

**Appleton Wastewater Treatment Plant  
Synopsis  
October 2017 - December 2017**

**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), pH, phosphorous, and ammonia. (See Table 1). The plant maintained good treatment and a healthy microbiological population with a sludge retention time of seven and one half days. Dewatering processes functioned well and converted 14.4 Million Gallons (MG) of primary digested sludge to biosolids.

**Table 1 - Summary of Treatment**

<b>Parameter</b>	<b>October</b>	<b>November</b>	<b>December</b>	<b>Average</b>
Industrial Flow (MG)	57.4	52.2	53.8	54.5
Domestic Flow (MG)	280.9	252	239.1	257.3
Total Flow (MG)	338.3	304.2	292.9	311.8
Influent CBOD Load (lbs)	875,873	826,489	841,740	848,034
Influent TSS Load (lbs)	1,547,328	1,407,430	1,596,602	1,517,120
Influent Phosphorous Load (lbs)	18,954	15,627	15,527	16,703
Influent Ammonia Load (lbs)	66,707	67,887	72,356	68,983
Effluent CBOD Load (lbs)	10,686	14,483	13,549	12,906
Effluent TSS Load (lbs)	12,644	11,580	12,654	12,293
Effluent Phosphorous Load (lbs)	643	530	624	599
Effluent Ammonia Load (lbs)	1,591	5,291	14,295	7,059
% Treatment Removal of CBOD	98.8%	98.2%	98.4%	98.5%
% Treatment Removal of TSS	99.2%	99.2%	99.2%	99.2%
% Treatment Removal of Phosphorous	96.6%	96.6%	96.0%	96.4%
% Treatment Removal of Ammonia	97.6%	92.2%	80.2%	90.0%

**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. During the reporting period Donohue & Associates continued preliminary design services associated with the improvements project. This includes engineering services as part of the updated hydraulic analysis (*may 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:** On December 6, 2017 Common Council approved contract award August Winter & Sons Inc. A pre-construction meeting will be scheduled for January 2018.
- **Biogas Utilization Study Update: Donohue:** Updated biogas characteristic testing was conducted in early October 2017. The gas testing and analysis was completed in advance of McCotter Energy Systems (original equipment manufacturer representative) scheduled site visit on October 23, 2017 as part of inspection of the existing Hurst biogas boilers. This information is being utilized by

Donohue to assess alternative operational set points, automated controls, and various operational strategies that will provide more reliable boiler equipment operation under various gas quality conditions. The findings and recommendations will be used to appropriately evaluate the other alternatives listed within the draft Digester Gas Utilization Report.

- **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 is scheduled to occur in early January 2018 concurrent with successful abandonment of the Clearwater Creek lift station.

### **Regulatory Summary**

- Monthly Discharge Monitoring reports for October, November and December were filed electronically on time for regulatory compliance. The 2017 4th quarter short form was also submitted.

### **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 Single Blind Proficiency samples for laboratory recertification.
- Lab staff conducted compliance monitoring sampling and pretreatment monitoring sampling to complete compliance with 2017 requirements.

**EFFLUENT QUALITY SUMMARY**  
**July - December 2016/2017**

**Table 1 – 2016 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 Coliform Colonies/ (100 ml)	Chlorine <sup>(2)</sup> Residual (mg/L)	pH (s.u.)
<i>Permit Limit</i>	25	30	1,322 <sup>(3)</sup>	1.0	23 <sup>(3)</sup>	10, 11, 4.4, 18	400 col/100ml Geo.Mean	0.038 mg/L daily	6.0 - 9.0 daily limit
July	4	3	245	0.39	33.8	0.74	7	<0.01	7.0/7.2
August	4	3	196	0.42	31.7	1.92	3	<0.01	7.0/7.2
September	4	2	229	0.28	27.7	1.51	15	<0.01	6.8/6.9
October	5	4	342	0.70	62.4	3.54	NA	NA	6.5/6.9
November	5	5	447	0.42	35.9	1.45	NA	NA	6.5/6.8
December	3	4	406	0.27	27.8	0.59	NA	NA	7.0/7.1

**Table 2 – 2017 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 Coliform Colonies/ (100 ml)	Chlorine <sup>(2)</sup> Residual (mg/L)	pH (s.u.)
July	3	2	231	0.17	15.8	1.10	19	<0.01	7.1/7.4
August	4	4	317	0.26	22.9	1.14	9	<0.01	7.1/7.4
September	4	3	284	0.30	25.4	0.66	23	<0.01	7.1/7.3
October	4	5	408	0.23	20.7	0.56	NA	NA	7.1/7.2
November	6	5	386	0.21	17.7	2.01	NA	NA	7.0/7.1
December	6	5	408	0.25	20.1	5.9	NA	NA	7.1/7.3

**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 30<sup>th</sup>. \* 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 2017 RECEIVING STATION REVENUE**

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 118,361.74	\$128,962.99	\$ 159,597.37	\$ 162,154.77	\$ 149,221.72	\$173,976.28	\$ 166,571.15	\$131,635.84	\$139,721.87	\$171,850.75	\$ 155,983.50	\$ 155,724.27	\$ 1,813,762.25
Hickory Meadows	\$ 27,521.03	\$ 19,802.84	\$ 26,208.74	\$ 24,713.06	\$ 34,503.32	\$ 50,488.94	\$ 27,292.89	\$ 30,661.10	\$ 35,120.72	\$ 36,699.60	\$ 26,892.65	\$ 25,527.92	\$ 365,432.81
Jeff Waldvogel Trkg.	\$ 24,968.84	\$ 33,040.15	\$ 34,780.25	\$ 36,016.73	\$ 41,377.45	\$ 46,962.54	\$ 48,136.60	\$ 49,779.37	\$ 45,571.70	\$ 46,858.32	\$ 41,035.22	\$ 40,401.08	\$ 488,928.25
Moovin Materials	\$ -	\$ -	\$ -	\$ 6,331.87	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 6,331.87
Waldvogel Trucking	\$ 1,883.47	\$ 2,670.05	\$ 3,031.98	\$ 2,670.27	\$ 2,286.58	\$ 2,081.96	\$ 2,133.64	\$ 2,248.62	\$ 2,067.80	\$ 2,189.49	\$ 1,821.43	\$ 2,052.69	\$ 27,137.98
<b>2017 Total</b>	\$ 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	\$ 223,705.96	\$ 2,701,593.16
<b>2016 Total</b>	\$172,642.52	\$174,844.28	\$214,615.28	\$194,073.19	\$147,993.22	\$166,671.53	\$177,531.77	\$179,398.93	\$213,707.36	\$178,214.32	\$184,882.22	\$ 156,865.52	\$ 2,161,440.14

\*Moovin Materials new hauler in April 2017

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