Process Waste Water Treatment at New Belgium Brewing Co.

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Process Waste Water Plant Lead Operator/Mechanical Technician

Time line of construction and expansions

- 1995 - 2002 _ pH adjustment of process waste water
- 2002 - 2006 _ Two-stage system designed by Von Nordenskjold (German)
- 2006 – Present _ UASB and aerobic solids handling upgrades by Sanotec (Belgian)

Plant overhead

Process flow

- Brewery lift stations
- Screening of solids
- Equalization tank
- UASB Anaerobic digester
- Acidification tank
- Aerobic basin
- Aerobic clarifier
- Outfall buffering basin
- Final outfall flume and measurements
Waste water from the brewery

- Production cleaning processes and associated soil loads
- Rinse waters and wash down water
- Drained yeast
- Spent yeast
- Spent hops
- Waste beer

“Normal” production waste water
- Averages 8,200 mg/L COD
- Cleaning processes
- Rinse waters
- Small amounts of spent yeast and beer

High-strength waste streams
- Spent Yeast – 175,000 mg/L COD
- Waste beer – 75,000 - 200,000 mg/L COD
- Spent grain??
Current loading

Entire plant
- Volume – 750 m³/day 198,000 gpd
- Inlet COD – 5,800 kg/day 12,786 lbs./day
- Outlet COD – 43 kg/day 94 lbs./day
- Outlet BOD – 2.5 kg/day 8.2 lbs./day

UASB
- Volume – 750 m³/day 198,000 gpd
- Inlet COD – 5,800 kg/day 12,786 lbs./day
- Outlet COD 590 kg/day 1,300 lbs./day

New Belgium production history

Biogas usage
- 75% methane
- 24% CO2
- 800 – 1,000 ppm H2S

Biogas
- Utilization
  - 500 kw Combined heat and power unit at brewery
  - 292 kw generation unit at pwtp
  - 480k BUT boiler for original pwtp building
Thank You