

1. Agenda

Documents:

[CC WS AGENDA PACKET 2-8-16.PDF](#)

2. Meeting Materials

Documents:

[ADMIN POLICY REAL PROPERTY MANAGEMENT-2-16.PDF](#)

[CC WS MINUTES 02-08-16.PDF](#)

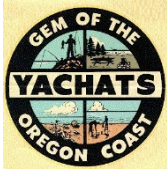
[CR TO CC FARM STORE REQUEST 2-16.PDF](#)

[FOOD AND BEVERAGE TAX-2-16.PDF](#)

[TAX LATE CHARGE SMALL BALANCES-2-16.PDF](#)

The Yachats City Council Vision

Our village is a place where natural resources are valued and protected, where diversity is celebrated, and where a vibrant economy and sense of community pride create and recreate a living spirit. Yachats cares not just for its citizens' basic needs but also supports them in their efforts to excel mentally, physically, artistically, and spiritually. It is a community with an enduring sense of itself.



CITY OF YACHATS CITY COUNCIL WORK SESSION - 9:30 A.M.

February 8, 2016
Civic Meeting Room, Yachats Commons

- I. Farm Store Request: Waiver of System Development Charges for Larger Meter
- II. Discussion: Food and Beverage Tax Revenue Policy
- III. Discussion: Real Property Management Policy
- IV. Agenda Topics for Joint Meeting with County Commissioners
- V. Discussion: Threshold for Flat Rate Delinquent Charge on Tax Payments
- VI. Schedule Goal Setting
- VII. Discussion: Code Enforcement Contract Requirements
- VIII. Set the agenda for the February 11, 2016 City Council meeting

This meeting is open to the public and interested citizens are invited to attend. This is an open meeting under Oregon Revised Statutes, not a community forum; audience participation is at the discretion of the Council.

The meeting will be audio taped. Minutes of this and all public meetings are available for review in the City Office. The meeting place is accessible to persons with disabilities. Please let us know if you will need any special accommodations to attend the meeting by calling the City Recorder at 547-3565, or Oregon Relay 1-800-735-2900 (T.D.D.) two days in advance.

The City of Yachats does not discriminate on the basis of race, color, religion, creed, gender, national origin, age, disability, marital or veteran status, sexual orientation, or any other legally protected status.

Posted February 5, 2016
Nancy Batchelder
City Recorder



- Because the City has never had an Industry in town before, should there actually be a different way of determining the water and sewer rates for this type of business?
- Should the City develop a fee based on the projected increased water use and sewer impact rather than a straight System Development Charge adjustment; and, defer the difference until the property is sold to another owner or the use of the building is changed to one that is considered to use the full capacity? At that time, the remaining amount of uncollected System Development Charges would become due.
- When the City updates the conservation and curtailment Code, this industry will need to be considered. What type of restrictions will the City consider placing on this business the next time there is a water shortage?
- How much waste per month/per year will this business generate?
 - There are different types of wastewater discharges resulting from brewing operations including floor and equipment wash-down, cleaning of tanks, waste left over from the process and product that cannot be used.
- Should the City require any pre-treatment before it goes into the wastewater system?
- How is the City going to monitor how much and when the waste is discharged into the wastewater system since it will not necessarily correspond to when the water is used or even how much water is used?

I have attached a copy of a report given to the Council of the City of Fort Bragg when a local brewery planned to expand their operations in 2012 that Dave Buckwald found online. While that brewery is much larger than the Farm Store will ever be, it does a very good job of explaining all of the issues to consider.



CITY OF FORT BRAGG
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PHONE 707/961-2823 FAX 707/961-2802

COUNCIL COMMITTEE AGENDA ITEM SUMMARY REPORT

MEETING DATE: July 25, 2012
TO: Finance and Administration Committee
FROM: Marie Jones, Community Development Director
Linda Ruffing, City Manager
AGENDA ITEM TITLE: **Receive Report and Discuss Water Use and Wastewater Treatment Issues Associated with North Coast Brewery Expansion Plans**

The North Coast Brewing Company (NCBC) is seeking to expand the production capacity of their manufacturing facility from 40,000 barrels of beer per year to 90,000 barrels of beer per year. This expansion will take place over several years and result in a gradual increase in water use and in wastewater generation by the facility.

This staff report provides information to help inform a discussion about how the City of Fort Bragg (City) and NCBC can work together to accommodate the expansion plans given the limitations of the City's water and wastewater utilities. The staff report discusses water and wastewater issues, including:

Water issues

1. Estimated additional water demand for NCBC expansion.
2. City water availability.
3. Need for additional City water storage for future development.
4. Estimated water capacity fees for NCBC expansion.
5. Summary of water conservation ordinance and implications for NCBC.

Wastewater issues

6. Summary of issues related to NCBC wastewater discharge.
7. Summary of measures implemented by NCBC to address wastewater issues.
8. Technical memo (prepared by Dave Richards, PE, see attached).
9. Draft proposed "regulatory agreement" between NCBC and City to establish discharge limitations.
10. Estimated sewer capacity fees for NCBC expansion.

WATER ISSUES

1. Estimated additional water demand for NCBC expansion.

The NCBC's proposed expansion from 40,000 to 90,000 barrels of beer per year will require an additional 5.995 million gallons of water per year. In 2009/10, the NCBC required 5 million gallons of water to produce 31,000 barrels of beer or about 160 gallons of water/barrel. By the end of 2011/12, the NCBC will utilize an estimated 6.9 million gallons of water to produce an estimated 48,000 barrels of beer (at a rate of 144 gallon per barrel). The NCBC's water use has increased as a proportion of all water production by the City from 2.3% in 2009/10 to 3.2% in 2011/12. Production of 90,000 barrels of beer will require 13 million gallons of water per year, which would be approximately 6% of all water produced by the City.

As shown in Table 1 below, the NCBC's proposed increase in production (assuming it follows past water use trends) would occur mostly during the winter and spring months, when water supply and storage are not an issue for the City. During the "dry" months of July through September, rates of water use are projected to be less (in the 4.3% to 4.9% range), than the overall estimate of 6%. If this seasonal water use profile continues into the future, the impact of the proposed NCBC expansion on the City's ability to serve water users during dry or drought conditions will be somewhat less than otherwise.

Table 1: Current and Anticipated North Coast Brewing Company Water Usage

Month	2009/2010 water use (31,794 Barrels) gallons per month	2010/2011 water use (38,959 Barrels) gallons per month	2011/2012 Water Use (48,473 Barrels) gallons per month	Anticipated Water Use (90,000 Barrels) Gallons Per Month	Current City Water Use Gallons per Month	% of total water use 40000 barrels	% of total water use 90000 barrels
Jul	457,776	547,536	537,812	1,000,759	23234376	2.0%	4.3%
Aug	373,252	457,028	561,748	1,045,299	22497596	1.7%	4.6%
Sep	418,132	427,108	534,820	995,191	20308200	2.1%	4.9%
Oct	340,340	397,188	574,464	1,068,961	17761260	1.9%	6.0%
Nov	369,512	362,032	460,020	856,004	15818704	2.3%	5.4%
Dec	345,576	420,376	549,032	1,021,637	14832840	2.3%	6.9%
Jan	443,564	368,764	584,188	1,087,055	16779136	2.6%	6.5%
Feb	474,980	387,464	570,724	1,062,002	14781228	3.2%	7.2%
Mar	460,768	492,184	547,536	1,018,853	14781228	3.1%	6.9%
Apr	463,012	528,088	669,460	1,245,729	17012512	2.7%	7.3%
May	453,288	516,868	655,236	1,219,262	17530876	2.6%	7.0%
Jun	471,988	567,732	719,717	1,339,247	19368712	2.4%	6.9%
Annual Water Use	5,072,188.00	5,472,368	6,964,757	12,960,000	214,706,668		
Total City Water Use (gallons)	223,273,512	217,635,088	214,706,668	214,706,668			
Percent of Total City Water	2.3%	2.5%	3.2%	6.0%			
Water Use (Gallons)/ Barrel	160	140	144	144			

Source: Finance Department, City of Fort Bragg; Community Development Department, City of Fort Bragg, 2012

Key

Bold Indicates Drought Month

 Estimated, data not yet available.

2. City water availability.

The City of Fort Bragg currently has a permit to divert 3.0 cfs from the Noyo River. The City also obtains water from two other surface water sources but the diversion on the Noyo is most heavily impacted in a drought due to pumping restrictions. In 2011, City staff completed an analysis of water use and storage for a 50-year drought scenario (similar to the 1977 drought) and determined that the City presently has an “excess” storage capacity that would allow for an 8% increase in overall water use over existing water use (while maintaining a 5 million gallon water storage reserve which is needed to maintain adequate pressure in the distribution system for fire suppression). Based on this, it can be concluded that the City has sufficient water supply to serve the proposed NCBC expansion in both drought and non-drought conditions. It is noted however that approval of the project would constrain the City's ability to supply water to future development projects due to drought year limitations on water supply.

3. Need for additional City water storage limitations for future development.

In 2011, the NCBC used approximately 5.4 million gallons of water, which amounts to 2.5% of all water produced in the City of Fort Bragg that year. Increasing production to 90,000 barrels of beer would result in total water demand of 12.9 million gallons or 6% of annual City water production. In order to accommodate the increase in production from 40,000 to 90,000 barrels, the NCBC would use 3.5% of the City's “excess” storage capacity (see discussion above). Approval of the project will reduce the City's “excess” or unallocated storage such that additional development can only be permitted so long as it increases water demand by less than 4.5% in total over current water use. Without additional water storage, the time will come when the City is not able to permit additional development.

The City is well aware of the need for additional water storage to ensure adequate water supply under severe drought conditions and to serve future development. The City has designed and begun the permitting process for construction of a 45-acre foot (i.e., 15 million gallon) reservoir at its Newman Gulch property off Summers Lane. That project is currently on hold but approval of the NCBC project may require the City to reconsider the implementation timeline. Construction of the Newman Reservoir project would enable the City to increase water service by an additional 12% in addition to the existing 8% excess capacity for a total of 20% excess capacity.

Regardless of whether or not the NCBC project proceeds, the City needs to move forward with either the Newman Reservoir project or an alternate water storage facility within the next few years in order to ensure that the City can continue to consider approval of new development projects which may benefit our community.

4. Estimated water capacity fees for NCBC expansion.

The City has completed a nexus study to establish Development Impact Fees to help fund some of the costs of developing key infrastructure that serves future development such as additional water storage. The Development Impact Fees were temporarily tabled while the financing plan for the Mill Site Specific Plan was prepared. The fees have not yet been approved by City Council, but the Finance & Administration Committee has suggested that, if and when they are approved, there should be a 12-24 month “grace period” before they take effect.

If NCBC expands production, it would be required to pay Capacity Fees which reimburse the City for previous investments in water and sewer infrastructure which resulted in the development of excess

capacity which will benefit the proposed project. Typically, Capacity Fees are charged based on square footage assumptions. However, the Bartle/Wells Study used the 2008 production capacity and water use of the NCBC as the basis for establishing a per square foot charge. With the significant intensification of use (increase water use by 125%) within the existing structure, the square footage calculation is not applicable.

