



**SCHIER**

# **The effect of the Clean Water Act on Grease Interceptors**

Presented to: R8PA 2022

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Senior Regulatory Compliance Manager

1949

PDI G101

Certification for Commercial  
Grease Interceptors











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## SLICK FIRE RUINS FLATS

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HEADQUARTERS  
Environmental  
Protection  
Agency



Federal Water Pollution  
Control Act (1948) Amended

# **Clean Water Act**

Established the basic  
structure for regulating  
pollutants discharged into the  
waters of the United States

1972

## Key revisions:



Made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions;

Key revisions:

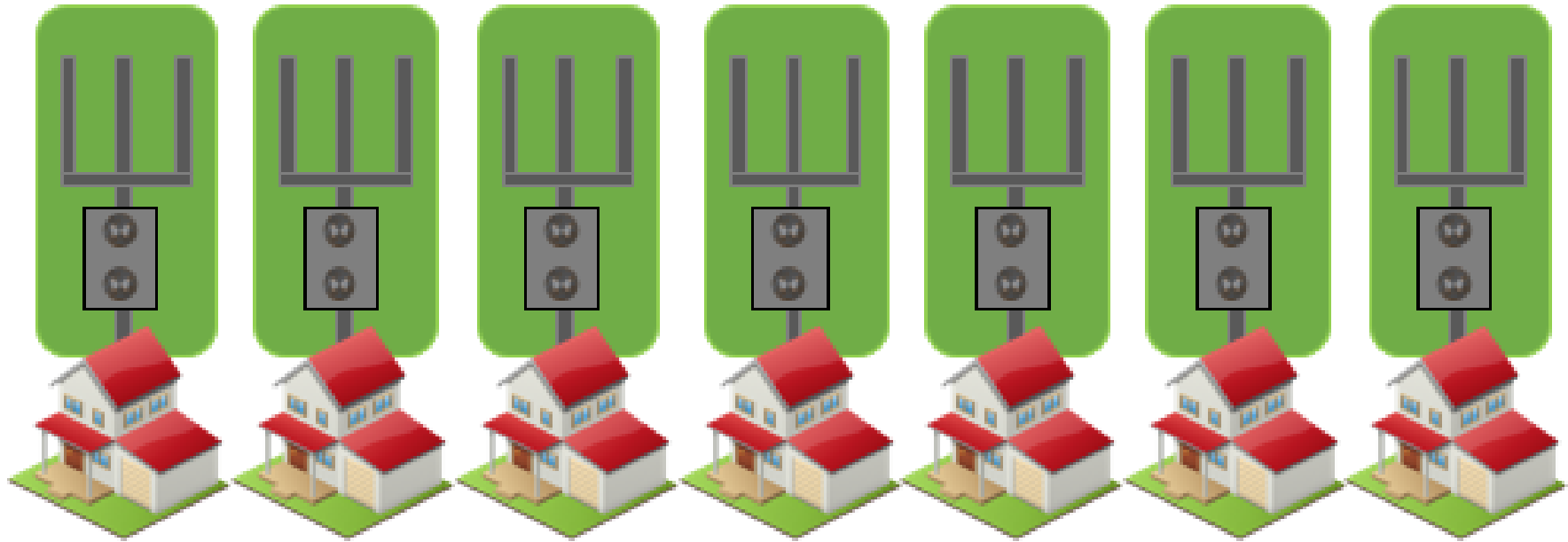


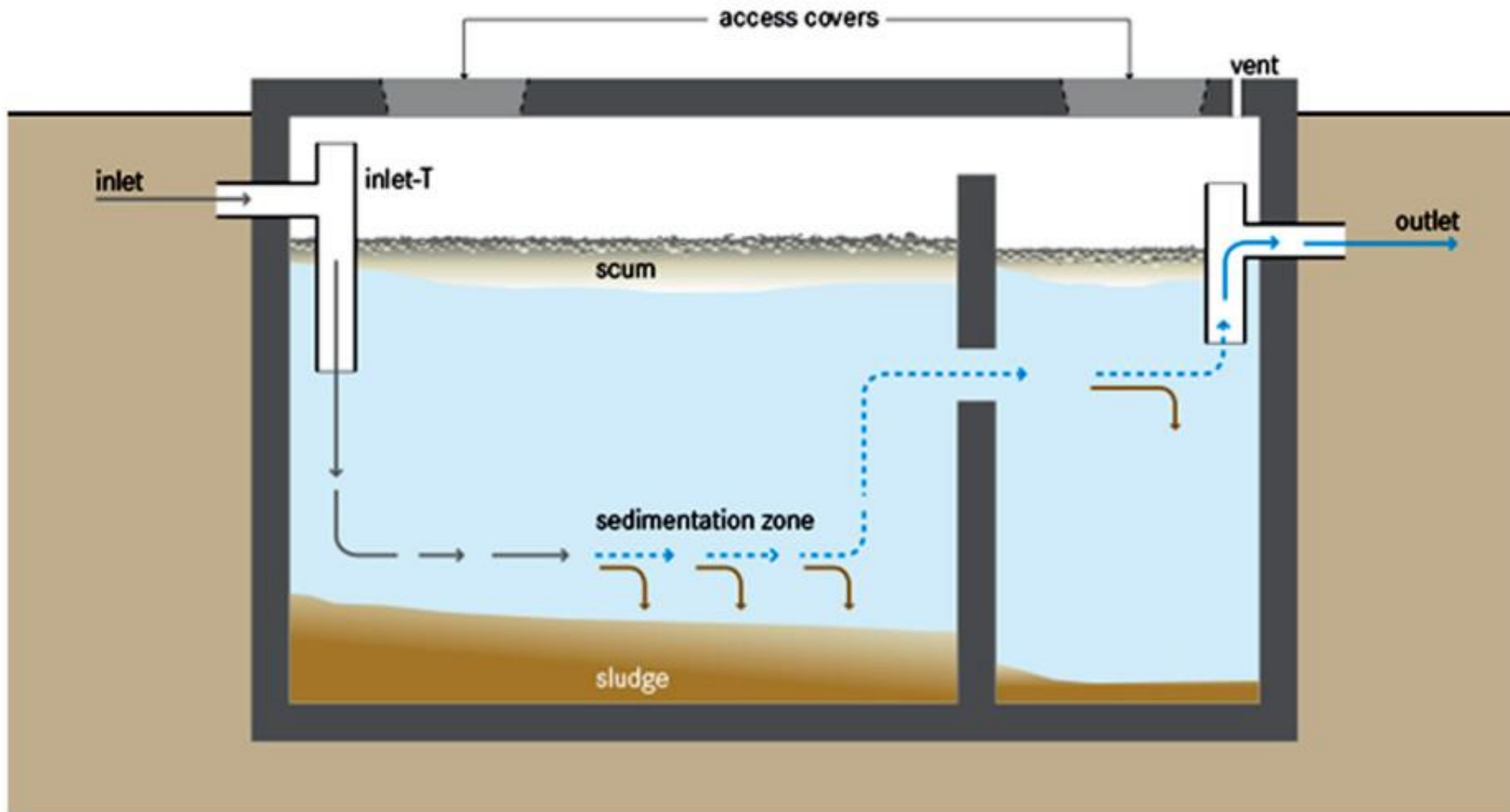
Gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry;

