Stephen Kuplicki, PE, JD

GLWA
MWEA Presentation: Brewers in GLWA Service Area

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System Background Information

- Size of System
  - 840 sq. miles
  - 75 Communities and City of Detroit
  - Population Served: + 4 Million

- Combined System
  - Residential/Domestic (84%)*
  - Industrial/Commercial (15%)*
  - Other (Septage, Groundwater) (<1%)*
  - Stormwater†
    - * Dry Weather Flows
    - † Detroit, Highland Park, Hamtramck
Why the Interest in Breweries?

1. Traditional concerns of IPP Program – prevent discharges that can impact WRRF or Contribute to violation of NPDES Permit
2. Cost recovery for High Strength Wastewater
Issues & Concerns

IPP Issues: Pollutants of Concern were the compatible pollutants (BOD, TSS, P and FOG) and pH.

• Control through SIU Permit – Selected larger breweries for SIU permit but in 2018, changed to General Discharge Permit (Unless deemed significant)
• Required development of pH plans

High Strength Issues: Compatible pollutants (BOD, TSS, P and FOG)

• Actual Sampling
  – Operations integrated with Restaurant/Food wastewater
    (Only want to surcharge brewery waste and wastewater)
• Wastewater Formula (Literature Study)
### INDUSTRY AVERAGE TABLE

<table>
<thead>
<tr>
<th>SIC Number</th>
<th>SIC Description</th>
<th>NAICS Number</th>
<th>NAICS Description</th>
<th>BOD</th>
<th>TSS</th>
<th>P (phosphorus)</th>
<th>FOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2082</td>
<td>Malt Beverages</td>
<td>312120</td>
<td>Breweries</td>
<td>1,400</td>
<td>600</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>2086</td>
<td>Soft Drinks</td>
<td>312111</td>
<td>Soft Drink Manf.</td>
<td>600</td>
<td>350</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

### SURCHARGE FEE CALCULATION

Total Surcharge Fee = 0.0624 \times \text{Volume} \times [a \times (\text{BOD}-275) + b \times (\text{TSS}-350) + c \times (P-12) + d \times (\text{FOG}-100)]

- **Volume**: Volume of Wastewater Discharged for a billing period Thousand Cubic Feet (Mcf)
- **BOD**: BOD Strength Level Miligrams/liter (mg/l)
- **TSS**: TSS Strength Level Miligrams/liter (mg/l)
- **P**: Phosphorus Strength Level Miligrams/liter (mg/l)
- **FOG**: The Fats, Oils & Grease Strength Level Miligrams/liter (mg/l)
- **a, b, c, d**: The Surcharge Rate $ per pound
How Can the Wastewater Flow Be Determined?

• If the facility is a stand-alone brewery, installation of a sewage meter provides actual wastewater volumes.

• If the facility is a mixed use, separation and installation of a sewage meter for brewery operations only would be acceptable;

• Finally, literature search finds 5 barrels of wastewater is generated for every barrel of beer produced. Brewers file an excise tax return with the state to provide verifiable measurement of beer production. So that:

\[
5 \times \text{barrels of Beer [Excise form]} = \text{Wastewater Volume (barrels)}
\]

Cost < $1.00 per Barrel

31 gallons per barrel
Kurt Anderson
City of Grand Rapids
Challenges Faced By Microbreweries

- Intense Water Usage
- Limited Available Footprint
- Incurring Surcharges
- Return on Investment
General Strategies for Water Reduction & Wastewater Management

• Side-stream high strength waste streams for separate, off-site disposal
  ➢ Effluent from fermentation & filtration account for a large majority of BOD load
  ➢ Spent yeast and trub account for a substantial amount of TSS

• Effective for relieving the burden

Source: The Institute
General Strategies for Water Reduction & Wastewater Management

• Fat Head’s Brewery, Middleburg Heights, Ohio

• Side-stream high strength solids (spent grain & yeast) for separate, offsite disposal
  - animal feed
  - fertilizer
  - compost
General Strategies for Water Reduction & Wastewater Management

• Avoid discharging to the Wastewater Treatment Plant during peak hours of the diurnal cycle
• Flow equalization
• pH neutralization
• Heat & condensate recovery
Alternative Technologies

Ellicottville Brewing Company, Ellicottville, New York

Source: ClearCove®
Your turn to ask the Experts!