

**Appleton Wastewater Treatment Plant  
Operations Synopsis  
January 2019 – March 2019**

**Wastewater Treatment Program**

- The Appleton Wastewater Treatment Plant (AWWTP) final effluent met Wisconsin Department of Natural Resources (WDNR) discharge monitoring reporting limits for carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), and phosphorous. Ammonia limits were met in January and February, but exceeded in March as a result of planned plant maintenance activities. (See Effluent Quality Summary). The plant maintained good treatment and a healthy microbiological population with a sludge retention time of eight days. Dewatering processes functioned well and converted 14.4 Million Gallons (MG) of primary digested sludge to biosolids.

**Summary of Treatment**

<b>Parameter</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>Average</b>
Industrial Flow (MG)	54.9	49.6	49.9	51.5
Domestic Flow (MG)	327.2	205.3	470.7	334.4
Total Flow (MG)	382.1	254.9	520.6	385.9
Influent CBOD Load (Avg Daily lbs)	23,469	24,986	26,324	24,926
Influent TSS Load (Avg Daily lbs)	41,500	43,193	43,173	42,622
Influent Phosphorous Load (Avg Daily lbs)	444	415	514	458
Influent Ammonia Load (Avg Daily lbs)	2,261	2,158	2,161	2,193
Effluent CBOD Load (Avg Daily lbs)	764	782	2,025	1,190
Effluent TSS Load (Avg Daily lbs)	480	1,253	1,169	967
Effluent Phosphorous Load (Avg Daily lbs)	24	35	38	32
Effluent Ammonia Load (Avg Daily lbs)	156	275	1,350	594
% Treatment Removal of CBOD	96.7	96.9	92.3	95.3
% Treatment Removal of TSS	98.8	97.1	97.3	97.7
% Treatment Removal of Phosphorous	94.6	91.6	92.6	92.9
% Treatment Removal of Ammonia	93.1	87.3	37.5	72.6

**Work in Progress:**

- **2017 Appleton Wastewater Plant Improvement Projects** (WAS Pumping System Replacement, High Pressure Blower #3 Replacement, Digester Biogas Mix Compressor Glycol Cooling System): A Pre-Construction meeting was held on March 3, 2019 at the AWWTP with Donohue & Associates and August Winter and Sons Inc. Work proceeding.
- **Chemical Storage Room Rehab/Improvements Project:** August Winter & Sons Inc. initiated construction activities in January 2018. Project completed during the reporting period.
- **Biogas Utilization Study Update:** Project complete. Donohue provided the final report in early January 2019.
- **Briarcliff and Midway Improvement Projects:** Pre-construction meeting was held January 25, 2019. Start of construction is projected to occur in early May 2019.
- **Compost Site Evaluation:** Work in progress on final draft report by Coker Composting and Consulting (Coker).

## Regulatory Summary

- Monthly Discharge Monitoring reports for January, February, and March were filed electronically on time for regulatory compliance.
- Effluent ammonia monthly average limit of 10 mg/l was exceeded in March with an average concentration of 11.12 mg/l reported. A temporary shutdown of the BFP filtrate line was required in March to facilitate piping modifications. This work was necessitated by excessive struvite formation (hard mineral scale) that restricted flow through the pipe. Ammonia rich (average 450 mg/l) filtrate flow was redirected to a point in the liquids process that is not as effective at removing ammonia. BFP filtrate flow was redirected back to the normal process addition point following the successful completion of the piping work on April 10, 2019.

## Laboratory

- All sampling and laboratory testing procedures were performed in accordance with requirements outlined in the AWWTP Wisconsin Pollutant Discharge Elimination System (WPDES) permit.
- Discharge Monitoring Report (DMR) and Health Department testing program objectives associated with sampling and analysis were met during the reporting period.
- Successfully submitted monthly DMR reports for January, February, and March.
- During the period conducted analysis of proficiency samples required for laboratory recertification under Wisconsin Administrative Code NR 149.

