ST THO THE RAILWAY	MAS	Report No. ES13 -23 File No.
Directed to:	Mayor Joe Preston and Members of City Council	Date Authored: Feb 12, 2022 Meeting Date: Mar 6, 2023
Department:	Environmental Services	Attachment Water Pollution Control Plant 2022 Annual Performance Report
Prepared By:	Joe Daly, Environmental Coordinator	
Subject:	St. Thomas Water Pollution Control Plant - 2022 Annual Performa	ance Report

Recommendation:

THAT: Report ES13-23, St. Thomas Water Pollution Control Plant - 2022 Annual Performance Report be received for information.

Background:

The St. Thomas Water Pollution Control Plant - 2022 Annual Performance Report summarizes laboratory test results, volumes of treated wastewater, production and utilization of fertilizer, and maintenance of equipment.



Throughout 2022 all laboratory test results indicated that the Water Pollution Control Plant effluent quality discharging to Kettle Creek was within the approval limits. Average flows indicate the plant is at 60% rated capacity. Plant capacity is significantly influenced by Inflow and Infiltration from rain events and city expansion a new plant study has been started and is ongoing.

In 2022 the WPCP average daily flow was 16,299m3 or

60% of the daily average limit. By eliminating 100% of the cities inflow and infiltration the plant would see a daily average flow of approximately 11,000m3 or 40% of the daily average limit. However, the realistic target of eliminating inflow and infiltration would get the plant average daily flow to 50%. A 4 million litre storage tank in Mill Creek mitigates wet weather spikes in flow but cannot contain all extreme precipitation or melt events.

The City of St. Thomas has an ongoing commitment to eliminate bypass and overflow events by strategically upgrading and separating storm/sanitary sewer systems along with eliminating downspouts and illegal connections to the sanitary sewer system. Early 2022 a pollution prevention control plan was completed. In 2022 a wastewater management master plan was created and an "Investing in Canada infrastructure program" grant is to be allocated towards optimization of plant flows during wet-weather and to reduce overflow events.

Odour control is a reality of all treatment plants and can only be mitigated and not eliminated. In 2022 procedural and operational changes have significantly reduced odour complaints since 2020. To further enhance odour control, council authorized new aerated storage tanks for design and construction in 2022/2023.

Env. Services



Financial Impact: The treatment plant has a replacement value of \$95M and has a sustainable asset condition based on current and projected funding.

Respectfully Submitted,

Joe Daly Environmental Coordinator

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Reviewed By:

The Mensell

Planning

City Clerk

John Mansell C.E.T. Manager of Pollution Control

HR

Other

ST. THOMAS WATER POLLUTION CONTROL PLANT

2022 Annual Performance Report

Amended Environmental Compliance Approval

Number# 6122-BRHL4L (July28,2020-Present) For the Period: January 1st to December 31st, 2022

Prepared by: Joe Daly



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1 Monitoring Data Overview:

For the purposes of this report the St. Thomas Water Pollution Control Plant shall be referred to as 'the plant' and Ontario Ministry of the Environment, Conservation and Parks Amended Environmental Compliance Approval 6122-BRHL4L shall be referred to as the 'ECA'.

The average and peak daily sewage flow limits, 27,300 m³/day/year and 54,600 m³/day respectively, as set out in the ECA, were always maintained throughout 2022, with an annual average day flow of 16,299 m³/day and a peak day flow of 38,871 m³/day in May 2022.

Throughout 2022, the monthly average of all sample parameters were within ECA limits. One objective exceedance occurred in October, 2022 pictured in the graph below.

October	WPCP	Total Ammonia Nitrogen	Objective	1.0 mg/L (May 1- Nov 31)	5.0 mg/L	1.23 mg/l	0.23 over objective.	Increased monitoring and in-house testing. Increased airflow.
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In 2022 there were a total of 6 odour complaints received from 4 different residents. Odour surveys were conducted at the Water Pollution Control Plant and surrounding areas throughout the year, most of which concluded no to minimum odours coming from the WPCP. Strong winds planned or emergency maintenance, and cleaning of the Plant may create stronger than normal odours. Most odours that were detected during these surveys came from different sources, including: Solids Treatment Process, Agricultural and Local Landfills. The City has completed several studies and is in the process of adding additional odour control systems to the plant.

There were 4 instances which were momentary where disinfection was not continuous as detailed in the Table 5-Summary of Effluent Quality Control and Environmental Operating Issues.

As indicated by the data presented in this report, the operations of the St. Thomas Water Pollution Control Plant were both adequate and successful throughout 2022.

The following tables, Table 1 through 4, represent a summary of monitoring data collected at the plant throughout 2022:

