

**Appleton Wastewater Treatment Plant
Operations Synopsis
April 2021 – June 2021**

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. The plant maintained good treatment and a healthy microbiological population with a sludge retention time of 10.0 days. Dewatering processes functioned well and converted 17.5 million gallons (MG) of primary digested sludge to biosolids.

Summary of Treatment

Parameter	April	May	June	Average
Industrial Flow (MG)	29.6	27.9	26.5	28.0
Domestic Flow (MG)	363.4	322.8	288.8	325.0
Total Flow (MG)	393.0	350.7	315.3	353.0
Influent CBOD Load (Avg Daily lbs)	22,466	21,158	24,849	22,824
Influent TSS Load (Avg Daily lbs)	45,244	46,207	57,851	49,767
Influent Phosphorous Load (Avg Daily lbs)	479	461	471	470
Influent Ammonia Load (Avg Daily lbs)	2,270	2,116	1,798	2,061
Effluent CBOD Load (Avg Daily lbs)	595	540	430	522
Effluent TSS Load (Avg Daily lbs)	344	180	206	243
Effluent Phosphorous Load (Avg Daily lbs)	21	21	22	21
Effluent Ammonia Load (Avg Daily lbs)	178	94	46	106
% Treatment Removal of CBOD	97.4	97.4	98.3	97.7
% Treatment Removal of TSS	99.2	99.6	99.6	99.5
% Treatment Removal of Phosphorous	95.6	95.4	95.3	95.5
% Treatment Removal of Ammonia	92.2	95.6	97.4	95.1

Work in Progress:

- 2019 Appleton Wastewater Plant Improvement Projects: The project includes replacement of the Return Activated Sludge (RAS) pumps, process piping modifications (e.g. blended sludge, filtrate, waste gas flare), outside secondary chemical offloading containment repairs, primary clarifiers #5 & #6 drive replacements (2020 CIP), and H-Building effluent pump replacements (2020 CIP). Staab Construction (Staab) initiated construction activities in January 2021. During the reporting period work was completed associated with the blended sludge pipe replacement, filtrate pipe modifications, outside secondary chemical offloading containment repairs, and waste gas flare rehabilitation. Primary Clarifier #5 and #6 replacement work and RAS pump replacement work is scheduled to begin during the next quarter. Final project completion is scheduled for March 2022.
- Appleton Wastewater Plant Sludge Storage Building Addition: Applied Technologies, Inc. (ATI) advanced preliminary engineering services as part of the Sludge Storage Building (SSB) Addition Phase I Conditions Assessment and Project Alternatives report. A series of meetings and workshops were held during the reporting period with staff to review current site conditions obtain necessary data and information and elicit perspectives of issues requiring solutions. These meetings also provided an opportunity for staff to share past observations, current, and expected future operational and facility needs as well as

deficiencies. ATI provided three design concepts for consideration which were vetted by project team members with one concept chosen for further development. ATI will be refining this concept based on a prioritized list of improvements (e.g. repairs, equipment replacement, and building access) along with a schedule of estimated costs to construct the SSB addition and 600 yards per year biosolids compost processing area in 2022 and 2023.

- 2021 Appleton Wastewater Plant Solids Dewatering Equipment Upgrades: McMahon Associates, Inc. (McMahon) continued engineering services as part of the Solids Dewatering Equipment Upgrades project. McMahon facilitated a series of in-person and remote meetings with staff during the reporting period to obtain necessary data and information that will be compiled within the Phase I Conditions Assessment and Project Alternatives report. Alternative dewatering technologies were evaluated as part of the preliminary evaluation. However, the type of belt filter press equipment used presently appear to be the most efficient and economical technology to carry forward as part of the replacement and/upgrade construction project in 2022 and 2023.
- 2021 Secondary Clarifier Drive Rebuild Project: On June 2, 2021, Common Council approved contract award for the removal, rebuilding, and reinstallation of drive equipment on Secondary Clarifiers #1 through #6 to Sabel Mechanical. Common Council also approved the sole source purchase of the associated rebuild parts through the original equipment manufacturer, Evoqua. The equipment purchase order to Evoqua was subsequently submitted on June 14, 2021. Work will commence by Sabel Mechanical upon receipt of the rebuild parts which expected to have up to an 8-to-10-week lead time.

