



Blyth Sewage Treatment Plant 2023 Annual Report

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

Blyth Sewage Treatment Plant 2023 Annual Report

Blyth STP Environmental Compliance Approval #9189-A6UPSM & (DRAFT CLI ECA 090-W601 Issue #1)

The Following is a summary and discussion of the 2023 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 2023 annual average flows were 443m³/day which represents 60.7% of the annual 730 m³/day capacity. The Peak flow of 1634m³/d occurred in April 2023 and represents 60% of the Peak Capacity of the plant.

Bypass Events

There were 8 bypass events for the Blyth Sewage Treatment plant in 2023, all of the bypasses were measured secondary bypasses. The bypasses occurred due to heavy precipitation and/or spring runoff, the aging filters are also contributing factors in the bypasses as they cannot handle the higher flows which are occurring now with less flow than we have historically seen them handle. The longest bypass was in February with 61.34 hours of secondary bypassing. The total number of bypass hours for 2023 were: 282 Secondary bypass hours with a total measured volume of 11,561m³

Compliance limits

The plant consistently removed 98.4% Biological Oxygen demand, 97.7% total suspended solids, 90.9% phosphorous and 94.1% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations other than a slight drop in phosphorus removal.

In May 2023 our Monthly Geometric Mean for E.Coli exceeded our Limit of 200cfu/100mL with a Monthly Geometric Mean result of 401cfu/100mL- this exceedance was reported to our MECP Inspector at month end

Operational problems

The Blyth Sewage treatment plant has been dechlorinating the final effluent using calcium thiosulfate since April 2022, in 2023 we had an average chlorine residual of 0.01mg/L. The Township has Engineering working on The UV system and sand filters for the Blyth Sewage treatment plant which should be installed and completed in the future. The Filters have been plugging and not backwashing efficiently- Many corrective actions and troubleshooting has occurred to try to alleviate the number of Bypasses including replenishing the filter media, monitoring the number of backwashes

Noticing Ferric Pump is not always Dosing correctly- corrective action to monitor Ferric pump dose more closely and Ferric Tank Measurements with a new Monthly work order developed starting in 2024.

Maintenance

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

Unplanned maintenance activities in 2023:

Repair breaker board for clarifier arm

New pH sensor

Generator Replaced Belts and gauges, installed new guard over belt

Filter Media ordered and replenished

Installed new knife gate valve

Cleaned Grit Channel

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 phosphorous 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.

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 are calibrated annually. Advanced Meter Systems calibrated the flow meters and the V-Notch weir, the certificates are stored at the PUC Office. We aim to Calibration the pH analyzer monthly and record it in the log books and daily site spreadsheets- calibration was not recorded on the pH analyzer in January 2023.

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 972cubic meters were utilized in 2023 and hauled/applied by Ontario Greenways Inc to agriculture lands.

We would predict roughly 900m³ will be utilized, hauled and applied in 2024.

Complaints

There were no complaints to report during the 2023 operating year.

Tables

Attached in the report are:

Data summary

compliance summary

sludge metals summary

Bypass and overflow events

Blyth Sewage Treatment Plant

2023 DATA SUMMARY

Flows	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg Flow	Max	% Cap
Total Flows	16471	15289	19305	15609	12392	9679	10435	10011	9482	12271	13594	17293	161831	443	19305	60.7
Avg	531	546	623	520	400	323	337	323	316	396	453	558			623	
Max	1386	1812	1596	1634	529	480	643	524	399	763	1098	1256			1812	

														Ave	Max.	Removal Efficiency%
Raw Sewage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec				
BOD5	125	188	53	126	205	134	87	135	177	171	224	173		149.64	224	98.4
TSS	108	92	55	114	126	95	119	97	129	111	149	121		109.50	149	97.7
TP	2.35	2.59	1.15	2.66	3.99	4.00	3.87	3.69	3.91	3.23	4.04	2.50		3.13	4.04	90.9
TKN	17.07	19.50	13.00	21.65	29.15	31	38.45	32.13	35.30	25.50	29.70	20.50		26.04	38.45	94.1
pH	7.52	7.55	7.61	7.58	7.54	7.55	7.54	7.63	7.62	7.56	7.68	7.63		7.58	7.68	

Final Effluent	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Average	Max.
E. Coli	2	21	60	30	401	96	33	21	11	4	4	15		58	401
CBOD5	2.00	3.50	2.00	2.00	2.50	2.00	2.00	2.00	2.00	2.00	3.00	3.00		2.33	3.50
TSS	3.00	2.00	2.00	2.50	2.00	3.50	3.50	2.33	2.00	2.00	2.50	2.50		2.49	3.50
TP	0.27	0.73	0.22	0.44	0.16	0.30	0.20	0.25	0.27	0.19	0.27	0.15		0.29	0.73
TKN	1.70	1.45	1.30	1.65	0.50	1.70	1.15	0.77	1.15	0.63	0.80	5.50		1.52	5.50
NH3&4	0.83	0.10	0.10	0.10	0.10	0.95	0.10	0.10	0.10	0.10	0.15	3.55		0.52	3.55
NO2	0.14	0.03	0.03	0.03	0.04	0.05	0.03	0.03	0.17	0.03	0.04	0.55		0.10	0.55
NO3	7.92	9.30	9.26	8.07	17.51	15.95	4.41	15.05	10.70	9.70	7.34	7.89		10.26	17.51
pH	7.44	7.40	7.44	7.44	7.52	7.43	7.54	7.59	7.72	7.55	7.61	7.46		7.51	7.72
Tot Cl Res.	0.18	0.20	0.20	0.16	0.15	0.15	0.13	0.13	0.15	0.15	0.16	0.14		0.16	0.20

Blyth STP Compliance Summary 2023

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	1386	1812	1596	1634	529	480	643	524	399	763	1098	1256
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	531	546	623	520	400	323	337	323	316	396	453	558
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	2.0	3.5	2.0	2.0	2.5	2.0	2.0	2.0	2.0	2.0	3.0	3.0
TSS	3.0	2.0	2.0	2.5	2.0	3.5	3.5	2.3	2.0	2.0	2.5	2.5
Loading Kg	11	11	11	11	3.7	3.7	3.7	3.7	3.7	3.7	11	11
CBOD Kg	1.06	1.91	1.25	1.04	1.00	0.65	0.67	0.65	0.63	0.79	1.36	1.67
TSS Kg	1.59	1.09	1.25	1.30	0.80	1.13	1.18	0.75	0.63	0.79	1.13	1.39
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	0.27	0.73	0.22	0.44	0.16	0.30	0.20	0.25	0.27	0.19	0.27	0.15
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	0.14	0.40	0.14	0.23	0.06	0.10	0.07	0.08	0.08	0.08	0.12	0.08
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	0.83	0.10	0.10	0.10	0.10	0.95	0.10	0.10	0.10	0.10	0.15	3.55
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
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Actual	0.0028	0.0004	0.0004	0.0007	0.0008	0.0071	0.0014	0.0013	0.0021	0.0010	0.0015	0.0281
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.	0.20	0.20	0.20	0.20	0.20	0.21	0.20	0.20	0.20	0.21	0.34	0.34
Monthly Average	0.18	0.16	0.17	0.16	0.15	0.15	0.13	0.13	0.15	0.15	0.14	0.14
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
Min	7.09	7.24	7.23	6.55	7.32	7.27	7.22	7.45	7.56	7.41	7.46	7.24
Max	7.87	7.83	7.92	7.89	8.03	7.97	7.68	7.72	7.82	7.68	7.77	7.64
Average	7.44	7.44	7.44	7.44	7.52	7.43	7.54	7.59	7.72	7.55	7.61	7.46
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	2	21	60	30	401	96	33	21	11	4	4	15
Comp. Y/N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y

Quarterly Metals Calculations Report 2023						
Parameter						
Date	Jan 17-23	Apr 11-23	July 4-23	Aug 8-23	Oct 10-23	Average
Total Solids	8110	19400	26000	25600	28000	19778
TKN	503	930	1480	1730	1390	1160.75
NH 3&4	169	212	443	554	260	345
NO2	< 0.2	2	< 3	3	3	2.05
NO3	< 0.3	< 0.3	< 3	3	3	1.65
NO2+NO3	< 0.3	2	< 3	3	3	2.1
Arsenic	< 0.1	0.2	0.2	0.2	0.2	0.2
Cadmium	< 0.005	0.012	0.018	0.019	0.018	0.014
Cobalt	0.04	0.1	0.14	0.16	0.16	0.11
Chromium	0.54	1.3	1.8	2.1	2.2	1.44
Copper	2.3	5.7	8.8	9.8	9.2	6.65
Mercury	0.001	0.003	0.004	0.004	0.005	0.003
Potassium	76	93	120	132	89	105
Molybdenum	0.1	0.16	0.23	0.27	0.25	0.19
Nickel	0.19	0.49	0.78	0.87	0.81	0.58
Phosphorous	180	462	760	863	915	566
Lead	0.2	0.4	0.5	0.6	0.6	0.4
Selenium	< 0.1	< 0.1	0.1	0.1	0.1	0.1
Zinc	3	10	14	15	14	10.5
Ecoli DW	53021	118557	15385	15625	32143	50647
Ecoli /100 ml	43000	230000	40000	40000	90000	88250
pH						

Table 1 BYPASS AND OVERFLOW EVENTS Blyth STP

FACILITY NAME: Blyth STP 2023

Sample Results

Date (dd/mm/y)	Location	Type (See Legend for description)	Start Time	Duration (hours)	Volume (1,000m ³)	M/E	Disinfection (Y/N)	Treatment (Y/N)	Reason Code*	CBOD ₅ (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	A+A (mg/L)	E.Coli (cfu/100 ml)	Ref #
Dec 31-Jan 2	Blyth STP	SB	11:16	51	3.036	M	Y	Y	1	13	10	0.62	5	3.6	70	1-2FQ1PI
Feb 9-23	Blyth STP	SB	21:24	61.34	2.638	M	Y	Y	1	5	3	0.28	1.3	0.1	300	1-2HSNZ7
Mar 17-23	Blyth STP	SB	12:28	44.5	1.943	M	Y	Y	1	4	6	0.3	0.5	0.1	139	1-32XFEX
Jul 13-23	Blyth STP	SB	03:55	3.34	0.295	M	Y	Y	1	8	24	0.3	1.9	0.1	NDOG	1-3MLYFW
Nov 9-23	Blyth STP	SB	12:10	9.1	0.504	M	Y	Y	1	4	14	0.22	0.7	0.1	159	1-4DAI5Z
Dec 4-23	Blyth STP	SB	19:26	11	0.296	M	Y	Y	1	<12	10	0.29	3	1.7	6000UAL	1-4GUS2K
Dec 24-23	Blyth STP	SB	16:51	49.66	0.899	M	Y	Y	4	6	8	0.23	7.6	6.6	1000	1-4JXEF9
Dec 27-23	Blyth STP	SB	9:09	52.06	1.95	M	Y	Y	1	5	8	0.29	2.9	2.3	610	1-4K17ID
Total				282	11.561											

Legend

PB = Primary

Bypass

SB = Secondary

Bypass

STPO = Sewage Treatment Plant
Overflow

CSO = Combined Sewer
Overflow

SSO = Sanitary Sewer Overflow

STWO = Satellite Treatment Works
Overflow

Comments:

M = Measured Y = Yes

E = Estimated N = No

*Reason Codes:

1 = Heavy

Precipitation

2 = Spring Runoff

3 = Infiltration

4 = Mechanical/Equipment

Failure

5 = Pipe

Failures(break/leak/plugged)

6 = Process

Upsets

7 = Power

Outages

8 = Unknown

9 = Other, please

comment below.

Report Completed by: Veolia Water

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