Township of
SEVERN

Wastewater Treatment and Collection System

Coldwater

2024 Annual Report

Table of Contents

Introduction

The Township of Severn prepared the 2024 annual summary report for the Coldwater Water Pollution Control Plant (WPCP).

This report summarizes notable operating events, repairs and maintenance, non- compliance issues, effluent quality, sludge quantity, and flow data for 2024. This report is based on operating data collected and compiled by the Township of Severn.

Summary of Monitoring Requirements

Table 6 lists the parameters that must be monitored, and the monitoring frequency as stated in Amended Certificate of Approval (C of A) No. 3832-6S2QCH, issued by the Ministry of the Environment, Conservation and Parks (MECP) on March 6, 2009.

Raw Sewage Quality

Table 1 illustrates the monthly and annual average raw sewage quality results.

Table 1: 2024 Monthly Raw Influent Quality

Month	CBOD5 *(mg/L)*	TSS *(mg/L)*	Total Phosphorus *(mg/L)*	TKN *(mg/L)*
January	67	78	2.43	22.6
February	86	88	2.41	26.1
March	37	61	1.54	17.4
April	49	66	1.56	20.8
May	52	71	2.10	22.2
June	187	182	5.95	53.2
July	173	154	4.83	44.1
August	168	220	6.49	45.6
September	196	220	5.24	49.5

Month	CBOD5 *(mg/L)*	TSS *(mg/L)*	Total Phosphorus *(mg/L)*	TKN *(mg/L)*
October	254	260	7.15	65.7
November	161	209	5.70	53.1
December	115	160	2.77	25.6
Average	**129**	**148**	**4.00**	**37.0**

Effluent Quality

Tables 2 and 3 illustrate the monthly and annual average effluent quality results.

Table 2: 2024 Monthly Average Effluent Quality

Month	TKN *(as Nitrogen) (mg/L)*	Alkalinity *(as $CaCO^3$) (mg/L)*	Temperature *(°C)*	Unionized Ammonia *(as Nitrogen) (mg/L)*	Nitrite *(as Nitrogen) (mg/L)*	Nitrate *(as Nitrogen) (mg/L)*
January	0.9	167	11.20	0.001	0.20	16.64
February	1.4	178	11.4	0.001	0.49	15.75
March	1.1	196	11.4	0.005	1.18	12.73
April	2.4	192	12.3	0.008	1.19	10.79
May	0.8	168	13.8	0.002	0.82	18.84
June	0.9	134	19.5	0.002	0.31	22.53
July	0.8	105	21.5	0.001	0.05	25.56
August	0.8	99	20.6	0.003	0.04	19.65
September	0.6	122	19.0	0.001	0.04	26.88
October	0.5	128	16.1	0.001	0.03	34.0
November	1.1	111	15.9	0.002	0.10	35.20

Month	TKN *(as Nitrogen) (mg/L)*	Alkalinity *(as $CaCO^3$) (mg/L)*	Temperature *(°C)*	Unionized Ammonia *(as Nitrogen) (mg/L)*	Nitrite *(as Nitrogen) (mg/L)*	Nitrate *(as Nitrogen) (mg/L)*
December	0.9	163	10.7	0.003	0.79	20.76
Average	**1.0**	**147**	**15.2**	**0.002**	**0.43**	**21.76**

Table 3: 2024 Monthly Average Effluent Quality

Month	Effluent ADF	CBOD		TSS		Total Phosphorus	
	m^3/day	*mg/L*	*kg/d*	*mg/L*	*kg/d*	*mg/L*	*kg/d*
Effluent Objective		10	9.21	10	9.21	0.3	0.28
Effluent Limit		15	13.8	15	13.8	0.5	0.46
January	619	3.6	2.22	4.6	2.84	0.04	0.02
February	700	3.0	2.10	5.3	3.71	0.04	0.02
March	744	3.5	2.60	6.3	4.68	0.04	0.02
April	1075	6.3	6.77	6.0	6.45	0.05	0.05
May	548	4.0	2.19	5.4	2.95	0.07	0.03
June	402	3.5	1.40	5.0	2.01	0.06	0.02
July	401	4.0	1.60	4.4	1.76	0.05	0.02
August	327	4.0	1.30	3.5	1.14	0.06	0.01
September	307	4.0	1.22	3.5	1.07	0.06	0.01
October	291	3.6	1.04	3.2	0.93	0.08	0.02
November	331	4.0	1.32	3.8	1.25	0.07	0.02
December	709	4.0	2.83	6.2	4.39	0.05	0.03

