

ASHBRIDGES BAY WASTEWATER TREATMENT PLANT 2023 Annual Report



April 2, 2024

2023 ANNUAL REPORT

EXECUTIVE SUMMARY

The Ashbridges Bay Treatment Plant (ABTP) is one of four wastewater treatment facilities operated by the City of Toronto. This facility, located at 9 Leslie Street, has a rated capacity of 818,000 m³/day, or 818 ML/day, and serves an equivalent population of approximately 1,394,000. The Ashbridges Bay Treatment Plant discharges into Lake Ontario and operated under Amended Environmental Compliance Approval (ECA) Sewage No. 5039-C9CK5L, issued on May 31st, 2022, at which point it was replaced by Amended ECA No. 0574-CQ6J5H, issued on May 2, 2023.

The average daily flow rate in 2023 was 610.2 ML/day. Influent concentrations of Biochemical Oxygen Demand (BOD₅), Total Phosphorus (TP) and Total Suspended Solids (TSS) averaged 195.5 mg/L, 6.5 mg/L, and 302.2 mg/L, respectively.

Ashbridges Bay Treatment Plant achieved the following effluent quality and loading rates in 2023 in comparison to ECA limits:

Parameter	ECA ¹	2023 Final Effluent
Total Suspended Solids (TSS)	25.0 mg/L	14.9
Carbonaceous Biological Oxygen Demand (CBOD ₅)	25.0 mg/L	7.7
Total Phosphorus (TP)	1.0 mg/L	0.7
Escherichia Coli (E. Coli) ²	200 CFU/100 mL	112
рН	6.0-9.5	7.2
TSS Loading Rate	20,450 kg/day	7,732
CBOD₅ Loading Rate	20,450 kg/day	3,963
TP Loading Rate	818 kg/day	415

¹ Referenced from ECA Sewage No. 0574-CQ6J5H Schedule C.

² Arithmetic mean of monthly geometric mean data.

In 2023, a process upset in April resulted in elevated phosphorus, ammonia, BOD Loading and comparatively more bypasses in April than in previous years. Corrective measures were taken to manage the issue. Similar corrective measures will be taken in the event of a future recurrence.

During 2023, the biosolids generated at Ashbridges Bay were managed through agricultural land application, soil amendment use, pelletization, and mine reclamation. The total amount of biosolids generated at the plant in 2023 was 152,077 wet tonnes at an average of 27.07 % total solids (TS). The biosolids generated met all the metal and *E. coli* concentration requirements set out in O.Reg 267/03.

Ferrous chloride consumption for phosphorus removal totalled 1,678 tonnes as Fe. Polymer consumption in 2023 for waste activated sludge (WAS) thickening and sludge dewatering totalled



2023 ANNUAL REPORT

148.50 and 644 tonnes, respectively. Total sodium hypochlorite (12% w/v) consumption for disinfection totalled 4,110 m³.

There were seventeen secondary treatment system bypass occurrences in 2023 where portions of the flow did not receive secondary treatment, but still received preliminary treatment, primary treatment, and nutrient removal before being disinfected and discharged into Lake Ontario. Total bypassed flows were estimated to be 4,594.67 ML.

The plant continued with numerous capital projects. Notable projects included: construction of a new ultraviolet (UV) disinfection facility; construction of a new influent pumping station; construction of a new WAS thickening facility; construction of a new plant outfall; construction of D Building Phase 2; design of Secondary Treatment Upgrades, design of new Pelletizer; construction of new Hot Water Boilers and construction of Digesters 9-12 upgrade. A variety of scheduled, preventative, predictive and reactive maintenance was performed, including annual calibration of effluent monitoring equipment.

Total annual consumption for potable water, hydro, and natural gas was 633,346 m³, 129.7 GWh, and 5.8 M scm, respectively. Direct operating costs for 2023 totalled \$73.1 M. In 2023, the Ashbridges Bay Treatment Plant had a staffing compliment of 150.5 full time equivalent (FTE) employees. As of February 26, 2024, there were 6 health and safety incidents and 1 lost time days due to work related injuries in 2023 (to December 31, 2023).



2023 ANNUAL REPORT

TABLE OF CONTENTS

Ε	XECUT	IVE S	UMMARYi
Т	ABLE C	OF CO	NTENTS iii
1	INT	ROD	UCTION1
2	PLA	NT P	ROCESS OVERVIEW
	2.1	Influ	uent2
	2.2	Prel	iminary Treatment2
	2.3	Prin	nary Treatment2
	2.4	Seco	ondary Treatment3
	2.5	Fina	ll Effluent3
	2.6	Soli	ds Handling4
	2.7	Soli	ds Management4
3	PRO	DCES	S SUMMARY
	3.1	Proc	cess Parameters5
	3.2	Bios	solids Management
	3.2	.1	Agricultural Land Application8
	3.2	.2	Third Party Process Stabilization (Soil Amendment)9
	3.2	.3	Pelletization9
	3.2	.4	Landfill Management of Biosolids9
	3.2	.5	Mine Reclamation9
	3.3	Che	mical Usage10
	3.4	Вур	asses, Overflows, Spills, and Abnormal Discharge Events10
	3.4	.1	Bypasses10
	3.4	.2	Overflows11
	3.4	.3	Spills11
	3.4	.4	Abnormal Discharge Events14
	3.5	Con	nplaints14
	3.6	ME	CP Procedures F-5-1 and F-5-514

TORONTO Water

ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2023 ANNUAL REPORT

	3.7	Effluent Quality Assurance and Control Measures	15
4	CAF	PITAL PROJECTS	. 16
5	MA	INTENANCE	. 18
6	UTI	LITIES	. 20
7	ADI	MINISTRATION	. 21
	7.1	Operations and Maintenance Costs	21
	7.2	Human Resources	22
	7.3	Occupational Health & Safety	23
	7.4	Staff Training and Development	24
	7.5	Utility Operator Certification	24
	7.6	MECP Correspondence	24

APPENDICES

APPENDIX A – Plant Schematic
APPENDIX B – Influent and Effluent 2018 Performance Charts
APPENDIX C – Historical Performance Data
APPENDIX D - Secondary Treatment Effluent (Leachate Related)
APPENDIX E – Influent and Effluent Metal Concentrations
APPENDIX F – Biosolids Analysis
APPENDIX G – Maintenance Activities
APPENDIX H – Staff Training Courses

LIST OF TABLES

Table 1: Secondary Treatment and Final Effluent Parameters	5
Table 2: Process Parameters	6
Table 3: Biosolids Management Methods	9



2023 ANNUAL REPORT

Table 4: Chemical Usage Summary	.10
Table 5: Bypass Summary	.11
Table 6: Spill Summary	. 12
Table 7: Capital Projects	.16
Table 8: Summary of Regulated Monitoring Equipment Calibration and Maintenance	. 18
Table 9: Average Unit and Total Utility Cost	.20
Table 10: Plant Staffing	.22
Table 11: Wastewater Treatment Certificates	.24
Table 12: Correspondence submitted to the MECP and MOL	.25

LIST OF FIGURES

Figure 1: Annual Utility Consumption (Water, Hydro, Gas)	20
Figure 2: Operations and Maintenance Cost Breakdown	21
Figure 3: Ashbridges Bay Treatment Plant Health & Safety Injury Summary	23



2023 ANNUAL REPORT

GLOSSARY OF ABREVIATIONS

AAC	Annual Average Concentration
BOD5	Five-Day Biochemical Oxygen Demand
CBOD2	Five-Day Carbonaceous Biochemical Oxygen Demand
CEPT	Chemically Enhanced Primary Treatment
CEU	Continuing Education Units
CFU	Colony Forming Units
DAF	Dissolved Air Flotation
E. coli	Escherichia coli
ECA	Environmental Compliance Approval
Fe	Iron
HTP	Humber Treatment Plant
HRT	Hydraulic Retention Time
kg	Kilogram
kWh	Kilowatt-hour
MAC	Monthly Average Concentration
MGMD	Monthly Geometric Mean Concentration
MWh	Megawatt-hour
m3	Cubic metre
m3 /day	Cubic metre per day
mg/L	Milligrams per litre
mL	Millilitre
ML	Million litres
MECP	Ministry of the Environment, Conservation and Parks
Q	Flow Rate
RAS	Return Activated Sludge
SBS	Sodium Bisulphite
SBS (P)	Sodium Bisulphite Presence
scm	Standard cubic metre
SS	Suspended Solids
TCR	Total Residual Chlorine
ТР	Total Phosphorus
TS	Total Solids
TSS	Total Suspended Solids
TVS	Total Volatile Solids
TWAS	Thickened Waste Activated Sludge
μg/L	Micrograms per litre
WAS	Waste Activated Sludge
% w/v	Percent concentration of components of a solution expressed as weight by volume
% w/w	Percent concentration of components of a solution expressed as weight by weight



2023 ANNUAL REPORT

Definitions

Bypass: Means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities.

Overflow: An overflow is defined as a discharge to the environment from the plant at a location other than the plant outfall downstream of the final effluent sampling station.

Spill: A spill is defined within the meaning of Part X of the Environmental Protection Act. "Spill", when used in reference to a pollutant, means a discharge,

- a) into the natural environment,
- b) from or out of a structure, vehicle or other container, and
- c) that is abnormal in quality or quantity in light of the discharge.