Regulatory Summary

- Monthly Discharge Monitoring reports for April, May, and June were filed electronically on time for regulatory compliance.

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.
- Analysis of Single-Blind Proficiency samples for laboratory recertification occurred during the reporting period.
- Sampling of influent in support of Wisconsin State Lab of Hygiene COVID Sewage Surveillance continued during the reporting period.

Staffing & Training

- Staff returned to pre-COVID-19 work schedules and areas.
- Following the retirement of Solids Operator Dave Konetzke in December 2020, Common Council approved a table of organization change in January to reclassify a solids operator to a fourth utility worker position. Liquids Operator Anthony Rottier was hired for the new utility worker position and his vacancy has been filled by the hiring of John Beneke in May.
- Liquids Operator Elizabeth Martin resigned in June. The hiring process was immediately initiated with interviews conducted on June 24th.

EFFLUENT QUALITY SUMMARY
January 2020/2021 – June 2020/2021

Table 1 – 2020-2021 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P ⁽³⁾ (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
January 2020	8	3	256	0.11	11	4.41	NA	NA	6.9/7.5
February 2020	5	3	229	0.11	9	7.53	NA	NA	6.9/7.1
March 2020	9	3	586	0.11	19	5.45	NA	NA	6.9/7.2
April 2020	6	2	218	0.11	12	4.51	NA	NA	6.9/7.1
May 2020	6	3	413	0.16	20	4.33	4	<0.100	6.7/7.1
June 2020	9	3	586	0.11	17	5.45	2	<0.032	6.9/7.2
Nov - April Period Average ⁽³⁾					13	May - October Period Average ⁽³⁾			18

Table 2 – 2020-2021 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P ⁽³⁾ (lbs/day)	NH3-N ⁽¹⁾ (mg/L)	Fecal Coliform Colonies/ (100 ml)	Chlorine ⁽²⁾ Residual (mg/L)	pH (s.u.)
January 2021	7	2	161	0.27	19	11.70	NA	NA	6.9/7.3
February 2021	8	6	420	0.33	24	14.20	NA	NA	7.0/7.3
March 2021	7	4	473	0.22	25	1.74	NA	NA	7.0/7.2
April 2021	5	3	344	0.19	21	1.62	NA	NA	7.1/7.2
May 2021	5	2	180	0.21	21	1.00	4	<0.032	6.9/7.1
June 2021	5	2	206	0.25	22	0.52	4	<0.032	6.9/7.2
Nov - April Period Average ⁽³⁾					22	May - October Period Average ⁽³⁾			21

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 30th. 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 during the months of May – October and November – April.

YEAR 2021 RECEIVING STATION REVENUE

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 110,206.08	\$ 99,576.28	\$ 112,441.21	\$ 114,069.65	\$ 128,729.06	\$ 118,096.94							\$ 683,119.22
Buttles Custom Ag	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -							\$ -
Hickory Meadows	\$ 20,276.34	\$ 25,312.36	\$ 29,607.87	\$ 35,278.49	\$ 27,916.08	\$ 27,265.29							\$ 165,656.43
Holland Sanitary Dist. 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -							\$ -
Jeff Waldvogel Trkg.	\$ 28,287.42	\$ 30,970.38	\$ 34,544.27	\$ 42,086.75	\$ 39,497.32	\$ 36,605.25							\$ 211,991.39
Movin Materials	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -							\$ -
Waldvogel Trucking	\$ 1,844.16	\$ 1,556.53	\$ 1,975.58	\$ 1,869.36	\$ 1,817.53	\$ 1,893.85							\$ 10,957.01
2021 Total	\$ 160,614.00	\$157,415.55	\$ 178,568.93	\$ 193,304.25	\$ 197,959.99	\$ 183,861.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,071,724.05
2020 Total	\$153,426.62	\$137,976.81	\$175,878.03	\$179,887.25	\$181,558.27	\$202,129.38	\$205,556.34	\$175,571.51	\$170,679.26	\$195,882.29	\$188,313.41	\$ 180,651.32	\$ 2,147,510.49

3% Rate Increase effective 1/1/18

1% Rate Increase effective 1/1/19

5% Rate Increase effective 10/1/20

Date: July 20, 2021

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Utilities Committee