1.1 Table 1 – Daily Sewage Flow Summary

WPCP Daily Sewage Flow Summary - 2022 January February March April May June July August September October November December														
Date	January Flow (m3)	February Flow (m3)	March Flow (m3)	April Flow (m3)	May Flow (m3)	June Flow (m3)	July Flow (m3)	August Flow (m3)	September Flow (m3)	October Flow (m3)	November Flow (m3)	December Flow (m3)		
1	20,901	12,958	18,424	20,560	25,574	20,250	12,305	15,140	13,254	11,788	12,185	12,620		
2	20,833	20,823	18,210	19,756	28,130	15,622	11,641	18,676	12,901	11,984	11,716	12,406		
3	19,931	15,900	17,607	19,089	26,845	14,697	11,984	17,230	12,289	11,519	11,544	14,568		
4	19,464	14,572	17,008	18,329	38,871	13,760	12,326	21,378	12,178	11,426	11,517	13,477		
5	20,873	14,049	17,414	17,303	33,831	13,907	14,206	17,903	12,677	11,287	11,523	12,821		
6	18,988	13,950	27,614	18,984	24,862	15,930	12,218	15,136	12,690	11,078	12,026	12,298		
7	18,781	13,562	28,110	18,904	22,533	30,706	11,957	14,294	12,133	11,117	11,277	12,171		
8	17,588	13,164	25,061	17,561	20,912	21,993	12,167	17,203	11,878	11,269	11,102	12,018		
9	20,401	14,412	22,660	17,445	19,796	21,249	11,489	15,587	11,648	10,854	11,161	11,733		
10	17,601	14,189	21,026	17,000	18,687	18,956	11,699	13,707	11,522	11,483	10,995	12,012		
11	16,681	17,423	20,786	18,301	18,063	17,392	11,873	13,205	11,761	10,879	12,105	12,102		
12	15,927	17,057	20,213	17,861	17,427	29,118	11,647	12,728	14,191	11,994	12,181	11,714		
13	15,530	15,304	18,843	17,397	17,106	20,109	11,517	12,325	16,549	19,892	12,774	11,712		
14	16,489	14,468	17,591	17,397	17,026	17,494	11,408	12,197	13,134	13,141	12,079	11,340		
15	15,530	13,900	17,712	17,531	16,840	16,843	11,299	11,977	12,443	12,898	11,945	19,926		
16	15,694	18,075	17,569	26,855	18,674	14,673	11,071	12,097	11,935	12,432	15,063	16,962		
17	14,912	37,934	17,876	20,187	16,331	14,921	11,515	11,899	11,796	12,256	12,809	14,693		
18	14,601	32,322	18,093	20,441	16,298	14,355	15,878	11,754	12,068	16,120	12,393	13,926		
19	15,619	21,983	23,021	28,406	16,212	14,182	19,688	11,698	15,957	15,411	12,312	13,360		
20	14,889	20,227	26,850	33,232	16,137	14,984	18,421	11,619	12,981	13,945	12,340	13,006		
21	14,218	22,777	22,424	33,246	16,048	14,351	14,746	24,647	13,898	12,850	12,340	12,700		
22	14,358	30,552	20,241	30,785	15,080	14,017	13,216	16,755	14,553	12,538	23,257	12,516		
23	14,366	38,546	27,388	26,109	15,356	13,672	12,529	14,999	12,949	12,239	11,572	17,117		
24	13,717	30,122	36,011	23,288	14,771	13,278	21,051	13,383	12,425	12,165	11,333	14,408		
25	13,594	23,351	25,929	24,745	14,255	12,729	14,504	12,888	14,355	11,728	11,358	12,860		
26	13,332	21,193	24,094	22,989	14,307	13,135	13,404	13,714	15,391	12,278	11,469	12,807		
27	13,153	20,107	22,237	21,312	15,209	13,171	12,955	12,363	14,085	11,602	14,451	12,634		
28	12,906	18,337	20,758	19,998	14,182	12,696	12,756	12,290	11,982	11,645	12,913	12,827		
29	13,366		19,727	19,009	14,141	12,694	12,354	16,753	12,230	11,889	12,149	12,827		
30	13,448		20,737	18,637	13,850	12,474	11,843	20,643	11,743	11,818	14,309	33,759		
31	13,050		21,199		13,637		11,779	14,512		13,352		37,944		
Total	500,851	561,257	672,433	642,733	590,991	493,358	407,446	460,700	389,596	386,877	376,198	457,264		
Average	16,156	20,045	21,691	21,424	19,064	16,445	13,143	14,861	12,987	12,480	12,540	14,750		
Maximum	20,901	38,546	36,011	33,246	38,871	30,706	21,051	24,647	16,549	19,892	23,257	37,944		
Minimum	12,906	12,958	17,008	17,000	13,637	12,474	11,071	11,619	11,522	10,854	10,995	11,340		

Monthly Average Sewage Flow Summary													
2022	Total Flow (m3)	Average Flow (m3)	Min. Flow (m3)	Max. Flow (m3) 54,600 m3/day									
January	500,851	16,156	12,906	20,901									
February	561,257	20,045	12,958	38,546									
March	672,433	21,691	17,008	36,011									
April	642,733	21,424	17,000	33,246									
May	590,991	19,064	13,637	38,871									
June	493,358	16,445	12,474	30,706									
July	407,446	13,143	11,071	21,051									
August	460,700	14,861	11,619	24,647									
September	389,596	12,987	11,522	16,549									
October	386,877	12,480	10,854	19,892									
November	376,198	12,540	10,995	23,257									
December	457,264	14,750	11,340	37,944									
Totals	5,939,704	16,299	10,854	38,871									