**EFFLUENT QUALITY SUMMARY**  
**October 2017/2018 – March 2018/2019**

**Table 1 – 2017/2018 Monthly Permit Summary**

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P (lbs/day)	NH3-N <sup>(1)</sup> (mg/L)	Fecal <sup>(2)</sup> Coliform Colonies/ (100 ml)	Chlorine <sup>(2)</sup> Residual (mg/L)	pH (s.u.)
<b>Permit Limit</b>	<b>25</b>	<b>30</b>	<b>1,322<sup>(3)</sup></b>	<b>1</b>	<b>23<sup>(3)</sup></b>	<b>10, 11, 4.4, 18</b>	<b>400 col/100ml Geo.Mean</b>	<b>0.038 mg/L daily</b>	<b>6.0 - 9.0 daily limit</b>
October 2017	4	5	408	0.23	20.7	0.56	NA	NA	7.2/7.4
November 2017	6	5	386	0.21	17.6	2.01	NA	NA	7.1/7.3
December 2017	6	5	408	0.25	20.1	5.80	NA	NA	7.1/7.3
January 2018	8	4	331	0.16	12.4	2.82	NA	NA	7.0/7.3
February 2018	6	4	337	0.31	26.0	3.47	NA	NA	7.0/7.3
March 2018	6	2	211	0.39	34.6	4.63	NA	NA	7.2/7.5

**Table 2 – 2018/2019 Monthly Permit Summary**

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P (lbs/day)	NH3-N <sup>(1)</sup> (mg/L)	Fecal <sup>(2)</sup> Coliform Colonies/ (100 ml)	Chlorine <sup>(2)</sup> Residual (mg/L)	pH (s.u.)
October 2018	5	4	510.00	0.26	31.8	0.89	NA	NA	7.4/7.6
November 2018	7	3	304.60	0.22	21.0	1.59	NA	NA	7.4/7.5
December 2018	5	4	672.90	0.30	27.9	3.25	NA	NA	6.2/7.5
January 2019	8	5	480.00	0.23	24.0	1.37	NA	NA	6.8/7.1
February 2019	10	16	1,253.00	0.46	35.0	3.58	NA	NA	6.8/7.2
March 2019	13	6	1,169.00	0.25	38.0	<b>11.12</b>	NA	NA	7.0/7.4

**NOTES:**

- 1) Seasonal NH3-N limits: 10 mg/L Jan. 1 – Mar. 31, 11 mg/L Apr. 1 – May 31, 4.4 mg/L June 1 – Sep 30, 18 mg/L Oct 1 – Dec 31.
- 2) Seasonal fecal and residual chlorine limits are in effect May 1st through September 30<sup>th</sup>. Limit of Detection 0.032 mg/L.
- 3) April 1, 2017 WPDES Reissuance with new TSS limits expressed as monthly concentration limit (mg/L) and loading limit (lbs).  
 The future TMDL phosphorus limit will be 23 lbs/day expressed as a 6-month average.

**YEAR 2019 RECEIVING STATION REVENUE**

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 192,964.32	\$171,666.63	\$ 206,654.56										\$ 571,285.51
Dean Foods	\$ -	\$ -	\$ -										\$ -
Hickory Meadows	\$ 38,366.69	\$ 36,715.45	\$ 55,880.13										\$ 130,962.27
Holland Sanitary Dist. 1	\$ -	\$ -	\$ -										\$ -
Jeff Waldvogel Trkg.	\$ 37,371.58	\$ 30,251.53	\$ 36,648.35										\$ 104,271.46
Movin Materials	\$ -	\$ -	\$ -										\$ -
Waldvogel Trucking	\$ 2,514.92	\$ 1,833.16	\$ 2,605.28										\$ 6,953.36
<b>2019 Total</b>	\$ 271,217.51	\$240,466.77	\$ 301,788.32	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 813,472.60
<b>2018 Total</b>	\$230,054.73	\$225,457.71	\$278,712.95	\$330,081.94	\$416,028.68	\$333,628.29	\$322,323.96	\$276,553.18	\$328,181.16	\$302,376.00	\$274,097.90	\$ 258,720.18	\$ 3,576,216.68

Holland Sanitary District 1 new customer in March 2018  
 Dean Foods new customer in April 2018  
 3% Rate Increase effective 1/1/18  
 1% Rate Increase effective 1/1/19

Date: April 15, 2019  
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 Utilities Committee