Table 3: 2024 Monthly Average Effluent Quality - Continued

Month	Total Ammonia (Nitrogen)				pH	E. Coli
	mg/L	kg/d	mg/L	kg/d		
	May 15 - Oct 15		Oct 16 - May 14			
Effluent Objective	1.00	0.92	3.00	2.76		
January			0.1	0.06	7.46	2
February			0.1	0.07	7.50	2
March			0.4	0.29	7.70	3
April			1.7	1.82	7.30	2
May	0.3	0.16			7.44	2
June	0.2	0.08			7.35	2
July	0.1	0.04			7.14	2
August	0.3	0.09			7.43	2
September	0.1	0.03			7.48	2
October	0.1	0.02			7.48	2
November			0.2	0.06	7.45	2
December			0.5	0.35	7.40	4

Influent Flows

The rated capacity of the Coldwater WPCP is 921 m^3/day (average daily flow) with a peak flow rate of 3,420 m^3/day, as listed in the C of A.

Table 4: Summary of Influent Flows

Month	Total Monthly Flow (m^3)	Average Daily Flow (m^3/day)	Average Daily Flow (% of Rated Capacity)	Peak Daily Flow (m^3/day)	Peak Daily Flow (% of Rated Capacity)	Peak Daily Flow (% of Rated Peak Flow)
January	27513	888	96%	1217	132%	35%
February	29248	1009	109%	1352	146%	39%
March	34113	1100	119%	1353	146%	39%
April	40044	1335	144%	2185	237%	63%
May	20050	647	70%	1198	130%	35%
June	16212	540	58%	717	77%	20%
July	16206	523	56%	1050	114%	30%
August	12104	390	42%	541	58%	15%
September	10216	341	37%	453	49%	13%
October	9840	317	34%	414	44%	12%
November	10872	362	39%	551	59%	16%
December	23417	755	81%	1504	163%	43%
Average	**20819**	**684**		**1044**		
Max	**40044**	**1335**		**2185**		
Total	**249835**					

Charts

Figure 1: Coldwater WPCP 2024 total monthly flow total values are in (m^3)

