



USDA FOG ABATEMENT TRAINING: EFFECTIVE FOG ABATEMENT PROGRAM IMPLEMENTATION

SESSION 4

POLLUTION PREVENTION
resource center

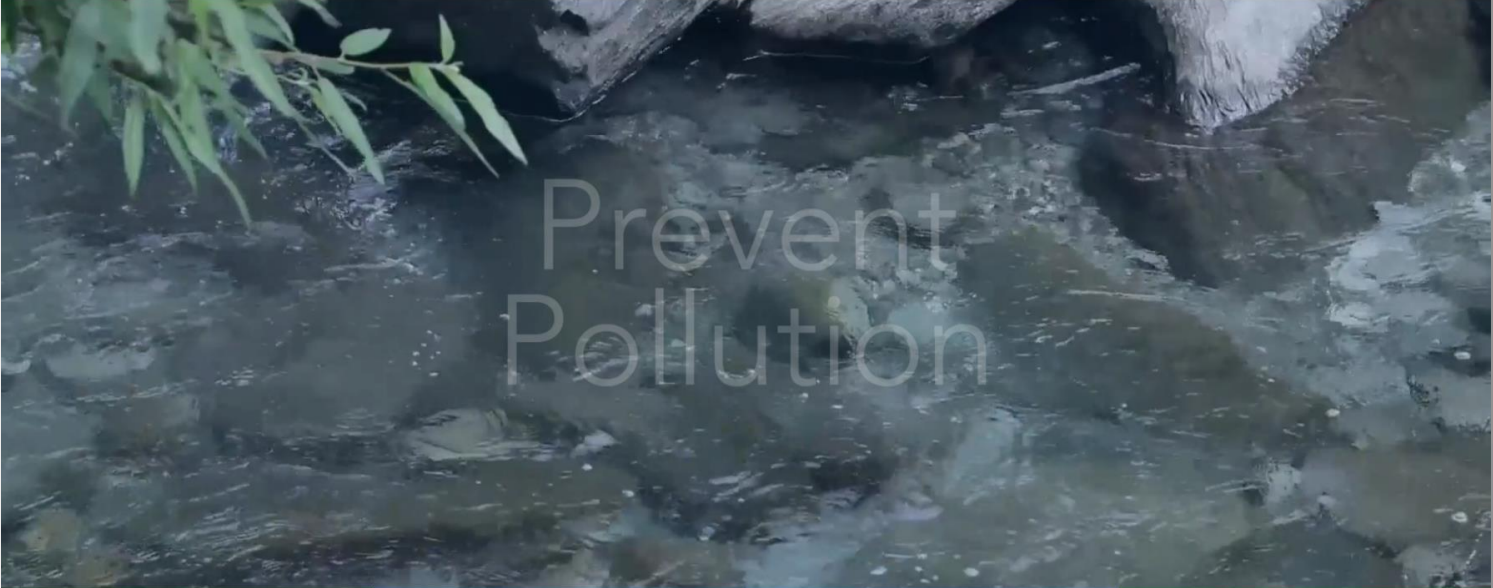


WSA
a project of pprc.org

This training is sponsored by a grant from the USDA Rural Utilities Service (RUS)

**This training is brought to you through a grant
from the USDA Rural Utilities Service**





WHO WE ARE



OUR EVENTS



OUR PROJECTS



GET INVOLVED



Q Search...

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About Us

Western States Alliance (WSA) is a project of the [Pollution Prevention Resource Center](#) that helps professionals identify and implement best practices in Fats, Oils, and Greases (FOG) management.

We are a membership organization of FOG professionals from across the United States. [Click here](#) to check out our staff bios on pprc.org.

Our vision is to be a comprehensive source of knowledge and assistance to advance technologies and best management practices, conserve resources, and derive the most value from FOG while prohibiting its damaging effects in the wastewater system.

Conferences & Workshops

We offer two FOG related technical training conferences each year: The [FOG Forum](#) & the [Pacific Northwest Pretreatment Workshop](#). Both events offer immersive training, program development and implementation sessions, and many opportunities for networking with your peers.

[Subscribe Below >](#)

FOG Abatement Training

With funding from the USDA, we provide both virtual and in-person trainings to help small rural communities and those who serve them. The trainings focus on building the business case for your program, program implementation and emerging chemicals of concern.

[Training Calendar >](#)

National Resource Reference Guide

Our National Reference Resource Guide is a "one-stop" shop to learn about FOG, its value as a resource, its problems in sewer conveyance lines, its contribution to sanitary sewer overflows, its cost of treatment, and how you can establish or enhance a FOG Abatement program.

[View the Guide >](#)

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TECHNICAL RESOURCES TAB



**We encourage open discussion
during the presentation...**



TRAINERS:

Ed Gilmore

Ken Grimm

Jean Waters

Clayton Brown

David James

Patrick Bryan



PROGRAM IMPLEMENTATION

SESSION 3

- YOUR EXISTING FOG PROGRAM
- ESTABLISHING LEGAL AUTHORITY
- STAKEHOLDERS
- FOG TRIAGE
- FOG MANAGEMENT PRACTICES
- FSE EFFECTIVE FOG PRETREATMENT

SESSION 4

- **FOG AND WATER SEPARATION**
- **GREASE REMOVAL DEVICES (GRD)**
- **FSE INSPECTIONS**
- **PREFERRED PUMPER PROGRAMS**

DAVID JAMES

PPRC FOG TRAINER

- OWNER, WASTEWATER TRAINING AND CONSULTING SERVICES, AUSTIN, TX (3 YEARS)
- 45+ YEARS OF EXPERIENCE PROVIDING ENVIRONMENTAL TECHNICAL AND COMPLIANCE ASSISTANCE TO MUNICIPALITIES, BUSINESSES, AND INDUSTRIES - SPECIALIZING IN DEVELOPMENT AND IMPLEMENTATION OF SSO AND FOG ABATEMENT PROGRAMS; MUNICIPAL PRETREATMENT PROGRAMS; WASTEWATER TREATMENT PLANT COMPLIANCE STRATEGIES; AND POLLUTION PREVENTION PROGRAMS.
- WORKED FOR THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (26+ YEARS), WWTP OPERATION AND MAINTENANCE SERVICES (12 YEARS), ENVIRONMENTAL CONSULTING (5 YEARS), AND ENVIRONMENTAL PROTECTION AGENCY - REGION VI (2 YEARS)
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- LIFE-TIME MEMBER OF THE AMERICAN WATER WORKS ASSOCIATION AND THE WATER ENVIRONMENT FEDERATION.





**FOG & WATER
SEPARATION**

Effect of Size on Performance



Effect of Size on Performance



Effect of Size on Performance

FOG (Oil) Travel Time	
3-inch Rise at 68° F - 0.90 SG - Hour:Minute:Second	
Droplet Diameter in Microns	Rise Time
300	0:00:15
150	0:01:30
50	0:09:18
15	1:43:22

150 microns = .15 mm 50 microns = .05 mm

Rise 5 ft. in 30 minutes

????????