Abnormal Discharge: A discharge of a pollutant designated by the regulations at a location designated by the regulations shall be deemed to be in a quantity or with a quality abnormal at the location. R.S.O. 1990, c. E.19, s. 91 (2).

$$Loading\left(\frac{kg}{day}\right) = Concentration\left(\frac{mg}{L}\right) \times Flow\left(\frac{ML}{day}\right)$$

Percent Removal (%) = $1 - \frac{Concentration (Final)}{Concentration (Initial)}$

Aeration Loading =
$$\left(\frac{kg \ cBOD}{m^3 \ aeration \ capacity}\right) = \frac{(Q_{Primary \ Effluent} + Q_{RAS}) \times [cBOD_{5_{primary \ effluent}}]}{V_{aeration \ Tanks}}$$

Solids Capture (%) = $\frac{Centrifuge Feed TS - Centrate TSS}{Centrifuge Feed TS} \times 100$

2023 ANNUAL REPORT

1 INTRODUCTION

The Ashbridges Bay Treatment Plant (ABTP) is one of four wastewater treatment facilities operated by the City of Toronto under the responsibility of the Wastewater Treatment section of Toronto Water. The facility is located at 9 Leslie Street, in Toronto's east end and also includes two raw sewage pump stations located north of Lake Shore Boulevard at 1091 Eastern Avenue. The Ashbridges Bay Treatment Plant services a sewershed of approximately 25,000 ha and an estimated connected population of 1,394,000¹; bounded by Steeles Avenue on the north, the Humber sewershed on the west, the Highland Creek sewershed on the east, and the lakeshore on the south. The plant also provides production of biosolids for beneficial use, including the biosolids that are generated and transferred from the Humber and North Toronto Treatment Plants. The Ashbridges Bay Treatment Plant has a rated capacity of 818,000 m3/day, or 818 ML/day.

Major liquid treatment processes include screening and grit removal, primary treatment, secondary treatment, nutrient removal, and effluent disinfection. Treated effluent is discharged to Lake Ontario. Solids handling processes include waste activated sludge thickening, sludge stabilization by anaerobic digestion, dewatering using high speed centrifuges and biosolids management. Numerous auxiliary systems are required for proper operation of plant processes and include: potable water, process water (i.e. "plant water"), heating, ventilation and air conditioning (HVAC), SCADA, odour control, electrical power distribution, natural gas, chemicals, and instrument air.

The Ministry of the Environment, Conservation and Parks (MECP) has classified the Ashbridges Bay Treatment Plant as a Class IV wastewater treatment facility under Regulation 129/04. In 2023, the plant operated under Amended Environmental Compliance Approval (ECA) Sewage No. 5039-C9CK5L, issued on May 31st, 2022, at which point it was replaced by Amended ECA No. 0574-CQ6J5H, issued on May 2, 2023.

This report is a summary of plant operations and performance in 2023. Highlights of the report include a discussion of effluent quality and summaries of process operations, maintenance, chemical and utility consumption, capital projects, operational costs and human resources.

¹ Population estimated by sewershed delineation and 2021 census data

2023 ANNUAL REPORT

2 PLANT PROCESS OVERVIEW

A description of the plant process is included below. A plant process flow diagram is available in Appendix A. Additional information on the plant's process can be found on the City of Toronto website².

2.1 Influent

The Ashbridges Bay Treatment Plant treats wastewater flows from the Mid-Toronto, High Level, Low Level, and Lakefront Interceptor Sewers, as well as the Queen Street and Coxwell Avenue Trunk Sewers. The Mid-Toronto Interceptor flows are pumped to the plant via the Pumping Station known as "T Building". The High Level and Low Level Interceptor Sewers, and the Queen Street Trunk Sewer flows are pumped to the plant via the Pumping Station known as "M Building". The Lakefront Interceptor Sewer flows are pumped to the plant via the M Building or the T Building. The Coxwell Avenue Trunk Sewer flows come to the plant by gravity. Once wastewater enters the plant, it flows by gravity through the plant's processes.

Influent to the Ashbridges Bay Treatment Plant also includes sludge flows received from the Humber Treatment Plant and the North Toronto Treatment Plant via the Mid-Toronto Interceptor and Coxwell Sanitary Trunk Sewer, respectively.

2.2 Preliminary Treatment

Raw wastewater enters the Headworks (known as "P" and "D" Buildings) for grit and screenings removal. The P Building has six aerated grit channels and six mechanical screens. D Building has five mechanical screens and four aerated grit channels. The removed grit and screenings from P and D Buildings are hauled to a sanitary landfill site. Ferrous chloride is applied for nutrient removal (i.e. phosphorous removal) to the distribution conduits upstream of the aerated grit channels.

2.3 Primary Treatment

Primary Treatment occurs in the Primary Clarification Tanks, where the flow velocity of the wastewater is reduced to allow heavier solids to settle to the bottom. There are 12 Primary Clarification Tanks. Sludge collectors in the tanks sweep the settled sludge, called primary or raw sludge, into sludge hoppers. Floating solids, called scum, are collected from the top of the water

²<u>https://www.toronto.ca/services-payments/water-environment/managing-sewage-in-toronto/wastewater-treatment-plants-and-reports/</u>



and swept into scum hoppers. The primary sludge and scum are then pumped out for further treatment and the wastewater, called primary effluent, continues onto secondary treatment.

2.4 Secondary Treatment

The primary effluent receives secondary treatment through a conventional, suspended biomass activated sludge process in the Aeration Tanks. The mixed liquor consists of primary effluent mixed with return activated sludge (RAS), which is removed from the Final Clarification Tanks and contains micro-organisms that naturally occur in wastewater and facilitate its degradation. In the presence of oxygen, these micro-organisms break down organic material in the wastewater. Air is supplied to the Aeration Tanks through 10 electrically driven blowers. There are a total of 11 Aeration Tanks that employ a step feed aeration process with four passes per tank. Aeration Tank No.1 and 3 - 9 are equipped with plastic disc coarse air bubble diffusers; Aeration Tank No. 2 is equipped with a mix of ceramic and membrane fine bubble diffusers.

The mixed liquor from the Aeration Tanks flows to 11 large Final Clarification Tanks, where the activated sludge is allowed to settle. A controlled quantity of this sludge is returned to the Aeration Tanks as RAS in order to maintain a sufficient biomass concentration. The excess is removed as waste activated sludge (WAS).

The plant has 10 Dissolved Air Flotation (DAF) Tanks to thicken WAS with the use of air and a thickening polymer, which is used as a coagulant. The plant also has the capacity to co-settle WAS from the Final Clarification Tanks in the Primary Clarification Tanks. At the DAF facility, incoming WAS first enters an inlet splitter box, dividing the inlet flow between the DAF tanks in operations. This splitter box also contains an overflow pipe which allows the excess WAS flow to return to the Aeration Tanks.

2.5 Final Effluent

Through operating and maintaining preliminary, primary, and secondary treatment processes, final effluent is treated to meet Schedule B of the ECA (No. 0574-CQ6J5H). Sodium Hypochlorite is used to disinfect and kill pathogens in the final effluent.

The final effluent is discharged to Lake Ontario through an outfall pipe equipped with diffusers and extending approximately 1000 m into the lake from the shore. During periods of wet weather flows, the plant also has the capability of discharging final effluent through the seawall gates to prevent flooding.



2023 ANNUAL REPORT

2.6 Solids Handling

All primary sludge, thickened WAS (TWAS), co-settled WAS from the Primary Clarification Tanks, and scum from the Primary and Secondary Clarification Tanks, collectively called "sludge", is treated, handled and disposed of in a similar manner, consisting of anaerobic digestion, dewatering and then hauled or pelletized.

Anaerobic digestion is the biological degradation (stabilization) of organic materials in the absence of oxygen – it reduces volume of solids, destroys pathogens and mitigates sludge odour. The process produces digester gas, made up predominantly of methane. This gas is used as a supplementary fuel for plant needs, including process and space heating, thereby reducing the plant's operating costs and carbon footprint. The digesters are operated in the mesophilic temperature range ($34 - 38^{\circ}$ C). The Digestion process at Ashbridges Bay Treatment Plant consists of 20 primary digesters.

The resulting anaerobically digested sludge, called "biosolids", is subsequently conditioned with a polymer and dewatered by centrifugation. Twelve solid bowl dewatering centrifuges are used to dewater the biosolids. The resulting biosolids "cake" is pumped either to the plant's Truck Loading Facility, or to the onsite pelletizer facility.

2.7 Solids Management

The dewatered biosolids are managed in a number of ways, including agricultural land application, third party process stabilization, pelletization, landfilling, and mine reclamation.

2023 ANNUAL REPORT

3 PROCESS SUMMARY

3.1 Process Parameters

In 2023, the Ashbridges Bay Treatment Plant continued to produce a high quality effluent. A summary of key secondary treatment effluent and final effluent parameters against the ECA objectives and limits are shown in Table 1. Influent and effluent performance charts are available in Appendix B. Historical performance data is included in Appendix C.

Parameter	cBOD₅ ¹ ,mg/L	TSS, mg/L	TP, mg/L	Total Residual Chlorine, mg/L	E-Coli, count/100mL	pH Min	pH Max
		9	Secondary E	ffluent			
January	3.9	6.8	0.5	0.57	171	6.8	7.3
February	5.7	7.3	0.6	0.63	31	6.8	7.3
March	7.2	12.5	0.6	0.61	45	6.9	7.4
April	13.4	34.7	1.1	0.56	34	7.0	7.4
Мау	7.7	8.3	0.5	0.47	25	6.9	7.2
June	6.7	10.6	0.6	0.48	126	7.2	7.5
July	5.4	9.9	0.7	0.50	235	7.2	7.6
August	5.4	11.7	0.7	0.50	39	7.2	7.4
September	4.7	9.9	0.6	0.54	200	7.1	7.5
October	5.6	11.2	0.7	0.64	147	7.0	7.4
November	6.2	12.4	0.7	0.74	123	6.9	7.3
December	7.7	20.0	1.0	0.78	161	6.8	7.5
Annual Average Effluent Concentration	6.6	12.9	0.7	0.59	112		7.2
Loading², kg/d	3963	7732	415	N/A	N/A	N/A	N/A
Removal Efficiency ,%	96%	96%	89%	N/A	N/A	N/A	N/A
		EC	A Require	ments ^{4,5}			
Final Effluent Objective	AAC: 25.0 mg/L	AAC: 25.0 mg/L	MAC: 1.0 mg/L	N/A	N/A	6	.5-8.5
Secondary Treatment Effluent Objective	AAC: 15.0 mg/L	AAC: 15.0 mg/L	MAC: 0.9 mg/L	N/A	N/A	6	.5-8.5
Secondary Treatment Effluent Limit	AAC: 25.0 mg/L	AAC: 25.0 mg/L	MAC: 1.0 mg/L	N/A	N/A	6	.0-9.5

Table 1: Secondary Treatment and Final Effluent Parameters



2023 ANNUAL REPORT

Average Waste Loading	AAL:	AAL:	AAL: 818	N/A	N/A	N/A
Limit ³	20,450	20,450	kg/d			
	kg/d	kg/d				

1 cBOD = 0.8 * BOD assumed for removal efficiency calculatons.