A Capacity Fee calculation based on water use associated with the increase in production capacity is appropriate. Although in 2011/12, the NCBC produced an estimated 48,400 barrels of beer, the "grandfathered" production capacity is 40,000 barrels/year, therefore the expansion of production to 90,000 barrels would require payment of Capacity Fees for the additional 50,000 barrels.

Table 2 calculates the total Water Capacity Fee based on the gallons of water used per day for the additional 50,000 barrels of beer. As a consequence of the expansion, the NCBC will utilize 19,452 gallon of water per day ($50,000 \times 144 / 365$). According to the Bartle/Wells Study, an equivalent dwelling unit uses 452 gallons per day, thus $19,452 \text{ gallons} / 452 \text{ gallons} = 43 \text{ EDU}$. The NCBC expansion would utilize an equivalent amount of water as 43 homes. The capacity charge per EDU is \$3,885. Thus the total capacity charge (based on the current fee schedule) would be $\$3,885 / \text{EDU} \times 43 \text{ EDUs} = \$167,210$. As a large water user, the NCBC is eligible for a 60% reduction in its water capacity fees (per Council Resolution 2668-2003), consequently the actual capacity fee due would be \$66,884. See Table 2 below for detailed calculations.

Table 2: Water Capacity Fee Charge

2012 EDU Fee	\$3,885.40	per EDU
Gallons of water use	452	per EDU
Brewery Increase in Water Use (50,000 Barrels)	19,452	gallons/day
Total EDU's for Brewery	43	EDUs
Total Water Capacity Fee	\$ 167,210	
60% Discount per Resolution 2668-2003	\$ 66,884	

5. Summary of water conservation ordinance and implications for NCBC.

City Council adopted a Water Conservation Ordinance in 2006 to allow the City to respond quickly to a water shortage/drought situation. Due to pumping limitations on the Noyo River and the variability of water flow on the Noyo in a drought situation, the City can go from having adequate water in storage to a potentially serious water shortage in a relatively short period of time. Additionally, recovering from a water storage shortage situation may be a lengthy process. The Water Conservation Ordinance:

1. Authorizes the City Manager to declare a water emergency based upon quantitative criteria.
2. Provides for 3 Stages of water conservation, with increasingly stringent provisions, which include:
 - In a Stage 1 Water Emergency, voluntary water use reduction of 10%;
 - In a Stage 2 Water Emergency, water use reduction of 25%;
 - In a Stage 3 Water Emergency, water use reduction of 30%.
3. Sets minimum standards for water use in new construction and remodels.

The Ordinance also sets required increases in water pricing during water emergencies in order to incentivize reduced water use as follows:

- Stage 1 Water Emergency, the variable portion of the water rate charge would increase by 10%;
- In a Stage 2 Water Emergency, the variable portion of the water rate charge would increase by 25%;
- In a Stage 3 Water Emergency, the variable portion of the water rate charge would double.

During the various stages of a water emergency, NCBC would be obligated to pay the higher rates for the variable portion of the bill, like all water users.

Staff modeled current City water supply, storage and demand characteristics in a severe, 1977-type drought. The modeling concluded that without new water storage, the City would likely impose 25 days of Stage 1 Water Emergency, 30 days of Stage 2 Water Emergency, and 20 days of Stage 3 Water Emergency (during the months of May through October) in a severe drought. Thus the NCBC, would experience higher water bills during some portion of the billing cycle for the summer months of a severe drought situation. The Water Conservation Ordinance does not mandate water conservation, so the NCBC could chose to operate at the same capacity as it did prior to the water emergency, it would just pay more for water to do so.

With the construction of additional water storage (of 45 acre feet or more), the City would not have to declare a water emergency with current development levels. However, if total water demand increases as a result of new development projects by 15 to 20%, the City would likely need to declare water emergencies in drought conditions.

WASTEWATER ISSUES

6. Summary of issues related to NCBC wastewater discharge.

NCBC periodically discharges high strength wastewater from brewing operations to the City's wastewater treatment plant (WWTP). Wastewater originates from NCBC production activities including floor wash-down, keg washing, beer wasted from bottle overfilling, spills generated by fobbing during the fermentation process, cleaning of tanks/hoppers following production, and product that cannot be used and is discharged to the drain.

NCBC's wastewater organic strength has BOD5 (biochemical oxygen demand) concentrations ranging from 4,300-9,500 mg/L based on wastewater analyses conducted during the April-May 2012 period. Combining the average wastewater strength and discharge quantities from NCBC results in a BOD5 loading to the plant of 1,060 lbs/day which is a significant fraction of the organic capacity of the WWTP. The design capacity of the WWTP for BOD is 1,500 lbs/day. Recent trends in organic loading, particularly peak events, are exceeding the design capacity of the WWTP.

The average wastewater strength to the WWTP reflects a significant contribution from NCBC. Peak wastewater strength at the WWTP correlates with monthly peak flows of high BOD discharges from the NCBC. Without discharges from NCBC, influent BOD5 concentrations would range from 150-200 mg/L. With the BOD from the NCBC, total BOD concentrations at the WWTP have predictable monthly peaks in BOD of between 300 to 500 BOD (mg/L) with occasional spikes of 600 to 700+ BOD (mg/L).

7. Summary of measures implemented by NCBC to address wastewater issues.

The first course of pre-treatment of NCBC wastewater is to divert solids and neutralize pH as discussed below.

Diverting Solids. Malt and hops are responsible for the vast majority of solid waste produced in the brewery. Spent grain and hops which remain after the production of wort and which could make their way into the wastewater are typically removed from breweries using a variety of equipment with the goal of leaving as little behind in the brew kettle, lauter tun and plumbing and on the floor as possible.

NCBC employs a sealed progressive cavity pump in the brewhouse which is the cleanest and most efficient method of moving this spent grain. Any spoils which find their way onto the floor are subsequently trapped behind a series of screens that are installed in brewhouse trench drains. These spoils are vacuumed out and removed to the spent grain truck.

Spent hops are similarly removed from the brewery before the drain by manually removing them from their primary point of use in the whirlpool. The hops, which importantly filter protein out of the wort prior to the introduction of yeast in the fermenter, are also valuable as fertilizer and mulch and are made available to local gardeners as such, also free of charge.

One of the highest BOD material produced is brewer's yeast. NCBC diverts nearly all yeast into the spent grain after centrifuging it from the beer. NCBC recently purchased a \$250,000 centrifuge which removes 100% of the yeast from the beer and eliminates the use of DE filtration. NCBC has also, in the last several years, invested in equipment which enables the brewery to ferment under pressure which controls fobbing (foaming), another source of yeast entering the drains.

Adjusting PH. The other basic pre-treatment of wastewater that NCBC undertakes is to adjust the pH of liquids that go into the drains. The acid and caustic cleaners that are used to clean brewing vessels are typically outside the allowable pH range for disposal and so all such material used by the brewery is neutralized before it is put into the drain. All such releases are logged.

8. Technical memo prepared by Dave Richards, PE (see Attachment).

As noted above, NCBC contributes a significant portion of the BOD load to the WWTP and the WWTP is nearing capacity in its ability to treat BOD. The report by Dave Richards compares actual performance at the WWTP with design criteria for the facility and concludes that average flows to the plant are 50-60% of the design flow and recent trends in organic loading, particularly peak events, are exceeding the design capacity of the facility. The report recommends that improvements be made to the clarifier and the trickling filter. Specifically given the projected increases in BOD from NCBC the report recommends that:

"...an increase in trickling filter volume would be warranted to treat the additional BOD. Considering the age and apparent operational issues with the primary trickling filter, replacement of the rock media with a high-rate plastic media should be considered. Based on a preliminary organic loading rate of 50 lbs BOD5-day/1000 ft³ and a target BOD removal rate of 40 percent through the primary clarifier, an 80 ft diameter primary trickling filter with a plastic media depth of 5 ft would be appropriate."

Staff concurs with this recommendation and will be implementing actions necessary to proceed with repair and expansion of the primary trickling filter at the WWTP. A more detailed and comprehensive evaluation of WWTP capital improvements will be presented to the Council/Municipal Improvement District Board in a few months.

9. Draft provisions of a proposed "regulatory agreement" between NCBC and City to establish discharge limitations.

To ensure that organic loading from the NCBC does not result in exceedances of the WWTP's discharge limitations, staff recommends that the City and NCBC enter into a regulatory agreement which establishes compliance thresholds for BOD and TSS, monitoring requirements, and penalties for

violations. While the precise language of the agreement will need to be worked out, the following provisions have been drafted by staff:

- a. Organic loading from NCBC discharge shall not exceed a daily maximum average BOD of 8000 mg/L and a maximum TSS of 2000 mg/L. Additionally the organic loading shall not exceed a thirty (30) day average BOD of 5000 mg/L and 1000 mf/L TSS. Finally effluent shall not be less than 6.0 s.u. or greater than 9.0 s.u. The Public Works Director can modify these maximum discharge requirements once every two years in order to ensure effective operation of the WWTP and compliance with Regional Water Quality Control Board requirements.
- b. NCBC will be subject to a penalty fine of \$1,000 for each violation of the organic strength, PH and BOD requirements set forth in Condition (a) above. Any penalty fine will be assessed as part of the utility billing.
- c. In the event that NCBC does not comply with any prohibition or maximum effluent limitation, the NCBC shall notify the Public Works Department within 24 hours of knowledge of the problem. NCBC shall provide a written notification within 5 days of the violation that states the nature, time and duration, and cause of the non-compliance and the corrective actions or measures to be implemented to remedy the non-compliance and prevent recurrences.
- d. NCBC will be required to pay for all costs associated with monitoring, sampling and analyzing discharges into the City collection system in accordance with this special condition. NCBC will report influent and effluent flows and sample results in a self-monitoring report submitted to the Lead Treatment Plant Operator at the WWTP no later than the first day of the following month. NCBC shall collect one 24-hour composite sample one time per week. The composite sample will consist of a minimum of one sample per hour. The samples must be sent to a certified lab. The City may allow in-house samples results when acceptable consistency in results is shown. The sampling schedule will be coordinated with the WWTP staff. The City may complete random independent monitoring to confirm the quality of the report data. Additionally, if required by the City, NCBC shall install at its own cost a manhole for the City to independently sample the effluent.
- e. If compliance costs or fines imposed by the Regional Water Quality Control Board are directly attributable to discharge from NCBC in violation of these conditions, the City will notify the NCBC and NCBC shall be required to reimburse the City for any such fines and costs. Any discharges from NCBC that violate any condition of this permit shall be prima facie evidence that NCBC is responsible for the compliance cost or fines imposed by the Regional Water Quality Control Board related to the discharge.

10. Estimated sewer capacity fees

Table 3 below outlines the NCBC estimated sewer capacity fees. The fee was calculated based on the actual EDU equivalent of increased sewer flow to the WWTP. As with the water analysis, when Bartle/Wells defined a per square foot basis for sewer flows, it based that analysis on a smaller volume operation within the existing 10,000 SF facility. As the total production will more than double with the proposed expansion, use of the EDU equivalent based on actual sewer outflow provides a more accurate estimate of the utilization of WWTP capacity by the facility. The EDU equivalency was determined by subtracting the beer produced in a day plus an allowance for water lost to processing to determine the sewer outflow, which is calculated at 13,238 gallons/day. This was then divided by the EDU equivalent of 150 gallons/day which equals 88 EDUs. Thus the total capacity charge would be \$3,053.26/EDU X 88 EDUs = \$269,458. As a high volume wastewater producer, the NCBC is eligible for a 60% reduction in its sewer capacity fees, consequently the actual fee would be \$107,784. See Table 3 below for detailed calculations.