## Key revisions:

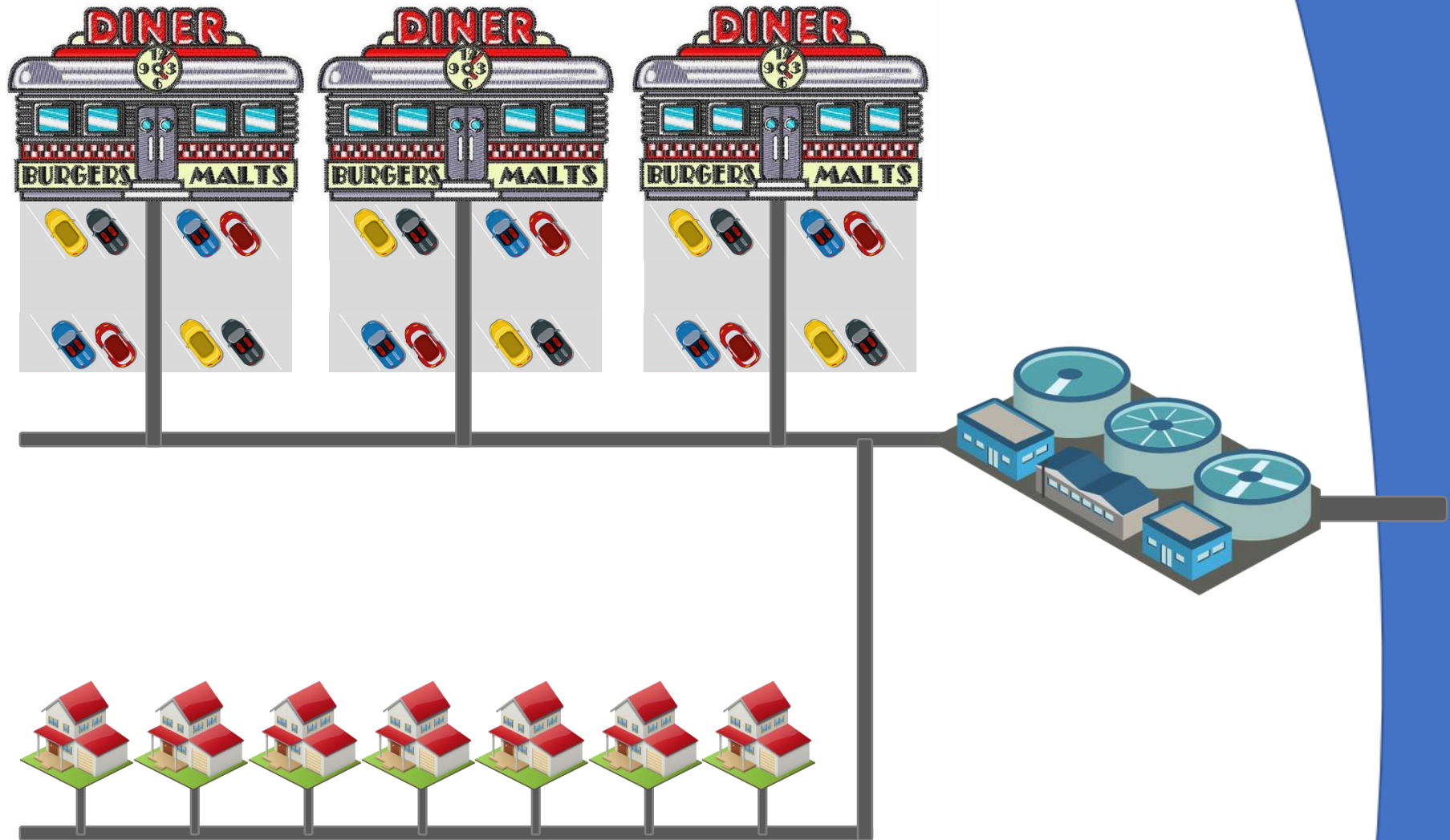


Funded the construction of sewage treatment plants under the construction grants program





What does the future look like for prefabricators of septic tanks?





United States  
Environmental Protection  
Agency

Office of Water Program  
Operations  
Washington DC 20460

Office of Research and  
Development  
Municipal Environmental Research  
Laboratory  
Cincinnati OH 45268