² Loading is calculated based on the flow rates as provided in Table 2.

³ Loading is calculated based on the flow rates as provided in Table 2.

⁴ Referenced from ECA Sewage 5039-C9CK5L, issued on May 31, 2023.

⁵ AAC refers to Annual Average Concentration, MAC refers to Monthly Average Concentration, MGMD refers to Monthly Geometric Mean Density, and AAL refers to Annual Average Daily Loading

Influent and Final effluent concentrations of eleven select heavy metals have been included in Appendix E. Any discharge into City sewers must meet the sewer use By-law limits. Final effluent concentrations are presented to assess the treatment plant's removal capacity.

A summary of the annual average of process parameters over the past three years is shown in *Table 2*.

Parameter	Units	2023	2022	2021				
Influent Parameters								
Flow ¹	ML/day	610.2	570.4	512.8				
Total Annual Flow ¹	ML	222,626	208,083	187,270				
Total Suspended Solids (TSS)	mg/L	302.2	324.1	329.7				
Biological Oxygen Demand (BOD ₅)	mg/L	195.5	203.1	218.5				
Total Phosphorus (TP)	mg/L	6.5	6.5	6.3				
Transfer from Humber TP: liquid biosolids	Dry tonnes/day	63.7	69.9	53.0				
Transfer from Humber TP: WAS	Dry tonnes/day	7.8	1.9	4.3				
Transfer from North Toronto TP: sludge (primary sludge, WAS, and scum)	ML/day	0.56	0.46	0.55				
Preliminary Treatment								
Grit and Screenings	Tonnes/day	6.1	5.1	5.0				
Primary Treatment								
TSS	mg/l	206.9	250.8	246.2				
cBOD5	mg/L	111.7	118.6	132.5				
Secondary Treatment								
Aeration Loading	kg CBOD⁵/m³·day	0.36	0.36	0.37				
Mixed Liquor Suspended Solids	mg/L	2,908	3,003	3,029				

Table 2: Process Parameters



2023 ANNUAL REPORT

Parameter	Units	2023	2022	2021
Flow through Seawall Gates	ML	4727	2101	1462
Solids Handling				•
Primary Sludge Treated	m³/day	4,298	3,822	3,357
Primary Sludge TS	%	2.2	2.5	1.9
Primary Sludge TVS	%	70.9	70.1	69.1
WAS to Primary Treatment and Excess Was to Aeration	m³/day	4059	4778	3430
WAS to Thickening	m³/day	9,099	8,222	8,266
WAS TS	%	0.98	1.00	1.05
TWAS Treated	m³/day	2,494	2,258	2,527
TWAS TS	%	3.9	3.8	3.3
TWAS TVS	%	72.0	70.4	70.4
Volume to Digestion	m³/day	6,792	6,080	5,885
Digesters Hydraulic Retention Time	days	18.1	20.2	20.9
Organic Loading to Digesters	TVS / m³/day	1.1	1.0	0.8
Digester Gas Volume	m³/day	56,288	54,497	52,682
Dewatering Centrifuge Feed TS	%	1.83	1.87	1.7
Dewatered Biosolids TS	%	27.07	28.02	27.0
Centrate Quality	mg/L	753.7	474.9	985
Solids Capture Rate	%	95.8	97.4	94.3
Centrifuge Run-time	hours	49,030	48,372	48,347

Influent flow to the Ashbridges Bay Treatment Plant increased by 7% in 2023. Influent strength of BOD, TSS and TKN decreased by 3.7%, 6.7% and 5.87% while TP increased by 0.35%.

Final effluent annual average concentration for cBOD, TSS, and TP was 7.7 mg/L, 14.9 mg/L, and 0.7 mg/L, respectively and met the average effluent concentration specified in Schedule C of the ECA throughout 2023, with the exception of TP in April. The final effluent annual average for e. Coli monthly geometric mean density in 2023 was 112 CFU/100 mL. Final effluent pH remained between the range of 6.0 – 9.5 throughout the course of 2023.

A process upset due to filamentous microorganisms resulted in final effluent parameters being elevated. Higher phosphorus levels over several days caused the monthly average to exceed the compliance limit. TSS and CBOD were also higher in April as well but did not exceed compliance limits. Corrective measures were taken to address the issue and promote desirable tank microbiology, reduce clarifier stress and allow adequate settling. Actions included:

• Microbiological analysis performed on-site, and by off-site specialists.



- Increasing airflow to increase dissolved oxygen concentrations,
- Reducing influent flow to affected tanks
- Reducing RAS flows from affected tanks
- Increased WAS flow from affected tanks

These actions were effective in resolving the issue. A similar approach will be taken to manage any future recurrences.

The Ashbridges Bay Treatment Plant encountered no chronic operating problems and continued to produce a high quality effluent through the continued improvement of operations and maintenance of treatment processes. The plant consistently surpassed the design objectives highlighted in Condition 6 as well as Schedule B of the ECA except for elevated TP in April and December

There was one deviation from the monitoring schedule in 2023. In 2023, E. Coli sample was scheduled on every Thursday. However, the combined sample from the two secondary effluent samples was not representative. Another E. Coli sample was collected on August 8th, 2023. *E. coli* sampling is conducted weekly, so it has been moved from Thursday in 2023 to Wednesday of every week in 2024. All other parameters specified in *Schedule D - Monitoring Program* of the ECA exceed the sampling frequency of 3 times/week specified by Condition 9(1)(b), negating the requirement for future sampling forecasts and scheduling.

3.2 Biosolids Management

The flow projections for 2023 do not exceed the plant rated capacity of 818 ML/day and are expected to generate a sludge volume that will be +/- 5% of the volume generated in 2023.

Biosolids analysis are included in Appendix F and compared against *Ontario Regulation 267/03* under the *Nutrient Management Act*, which governs the maximum acceptable metal concentration in biosolids that are applied to land. The average metal and *E. coli* concentrations met all criteria as designated in O. Reg 267/03.

Biosolids management from the Ashbridges Bay Treatment Plant in 2023 totalled 152,077 wet tonnes and was managed as follows.

3.2.1 Agricultural Land Application

A total of 42,397 wet tonnes of biosolids were sent to approved agricultural land application sites in Ontario. During the 2023 land application season, the City contracted an independent field inspector to monitor the practices of the City's land appliers. The independent field inspector



2023 ANNUAL REPORT

observed the application of biosolids on numerous agricultural land sites in Ontario. The inspector was responsible for ensuring the Nutrient Management Act and accompanying Regulations were adhered to, site specific requirements were followed, and monitoring and recording of odour measurements were taken before, during and after application.

3.2.2 Third Party Process Stabilization (Soil Amendment)

In 2023, a total of 29,739 wet tonnes of biosolids were further processed off-site by licensed external service providers and beneficially used as Class A biosolids and soil amendments.

3.2.3 Pelletization

The operation and maintenance of the Ashbridges Bay Treatment Plant Pelletizer facility and marketing of pellets is managed by an outside contractor. In 2023, 72,765 wet tonnes of biosolids were processed by the on-site pelletizer. Pellet quality in 2023 met the standards set out by the Canadian Fertilizers Act.

3.2.4 Landfill Management of Biosolids

No biosolids were transported to landfill sites in 2023.

3.2.5 Mine Reclamation

A total 7,176 wet tonnes of biosolids was utilized at mine reclamation sites. *Table 3* below summarizes the biosolids management methods utilized and the total amount of biosolids sent to each management option.

Biosolids Management Method / Wet Tonnes	2023	2022	2021
Agricultural Land Application	42,397	41,268	30,914
Alkaline Stabilization	29,739	37,804	28,849
Pelletization	72,765	68,248	73,055
Landfill	0	0	0
Mine Reclamation	7,176	8,283	7,700
TOTAL	152,077	155,604	140,518

Table 3: Biosolids Management Methods

2023 ANNUAL REPORT

3.3 Chemical Usage

Several chemicals are used during the treatment process at the plant. *Table 4* outlines the chemical consumption for the current and previous year. Costs listed exclude applicable taxes.

Process	Chemical	Parameters	2023	2022	2021
		Dosage (mg/L)	7.53	8.18	10.56
Phosphorus Removal	Ferrous Chloride as Fe	Consumption (tonnes)	1,678	1,722	1,962
Removal	0310	Cost (\$)	\$2,074,253	\$1,927,101	\$2,199,462
	Sodium	Dosage (mg/L)	2.23	2.22	2.24
Disinfection ¹	Hypochlorite	Consumption (m3)	4,110	3,842	3,520
	(12% w/v)	Cost (\$)	\$4,118,946	\$790,122	\$584,629
		Dosage (kg/DT)	4.57	5.49	6.20
WAS	Polymer	Consumption (tonnes)	148.50	165.00	196.50
Thetering		Cost (\$)	\$710,561	\$753,889	\$863,546
		Dosage (kg/DT)	15.00	13.57	14.72
Biosolids Polym Dewatering	Polymer	Consumption (tonnes)	644	608	593
		Cost (\$)	\$4,563,089	\$4,165,652	\$2,629,407
		Dosage (kg/DT)	0.20	0.20	N/A
СЕРТ	Ferric Chloride as FF	Consumption (tonnes)	44	40.83	N/A
	0312	Cost (\$)	\$129,459	\$107,619	N/A
		Dosage (kg/DT)	N/A	N/A	N/A
СЕРТ	Polymer	Consumption (tonnes)	1.50	2	N/A
		Cost (\$)	\$9,586	\$8,929	N/A

Table 4: Chemical Usage Summary

3.4 Bypasses, Overflows, Spills, and Abnormal Discharge Events

3.4.1 Bypasses

There were seventeen bypass events in 2023; all were secondary treatment bypasses. The total volume of bypass flow was 4,594.67, or 2.11 % of the annual flow. Table 5 summarizes the bypass events that occurred in 2023.