Table 3: Sewer Capacity Fee Charge

2012 EDU Fee	\$3,053.26	per EDU
Gallons of sewer produced per EDA	150	gallons/day/EDU
Brewery Increase in Water Use (50,000 Barrels)	19,452	gallons/day
Beer Brewed	4,269	gallons/day
Water lost to process (hops, evaporation, etc.)	1,945	gallons/day
Brewery Increase in Sewer Outflow (50,000 Barrels)	13,238	gallons/day
Total EDU's for Brewery	88	EDUs
Total Water Capacity Fee	\$ 269,459	
60% Discout per Resolution 2668-2003	\$ 107,784	

Attachment: Technical Memo by Dave Richards, PE

**INITIAL REVIEW OF HISTORICAL
WASTEWATER TREATMENT PLANT PERFORMANCE
CITY OF FORT BRAGG
JULY 5, 2012**

North Coast Brewing Company (NCBC) discharges periodically high strength wastewater from brewing operations to the City of Fort Bragg (City) wastewater treatment plant (WWTP). Wastewater originates from production activities including floor wash-down, keg washing, beer wasted from bottle overfilling, spills generated by fobbing during the fermentation process, cleaning of tanks/hoppers following production, and product that cannot be used and is discharged to the drain. Based on the historical water usage/water budget for NCBC, typical wastewater discharge rates average approximately 24,000 gal/day for a four day per week production schedule. Wastewater organic strength is high with BOD₅ concentrations ranging from 4,300-9,500 mg/L based on wastewater analyses conducted during the April-May 2012 period. Combining the average wastewater strength and discharge quantities from NCBC results in a BOD₅ loading to the plant of 1,060 lb/day, a significant fraction of the organic capacity of the WWTP.

Wastewater discharges from NCBC are expected to increase in the future as brewing operations are expanded from four to seven days per week. An overall annual increase in brewery production from 50,000 to 85,000 barrels is planned over a 2-3 year period. Because of the likely increase in organic loading to the City WWTP from NCBC, certain physical improvements may be warranted at the City facility. A brief technical memorandum is summarized below addressing limited potential plant modifications based on an initial review of historical WWTP performance.

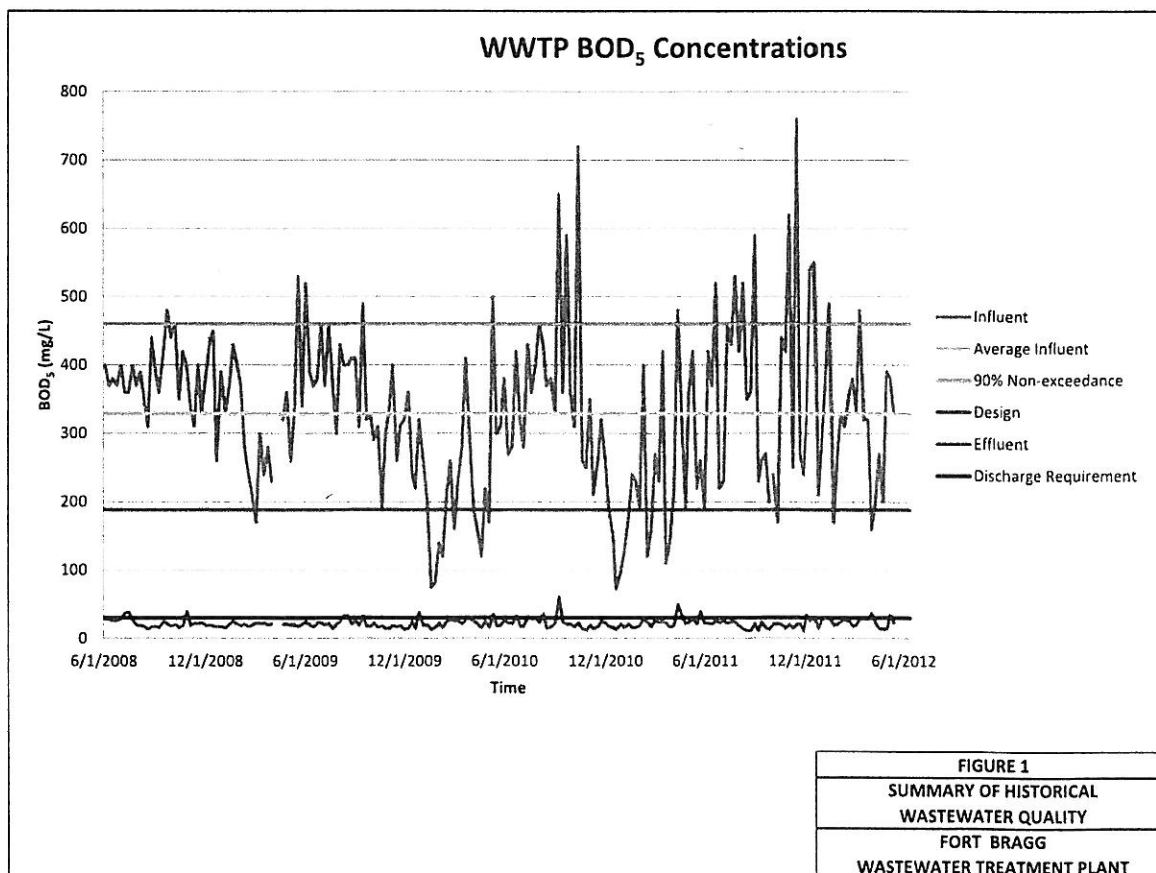
Historical Treatment Plant Performance

Operational data are collected at the City WWTP in accordance with the monitoring and reporting program adopted by the Regional Water Quality Control Board to ensure compliance with the facility discharge permit. Operational and process control data for the plant for the period 2009-2012 are summarized in Table 1. Historical BOD₅ concentrations are further illustrated in Figure 1.

ATTACHMENT

Table 1
Summary of Wastewater Treatment Plant Performance
2009-2012

Parameter	Year				2009-2012
	2009	2010	2011	2012	
Average annual flow, mgd	0.44	0.70	0.53	0.63	0.57
Average dry weather flow, mgd	0.39	0.60	0.46	0.57	0.51
Peak wet weather flow, mgd	0.75	3.04	3.69	2.71	3.69
Influent wastewater					
Average BOD ₅ , mg/L	340	293	324	318	329
BOD ₅ 90% non-exceedance, mg/L	--	--	--	--	460
Average BOD ₅ loading, lbs/day	1,236	1,431	1,229	1,712	1,347
BOD ₅ loading, 90% non-exceedance, lbs/day	--	--	--	--	1,890
Effluent wastewater					
Average BOD ₅ , mg/L	21	22	22	25	22
BOD ₅ 90% non-exceedance, mg/L	--	--	--	--	30



From a review of the data, the following observations are offered:

1. The average wastewater strength to the plant reflects a significant contribution from NCBC. Without discharges from NCBC, influent BOD₅ concentrations would range from 150-200 mg/L.
2. Wastewater flows include a sizable component of infiltration and inflow (I/I).
3. The plant is consistently meeting the average monthly BOD₅ limitation of 30 mg/L. Maximum BOD₅ values however (greater than the 90% non-exceedance) may prove problematic in the future if trends in performance during peak events continue.

For a more robust perspective regarding historical plant performance, additional information is presented below in Tables 2 and 3. Design criteria in Table 2 represent the original basis for unit process sizing for the initial plant construction and subsequent expansion in 1977. Unit process performance summarized in Table 3 is a historical indication of the effectiveness of the two-stage trickling filters in BOD₅ removal. Organic loading to the respective filters versus BOD₅ removal are further illustrated in Figures 2 and 3.