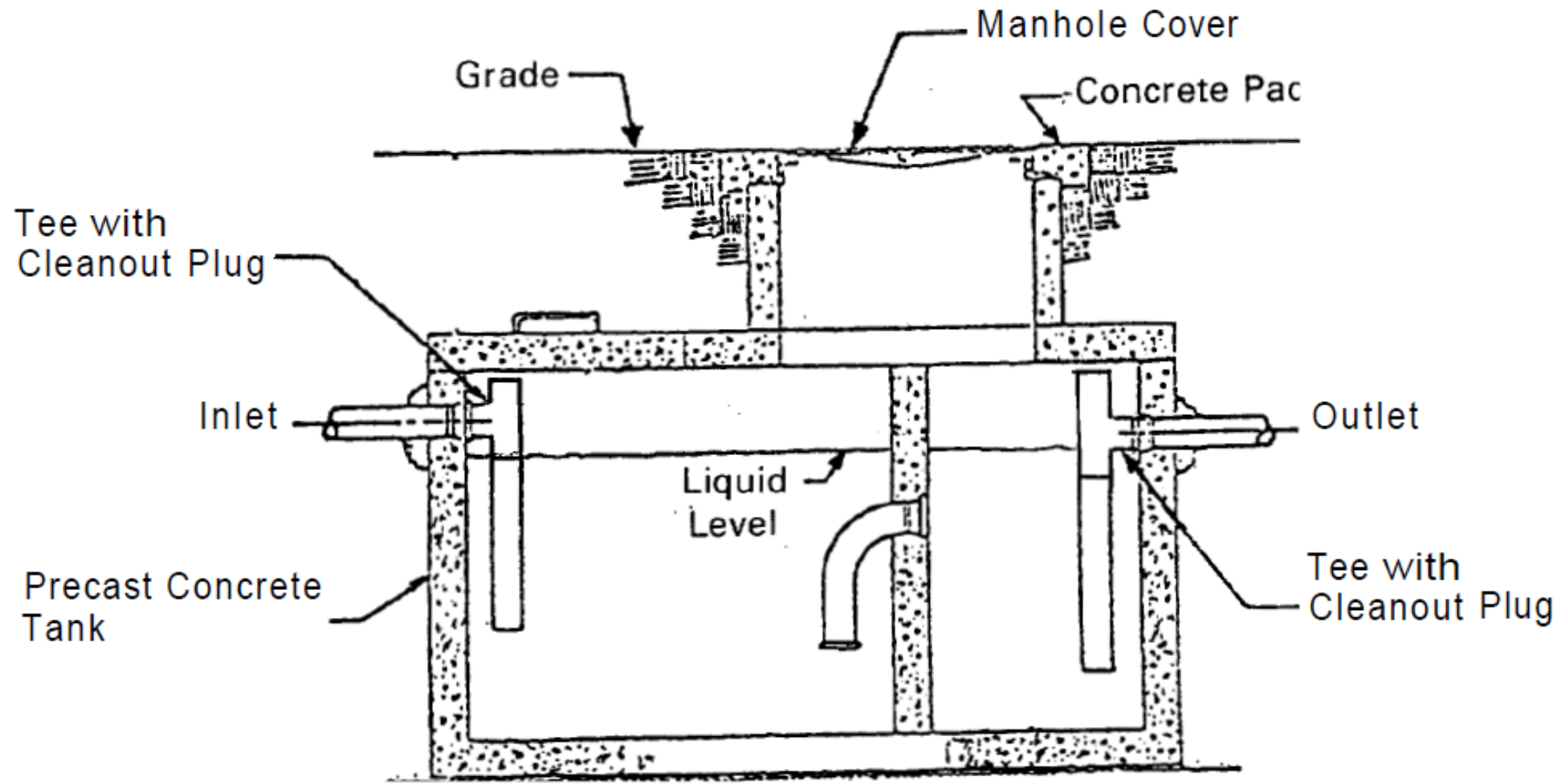
Technology Transfer



# Design Manual

## Onsite Wastewater Treatment and Disposal Systems

1980



1. RESTAURANTS:

$$(D) \times (GL) \times (ST) \times \left(\frac{HR}{2}\right) \times (LF) = \text{Size of Grease Interceptor, gallons}^a$$

D = number of seats in Dining Area

GL = Gallons of wastewater per meal , normally 5 gal

ST = Storage capacity factor -- minimum of 1.7  
onsite disposal - 2.5

HR = Number of hours open

LF = Loading factor -- 1.25 interstate freeways  
1.0 other freeways  
1.0 recreational areas  
0.8 main highways  
0.5 other highways

**HYGI Design Manual, 1979**  
**M.C. Nottingham**  
**Pasadena, CA**

Works cited by EPA Design Manual, Onsite  
Wastewater Treatment and Disposal Systems, 1980

**International Association of  
Plumbing and Mechanical Officials**

**UNIFORM  
PLUMBING  
CODE**

**1982**  
EDITION

Adopted at the Fifty-Second Annual Conference  
OCTOBER, 1981

**INTERNATIONAL ASSOCIATION OF PLUMBING  
AND MECHANICAL OFFICIALS**  
(A Non-Profit Organization)

# APPENDIX H

## Recommended Procedures for Sizing Commercial Kitchen Grease Interceptors

### H1 Waste Discharge Requirements

(a) Waste discharge from fixtures and equipment in establishments which may contain grease, including but not limited to, scullery sinks, pot and pan sinks, dishwashing machines, soup kettles and floor drains located in areas where grease-containing materials may exist, may be drained into the sanitary waste through the interceptor when approved by the Administrative Authority.

(b) Toilets, urinals and other similar fixtures shall not waste through the interceptor.

(c) All waste shall enter the interceptor through the inlet pipe only.

### H2 Design

(a) Interceptors shall be constructed in accordance with the design approved by the Administrative Authority and shall have a minimum of two compartments with fittings designed for grease retention.