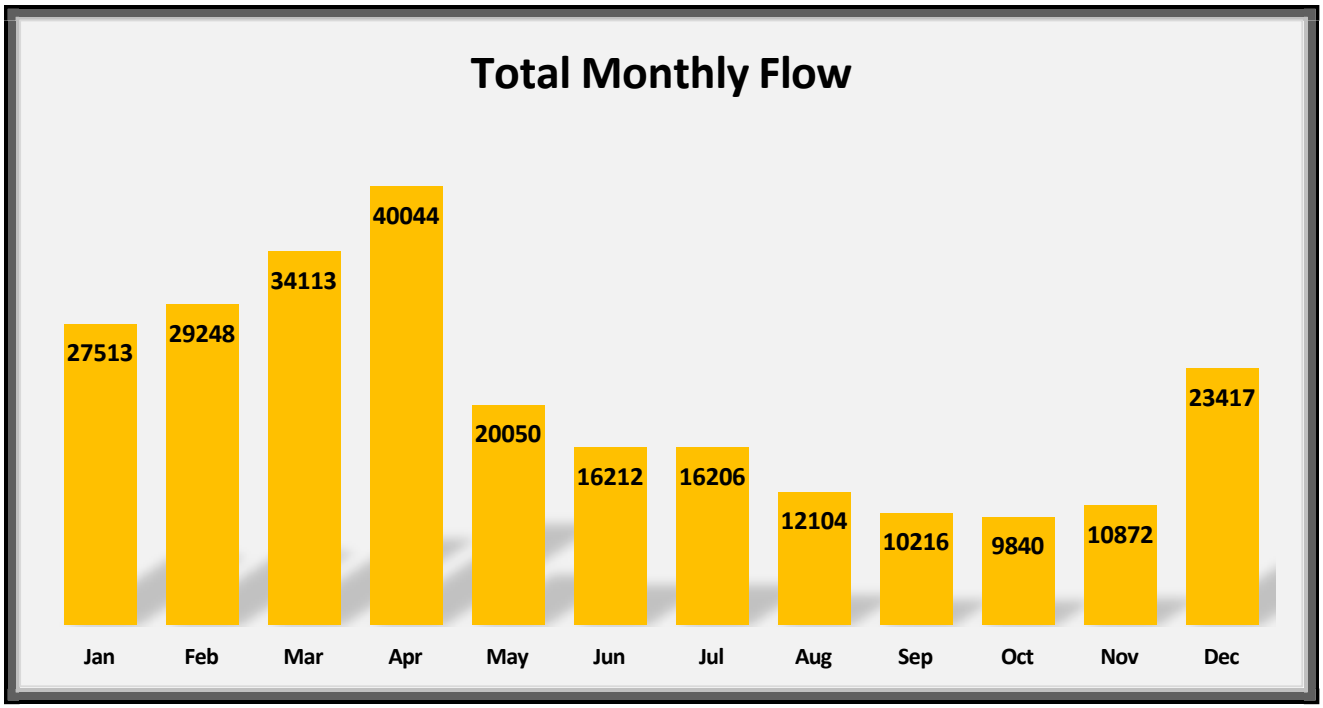
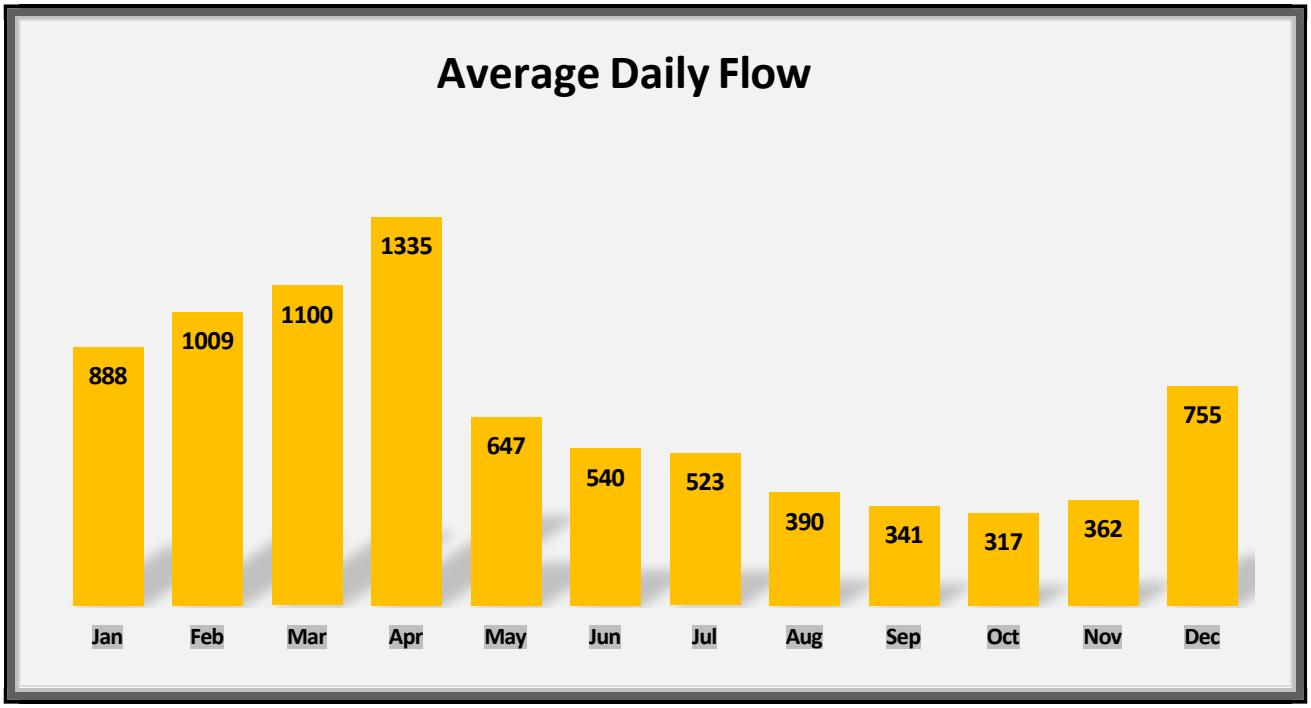


Figure 2: Coldwater WPCP 2024 average daily flow total values are in (m^3)



Sludge Analysis

The results of the sludge analysis are summarized in Table 6 .

Table 5: Sludge Analysis

Parameter	Limits	Annual Average	
Units	**Metal Concentration** (mg/kg)	**Sludge Concentration** (mg/L)	**Metal Concentration** (mg/kg)
Total Solids	--	21933.33	--
Ammonia +	--	10.10	--
TKN	--	836.8	--
Nitrate + Nitrite	--	50.5	--
Phosphorus	--	569.4	--
Arsenic	170	0.1	5.6
Cadmium	34	0.01	0.67
Cobalt	340	0.04	1.90
Chromium	2,800	1.09	48
Copper	1,700	6.95	315
Mercury	11	0.66	0.66
Potassium	--	56.92	--
Molybdenum	94	0.10	4.70
Nickel	420	0.69	31
Lead	1,100	0.26	12.4
Selenium	34	0.10	5.6
Zinc	4,200	11.3	509

E. Coli (cfu/1g)	< 2,000,000	120040

1-Limits for metal concentration in sludge are listed in MECP publication "Guideline for the Utilization of Bio solids and other wastes on Agricultural Lands" as referenced in the Certificate of Approval No. 7383-4LAHXD

Operational Issues and Corrective Actions

There were no effluent objective exceedances in 2024.