Table 2
Fort Bragg Wastewater Treatment Plant
Design Criteria

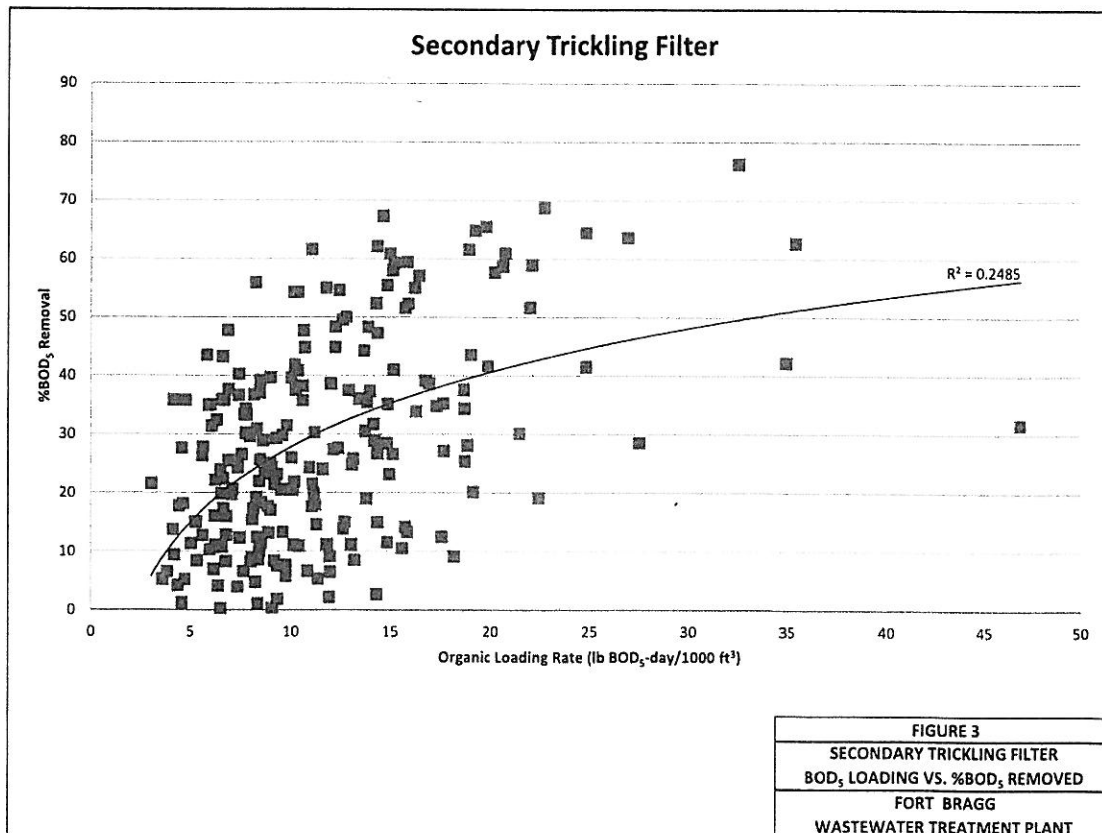
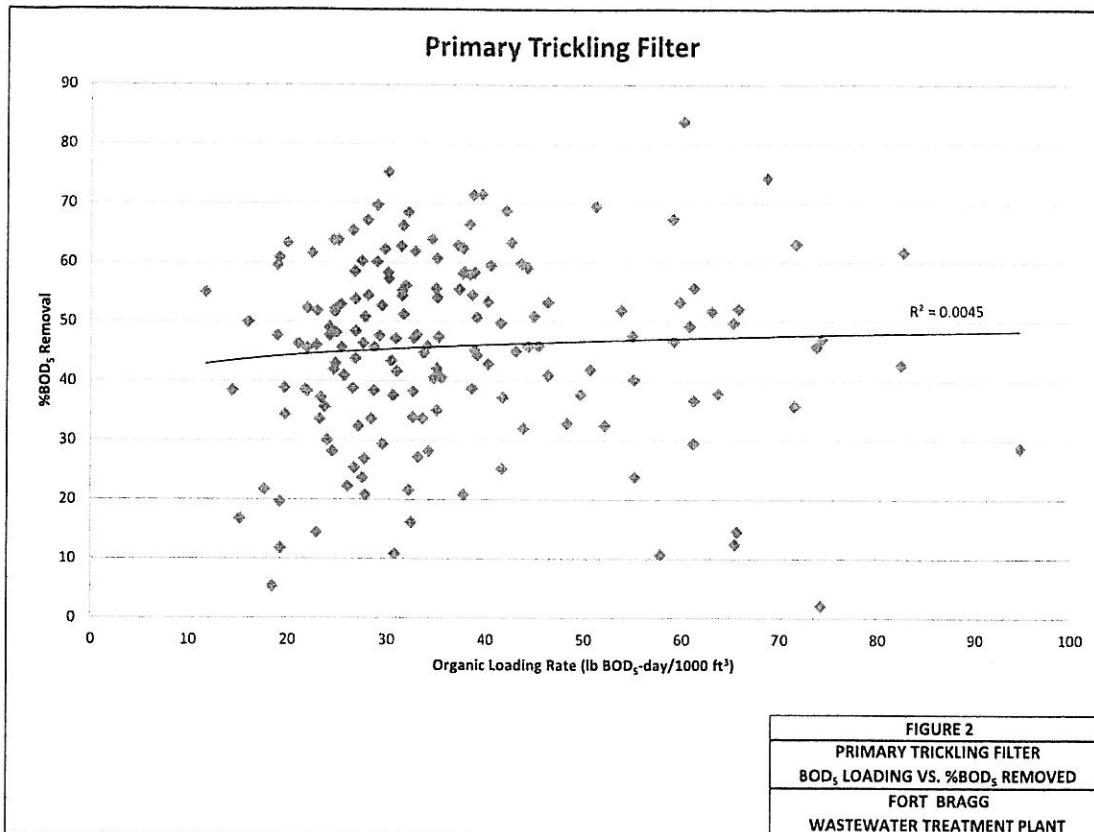
Parameter	Value
Average dry weather flow (ADWF)	1.0 mgd
Peak wet weather flow (PWWF)	5.1 mgd
Peaking factor (PWWF/ADWF)	5.1
Influent BOD ₅ concentration	188 mg/L
Influent BOD ₅ loading	1,571 lbs/day
Primary clarifier overflow rate, ADWF	302 gpd/ft ²
BOD ₅ removal, primary clarification	30%
BOD ₅ loading to primary biofilter	1,100 lbs/day
BOD ₅ loading to primary biofilter	73 lbs-day/1,000 ft ³
BOD ₅ removal, primary biofilter	70%
BOD ₅ loading to secondary biofilter	330 lbs/day
BOD ₅ loading to secondary biofilter	11 lbs-day/1000 ft ³
BOD ₅ removal, secondary biofilter	40%

Table 3
Review of Unit Process Performance, 2009-2012
City of Fort Bragg Wastewater Treatment Plant

Parameter	Year				2009-2012
	2009	2010	2011	2012	
Peaking factor wet weather (PWWF/AWWF)	1.7	3.1	5.0	3.6	4.6
Primary clarifier surface overflow rate (gpd/ft ²)	134	211	159	191	171
Secondary clarifier surface overflow rate (gpd/ft ²)	134	211	159	191	171
BOD loading rate					
Primary trickling filter (lbs BOD-day/1000 ft ³)	29	33	37	64	36
Secondary trickling filter (lbs BOD-day/1000 ft ³)	7	10	11	15	10
Average percent BOD removal					
Primary clarifier	59	45	49	36	53
Primary trickling filter	42	49	40	48	44
Secondary trickling filter	-6	7	23	55	13
Combined trickling filters	44	49	54	79	53
Secondary clarifier	42	42	32	36	39
Overall plant	94	91	92	92	92

Comparing actual unit process performance to design suggests the following:

1. While average flows to the plant are 50-60% of the design flow, recent trends in organic loading, particularly peak events, are exceeding the design capacity of the facility.
2. In terms of BOD₅ removal, primary clarifier performance is better than expected, probably due to lower overflow rates. However, long-term, the shallow depth of the clarifier (7 ft) may contribute to a reduction in performance, particularly during peak events.
3. Trickling filter performance has been inconsistent despite operating at lower than planned organic loading rates. Performance may be impacted by short-circuiting and other operational issues.



Limited Plant Modifications

As noted earlier, the NCBC is planning a significant expansion in production over a 2-3 yr period. Depending on how wastewater characteristics and flows to the plant change in response to increased operations, the City facility could experience greater BOD loading on a daily basis. Under one possible scenario, organic loading from NCBC could increase from 1,060 lbs BOD₅/day to 1,800 lbs BOD₅/day assuming a direct scale-up from annual brewery production (85,000 barrels per year in the future versus 50,000 barrels per year currently). While the incremental increase of approximately 600 lbs BOD₅/day likely represents a worst-case scenario, initial planning for this value may be useful. Assuming that the plant is essentially operating at the organic loading capacity, an increase in trickling filter volume would be warranted to treat the additional BOD. Considering the age and apparent operational issues with the primary trickling filter, replacement of the rock media with a high-rate plastic media should be considered. Based on a preliminary organic loading rate of 50 lbs BOD₅-day/1000 ft³ and a target BOD removal rate of 40 percent through the primary clarifier, an 80 ft diameter primary trickling filter with a plastic media depth of 5 ft would be appropriate.

CITY COUNCIL AGENDA COVER-SHEET
--

From: Nancy Batchelder, City Recorder

- ☐ Regular Meeting Agenda Item ☒ Work Session Discussion Topic
- o Add to agenda for _____ meeting.
 - o Continue this item until _____.
 - o Item dismissed.

DATE: February 5, 2015

Title: Discussion Item: Food & Beverage Tax Revenue Policy

Item: As per the Municipal Code all Food and Beverage taxes collected by the City shall be used for financing of improvements to the sanitary or storm sewer systems or the water system.

When the Green Ribbon Committee made the recommendation to enact the Food and Beverage Tax they also recommended that 100% of that tax be used to fund the debt service on the new wastewater system improvements.

In the years since the tax has been enacted, as Budget Officer I have done that by going to that source first each year when looking to fund the loan payments each year. The remaining funds come from the Urban Renewal District, System Development Charges, Sewer Rates, and a portion of the Occupancy Tax in the General Fund.

Councilor Scott has asked that this item be added to the Work Session Agenda this month for discussion because the amount of tax revenue has been in excess of budget expectations and he feels that a written policy is needed.

CITY COUNCIL AGENDA COVER-SHEET
--

From: Nancy Batchelder, City Recorder

- ☐ Regular Meeting Agenda Item ☒ Work Session Discussion Topic
- o Add to agenda for _____ meeting.
 - o Continue this item until _____.
 - o Item dismissed.

DATE: February 5, 2016

Title: Real Property Management Policy

Item:

At the August 13, 2015 City Council Meeting Sandy Dunn asked if the City had a Real Property Policy and suggested that perhaps one should be developed if there is not one already in place.

I began doing research, contacting other recorders and looking online for samples. I was able to find one very long and complex policy, which I forwarded to City Council on the Internet. While I knew there was much in it that would not be applicable I thought there might be some ideas that could be useful. I also prepared an Agenda Cover Sheet for the October Work Session that included the Newport Municipal Code Section that deals with Real Property Management. I also noted that there was a slight difference between State Law and the Newport Policy when it came to the sale of public property that should be considered when drafting a policy for Yachats.

At the October Work Session the topic was continued to the November Work Session.

At the November Special Meeting (Work Session) the topic was once again continued to the next Work Session because no one on City Council had had a chance to review the material or work on draft language.

At the December Work Session Dunn said that she had been doing some research but had not gotten very much information other than the Newport Policy and that she would like to bring it back to City Council later to discuss. Frye said that she would like to see some guidelines. Brean said that he would like to do an outline and confer with Dunn. The topic was continued to the next Work Session.

At the January Work Session the topic was once again continued to the February Work Session.

It has been mentioned a couple of times now that if the City already had a City Administrator there might be a policy by now, or perhaps the topic should wait until it can be delegated to the City Administrator.

Besides a Policy regarding buying and selling real property another issue the City Council needs to consider is the ongoing daily maintenance of the real property the City owns. The City has recently purchased one more large building, and the Public Works Department is actually short one person so facilities maintenance is becoming an issue.

Should Public Works have a facilities maintenance position –like a handy man that could do small fixit jobs, painting, gutter cleaning, and safety related jobs? That employee would not be required to be out in the field doing the regular utility related work and could be paid at a lower rate of pay. That would free up the rest of Public Works to continue doing the work keeping the water, sewer and storm drain systems in good working order. Or should the City hire out those types of things that the City crew just does not have the time to do?

In the past I have drafted many policies for City Council adoption but they have always been based on information from CIS, State Law, current procedures or discussions. Up to this point, there has not been any conversation about what City Council would like to see in such a policy and it has been my understanding that Council wanted to develop this policy. However, if given some direction I am capable of preparing a draft for Council consideration.

I recommend that at this Work Session City Council make one of the following decisions:

- Assign the task to a Sub-Committee of Council Members with an estimated finish date for review by the full City Council.
- Assign staff to prepare the policy with some added direction regarding specifics.
- Assign it to the new City Administrator when that position is filled.

CITY COUNCIL AGENDA COVER-SHEET
--

From: Nancy Batchelder, City Recorder

- ☐ Regular Meeting Agenda Item ☒ Work Session Discussion Topic
- o Add to agenda for _____ meeting.
 - o Continue this item until _____.
 - o Item dismissed.

DATE: February 5, 2015

Title: Discussion: Threshold for Flat Rate Delinquent Charge on Tax Payments

Item: Currently the online tax payment system automatically sends out an invoice for a delinquent charge of \$100 plus 10% interest for any tax payment that has not been made.

This last quarter one of the accounts had an invoice for \$1,3506 and for some reason the check they sent the City was for \$1,3500 leaving a balance of \$6. The system then sent them a delinquent notice and an invoice for \$106.60.

I would like the staff to be allowed to waive the flat delinquency fee for accounts that have made short payments leaving small balances like the case above. Even better would be a threshold in the system that would prevent the fee being added to an account that has a small balance. The 10% interest should still be applied. Perhaps staff could add that fee could add that fee in a subsequent quarter if the balance remained unpaid.

In the meantime the staff would work with the property owner or the manager to collect the balance.

