TETRA TECH

Meeting Minutes

Date of Meeting:	July 6, 2016		
Meeting Topic:	Stevenson Ecology Meeting		
In Attendance:	Eric Hansen and Nick Hogan (City of Stevenson); David Knight (Ecology); Louie, Gary and Doug Nichols (OMI); Jim Santroch and Cyndy Bratz (both Tetra Tech)		
Prepared by:	Cyndy Bratz		
Project:	Stevenson Wastewater Facility Plan	***Project Number:***	135-48600-16001

These minutes summarize items discussed and issues resolved at the subject meeting to the best of the recorder's recollection. Recipients with different recollections or understandings of the meeting are asked to contact the recorder as soon as possible so that corrections can be made.

Eric Hansen organized this meeting to discuss project status, loading issues and potential solutions with Ecology. This meeting was held on July 6, 2016. The agenda and handouts are attached. The following are key discussion items from this meeting:

Background Information

- David mentioned that it was acceptable to prepare one document for the sewer plan and the wastewater facility plan. He said that many smaller utilities do it this way.
- Cyndy said that the NPDES permit requirement to prepare a Sewer Plan/Facility Plan Update when influent loads exceed 85% of the Wastewater Treatment Plant (WWTP) capacity is the reason the City selected Tetra Tech to do this work.
- The Stevenson WWTP has experienced intermittent high influent BOD loads over the past 6-8 years, prior to Backwoods Brewery connecting to the City sewer system just a few months ago. David and Eric have been in contact over the past years to discuss and make sure Stevenson is addressing the high BOD issue.
- Cyndy handed out the attached chart entitled "Stevenson BOD Loadings – Historical and Projected". The projections on this chart are in rough draft form. Residential flow and load projections can be based on population projections (and conversion of unsewered to sewered homes). We plan to make individual projections for industrial dischargers.
- The attachment entitled "High Strength Dischargers" shows the 23 commercial/industrial dischargers to the WWTP identified by the City. The top four high strength dischargers to the WWTP are breweries, a distillery and a cider house.

- The goal of this meeting was to share information from both the City and Backwoods Brewery (Backwoods), to assist with future plans to deal with brewery wastewater, which includes both the City and Backwoods and is fair to both.
- Eric introduced and Cyndy briefly described the "Brewers Association Water and Wastewater Treatment/Volume Reduction Manual" (Brewers Association Manual).

Understanding Backwoods' System and Wastewater Produced

- Kevin stated that Backwoods typically brews twice per day, using 5,000 gpd of water. They clean 1-2 tanks per day with caustic (high pH), using 40 gallons of water to clean one tank.

- The highest temperature water they discharge is 160° F, when they transfer from the boil kettle to the fermenter.
- They reuse the keg wash water, and keep adding more water and caustic as needed.
- The two chemicals they use are NaOH and H_2SO_4, primarily for cleaning.
- Solids discharged to the sewer are from washdown only.

- There was a fair amount of discussion regarding sampling results from Backwoods sampling location in the sewer system. Sampling results included high and low pH, high BOD and high TSS.

  - pH higher than 9 and lower than 6 creates an environment that favors undesirable microorganisms (like filaments) and the City has an ordinance requiring that discharge to the sewer system stay between pH 6-9.
  - pH from March sampling ranged from 3.02 to 12.93 (per Gary).
  - Brewery wastewater is very high in BOD. Samples (from Backwoods Brewery's sampling location) for the month of March averaged 6,162 mg/L BOD with a peak BOD of 12,100 mg/L.

    - Jim stated that if Backwoods generated 100,000 gal of wastewater in a month with a concentration of 6,000 ppd BOD, the BOD load to the WWTP would be approximately 170 ppd. This is roughly equivalent to the BOD load generated by 340 homes.

  - High temperature has been observed at the sampling location, but Gary (OMI) stated that travel time through the sewer system and mixing with lower temperature wastewater mitigates the temperature by the time it arrives at the WWTP.

- Backwoods uses a centrifuge to separate solids, and then a farmer picks up the solids to reuse.
- Backwoods does not use a wastewater holding tank.
- Backwoods CIP (clean-in-place) system does not reuse the cleaning water. Kevin wants to buy a CIP system that reuses the cleaning water, but it costs approximately $110,000, a cost high enough to have a long payback period, so they have been reluctant to purchase it.
- Kevin expects that Backwoods will double or triple production by the end of 2016, and he projects consistent growth for the next 5 years. Their goal is to brew 4 times/day, 6 days/week.
- They now have a 20-barrel system, with 3 ea 80-barrel fermenters. They used 155,000 gal of water last month and shipped 41,000 gal of product. That's a 1:3.7 ratio, which indicates they are careful with water usage. A ratio of 1:7 is average (according to the Brewers Association Manual). Gary said Full Sail Ale's ratio is 1:1.7.
- They occasionally have bad batches of beer, but do not dispose of it to the sewer.

Brewery Wastewater Treatment Options

- An aerated holding tank is recommended. It would need to be sufficiently large to provide enough detention time to buffer BOD peaks delivered to the WWTP. It may provide pH neutralization, since both high and low pH streams would contribute to the tank over the day. Aeration would reduce BOD (probably to a small extent) and would keep the stored waste from going septic. pH could be neutralized prior to discharge to the sewer system and the discharge could be metered to sewer consistently, reducing shock loads to the WWTP.
- Jester and Judge Cider Company (registered as LDB with the City) is located in the same complex as Backwoods. They discharge straight into a pump station with a 2-inch discharge, which is maintained by the Port of Skamania County.

Other Discussion

- Tetra Tech ran quick numbers comparing brewery wastewater charges for Hood River, Bend, Portland and Stevenson. Portland's charges are significantly higher than the other 3 cities. Rates for Stevenson are comparable to Bend and Hood River. Kevin and Eric discussed Stevenson's rate charges and Kevin agrees that they are fair.
- The highest water users in Stevenson include Skamania Lodge, high school athletic field irrigation, grade school playground irrigation, Jester and Judge Cider Company

Next Steps

- Kevin will review their process with his leads at Backwoods, particularly how they clean and how they use chemicals.
- The City will continue monitoring and data collection for Backwoods and other high strength dischargers. As part of this effort, the City will collect more data on the distillery and Jester and Judge, located in the same complex as Backwoods.
- The City and OMI will plan a tour of the Full Sail Ale facility at Hood River, to see their wastewater pretreatment process. Kevin, Cyndy, Eric and OMI staff will attend. This will occur after Kevin returns from a business trip in 2 weeks.
- Kevin, Eric and Cyndy will also tour the Backwoods facility when Kevin returns.
- Eric asked that Tetra Tech develop preliminary size and cost information for a UASB brewery pretreatment system.
- As part of a post-meeting discussion, Eric asked Cyndy to prepare a brief brewery guidance memo that the City could use as an educational handout for area breweries.

cc: Eric Hansen, City of Stevenson
Nick Hogan, City of Stevenson
Kevin Waters, Backwoods Brewing
Jim Santroch, Tetra Tech
Gordon Munro, Tetra Tech
Hunter Bennett-Daggett, Tetra Tech
Erik Nordholm, Tetra Tech