(b) There shall be an adequate number of manholes to provide access for cleaning all areas of an interceptor; a minimum of one (1) per ten (10) feet of interceptor length. Manhole covers shall be gas tight in construction having a minimum opening dimension of twenty (20) inches.

(c) In areas where traffic may exist the interceptor shall be designed to have adequate reinforcement and cover.

### H3 Location

(a) Each grease interceptor shall be so installed and connected that it shall be at all times easily accessible for inspection, cleaning and removal of the intercepted grease. A grease interceptor may not be installed in any part of a building where food is handled. Location of the grease interceptor shall meet the approval of the Administrative Authority.

(b) Interceptors shall be placed as close as practical to the fixtures it serves.

## SIZING GREASE INTERCEPTORS

179

(c) Each business establishment for which a grease interceptor is required shall have an interceptor which shall serve only that establishment.

### H4 Sizing Criteria

(a) Parameters—The parameters for sizing a grease interceptor are hydraulic loading and grease storage capacity, for one or more fixtures.

(b) Sizing Formula—The size of the interceptor shall be determined by the following formula:

$$\text{Number of meals per peak hour}^1 \times \text{waste flow rate}^2 \times \text{retention time}^3 \times \text{storage factor}^4 = \text{Interceptor size (liquid capacity)}$$

#### <sup>1</sup>Meals Served at Peak Hour

#### <sup>2</sup>Waste Flow Rate

a. With dishwashing machine	6 gallon flow
b. Without dishwashing machine	5 gallon flow
c. Single service kitchen	2 gallon flow
d. Food waste disposer	1 gallon flow

#### <sup>3</sup>Retention Times

Commercial kitchen waste	
Dishwasher	2.4 hours
Single service kitchen	
Single serving	1.5 hours

#### <sup>4</sup>Storage Factors

Fully equipped commercial kitchen	8 hour operation: 1 16 hour operation: 2 24 hour operation: 3
Single Service Kitchen	1.5

### H5 Effluent Sampling

An effluent sampling box on grease interceptors may be required by the Administrative Authority.