Related Goal:

Reference And Review Material:

Budget Impact:

Additional Information:

Attachments:

CITY COUNCIL AGENDA COVER-SHEET
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CITY OF YACHATS
CITY COUNCIL WORK SESSION
Civic Meeting Room - Yachats Commons
February 8, 2016
Minutes

Mayor Ronald Brean called the work session of the City Council to order at 9:30 a.m. in the Civic Meeting Room at the Yachats Commons. Council members present: Greg Scott, Sandy Dunn, and Max Glenn. Absent: Barbara E. Frye.

I. Farm Store Request: Waiver of System Development Charges for Larger Meter

Brean explained that Nathan Bernard came to the City Council last month to request that the System Development Charges be waived for installing a 2" meter.

Wastewater Treatment Plant Operator, Dave Buckwald said that he does not yet know what the impact on the wastewater treatment plant will be because Bernard has not responded to his request for information about how much product he will be producing and what type of waste he will be discharging.

Water Treatment Plant Operator, Rick McClung said that he does not know how much beer Bernard will be producing, but of course, during a Phase 3 water shortage he would not be able to make any.

Scott said that he has a concern with setting a precedent. And while the SDC amount looks large, this is not for an individual it is for a business and the City is looking at some very large numbers for the water improvements in the future.

Discussion followed about the rationale for the SDCs and what other businesses would be charged if they were to need a larger meter to meet the needs of their increased business.

Brean suggested that with Buckwald's and McClung's help he could draft a letter to Bernard stating what information the City will need about his business plans before any decision can be made.

Discussion also followed about the need to find a way to establish a base water/sewer rate for new businesses and businesses that change their operations.

Buckwald said that the representative from DEQ said the City should be charging the brewery a higher sewer rate than other users because of the type of waste being discharged. However, he will not know what is being discharged until he is able to test it.

City Council directed the Public Works and Streets Commission to work with McClung and Buckwald on a rate structure for industrial users.

Interviews for Planning Commission Membership

Helen Anderson said that she has been working on the City Database populating the property data and it has rekindled her interest in the City.

When asked what her tolerance for inaction would be she said that she is working on that.

1 Scott said that he knows that Anderson has a good idea of how the property database will assist
2 the Planning Commission.

3
4 John Deriberprey said he wants to help the City and he wants to be part of the long term planning
5 because he plans to be here for a long time.

6
7 Deriberprey said that the position to be filed is for one year so this would give him a chance to learn
8 about how the Planning Commission and the planning process works.

9
10 Deriberprey said that Yachats faces challenges in the future as the City looks at how to zone in
11 order to find places for people to live while keeping Yachats the Yachats it is today.

12
13 When asked what his tolerance for inaction was Deriberprey said that he understands that
14 sometimes things take time because they are unique and there are many aspects to consider.

15 16 **II. Discussion: Food and Beverage Tax Revenue Policy**

17
18 Scott said that the City is collecting more than originally anticipated, and he believes that it is
19 important to make it a formal policy that all of the Food and Beverage Tax be used to reduce the
20 General Fund contribution to the Wastewater Treatment System Debt Repayment, which would
21 free up the General Fund money to be used for streets, storm drains or other uses.

22
23 Scott will draft an Administrative Policy for review.

24 25 **III. Discussion: Real Property Management Policy**

26
27 Brean said that he has reviewed the policies that other cities have but most of them deal mostly
28 with disposal of property and are vague so it will not be possible to draft a policy based on those
29 examples.

30
31 Dunn said that the City went from the City Council not being able to doing anything to having the
32 ability to buy and sell and she believes that the Council owes the citizen some assurance that there
33 are some controls and policies that govern the decisions.

34
35 Brean said that if the rest of Council does not have any objections he would like to ask the City
36 Planner to work on this.

37
38 There was consensus to proceed in this manner.

39 40 **IV. Agenda Topics for Joint Meeting with County Commissioners**

41
42 There was consensus to send word to the County Commissioners that the City Council would like
43 to see the following items on the agenda for the Joint Meeting:

- 44 • 804 Trail/Ocean View Drive
- 45 • Cascadian Evacuation Drill – June 10, 2016 - Notification that Yachats will be
- 46 conducting one and asking for their Corporation
- 47 • Repair of Riprap Along Ocean View Drive
- 48 • Noxious Vegetation

1 **V. Discussion: Threshold for Flat Rate Delinquent Charge on Tax Payments**

2
3 There was consensus to give staff the ability to waive the fee in situations when the majority of the
4 tax payments have been made but for some reason, there is a small amount remaining.

5
6 **VI. Schedule Goal Setting**

7
8 Staff will use a Meeting Wizard to schedule a City Council work session for this.

9
10 **VII. Discussion: Code Enforcement Contract Requirements**

11
12 It was explained

13
14 Scott said that everyone understands that the work can be confrontational. Scott said that
15 Niskanen reported that he did research and in all the cities that he looked at their Code
16 Enforcement Officers were city employees and were covered by the city insurance.

17
18 Brean said that Waldport, Newport and Toledo all have contract Code Enforcement Officers.

19
20 Scott said that perhaps this discussion could be continued until he is able to find out what those
21 cities are doing.

22
23 **VIII. Set the agenda for the February 11, 2016 City Council meeting**

24
25 City Council reviewed the agenda items for the Thursday meeting.

26
27 The meeting was adjourned at 11:47 a.m.

28
29
30
31
32 _____
33 Ronald Brean, Mayor

34 Attest:

35
36
37 _____
38 Nancy Batchelder, City Recorder

- Because the City has never had an Industry in town before, should there actually be a different way of determining the water and sewer rates for this type of business?
- Should the City develop a fee based on the projected increased water use and sewer impact rather than a straight System Development Charge adjustment; and, defer the difference until the property is sold to another owner or the use of the building is changed to one that is considered to use the full capacity? At that time, the remaining amount of uncollected System Development Charges would become due.
- When the City updates the conservation and curtailment Code, this industry will need to be considered. What type of restrictions will the City consider placing on this business the next time there is a water shortage?
- How much waste per month/per year will this business generate?
 - There are different types of wastewater discharges resulting from brewing operations including floor and equipment wash-down, cleaning of tanks, waste left over from the process and product that cannot be used.
- Should the City require any pre-treatment before it goes into the wastewater system?
- How is the City going to monitor how much and when the waste is discharged into the wastewater system since it will not necessarily correspond to when the water is used or even how much water is used?

I have attached a copy of a report given to the Council of the City of Fort Bragg when a local brewery planned to expand their operations in 2012 that Dave Buckwald found online. While that brewery is much larger than the Farm Store will ever be, it does a very good job of explaining all of the issues to consider.



CITY OF FORT BRAGG
416 N. FRANKLIN, FORT BRAGG, CA 95437
PHONE 707/961-2823 FAX 707/961-2802

COUNCIL COMMITTEE AGENDA ITEM SUMMARY REPORT

MEETING DATE: July 25, 2012
TO: Finance and Administration Committee
FROM: Marie Jones, Community Development Director
Linda Ruffing, City Manager
AGENDA ITEM TITLE: **Receive Report and Discuss Water Use and Wastewater Treatment
Issues Associated with North Coast Brewery Expansion Plans**

The North Coast Brewing Company (NCBC) is seeking to expand the production capacity of their manufacturing facility from 40,000 barrels of beer per year to 90,000 barrels of beer per year. This expansion will take place over several years and result in a gradual increase in water use and in wastewater generation by the facility.

This staff report provides information to help inform a discussion about how the City of Fort Bragg (City) and NCBC can work together to accommodate the expansion plans given the limitations of the City's water and wastewater utilities. The staff report discusses water and wastewater issues, including:

Water issues

1. Estimated additional water demand for NCBC expansion.
2. City water availability.
3. Need for additional City water storage for future development.
4. Estimated water capacity fees for NCBC expansion.
5. Summary of water conservation ordinance and implications for NCBC.

Wastewater issues

6. Summary of issues related to NCBC wastewater discharge.
7. Summary of measures implemented by NCBC to address wastewater issues.
8. Technical memo (prepared by Dave Richards, PE, see attached).
9. Draft proposed "regulatory agreement" between NCBC and City to establish discharge limitations.
10. Estimated sewer capacity fees for NCBC expansion.

WATER ISSUES

1. Estimated additional water demand for NCBC expansion.

The NCBC's proposed expansion from 40,000 to 90,000 barrels of beer per year will require an additional 5.995 million gallons of water per year. In 2009/10, the NCBC required 5 million gallons of water to produce 31,000 barrels of beer or about 160 gallons of water/barrel. By the end of 2011/12, the NCBC will utilize an estimated 6.9 million gallons of water to produce an estimated 48,000 barrels of beer (at a rate of 144 gallon per barrel). The NCBC's water use has increased as a proportion of all water production by the City from 2.3% in 2009/10 to 3.2% in 2011/12. Production of 90,000 barrels of beer will require 13 million gallons of water per year, which would be approximately 6% of all water produced by the City.

As shown in Table 1 below, the NCBC's proposed increase in production (assuming it follows past water use trends) would occur mostly during the winter and spring months, when water supply and storage are not an issue for the City. During the "dry" months of July through September, rates of water use are projected to be less (in the 4.3% to 4.9% range), than the overall estimate of 6%. If this seasonal water use profile continues into the future, the impact of the proposed NCBC expansion on the City's ability to serve water users during dry or drought conditions will be somewhat less than otherwise.

Table 1: Current and Anticipated North Coast Brewing Company Water Usage

Month	2009/2010 water use (31,794 Barrels) gallons per month	2010/2011 water use (38,959 Barrels) gallons per month	2011/2012 Water Use (48,473 Barrels) gallons per month	Anticipated Water Use (90,000 Barrels) Gallons Per Month	Current City Water Use Gallons per Month	% of total water use 40000 barrels	% of total water use 90000 barrels
Jul	457,776	547,536	537,812	1,000,759	23234376	2.0%	4.3%
Aug	373,252	457,028	561,748	1,045,299	22497596	1.7%	4.6%
Sep	418,132	427,108	534,820	995,191	20308200	2.1%	4.9%
Oct	340,340	397,188	574,464	1,068,961	17761260	1.9%	6.0%
Nov	369,512	362,032	460,020	856,004	15818704	2.3%	5.4%
Dec	345,576	420,376	549,032	1,021,637	14832840	2.3%	6.9%
Jan	443,564	368,764	584,188	1,087,055	16779136	2.6%	6.5%
Feb	474,980	387,464	570,724	1,062,002	14781228	3.2%	7.2%
Mar	460,768	492,184	547,536	1,018,853	14781228	3.1%	6.9%
Apr	463,012	528,088	669,460	1,245,729	17012512	2.7%	7.3%
May	453,288	516,868	655,236	1,219,262	17530876	2.6%	7.0%
Jun	471,988	567,732	719,717	1,339,247	19368712	2.4%	6.9%
Annual Water Use	5,072,188.00	5,472,368	6,964,757	12,960,000	214,706,668		
Total City Water Use (gallons)	223,273,512	217,635,088	214,706,668	214,706,668			
Percent of Total City Water	2.3%	2.5%	3.2%	6.0%			
Water Use (Gallons)/ Barrel	160	140	144	144			

Source: Finance Department, City of Fort Bragg; Community Development Department, City of Fort Bragg, 2012

Key

Bold Indicates Drought Month

 Estimated, data not yet available.

