

MUNICIPAL

BLOOMINGDALE, MI USA

CMFF® technology

Project Name:	Bloomington WWTP Upgrade
Location:	Bloomington, MI USA
Type of Plant:	Municipal - Nitrification
Technology Used:	Biowater CMFF®
Biomedia Used:	Biowater BWT-X®
Operational Since:	2013



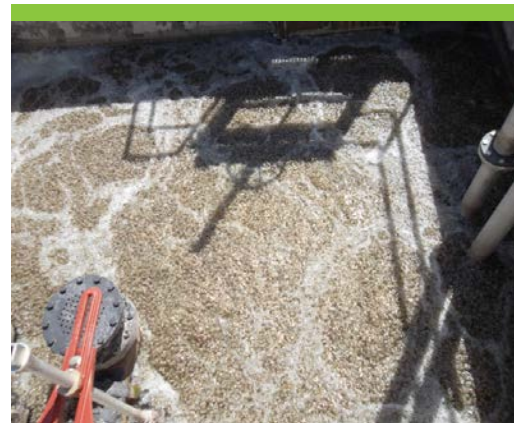
Overview of the Bloomington plant

The Challenge

Bloomington's existing wastewater treatment plant has unique challenges associated with seasonal fluctuation from regional school and food processor discharges. The existing lagoon cannot meet new ammonia limits, and cold wastewater temperature exacerbates the problem.

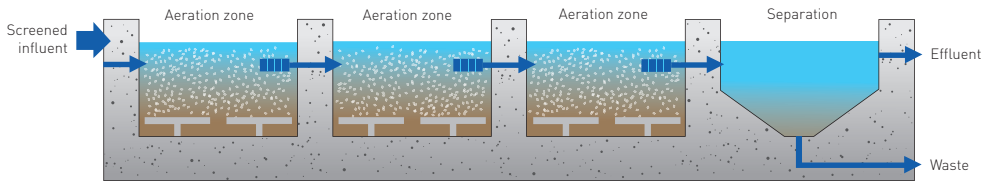
The Design

The municipality selected Biowater's CMFF® biological process, which is based on the MBBR (Moving Bed Biofilm Reactor) concept in which biofilm are fluidized in the bed and remove organics and nitrify



Bloomington CMFF® Process Basin in operation

ammonia and TKN. The CMFF® process in Bloomingdale is a three-stage aerobic process followed by gravity clarification as shown.



Seasonal Design Challenges

PARAMETER	WINTER (SEPT - JUNE) SCHOOL	SUMMER (JULY - AUGUST) FRUIT PROCESSOR
Average daily flow, process design	0.085 MG/D	0.121 MG/D
Maximum daily flow	0.138 MG/D	0.189 MG/D
Peak instantaneous flow, sieve design	400 gpm	400 gpm
BOD ₅	224 mg/L	575 mg/L
TSS	224 mg/L	183 mg/l
Ammonia-N	22 mg/L	12 mg/l
TKN	41 mg/L	22 mg/L
Phosphorous	8 mg/L	5 mg/L
pH	6.5 - 8 su	6.5 - 8 su
Alkalinity	240 - 350 mg/L	240 - 350 mg/L
Residual DO	4.0 mg/L	3.0 mg/L
Wastewater temperature	8°C	12°C

Achievements

Biowater's CMFF® process was successfully started up in winter/spring 2013. Performance testing was a success, and the system meets the effluent design criteria:

PARAMETER	LIMIT/TARGET	ACTUAL
scBOD	<5mg/L	2mg/L
NH ₃	<5.5 mg/L	3mg/L



Close up BWTX with solids

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Biowater Technology is an innovative company with over forty years of experience in the Biological treatment field. Our focus is on saving energy and resource recovery, with water as our major resource.