### H6 Abandoned Grease Interceptors

Abandoned grease interceptors shall be pumped and filled as required for abandoned sewers and sewage disposal facilities in Section 1119 of the Uniform Plumbing Code.

**UPC Grease Task Group Meeting  
January 25 & 26, 2005  
IAPMO Headquarters  
Ontario, CA**

January 25, 2005 attendees included: Rand Ackroyd, Tim Allinson, Sherrill Bond, Sid Cavanaugh, Joe Cunningham, Kook Dean, Linda Deunay, Mike Gitter, Stephen Hamilton, Wayne Harrison, Mark Kawamoto, Don Kirkland, Terresa Moritz, Rick Oliver, Phil Ribbs, Bill Rice, Linda Shadler, John Shaffer, Billy Smith, Bill Sobanski, Stan Steinbach, Max Weiss, John Halliwill, Maribel Campos, Anne Sonner, Ken Browne, Jay Peters, Michael Kobel.

January 26, 2005 attendees included: Rand Ackroyd, Tim Allinson, Sherrill Bond, Sid Cavanaugh, Joe Cunningham, Linda Deunay, Stephen Hamilton, Wayne Harrison, Mark Kawamoto, Don Kirkland, Terresa Moritz, Rick Oliver, Phil Ribbs, Bill Rice, Linda Shadler, Billy Smith, Stan Steinbach, Max Weiss, Maribel Campos, Anne Sonner, Ken Browne, Jay Peters, Michael Kobel.

Following are the cumulative, consensus recommendations of the Task Group following these two days of final meetings. While not presented in the order discussed at the meetings, these are all the recommendations of the Task Group.

Delete term: ~~Grease Trap~~

Add term: Hydromechanical Grease Interceptor (HGI)

Add sizing method for HGI:

Table 10-2 – 1015.1

**Table 10-2**  
**Hydromechanical Grease Interceptor (HGI)**  
**Sizing Chart\***

<b>DFU</b>	<b>HGI FLOW (gpm)</b>
8	20
10	25
13	35
20	50
35	75
172	100
216	150
342	200
428	250
576	350
720	500

\*Based on intermittent potentially full flow in drainage lines.



Delete Appendix H

Add new sizing method for Gravity Grease Interceptors (GGI):

**Table 10-3**  
**Gravity Grease Interceptor Sizing**

<b>DFUs (1)</b>	<b>Interceptor Volume (2)</b>
8	500 gallons
21 (3)	750 gallons
35	1,000 gallons
90 (3)	1,250 gallons
172	1,500 gallons
216	2,000 gallons
307 (3)	2,500 gallons
342	3,000 gallons
428	4,000 gallons
576	5,000 gallons
720	7,500 gallons
2112	10,000 gallons
2640	15,000 gallons

Notes

(1) The maximum allowable DFUs plumbed to the kitchen drain lines that will be connected to the grease interceptor.

(2) This size is based on: the DFUs, the pipe size from this code; Table 7-5; Useful Tables for flow in half-full pipes (ref: *Mohinder Nayyar Piping Handbook*, 3rd Edition, 1992).

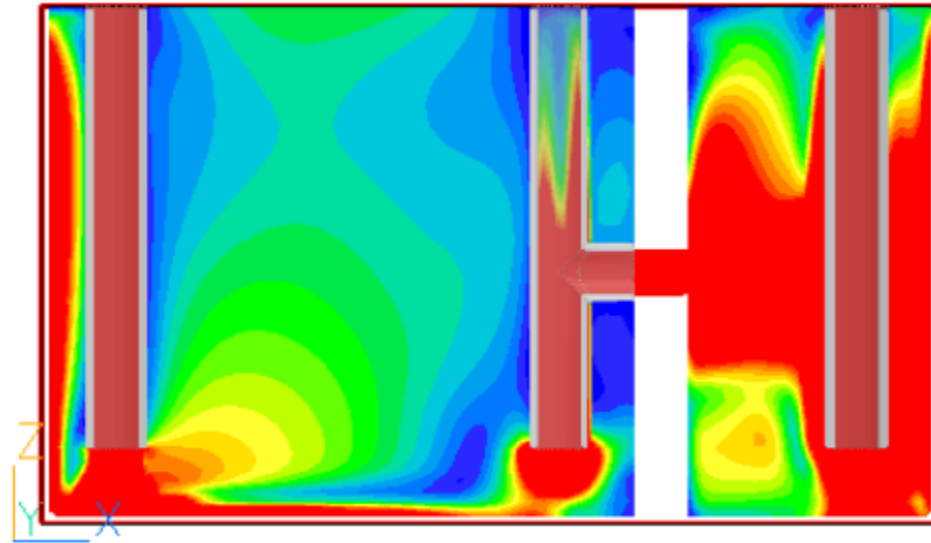
(3) Based on 30-minute retention time (ref.: Metcalf & Eddy, Inc. *Small and Decentralized Wastewater Management Systems*, 3rd Ed. 1998). Rounded up to nominal interceptor volume.

