Acceptance of Septage at Municipal WWTPs

Presented by
Tom Ferrero

October 15, 2019
ELKHART ENVIRONMENTAL
ELKHART, IN
Permit: 500,000 gpd

NAWC ENVIRONMENTAL
WARMINSTER, PA
Permit: 200,000 gpd
OVERVIEW

- Characteristics of Septage
- Administration and Management
- Cotreatment with Municipal Wastewater
- Economic Elements
DOMESTIC SEPTAGE AS DESCRIBED IN THE FEDERAL PART 503 REGULATIONS IS THE LIQUID OR SOLID MATERIAL REMOVED FROM A SEPTIC TANK, CESSPOOL, PORTABLE TOILET, TYPE III MARINE SANITATION DEVICE, OR A SIMILAR SYSTEM THAT RECEIVES ONLY DOMESTIC SEPTAGE (HOUSEHOLD, NON-COMMERCIAL, NON-INDUSTRIAL SEWAGE).
# Characteristics of Septage

Data as reported by US EPA 1984 and 1994  
Units are mg/l except pH

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Average</th>
<th>Design Value</th>
<th>Typ Mun Wastewater</th>
<th>Ratio of Septage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Solids</td>
<td>1,100-130,500</td>
<td>34,100</td>
<td>40,000</td>
<td>720</td>
<td>56</td>
</tr>
<tr>
<td>TSS</td>
<td>310-93,400</td>
<td>12,900</td>
<td>15,000</td>
<td>220</td>
<td>68</td>
</tr>
<tr>
<td>VSS</td>
<td>95-51,500</td>
<td>9,000</td>
<td>10,000</td>
<td>165</td>
<td>61</td>
</tr>
<tr>
<td>BOD</td>
<td>440-78,600</td>
<td>6,500</td>
<td>7,000</td>
<td>220</td>
<td>32</td>
</tr>
<tr>
<td>COD</td>
<td>1,500-703,000</td>
<td>31,900</td>
<td>15,000</td>
<td>500</td>
<td>30</td>
</tr>
<tr>
<td>TKN</td>
<td>66-1,060</td>
<td>590</td>
<td>700</td>
<td>40</td>
<td>18</td>
</tr>
<tr>
<td>Ammonia-N</td>
<td>3-116</td>
<td>97</td>
<td>150</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Total P</td>
<td>20-760</td>
<td>210</td>
<td>250</td>
<td>8</td>
<td>31</td>
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<td>Alkalinity</td>
<td>520-4,200</td>
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<td>Oil &amp; Grease</td>
<td>210-23,400</td>
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<td>8,000</td>
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</tr>
<tr>
<td>pH</td>
<td>1.5-12.6</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Characteristics of Septage

PROBABLY INCLUDED:

• Private Wastewater Treatment Plants
• Grit Traps – Car Wash
• Grease Traps - Restaurant
Note:
While not considered residential septage by the USEPA definition, EPA does consider some non-septage wastes as associated streams.

Administration and Management

- Hauler Permitting
  - Disposal Permitting
    - Legal Mechanism under which to operate
      - Permit Conditions
    - Ensures some type of accountability
      - Non-compliance enforcement
  - Contact info
  - Insurance coverage (minimum coverages)
  - Complete vehicle inventory
Administration and Management

- Hauler Permitting
- Collection Vehicle Requirements
  - Legal on the highway
  - Minimum Insurance Requirements
  - Size of discharge piping
  - Pressure discharge requirements
Administration and Management

- Hauler Permitting
- Collection Vehicle Requirements
- Pumpout Manifesting
  - Becomes a chain of custody for the material
  - Contains:
    - Wastewater source
    - Generator’s Section
    - Hauler’s Section
    - Disposal Site Section
  - Single Source or Multiple Source forms
  - Best if 4 - Part Carbonless Paper
ELKHART ENVIRONMENTAL PROCESSING CORP
WASTE ACCEPTANCE FORM
IDEM Permit No. S/TF-941-1

1. Hauler Name:  
2. Truck ID:  
3. Date:  
4. Time:  
5. Volume Discharged:  gallons

5. Sources, Types, and Volumes:

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Type Code</th>
<th>Approximate Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
<td></td>
</tr>
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This information is required. It is confidential information that will only be used for regulatory purposes. Should SELECT be required to submit this information to any regulatory entity the hauler and generator will be notified.

6. Type Codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>RS</td>
<td>Residential Septage</td>
</tr>
<tr>
<td>CS</td>
<td>Commercial Septage</td>
</tr>
<tr>
<td>FOG</td>
<td>Grease Trap Waste</td>
</tr>
<tr>
<td>POT</td>
<td>Portable Toilet Waste</td>
</tr>
<tr>
<td>SS</td>
<td>Sewage Sludge</td>
</tr>
<tr>
<td>CW</td>
<td>Car Wash Waste</td>
</tr>
<tr>
<td>OT</td>
<td>Other</td>
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</table>

7. Charge: (Based on No. 1,3,7A,7B, and 7C above.)

7A \[ \text{GALLONS} \times \text{COST/GALLON} = \text{TOTAL} \]
7B \[ \text{GALLONS} \times \text{COST/GALLON} = \text{TOTAL} \]
7C \[ \text{GALLONS} \times \text{COST/GALLON} = \text{TOTAL} \]

Total: 

8. I certify that the above described wastes do not contain any materials or substances which are not permitted by applicable law to be disposed at this facility, that they do not contain any hazardous materials, and that all information contained in this form is true and correct.