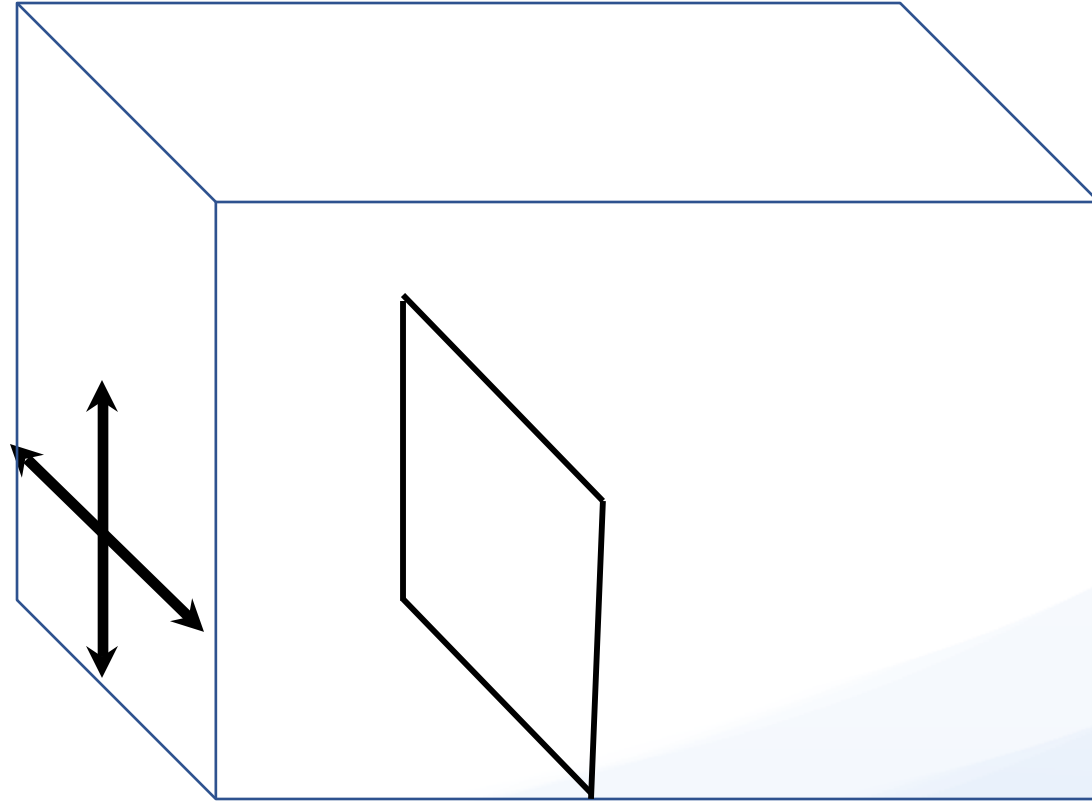


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Poll Question

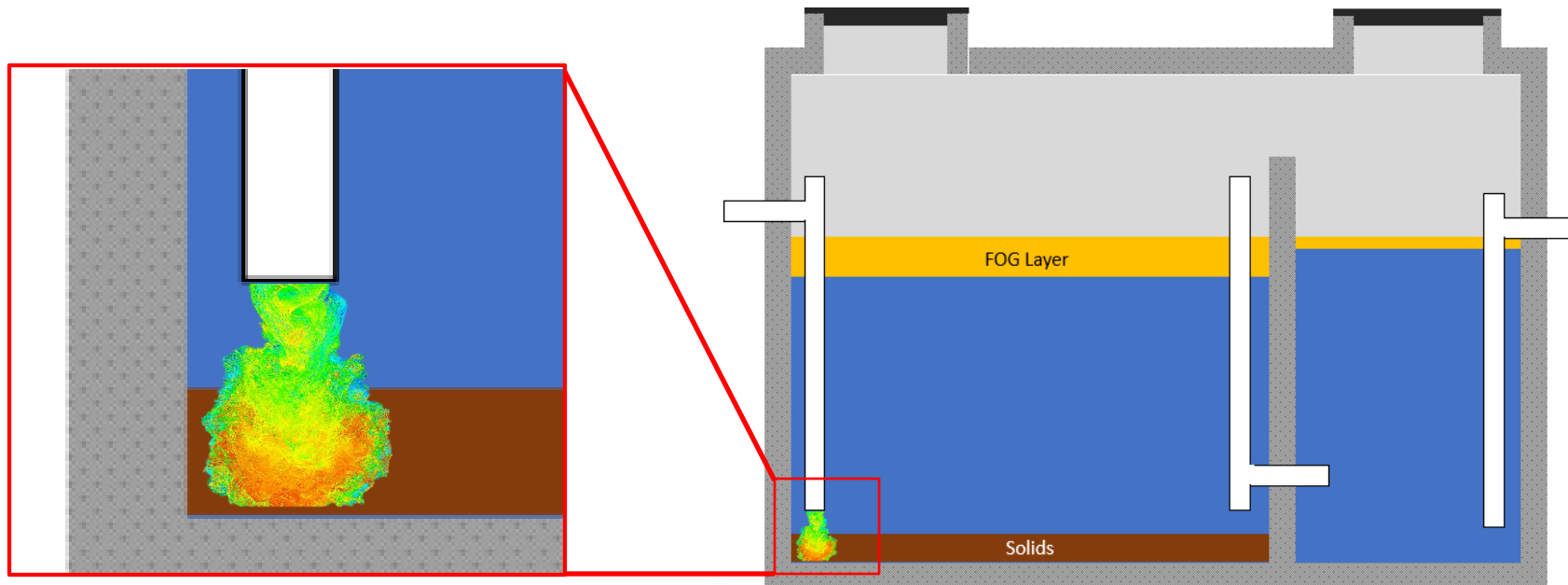
Grease Removal Devices (GRD)

- How does FOG flow through these devices?



**Distribute flow throughout
cross-sectional area**

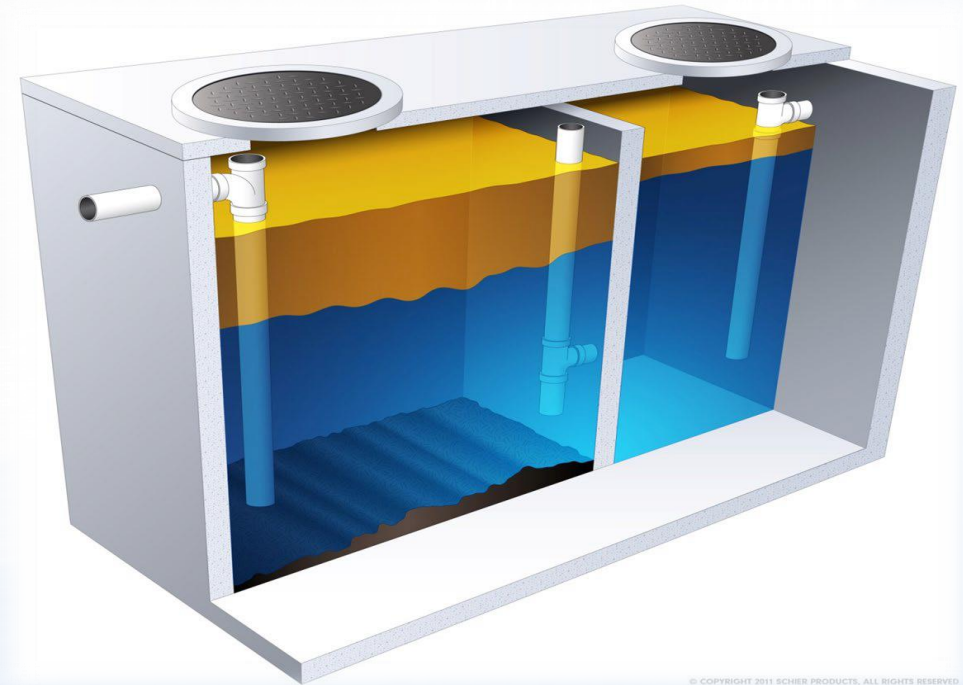
How does this design distribute the velocity?



In fluid dynamics, laminar flow is characterized by fluid particles following smooth paths in layers, with each layer moving smoothly past the adjacent layers with little or no mixing.

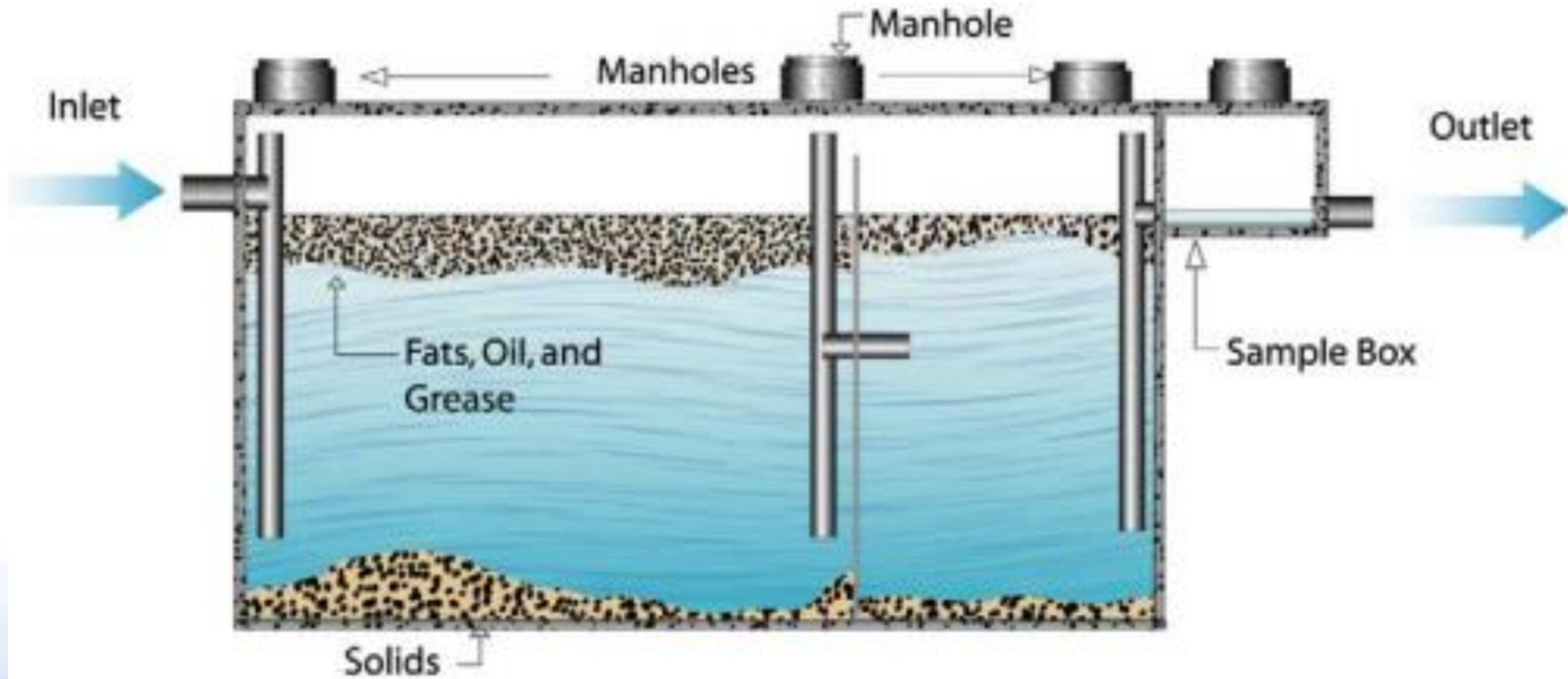
LAMINAR FLOW IN A GGI

In fluid dynamics, laminar flow is characterized by fluid particles following smooth paths in layers, with each layer moving smoothly past the adjacent layers with little or no mixing.

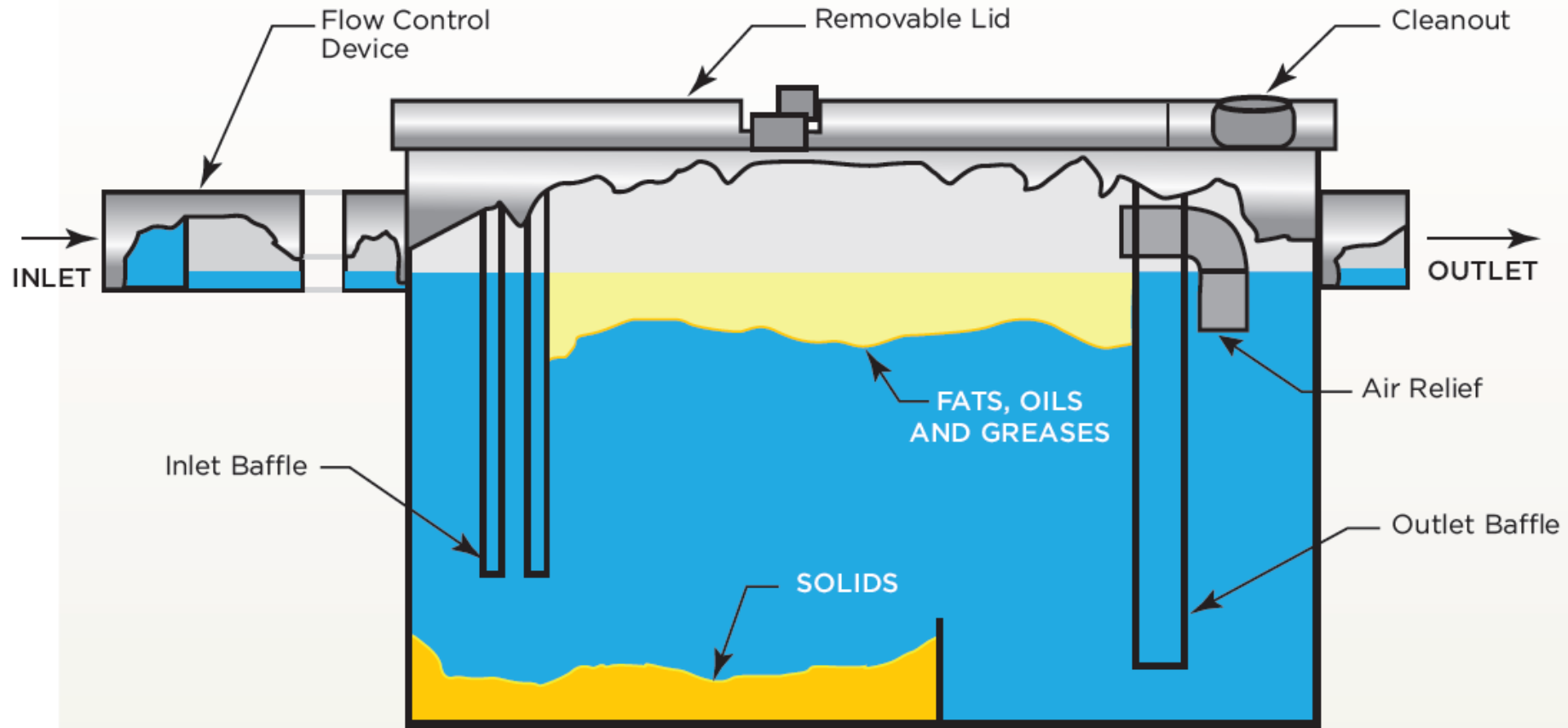


<https://youtu.be/56AyTlhNQBo>

Gravity Grease Interceptors (GGIs)