1.2 Table 2 – Monthly Average Sewage Flow Summary

1.3 Chart 1 – Monthly Average Day Sewage Flow



1.4 Chart 2 – Monthly Maximum Day Sewage Flow



1.5 Chart 3 – Annual Average Day as a percent of WPCP Average Day Flow Capacity



1.6 Weekly Laboratory Analytical Data and Un-ionized Ammonia

		Raw I	nfluent			Final Effluent													
		Total	Total	Total	Ammoniau		Total	Total	Total	Ammoniau			NOT	E Coli	pH@				Uniopized
Date	BOD5	Suspended	Phosphorus	Kjeldahl Nitrogon av	Ammonium	CBOD	Suspended	Phosphorus	Kjeldahl	Ammonium	NO2	NO3	NO2+	(cfu/	Temp	pH (in-	Temp	UV%	Ammonia
	fuißtri	(mg/L)	(mg/L)	N (mg/L)	as N (mg/L)	(mg/c)	(mg/L)	(mg/L)	N (mg/L)	as N (mg/L)	(ing/r/	fuilter	(mg/L)	100mL)	(Cert)	nouse	101	ruwei	(ug/L)
05-Jan-22	121.00	91.00	2.43	20,40	19.60	12.00	8.00	0.32	1.20	0.20	1.28	15.80	17.10	42.00	7.46	7.80	13.50	64.00	3.03
12-Jan-22	120.00	104.00	2.39	23.90	22.00	14.00	14.00	0.35	0.70	0.20	2.11	17.70	19.80	26.00	7.52	6.80	12.90	60.00	0.29
19-Jan-22	142.00	213.00	3.16	28.70	26.80	2.00	4.00	0.37	1.00	0.20	3.12	19.10	22.20	80.00	7.59	7.20	12.40	72.00	0.71
21-Jan-22						1.50	6.40									7.20		60.00	0.00
26-Jan-22			0.000		28.20	3.10	0.000.000	26555		0.08			1000			7.90	10.90	64.00	1.25
26-Jan-22	151.00	446.00	3.47	31.60	27.60	5.00	10.00	0.49	2.90	0.10	1.37	23.50	24.90	324.00	7.47	7.90	10.90	64.00	1.56
Average	155.50	213,30	2,80	20.15	24.04	3.00	6,40	0.56	1,45	0.10	1.97	19.05	21.00	12.94		7.07	13.30	60.00	1.14
02-Feb-22	232.00	317.00	3.64	32,00	28.50	2.00	6.00	0.35	0.25	0.10	0.44	23.10	25.50	46.00	7.47	7.92	11.60	60.00	0.77
16-Feb-22	247.00	268.00	3,29	33.10	24.80	5.00	8.00	0.29	1.90	0.05	0.13	23.80	23.90	20.00	7.49	7.95	11.00	60.00	0.88
23-Feb-22	64.00	84.00	1.14	10.70	7.60	4.00	8.00	0.25	1.40	0.40	0.42	11.60	12.00	34.00	7.61	7.41	11.20	82.00	2.09
Average	156.75	245.75	2.88	27.28	22.05	3.25	7.00	0.36	1.26	0.15	0.30	21.23	21.50	18.81					1.38
02-Mar-22	184.00	327.00	1.98	23.80	21.20	5.00	8.00	0.20	1.40	0.60	0.65	19.20	19.80	8.00	7.57	6.98	11.80	60.00	1.22
09-Mar-22	146.00	190.00	1.86	18.50	15.50	7.00	7.00	0.27	2.70	0.60	0.29	14.70	15.00	70.00	7.74	7.33	10.90	76.00	2.55
17-Mar-22	138,00	131.00	3.16	36.60	28.20	6.00	3.00	0.38	1.10	0.70	0.47	18.80	19.20	90.00	7.76	7.33	11.30	63.00	3.06
30-Mar-22	144.00	135.00	2.15	22.10	17.50	8.00	10.00	0,47	0.60	0.40	0.14	17.40	17.70	20.00	7.42	7.34	13.20	60.00	4.66
Average	149.80	191.60	2.26	24.30	20.24	6.60	6.80	0.32	1.50	0.64	0.36	17.18	17.52	42.53					2.49
06-Apr-22	137.00	133.00	2.56	25.40	22.30	6.00	6.00	0.28	1.00	0.40	0.34	18.10	18.40	68.00	7.62	7.17	13.00	64.00	1.38
13-Apr-22	138.00	141.00	2,40	22.80	20.70	7.00	5.00	0.35	0.25	0.05	0.21	177.00	17.90	142.00	7.60	7.39	14.40	64.00	0.32
20-Apr-22	94.00	241.00	1.26	14.30	13.40	5.00	9.00	0.32	1.50	0.30	0.15	14.00	14.20	408.00	7.64	7.35	13.00	84.00	1.57
27-Apr-22	66.00	57.00	1.57	18.60	15.20	11.00	14.00	0.50	0.25	0.20	0.08	15.80	15.90	120.00	7.52	7.31	12.70	72.00	0.93
Average	108.75	143.00	1.95	20.28	17.90	7.25	8.50	0.36	0.75	0.24	0.20	56.23	16.60	147.46					1.05
04-May-22	53.00	50.00	2.11	11.30	9,50	10.00	16.00	0.38	0.80	0.05	0.08	13.80	13.90	118.00	7.78	7.26	14.40	68.00	0.24
18-May-22	99.00	78.00	1.95	25.20	24.00	2.00	2.00	0.35	0.80	0.05	0.10	20.60	20.70	124.00	7.65	7.17	16.30	64.00	0.24
25-May-22	176.00	233.00	3.23	33.40	23.30	2.00	7.00	0.44	1.00	0.30	0.19	21.40	21.60	92.00	7.40	7.08	15.80	60.00	1.04
Average	103.00	107.25	2.11	24.33	18.90	4.00	8.25	0.44	1.13	0.11	0.11	18.68	18.80	94.00					0,43
01-Jun-22	169.00	187.00	3.07	37.70	30.30	2.00	6.00	0.60	1.20	0.05	0.18	23.70	23.90	46.00	7.90	7.01	17.10	60.00	0.16
08-Jun-22	128.00	178.00	1.40	19.00	11.80	2.00	3.00	0.50	0.90	0.05	0.16	14.50	14.70	104.00	8.01	7.28	16.00	72.00	0.28
15-Jun-22	221.00	156.00	1.93	22.00	20.20	2.00	6.00	0,48	0,25	0.10	0.21	18.40	18.60	40.00	7.76	7,32	18.30	64.00	0.72
22-Jun-22	171.00	195.00	2.13	27.00	24,90	8.00	6.00	0.59	0.25	0.20	0.55	23.00	23,60	98.00	7.47	7.36	17.90	64.00	1.54
28-Jun-22	179.40	163.00	3,48	28.26	29.00	3.60	5.00	0.75	0.76	0.50	0.39	25.60	24.50	97.44	7,55	7.00	19.40	60.00	1.00
06-Jul-22	202.00	219.00	2.77	30.10	23.90	5.00	6.00	0.71	0.60	0.10	0.53	21.10	21.60	24.00	7.91	6.97	19.90	60.00	0.37
13-Jul-22	169.00	69.00	3.42	44.80	31.30	8.00	6.00	0.67	2.80	0.50	0.37	26.10	26.50	30.00	8.20	6.90	19.90	60.00	1.56
20-Jul-22	244.00	311.00	1.77	20.00	18.70	5.00	7.00	0.36	1.50	1.40	0.69	16.40	17.10	62.00	7.04	7.60	20.40	74.00	22.37
28-Jul-22	218.00	536.00	3.63	35.00	28.70	2.00	7.00	0.42	1.20	0.05	0.09	24.20	24.30	8.00	7.68	6.80	20.60	60.00	0.13
Average	208.25	283.75	2.90	32,48	25.65	5.00	6.50	0,54	1.53	0.51	0.42	21.95	22.38	24.45					6.10
03-Aug-22									2105000							7.23	21.10	60.00	0.00
09-Aug-22	267.00	323.00	3.20	28.10	22,00	2.00	7.00	0.36	1.50	0.50	0.48	19.20	19.70	34.00	7.20	7.40	21.00	64.00	5.29
24-Aug-22	136.00	242.00	1.88	45.60	24.40	4.00	7.00	0.4/	1.00	0.05	0.21	19.20	19.40	64.00	7.76	7.10	21.10	60.00	1.38
31-Aug-22	82.00	67.00	2.83	22.40	22,60	2.00	7.00	0.42	0.25	0.10	0.18	16.20	16.40	120.00	7.85	7.40	21.30	68.00	1.08
Average	186.75	214.75	2.95	29.85	25.23	2.25	6.75	0.41	0.75	0.18	0.26	19.65	19.93	51.05					1.61
07-Sep-22	109.00	91.00	3,58	36.00	33.90	5.00	6.00	0.51	0.70	0.10	0.16	23,10	23.30	2.00	7.73	6.93	21.50	60.00	0.37
14-Sep-22	96.00	80.00	2,69	35.10	22.10	4.00	7.00	0.50	0.25	0.05	0.08	23.00	23.10	124.00	7.97	6.87	21.10	64.00	0.16
21-Sep-22	141.00	49.00	2.67	35.60	27.60	6.00	13.00	0.46	0.80	0.05	0.11	21.90	22.00	36.00	7.34	6.70	21.50	60.00	0.11
Average	119.50	76.75	2.57	34.63	27.50	4.25	12.13	0.34	0.79	0.05	0.10	22.90	22.90	29.34	7.55	7.10	20.00	00.00	0.25
05-Oct-22	132.00	155.00	2.90	37.30	33.20	5.00	14.00	0.48	1.20	0.50	0.11	26.50	26.60	92.00	7.33	6.97	20.30	60.00	1.88
12-Oct-22	140.00	109.00	3.87	4.80	2.10	5.00	7.00	0.48	4.80	2.10	0.62	23.40	24.00	6.00	7.27	6.94	19.90	60.00	7.17
19-Oct-22	126.00	102.00	3.41	32.60	26.30	2.00	9.00	0.37	6.20	1.80	1.01	18.50	19.50	52.00	7.53	7.04	18.30	76.00	6.87
26-Oct-22	135.00	64.00	3.67	39.40	32.90	2.00	6.00	0.49	2.10	0.50	1.84	21.30	23.20	192.00	7,40	6.97	19.30	60.00	1.75
Average	133.25	107.50	3.46	28.53	23.63	3.50	9.00	0.46	3.58	1.23	0.90	22.43	23.33	48.45	7.07	6.00	10.77		4.42
02-Nov-22	213.00	98.00	3.34	37.60	32.00	2.00	5.00	0.52	1.50	0.20	0.82	23.00	24,40	184.00	7.61	6.92	17.80	60.00	0.59
16-Nov-22	199.00	347.00	4.30	36.30	29,80	6.00	12.00	0.45	3.00	0.80	0.70	22.80	23.50	38.00	7.29	7.12	17.00	60.00	3.33
23-Nov-22	154.00	85.00	4.22	41.30	34.40	2.00	5.00	0.61	2.90	1.00	0.51	24.40	24.90	6.00	7.10	6.86	15.90	60.00	2.11
30-Nov-22	115.00	262.00	3.92	38.20	30.20	2.00	8.00	0.36	1.80	0.40	0.46	23.80	24.30	10.00	7.73	6.88	15.70	60.00	0.87
Average	164.60	205.00	4.05	39.18	29.92	4.20	7.60	0.48	2.18	0.54	0.79	23.88	24.66	36.94					1.52
07-Dec-22	186.00	184.00	3.50	33.50	30.40	2.00	8.00	0.44	0.25	0.10	0.13	24.80	25.00	14.00	7.85	6.82	14.20	60.00	0.17
14-Dec-22	268.00	327,00	4.66	38.70	33.50	5.00	5.00	0.37	0.25	0.40	0.38	25.60	26.00	12.00	7.82	5.80	15.00	60.00	0.75
28-Dec-22	214.00	70.00	3.27	38.80	32,40	8.00	18.00	0.30	2.60	2.30	1.07	21.70	22.70	5.00	7.63	6.93	13.50	100.00	4.76
Average	207.75	194.25	3.78	36.45	31.50	4.75	9.75	0.37	0.84	0.95	0.58	23.53	24.10	11.97					5.11