2. City water availability.

The City of Fort Bragg currently has a permit to divert 3.0 cfs from the Noyo River. The City also obtains water from two other surface water sources but the diversion on the Noyo is most heavily impacted in a drought due to pumping restrictions. In 2011, City staff completed an analysis of water use and storage for a 50-year drought scenario (similar to the 1977 drought) and determined that the City presently has an "excess" storage capacity that would allow for an 8% increase in overall water use over existing water use (while maintaining a 5 million gallon water storage reserve which is needed to maintain adequate pressure in the distribution system for fire suppression). Based on this, it can be concluded that the City has sufficient water supply to serve the proposed NCBC expansion in both drought and non-drought conditions. It is noted however that approval of the project would constrain the City's ability to supply water to future development projects due to drought year limitations on water supply.

3. Need for additional City water storage limitations for future development.

In 2011, the NCBC used approximately 5.4 million gallons of water, which amounts to 2.5% of all water produced in the City of Fort Bragg that year. Increasing production to 90,000 barrels of beer would result in total water demand of 12.9 million gallons or 6% of annual City water production. In order to accommodate the increase in production from 40,000 to 90,000 barrels, the NCBC would use 3.5% of the City's "excess" storage capacity (see discussion above). Approval of the project will reduce the City's "excess" or unallocated storage such that additional development can only be permitted so long as it increases water demand by less than 4.5% in total over current water use. Without additional water storage, the time will come when the City is not able to permit additional development.

The City is well aware of the need for additional water storage to ensure adequate water supply under severe drought conditions and to serve future development. The City has designed and begun the permitting process for construction of a 45-acre foot (i.e., 15 million gallon) reservoir at its Newman Gulch property off Summers Lane. That project is currently on hold but approval of the NCBC project may require the City to reconsider the implementation timeline. Construction of the Newman Reservoir project would enable the City to increase water service by an additional 12% in addition to the existing 8% excess capacity for a total of 20% excess capacity.

Regardless of whether or not the NCBC project proceeds, the City needs to move forward with either the Newman Reservoir project or an alternate water storage facility within the next few years in order to ensure that the City can continue to consider approval of new development projects which may benefit our community.

4. Estimated water capacity fees for NCBC expansion.

The City has completed a nexus study to establish Development Impact Fees to help fund some of the costs of developing key infrastructure that serves future development such as additional water storage. The Development Impact Fees were temporarily tabled while the financing plan for the Mill Site Specific Plan was prepared. The fees have not yet been approved by City Council, but the Finance & Administration Committee has suggested that, if and when they are approved, there should be a 12-24 month "grace period" before they take effect.

If NCBC expands production, it would be required to pay Capacity Fees which reimburse the City for previous investments in water and sewer infrastructure which resulted in the development of excess

capacity which will benefit the proposed project. Typically, Capacity Fees are charged based on square footage assumptions. However, the Bartle/Wells Study used the 2008 production capacity and water use of the NCBC as the basis for establishing a per square foot charge. With the significant intensification of use (increase water use by 125%) within the existing structure, the square footage calculation is not applicable.

A Capacity Fee calculation based on water use associated with the increase in production capacity is appropriate. Although in 2011/12, the NCBC produced an estimated 48,400 barrels of beer, the "grandfathered" production capacity is 40,000 barrels/year, therefore the expansion of production to 90,000 barrels would require payment of Capacity Fees for the additional 50,000 barrels.

Table 2 calculates the total Water Capacity Fee based on the gallons of water used per day for the additional 50,000 barrels of beer. As a consequence of the expansion, the NCBC will utilize 19,452 gallon of water per day ($50,000 \times 144 / 365$). According to the Bartle/Wells Study, an equivalent dwelling unit uses 452 gallons per day, thus $19,452 \text{ gallons} / 452 \text{ gallons} = 43 \text{ EDU}$. The NCBC expansion would utilize an equivalent amount of water as 43 homes. The capacity charge per EDU is \$3,885. Thus the total capacity charge (based on the current fee schedule) would be $\$3,885 / \text{EDU} \times 43 \text{ EDUs} = \$167,210$. As a large water user, the NCBC is eligible for a 60% reduction in its water capacity fees (per Council Resolution 2668-2003), consequently the actual capacity fee due would be \$66,884. See Table 2 below for detailed calculations.

Table 2: Water Capacity Fee Charge

2012 EDU Fee	\$3,885.40	per EDU
Gallons of water use	452	per EDU
Brewery Increase in Water Use (50,000 Barrels)	19,452	gallons/day
Total EDU's for Brewery	43	EDUs
Total Water Capacity Fee	\$ 167,210	
60% Discount per Resolution 2668-2003	\$ 66,884	

5. Summary of water conservation ordinance and implications for NCBC.

City Council adopted a Water Conservation Ordinance in 2006 to allow the City to respond quickly to a water shortage/drought situation. Due to pumping limitations on the Noyo River and the variability of water flow on the Noyo in a drought situation, the City can go from having adequate water in storage to a potentially serious water shortage in a relatively short period of time. Additionally, recovering from a water storage shortage situation may be a lengthy process. The Water Conservation Ordinance:

1. Authorizes the City Manager to declare a water emergency based upon quantitative criteria.
2. Provides for 3 Stages of water conservation, with increasingly stringent provisions, which include:
 - In a Stage 1 Water Emergency, voluntary water use reduction of 10%;
 - In a Stage 2 Water Emergency, water use reduction of 25%;
 - In a Stage 3 Water Emergency, water use reduction of 30%.
3. Sets minimum standards for water use in new construction and remodels.

The Ordinance also sets required increases in water pricing during water emergencies in order to incentivize reduced water use as follows:

- Stage 1 Water Emergency, the variable portion of the water rate charge would increase by 10%;
- In a Stage 2 Water Emergency, the variable portion of the water rate charge would increase by 25%;
- In a Stage 3 Water Emergency, the variable portion of the water rate charge would double.

During the various stages of a water emergency, NCBC would be obligated to pay the higher rates for the variable portion of the bill, like all water users.

Staff modeled current City water supply, storage and demand characteristics in a severe, 1977-type drought. The modeling concluded that without new water storage, the City would likely impose 25 days of Stage 1 Water Emergency, 30 days of Stage 2 Water Emergency, and 20 days of Stage 3 Water Emergency (during the months of May through October) in a severe drought. Thus the NCBC, would experience higher water bills during some portion of the billing cycle for the summer months of a severe drought situation. The Water Conservation Ordinance does not mandate water conservation, so the NCBC could chose to operate at the same capacity as it did prior to the water emergency, it would just pay more for water to do so.

With the construction of additional water storage (of 45 acre feet or more), the City would not have to declare a water emergency with current development levels. However, if total water demand increases as a result of new development projects by 15 to 20%, the City would likely need to declare water emergencies in drought conditions.

WASTEWATER ISSUES

6. Summary of issues related to NCBC wastewater discharge.

NCBC periodically discharges high strength wastewater from brewing operations to the City's wastewater treatment plant (WWTP). Wastewater originates from NCBC production activities including floor wash-down, keg washing, beer wasted from bottle overfilling, spills generated by fobbing during the fermentation process, cleaning of tanks/hoppers following production, and product that cannot be used and is discharged to the drain.

NCBC's wastewater organic strength has BOD5 (biochemical oxygen demand) concentrations ranging from 4,300-9,500 mg/L based on wastewater analyses conducted during the April-May 2012 period. Combining the average wastewater strength and discharge quantities from NCBC results in a BOD5 loading to the plant of 1,060 lbs/day which is a significant fraction of the organic capacity of the WWTP. The design capacity of the WWTP for BOD is 1,500 lbs/day. Recent trends in organic loading, particularly peak events, are exceeding the design capacity of the WWTP.

The average wastewater strength to the WWTP reflects a significant contribution from NCBC. Peak wastewater strength at the WWTP correlates with monthly peak flows of high BOD discharges from the NCBC. Without discharges from NCBC, influent BOD5 concentrations would range from 150-200 mg/L. With the BOD from the NCBC, total BOD concentrations at the WWTP have predictable monthly peaks in BOD of between 300 to 500 BOD (mg/L) with occasional spikes of 600 to 700+ BOD (mg/L).

7. Summary of measures implemented by NCBC to address wastewater issues.

The first course of pre-treatment of NCBC wastewater is to divert solids and neutralize pH as discussed below.

Diverting Solids. Malt and hops are responsible for the vast majority of solid waste produced in the brewery. Spent grain and hops which remain after the production of wort and which could make their way into the wastewater are typically removed from breweries using a variety of equipment with the goal of leaving as little behind in the brew kettle, lauter tun and plumbing and on the floor as possible.

NCBC employs a sealed progressive cavity pump in the brewhouse which is the cleanest and most efficient method of moving this spent grain. Any spoils which find their way onto the floor are subsequently trapped behind a series of screens that are installed in brewhouse trench drains. These spoils are vacuumed out and removed to the spent grain truck.

Spent hops are similarly removed from the brewery before the drain by manually removing them from their primary point of use in the whirlpool. The hops, which importantly filter protein out of the wort prior to the introduction of yeast in the fermenter, are also valuable as fertilizer and mulch and are made available to local gardeners as such, also free of charge.

One of the highest BOD material produced is brewer's yeast. NCBC diverts nearly all yeast into the spent grain after centrifuging it from the beer. NCBC recently purchased a \$250,000 centrifuge which removes 100% of the yeast from the beer and eliminates the use of DE filtration. NCBC has also, in the last several years, invested in equipment which enables the brewery to ferment under pressure which controls fobbing (foaming), another source of yeast entering the drains.

Adjusting PH. The other basic pre-treatment of wastewater that NCBC undertakes is to adjust the pH of liquids that go into the drains. The acid and caustic cleaners that are used to clean brewing vessels are typically outside the allowable pH range for disposal and so all such material used by the brewery is neutralized before it is put into the drain. All such releases are logged.

8. Technical memo prepared by Dave Richards, PE (see Attachment).

As noted above, NCBC contributes a significant portion of the BOD load to the WWTP and the WWTP is nearing capacity in its ability to treat BOD. The report by Dave Richards compares actual performance at the WWTP with design criteria for the facility and concludes that average flows to the plant are 50-60% of the design flow and recent trends in organic loading, particularly peak events, are exceeding the design capacity of the facility. The report recommends that improvements be made to the clarifier and the trickling filter. Specifically given the projected increases in BOD from NCBC the report recommends that:

"...an increase in trickling filter volume would be warranted to treat the additional BOD. Considering the age and apparent operational issues with the primary trickling filter, replacement of the rock media with a high-rate plastic media should be considered. Based on a preliminary organic loading rate of 50 lbs BOD5-day/1000 ft³ and a target BOD removal rate of 40 percent through the primary clarifier, an 80 ft diameter primary trickling filter with a plastic media depth of 5 ft would be appropriate."

Staff concurs with this recommendation and will be implementing actions necessary to proceed with repair and expansion of the primary trickling filter at the WWTP. A more detailed and comprehensive evaluation of WWTP capital improvements will be presented to the Council/Municipal Improvement District Board in a few months.