Hydro-Mechanical Grease Interceptors (HGIs)

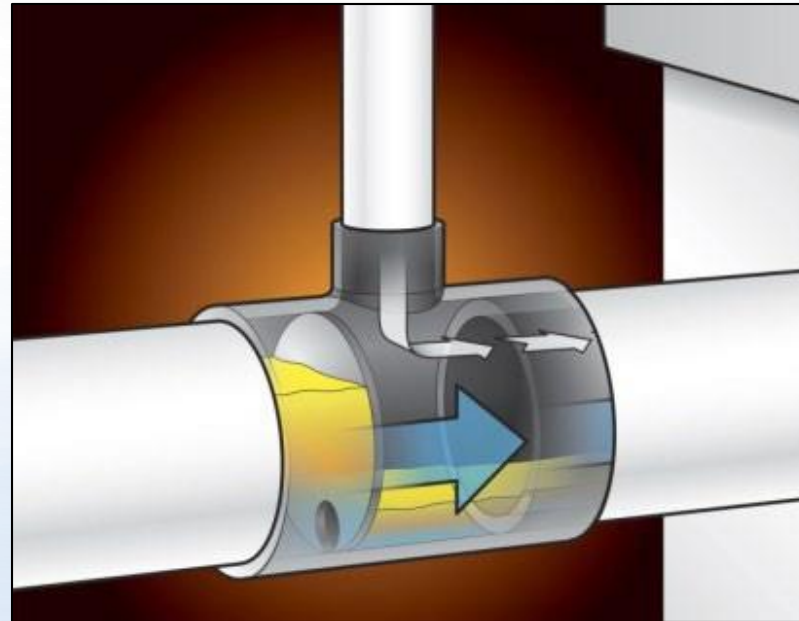


PDI G101/ASME A112.14.3

Hydromechanical – formerly called grease trap

With EXTERNAL flow control

This standard is design based requiring an external flow control with air vent (intake), to inject air into influent as it enters HGI

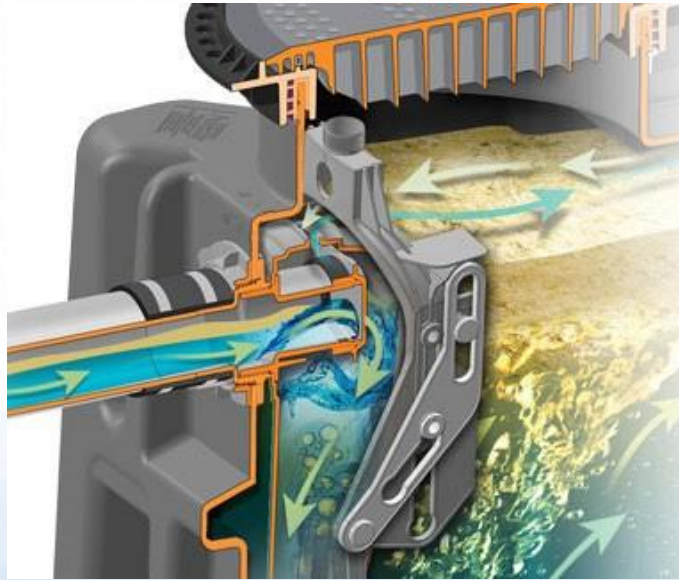


PDI G101/ASME A112.14.3

Hydromechanical — formerly called grease trap

With BUILT-IN (integral) flow control

This standard is design based on using a built-in or integral flow control that does NOT require a vent

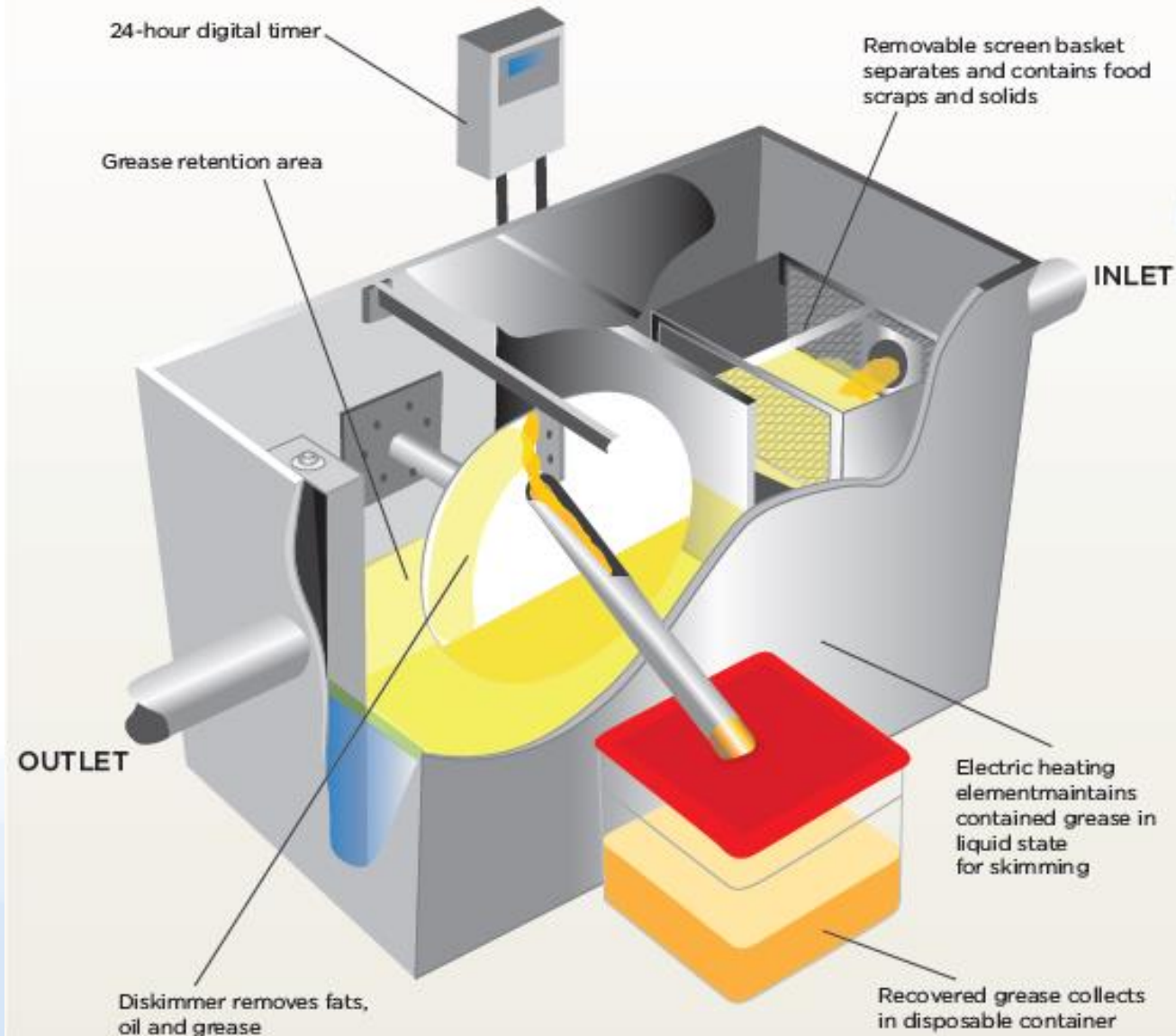


Endura Dynamic Baffle
Built-in Flow Control

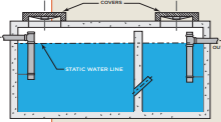
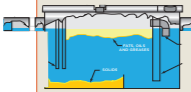
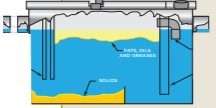
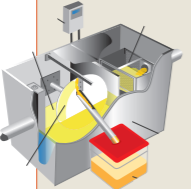


Schier Cartridge Built-in
Flow Control

Automated Grease Removal Device (AGRD)



Equipment Types: the Good, the Bad, and the Ugly (\$)

