly into storm drains, and can "contaminate" an otherwise useful by-product.
- Use a 3-compartment sink for ware washing. Begin with a hot pre-wash, then a scouring sink with detergent, then a rinse sink.

- Make sure all drain screens are installed.
- Prior to washing and rinsing use a hot water ONLY (no detergent) pretense that is separately trapped to remove non-emulsified oils and greases from ware washing. Wash and rinse steps should also be trapped.
- Empty grill top scrap baskets or scrap boxes and hoods into the rendering barrel.
- Easy does it! Instruct staff to be conservative about their use of fats, oils and grease in food preparation and serving.
- Ensure that edible food is not flushed down your drains. Edible food waste may be donated to a local food bank. Inedible food waste can be collected by a local garbage feeder who will use food discards for feeding livestock. Food donation is a win-win situation. It helps restaurants reduce disposal costs and it puts the food in the hands of those who can use it. Check the *Directory of Markets for Recyclable Materials* for a list of food waste collectors.

## Grease Traps

- For grease traps to be effective, the units must be properly sized, constructed, and installed in a location to provide an adequate retention time for settling and accumulation of the FOG. If the units are too close to the FOG discharge and do not have enough volume to allow amassing of the FOG, the emulsified oils will pass through the unit without being captured. For information on properly locating, constructing, and sizing grease traps, contact your local county and city representatives and examine EPA guidance documents.
- Ensure all grease-bearing drains discharge to the grease trap. These include mop sinks, woks, wash sinks, prep sinks, utility sinks, pulpers, dishwashers, pretense sinks, can washes, and floor drains in food preparation areas such as those near a fryer or tilt/steam kettle. No toilet wastes should be plumbed to the grease trap.
- If these suggested best management practices do not adequately reduce FOG levels, the operator may consider installing a second grease trap with flow-through venting. This system should help reduce grease effluent substantially.

## Consumer Tip

Buyer beware! When choosing a method of managing your oil and grease, ensure that it does what the vendor says it will do. Some technologies or "miracle cures" don't eliminate the problem but result in grease accumulations further down the sewer line. "Out of sight" is not "out of mind." Check the vendor's references.



The **Grease Goblin** is the mascot for DPPEA's Oil and Grease Management Program. He serves as a reminder to keep grease out of sinks and drains before it becomes a nuisance.

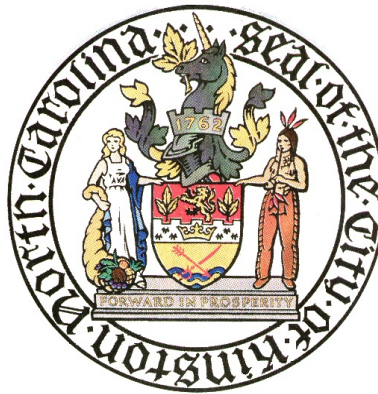
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DPPEA-FY00-08. 2,000 copies of this public document were printed on recycled paper at a cost of \$72.40, or \$0.036 per copy.

# *Appendix B*

## Interceptor Maintenance Log



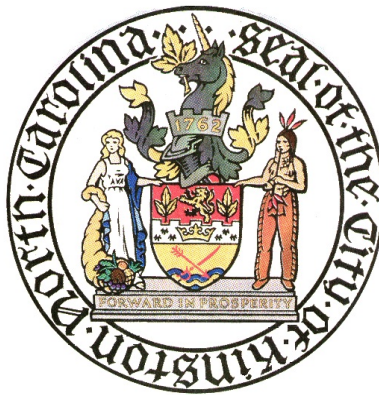
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# *Appendix C*

Oil Collection



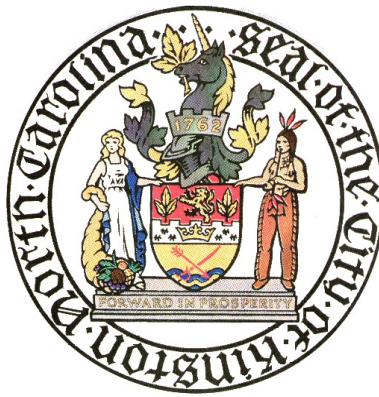
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# *Appendix D*

## Interceptor Detail



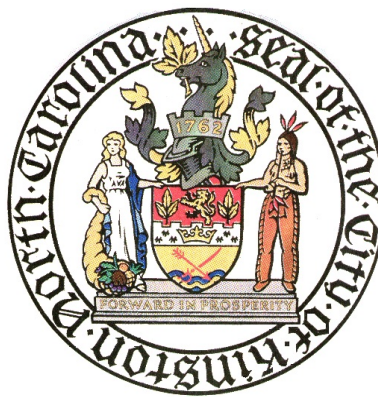
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# *Appendix E*

Permit Form



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