

Appleton Wastewater Treatment Plant

Synopsis

January 2018 – March 2018

Wastewater Treatment Program

- The Appleton Wastewater Treatment Plant (AWWTP) final effluent met all Wisconsin Department of Natural Resources (WDNR) discharge monitoring reporting limits including carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), phosphorous, and ammonia. (See Table 1). The plant maintained good treatment and a healthy microbiological population with a sludge retention time of eight days. Dewatering processes functioned well and converted 14.2 Million Gallons (MG) of primary digested sludge to biosolids.

Table 1 - Summary of Treatment

Parameter	January	February	March	Average
Industrial Flow (MG)	48.6	45.5	52.8	49.0
Domestic Flow (MG)	230.4	219.0	275.4	241.6
Total Flow (MG)	279.0	264.5	328.2	290.6
Influent CBOD Load (lbs)	830,899	807,424	902,661	846,995
Influent TSS Load (lbs)	1,509,468	1,472,991	1,720,573	1,567,677
Influent Phosphorous Load (lbs)	16,640	14,967	16,853	16,153
Influent Ammonia Load (lbs)	82,666	67,602	71,728	73,999
Effluent CBOD Load (lbs)	16,603	13,212	16,095	15,303
Effluent TSS Load (lbs)	10,265	9,443	6,539	8,749
Effluent Phosphorous Load (lbs)	385	727	1,072	728
Effluent Ammonia Load (lbs)	6,569	8,070	12,739	9,126
% Treatment Removal of CBOD	98.0	98.3	98.2	98.2
% Treatment Removal of TSS	99.3	99.4	99.6	99.4
% Treatment Removal of Phosphorous	97.7	94.9	93.5	95.4
% Treatment Removal of Ammonia	92.2	88.1	81.9	87.4

Work in Progress:

- **2017 Appleton Wastewater Plant Improvement Project:** This project is comprised of four individual capital improvement projects which includes WAS Pumping System Replacement, High Pressure Blower #3 Replacement, Digester Biogas Mix Compressor Glycol Cooling System, and Final Effluent Firm Pump Capacity Improvements. Donohue & Associates continued preliminary design services associated with the improvements project. This includes engineering services as part of the updated hydraulic analysis (*reference October 3, 2017 Utilities Informational Memorandum for additional details*). The tentative start of the construction bidding phase is June 2018.
- **Chemical Storage Room Rehab/Improvements Project:** August Winter & Sons Inc. initiated construction activities in January 2018. A pre-construction meeting was held at the AWWTP on January 11, 2018. Demolition and associated construction activities commenced in early February. Substantial project completion is anticipated to occur in July 2018.
- **Biogas Utilization Study Update:** Donohue and Associates (Donohue) submitted a draft Digester Biogas Utilization Report for review in late 2017. At that time the Facilities Management Department (FMD) was concurrently working on a project that would add a high efficiency boiler to support the lower heating loop at the AWWTP. Subsequent discussions with FMD led to a

decision by the Utilities Department to temporarily delay finalization of the report based upon the initial findings that indicated the new lower loop boiler should utilize a portion of the excess biogas that is produced. FMD is currently working with Donohue to incorporate improvements including new biogas boiler, new biogas conveyance piping, mixing, boiler operational set points, automated controls, and operational strategies. These improvements are intended to further optimize the use of two existing upper loop boilers while facilitating the new lower loop biogas boiler in addition to other potential future biogas utilization upgrades. Donohue will proceed to amend the draft report once the full scope and costs of the aforementioned improvements is known.

- **Spartan Drive Lift Station:** The AWWTP is supporting the Department of Public Works as part of the new Spartan Drive lift station construction project. Equipment start-up and testing activities commenced on December 8, 2017 and were completed on December 15, 2017. Official start-up of the Spartan Drive lift station occurred in early January, concurrent with successful abandonment of the Clearwater Creek lift station.
- **Briarcliff and Midway Improvement Projects:** On March 21, 2018 Common Council approved the engineering contract for the Briarcliff and Midway Road Lift Station Improvements Projects to McMahon. Preliminary engineering to initiate during the next reporting period subsequent to contract execution.

Regulatory Summary

- Monthly Discharge Monitoring reports for January, February and March were filed electronically on time for regulatory compliance.