Maintenance Summary

All maintenance that was completed in 2024 on major structures, apparatus and/or mechanical equipment is summarized below.

Water Pollution Control Plant

The following is a list of preventative and emergency maintenance completed at the WPCP in 2024.

- All critical alarms were tested monthly.
- All floats were inspected and cleaned monthly.
- The backup generator was tested monthly under load.
- The blowers and air compressor were serviced yearly to check belts, alignment, motor function and lubrication.
- Replaced U.V bulbs and sleeves.
- Inspection performed on sludge storage tank.
- Pumps were replaced as needed.
- Environmental Assessment under way for plant expansion.

Collection System

The following is a list of preventative and emergency maintenance completed on the collection system in 2024.

- Sewage Pump stations were cleaned to remove grease, grit, and other debris.
- All sewage pumping station alarms were tested monthly.
- All floats in the sewage pumping stations were inspected and cleaned monthly.
- Debris was removed from several pumps in the sewage pumping stations as warranted.
- Pumps were replaced as required.
- Approximately 25% of manholes were inspected.
- All generators were serviced.
- Flushed approximately 2314 m of sewer main.
- Inspected 1135 m of sewer main by video camera to identify any necessary repairs.

Summary of Effluent Quality Assurance or Control Measures

Tables 6 and 7 summarize which parameters are analyzed by the accredited laboratory; SGS Lakefield Research, Aquatic Laboratories or Caduceon Laboratories, and which parameters are analyzed in-house.

Table 6: Summary of Monitoring Requirements

Source	Parameter	Required	Method
Raw Influent	$CBOD_5$	Monthly	SGS Lakefield or Caduceon
	Total Suspended Solids	Monthly	SGS Lakefield or Caduceon
	Total Phosphorus	Monthly	SGS Lakefield or Caduceon
	Total Kjeldahl	Monthly	SGS Lakefield or Caduceon

***Note: SGS Lakefield and Caduceon are both MECP approved accredited laboratories*

Table 7: Summary of Monitoring Requirements

Source	Parameter	Required	Method
Final Effluent	Flow	Daily	SGS Lakefield or Caduceon
	$CBOD_5$	Weekly	SGS Lakefield or Caduceon
	Total Suspended Solids	Weekly	SGS Lakefield or Caduceon
	Total Phosphorus	Weekly	SGS Lakefield or Caduceon
	Total Ammonia	Weekly	SGS Lakefield or Caduceon
	Nitrate	Weekly	SGS Lakefield or Caduceon
	E. Coli	Weekly	SGS Lakefield or Caduceon,
	Total Chlorine Residual	Weekly	N/A (UV disinfection)
	pH	Weekly	In House Grab Sample
	Temperature	Weekly	In House Grab Sample
	Unionized Ammonia	Weekly	SGS Lakefield or Caduceon

***Note: SGS Lakefield & Caduceon are both MECP approved accredited laboratories*

In-house tests are conducted by licensed operators for monitoring purposes. Standard Methods are used by the operators and the test results are utilized for process control.

All in-house monitoring equipment is calibrated based on the manufacturer's recommendations.

Efforts and Results in Meeting Effluent Objectives of Certificate of Approval

The WPCP is operated and maintained such that all effluent quality objectives are strived for. Objectives and limits are based on a monthly average. There was no objective exceedance in 2024.

Sludge Volume and Disposal

Table 8 below summarizes the sludge volume generated in 2024, the anticipated volume to be generated next year, and the sludge disposal location.

Table 8: Sludge Generated and Disposal

Sludge Generated in 2024 *(m3)*	**Anticipated Volume for 2025** *(m3)*	**Sludge Disposal Location**
210	1200	NASM Plan 24506. Home Con.13 Lot 16/17 Tiny
122		NASM Plan 241138. Patterson/Brown Con. 1 Lot 20/21 Clearview
336		NASM Plan 61875. Strongville Con 14 Lot 1 Springwater
210		NASM Plan. Uncle Ken's. Con 8 Lot 16 Springwater
Total- 878		

Summary of Complaints

There were no complaints in 2024 in the Municipal system.

Summary of Calibration and Maintenance on Effluent Monitoring Equipment

Magnetic flow meters were calibrated by a qualified contractor on February 27, 2024.

All in-house monitoring equipment is calibrated based on manufacturer's recommendations.

Summary of By-Pass, Spills or Abnormal Discharge Events

There were no bypasses, spills, or abnormal discharge events in 2024.