Month	# Of Days	Total Flow (m3)	Average Daily Flow (m3)		BOD/CBOD TSS Total Amm (5 mg/L)		т	KN	(1	TP mg/L)	E.coli (200 CFU/ 100 mL)	pH m (6.0- Effli	min/ nax 9.5 on uent)			
2022			(Inf	Eff	Inf	Eff	Eff	Inf	Eff	Inf	Eff	Eff	min	max
lanuaru	21	F00 8F1	16 156	(mg/L)	134	7.4	214	11	0.16	26.15	1.45	2.9	0.383	72	6.9	7.0
January	31	500,851	10,150	(kg/day)	2157	119	3449	178	2.5			46	6.2	/3	0.8	7.9
Fahrmann	20	561 257	20.045	(mg/L)	157	3.3	246	7	0.15	27.28	1.26	2.9	0.36	10		7.05
February	28	561,257	20,045	(kg/day)	3142	65	4926	140	3.0			58	7.2	19	7.41	7.95
March	21	672 422	21 601	(mg/L)	150	6.6	192	6.8	0.64	24.30	1.5	2.3	0.32	42	6.08	7.24
warch	31	672,433	21,691	(kg/day)	3249	143	4156	148	13.9			49	6.9	43	6.98	7.34
Amril	20	642 722	21 424	(mg/L)	109	7.3	143	8.5	0.24	20.28	0.75	1.9	0.36	147	7 17	7 20
Aprii	30	642,733	21,424	(kg/day)	2330	155	3064	182	5.1			42	7.8	147	/.1/	7.39
. Maria	21	500.001	10.004	(mg/L)	103	4.0	107	8.25	0.11	24.33	1.13	2.1	0.44		7.00	7.20
iviay	31	590,991	19,064	(kg/day)	1964	76	2045	157	2.1			40	8.4	94	7.08	7.20
lune	20	402.250	10 445	(mg/L)	179	3.6	163	5.2	0.20	28.26	0.76	2.4	0.58	0.2		7.20
June	30	493,358	16,445	(kg/day)	2950	59	2681	86	3.3			40	9.5	92	′	7.36
	24	107 116	12.142	(mg/L)	208	5.0	284	6.5	0.51	32.48	1.53	2.9	0.54	24	6.0	7.0
July	31	407,446	13,143	(kg/day)	2737	66	3729	85	6.7			38	7.1	24	6.8	7.6
A	21	460 700	14.001	(mg/L)	149.4	1.8	172	5.4	0.14	23.88	0.60	2.4	0.32	F1	7 22	7.0
August	31	460,700	14,861	(kg/day)	2220	27	2553	80	2.1			35	4.8	51	7.23	7.8
Contombor	20	200 505	12.007	(mg/L)	120	4.3	77	12.13	0.06	34.63	0.79	2.9	0.45	20		7.1
September	30	389,596	12,987	(kg/day)	1552	55	997	157	0.8			37	5.9	29	6.7	/.1
Ostahan	21	206 077	12,400	(mg/L)	133	3.5	108	9	1.23	28.53	3.58	3.5	0.46	40		7.04
October	31	386,877	12,480	(kg/day)	1663	44	1342	112	15.3			43	5.7	48	6.94	7.04
November	20	276 102	12 5 40	(mg/L)	165	4.2	205	7.6	0.54	39.18	2.18	4.0	0.48	27	6.02	7 1 2
November	30	370,198	12,540	(kg/day)	2064	53	2571	95	6.8			51	6.0	3/	0.82	/.12
Desember	21	457.264	14 750	(mg/L)	208	4.8	194	9.25	0.95	36.45	0.84	3.8	0.37	12		774
December	31	457,264	14,750	(kg/day)	3064	70	2865	136	14.0			56	5.5	12	0.8	1.14

