



Blyth Sewage Treatment Plant 2021 Annual Report

Owned by the Township of North Huron and Operated by Veolia Water Canada

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Blyth STP Environmental Compliance Approval #9189-A6UPSM

The Following is a summary and discussion of the 2021 Blyth Sewage treatment plant operation and summary of compliance limits as set forth in the ECA.

The Annual Average Rated Capacity of the Treatment Unit is 730 m³/d with Peak Capacity of 2730 m³/d.

Based on Raw Sewage Flows, the 2021 annual average flows were 444m³/day which represents 61% of the annual 730 m³/day capacity. The maximum Peak Monthly average flow of 2251m³/d occurred in November 2021 represents 82% of the peak capacity.

Bypass Events

There were four bypass events for the Blyth Sewage Treatment plant in 2021, one of the bypasses was measured as a primary bypass. The bypass occurred due to a mechanical/equipment failure. The three other bypasses were measured as secondary bypasses. The bypasses occurred due to heavy precipitation. The longest bypass was in November with 27.45 hours of primary bypassing. The total number of bypass hours for 2021 were: 27.5 Primary bypass hours and 54.95 Secondary bypass hours with a total measured volume of 4.604 X 1000m³.

Compliance limits

The plant consistently removed 98.7% Biological Oxygen demand, 97.8% total suspended solids, 95.7% phosphorus and 97.6% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

Operational Problems

The Blyth Sewage treatment plant was supposed to be dechlorinated by January 1 2021; In 2021, the township received temporary approval to use Dechlor pucks with frequent monitoring of the chlorine residuals at the discharge. It was found that the Dechlor pucks were decreasing the DO (dissolved oxygen) in the receiving stream. Temporary permission was given to start using Vita-d-chlor powder with frequent monitoring of the DO, pH, temp, and chlorine residual at the receiving stream.

This is a pilot dechlor run being done with BMROSS, and are working on a UV system and sand filters for the Blyth Sewage treatment plant which should be installed and completed in 2022.

Maintenance

Routine maintenance was performed throughout the year, according to the computerized maintenance program Jobsplus.

Replaced 2 flygt pump guide rails on two pumps (new stainless steel 2' pipe and 4 stainless steel brackets)

Quality Control Monitoring

Monitoring includes an online dissolved oxygen sensor which indicates loading and raw sewage quality, aeration basin solids content and proper operations of the aerators. Secondary clarifier effluent is monitored for dissolved phosphorus to determine adequate ferric chloride dosage in aeration basins as well as general clarity and surface debris which indicates proper solids removal. Adequate return to the aeration and wasting rates. It was decided we would no longer monitor for ammonia in house due to the toxicity of the reagent.

The flowmeter measures the flow out of the treatment plant and is used to base dosages and treatment plant capacity. Results of monitoring activities can be viewed on the monthly spreadsheets.

Calibration and Maintenance

The flowmeters were calibrated annually in 2021. Iconix Waterworks calibrated the flow meters and the V-Notch weir, and certificates are stored at the PUC Office. The pH analyzer is calibrated monthly and recorded in the log books.

Efforts to meet effluent objectives

As described in the quality control monitoring section, analytic and visual parameters are used as indicators of process efficiency and should fall within the critical control points. A summary of values was developed and is in the Blyth sewage treatment facility operations manual for reference and historically have been adequate to maintain compliance.

Biosolids Generated

A total of 631m³ was hauled from Blyth Sewage Treatment plant to the Wingham Sewage treatment plant by OGI industries. There were no opportunities for land application in the year 2021. We would predict roughly that 640m³ will be utilized, hauled and applied in 2022.

Complaints

There were no complaints to report during the 2021 operating year.

Tables

Attached in the report are: data summary; compliance summary; sludge metals summary; Bypass and overflow events

Blyth Sewage Treatment Plant													2021 DATA SUMMARY							
Flows	January	February	March	April	May	June	July	August	September	October	November	December	Total	Avg Flow	Maximum	% Cap				
Total Flows	13009	10136	19895	13293	11085	10480	10499	9866	11846	15539	20141	16165	161954	444	20141	60.8				
Avg	420	362	642	443	358	349	339	318	395	501	671	521			671					
Max	524	548	1765	643	432	647	634	415	1112	1060	2251	1305			2251					
														Average	Max.	Removal Efficiency%				
Raw Sewage	January	February	March	April	May	June	July	August	September	October	November	December								
CBOD	97	155	104	148	145	217	224	221	177	133	239	139		166.36	239	98.7				
SS	69	113	82	131	105	160	78	153	164	194	151	112		125.85	194	97.8				
TP	2.43	3.91	2.07	3.99	4.28	5.37	4.15	4.27	3.93	3.20	3.87	3.24		3.72	5.37	95.7				
TKN	24.15	31.40	16.03	24.65	36.00	36.85	33.85	36.20	25.25	25.00	26.30	21.90		28.13	36.85	97.6				
pH	7.59	7.66	7.56	7.42	7.76	7.48	7.48	7.51	7.33	7.56	7.89	7.50		7.57	7.89					
Final Effluent	January	February	March	April	May	June	July	August	September	October	November	December		Average	Max.					
CBOD	3.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.5	2.0	2.0		2.17	3.0					
SS	2.0	2.0	2.3	2.0	5.0	5.0	2.5	2.7	2.0	2.0	2.5	2.5		2.71	5.00					
Ammonia	0.10	0.10	0.10	0.36	0.10	0.06	0.10	69.40	16.73	0.20	0.20	0.10		7.30	69.40					
TKN	1.40	1.00	0.53	0.53	0.50	0.70	0.55	0.53	0.85	0.55	0.55	0.55		0.69	1.40					
TP	0.19	0.11	0.07	0.10	0.18	0.21	0.21	0.22	0.19	0.18	0.14	0.13		0.16	0.22					
NO2	0.03	0.03	0.03	0.07	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03		0.03	0.07					
NO3	14.25	19.85	11.10	16.90	20.30	18.65	18.50	23.13	8.38	13.90	13.20	16.35		16.21	23.13					
pH	7.50	7.48	7.39	7.44	7.41	7.53	7.58	7.52	7.51	7.62	7.63	7.56		7.51	7.63					
E. Coli	33	85	135	39	104	6	22	15	16	73	80	13		52	135					
Tot CI Res.	0.15	0.19	0.19	0.14	0.13	0.14	0.13	0.16	0.15	0.14	0.71	0.12		0.20	0.20					

Blyth STP Compliance Summary			2021									
Flows	January	February	March	April	May	June	July	August	September	October	November	December
Peak Flow	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730
Actual	524	548	1765	643	432	647	634	415	1112	1060	2251	1305
Comp.Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Av Day Flow	730	730	730	730	730	730	730	730	730	730	730	730
Actual	420	362	642	443	358	349	339	318	395	501	671	521
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CBOD&TSS	15	15	15	15	5	5	5	5	5	5	15	15
CBOD	3.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.5	2.0	2.0
TSS	2.0	2.0	2.3	2.0	5.0	5.0	2.5	2.7	2.0	2.0	2.5	2.0
Loading Kg	11	11	11	11	3.7	3.7	3.7	3.7	3.7	3.7	11	11
CBOD Kg	1.26	0.72	1.28	0.89	0.72	0.87	0.68	0.64	0.79	1.25	1.34	1.04
TSS Kg	0.84	0.72	1.50	0.89	1.79	1.75	0.85	0.85	0.79	1.00	1.68	1.04
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tot P	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	1	1
Actual	0.19	0.11	0.07	0.10	0.18	0.21	0.21	0.22	0.19	0.18	0.14	0.14
TP Load Kg	0.7	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.7	0.7
Act. TP Kg	0.08	0.04	0.05	0.04	0.06	0.07	0.07	0.07	0.08	0.09	0.09	0.07
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NH 3&4	17	21	14	6	3	1	1	1	1	3	3	11
Actual	0.10	0.15	0.13	0.12	0.12	0.12	0.14	0.08	0.11	0.10	0.11	0.23
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

NH 3	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Actual	0.0005	0.0004	0.0004	0.0012	0.0007	0.0007	0.0013	0.0040	0.0015	0.0014	0.0011	0.0008
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tot Cl Res (limit)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Month Max.	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.19	0.19	0.19
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
pH	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9
Actual	7.50	7.48	7.39	7.44	7.41	7.53	7.58	7.52	7.51	7.62	7.63	7.56
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
E. Coli	200	200	200	200	200	200	200	200	200	200	200	200
Actual GMD	33	85	135	39	104	6	22	15	16	73	80	13
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N

Blyth Compliance summary Shows that in September the Max chlorine residual in the month was 0.20mg/L, the monthly average is 0.20mg/L which is below the limit of 0.20mg/L. The Total chlorine residual is not a compliance limit but is an objective therefore this is not a compliance concern.

Quarterly Metals Calculations Report		2021				
Parameter						
Date	Jan 19-21	Apr 13-21	Jul 6-21	Oct 26-21	Nov 30-21	Average
Total Solids	28000	38100	27900	39300	31400	32940
TKN	1470	1910	1790	2060	1540	1754
NH 3&4	232	329	669	115	420	353
NO2	3	4.6	0.2	0.2	0.4	1.68
NO3	< 0.3	0.3	0.3	0.3	0.3	0.3
NO2+NO3	3	4.6	0.3	0.3	0.4	1.72
Arsenic	< 0.2	0.3	0.2	0.4	0.3	0.28
Cadmium	7.8	0.026	0.021	0.032	0.024	1.5806
Cobalt	0.16	0.22	0.18	0.31	0.19	0.212
Chromium	2.5	3.2	2.7	4.8	3.1	3.26
Copper	8.5	12	10	17	11	11.7
Mercury	0.002	0.006	0.005	0.006	0.006	0.005
Potassium	90	99	98	110	78	95
Molybdenum	0.29	0.32	0.26	0.4	0.35	0.324
Nickel	0.7	0.94	0.79	1.4	0.87	0.94
Phosphorous	620	960	760	1300	790	886
Lead	0.4	0.5	0.4	0.6	0.4	0.46
Selenium	< 0.1	0.1	0.1	0.1	0.1	0.1
Zinc	15	18	14	24	15	17.2
Ecoli DW	17857	34121	19355	25445	98726	39100.8
Ecoli /100 ml	50000	130000	54000	100000	310000	128800
pH						
Tank in " to Top						
Volume in m3	941	941	941	941	941	
Volume at 4%	659	896	656	925	739	0
Solids Kg	26354	35860	26259	36989	29554	0

*See Bypass event description on Page 2

Table 1 BYPASS AND OVERFLOW EVENTS BLYTH STP

FACILITY NAME:		Blyth STP								YEAR:		2021					
Date (dd/mm/yy)	Location	Type (See Legend for description)	Start Time	Duration (hours)	Volume (1,000m3)	M/E	Disinfection (Y/N)	Treatment (Y/N)	Reason Code*	Sample Results					Ref #		
										CBOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	E.Coli (/100ml)			
Mar 11-21	Blyth	SB	9:55	18	1.463	M	Y	Y	1	11	8	0.15		9900	904916		
Nov 6-21	Blyth	PB	4:00	27.5	0.6	E	Y	N	4	41	54	0.99	16.8	63	1-1DP2JC		
Nov 17-21	Blyth	SB		17.45	1.35	M	Y	Y	1, 2	5	24	0.43	0.6	<1000	1-1EY2YE		
Dec 11-21	Blyth	SB	4:30	19.50	1.191	M	Y	Y	1	8	21	0.39	1	330	1-1G3TJH		
				82.45	4.604												
<u>Legend</u>																	
PB = Primary Bypass						M = Measured		Y = Yes		*Reason Codes:							
SB = Secondary Bypass						E = Estimated		N = No		1 = Heavy Precipitation			6 = Process Upsets				
STPO = Sewage Treatment Plant Overflow												2 = Spring Runoff			7 = Power Outages		
CSO = Combined Sewer Overflow												3 = Infiltration			8 = Unknown		
SSO = Sanitary Sewer Overflow												4 = Mechanical/Equipment Failure			9 = Other, please comment below.		
STWO = Satellite Treatment Works Overflow												5 = Pipe Failures(break/leak/plugged)					
Comments:																	

Report Completed by: Veolia Water

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