# Small and Decentralized Wastewater Management Systems

Crites • Tchobanoglous

"Typically, skimming or interceptor tanks are used to trap oils by flotation and grease by cooling and flotation. The contents of the tank serve as a heat exchanger cooling the incoming liquid, which helps to solidify the greases. For flotation to be effective, the interceptor tank must detain the fluid for an adequate period of time (**typically greater than 30 minutes**)."

2008 WERF Report:  
*Assessment of Grease Interceptor  
Performance*

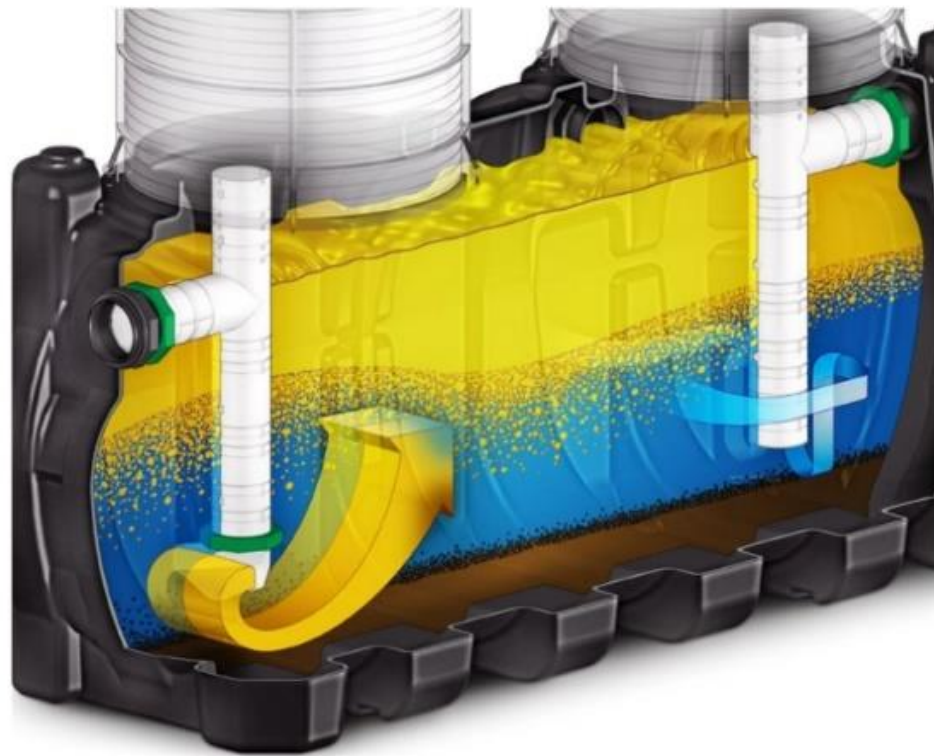