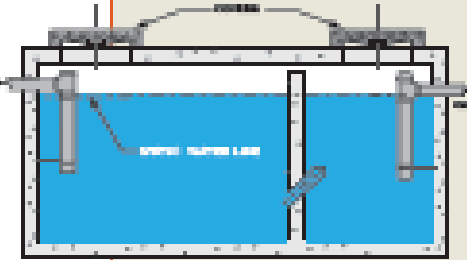
	Benefits	Drawbacks	Costs
<p>GGI</p> 	<ul style="list-style-type: none"> • Large FOG storage capacity • Less maintenance • Outside installation for easy maintenance and inspection access • Maintenance can be performed during off hours • Minimal contact by employees 	<ul style="list-style-type: none"> • Requires more space for installation • Can be source of odors if not maintained properly • More expensive to install • Higher maintenance costs per individual pumping events 	<ul style="list-style-type: none"> • New construction restaurants = \$15,000 - \$25,000 • Existing restaurant retrofit = \$25,000 - \$75,000 • Maintenance = \$0.20/gallon - \$0.25/gallon
<p>HGI</p> 	<ul style="list-style-type: none"> • Requires significantly less space • Less expensive to install • Can be made with durable polyethylene materials • Lower maintenance costs per event • Can be maintained by restaurant staff 	<ul style="list-style-type: none"> • Less FOG storage capacity; more frequent maintenance • Requires flow control device and additional venting • Indoor installation requires space for device • Potentially indoor odors if lid not sealed • Typically requires health department approval • Inspected or maintained during business hours 	<ul style="list-style-type: none"> • Above ground installation = \$2,500 - \$5,000 • New construction, below ground installation = \$5,000 - \$15,000 • Existing restaurant retrofit, below ground installation = \$10,000 - \$25,000 • Maintenance = Typically a base fee of \$100 - \$150 per event
<p>Large HGI</p>  <p>Just like "regular" HGI but bigger.</p>	<ul style="list-style-type: none"> • Uses less space than a GGI • Typically less expensive installation than a GGI • Typically made with durable polyethylene materials • Lower maintenance costs per event than a GGI • Larger FOG storage space than an HGI • Airtight lids prevents odors 	<ul style="list-style-type: none"> • Less FOG storage capacity than a GGI; more frequent maintenance • Requires flow control device and additional venting • Indoor installation requires space for device • Typically requires health department approval • Restaurant staff cannot conduct maintenance 	<ul style="list-style-type: none"> • New construction restaurants = \$10,000 - \$20,000 • Existing restaurant retrofit = \$20,000 - \$50,000 • Maintenance = \$0.20/gallon - \$0.25/gallon
<p>AGRD (type of HGI)</p> 	<ul style="list-style-type: none"> • Doesn't require significant space • Lower maintenance costs per event • Self-cleaning resulting in less frequent complete pumping • Often preferred by sewer agencies over regular HGIs • Can be maintained by restaurant staff 	<ul style="list-style-type: none"> • Requires daily, weekly and monthly maintenance • High degree of restaurant staff training required • No air tight seals; potential indoor odors • More expensive than passive HGI • Requires management of recyclable grease container • Typically cannot be installed below ground • Requires flow control device and additional venting • Typically requires health department approval 	<ul style="list-style-type: none"> • Above ground installation = \$5,000 - \$10,000 • Existing restaurant retrofit = \$10,000 - \$15,000 • Maintenance = Typically a base fee of \$100 - \$150 per event

National Restaurant Association

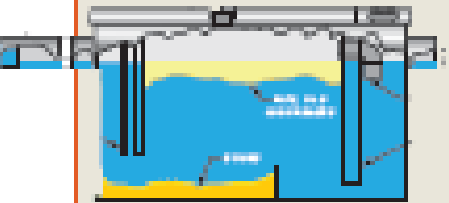
Restaurant.org/FOG

GRD BENEFITS, DRAWBACKS, AND COSTS - GGI

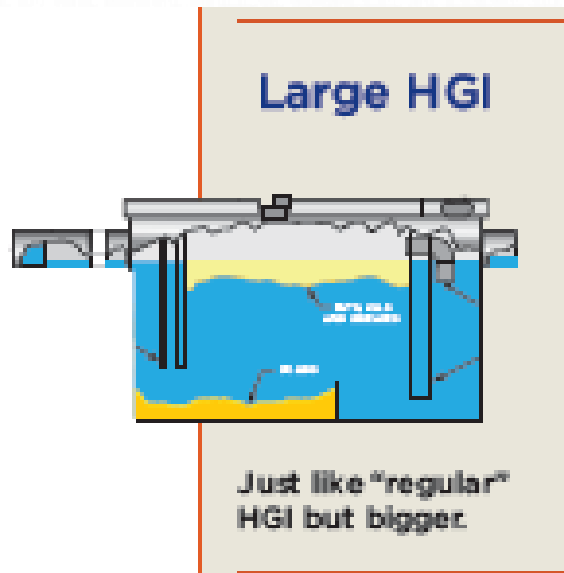
Equipment Types: the Good, the Bad, and the Ugly (\$)

	Benefits	Drawbacks	Costs
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GRD BENEFITS, DRAWBACKS, AND COSTS - HGI

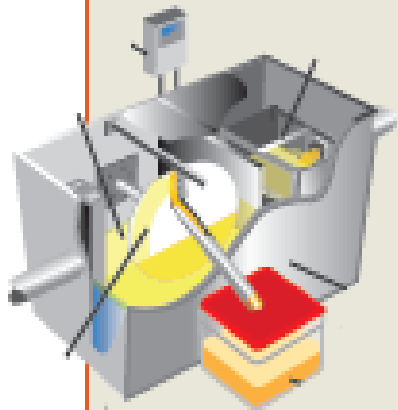
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GRD BENEFITS, DRAWBACKS, AND COSTS – LARGE HGI

 <p>Large HGI</p> <p>Just like "regular" HGI but bigger.</p>	<ul style="list-style-type: none">• Uses less space than a GGI• Typically less expensive installation than a GGI• Typically made with durable polyethylene materials• Lower maintenance costs per event than a GGI• Larger FOG storage space than an HGI• Airtight lids prevents odors	<ul style="list-style-type: none">• Less FOG storage capacity than a GGI; more frequent maintenance• Requires flow control device and additional venting• Indoor installation requires space for device• Typically requires health department approval• Restaurant staff cannot conduct maintenance	<ul style="list-style-type: none">• New construction restaurants = \$10,000 - \$20,000• Existing restaurant retrofit = \$20,000 - \$50,000• Maintenance = \$0.20/gallon - \$0.25/gallon
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GRD BENEFITS, DRAWBACKS, AND COSTS - AGRD

AGRD (type of HGI)



- Doesn't require significant space
- Lower maintenance costs per event
- Self-cleaning resulting in less frequent complete pumping
- Often preferred by sewer agencies over regular HGIs
- Can be maintained by restaurant staff

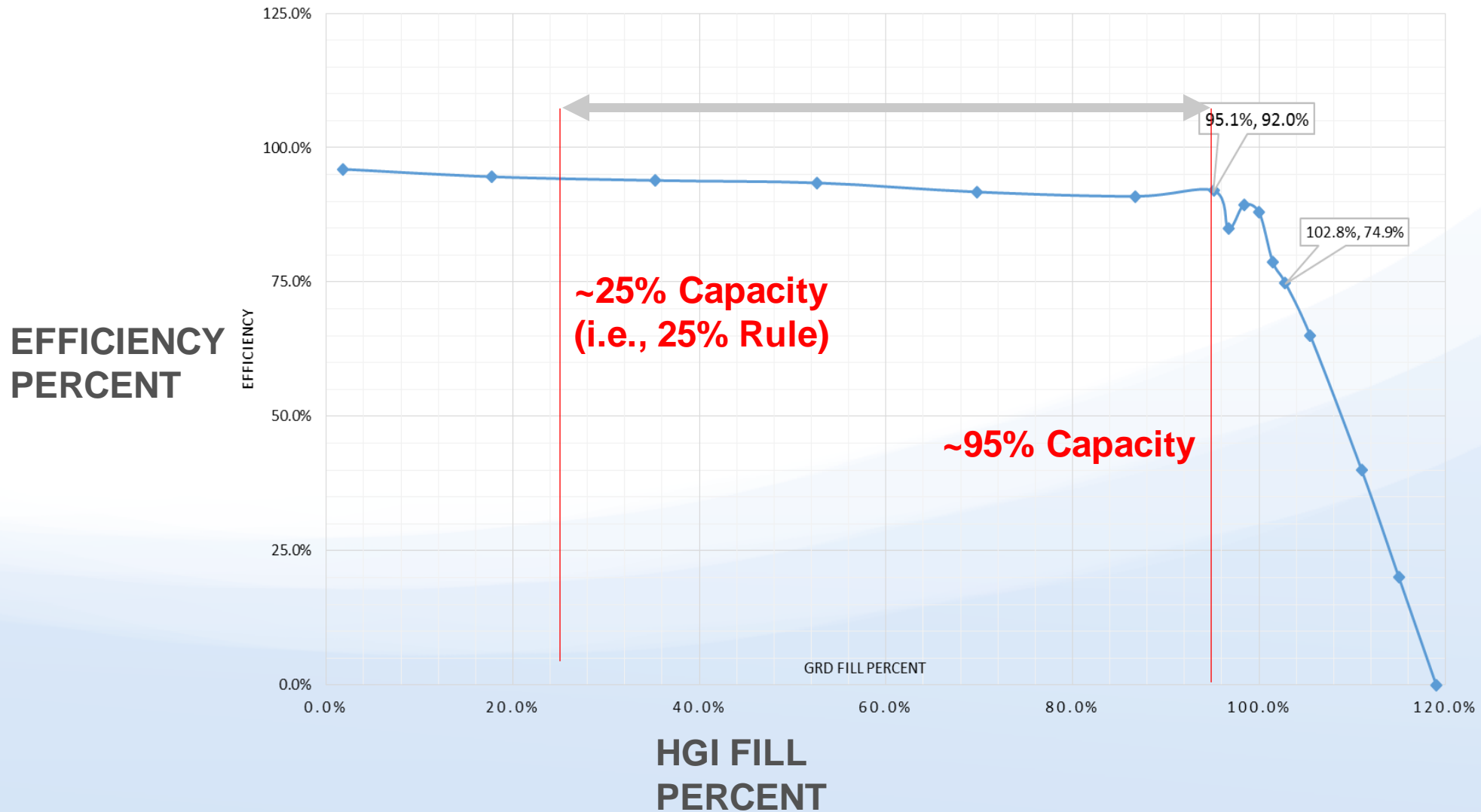
- Requires daily, weekly and monthly maintenance
- High degree of restaurant staff training required
- No air tight seals; potential indoor odors
- More expensive than passive HGI
- Requires management of recyclable grease container
- Typically cannot be installed below ground
- Requires flow control device and additional venting
- Typically requires health department approval

- Above ground installation = \$5,000 - \$10,000
- Existing restaurant retrofit = \$10,000 - \$15,000
- Maintenance = Typically a base fee of \$100 - \$150 per event

HGI EFFICIENCY TESTING RESULTS / FOG STORAGE CAPACITY

25% Rule applied to HGIs can cost FSEs excessive pump-out costs

EFFICIENCY VS. FILL %



???????



???????