1.7 Table 4 – Monthly Average Influent/Effluent Concentrations and Loadings

1.8 Chart 4 – Monthly Average Effluent CBOD (mg/L)



1.9 Chart 5 – Monthly Average Effluent Total Suspended Solids (mg/L)



1.10 Chart 6 – Monthly Average Effluent Total Phosphorus (mg/L)



1.11 Chart 7 – Monthly Average Effluent Ammonia + Ammonium (mg/L)



1.12 Chart 8 – Monthly Geomean Effluent E. Coli. (CFU/100 mL)



1.13 Chart 9 – Weekly Effluent pH



2 Data Interpretation:

The following represents a comprehensive interpretation of all monitoring and certified analytical data obtained during the 2022 reporting period, comparing plant effluent quality and quantity to the criteria stipulated in the ECA.

Peak Flow:

The peak day flow measured through the plant was $38,871 \text{ m}^3/\text{day}$ in May 2022. This represents 71% of the ECA peak day rating of 54,600 m³/day.

Average Daily Flow:

The average daily flow for the year measured through the plant in 2022 was 16,299 m³/day. This represents 60% of the ECA average day rating of 27,300 m³/day for any period greater than one (1) calendar year. A three-year average daily flow for 2020–17,013 m³/day ,2021-18,078 m³/day and 2022-16,299 is 17,130 m³/day or 62% of plant capacity.

Overflow, Bypass and Spills:

6 miscellaneous spills occurred in 2022 as detailed in Table 5- Summary of Effluent Quality Control and Environmental Operating Issues. There were no other diversions of sewage from any portion of the Water Pollution Control Plant. Diversions of sewage of this nature are prohibited.

Wet weather overflow events from the Combined Sewer Overflow Facility (ECA#3-1839-98-996) and Sewage Pumping Stations are detailed in Table 6- Summary of Overflows, Bypasses and Spills.

Carbonaceous Biochemical Oxygen Demand (5 day):

The highest monthly average CBOD₅ in effluent was 7.4 mg/L in January of 2022 with an annual average of 4.63 mg/L. Effluent CBOD₅ loadings were highest in April of 2022 at 155 kg/d and averaged 77.69 kg/d over the reporting period. As per the ECA, the monthly average limit of 15 mg/L with monthly average loading limits of 410 kg/d were not exceeded at any time in 2022.

Total Suspended Solids:

The highest monthly average Total Suspended Solids in effluent was 12.1 mg/L in September of 2022 with an annual average of 8.05 mg/L. Effluent TSS Loadings were highest in April of 2022 at 182 kg/d and averaged 130 kg/d over the reporting period. As per the ECA, the monthly average limit of 20 mg/L with monthly average loading limits of 546 kg/d were not exceeded at any time in 2022.

Total Phosphorus:

The highest monthly average Total Phosphorus in effluent was 0.58 mg/L in June of 2022 with an annual average of 0.42 mg/L. Effluent Total Phosphorus Loadings were highest in June of 2022 at 9.5 kg/d and averaged 6.8 kg/d over the reporting period. As per the ECA, the monthly average limit of 1 mg/L with monthly average loading limits of 27 kg/d were not exceeded at any time in 2022.

