Oregon DEQ Pretreatment Program

Regulation of Craft Breweries and other Fermented Beverages
City with most # of breweries per capita?

### America's Craft Beer Capitals

- **Portland ME**: 25.5 microbreweries per 100,000 inhabitants (23 total microbreweries)
- **Boulder CO**: 21.9 microbreweries per 100,000 inhabitants (23 total microbreweries)
- **Asheville NC**: 21.6 microbreweries per 100,000 inhabitants (19 total microbreweries)
- **Bend OR**: 14.3 microbreweries per 100,000 inhabitants (12 total microbreweries)
- **Kalamazoo MI**: 13.2 microbreweries per 100,000 inhabitants (10 total microbreweries)
- **Portland OR**: 11.0 microbreweries per 100,000 inhabitants (68 total microbreweries)
- **Denver CO**: 8.7 microbreweries per 100,000 inhabitants (58 total microbreweries)
- **Missoula MT**: 8.6 microbreweries per 100,000 inhabitants (6 total microbreweries)
- **Seattle WA**: 8.1 microbreweries per 100,000 inhabitants (54 total microbreweries)
- **Grand Rapids MI**: 7.2 microbreweries per 100,000 inhabitants (14 total microbreweries)

Source: Smartasset
Average of beer to wastewater?

1:6
What do we have?

• Craft Breweries/Brew Pubs
What do we have?

- Wineries
- Distilleries
- Ciders
- kombucha Facilities
- Saki
What do we have?

• Breweries
  o In 2005 - 64 Breweries
  o In 2016 – 261 Breweries
  o Produced 7.18 million barrels of beer
  o Economic Impact – $4.49 billion
  o 31,000 jobs created, direct/indirect

• Wineries
  o In 2016, 725 Wineries with 424 wineries crushing 61,614 tons of grapes
What do we have?

Pure Water Brew
Portland OR-
September 2016

Home Brew Competition for Feature Beer Made with Water From Wastewater Treatment Plant

Hosted by-
Clean Water Services
What is Brewery Waste
Brewery Wastewater

- 1 barrel = 31 Gallons of beer
- For 1 barrel of beer brewed, 4-10 barrels of WW produced.
- Avg. ratio is 1:6 in larger facilities and 1:4 in smaller breweries
- With reduction of water and WW, this number can go as low as 1:3
Brewery waste load and treatment cost

<table>
<thead>
<tr>
<th>Parameters in this example</th>
<th>With side stream</th>
<th>Without side stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallons/month</td>
<td>20,000</td>
<td>24,000</td>
</tr>
<tr>
<td>BOD, mg/L</td>
<td>3,000</td>
<td>9,990</td>
</tr>
<tr>
<td>TSS, mg/L</td>
<td>550</td>
<td>4,400</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Monthly fees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugene, OR</td>
<td>$253</td>
<td>$304</td>
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<tr>
<td>Bend, OR</td>
<td>$86</td>
<td>$430</td>
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<tr>
<td>Portland, OR</td>
<td>$292</td>
<td>$1,716</td>
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<td>Turlock, CA</td>
<td>$176</td>
<td>$455</td>
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<td>Syracuse, NY</td>
<td>$159</td>
<td>$684</td>
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<td>San Diego, CA</td>
<td>$354</td>
<td>$1,371</td>
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<tr>
<td>Escondido, CA</td>
<td>$333</td>
<td>$1,476</td>
</tr>
</tbody>
</table>

Help me add more towns to this list...

You can see high variations town to town.
Also high variation with side streaming or not
Keep in mind side streaming has costs of its own
Small Vs Large POTWs

• pre-treatment may be necessary to smaller wastewater treatment plants
• Larger plants may be able to handle waste, but higher fees for infrastructure

Pretreatment system at a local brewery, pH neutralization before discharge
Concerns for WWTP and Collection systems

- BOD/COD 1200-3000mg/l-3500-5000mg/l
- TSS 100-160 mg/l
- pH 3 –12
- Temperature up to 165 degrees Fahrenheit
- Hydrogen Sulfide & Sulfuric acid formation
- Capacity Issues, is the infrastructure able to support the discharge?
- Odor control complaints from public
Concerns for POTW and Collection systems

Stand pipe from pump station downstream of brewery, due to low pH, high temp & HS
How are they regulated?

• Individual discharge permits
• Discharge control authorization letters
• Best Management Practices (BMPs)
• Extra strength surcharge
Common BMP Examples

- Side-stream grain, wort, yeast, and turb
- Land apply high strength wastewater
- Send solids for animal feed
- Use cleaning/sanitizing solution for pH neutralization of wastewater
- Reduce water consumption
- Reduce chemical use
POTWs with approved IPP

- Large breweries regulated through SIU permit
- Small and mid-size breweries regulated through BMP based discharge authorization letters, and general permits
- Proactive
- Preventative
- Collaborative
POTWs without formal IPP

- No systematic permitting process currently in place
- Regulatory response is reactive to NPDES permit violation
Example 1 – Tillamook STP

- Population – 4,940
- Wastewater plant ADWF of 0.5 MGD AWWF of 4.0 MGD
- City has no approved IPP
- Have the 8th largest brewery in Oregon
- City contacted DEQ wanting to issue industrial discharge permit to the brewery
- DEQ working with the city to provide SUO review and feedback
- Other approved programs shared information on permit process and BMPs
- City is issuing permit
- No impact at the WWTP, no NPDES permit violation
Example 2 – Hood River STP

• Population – 7,700
• ADWF of 2.0 MGD AWWF of 4.0 MGD
• No approved IPP (Delisted)
• Full Sail Brewery, the 5th largest brewery in Oregon
• Hood River Juice, large IU
• 4 mid-size breweries
• City has local IPP and issues permits to Full Sail and HR Juice
• WWTP reaching capacity for BOD/TSS load
• DEQ will evaluate DMR and IU data to determine if pretreatment requirement is necessary in upcoming NPDES permit
Example 3 – Astoria STP

- Population – 9,500
- ADWF of 4.2 MGD, AWWF of 12.6 MGD
- Facultative lagoon with mechanical aeration
- No approved pretreatment program
- Two mid-size breweries, 4 small breweries
- City has no pretreatment program
- Have BOD/TSS issues at the WWTP, especially in the summer months
- DEQ plans to include pretreatment requirements in the next NEPDES permit
Statewide regulatory streamlining

• Include Industrial User Survey requirements in NPDES permits
• DEQ reviews each survey
• If POTW has breweries causing impact, IPP requirements included in NPDES permit
• Collaboration b/n local approved programs and small communities on information sharing
• Promote the voluntary pretreatment program
• Facilitate Pollution Prevention practices
• Provide brewery BMP factsheets and brochures
Questions?

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