Laboratory Program

- Program objectives for regulatory and process sampling and analysis were met including results for the Discharge Monitoring Report (DMR) and Health Department pool testing program.
- Lab personnel completed the analysis of Double Blind Proficiency samples for laboratory recertification.
- Lab staff began compliance monitoring sampling and pretreatment monitoring sampling of 2018 requirements.
- Staff is preparing for Disinfection Season monitoring activities

EFFLUENT QUALITY SUMMARY
October 2016/2017 – March 2017/2018

Table 1 – 2016/2017 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P (lbs/day)	NH3-N ⁽¹⁾ (mg/L)	Fecal Coliform Colonies/ (100 ml)	Chlorine ⁽²⁾ Residual (mg/L)	pH (s.u.)
<i>Permit Limit</i>	25	30	1,322 ⁽³⁾	1	23 ⁽³⁾	10, 11, 4.4, 18	400 col/100ml Geo.Mean	0.038 mg/L daily	6.0 - 9.0 daily limit
Oct 2016	5	4	342	0.70	62.4	3.54	NA	NA	6.5/6.9
Nov 2016	5	5	447	0.42	35.9	1.45	NA	NA	6.5/6.8
Dec 2016	3	4	406	0.27	27.8	0.59	NA	NA	7.0/7.1
Jan 2017	4	3	344	0.23	26.3	2.28	NA	NA	7.1/7.3
Feb 2017	4	2	218	0.17	18.5	1.14	NA	NA	7.1/7.3
Mar 2017	3	1	136	0.06	9.4	1.58	NA	NA	7.1/7.3

Table 2 – 2017/2018 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P (lbs/day)	NH3-N ⁽¹⁾ (mg/L)	Fecal Coliform Colonies/ (100 ml)	Chlorine ⁽²⁾ Residual (mg/L)	pH (s.u.)
Oct 2017	4	5	408	0.23	20.7	0.56	NA	NA	7.1/7.2
Nov 2017	6	5	386	0.21	17.7	2.01	NA	NA	7.0/7.1
Dec 2017	6	5	408	0.25	20.1	5.90	NA	NA	7.1/7.3
Jan 2018	8	4	331	0.16	12.4	2.82	NA	NA	7.0/7.3
Feb 2018	6	4	337	0.31	26.0	3.47	NA	NA	7.0/7.3
Mar 2018	6	2	211	0.39	34.6	4.63	NA	NA	7.2/7.5

NOTES:

- 1) Seasonal NH3-N limits: 10 mg/L Jan. 1 – Mar. 31, 11 mg/L Apr. 1 – May 31, 4.4 mg/L Sep 30 – Sep 30, 18 mg/L Oct 1 – Dec 31.
- 2) Seasonal fecal and residual chlorine limits are in effect May 1st through September 30th. * April 1, 2017 WPDES Reissuance with new TSS limits expressed as monthly concentration limit (mg/L) and loading limit (lbs).
- 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 2018 RECEIVING STATION REVENUE

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 166,686.94	\$170,841.65	\$ 213,882.79										\$ 551,411.38
Hickory Meadows	\$ 19,432.60	\$ 17,842.90	\$ 15,000.34										\$ 52,275.84
Holland Sanitary Dist. 1	\$ -	\$ -	\$ 5,694.90										\$ 5,694.90
Jeff Waldvogel Trkg.	\$ 41,977.54	\$ 34,849.86	\$ 42,214.17										\$ 119,041.57
Movin Materials	\$ -	\$ -	\$ -										\$ -
Waldvogel Trucking	\$ 1,957.65	\$ 1,923.30	\$ 1,920.75										\$ 5,801.70
2018 Total	\$ 230,054.73	\$225,457.71	\$ 278,712.95	\$ -	\$ -	\$ -	\$ 244,134.28	\$214,324.93	\$222,482.09	\$257,598.16	\$ -	\$ -	\$ 734,225.39
2017 Total	\$172,735.08	\$184,476.03	\$223,618.34	\$231,886.70	\$227,389.07	\$273,509.72	\$244,134.28	\$214,324.93	\$222,482.09	\$257,598.16	\$225,732.80	\$ 223,703.96	\$ 2,701,593.16

Movin Materials new hauler in April 2017
 Holland Sanitary District 1 new customer in March 2018
 3% Rate Increase effective 1/1/18

Date: April 12, 2018
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 Utilities Committee