

FAIRFIELD, PA MUNICIPAL WASTEWATER TREATMENT PLANT

Chesapeake Bay Initiative Compliance on a Small Municipal Budget

October 6, 2016



DESIGN CHARACTERISTICS

	Influent	Effluent
PEAK FLOW (MGD)	0.6	0.6
AVG. FLOW (MGD)	0.3	0.3
TEMPERATURE (C)	10	–
BODs (mg/l)	250	< 20
TSS (mg/l)	250	< 20
TKN (mg/l)	40	–
AMMONIA-N (mg/l)	35	< 1
TOTAL-N (mg/l)	–	< 8
TOTAL-P (mg/l)	12	< 1
FECAL (mpn/100ml)	–	< 200

OVERVIEW

The Town of Fairfield, PA was in a tough position. On one side, environmental regulations of the Chesapeake Bay Initiative were forcing an upgrade to a 40+ year old conventional activated sludge wastewater treatment plant. On the other, the extremely constrained economic environment made that a difficult proposition.

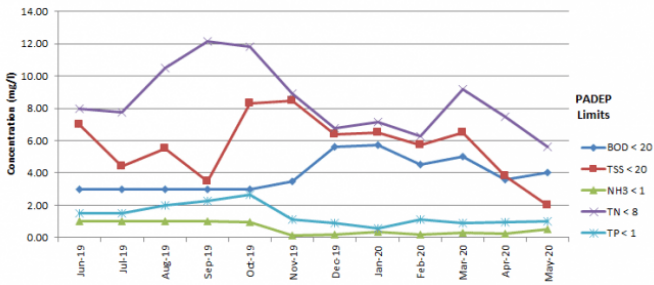
Consulting engineer C.S. Davidson, Inc. sought treatment technologies that could meet tight effluent standards for discharge to the Chesapeake Bay at a cost that was reasonable for a small town.

Additionally, an aging collection system that suffered from persistent Infiltration & Inflow (I&I) required a solution that could treat the town's wastewater effectively under both average and significantly higher peak daily flow conditions. Design average and peak daily flow rates are 0.3 and 0.6 million gallons per day (MGD) respectively.

An Aquapoint AquaCELL™ Moving Bed Biofilm Reactor (MBBR) treatment system was specified for its proven enhanced nutrient removal (ENR) capability, ease of operation for the town's two-man operations group and cost effective design. The Aquapoint treatment system was able to incorporate some tanks from the previous plant for aerobic digesters, further contributing to cost savings.

PERFORMANCE DATA

Fairfield Municipal System Performance Data



DATE	BOD5 (mg/l)	TSS (mg/l)	Nh3 (mg/l)	TN (mg/l)	TP (mg/l)
JUN. 2019	3.00	7.00	1.00	7.96	1.50
JUL. 2019	3.00	4.40	1.00	7.78	1.50
AUG. 2019	3.00	5.50	1.00	10.53	2.00
SEP. 2019	3.00	3.50	1.00	12.15	2.25
OCT. 2019	3.00	8.30	0.96	11.83	2.67
NOV. 2019	3.50	8.50	0.13	8.89	1.14
DEC. 2019	5.60	6.40	0.19	6.78	0.89
JAN. 2020	5.75	6.50	0.34	7.13	0.58
FEB. 2020	4.50	5.75	0.18	6.28	1.13
MAR. 2020	5.00	6.50	0.27	9.16	0.89
APR. 2020	3.60	3.80	0.25	7.50	0.95
MAY 2020	4.00	2.00	0.49	5.60	1.01
AVG.	3.91	5.68	0.57	8.47	1.38

- System Commissioned: October 2012
- Detectable Limit for BOD & TSS: Permit based on total maximum annual load NOT effluent concentration
- Data Source: PA DEP Records

SYSTEM DIAGRAM