(Ammonia + Ammonium) Nitrogen:

The highest monthly average (Ammonia + Ammonium) Nitrogen in effluent was 1.23 mg/L in October of 2022 with an annual average of 0.41 mg/L. Effluent (Ammonia + Ammonium) Nitrogen Loadings were highest in October of 2022 at 15.3 kg/d and averaged 6.303 kg/d over the reporting period. As per the ECA, the monthly average limit of 5 mg/L with monthly average loading limits of 137 kg/d were not exceeded at any time in 2022.

Effluent pH:

The effluent pH ranged from 6.7 to 7.95 throughout 2022. As per the ECA, the range limit of 6.0 to 9.5 was maintained throughout the reporting period.

Disinfection:

The highest monthly geomean E. coli was 147 CFU/100 ml in April of 2022. As per the ECA, the monthly geomean limit of 200 CFU/100 ml was not exceeded at any time during the reporting period.

Complaints:

In 2022 there were a total of 6 odour complaints received from 4 different residents. Odour surveys were conducted at the Water Pollution Control Plant and surrounding areas throughout the year, most of which concluded no to minimum odours coming from the WPCP. Strong winds planned or emergency maintenance and cleaning of the Plant may create stronger than normal odours. Most odours that were detected during these surveys came from different sources, including: Solids Treatment Process, Agricultural and Local Landfills. The City has completed several studies and is in the process of adding additional odour control systems to the plant.

3 Operational Summaries:

The following tables, Table 5 through 9, represent a summary of effluent quality assurance/control measures, major maintenance conducted at the plant, measures taken to mitigate environmental and operational problems, future plant alterations and upgrades and monitoring equipment calibration/maintenance procedures:

3.1 Table 5 – Summary of Effluent Quality Control and Environmental Operating Issues <u>WPCP St. Thomas Spill Events</u>

			2022 S	pill, Bypass	and Over	flows a	t Wate	er Pollut	i <mark>on C</mark> o	ontrol	Plan	t and P	ump	ing	Sta	tion	s				
Date	Location	Type of	Reference #	Description/ Details	Response/	Start o	f Event	End of	Event	Duration	Volume	Reason:	TP	TSS	pH	TKN	BOD	CBOD	E. Coli (cfu/ 100	Toxicity	Rain
		Event		and a second	Corrective Action	Date	Time	Date	Time		(ms)		(mg/L)	(mg/r)	1000	(mg/c)	(mg/r)	(mg/r)	mL)	(70)	(mm)
20-Apr-22	WPCP	Spill	1-1RPCUR	Power Blip caused UV to momentarely power down	Ensure all equipment back to normal.	20-Apr-22	12:21	20-Apr-22	12:23	<3Min	72	Power									0
08-Jul-22	WPCP	Spill	1-15WZYA	Power Blip caused UV to momentarely power down	Ensure all equipment back to normal.	08-Jul-22	16:26	08-Jul-22	16:29	00/03	32.4	Power									0
21-Aug-22	WPCP	spill	1-23TPNY	Power Blip caused UV to momentarely power down	Ensure all equipment back to normal.	21-Aug-22	12:49	21-Aug-22	12:52	3M	79	Power									25
30-Sep-22	WPCP	Spill	1-26YAVP	Power Blip caused UV to momentarely power down	Ensure all equipment back to normal.	30-Sep-22	10:25	30-Sep-22	10:28	00/03	27	Power									
07-Nov-22	Sunset P.S	Spill	1-28YMZH	Sewer blockage causing spill	Vac trucks operated station until repair made	7-Nov-22	15:00	8-Nov-22	11:00	20/00	80-90	Mechanical									
08-Nov-22	WPCP	Spill	1-28ZQ/L	Vac truck spilled during decant	Vac truck cleaned up and decanted properly	8-Nov-22	18:30	8-Nov-22	18:31	00/01	1	Operational									

3.2 Table 6 – Summary of Overflows, Bypasses and Environmental Releases

			20	22 Bypass a	nd Overfl	ows at	Water	Polluti	on Cor	ntrol Pl	ant a	nd Pur	npin	g Sta	tio	ns			1.		
Date	Location	Type of	Reference #	Description/ Details	Response/	Start o	f Event	End of	Event	Duration	Volume	Reason:	TP	TSS	рн	TKN	BOD	CBOD	E. Coli (cfu/	Toxicity	Rain
		LVEIL			Corrective Action	Date	Time	Date	Time	1	Turst		(ing/ c)	(ing/c)		(mg/c)	(mg/c)	fungvel	100 1112)	1 (194)	tunud
17-Feb-22	CSO Facility	Overflow	220217-000008	Wet Weather Overflow	Followed SOP	17-Feb-22	5:27	18-Feb-22	22:35	16H/58H	27508	Weather	1.13	76.3	Ĩ		26.7		530,000	3%	25
17-Feb-22	Woodworth P.S	Overflow	220217-000009	Wet Weather Overflow	Followed SOP	17-Feb-22	5:30	17-Feb-22	9:36	4H/6M	51.5	Weather	1.06	74.5	7.5	7.39	30.6				25
22-Feb-22	CSO Facility	Overflow	220222-000006	Wet Weather Overflow	Followed SOP	22-Feb-22	15:10	23-Feb-22	9:25	18H/15M	19827	Weather	1.69	77.1			57.1		NR	0%	14
22-Feb-22	Woodworth P.S	Overflow	1-1M5RGD	Wet Weather Overflow	Followed SOP	22-Feb-22	16:02	22-Feb-22	17:31	1H/29M	19.4	Weather	1.01	81.5	7.52	9.83	46				14
03-May-22	CSO Facility	Overflow	220504-000008	Wet Weather Overflow	Followed SOP	3-May-22	19:35	4-May-22	12:52	17H/17M	7829	Weather	1.3	50.8			36.1		NR	0%	19
07-Jun-22	CSO Facility	Overflow	220607-000009	Wet Weather Overflow	Followed SOP	07-Jun-22	12:10	07-Jun-22	14:08	1H/58M	1115	Weather	2.87	90			66.8		1,180,000	0%	32
01-Aug-22	Woodworth P.S	Overflow	220801-000003	Wet Weather Overflow	Followed SOP	01-Aug-22	21:00	01-Aug-22	21:21	00H/21M	14.3	Weather	1.75	255	7.23	15.8	100		NR		22
21-Aug-22	Woodworth P.S	Overflow	220822-000002	Wet Weather Overflow	Followed SOP	21-Aug-22	13:07	21-Aug-22	13:20	00H/13M	0.5	Weather	2.27	124	7.29	17.9	134		NR		25
21-Aug-22	CSO Facility	Overflow	220822-000003	Wet Weather Overflow	Followed SOP	21-Aug-22	14:02	21-Aug-22	15:11	1H/7M	635	Weather	2.24	114	1		52.4		NR	0%	25
29-Aug-22	Sunset P.S	Overflow	220829-000002	Wet Weather Overflow	Followed SOP	29-Aug-22	20:05	29-Aug-22	20:11	00H/06M	7.2	Weather	0.69	28.1	7.5	5.17	40.3		81,000		25
31-Dec-22	CSO Facility	Overflow	22123-000002	Wet Weather Overflow	Followed SOP	31-Dec-22	6:53	31-Dec-22	12:10	07H/15M	4050.2	Weather	0.591	19.5			13.2		NR	0%	30

3.3 Table 7 – Summary of Major Maintenance Items/ Project

2022 Completed Major Maintenance
New Gate at Grit Tank
Major UV channel Cleaning
VFD Installed on RAS pumps 2-4
New flushing water system for Plant #4
Blower building heating upgrade

3.4 Table 8 – Summary of Future Upgrade Planning

Future Major Maintenance Upgrades
Multiple scum trough replacements throughout all plants
Plant#3 final clarifier drive shaft, sprockets, and gates to be upgraded
New sludge pump to be installed in Gallery#1
Automated actuators and valves for plants #2 and #3 to control sludge return/wasting
New aerated Sludge storage system
UV system upgrade

3.5 Table 9 - Summary of Monitoring Equipment Calibrations



Instrument Verification Certificate of Completion

CLIENT CITY OF ST. THOMAS LOCATION ST. THOMAS WWPCP

	Summary - Equipment List													
	LOCATION	DESCRIPTION	MANUEACTURED	MODEL	SERIAL		TECH		VERIF	ICATION	INFO.			
#	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	NUMBER	FII #	TECH	CSE	DATE	FREQ.	DUE			
	EQUIPMENT LIST - P	ASS	•											
1	St. Thomas WWPCP	Raw Sludge Flow Meter	Krohne	IFC 100W	10634441	DG-Q16	MM	- 20	4-Oct-22	Annual	Oct-23			
2	St. Thomas WWPCP	Effluent Flow Plants 2&3S	Milltronics	OCMIII	041102102PB	FIT-211	PM	° 28	4-Oct-22	Annual	Oct-23			
3	St. Thomas WWPCP	Effluent Flow Plants 4&3N	Milltronics	OCMIII	041102103PB	FIT-212	PM		4-Oct-22	Annual	Oct-23			
4	St. Thomas WWPCP	Plant #2 Flow Meter	Endress+Hauser	Prosonic 91W	C4061B02000	N/A	PM	. •	4-Oct-22	Annual	Oct-23			
5	St. Thomas WWPCP	Plant #3 Flow Meter	Endress+Hauser	Prosonic 91W	C4061C02000	N/A	PM	. 2	4-Oct-22	Annual	Oct-23			
6	St. Thomas WWPCP	Plant #4 Flow Meter	Endress+Hauser	Prosonic 93W	C407CE02000	N/A	PM		4-Oct-22	Annual	Oct-23			
7	St. Thomas WWPCP	Raw Primary Sludge Flow Meter	Krohne	IFC 100W	A19317875	DG-Q7	PM	-8	5-Oct-20	Annual	Oct-21			
8	St. Thomas WWPCP	Plant #4 East Flow DP Meter	Vega	VEGADIF 85	43627448	FIT-1-3	PM	2 0 23	5-Oct-22	Annual	Oct-23			
9	St. Thomas WWPCP	Plant #4 West Flow DP Meter	Vega	VEGADIF 85	43627447	FIT-1-4	PM	× 48	5-Oct-22	Annual	Oct-23			
10	St. Thomas WWPCP	Plant #3 Flow DP Meter	Vega	VEGADIF 85	43827445	FIT-1-1	PM	° 2°	5-Oct-22	Annual	Oct-23			
11	St. Thomas WWPCP	Plant #2 Flow DP Meter	Vega	VEGADIF 85	43627446	FIT-1-2	PM	12	5-Oct-22	Annual	Oct-23			
12	St. Thomas WWPCP	Centrate Wet Well Flow	Rosemount	8750	14886682	N/A	PM	. •	4-Oct-22	Annual	Oct-23			
13	St. Thomas WWPCP Gallery #2	RAS/WAS Flow #2	Greyline	DFM-IV Doppler	17729	N/A	PM	. 2	16-Nov-22	Annual	Nov-23			
14	St. Thomas WWPCP Gallery #2	RAS/WAS Flow #1	Greyline	DFM-IV Doppler	17730	N/A	PM	. 8,	16-Nov-22	Annual	Nov-23			
15	St. Thomas WWPCP - CSO Site	CSO - Overflow Meter	Vega	VEGAMET 625	40053229	N/A	PM	-2	5-Oct-22	Annual	Oct-23			
16	St. Thomas WWPCP -	Reactor Discharge Flow	Endress+Hauser	Promag 400	M80BB116000	FT-40-608	PM	5.20	4-Oct-22	Annual	Oct-23			
17	St. Thomas WWPCP -	Truck Loading Flow	Endress+Hauser	Promag 400	M80B2C16000	N/A	PM	2 a 8	4-Oct-22	Annual	Oct-23			
18	St. Thomas WWPCP -	Untility Water Flow	Endress+Hauser	Promag 400	M8088216000	FT-40-101	PM	12	5-Oct-22	Annual	Oct-23			
19	St. Thomas WWPCP -	Untility Water Flow	Endress+Hauser	Promag 10D	MA085319000	FQT-30-201	MM	1	5-Oct-22	Annual	Oct-23			
20	St. Thomas WWPCP -	Potable Water Flow	Endress+Hauser	Promag 400	MA097516000	FIT-41-100	PM		16-Nov-22	Annual	Nov-23			
21	St. Thomas WWPCP -	Dry Sludge Flow	Siemens	Mag 5000	N1J5020133	N/A	PM	. 2	5-Oct-22	Annual	Oct-23			
22	St. Thomas WWPCP -	Dewatering Biosolids Flow	Endress+Hauser	Promag 55S	MA0B5319000	FT-31-603	PM/MM	. •	5-Oct-22	Annual	Oct-23			

3.6 Deviations to sampling schedule

Original Date	Sample Date	Reason For Sample
		Date Change
03.16.2022	03.17.2022	Raw Sampler tripped. All samples re-scheduled.
06.29.2022	06.28.2022	Rescheduled Sample Day due to SGS closure on 07.01.2022
07.27.2022	07.28.2022	Sample date changed due to staff shortage and mandatory training.
08.10.2022	08.09.2022	Sampling date changed due to major plant maintenance.

3.7 Table 10 - 2022 Sampling schedule

2023 Monitoring Program for Sampling					
Week #	Day of Week	Date	Туре	Raw Parameters Tested	Final Parameters Tested
1	Thursday	5-Jan-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
2	Thursday	12-Jan-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
3	Thursday	19-Jan-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
4	Thursday	26-Jan-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
5	Thursday	2-Feb-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
6	Thursday	9-Feb-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
7	Thursday	16-Feb-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
8	Thursday	23-Feb-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
9	Thursday	2-Mar-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
10	Thursday	9-Mar-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
11	Thursday	16-Mar-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
12	Thursday	23-Mar-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
13	Thursday	30-Mar-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
14	Thursday	6-Apr-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
15	Thursday	13-Apr-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
16	Thursday	20-Apr-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
17	Thursday	27-Apr-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
18	Thursday	4-May-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
19	Thursday	11-May-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
20	Thursday	18-May-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
21	Thursday	25-May-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
22	Thursday	1-Jun-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
23	Thursday	8-Jun-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
24	Thursday	15-Jun-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
25	Thursday	22-Jun-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
26	Thursday	29-Jun-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
27	Thursday	6-Jul-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
28	Thursday	13-Jul-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
29	Thursday	20-Jul-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
30	Thursday	27-Jul-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
31	Thursday	3-Aug-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
32	Thursday	10-Aug-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
33	Thursday	17-Aug-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
34	Thursday	24-Aug-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
35	Thursday	31-Aug-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
36	Thursday	7-Sep-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
37	Thursday	14-Sep-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
38	Thursday	21-Sep-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
39	Thursday	28-Sep-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
40	Thursday	5-Oct-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
41	Thursday	12-Oct-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
42	Thursday	19-Oct-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
43	Thursday	26-Oct-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
44	Thursday	2-Nov-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
45	Thursday	9-Nov-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
46	Thursday	16-Nov-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
47	Thursday	23-Nov-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
48	Thursday	30-Nov-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
49	Thursday	7-Dec-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
50	Thursday	14-Dec-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
51	Thursday	21-Dec-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH
52	Thursday	28-Dec-23	Weekly	BOD5, TSS, TP, TKN, TAN	TP, CBOD, TAN, TSS, TKN, Nitrates, E.Coli, pH

4 Sludge Management:

4.1 Sludge Production:

This activated sludge plant, transfers sludge to a raw sludge storage tank. The tank is 40' diameter; 25' deep (including the 5' cone bottom) with a capacity of 712 cubic meters. Raw sludge is processed through a belt press achieving approximately 3% solids using a polymer. It is projected that sludge volumes in 2023 will be comparable to 2022.

4.2 Sludge Disposal:

A new solids treatment process called Lystek has been in production since April 2018, reducing organics to landfill. This process produces a Canadian certified fertilizer material which is land applied in order to contribute to a sustainable nutrient cycle.

In 2022 there was no sludge transported from the WPCP, all sludge was treated through the Lystek process and land applied. In 2022, a yearly total of 10,481 m3 of raw sludge was processed into a Canadian Food Inspection Agency (CFIA) approved fertilizer and hauled offsite to be land applied.

5 Overflow/By-pass Prevention:

5.1 2022 Summary:

In 2022, \$337,686.00 was put towards multiple projects working towards elimination of bypass and overflow events. Projects include separation of combined sewers \$250,000.00, along with a subsidy program to cover costs of disconnecting downspouts and installing sump pumping systems. In 2022, subsidy was provided for 16 residential basements back water valve installations, and 13 foundation drain disconnects and sump pump installations, the total amount subsidized equaled a total of \$87,686.00.

5.2 2023 Projections:

In 2023, the total projection towards overflow/bypass improvements is \$3,815,000.00, with an estimated amount of \$500,000.00 being spent on sewer separations, including removal of Parkside pumping station which is combined sewer. The basement flooding grant program has been budgeted to allow for subsidization of foundation drain disconnects and back water valve installations in 2023, to the order of \$65,000.00. \$250,000.00 has been allocated towards a wastewater management master plan class EA (WWMP) for the city. \$3,000,000.00 has also been granted through the investing in Canada infrastructure program (ICIP) to optimize plant flows during wet-weather and reduce overflows.