Poll Question



PATRICK BRYAN, PPRC FOG TRAINER AND TECHNICAL PROGRAM MANAGER

*Stanislaus County, Hazardous Materials Inspector
County Of Fresno, NPDES Inspector
Municipal Interagency Training Coordinator*

- **EXPERIENCE SERVING AS A WASTEWATER AND STORM WATER INSPECTOR FROM THE COUNTY OF FRESNO, CALIFORNIA.**
- **BACKGROUND IN COMMERCIAL AND DEVELOPMENT PROGRAMS PATRICK UNDERSTANDS THE DISCONNECT THAT CAN OCCUR BETWEEN THE COMMUNITIES WE SERVE SUCH AS FOOD SERVICE ESTABLISHMENT'S (FSES), OTHER REGULATORY INSPECTORS/PROGRAMS AND WITHIN OUR OWN AGENCIES.**
- **BUILDING RELATIONSHIPS WITH INTERNAL DEPARTMENTS AND PRIVATE STAKEHOLDERS IS ESSENTIAL FOR A SUCCESSFUL FOG PROGRAM.**

FSE Inspections

Inspect the Food Service Establishment

- Walk Through the Facility
- Identify Where the Grease Removal Device (GRD) is
 - *It's a Different Plan if there is NO GRD*
- Find Out What Fixtures are Connected to the GRD
- What is the Condition of the GRD
- How Often is the GRD Pumped
- Establish a Pump Out Schedule



FOG IMPACTS ON FOOD SERVICE ESTABLISHMENTS



How much did this cost the utility and the FSE to cleanup?

FOG IMPACTS ON FOOD SERVICE ESTABLISHMENTS

Controlling FOG in FSEs help lessen the likelihood of:

- Chargebacks for repairs to sewer pipes attributed to FOG, or surcharges from the local sewer authority.
- Getting several testing requirements imposed due to a history of violations.
- Enforcement action by local sewer authorities due to violation of ordinances.

GREASE TRAP OR INTERCEPTOR?



This is NOT a grease trap or interceptor!

Courtesy Brownsville PUB

Grease Interceptor Location is Very Important



Where's the accessibility to
PRESSURE WASH



What are the chances of
REGULAR CLEANING

Floor Sink drain used as a condensate drain



All drains are being impacted

Deck Wash at the end of the day



Handwash Sink



Floor drain

What's happening outside the interceptor ?



You Can See The FOG Going Down The Drain?



WHICH FIXTURES PRODUCE GREASE IN QUANTITIES THAT CAN AFFECT LINE STOPPAGE?



What you may see during an inspection...

- **Is the entire kitchen area plumbed to a Grease Removal device?**
- **Are all fixtures properly plumbed/connected?**
- **Is everything in proper working order?**



Always check the plumbing

SEP 29 2004



**PLUMBING CODE REQUIRES THESE BE ACCESSIBLE
BUT REALLY YOU NEED TO BE A PLUMBER AND
MECHANIC TO OPEN SOME OF THESE.**



**“We have never dumped
grease down the drain.”**

**This
restaurant
invented
their own
grease trap.**



WHAT ABOUT DISHWASHERS AND FOOD WASTE DISPOSAL UNIT CONNECTIONS?

2018 & 2021 International Plumbing Codes (IPC):

1003.3.1 Grease interceptors and automatic grease removal devices required

A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease laden waste located in food preparation areas, such as in restaurants; hotel kitchens; hospitals; school kitchens; bars; factory cafeterias and clubs. Fixtures and equipment shall include pot sink; prerinse sinks; soup kettles, or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units; and dishwashers without prerinse sinks.

1003.3.2 Food waste disposers restrictions

A food waste disposer shall not discharge to a grease interceptor.

2018 & 2021 Uniform Plumbing Codes (UPC):

1014.1.3 Food waste disposers and dishwashers

No food waste disposer or dishwasher shall be connected to or discharge into a grease interceptor. Commercial food waste disposers shall be permitted to discharge directly into the building's drainage system.

Exception: Food waste disposers shall be permitted to discharge into grease interceptors that are designed to receive the discharge of food waste.

Down The Dishwasher Drain



There Goes The FOG!!!

**First Cycle
from the
Dishwasher**

12/29/2009

Poll Question

?????????



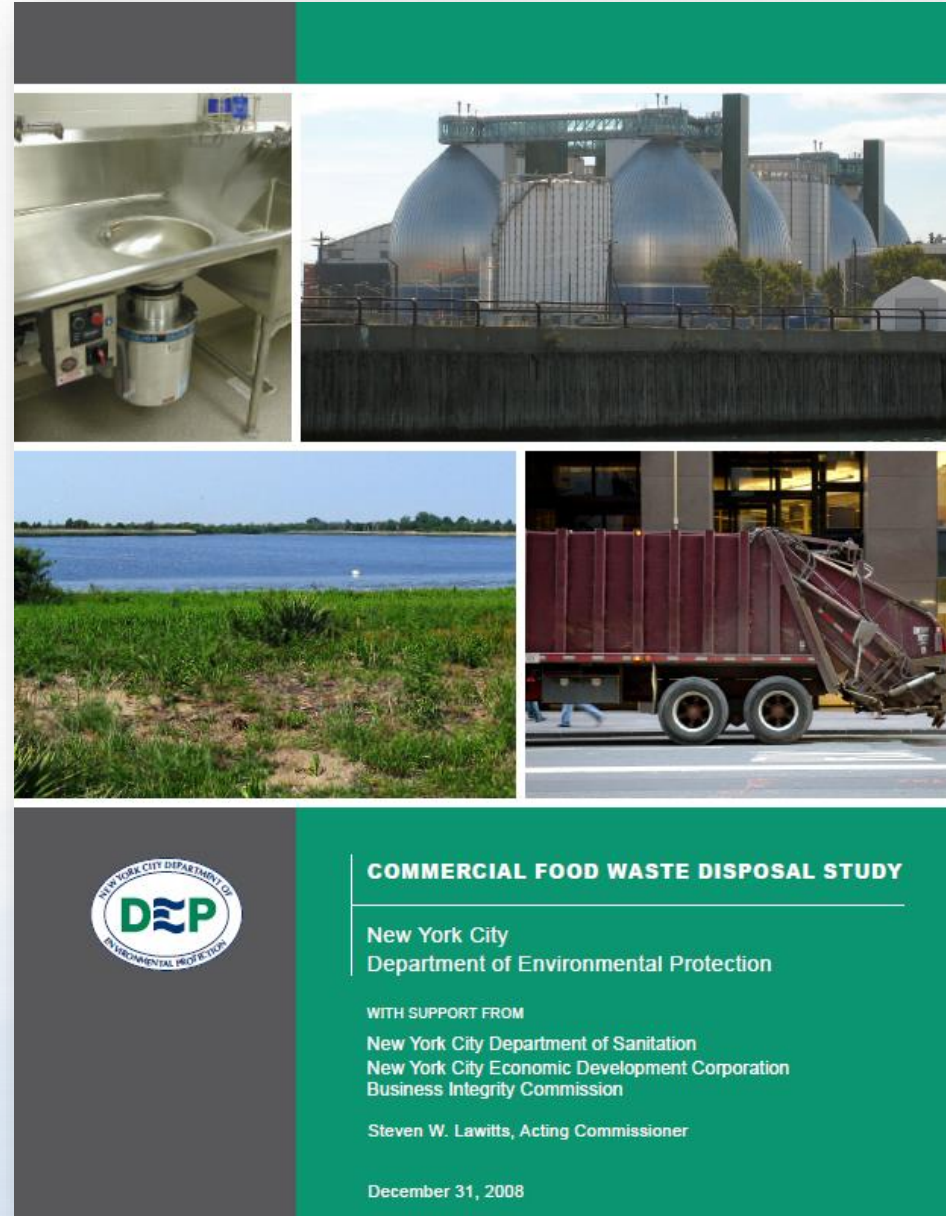
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COMMERCIAL FOOD WASTE DISPOSAL UNITS (A.K.A. GARBAGE GRINDERS)

- ❑ Uses Water and Electricity
 - Typical: 12 HP @ 720 Gals/Hour Costs ~\$1600/yr (Austin Estimate)
- ❑ Increases Grease Trap and Interceptor Loading
- ❑ More Frequent Cleaning and Pump Outs Needed for Trap and Interceptor
- ❑ Increased Bad Odor Potential
- ❑ Should Use a Solids Trap Prior to Traps
- ❑ Must Inspect and Clean Frequently



FOG LOADING FROM FOOD WASTE DISPOSAL UNITS



COMMERCIAL FOOD WASTE DISPOSAL STUDY

New York City
Department of Environmental Protection

WITH SUPPORT FROM

New York City Department of Sanitation
New York City Economic Development Corporation
Business Integrity Commission

Steven W. Lawitts, Acting Commissioner

December 31, 2008

FOOD WASTE DISPOSAL STUDY



Food waste before grinding



Food waste after grinding

EPA METHOD 1664 LABORATORY RESULTS FOR FSES (ALL TYPES)

- RANGE: 6 TO 10 G/KG FOOD WASTE

Source: NYCDEP Commercial Food Waste Disposal Study 2008

FSE SAMPLING FOR FOG LOADING FROM FOOD WASTE DISPOSAL UNITS

Category	No. of Samples	1664 Oil and Grease (g/kg food waste)
Colleges and Universities	15	14.83
Medical Facilities	32	1.03
Retail Food Establishments (supermarkets)	29	6.16
Restaurants and hotels	61	18.59
Other FSEs (caterers, shelters, non-public schools, and senior centers)	35	18.21

FSE SAMPLING FOR FOG LOADING FROM FOOD WASTE DISPOSAL UNITS

Category	No. of Samples	1664 Oil and Grease (mg/L food waste)
Colleges and Universities	15	14830
Medical Facilities	32	1030
Retail Food Establishments (supermarkets)	29	6160
Restaurants and hotels	61	18590
Other FSEs (caterers, shelters, non-public schools, and senior centers)	35	18210

Hood and Vent Hood Cleaning



Hood and Vent Hood Cleaning



Roof Top Exhaust



What's Going On Here?



Drive Through Cleaning



DAVID JAMES

PPRC FOG TRAINER

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THINGS YOU WILL SEE...



**Detergents washing
out FOG in small traps**

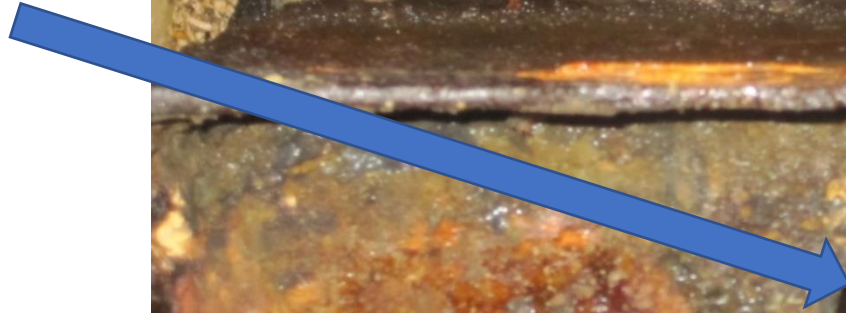
**Public
Sewer**



01/05/2011

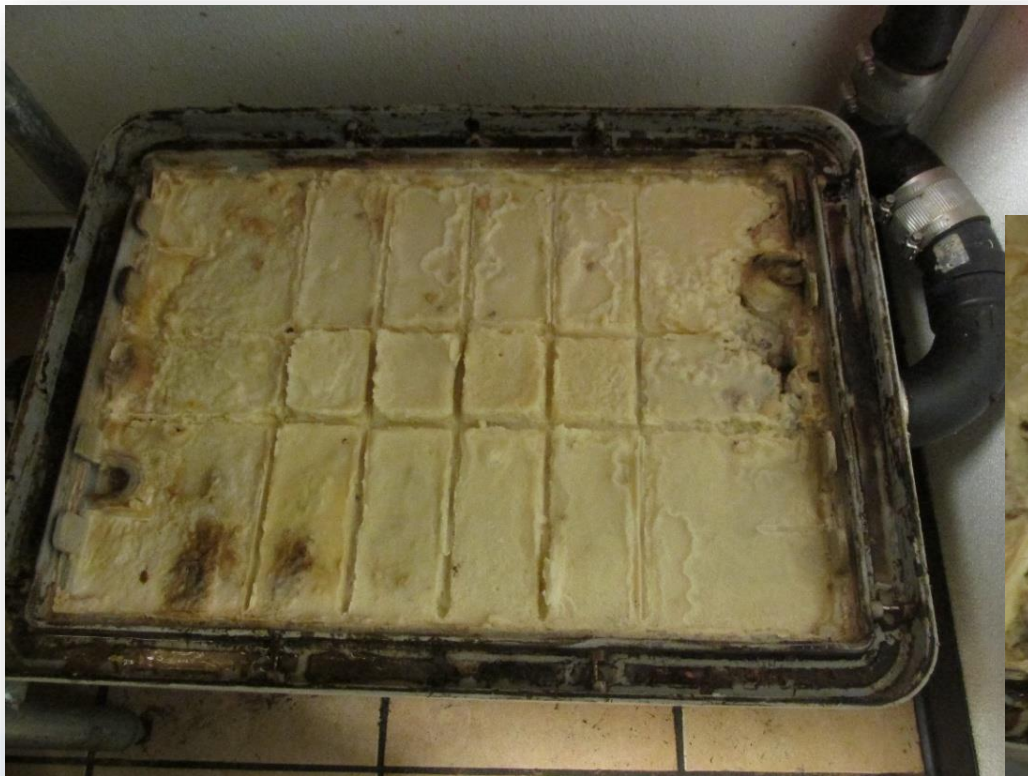
**3 Comp
Sink**

**INSPECTION
PORT**



01/05/2011

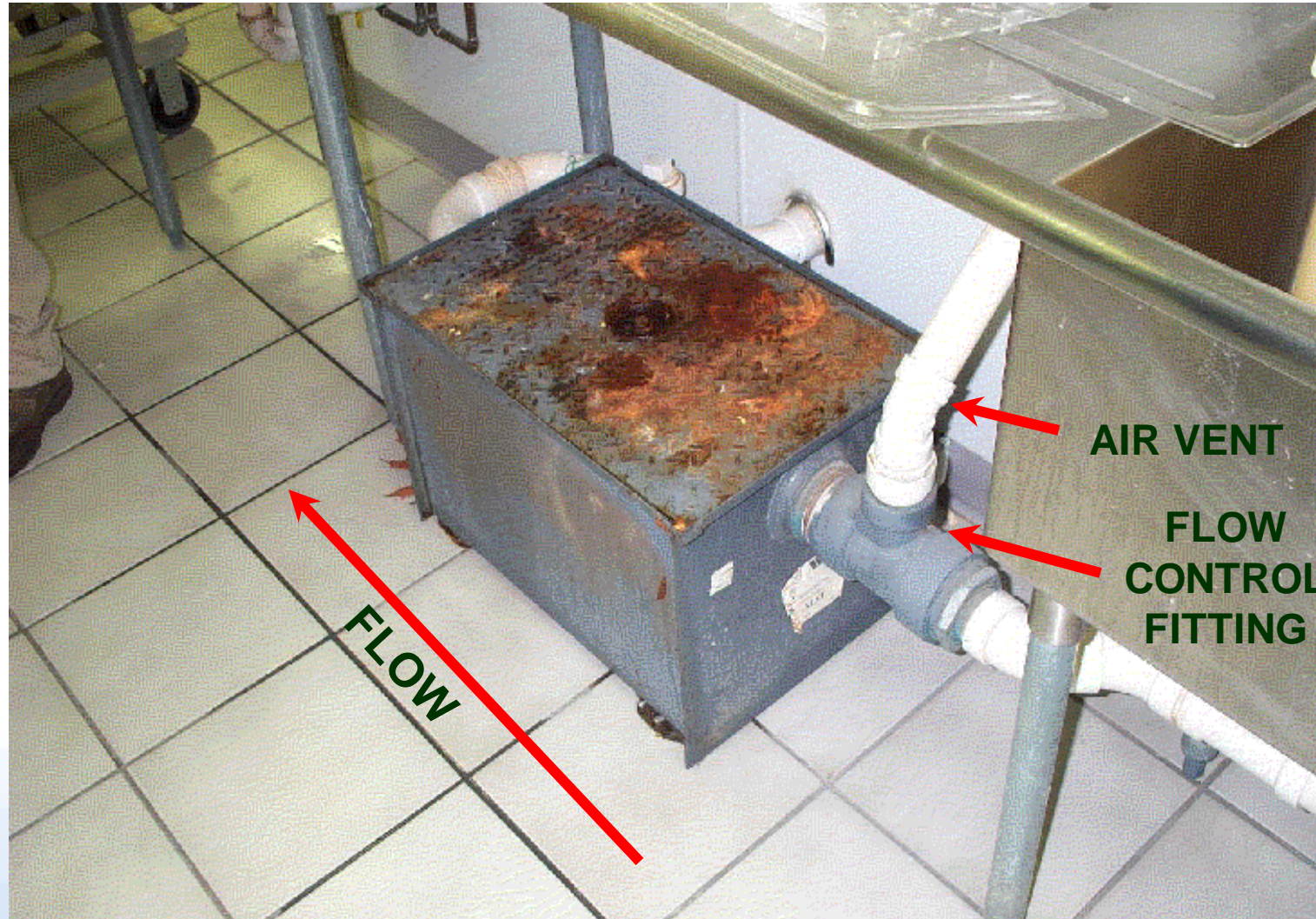
How Many Backups?



HOW HARD DO WE MAKE IT TO SERVICE?



THINGS YOU WILL SEE...



Venting and flow control is important!

THINGS YOU WILL SEE

**Leaking grease trap
inside buildings**



Current FOG Abatement



- Not all Food Service fixtures/drains connected
- Grease interceptor not serviced until drains plug

WHAT'S WRONG WITH THESE DEVICES?





13 months in service

Inaccessibility for maintenance & inspection

- Problem for plastic as well as fiber glass models



**Do the Photos
Demonstrate
FOG bypass**





Cacaklacks & Zeeks - (2 of 4 kitchens coming on board)

- High food production
- No ware washing, only 3comps, Handwash (s), Foodprep (s), floor drain (s)
- Plumbing Engineer's design - anticipated 30 days (Regulatory Frequency 20 days)



Outlet Manhole Cover



Inlet Manhole Cover



- Heavy food production
- Expecting to take over sales from Wilsonville & Beaverton
- Plumbing Engineer's design - anticipated 90 days

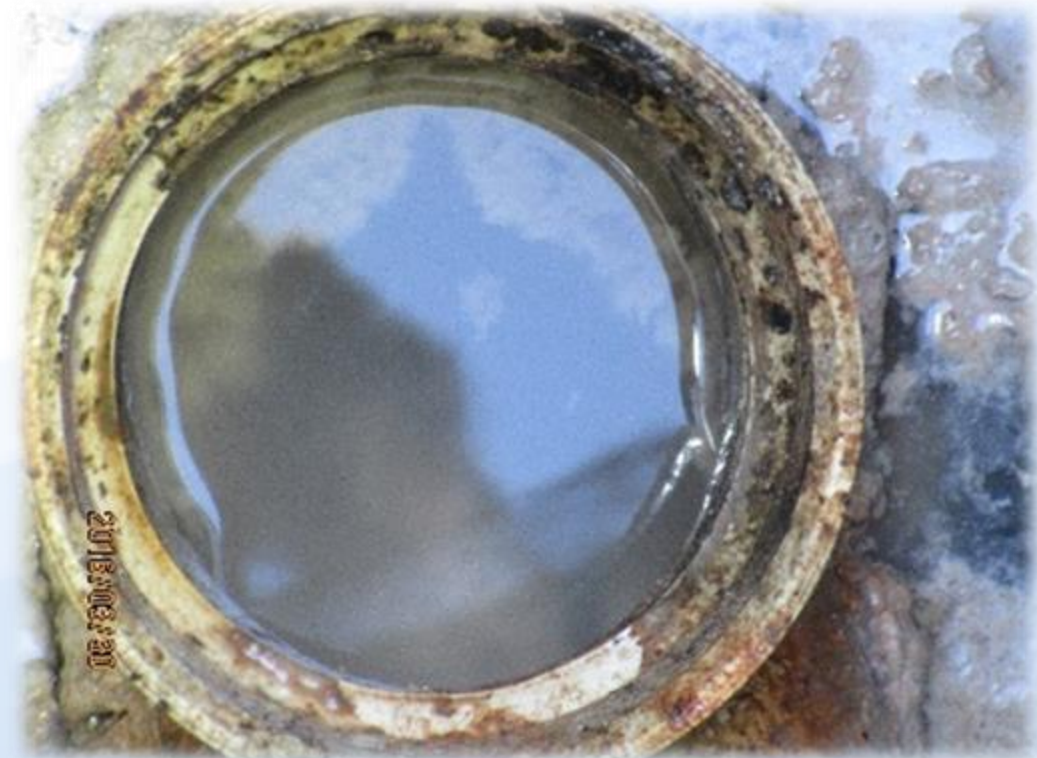


(1st spec 1000 gallon)

22 days in service



43 days in service





Over Three Years Without Service





**Do these Photos
Demonstrate
FOG Compliance?**



How do you miss this!