Short-circuiting from uncontrolled  
turbulence and velocity at 20 min RT

# High-capacity Hydromechanical 2006 - 2018



# High-capacity Hydromechanical Grease Interceptors Emerge...

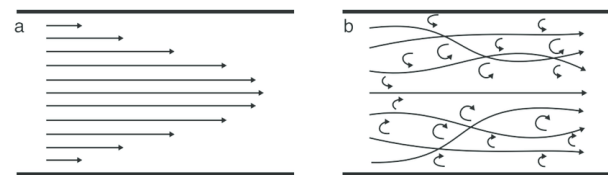


## laminar flow noun

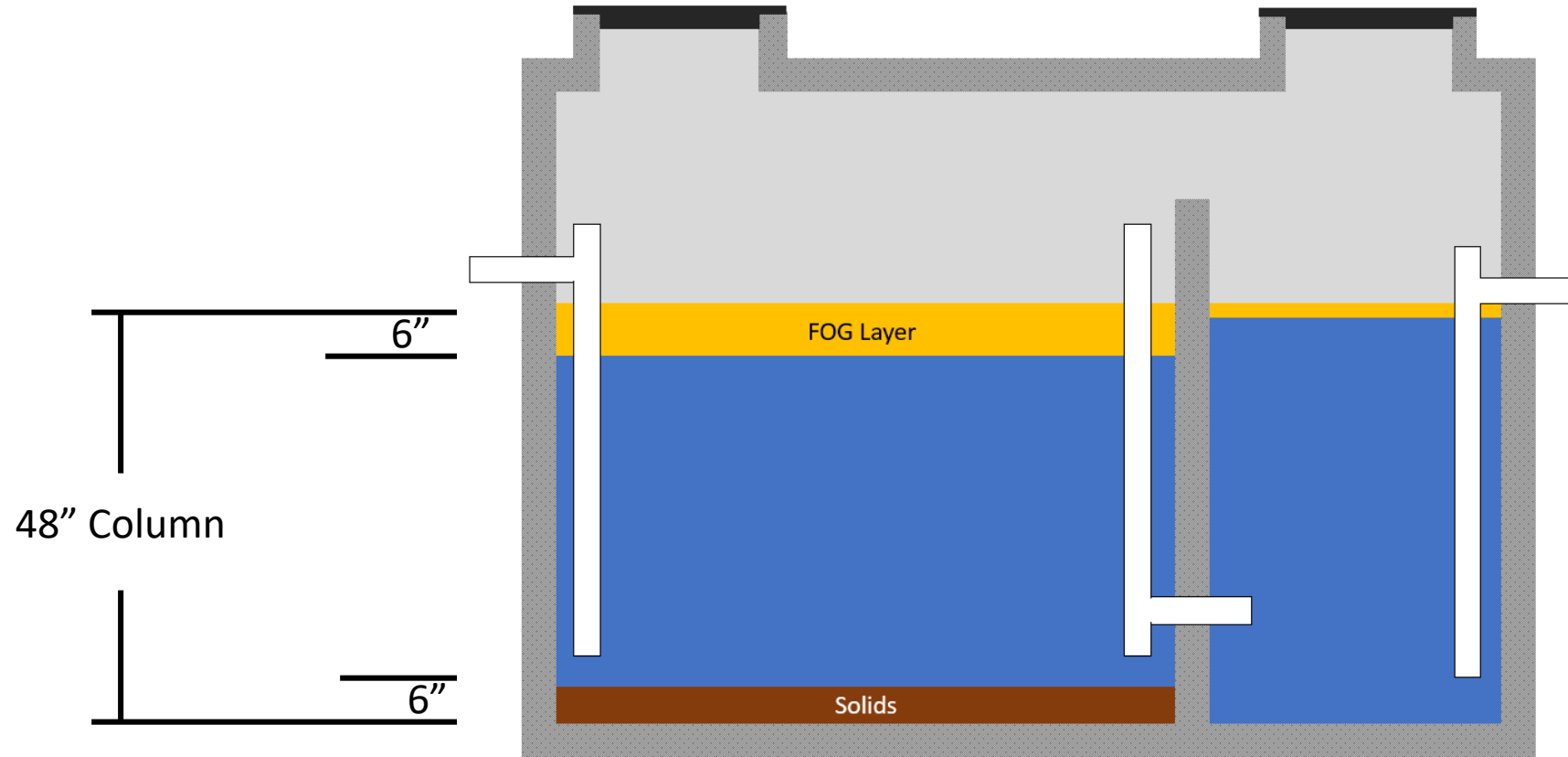


### Definition of *laminar flow*

Laminar flow <sup>(a)</sup> is flow in which the fluid travels smoothly or in regular paths, in contrast to turbulent flow <sup>(b)</sup>, in which the fluid undergoes irregular fluctuations and mixing.