9. Draft provisions of a proposed "regulatory agreement" between NCBC and City to establish discharge limitations.

To ensure that organic loading from the NCBC does not result in exceedances of the WWTP's discharge limitations, staff recommends that the City and NCBC enter into a regulatory agreement which establishes compliance thresholds for BOD and TSS, monitoring requirements, and penalties for

violations. While the precise language of the agreement will need to be worked out, the following provisions have been drafted by staff:

- a. Organic loading from NCBC discharge shall not exceed a daily maximum average BOD of 8000 mg/L and a maximum TSS of 2000 mg/L. Additionally the organic loading shall not exceed a thirty (30) day average BOD of 5000 mg/L and 1000 mf/L TSS. Finally effluent shall not be less than 6.0 s.u. or greater than 9.0 s.u. The Public Works Director can modify these maximum discharge requirements once every two years in order to ensure effective operation of the WWTP and compliance with Regional Water Quality Control Board requirements.
- b. NCBC will be subject to a penalty fine of \$1,000 for each violation of the organic strength, PH and BOD requirements set forth in Condition (a) above. Any penalty fine will be assessed as part of the utility billing.
- c. In the event that NCBC does not comply with any prohibition or maximum effluent limitation, the NCBC shall notify the Public Works Department within 24 hours of knowledge of the problem. NCBC shall provide a written notification within 5 days of the violation that states the nature, time and duration, and cause of the non-compliance and the corrective actions or measures to be implemented to remedy the non-compliance and prevent recurrences.
- d. NCBC will be required to pay for all costs associated with monitoring, sampling and analyzing discharges into the City collection system in accordance with this special condition. NCBC will report influent and effluent flows and sample results in a self-monitoring report submitted to the Lead Treatment Plant Operator at the WWTP no later than the first day of the following month. NCBC shall collect one 24-hour composite sample one time per week. The composite sample will consist of a minimum of one sample per hour. The samples must be sent to a certified lab. The City may allow in-house samples results when acceptable consistency in results is shown. The sampling schedule will be coordinated with the WWTP staff. The City may complete random independent monitoring to confirm the quality of the report data. Additionally, if required by the City, NCBC shall install at its own cost a manhole for the City to independently sample the effluent.
- e. If compliance costs or fines imposed by the Regional Water Quality Control Board are directly attributable to discharge from NCBC in violation of these conditions, the City will notify the NCBC and NCBC shall be required to reimburse the City for any such fines and costs. Any discharges from NCBC that violate any condition of this permit shall be prima facie evidence that NCBC is responsible for the compliance cost or fines imposed by the Regional Water Quality Control Board related to the discharge.

10. Estimated sewer capacity fees

Table 3 below outlines the NCBC estimated sewer capacity fees. The fee was calculated based on the actual EDU equivalent of increased sewer flow to the WWTP. As with the water analysis, when Bartle/Wells defined a per square foot basis for sewer flows, it based that analysis on a smaller volume operation within the existing 10,000 SF facility. As the total production will more than double with the proposed expansion, use of the EDU equivalent based on actual sewer outflow provides a more accurate estimate of the utilization of WWTP capacity by the facility. The EDU equivalency was determined by subtracting the beer produced in a day plus an allowance for water lost to processing to determine the sewer outflow, which is calculated at 13,238 gallons/day. This was then divided by the EDU equivalent of 150 gallons/day which equals 88 EDUs. Thus the total capacity charge would be $\$3,053.26/\text{EDU} \times 88 \text{ EDUs} = \$269,458$. As a high volume wastewater producer, the NCBC is eligible for a 60% reduction in its sewer capacity fees, consequently the actual fee would be \$107,784. See Table 3 below for detailed calculations.

Table 3: Sewer Capacity Fee Charge

2012 EDU Fee	\$3,053.26	per EDU
Gallons of sewer produced per EDA	150	gallons/day/EDU
Brewery Increase in Water Use (50,000 Barrels)	19,452	gallons/day
Beer Brewed	4,269	gallons/day
Water lost to process (hops, evaporation, etc.)	1,945	gallons/day
Brewery Increase in Sewer Outflow (50,000 Barrels)	13,238	gallons/day
Total EDU's for Brewery	88	EDUs
Total Water Capacity Fee	\$ 269,459	
60% Discout per Resolution 2668-2003	\$ 107,784	

Attachment: Technical Memo by Dave Richards, PE

**INITIAL REVIEW OF HISTORICAL
WASTEWATER TREATMENT PLANT PERFORMANCE
CITY OF FORT BRAGG
JULY 5, 2012**

North Coast Brewing Company (NCBC) discharges periodically high strength wastewater from brewing operations to the City of Fort Bragg (City) wastewater treatment plant (WWTP). Wastewater originates from production activities including floor wash-down, keg washing, beer wasted from bottle overfilling, spills generated by fobbing during the fermentation process, cleaning of tanks/hoppers following production, and product that cannot be used and is discharged to the drain. Based on the historical water usage/water budget for NCBC, typical wastewater discharge rates average approximately 24,000 gal/day for a four day per week production schedule. Wastewater organic strength is high with BOD₅ concentrations ranging from 4,300-9,500 mg/L based on wastewater analyses conducted during the April-May 2012 period. Combining the average wastewater strength and discharge quantities from NCBC results in a BOD₅ loading to the plant of 1,060 lb/day, a significant fraction of the organic capacity of the WWTP.

Wastewater discharges from NCBC are expected to increase in the future as brewing operations are expanded from four to seven days per week. An overall annual increase in brewery production from 50,000 to 85,000 barrels is planned over a 2-3 year period. Because of the likely increase in organic loading to the City WWTP from NCBC, certain physical improvements may be warranted at the City facility. A brief technical memorandum is summarized below addressing limited potential plant modifications based on an initial review of historical WWTP performance.

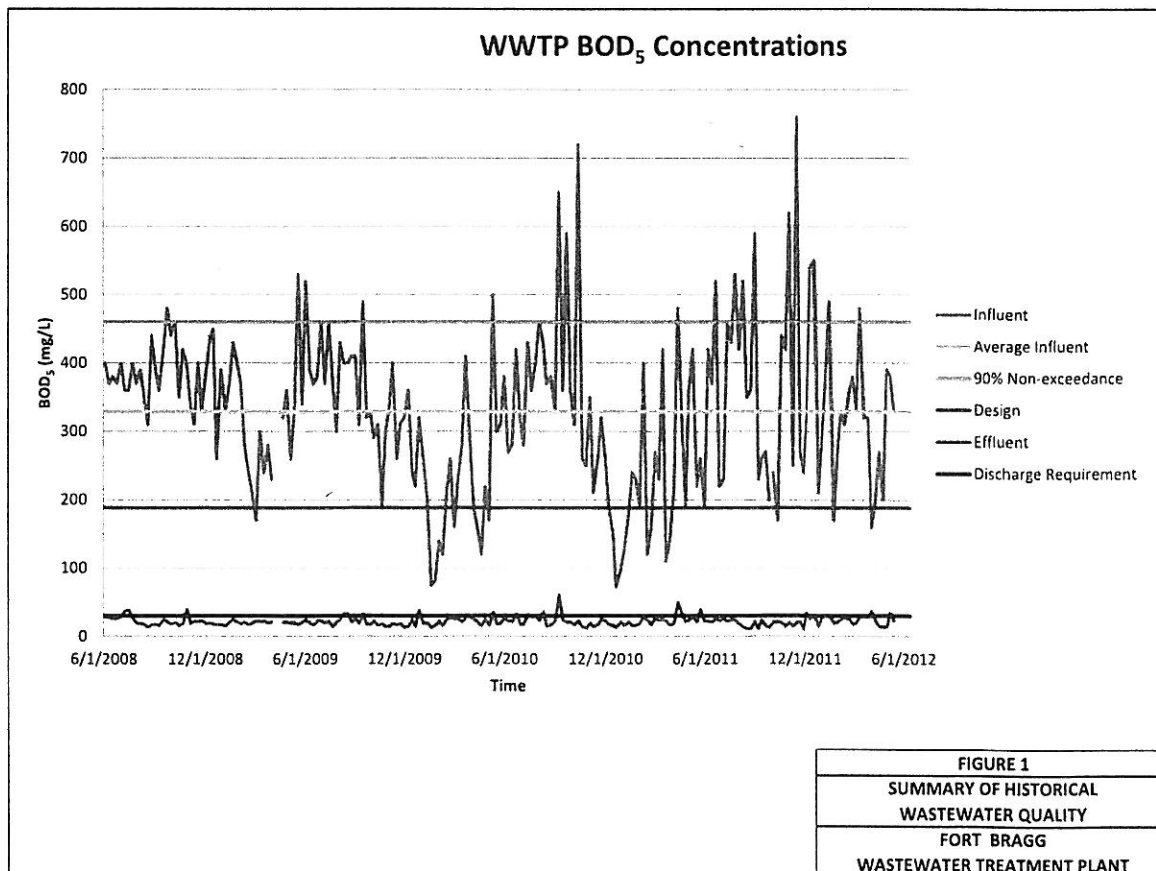
Historical Treatment Plant Performance

Operational data are collected at the City WWTP in accordance with the monitoring and reporting program adopted by the Regional Water Quality Control Board to ensure compliance with the facility discharge permit. Operational and process control data for the plant for the period 2009-2012 are summarized in Table 1. Historical BOD₅ concentrations are further illustrated in Figure 1.

ATTACHMENT

Table 1
Summary of Wastewater Treatment Plant Performance
2009-2012

Parameter	Year				2009-2012
	2009	2010	2011	2012	
Average annual flow, mgd	0.44	0.70	0.53	0.63	0.57
Average dry weather flow, mgd	0.39	0.60	0.46	0.57	0.51
Peak wet weather flow, mgd	0.75	3.04	3.69	2.71	3.69
Influent wastewater					
Average BOD ₅ , mg/L	340	293	324	318	329
BOD ₅ 90% non-exceedance, mg/L	--	--	--	--	460
Average BOD ₅ loading, lbs/day	1,236	1,431	1,229	1,712	1,347
BOD ₅ loading, 90% non-exceedance, lbs/day	--	--	--	--	1,890
Effluent wastewater					
Average BOD ₅ , mg/L	21	22	22	25	22
BOD ₅ 90% non-exceedance, mg/L	--	--	--	--	30



From a review of the data, the following observations are offered:

1. The average wastewater strength to the plant reflects a significant contribution from NCBC. Without discharges from NCBC, influent BOD₅ concentrations would range from 150-200 mg/L.
2. Wastewater flows include a sizable component of infiltration and inflow (I/I).
3. The plant is consistently meeting the average monthly BOD₅ limitation of 30 mg/L. Maximum BOD₅ values however (greater than the 90% non-exceedance) may prove problematic in the future if trends in performance during peak events continue.

For a more robust perspective regarding historical plant performance, additional information is presented below in Tables 2 and 3. Design criteria in Table 2 represent the original basis for unit process sizing for the initial plant construction and subsequent expansion in 1977. Unit process performance summarized in Table 3 is a historical indication of the effectiveness of the two-stage trickling filters in BOD₅ removal. Organic loading to the respective filters versus BOD₅ removal are further illustrated in Figures 2 and 3.

