Clean Water Services
At a Glance

- Wastewater Collection and Treatment
- Surface Water Management
- River Flow Management
- Regional Water Supply Planning
Why FOG?

- NPDES permit compliance
  - Sanitary Sewer Overflows from non-permitted outfalls are prohibited
  - Uncontrolled overflows are prohibited

- Infrastructure Maintenance
  - Cleaning lines / pump stations / POTW services
  - Infrastructure longevity

- Environmental (energy recovery)

- Reduce public costs & Preserve Capacity
Grease Caused Sanitary Sewer Overflows 2008 - 2013
$4.2 \, M = \text{Annual cost of FOG}

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater treatment</td>
<td>$3,500,000</td>
</tr>
<tr>
<td>- Diminished treatment capacity</td>
<td></td>
</tr>
<tr>
<td>- Uses more energy and chemicals</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>$371,000</td>
</tr>
<tr>
<td>- Collection system</td>
<td>$168,000 (includes cities)</td>
</tr>
<tr>
<td>- Pump Stations</td>
<td>$117,000</td>
</tr>
<tr>
<td>- Treatment plants</td>
<td>$86,000</td>
</tr>
<tr>
<td>FSE Oversight</td>
<td>$362,000</td>
</tr>
<tr>
<td>- Inspections</td>
<td>$252,000 (includes cities)</td>
</tr>
<tr>
<td>- Public Affairs</td>
<td>$16,000</td>
</tr>
<tr>
<td>- Administration</td>
<td>$94,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,233,000</strong></td>
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</table>
Field Evidence from Inspections

- No GRDs
- FOG lines not connected to GRDs
- Poorly maintained GRDs
- Difficult access to clean and inspect GRDs
- Use of prohibited emulsifiers, chemicals
- Size vs. maintenance not cost effective
FOG
INSPECTION PROBLEM

Look at the clues...
## Case Studies #1 and #2

<table>
<thead>
<tr>
<th>Status</th>
<th>GRD Size</th>
<th>Connections</th>
<th>Lbs FOG per year</th>
<th>Cleaning frequency</th>
<th>Cleaning cost/yr</th>
<th>More FOG captured</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pub</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved</td>
<td>HGI 20/40</td>
<td>3-comp sink</td>
<td>640</td>
<td>90 days</td>
<td>$320</td>
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<tr>
<td>Mfg Spec</td>
<td>HGI 20/40</td>
<td>All FOG</td>
<td>8,891</td>
<td>1.6 days</td>
<td>$17,500</td>
<td>1290% - 8,251 lbs</td>
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<tr>
<td>Updated</td>
<td>GB 75</td>
<td>All FOG drains</td>
<td>8,891</td>
<td>14 days</td>
<td>$3,315</td>
<td>1290% - 8,251 lbs</td>
</tr>
<tr>
<td><strong>Hospital</strong></td>
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<tr>
<td>Approved</td>
<td>HGI 20/40</td>
<td>3-comp sink</td>
<td>1,920</td>
<td>30 days</td>
<td>Self</td>
<td></td>
</tr>
<tr>
<td>Mfg Spec</td>
<td>HGI 20/40</td>
<td>All FOG</td>
<td>35,337</td>
<td>0.4 days</td>
<td>$69,700</td>
<td>1740% - 33,417 lbs</td>
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<tr>
<td>Updated</td>
<td>3 GB 75</td>
<td>All FOG drains</td>
<td>35,337</td>
<td>73 days</td>
<td>$3,300</td>
<td>1740% - 33,417 lbs</td>
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## Case Studies #3 and #4

<table>
<thead>
<tr>
<th>Status</th>
<th>GRD Size</th>
<th>Connections</th>
<th>Lbs FOG per year</th>
<th>Cleaning frequency</th>
<th>Cleaning cost/yr</th>
<th>More FOG captured</th>
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<tbody>
<tr>
<td><strong>Mexican</strong></td>
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<td></td>
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<tr>
<td>Approved</td>
<td>HGI 20/40</td>
<td>3-comp sink</td>
<td>1,920</td>
<td>30 days</td>
<td>Self</td>
<td></td>
</tr>
<tr>
<td>Mfg Spec</td>
<td>HGI 20/40</td>
<td>All FOG</td>
<td>12,900</td>
<td>0.9 days</td>
<td>$24,400</td>
<td>571% - 10,980 lbs</td>
</tr>
<tr>
<td>Updated</td>
<td>GB 259</td>
<td>All FOG drains</td>
<td>12,900</td>
<td>29 days</td>
<td>$2,281</td>
<td>571% - 10,980 lbs</td>
</tr>
<tr>
<td><strong>Chinese</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved</td>
<td>2 HGI 20/40</td>
<td>3-comp sink</td>
<td>3,840</td>
<td>30.5 days</td>
<td>Self</td>
<td></td>
</tr>
<tr>
<td>Mfg Spec</td>
<td>2 HGI 20/40</td>
<td>All FOG</td>
<td>16,956</td>
<td>1.7 days</td>
<td>$16,700</td>
<td>341% - 13,116 lbs</td>
</tr>
<tr>
<td>Updated</td>
<td>GB 250</td>
<td>All FOG drains</td>
<td>16,956</td>
<td>20 days</td>
<td>$2,500</td>
<td>341% - 13,116 lbs</td>
</tr>
</tbody>
</table>
Maintenance Alone not Effective
Oregon Approach

- State sets minimum requirements
- State or delegated building official is authority
- Local ordinance can not exceed State code
- 2009 UPC (or as updated)
Compliance

- Implementation not effective or efficient
- Minimum is the maximum
- Discretion does not capture FOG
- Impacting capacity, infrastructure, compliance
- Compliance inconsistent NPDES and State Code
Challenges & Opportunities

- Regulatory complexity and lack of alignment
- Costs, Capacity and Compliance
- Retrofitting existing problems, costs and incentives
- Education and outreach
- Plan review and support
- Effective Sizing
- Energy Recovery

CleanWater Services
Goals

- Protect public health and the environment
- Implement an resourceful, cost effective FOG Abatement program
- Collaborate with the different types of Food Service Establishments (FSEs)
- Comply with State and Federal Regulations
- Keep full capacity of conveyance system
- Extend out treatment capacity at plant
- Future residential, industrial growth
Multiple Stakeholders

- Oregon Building Codes Division (BCD)
- Oregon Dept of Agriculture (ODA)
- Oregon Health Authority
- Local building officials
- Local plumbing inspectors
- Local health inspectors
- Environmental Protection Agency (EPA)
- Oregon Department of Environmental Quality (DEQ)
- Wastewater utilities (conveyance, pretreatment, treatment)
- Food Service Establishments (FSEs)
- Oregon Restaurant & Lodging Assn.
- Pumpers
- Contractors, builders, architects
- Landlords, property managers
- Multi-family residential
- Commercial food processors
- Ratepayers

CleanWater Services
Suggestions for Code Change

• Guidance and Plan review
• Protect all FOG Lines
• Locals have maintenance authority
• FSE broadly identified
• Retrofit requirements
• Ability to sample
Rule Update:
....All FSE’s
....All FOG Lines (exceptions)
....Includes Dishwashers
....Includes Garbage Disposal
....Local Governments Authority for Maintenance
... not required for private homes

Does Not Address:
.....Retrofit clarity
.....No ability to sample
.....No plan review or guidance
.....No substantive change to sizing criteria
Plumbing Code / interpretation & implementation

Old Code

New Code

CleanWater Services
Public Outreach

Freeze the Grease Outreach Campaign
Site Visits
Web Site
Technical Assistance
Voluntary Plan Review
Statewide Outreach to FSE

Working with ACWA ........

- Consistent message on FOG awareness
  - Agencies
    - ORLA, Building/Plumbing, Wastewater
  - Owners
    - FSE, Property & management
  - Vendors / Contractors
    - Distributors, Plumbing, Excavations, Developers
  - Engineering
    - Kitchen Designers, Architects
Retrofits and Planning
Do it right the first time
Focused Effort (Triage)

- New construction voluntary plan review
- Inspection and follow-up
  - High and Very High FOG FSE
  - Contributor to grease lines\pump stations
  - Cause or contribute to SSO or illicit discharge
  - Priority specific by Jurisdiction
- Outreach efforts
  - Multi-family housing
  - Grease lines residential areas
Cost Effective

Big producers / Before
BMPs & poor design
FOG abatement system

Big Producers / After
Properly designed
FOG abatement system

Mass per unit effort by inspection and relative contribution, assumes 45% (20%) effective control

Mass per unit effort by inspection relative contribution, assumes 95% effective control

Pound FOG Controlled per $:

Inspection per facility

Pounds FOG Controlled per $:

Inspection per facility

CleanWater Services
Plan Review Results

Efficient Design

Fixed Cost, 5-year period
Over 5 years cumulated FOG for $ spent on plan review

- Very High: 300 - 400 lbs/$
- High: 70 - 100 lbs/$
- Average: 20 - 30 lbs/$
- Low: 7 - 10 lbs/$
- Very low: 2 - 3 lbs/$

Annual FOG /$
Range of 20-45% effective lbs. FOG $ inspection)

- 35 - 80 lbs/$
- 9 - 20 lbs/$
- 3 - 6 lbs/$
- <1 - 2 lbs/$
- <1 <1 lbs/$
## FOG Program timeline

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Support update of Plumbing Code</td>
<td>Add new FOG rules to outreach &amp; technical assistance</td>
<td>Evaluate funding of research to develop improved GRDs</td>
</tr>
<tr>
<td>Increase multi-family residential outreach</td>
<td>Implement data management to track GRD maintenance (FSEs, inspectors)</td>
<td>Promote FOG resource recovery</td>
</tr>
<tr>
<td>Standardize FSE training and kitchen BMPs</td>
<td>Partner with health inspectors</td>
<td>Revisit incentives and cost recovery options</td>
</tr>
<tr>
<td>Continue outreach and technical assistance for FSEs</td>
<td>Implement triage plan to bring high risk FSEs into compliance</td>
<td>Franchise all pumpers</td>
</tr>
<tr>
<td>Train all FOG inspectors</td>
<td>Construct FOG receiving station</td>
<td>Address stormwater impacts</td>
</tr>
<tr>
<td>Coordinate plan review/permitting; add voluntary plan review option</td>
<td>Continue outreach and technical assistance to FSEs</td>
<td>Continue outreach and technical assistance to FSEs</td>
</tr>
<tr>
<td>Begin outreach &amp; technical assistance for designers, contractors, plumbers</td>
<td>Implement retrofit strategy</td>
<td></td>
</tr>
<tr>
<td>Develop/deliver training for municipal inspectors &amp; plumbing officials</td>
<td>Explore “green” certification</td>
<td></td>
</tr>
<tr>
<td><strong>Update, clarify FOG rules to include:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- GRD maintenance and performance metrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Retrofit strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Triage plan (criteria to prioritize compliance)</td>
<td></td>
<td></td>
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<tr>
<td>- Enforcement framework, fees and fines</td>
<td></td>
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</tbody>
</table>

**CleanWater Services**
Expensive to Convey, Maintain, Clean, Treat Via Sewer lines & WWTP

FOG in Sewer = Bad

FOG in Truck = Good

FSE = Factory / waste product want to do for Beneficial use

FOG can be transported to its most Beneficial Resource Recovery endpoint

Reduce FOG Loading @ WWTP Extends life & treatment Capacity (years) - feeding FOG to digester lowers Transport costs of Solids

Air
Electricity
Chemical
Capacity

Pump
Clean
Deterioration

"COMPOUND IT - DOESN'T ANYBODY WANT TO TASTE IT?"