# How much FOG and Solids in a 1000 gal. GGI?

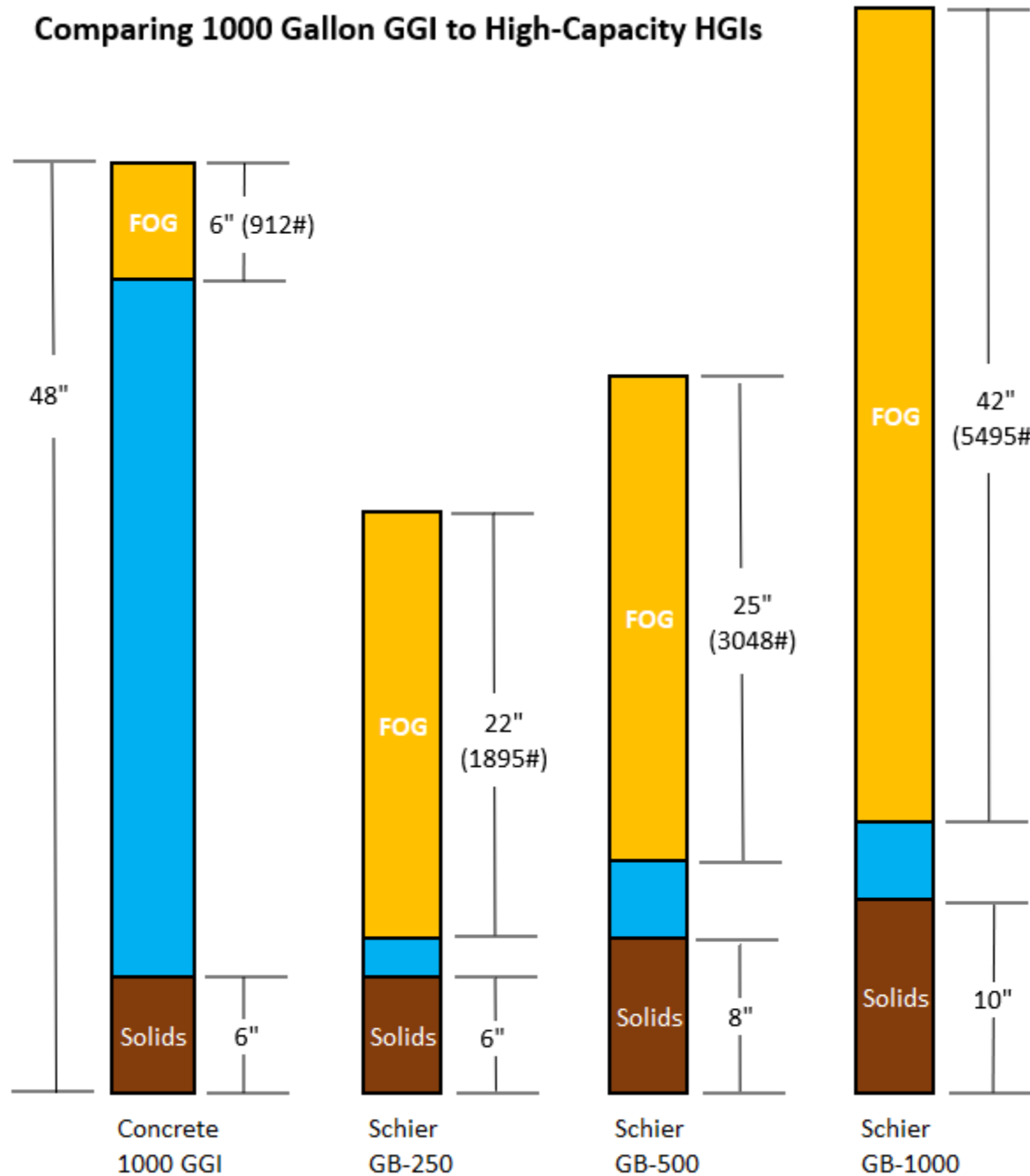


6" = 12.5% of total volume of tank

1000 x 12.5% = 125 gallons

125 Gallons of FOG x 7.3 lbs per gal. = **912 lbs**

## Comparing 1000 Gallon GGI to High-Capacity HGIs

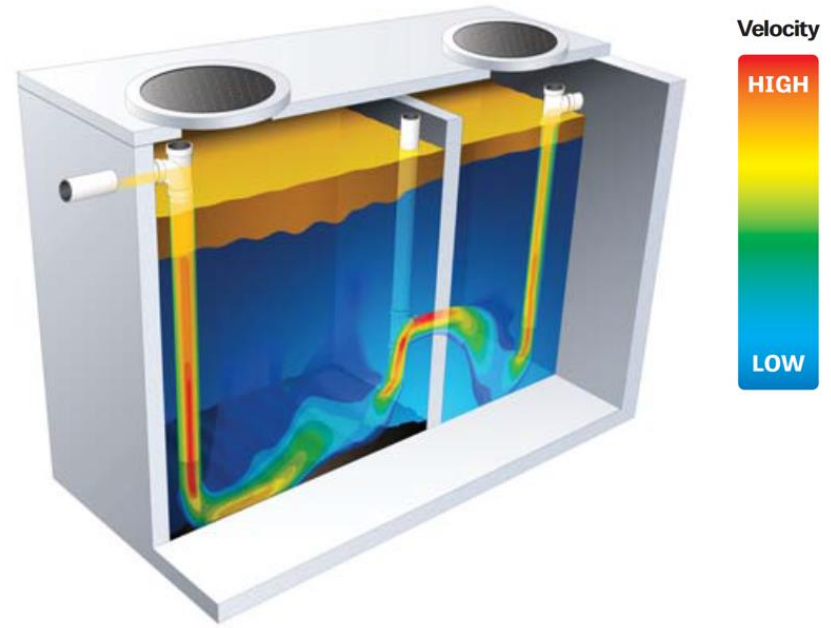


### **GB-1000**

**Now DUAL Certified**  
HGI – ASME A112.14.3 /  
CSA B481.1  
GGI – IAPMO Z1001



PROVEN  
performance



ASSUMED  
performance

HGI's are the right solution!





**Questions?**