Driver’s Name (Please Print): 
Driver’s Signature: 

9. I certify that the above described truck load was discharged at the Elkhart Environmental Processing of Oakridge, Inc. facility. I have no knowledge of the content of the truck load other than the information given on this form by the Hauler. Payment has been made in the following manner:

Payment Received [ ] 
Billed on Account [ ]

Operator’s Name (Please Print): 
Operator’s Signature: 

Payments shall be submitted to:
Elkhart Environmental Processing Corp
1143 Oak Street
Elkhart, IN 46514

Phone: (574) 266-7571
Fax: (574) 266-5632
Administration and Management

- Hauler Permitting
- Collection Vehicle Requirements
- Pumpout Manifesting
- Control Authority Recordkeeping
  - Invoicing
  - Tracking waste inputs
- User Fees
  - Management of Program
    - Application and/or Annual Renewal fee
  - Disposal Fee
    - Recovery of treatment costs
  - Passsthrough Fees
    - Clean-up, analytical fees...
Cotreatment with Municipal Wastewater

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Cotreatment with Municipal Wastewater

- Exerts load on liquid and solid streams
- Consumes WWTP capacity
- Effect WWTP operation and, ultimately, effluent quality
- But if you do it right, you can
Cotreatment with Municipal Wastewater

- Septage Receiving Station
  - Screening
  - Grit Removal
  - Odor Control
  - Site Monitoring
  - Access Control
  - Spill Control
  - Hose-down water
  - Equalization Tankage
Cotreatment with Municipal Wastewater

Septage Receiving Station
Cotreatment with Municipal Wastewater

- Incorporate into the Liquid Stream
- Into the Head of the Plant
- Effects caused by:
  - Size of the WWTP
  - Unit Process Sequence
  - Size of the Septage Truck Tank
  - Rate of Discharge from the Truck
  - Number of Loads per Day
- Effect on:
  - Effluent Quality
  - Solids Treatment
    - Increase loading on Digester
    - Increase loading on Dewatering Unit
Cotreatment with Municipal Wastewater

Head of Plant
Cotreatment with Municipal Wastewater

- Discharge into the Solids Stream
- Would Reduce Effect on Liquid Stream
- Pre-thickened prior to digester/dewatering
- Liquid Faction returned to the Liquid Stream
  - Attenuated Flow
  - Less of an Impact on Process Units
- Increase solids on dewatering units
Cotreatment with Municipal Wastewater

Discharged Into The Solids Stream
Economic Elements

- Must be a Commercial Endeavor
- Easy and Quick Access
- Reasonable Hours of Acceptance
- Reasonable Unloading Rates
Economic Elements

• Cost of Treating Septage Includes:
  • Daily O&M
  • Increased Solids Loading & Production
  • Administrative Costs of Septage Program
  • Facility Overhead
  • Capital Costs
Economic Elements

- Example Using Surcharge Values:

<table>
<thead>
<tr>
<th>&lt;Town&gt; Surcharge Rates</th>
<th>Over (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLOW</td>
<td>$5.29 Per 1000 gal</td>
</tr>
<tr>
<td>BOD</td>
<td>$0.1520 per pound</td>
</tr>
<tr>
<td>TSS</td>
<td>$0.3199 per pound</td>
</tr>
<tr>
<td>Ammonia-N</td>
<td>$0.5200 per pound</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>$0.5950 per pound</td>
</tr>
</tbody>
</table>
Economic Elements

Cost to Treat 1,000 Gallons
Based on Analyticals above
and <Town> Sewer Surcharge Rates

<table>
<thead>
<tr>
<th></th>
<th>ppm</th>
<th>X</th>
<th>Mgal</th>
<th>X</th>
<th>#/gallon</th>
<th>X</th>
<th>$/#</th>
<th>=</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.29</td>
</tr>
<tr>
<td>BOD</td>
<td>6,750</td>
<td>0.001</td>
<td></td>
<td>8.34</td>
<td></td>
<td>0.1520</td>
<td></td>
<td>8.56</td>
<td></td>
</tr>
<tr>
<td>TSS</td>
<td>14,750</td>
<td>0.001</td>
<td></td>
<td>8.34</td>
<td></td>
<td>0.3199</td>
<td></td>
<td>39.35</td>
<td></td>
</tr>
<tr>
<td>Ammonia-N</td>
<td>125</td>
<td>0.001</td>
<td></td>
<td>8.34</td>
<td></td>
<td>0.5200</td>
<td></td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Phosphorous</td>
<td>240</td>
<td>0.001</td>
<td></td>
<td>8.34</td>
<td></td>
<td>0.5950</td>
<td></td>
<td>1.19</td>
<td></td>
</tr>
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Cost to treat 1,000 gallons: $54.93
Water Environment Federation
Septage Handling
Manual of Practice No. 24
1-703-684-2400
www.wef.org/applications/publications/
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JUST DO IT