If I Can See It, You MISSED IT...

How do you miss this!







???????

???????

Poll Question

Grease Pumpers



Preferred Pumper Programs

Pumping Grease is Hard Work!



WHAT ABOUT THE SELF-CLEANERS?



Grease Pumpers and the Preferred Pumper Program:

A Brief Introduction



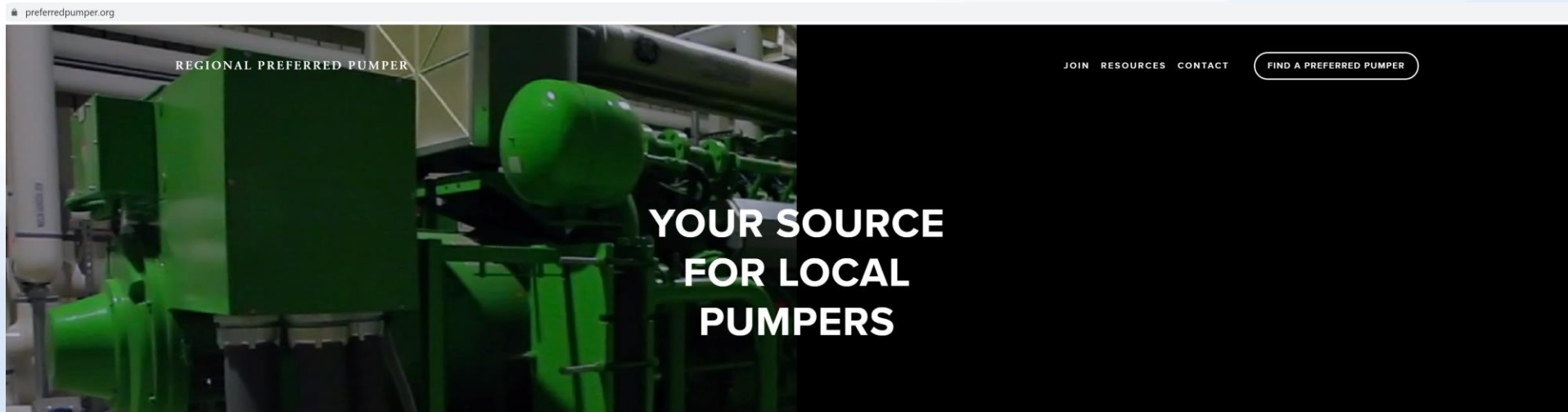
Preferred Pumper Program

The Preferred Pumper Program (PPP) is an alliance of pumper companies working with local sewer agencies to establish standards of cleaning and reporting procedures for grease interceptors. The developed criteria encourages effective maintenance, which extends the life of pretreatment equipment, helps prevent building sewer backups and helps promote compliance with local sewer use ordinances.



Preferred Pumper Standards

- Follows approved best practices for interceptor service
- Submits schedule of interceptor maintenance to sewer agency seven days in advance
- Submits FOG pump-out reports to sewer agency within 10 days of pump-out
- www.preferredpumper.org



PREFERRED PUMPER PROGRAM CLEANING STANDARDS



A well-cleaned and compliant grease interceptor.

Pumpers registered with the Preferred Pumper program sign agreements to certify that they will implement these cleaning standards during each pumpout and that staff will be trained and educated about these standards. If a Preferred Pumper is not used, then the FOG generator, or food service establishment, is responsible for maintaining these standards and alerting the local sewer agency seven days prior and submitting a FOG report within 10 days of a pumpout.

Gravity Grease Interceptor (GGI) Cleaning Standards

1. Completely pumpout all contents in the interceptor, so its integrity can be inspected
2. Pressure Wash
3. Remove all accumulated grease from the walls
 - Ledge/Ridge 3D grease buildup
 - Formed gel buildup on GGI rings (manhole covers)
 - No grease clumps on the walls
 - Pressure wash the inside of the inlet and outlet tees
 - Pressure wash the inside of the transfer piping (baffle wall)
4. Note GGI condition for FOG report
5. Report a missing outlet tee
6. Note baffle wall condition
 - Missing pipe
 - Water leaking any part of the baffle wall
7. Water leaking in from any of the outer walls



Interceptor operating correctly.

PREFERRED PUMPER PROGRAM CLEANING STANDARDS



Interceptor pumped out - NOT cleaned to standards.



Interceptor pumped out - cleaned to standards.

Hydromechanical Grease Interceptor (HGI) Cleaning Standards

1. Remove lid and scrape/clean off any FOG buildup on inner part of lid
2. Pumpout all the material in the HGI – completely
3. Remove baffles or diffusers and scrape/clean off all 3D FOG buildup
4. Scrape/Clean inside of HGI before refilling with clean water
 - Remove visible 3D grease
 - Remove as much harden grease along the top ridge of HGI
 - Vacuum any residue left at bottom of HGI
 - Replace baffle or diffusers
5. Note HGI condition for FOG report
 - Missing/rusted out baffle
 - Diffuser condition
 - Holes in HGI - metal/plastic
 - Missing bolts/screws
 - Replace lid

Inspection Standards

HGI inspection - while pumper is on site

1. Baffle is removed and scraped/cleaned
2. Walls are cleaned
3. Review pumper's Pumpout measurements
4. Complete a FOG report
5. Leave a copy with the food service establishment (FSE)

GGI inspection - while pumper is on site

1. Observe that entire GGI is evacuated of waste water
2. Observe that the GGI is pressure washed:
 - All internal concrete components
 - Formed gel buildup on GGI rings (manhole covers)
 - Inlet & outlet tee/downspouts cleaned meticulously
 - Send pressure washer stream through transfer piping (baffle wall)
 - Remove all 3D grease buildup on walls
 - Copy of FOG report to _____.



MUNICIPAL STANDARDS

- Follows up with FSE if pumper notes a deficiency in a pump-out report
- When a deficiency is noted, FOG inspector coordinates with pumper and FSE manager to be on-site at next pump-out to verify deficiency
- Participates in regional Preferred Pumper meetings to keep informed and provide assistance to other municipal members
- www.preferredpumper.org



PREFERRED PUMPER TRAINING AND OUTREACH

- Worked with pumpers to develop best maintenance standards
- Published standards on the Preferred Pumper web site
- Meet with individual pumpers on a rotating basis during municipal monthly meetings
- Provide training to new pumpers

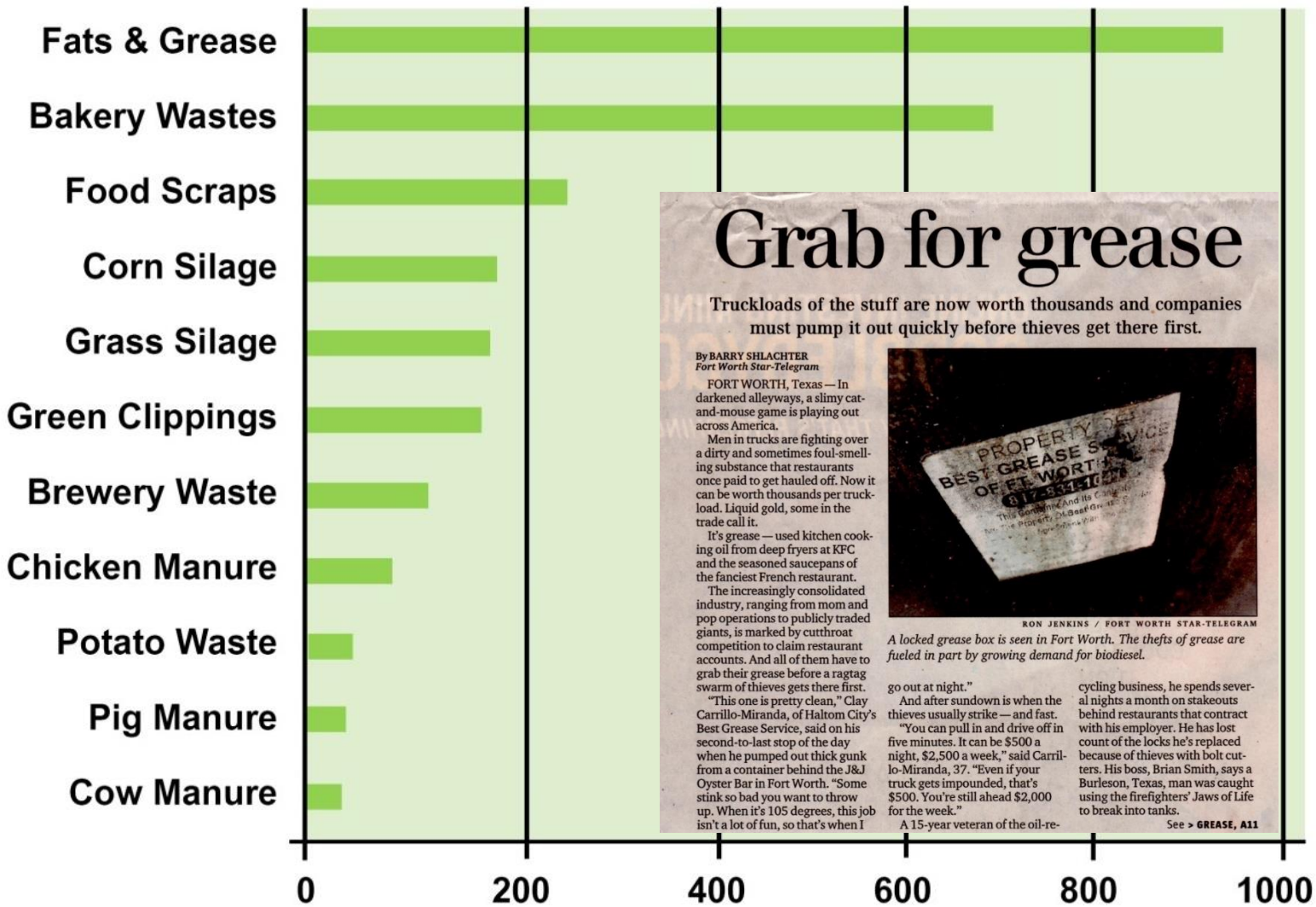
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Poll Question

YELLOW GREASE AS A COMMODITY



Grab for grease

Truckloads of the stuff are now worth thousands and companies must pump it out quickly before thieves get there first.

By BARRY SHLACHTER
Fort Worth Star-Telegram

FORT WORTH, Texas — In darkened alleyways, a slimy cat-and-mouse game is playing out across America.

Men in trucks are fighting over a dirty and sometimes foul-smelling substance that restaurants once paid to get hauled off. Now it can be worth thousands per truckload. Liquid gold, some in the trade call it.

It's grease — used kitchen cooking oil from deep fryers at KFC and the seasoned saucepans of the fanciest French restaurant.

The increasingly consolidated industry, ranging from mom and pop operations to publicly traded giants, is marked by cutthroat competition to claim restaurant accounts. And all of them have to grab their grease before a ragtag swarm of thieves gets there first.

"This one is pretty clean," Clay Carrillo-Miranda, of Haltom City's Best Grease Service, said on his second-to-last stop of the day when he pumped out thick gunk from a container behind the J&J Oyster Bar in Fort Worth. "Some stink so bad you want to throw up. When it's 105 degrees, this job isn't a lot of fun, so that's when I go out at night."

And after sundown is when the thieves usually strike — and fast.

"You can pull in and drive off in five minutes. It can be \$500 a night, \$2,500 a week," said Carrillo-Miranda, 37. "Even if your truck gets impounded, that's \$500. You're still ahead \$2,000 for the week."

A 15-year veteran of the oil-re-

cycling business, he spends several nights a month on stakeouts behind restaurants that contract with his employer. He has lost count of the locks he's replaced because of thieves with bolt cutters. His boss, Brian Smith, says a Burleson, Texas, man was caught using the firefighters' Jaws of Life to break into tanks.

See > GREASE, A11

RON JENKINS / FORT WORTH STAR-TELEGRAM

A locked grease box is seen in Fort Worth. The thefts of grease are fueled in part by growing demand for biodiesel.

THE PRICE OF YELLOW GREASE
 VARIES FROM QUARTER TO QUARTER AND
 IS LISTED BY THE USDA AGRICULTURAL
 MARKETING SERVICE. IN JANUARY 2017, IT
 SOLD FOR \$0.23 PER POUND OR ABOUT
 \$8.05 FOR A 35 LB. JIB OF OIL. (ABOUT 40%
 OF THE COST OF A \$20 FRYER OIL JIB.)

PRICE AS OF JULY 6, 2021
43¢ - 48¢ PER POUND

Cubic meters of biogas production per ton of substrate

GRESHAM WWTP ANAEROBIC DIGESTER FOG RECEIVING STATION



Grease-Zilla Turn-key
FOG-to-Energy System
Scalable for WWTP
with anaerobic digester

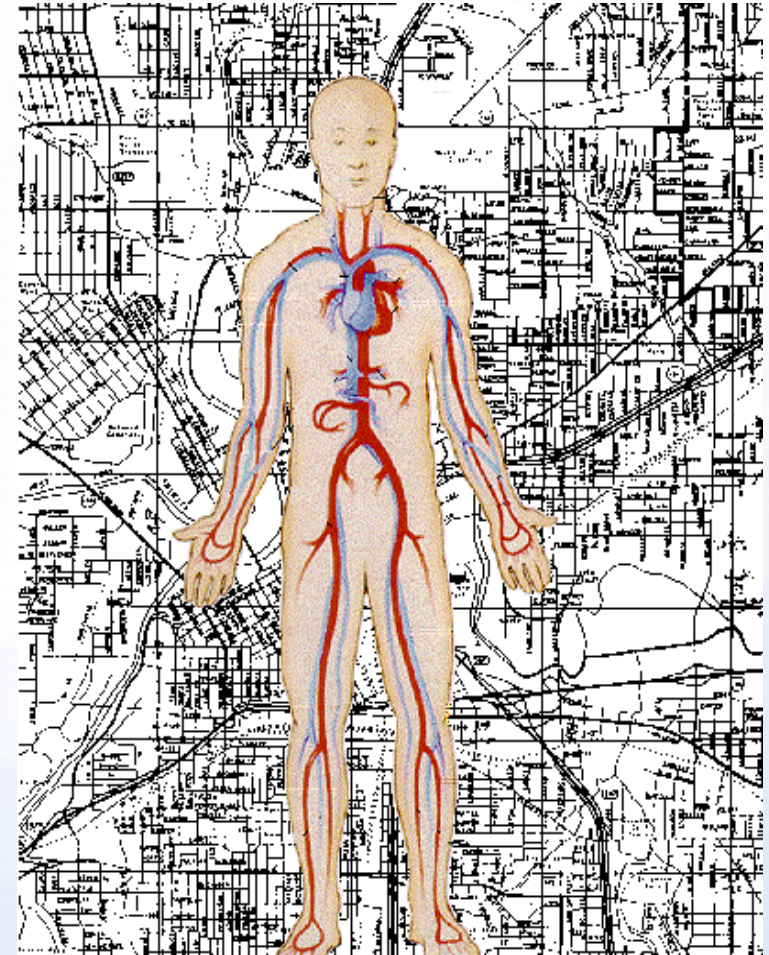
GREASE IS LIKE CHOLESTEROL

CITIES HAVE BEEN ON A HIGH FAT DIET FOR FAR TOO LONG.

WE HAVE BLOCKED ARTERIES.

CITIES HAVE SPENT MILLIONS ON ANGIOPLASTY.

CITIES SPEND MILLIONS EVERY YEAR TO COMBAT THE ONGOING PROBLEM.



If we don't change our diet and follow an exercise program, the problem will persist.

Questions ???





**YOUR OPINION
MATTERS**

Evaluation – Satisfaction Survey Form

- Please complete the course evaluation - satisfaction survey form
- Information supports on-going training
- Information is used TO INFORM future grant NEEDs
- USED TO CONFIRM CEU COMPLETION



USDA FOG Training Satisfaction survey

WSA FOG PROGRAM RESOURCES



WSA
a project of pprc.org

[About Us](#) [All About FOG](#) [Training Events](#) [Tech Resources](#) [Contact](#)

About Us

Western States Alliance (WSA) is a project of the [Pollution Prevention Resource Center](#) that helps professionals identify and implement best practices in Fats, Oils, and Greases (FOG) management.

We are a membership organization of FOG professionals from across the United States. [Click here](#) to check out our staff bios on pprc.org.

Our vision is to be a comprehensive source of knowledge and assistance to advance technologies and best management practices, conserve resources, and derive the most value from FOG while prohibiting its damaging effects in the wastewater system.

Conferences & Workshops

We offer two FOG related technical training conferences each year: The [FOG Forum](#) & the [Pacific Northwest Pretreatment Workshop](#). Both events offer immersive training, program development and implementation sessions, and many opportunities for networking with your peers.

[Subscribe Below >](#)

FOG Abatement Training

With funding from the USDA, we provide both virtual and in-person trainings to help small rural communities and those who serve them. The trainings focus on building the business case for your program, program implementation and emerging chemicals of concern.

[Training Calendar >](#)

National Resource Reference Guide

Our National Reference Resource Guide is a "one-stop" shop to learn about FOG, its value as a resource, its problems in sewer conveyance lines, its contribution to sanitary sewer overflows, its cost of treatment, and how you can establish or enhance a FOG Abatement program.

[View the Guide >](#)

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NATIONAL RESOURCE REFERENCE GUIDE



[About Us](#) [All About FOG](#) [Training Events](#) [Tech Resources](#) [Contact](#)

Technical Resources

As part of our mission to provide technical resources from partners throughout the country, we offer this selection of FOG related materials for your training needs.

[National Resource Reference Guide](#)

[Preferred Pumper Program](#)

[Interceptor Sizing Guide](#)

[Kennedy Jenks Brown Grease Supply Study](#)

[WSA's FOG Source Control Guide](#)

[The City of Portland's FOG Extra Charge Guidelines](#)

[WSA FOG Training Playlist on YouTube](#)

[Plumbing & Draining Institute Publications](#)

[FOG Resources in the PPRC Resource Library](#)

Presentation Slides from FOG Abatement Training (*coming soon*)

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PROGRAM IMPLEMENTATION

SESSION 3

- YOUR EXISTING FOG PROGRAM
- ESTABLISHING LEGAL AUTHORITY
- STAKEHOLDERS
- FOG TRIAGE
- FOG MANAGEMENT PRACTICES
- FSE EFFECTIVE FOG PRETREATMENT

SESSION 4

- **FOG AND WATER SEPARATION**
- **GREASE REMOVAL DEVICES (GRD)**
- **FSE INSPECTIONS**
- **PREFERRED PUMPER PROGRAMS**

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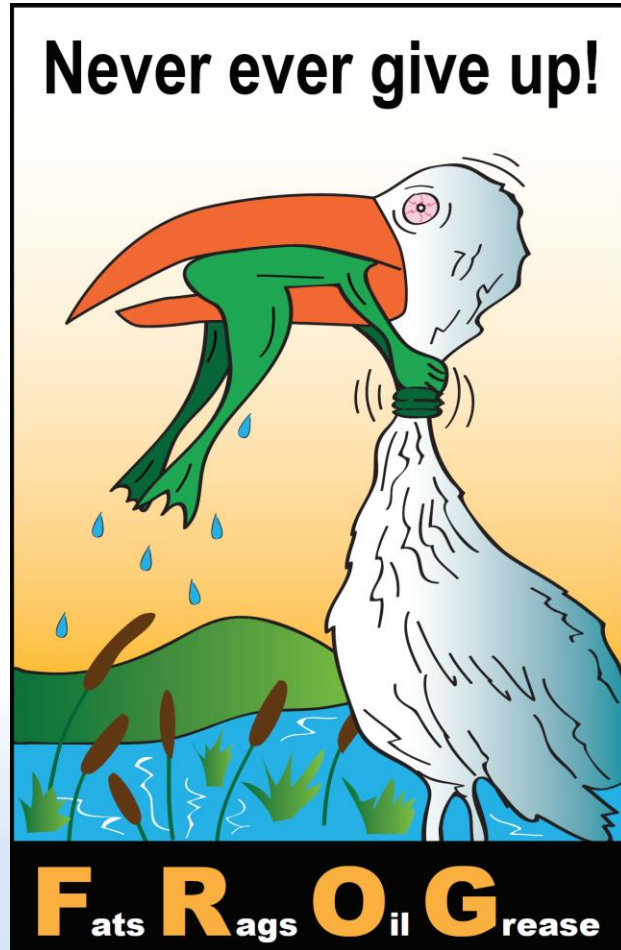
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**THANK YOU FOR ATTENDING SESSION 4
USDA FOG PRETREATMENT TRAINING**



RAPID RESPONSE --

<https://pprc.org/rapid-response/>

PPRC provides free and well-researched answers to specific questions about pollution prevention, with thorough and unbiased answers to inform decision making.