Table 2
Fort Bragg Wastewater Treatment Plant
Design Criteria

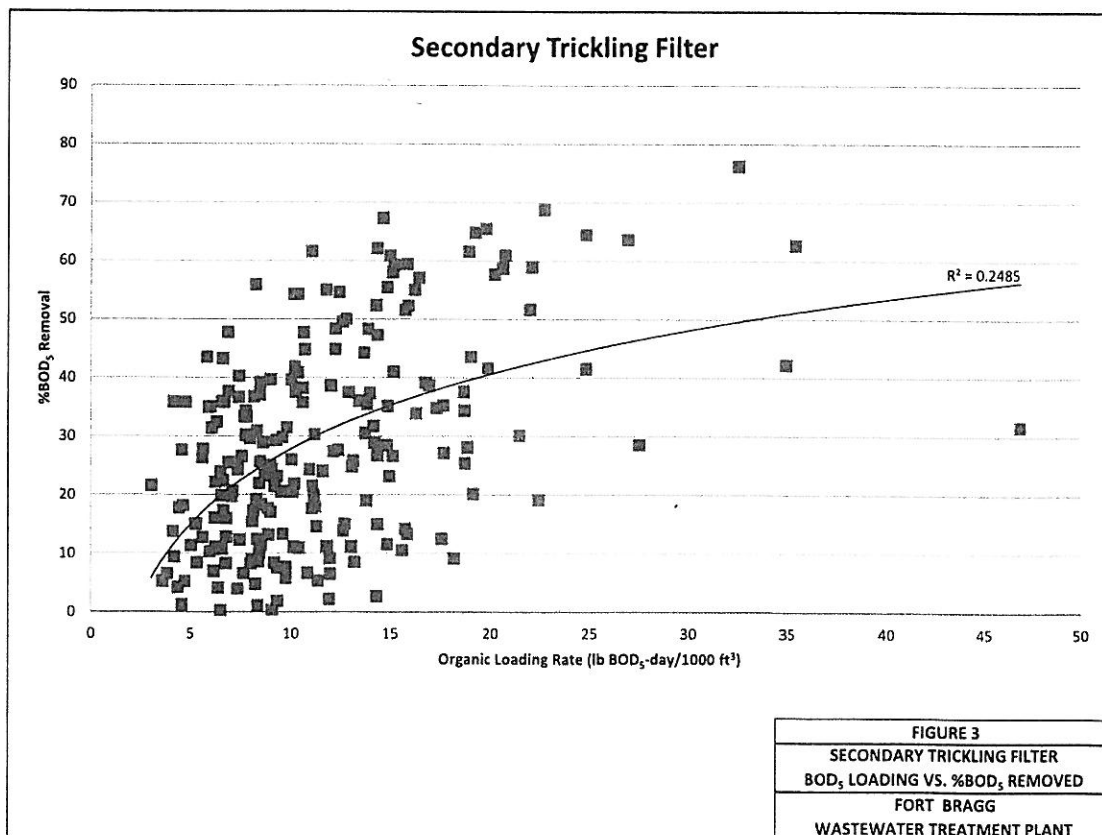
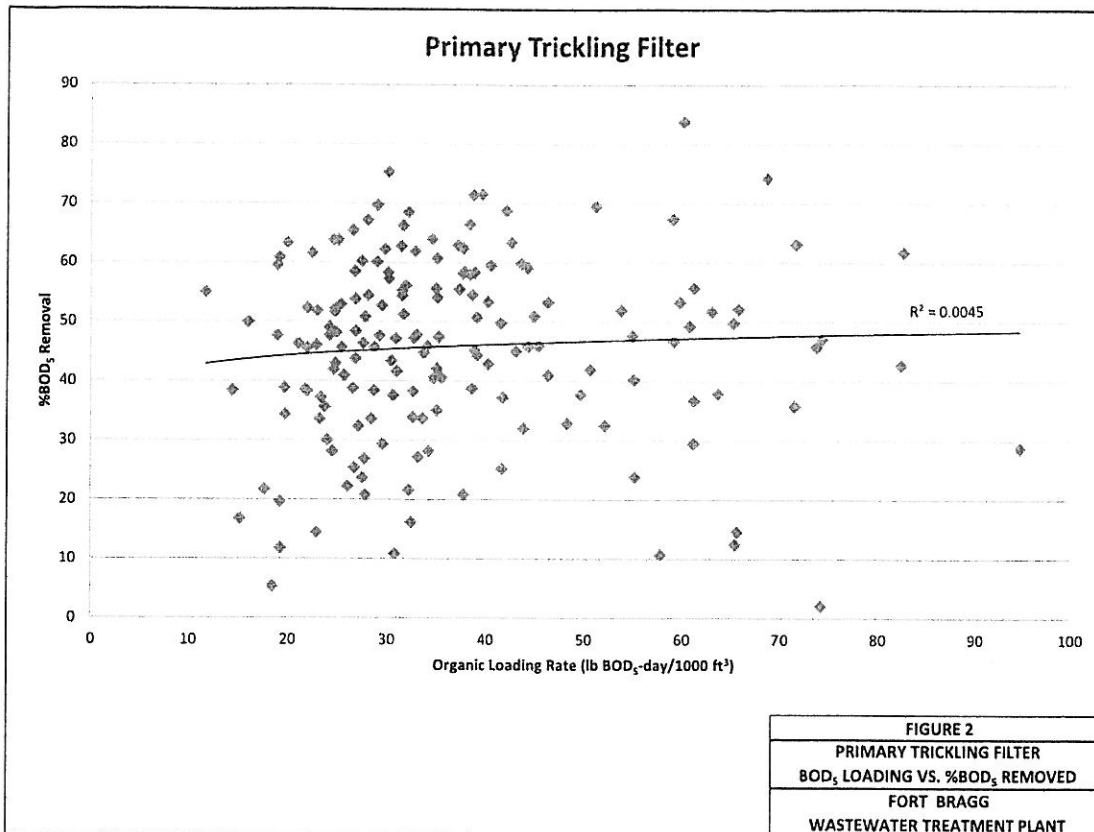
Parameter	Value
Average dry weather flow (ADWF)	1.0 mgd
Peak wet weather flow (PWWF)	5.1 mgd
Peaking factor (PWWF/ADWF)	5.1
Influent BOD ₅ concentration	188 mg/L
Influent BOD ₅ loading	1,571 lbs/day
Primary clarifier overflow rate, ADWF	302 gpd/ft ²
BOD ₅ removal, primary clarification	30%
BOD ₅ loading to primary biofilter	1,100 lbs/day
BOD ₅ loading to primary biofilter	73 lbs-day/1,000 ft ³
BOD ₅ removal, primary biofilter	70%
BOD ₅ loading to secondary biofilter	330 lbs/day
BOD ₅ loading to secondary biofilter	11 lbs-day/1000 ft ³
BOD ₅ removal, secondary biofilter	40%

Table 3
Review of Unit Process Performance, 2009-2012
City of Fort Bragg Wastewater Treatment Plant

Parameter	Year				2009-2012
	2009	2010	2011	2012	
Peaking factor wet weather (PWWF/AWWF)	1.7	3.1	5.0	3.6	4.6
Primary clarifier surface overflow rate (gpd/ft ²)	134	211	159	191	171
Secondary clarifier surface overflow rate (gpd/ft ²)	134	211	159	191	171
BOD loading rate					
Primary trickling filter (lbs BOD-day/1000 ft ³)	29	33	37	64	36
Secondary trickling filter (lbs BOD-day/1000 ft ³)	7	10	11	15	10
Average percent BOD removal					
Primary clarifier	59	45	49	36	53
Primary trickling filter	42	49	40	48	44
Secondary trickling filter	-6	7	23	55	13
Combined trickling filters	44	49	54	79	53
Secondary clarifier	42	42	32	36	39
Overall plant	94	91	92	92	92

Comparing actual unit process performance to design suggests the following:

1. While average flows to the plant are 50-60% of the design flow, recent trends in organic loading, particularly peak events, are exceeding the design capacity of the facility.
2. In terms of BOD₅ removal, primary clarifier performance is better than expected, probably due to lower overflow rates. However, long-term, the shallow depth of the clarifier (7 ft) may contribute to a reduction in performance, particularly during peak events.
3. Trickling filter performance has been inconsistent despite operating at lower than planned organic loading rates. Performance may be impacted by short-circuiting and other operational issues.



Limited Plant Modifications

As noted earlier, the NCBC is planning a significant expansion in production over a 2-3 yr period. Depending on how wastewater characteristics and flows to the plant change in response to increased operations, the City facility could experience greater BOD loading on a daily basis. Under one possible scenario, organic loading from NCBC could increase from 1,060 lbs BOD₅/day to 1,800 lbs BOD₅/day assuming a direct scale-up from annual brewery production (85,000 barrels per year in the future versus 50,000 barrels per year currently). While the incremental increase of approximately 600 lbs BOD₅/day likely represents a worst-case scenario, initial planning for this value may be useful. Assuming that the plant is essentially operating at the organic loading capacity, an increase in trickling filter volume would be warranted to treat the additional BOD. Considering the age and apparent operational issues with the primary trickling filter, replacement of the rock media with a high-rate plastic media should be considered. Based on a preliminary organic loading rate of 50 lbs BOD₅-day/1000 ft³ and a target BOD removal rate of 40 percent through the primary clarifier, an 80 ft diameter primary trickling filter with a plastic media depth of 5 ft would be appropriate.

CITY COUNCIL AGENDA COVER-SHEET
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From: Nancy Batchelder, City Recorder

- ☐ Regular Meeting Agenda Item ☒ Work Session Discussion Topic
- o Add to agenda for _____ meeting.
 - o Continue this item until _____.
 - o Item dismissed.

DATE: February 5, 2015

Title: Discussion Item: Food & Beverage Tax Revenue Policy

Item: As per the Municipal Code all Food and Beverage taxes collected by the City shall be used for financing of improvements to the sanitary or storm sewer systems or the water system.

When the Green Ribbon Committee made the recommendation to enact the Food and Beverage Tax they also recommended that 100% of that tax be used to fund the debt service on the new wastewater system improvements.

In the years since the tax has been enacted, as Budget Officer I have done that by going to that source first each year when looking to fund the loan payments each year. The remaining funds come from the Urban Renewal District, System Development Charges, Sewer Rates, and a portion of the Occupancy Tax in the General Fund.

Councilor Scott has asked that this item be added to the Work Session Agenda this month for discussion because the amount of tax revenue has been in excess of budget expectations and he feels that a written policy is needed.

CITY COUNCIL AGENDA COVER-SHEET
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From: Nancy Batchelder, City Recorder

- ☐ Regular Meeting Agenda Item ☒ Work Session Discussion Topic
- o Add to agenda for _____ meeting.
 - o Continue this item until _____.
 - o Item dismissed.

DATE: February 5, 2015

Title: Discussion: Threshold for Flat Rate Delinquent Charge on Tax Payments

Item: Currently the online tax payment system automatically sends out an invoice for a delinquent charge of \$100 plus 10% interest for any tax payment that has not been made.

This last quarter one of the accounts had an invoice for \$1,3506 and for some reason the check they sent the City was for \$1,3500 leaving a balance of \$6. The system then sent them a delinquent notice and an invoice for \$106.60.

I would like the staff to be allowed to waive the flat delinquency fee for accounts that have made short payments leaving small balances like the case above. Even better would be a threshold in the system that would prevent the fee being added to an account that has a small balance. The 10% interest should still be applied. Perhaps staff could add that fee could add that fee in a subsequent quarter if the balance remained unpaid.

In the meantime the staff would work with the property owner or the manager to collect the balance.

Related Goal:

Reference And Review Material:

Budget Impact:

Additional Information:

Attachments: