

Wingham Sewage Treatment Plant 2022 Annual Report

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

Wingham Sewage Treatment Plant 2022 Annual Report

Wingham STP ECA 1040-9HAN94 issued May 30, 2014 and #3557-7UNPUR (Aug 11, 2009-Air)

The Following is a summary and discussion of the 2022 Wingham Sewage treatment plant operation and summary of compliance limits as set forth in the Wingham STP ECA 1040-9HAN94 Issued May 30 2014.

The Rated Capacity of the Treatment Unit is 3,400m³ average daily flow

Based on Raw Sewage Flows, the 2022 annual average daily flow was 2049m³/day which represents 60.3% of the 3400m³/day capacity. The maximum Peak flow of 5306m³ occurred in December which represents 156% of the capacity.

Bypass Events

There were no bypass or overflow events that occurred during 2022 from the Wingham sewage treatment plant

Compliance limits

The plant consistently removed 97.8% Biological Oxygen demand, 96.5% total suspended solids, 88.4% phosphorous and 95.1% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

Operational problems

There were no major problems encountered during the 2022 operating year.

Maintenance

Routine maintenance was performed throughout the year, such as oil changes in gear drives and cleaning UV lights.

Repairs to reduction gearbox & coupler (Approx \$5000.00)

New Flyghts and chains for the Wingham STP Clarifier (Approx \$8000)

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 clarifiers 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 solids return to the aeration and wasting rates.

The raw sewage flowmeter measures the flow going to the treatment plant and is used to base dosages and treatment plant capacity. The final effluent flow meter measures flow to the UV lights and does not represent the hydraulic loading of the plant but rather is a sum of the flow through the plant and any lagoon discharge. Results of monitoring activities can be viewed on the monthly spreadsheets.

Calibration and Maintenance

There are two flowmeters, raw sewage in and the final effluent discharge volumes. The flowmeters are calibrated yearly this year raw sewage was calibrated by Iconix as well as the final effluent, the 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 these values was developed and is in the Wingham sewage treatment facility operations manual for reference and historically have been adequate to maintain compliance.

Biosolids Generated

A total of 9798 cubic meters were removed from cell 1 in 2015. Approximately 1332m³ of sludge went into the lagoon in 2022, we would estimate approximately the same amount for 2023. Our estimate for 2023 is based on no foreseen increase or decrease in flows, we did not dispose of any sludge in 2022. Estimating the solids volume in a lagoon situation is nearly impossible when there are no terms of reference for the % solids concentration. Many factors go into the volume such as how well the sludge compacts, water depth in the lagoon, temperature, wind action, solids quality, etc. Veolia will be looking at options to do a sludge survey of the lagoons to try to determine when the Sludge will need to be hauled.

Complaints

There were no complaints received as results of the operation of the sewage treatment facility.

Attached in the report is a data summary, compliance summary, sludge metals summary, bypass and overflow summary.

Wingham Sewage Treatment Plant							2022									
Flows Incoming	January	February	March	April	May	June	July	August	September	October	November	December	Total(m3)	Avg(m3)	Max(m3)	% Cap
Flows	52084	66322	102555	84128	71520	64457	52496	54387	44675	50681	45869	58763	747937	2049	102555	60.3
Average	1680	2369	3308	2804	2391	2149	1693	1754	1489	1635	1529	1896				
Max/d	2293	4562	4757	3984	3395	3023	3947	4232	2061	2571	2372	5306			5306	
Raw Sewage													Avg	Max.	%Removal	
CBOD	100	35	73	27	61	65	79	76	58	77	142	54		70	142	96.5
SS	104	30	118	19	64	78	103	42	49	93	129	37		72	129	95.3
TP	2.43	1.89	1.60	0.77	1.12	1.46	1.39	2.17	1.48	1.96	3.30	1.38		1.74	3.30	88.4
TKN	23.40	17.30	14.87	9.20	13.95	17.40	11.55	20.27	15.45	18.40	29.55	13.95		17.11	29.55	95.1
pH	7.64	7.74	7.64	7.49	7.51	7.39	7.69	7.57	7.61	7.69	7.69	7.64		7.61	7.74	
Alkalinity	368	229	347	323	324	344	294	330	286	207	369	346				
Final Effluent																
CBOD	2.0	2.0	4.3	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0		2.44	4.33	
SS	2.0	5.5	5.7	4.0	2.5	2.5	2.0	3.7	3.5	2.0	2.5	4.5		3.36	5.67	
Ammonia	0.15	0.10	0.10	0.45	0.15	0.45	0.10	0.10	0.20	0.15	0.10	0.15		0.18	0.45	
TKN	1.35	0.70	1.80	0.75	0.75	0.55	0.50	0.53	1.40	0.65	0.50	0.50		0.83	1.80	
TP	0.14	0.13	0.14	0.24	0.23	0.33	0.25	0.26	0.19	0.24	0.15	0.14		0.20	0.33	
NO2	0.08	0.49	0.03	0.03	0.04	0.06	0.03	0.05	0.06	0.03	0.06	0.05		0.08	0.49	
NO3	15.35	17.10	10.15	8.27	10.50	13.50	9.85	13.63	18.70	17.55	19.05	14.70		14.03	19.05	
pH	7.78	7.63	7.91	7.85	7.34	7.71	7.75	7.75	7.72	7.74	7.78	7.72		7.72	7.91	
E. Coli	45	532	30	13	7	71	13	33	8	41	21	164		81.59	532	
H2S<	0.02			0.02			0.02			0.02				0.02	0.02	
Alkalinity	253	229	252	288	244	237	231	201	179	207	209	241		231	288	

Wingham STP Compliance Summary				2022								
	January	February	March	April	May	June	July	August	September	October	November	December
Max/day m3	2293	4562	4757	3984	3395	3023	3947	4232	2061	2571	2372	5306
Av Day Flow	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
Actual	1680	2369	3308	2804	2391	2149	1693	1754	1489	1635	1529	1896
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CBOD&TSS	15	15	15	15	15	15	15	15	15	15	15	15
CBOD	2.0	2.0	4.3	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0
TSS	2.0	5.5	5.7	4.0	2.5	2.5	2.0	3.7	3.5	2.0	2.5	4.5
Loading Kg	51	51	51	51	51	51	51	51	51	51	51	51
CBOD Kg	3.36	4.74	14.34	5.61	7.17	4.30	3.39	3.51	2.98	3.27	3.06	7.58
TSS Kg	3.36	13.03	18.75	11.22	5.98	5.37	3.39	6.43	5.21	3.27	3.82	8.53
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tot P	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Actual	0.14	0.13	0.14	0.24	0.23	0.33	0.25	0.26	0.19	0.24	0.15	0.14
TP Load Kg	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Act. TP Kg	0.23	0.30	0.47	0.66	0.55	0.71	0.42	0.45	0.28	0.39	0.23	0.26
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
H2S	0	0	0	0	0	0	0	0	0	0	0	0
Actual(<)	0.02			0.02			0.02			0.02		
Comp. Y/N	Y			Y			Y			Y		
pH	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0
Average	7.78	7.63	7.91	7.85	7.34	7.71	7.75	7.75	7.72	7.74	7.78	7.72
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	45	532	30	13	7	71	13	33	8	41	21	164
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NH 3&4	3	3	3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	3	3
Actual	0.15	0.10	0.10	0.45	0.15	0.45	0.10	0.10	0.20	0.15	0.10	0.15
NH 3&4 Load/d	0.25	0.24	0.33	1.26	0.36	0.97	0.17	0.18	0.30	0.25	0.15	0.28
Limit kg/d	10.7	10.7	10.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	10.7	10.7
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	0.002	0.001	0.001	0.004	0.002	0.009	0.002	0.002	0.003	0.003	0.001	0.002
Comp. Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

- Ecoli result of 532 Occurred in February during the Freezing period, therefore while it exceeded the 200 organisms per 100mL Monthly Geometric mean- it is not considered an exceedance

2022	Wingham STP Sludge Metals Summary					
Parameter						
Date	Jan 18-22	Apr 12-22	Jul 5-22	Oct 11-22	Oct 25-22	Average
Total Solids	4610	13500	11900	10400	9600	10002
TKN	157	638	567	490	486	
NH 3&4	4.5	16	5.6	4.6	4.5	7.04
NO2	0.8	0.5	0.3	1.7	2	1.06
NO3	1.1	0.3	5.5	7.2	3	3.42
NO2+NO3	1.9	0.5	5.5	8.9	3	3.96
Arsenic	< 0.1	0.1	0.1	0.1	0.1	0.1
Cadmium	< 0.005	0.007	0.006	0.005	0.005	0.0056
Cobalt	< 0.01	0.03	0.03	0.04	0.003	0.0226
Chromium	0.15	0.64	0.7	0.67	0.65	0.562
Copper	1.4	6.6	7.4	6.2	6.2	5.56
Mercury	0.004	0.005	0.007	0.005	0.006	0.0054
Potassium	17	54	50	37	30	37.6
Molybdenum	< 0.05	0.08	0.1	0.11	0.13	0.094
Nickel	0.06	0.28	0.31	0.28	0.25	0.236
Phosphorous	55	240	300	230	205	206
Lead	< 0.1	0.2	0.3	0.2	0.2	0.2
Selenium	< 0.1	0.1	0.1	0.1	0.1	0.1
Zinc	< 1	4	5	5	5	4
EC cfu DW	1670282	1103704	3781513	2884615	1437500	2175522.8
EC cfu WW	770000	1490000	4500000	3000000	1380000	2228000

Table 1 BYPASS AND OVERFLOW EVENTS

Table 1 BYPASS AND OVERFLOW EVENTS													
FACILITY NAME:		Wingham Sewage					YEAR:		2022				
Date (dd/mm/yy)	Location	Type (see legend)	Start Time	Duration (hours)	Volume (1000m3)	M/E	Disinfection (Y/N)	Treatment (Y/N)	Reason Code*	Sample Results			
										BOD5 (mg/L)	SS (mg/L)	TP (mg/L)	E.Coli (/100ml)
<u>Legend</u>													
*Reason Codes:													
PB = Primary Bypass		M = Measured		Y = Yes		1 = Heavy Precipitation		6 = Process Upsets					
SB = Secondary Bypass		E = Estimated		N = No		2 = Spring Runoff		7 = Power Outages					
STPO = Sewage Treatment Plant Overflow						3 = Infiltration		8 = Unknown					
CSO = Combined Sewer Overflow						4 = Mechanical/Equipment Failure		9 = Other, please comment below.					
SSO = Sanitary Sewer Overflow						5 = Pipe Failures(break/leak/plugged)							
STWO = Satellite Treatment Works Overflow													
Comments:													

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