Bypass flows do not receive secondary treatment (i.e. the Aeration Tanks) but receive preliminary, primary treatment, nutrient removal, as well as disinfection before the final effluent sampling point. All bypass flows are blended with fully treated plant effluent prior to discharge. Secondary bypasses result from high wet weather flows that exceed the plant's secondary treatment capacity. Each instance was reported to the MECP Spills Action Center and recorded



2023 ANNUAL REPORT

in the plant's Monthly report. Total precipitation in the Toronto area was 727.5 mm in 2023, an 0.2% decrease compared to 2022.

Table 5: Bypass Summary

No	. Date	Start of Event	End of Event	Duration (hrs)	Volume (m ³)	Average Chlorine Dose (mg/L)
1	January 4 th to 5 th , 2023	7:34:00 PM	12:54:00 AM	5.34	267,090	10.0
2	February 9 th to 10 th , 2023	11:27:00 AM	2:01:00 AM	14.56	745,270	9.9
3	March 25 th , 2023	12:56:00 PM	9:53:00 PM	8.95	427,060	10.0
4	April 1 st , 2023	3:37:00 AM	10:28:00 AM	6.87	351,060	10.0
5	April 5 th , 2023	1:15:00 PM	10:49:00 PM	9.58	453,980	10.0
6	April 22 nd , 2023	7:19:00 AM	4:10:00 PM	8.85	248,820	10.0
7	May 20 th , 2023	8:30:00 AM	3:12:00 PM	6.68	208,350	10.0
8	June 12 th , 2023	8:20:00 AM	8:56:00 PM	12.60	758,740	10.0
9	July 13 th , 2023	6:45:00 AM	12:16:00 PM	5.52	183,610	10.0
10	July 27 th , 2023	4:21:00 AM	7:27:00 AM	3.09	128,310	9.9
11	July 29 th , 2023	11:53:00 AM	3:13:00 PM	3.33	105,660	9.9
12	August 25 th , 2023	2:24:00 AM	3:53:00 AM	1.48	35,740	10.1
13	September 14th, 2023	8:53:00 AM	11:00:00 AM	0.65	50	
14	November 8 th to 9 ^{th,} 2023	11:07:00 PM	3:37:00 AM	4.48	90,660	9.9
15	November 21 st , 2023	2:48:00 PM	6:46:00 PM	3.95	102,040	10.0
16	December 17 th , 2023	2:59:00 PM	8:14:00 PM	5.23	92,510	10.0
17	December 27 th , 2023	11:22:00 AM	6:04:00 PM	6.68	395,720	9.9

3.4.2 Overflows

There were no overflow events at the Ashbridges Bay Treatment Plant in 2023. An overflow is defined as a discharge to the environment from the plant at a location other than the plant outfall downstream of the final effluent sampling station.

3.4.3 Spills

There were 9 spills reported to the MECP in 2023; they are summarized below.

³ Adapted from <u>http://climate.weather.gc.ca/historical_data/search_historic_data_e.html</u>, Toronto City Station

2023 ANNUAL REPORT

Table 6: Spill Summary

Date	Volume (m ³)	Nature of event	Description
Jan. 11 th , 2023	NA	Broken buried pipe.	Centrate mixed with sump pump discharge leaking from the buried pipe between Blower Building and Dewatering Building. Spill stopped once the leaking pipe was isolated.
Mar. 25 th , 2023	50	Wet weather.	Around 12:30hrs on March 25 th , plant staff noticed that primary effluent was coming out from the east settled sewage conduit as the level of settled sewage in the conduit was getting high during the heavy rain event. The spilled material went on the nearby grass and entered catch basins in the vicinity. Plant technician opened passes to lower the sewage level within the conduit and the spill stopped around 13:00 hrs. The affected areas, including affected catch basins and grass area, were disinfected with the Sodium Hypochlorite on the same day.
Apr. 3 rd , 2023	1	Broken pipe.	On April 3 rd , plant staff noticed that plant water was coming out from a broken pipe on the east end of P building grit room. The spilled material went on the nearby grass and entered a catch basin and a manhole in the vicinity. Plant staff used a spill containment kit to stop the flow going into the sewers. Around 20:15hrs, a 14" valve was closed so the spill was stopped. Since the plant water is chlorinated final effluent, no need to disinfect the affected areas.
Apr. 5 th , 2023	40	Wet weather.	At approximately 17:30 hours, some preliminary effluent was observed to have spilled onto a grassy area north of D Building. At 18:00hrs a small portion of this effluent was observed leaving the grassy area and enter a catch basin. This spill was caused by a sudden surge of flow into the plant occurring over a short duration of time during a rain event on April 5, 2023. The estimated volume of spilled effluent was around 40 M ³ . The impacted area was disinfected on April 6, 2023.



Date	Volume (m ³)	Nature of event	Description
			At approximately 14:30hrs, the contractor noticed
			water coming through an insulated common
			overflow pipe. When the insulation was removed, it
			was noticed that a $1/2^{\prime\prime}$ drain value inside the
			insulated section was partially open. The valve was
			immediately closed to stop the spill of water. The
		Valve was partially	Contractor was preparing Digester 9-12 (under
April 19 th , 2023	0.1	open during pressure	refurbishment) by filling it with plant water for an
		testing.	uncoming pressure testing. For pressure testing, the
			digester has to be completely filled (to remove all
			the air) Hence when the digester was full the plant
			water went into the overflow nine leading to the $\frac{1}{2}$
			cracked open value in the insulated section nine
			causing the shill of plant water on the grass
			At approximately 17:30 hours, some preliminary
			effluent was observed to have spilled onto a grassy
			area north of D Building. A small portion of this
			offluent was observed leaving the grassy area and
luno 12th 2022	100	Watwaathar	entered a catch bacin. This shill was caused by a
Julie 12 , 2025	100	wet weather.	sudden surge of flow into the plant occurring over a
			duration of time during a rain event on lung 12
			2022. The impacted area was disinfected on lung
			2025. The impacted area was disinfected on Julie
			15, 2025.
			At approximately 11.40 hours, some suspected
			aned algested sludge was observed on a small
			distribution showed. There are no established
			distribution channel. There are no catch basins
			nearby, so no spliled material entered a catch basin.
			This spill was caused by a test flush using plant
Sept. 12 th , 2023	1	Loose flange	water for the purpose of reusing a digested sludge
			flushing line on Sept. 11th, 2023. The spill was not
			discovered until the next day because the spill
			The flame used to early the and of fluching line used.
			The hange used to cap the end of flushing line was
			noise and tested plant water went out. After this
			spill event, the flange was tightened, and no spill
		1	would be expected to happen again.



2023 ANNUAL REPORT

Date	Volume (m³)	Nature of event	Description
Oct. 5 th , 2023	0.5	Malfunctional cap.	At approximately 12:10 hours, some liquid came out from a cleanout and went on a small grassy area southeast of the D building. There are no catch basins nearby, so no spilled material entered a catch basin. This spill was due to malfunction at a cleanout for a force main, where the cap of the cleanout came off. The force main transfers drained liquids from our vacuum truck unloading facility to our preliminary treatment process. These liquids can be from various Ashbridges Bay Treatment Plant processes. At the time of the spill, the liquids were from cleaning jobs from both the Thickened Waste Activated Sludge hoppers and from the D Building primary tank scum system. After this spill event, the cap was fixed. To protect the cleanout, we are adding a cover and signage.
Dec. 12 th , 2023	0.1	Wet weather	Around 08:30hrs on Dec. 12th, 2023, plant staff noticed some traces of dried primary effluent in the vicinity of the west side of D Building. This spill was suspected being caused by a sudden surge of flow into the plant during a rain event on Dec. 9th, 2023. The estimated volume of spilled primary effluent was around 100 L. The impacted area was cleaned up and disinfected on Dec. 12th, 2023.

3.4.4 Abnormal Discharge Events

There were no abnormal discharge events at the Ashbridges Bay Treatment Plant in 2023. An abnormal discharge event is defined within the meaning of Part X of the Environmental Protection Act. For additional information, please refer to Section 7.6 – MECP/MOL Correspondence.

3.5 Complaints

The Ashbridges Bay Treatment Plant investigated 13 odour related complaint in 2023 and found 8 were not related to plant operation. There were no noise related complaints received in 2023. All complaints were recorded, investigated by Toronto Water staff, reported to MECP, and when possible, followed up with the complainant.

3.6 MECP Procedures F-5-1 and F-5-5

Condition 11 (4)(m) of the ECA describes requirements to summarize efforts to achieve conformance with MECP Procedure F-5-1 – Determination of Treatment Requirements for



2023 ANNUAL REPORT

Municipal and Private Sewage Works and MECP Procedure F-5-5 – Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer Systems.

In reference to procedure F-5-1, the plant utilizes the activated sludge treatment process to meet secondary or equivalent treatment and consistently achieves effluent quality at or beyond the objectives outlined in the ECA.

Furthermore, Toronto Water is committed to efforts to control the frequency and volume of CSO discharges and bypass events referenced in Procedure F-5-5. The City is currently implementing a 25 year plan related to its Wet Weather Flow Master Plan (WWFMP), which aims to reduce and eliminate the adverse impacts of storm water runoff and CSO discharges associated with wet weather events. It is expected that the on-going implementation of capital projects related to the City's WWFMP will eliminate CSO discharges and ultimately improve plant effluent.

3.7 Effluent Quality Assurance and Control Measures

Analytical tests to monitor required parameters are performed by the Toronto Water Laboratory which is accredited to ISO/IEC 17025 by Canadian Association for Laboratory Accreditation Inc. Plant operation and performance is monitored by licensed operators as well as by the facility management team. Standard Operation Procedures, emergency plans, equipment preventative and predictive maintenance, and a network of support staff, help ensure a rapid and effective response to issues, and maintain the high quality of the effluent and biosolids. An Integrated Quality Management System emphasizing environmental, and health and safety objectives is also in the early implementation stages across Toronto Water and is expected to further standardize facility operations and improve facility performance.

2023 ANNUAL REPORT

4 CAPITAL PROJECTS

Under Toronto Water's capital program, the Ashbridges Bay Treatment Plant commenced or continued with the capital works projects and studies listed in Table 7 in 2023.

Table	7:	Capital	Pro	iects
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Project Name Project Description		Project Stage (Dec	Estimated
		31, 2023)	Completion
Digester 9-12, II	Complete upgrade of Digester 9-12 cluster, including replacement of the mixing system and sludge recirculation pumps and sludge transfer pumps.	Construction	2024
D Building Phase 2 Upgrade	Upgrades to existing systems including screening handling and ferrous chloride dosing. Includes chemically enhanced primary treatment and upgrades to enhance maintainability of equipment.	Construction	2026
D Building Solar Roof	Installation of solar energy cells on the roof of D Building.	Construction	2024
Effluent Disinfection	New UV disinfection facility. Also includes new secondary west bypass conduits, plant water station upgrades, seawall substation upgrades, and seawall gate refurbishment.	Construction	2025
IPS	Preliminary civil work for the future IPS, replacement of M&T pumping station with new Integrated sewage/wet weather flow pumping station located South of Lakeshore.	Construction	2036
Outfall	New plant outfall that includes a new effluent drop shaft, new outfall pipe with diffusers.	Construction	2025
Polymer Upgrades	Replacement of dewatering polymer system, dewatering centrifuges, upgrades to sludge feed system, centrate storage, as well as the WAS polymer system.	Design	2030
WAS Thickening and South Station Upgrades	New WAS thickening facility using centrifuges and overhaul of South Substation.	Construction	2028
Blower Building Upgrades	Upgrades to blower building admin space and stores.	Completed	2023
Digester 13 & 16 Cleaning	Cleaning program for Digesters 13 and 16. Additional digester clusters to follow.	Completed	2023
Pelletizer Upgrades	Upgrades to various system to extend life of facility.	Construction	2025
Heating and Air Systems - Contract 1	Replacement of hot water boilers	Construction	2025
Heating and Air Systems - Contract 2	Replacement of compressors, dryers and chillers	Design	2028
Cross Collector Pilot	Pilot test of new technology on final tank 2.	Construction	2024



Project Name	Project Description	Project Stage (Dec	Estimated
Pelletizer 2.0	Construction of a new Pelletizer based on	31, 2023) Design	2030
	Pelletizer Design project.		
Secondary Treatment Upgrades	Addition of 2 new secondary treatment trains including aeration tanks and final tanks, conversion of tank 11 to fine bubble with complete replacement of associated Design equipment, new blower building and air header, misc. upgrades to supporting systems and installation of blower 12		2035
Grit Study	Study seeks to understand the performance of the grit removal system by computational fluid dynamics (CFD) modeling and field grit sampling.	Completed	2024
Elevator Modernization Project	Upgrade of existing elevators.	Design	2027
Digester 1-4 Cleaning	Cleaning and rehabilitation of Digesters 1 to 8. Upgrade associated equipment as needed.	Design	2027
Digester 5-8 Cleaning	Cleaning and rehabilitation of Digesters 1 to 8. Upgrade associated equipment as needed.	Design	2030
Old PS Upgrades	Complete upgrade of the original primary sedimentation tank 1 to 6, including process equipment replacement, scum and sludge pumping stations upgrade to improve working and operating conditions.	Design	2030
Digester Capacity Study	Evaluate the Digester Capacity at ABTP by identifying and assessing alternatives to upgrade, intensify and/or expand the capacity of the existing Anaerobic Digesters for long-term stability of the plant's biosolids management program.	Design	2025
M Building Critical Repairs III	Refurbishment/ repair of critical infrastructure in M Building such as Pumps, isolation valves/gates, check valves	Tender	2025
Landform	Landform Project is intended to provide erosion and sediment control in Ashbridges Bay and new ABTP property for the construction of a future combined sewer overflow High Rate Treatment Facility.	Construction	2025

2023 ANNUAL REPORT

5 MAINTENANCE

Staff from the Ashbridges Bay Treatment Plant performed a variety of scheduled, preventative, predictive and reactive maintenance activities on a diverse spectrum of equipment. Equipment availability and reliability ensures operational objectives are achieved.

The annual calibration and maintenance records of flow meters and on-line analysers was completed in 2023 and found to be within acceptable limits. A summary of calibration and maintenance of regulated monitoring equipment performed in 2023 is included in Table 8.

Table 8: Summar	y of Regulatea	Monitoring Equ	uipment Calibration	and Maintenance
-----------------	----------------	----------------	---------------------	-----------------

Calibration and/or Maintenance Record	Completion Date
pH Analyzer: TAB-DIS-AIT-3003 Calibration	01/18/2023
pH Analyzer: TAB-DIS-AIT-3006 Calibration -	01/18/2023
pH Analyzer: TAB-DIS-METR-3018 - Calibration	01/18/2023
Pocket Colorimeter II Chlorine System - (No Asset ID - Spare) Calibration	02/21/2023
Pocket Colorimeter II Chlorine System - TAB-DIS-METR-3017 Calibration	02/21/2023
Pocket Colorimeter II Chlorine System - TAB-DIS-METR-3012 Calibration	02/21/2023
Pocket Colorimeter II Chlorine System - TAB-DIS-METR-3016 Calibration	02/21/2023
Effluent Flow Meter - North Conduit - TAB-STR-FIT-8004 - Verification	05/18/2023
Effluent Flow Meter - South Conduit - TAB-STR-FIT-8003 - Verification	05/18/2023
Online Chlorine Analyzer (CL 17sc) - North - Calibration	08/10/2023
Online Chlorine Analyzer (CL 17sc) - South - Calibration	08/10/2023
Effluent Flow Meter - North Conduit - TAB-STR-FIT-8004 - Verification	08/24/2023
Effluent Flow Meter - South Conduit - TAB-STR-FIT-8003 - Verification	08/24/2023
Bypass Flow Meter - East - TAB-STR-PIT-0003X - Verification	11/28/2023
Bypass Flow Meter - West - TAB-STR-PIT-0004X - Verification	11/28/2023
Influent Flow Meter - P Building - Grit Diversion- TAB-PLT-FIT-0033 - Verification	11/28/2023
Influent Flow Meter - P Building – Screening Diversion - TAB-PLT-FIT-0031 - Verification	11/28/2023
P Building - Grit Tank Flow Meter - Tank 1 - TAB-PLT-FIT-0101 - Verification	12/14/2023
P Building - Grit Tank Flow Meter - Tank 2 - TAB-PLT-FIT-0201 – Verification	12/14/2023
P Building - Grit Tank Flow Meter - Tank 3 - TAB-PLT-FIT-0301 - Verification	12/14/2023
P Building - Grit Tank Flow Meter - Tank 4 - TAB-PLT-FIT-0401 – Verification	12/14/2023
P Building - Grit Tank Flow Meter - Tank 5 - TAB-PLT-FIT-0501– Verification	12/14/2023
P Building - Grit Tank Flow Meter - Tank 6 - TAB-PLT-FIT-0601– Verification	12/14/2023
Influent Flow Meter - D Building - Channel 08 - TAB-PLT-FIT-0803 - Verification	12/22/2023
Influent Flow Meter - D Building - Channel 09 - TAB-PLT-FIT-0903 - Verification	12/22/2023
Influent Flow Meter - D Building - Channel 10 - TAB-PLT-FIT-1003 - Verification	12/22/2023
Influent Flow Meter - D Building - Channel 11 - TAB-PLT-FIT-1103 - Verification	12/22/2023
Final Effluent - Autosampler - North - TAB-STR-SP-3132 Verification	Monthly



2023 ANNUAL REPORT

Calibration and/or Maintenance Record	Completion Date
Final Effluent - Autosampler - South - TAB-STR-SP-3334 Verification	Monthly
Autosampler - East Bypass - TAB-STR-SP-3001 - Verification	Quarterly
Autosampler - West Bypass - TAB-STR-SP-4001 - Verification	Quarterly
Influent Sampler - TAB-PLT-SP-0041 - P Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0041 - P Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0500 - D Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0500 - D Building - Calibration	Quarterly

In 2023, there were a total of 34,952 work orders completed on routine maintenance and emergency repairs; refer to Appendix H for a summary of major maintenance activities as per Condition 11(4) of the ECA.

None of the maintenance activities undertaken at the plant fell under Limited Operational Flexibility. A summary of the Notice of Modifications is shown in Section 7.6 MECP/MOL Correspondence.



2023 ANNUAL REPORT

6 UTILITIES

A summary of monthly utility consumption for the previous three years at Ashbridges Bay Treatment Plant is provided in Figure 1. Table 9 below summarizes the total cost and average unit cost for water, hydro, and natural gas. Total annual consumption for potable water, hydro, and natural gas was 633,346 m³, 129.7 GWh, and 5.8 Mscm, respectively.



Figure 1: Annual Utility Consumption (Water, Hydro, Gas)

Utility	2023	2022	2021
Water Unit Cost (\$/m³)	\$4.62	\$4.48	\$4.35
Water Total Cost (\$/year)	\$2.92M	\$2.63M	\$2.01M
Hydro Unit Cost (\$/kWh)	\$0.10	\$0.10	\$0.09
Hydro Total Cost (\$/year)	\$12.3M	\$13.1M	\$12.7M
Natural Gas Unit Cost (\$/m ³)	\$0.41	\$0.32	\$0.24
Natural Gas Total Cost (\$/year)	\$2.39M	\$2.1M	\$1.7M



2023 ANNUAL REPORT

7 ADMINISTRATION

7.1 Operations and Maintenance Costs

The 2023 plant direct operational costs are broken down into five categories: Salaries and Benefits, Materials and Supplies, New Equipment, Services and Rents, and Inter-Divisional Charges. Materials and Supplies is further segregated into Utilities, Machine & Equipment Parts, Chemicals and Other Materials and Supplies. A breakdown of annual operations and maintenance costs for the past three years is illustrated in Figure 2. Overall, operational costs increased by 11 % from 2022. Over half of the increased operations and maintenance cost was due to an increase in the cost of chemicals



Figure 2: Operations and Maintenance Cost Breakdown



2023 ANNUAL REPORT

7.2 Human Resources

Plant Staffing at the Ashbridges Bay Treatment Plant in 2023 is shown in Table 10.

Table 10: Plant Staffing

Positon	Number of FTE ¹
Sr. Plant Manager	1
Manager, Engineering Services	2
Superintendent, Plant Process and Operations	2
Senior Engineer	3
Engineer	1
Area Supervisor Plant Operations and Maintenance	8
Supervisor, Operational Support	1
Co-Ordinator Business Support	1
Supervisor, Operating Engineers A/R-C	1
Stationary Engineer Operator	11
Electrical Instrumentation Specialist	2
Engineering Technologist Technician	2
Plant Technician/Wastewater	36
Industrial Millwrights	42
EICT	23
Support Assistant	2
Materials Management Assistant	3
Wastewater Plant Worker	6
Administration Trainee	0
Technical Trainee	0.3
Labourer 2	3.2
Total FTE Positions	150.5

¹ FTE refers to Full Time Equivalent staff. Seasonal staff are considered 0.5 FTE staff.



2023 ANNUAL REPORT

7.3 Occupational Health & Safety

Continuous efforts are made to ensure a safe working environment at the Ashbridges Bay Treatment Plant. The Joint Health and Safety Committee (JHSC) assists management in resolving issues through regular meetings and monthly workplace inspections. Plant Health and Safety statistics for the Ashbridges Bay Treatment Plant are included in Figure 3⁴.

As of December 31st, 2023, there were 6 health and safety incidents, and a total of 1 lost time days due to work related injuries.



Figure 3: Ashbridges Bay Treatment Plant Health & Safety Injury Summary

⁴ The previously reported values for 2022 and 2021 have been changed to reflect the status of those WSIB claims as of December 31st, 2023



2023 ANNUAL REPORT

7.4 Staff Training and Development

The Strategic Planning and Workforce Development unit of Toronto Water facilitates a comprehensive training program for all staff.

Training attended by Ashbridges Bay Treatment Plant operations and skilled trades staff in 2023 includes the list of courses shown in Appendix I. Some of these courses were eligible for Continuing Education Units (CEU's) as specified by the Ontario Water and Wastewater Certification Office. Additional training related to the start-up and commissioning of new equipment/systems installed as part of the capital program was provided as required.

7.5 Utility Operator Certification

Toronto Water trains and provides the required resources to ensure all operators achieve and maintain Class IV certifications. In addition, all skilled trade positions are required to achieve and maintain a Class I operator's license. As part of this initiative, general operational/process training was delivered in order to prepare staff for any certification examination that they need to write. Table 11 summarizes the status of operator certification at the Ashbridges Bay Treatment Plant in 2023.

Class Level			
	Licensed		
Class I	50		
Class II	8		
Class III	11		
Class IV	36		
ΟΙΤ	23		
Total	128		

Table 11: Wastewater Treatment Certificates

7.6 MECP Correspondence

There were no orders issued by the Ministry of the Environment, Conservation and Parks (MECP).

Table 12 summarizes the correspondence submitted to the MECP for the Ashbridges Bay Treatment Plant. Correspondence related to spills and bypasses can be referenced in Section 3.4.



2023 ANNUAL REPORT

Event Date	Туре	Description	Resolution	Resolution Date
Complaints April 11th, 2023	Odor complaint	An investigation was completed, and no possible source of odour was identified at the plant. In addition, an off-site investigation was conducted and noticed a faint organic like smell not at the complainant's address, but at the southern end of the street near the lake. The faint odour was more noticeable from a southerly direction (from the lake), rather than a westerly direction (from the facility). In summary, the odour is not facility related, but more than likely due to the warming of the lake and seasonal turnover. The complainant was contacted and provided the updates on the investigation.	NA	NA
May 26th, 2023	Odor complaint	An odour complaint was received on May 26th, 2023. An investigation was completed, and it was possibly due to primary tank #10 being out of service and emptied. The concerned primary tank has been refilled with water on May 29 th . The plant staff has contacted the complainant, explained the investigation and action taken to address the complaint. The complainant appreciated the follow up phone call from the plant staff.	Resolved.	May 29th 2023
May 29th, 2023	Odor complaint	An odour complaint was received on May 29 th , 2023. It was possibly due to a malfunctional silo loading bay door on the Pelletizer facility, a process which is operated under contract by Veolia, but at the ABTP facility.	Resolved by forcing the door closed.	June 1 st , 2023
May 31st, 2023	Odor complaint	An odour complaint was received on May 31st, 2023. It was possibly due to a malfunctional silo loading bay door on the Pelletizer facility, a process which is operated under	Resolved by forcing the door closed.	June 1 st , 2023

Table 12: Correspondence submitted to the MECP

contract by Veolia, but at the ABTP

facility.



Event Date	Туре	Description	Resolution	Resolution Date
June 1 st , 2023	Odor complaint	An odor complaint was received on June 1 st , 2023 from a resident via a City Councillor's office. The complainant indicated that the smell comes through the catch basins and usually gets worse after it rains. The odour was not related to facility operations, but instead emanating from local street level catch basins. Ashbridges Bay responded by arranging for catch basin inspection/cleaning along the length of Berkshire Ave. with TW district operations. This was communicated to the resident via the councillor's office.	NA	NA
July 1 st , 2023	Odor complaint	An odour complaint was received on July 1st, 2023. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
July 5th, 2023	Odor complaint	An odour complaint was received on July 5th, 2023. An investigation was completed, and it was deemed due to the shutdown of aeration blowers for about 5.5 hours on July 5 th , for Hydro Global adjustment and hydro feeder switching purposes.	Resolved once the aeration blowers were put back to service.	NA
July 23 rd , 2023.	Odor complaint	An odour complaint was received on July 23 rd , 2023. An investigation was completed, and no possible source of odour was identified at the plant. The complainant was contacted plant staff on July 24 th , 2023 and left a voicemail. In his voicemail, the plant staff explained that the odour control systems were operating normally last night and that all exterior doors at the plant were closed. A potential cause may have been the rain the city got yesterday and stirred up parts of the collection system causing an odour, which was also mentioned in the voicemail.	NA	NA



Event Date	Туре	Description	Resolution	Resolution Date
July 25th, 2023	Odor complaint	An odour complaint was received on July 25th, 2023. An investigation was completed, and no possible source of odour was identified at the plant. The complainant indicated that he did not want a follow up phone call or e-mail.	NA	NA
Sept. 6th, 2023	Odor complaint	An odour complaint was received on Sept. 6th, 2023. An investigation was completed, and no possible source of odour was identified at the plant. The complainant was contacted by phone and left a message on the investigation result.	NA	NA
Oct.3 rd , 2023	Odor complaint	The plant received an odor complaint via Toronto-Danforth Councillor on Oct.3 rd , 2023. The plant staff did investigation and action has been taken to mitigate the impact from the possible source of odor. An email with detailed explanation on investigation and actions taken has been sent back to the Councillor's office on Oct. 4 th , 2023.	Resolved by flushing both High Level and Low Level interceptors.	Oct. 4 th , 2023
Oct. 23 rd , 2023	Odor complaint	The plant received an odor complaint on Oct. 23 rd . The plant staff conducted investigation and no possible source was identified. The complainant was contacted and provided the update on the investigation result.	NA	NA
Nov. 27 th , 2023	Odor complaint	The plant received an odor complaint on Nov. 27 th , 2023. The plant staff conducted investigation and a possible source was identified. The complainant was contacted and provided the update on the investigation result.	The malfunctional door was fixed.	Nov.29 th , 2023.



Event Date	Туре	Description	Resolution	Resolution Date
July 7 th , 2023	Other complaint	On July 7 th , ABTP staff received a complaint of raw sewage like material in the vicinity of ABTP via 311/TW CC regard raw sewage like material in the lake near ABTP. Area was scanned visually using aerial drones and all operational parameters reviewed. No evidence to validate the complaint was observed.	NA	NA
Consent Lette	rs			
June 26 th , 2023	Request for Consent	Planned releases of primary effluent due to bypass gates annual maintenance.	Consent was granted.	July 7 th , 2023
Notice of Mod	lification to Sewage Works			
June 26 th , 2019	Notice of Modifications to Sewage Works	In terms of status of LOF implementation, the upgrades are complete, AT 2 will be in service as a normal tank (as identified in ECA) for approx. 1.5 to 2 months, then the AT2 will start the trial to operate in Bio P mode in 2024.	NA	NA
Notification o	n Construction of Proposed	Works		
Feb. 7 th , 2023	Schedule submission for the completion of construction and commissioning operation of the Proposed Works.	This letter was to notify the Ministry of the Environment, Conservation and Parks that construction of the Sludge Management System Contract as described under Section of Proposed Works in ECA (5039- C9CK5L) commenced in Oct.1st, 2021. As per the current schedule, we are anticipating that the construction is planned for commissioning operation on Oct. 1 st , 2027 and completion of construction on Dec. 31 st , 2027.	NA	NA


2023 ANNUAL REPORT

Event Date	Туре	Description	Resolution	Resolution Date
June 15 th , 2023	Schedule submission for the completion of construction and commissioning operation of the Proposed Works.	This letter is to notify the Ministry of the Environment, Conservation and Parks that construction of the Ashbridges Bay Treatment Plant D Building Phase 2 Upgrades Project as described under Section of Proposed Works in ECA (0574- CQ6J5H) commenced on June 1st, 2023. As per the current schedule, we are anticipating that the facility to start commissioning on May 13, 2026 with completion of construction on June 10, 2026.	NA	NA
Notification o	n Commissioning			
Oct. 18 th , 2023	Notification on Commissioning	Commissioning Operation of Proposed Works - Digester 9 -12	NA	NA
MECP Inspect	ion			
NA	NA	NA	NA	NA



2023 ANNUAL REPORT

APPENDIX A – Plant Schematic







2022 ANNUAL REPORT

APPENDIX B – Influent and Effluent 2023 Performance Charts











2022 ANNUAL REPORT

Parameters	Units	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Influent													
Flow	ML/day	610.2	570.4	512.8	556.3	651.5	563.9	659.8	549.8	585.2	638.4	631.6	576.1
Total Annual Flow	ML	222,626	208,083	187,270	203,657	237,723	205,750	240,817	201,229	212,831	232,932	230,456	210,834
Total Suspended Solids (TSS)	mg/L	302.2	324.1	329.7	252.9	207.8	303.7	279.5	318.6	334.6	328.5	271.2	275.2
Biochemical Oxygen Demand (BOD ₅)	mg/L	195.5	203.1	218.5	179.3	153.8	207.9	201.9	244.6	274.9	258.3	174.9	178.2
Total Phosphorus (TP)	mg/L	6.5	6.5	6.3	5.6	4.9	6.3	6.4	7.5	7.5	6.6	5.9	6.2
Total Kjeldahl Nitrogen (TKN)	mg/L	42.3	44.9	42.8	38.2	37.2	42.6	40.3	45.4	43.7	44.7	46.6	47.7
Preliminary Treatment													
Grit and Screenings	tonnes/day	6.1	5.1	5.0	4.7	4.6	4.9	5.5	5.7	5.6	11.0	13.0	9.2
Primary Treatment													
TSS	mg/L	206.9	250.8	246.2	186.0	99.8	89.3	142.9	123.9	233.3	205.9	162.7	216.1
Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	111.7	118.6	132.5	117.0	99.8	89.3	68.7	84.3	98.9	92.9	90.3	113.3
Secondary Treatment													
Aeration Loading	kg CBOD ₅ / m ³ .day	0.36	0.36	0.37	0.35	0.35	0.27	0.25	0.25	0.32	0.32	0.32	0.53
Mixed Liquor Suspended Solids	mg/L	2,908	2994	2899	2933	3,285	3389	2,372	2,643	2,969	2,696	1,830	1,467
Flow through Seawall Gates	ML	4727	2101	1462	1732	3,834	3278	3,187	2,004	2,908	4,751	5,227.9	-
Secondary Treatment Effluent													
Secondary Effluent Daily Average Flow	ML/day	597.5	562.5	509.3	549.5	637.3	559.6	654.9	548.7	576.9	632.4	625.7	571.2
TSS	mg/L	12.9	13.5	13.2	11.8	14.7	8.0	5.2	6.4	10.1	8.2	8.0	8.4
TSS Loading Rate	kg/day	7732	7567	6732	6465	9,336	4453	3,415	3,489	5,021	5,021	4,981	4,810
cBOD5	mg/L	6.6	5.8	5.5	4.6	7.3	4.7	4.1	4.3	5	4.6	8.5	6.9
cBOD5 Loading Rate	kg/day	3963	3257	2814	2509	4,668	2627	2,668	2,381	2,838	2,837	5,262	3,926
ТР	mg/L	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.6	0.6
TP Loading Rate	kg/day	415	407	368	359	487	376	458	365	495	495	330	330
Escherichia Coli (E. Coli)	CFU/100 mL	112.0	60.0	29.0	17.0	32.0	25.6	53	36.8	66.5	7.4	90.0	31.3
рН	-	7.2	7.1	7.0	6.9	7.1	7.0	6.8	6.8	7.0	7.0	7.2	7.2

Parameters	Units	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Total Residual Chlorine	mg/L	0.6	0.5	0.5	0.55	0.54	0.59	0.60	0.60	0.50	0.80	1.00	0.60
Total Kjeldahl Nitrogen (TKN)	mg/L	8.0	6.6	4.4	3.8	10.4	6.2	5.0	3.8	6.7	7.3	14.5	14.4
Total Ammonia Nitrogen	mg/L	7.5	5.9	3.2	3.0	10.9	6.0	4.6	3.3	5.3	5.9	11.2	13.8
Nitrate + Nitrite	mg/L	17.5	19.1	17.8	17.5	14.4	17.4	17.1	18.5	17.0	16.3	13.1	17.1
Temperature	degrees Celsius	20.4	20.8	18.8	20.8	19.7	21.0	20.2	20.9	20.1	19.5	20.2	19.7
Final Effluent													
TSS	mg/L	14.9	13.8	13.7	11.9	15.0	8.1	5.4	6.5	10.4	9.2	-	-
cBOD5	mg/L	7.7	6.4	5.6	4.7	7.9	4.7	4.1	4.4	5.2	5.0	-	-
ТР	mg/L	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.8	-	-
Solids Handling													
Primary Sludge Treated	m³/day	4,298	3,822	3,357	4,874	5,429	5,978	5,640	6,420	4,440	4,292	5,067	5,546
Primary Sludge Total Solids (TS)	%	2.2	2.5	1.9	2.4	2.3	2.3	2.5	2.6	3	3.05	2.9	2.72
Primary Sludge Total Volatile Solids (TVS)	%	70.9	70.1	69.1	73.7	71.6	73.9	73	73.8	73.5	72.9	62.9	74.9
Waste Activated Sludge (WAS) co-settled in Primary Clarification Tanks or excess WAS to Aeration	m³/day	4,059	4,778	3,430	1,816	1,795	911	1,260	2,130	1,240	2,405	8,800	14,523
WAS to Thickening	m³/day	9,099	8,222	8,266	7,787	7,910	6,944	7,380	7,360	8,470	8,163	10,469	9,665
WAS TS	mg/L	1.0	1.0	1.1	0.9	0.9	0.8	0.7	0.7	0.8	0.82	0.54	0.49
Thickened WAS (TWAS) Treated	m³/day	2,494	2,258	2,527	2,257	2,119	1,952	1,440	1,600	2,090	2,366	876	677
TWAS TS	%	3.9	3.8	3.3	3.4	3.5	3.6	3.7	3.4	3.3	3.4	4.8	4.6
TWAS TVS	%	72.0	70.4	70.4	70.7	73.8	73.9	73.2	71.6	71	72.9	69.1	72.0
Volume to Digestion	m³/day	6,556	6,080	5,885	7,131	7,548	7930	7,080	8,020	6,530	6,658	5,933	6,222
Digesters Hydraulic Retention Time	days	18.1	20.2	20.9	17.3	20.0	19.3	20.2	18.1	23.3	23.1	21.8	21.1
Organic Loading to Digesters	TVS per m3 of digester capacity per day	1.1	1.0	0.8	1.1	1.0	1.0	0.9	1.1	1.0	1.0	2.1	1.3
Digester Gas Volume	m³/day	56,288	54,497	52,682	59,945	65,698	61,856	61,640	62,330	64,560	65,921	77,781	115,174
Dewatering Centrifuge Feed TS	%	1.8	1.9	1.7	1.8	1.7	1.6	1.7	1.8	1.8	1.8	1.8	1.7

Parameters	Units	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Dewatered Biosolids TS	%	27.1	28.0	27.0	26.9	27.7	27.9	27.9	28.1	27.7	26.5	27.8	28.3
Centrate Quality	mg/L	754	475	985	635	626	428	299	319	665.32	2091	1959	1196
Solids Capture Rate	%	96	97	94	96	96	97	98	98	96.44	88	77	96
Centrifuge Run Time	hours	49,030	48,372	48,347	47,578	51,226	52,790	52,400	52,329	48,049	43,507	51,451	102,922
Biosolids Management	wet tonnes/year	152,077	155,604	140,518	148,357	154,656	155,756	159,288	149,733	145,321	143,190	142,908	139,562



2022 ANNUAL REPORT

APPENDIX D – Secondary Treatment Effluent Parameters (Leachate Related)

APPENDIX D – Secondary Treatment Effluent Parameters (Leachate Related)

Quarterly Average	Boron	Cobalt	Magnesium	Manganese	Potassium	Strontium	Bis(2- ethlhexyl) Phthalate
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	μg/L
Q1	0.133	*0.004	13.8	0.0387	15.3	0.293	*0.25
Q2	0.133	*0.004	14.2	0.0651	14.9	0.32	*0.25
Q3	0.147	*0.004	12.8	0.0602	14	0.268	*0.25
Q4	0.151	*0.004	11.6	0.0552	14.5	0.226	*0.25

Values in red with an asterisk prefix are half the MDL Units are mg/l except for Bis Phthalate which is ug/l



2022 ANNUAL REPORT

APPENDIX E - Influent and Effluent Metal Concentrations

Influent (Daily Composite tested once/month for metals)

Parameters Units	Arsenic mg/L	Cadmium mg/L	Chromium mg/L	Cobalt mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Manganese mg/L	Mercury mg/L	Nickel mg/L	Zinc mg/L
January	*0.005	*0.002	0.00991	*0.002	0.137	4.42	0.00617	0.0797	*0.00005	0.00705	0.158
February	*0.005	*0.002	0.0138	*0.002	0.11	3.05	0.00528	0.0672	*0.00005	0.0138	0.128
March	*0.005	*0.002	0.00497	*0.002	0.103	3.7	0.00523	0.0691	*0.00005	0.0050	0.116
April	*0.005	*0.002	0.00699	*0.002	0.121	3.87	0.00671	0.0785	0.00015	0.00616	0.167
May	*0.005	*0.002	0.00574	*0.002	0.113	2.62	*0.0025	0.0672	*0.00005	0.0050	0.179
June	*0.005	*0.002	0.00435	*0.002	0.106	2.83	*0.0025	0.0779	*0.00005	0.00549	0.143
July	*0.005	*0.002	0.00435	*0.002	0.106	2.83	*0.0025	0.0779	*0.00005	0.00549	0.143
August	*0.005	*0.002	0.00622	*0.002	0.11	2.92	0.00504	0.0654	0.000053	0.00531	0.141
September	*0.005	*0.002	0.00638	*0.002	0.135	2.7	0.0059	0.0658	*0.00005	0.00598	0.171
October	*0.005	*0.002	0.00606	*0.002	0.121	2.74	*0.0025	0.0564	0.000127	0.00575	0.153
November	*0.005	*0.002	0.00688	*0.002	0.123	5.24	*0.0025	0.0814	*0.00005	0.00628	0.149
December	*0.005	*0.002	0.00555	*0.002	0.105	2.45	*0.0025	0.0563	0.000263	0.00544	0.134
Annual Average	0.005	0.002	0.00676667	0.002	0.1158333	3.2808333	0.004110833	0.07023	0.0000828	0.0064	0.1485

Data in red with an asterisk prefix are half the MDL

Final Effluent (Daily Composite tested once/month for metals)

Parameters Units	Arsenic mg/L	Cadmium mg/L	Chromium mg/L	Cobalt mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Manganese mg/L	Mercury mg/L	Nickel mg/L	Zinc mg/L
January	*0.005	*0.002	*0.002	*0.002	0.0106	0.463	*0.0025	0.0387	*0.00005	*0.0025	0.032
February	*0.005	*0.002	*0.002	*0.002	0.00914	0.453	*0.0025	0.0643	*0.00005	*0.0025	0.0366
March	*0.005	*0.002	*0.002	*0.002	0.0101	0.681	*0.0025	0.0611	*0.00005	*0.0025	0.0298
April	*0.005	*0.002	*0.002	*0.002	0.018	1.64	*0.0025	0.0651	*0.00005	*0.0025	0.0387
May	*0.005	*0.002	*0.002	*0.002	0.00798	0.485	*0.0025	0.0493	*0.00005	*0.0025	0.0277
June	*0.005	*0.002	*0.002	*0.002	0.00763	0.471	*0.0025	0.0602	*0.00005	*0.0025	0.0334
July	*0.005	*0.002	*0.002	*0.002	0.00763	0.471	*0.0025	0.0602	*0.00005	*0.0025	0.0334
August	*0.005	*0.002	*0.002	*0.002	0.00713	0.529	*0.0025	0.0608	*0.00005	*0.0025	0.0303
September	*0.005	*0.002	*0.002	*0.002	0.00641	0.631	*0.0025	0.057	*0.00005	*0.0025	0.036
October	*0.005	*0.002	*0.002	*0.002	0.00583	0.703	*0.0025	0.0552	*0.00005	*0.0025	0.0316
November	*0.005	*0.002	*0.002	*0.002	0.00711	0.66	*0.0025	0.0576	*0.00005	*0.0025	0.0337
December	*0.005	*0.002	*0.002	*0.002	0.00921	0.621	*0.0025	0.0776	*0.00005	*0.0025	0.030
Annual Average	0.005	0.002	0.002	0.002	0.0089	0.6507	0.0025	0.0589	0.0001	0.0025	0.0328

Data in red with an asterisk prefix are half the MDL



2022 ANNUAL REPORT

APPENDIX F – Biosolids Analysis

Ashbridges Bay Treatment Plant - Summary of Dewatered Biosolids Analysis for 2023

Dewatered Cake	January	February	March	April	May	June	July	August	September	October	November	December	Max Allowable Dry Wt Conc mg/Kg ¹	Annual Average
TKN	47,650	42,300	45,000	41,550	49,100	49,500	56750	44,950	49,650	45,200	52,700	49,450		47,817
Ammonia(N)	5,540	8,725	8,465	5,055	6,090	7,040	5,500	4,850	4,365	5,660	7,035	4,960		6,107
Nitrate as N	0.25	0.25	0.25	0.25	0.60	0.42	0.25	0.11	0.94	0.11	0.25	0.25		0
Nitrite as N	0.35	0.59	1.42	0.35	0.76	0.70	1.04	0.58	0.81	0.18	0.35	0.35		1
As	3.205	1	2.245	1.9	1.545	2.03	2.35	2.57	3.085	2.87	2.515	1.5	170	2
B**	14.4	18.15	9.905	9.095	5	5	17.4	19.7	25.4	20	22.25	28.35		16
Cd	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.70	0.66	0.69	0.50	0.50	34	1
Cr	76.5	70.2	64.5	66.8	69.6	66.4	58.2	74.3	65.1	60.0	60.7	65.5	2,800	66
Со	6.67	4.65	4.00	4.21	4.19	3.45	4.33	5.10	4.94	4.16	4.71	3.915	340	5
Cu	630	642	603	601	695	707	611	561	605	646	706	670	1,700	639
Pb	31.0	31.9	26.3	33.5	34.6	31.7	30.8	37.8	39.9	31.7	30.1	30.1	1,100	32
Mn	345	344	330	300	263	229	273	285	280	257	255	260		285
Hg	0.33	0.44	0.34	0.31	0.40	0.46	0.42	0.40	0.42	0.29	0.44	0.46	11	0
Мо	8.78	8.36	7.97	7.56	9.17	10.07	9.20	8.45	8.67	9.48	10.85	10.2	94	9
Ni	33.7	26.6	24.6	28.2	29.9	26.8	27.1	35.1	31.6	28.6	26.4	27.7	420	29
Total P	28,400	28,600	31,450	27,300	30,850	29,500	30,100	25,100	28,450	27,400	32,300	34,600		29,504
К	1345	1115	939	1120	959	917	1305	1705	1775	1350	1325	1240		1,258
Se	4.89	3.56	4.18	3.54	2.87	1.59	3.24	3.84	4.67	3.67	4.10	4.20	34	4
Zn	979	599	573	580	665	701	673	582	645	641	667	644	4,200	662
TS%	27.9	28.4	26.8	27.8	27.5	26.1	26.5	29.9	28.5	28.0	26.7	25.3		27
VS%	58.4	62.3	62.2	60.8	63.2	66.8	64.0	55.2	56.3	61.1	63.3	66.8		62
E. Coli ²	80,566	380,774	304,475	457,502	44,688	549,608	475,671	810,637	335,755	487,144	339,792	329,011	2,000,000	382,968

¹As per MECP Regulations for Biosolids Utilization on Agricultural lands.

²CFU/g dry weight.



2022 ANNUAL REPORT

APPENDIX G – Maintenance Activities

Raw Sewage Pumping, Preliminary and Primary Treatment

Preliminary and Primary Treatment includes two raw sewage pumping stations (M and T Buildings), preliminary treatment areas (P and D Buildings), and three primary treatment areas (Primary Clarification Tanks No. 1 to 6, Tanks No. 7 to 9, and Tanks No. 10 to 12). The following maintenance was completed in 2023.

Raw Sewage Pumping:

Bi-Weekly activities:

- Calibration of level transmitters
- Perform an IR temperature reading of the capacitor bank connections.
- Check pump motor coupling bolt for looseness.
- Check the pump speed controller cable connections, pump speed controller control cabinet relay contacts, control wiring connections for looseness.
- Check the pump volute for wear and clean the pump speed controller control cabinet.
- Inspect the pump bearing cooling lines, pump motor windings and pump speed controller.
- Perform a megger test of the motor winding insulation.
- Service the pump speed controller contact and test the pump motor E-Stop push button.
- Visual inspection of the pump coupling assembly inserts for separation

Monthly activities:

- Inspection of Submersible Pump discharge check valves, discharge line, pump suction, sump pump control panel Inspection, sump pump cable inspection and test of mechanical floats
- Calibrate the oil level and pressure switch for hydraulic fluid reservoir.
- Exercise and lubricate manual valves.
- Combustible Gas detectors & Alarm Testing
- Inspect Odour Control Fans and Charcoal Filters in M & T Bldg
- Check and clean the grit chamber screen.
- Functional test of the hydraulic oil reservoir low level switch and temperature probe.
- Inspection of the capacitor bank cabinet for dust and dirt.

Quarterly:

- Testing of Biofilter Media moisture content, and pH
- Functional test of the scrubber fan E-stop function and fan inlet pressure gauge alarms
- Inspect the scrubber motor/blower bearings.
- Visual inspection of the scrubber drive belts.
- Zero check the media differential pressure gauge.
- Calibration of the pressure transmitter.
- Dry well foundation inspection.
- Functional test of the scrubber system
- Test and check the UPS for RPU- M&T Bldg
- Verify the emergency and exit lighting operation.

Bi-annual activities:

- Calibration of the air flow transmitter
- Clean soft start controller and check for electrical connections for looseness
- Inspection and lubrication of the soft start controller internal components
- M Bldg and T Bldg Knife Gate Valve Exercise
- Sample and test scrubber media
- Check the oil level in the hydraulic fluid reservoir.
- Visual inspection of the hydraulic hoses and fittings
- Visual inspection of the reservoir sight glass banjo fittings

Annual activities:

- Busbar/MCC Panel Single line Diagram Update Inspection
- Test the local controls for starting, stopping and speed adjust of all Raw Sewage Pumps

Preliminary:

Weekly activities

- Inspection of aeration blower air and drive motor inlet filter for build up of dirt.
- Inspection of Washer Compactor
- Screen Spray water line Y Strainer cleaning
- Grit Tank and Channel Blowers Weekly Inspection
- Grit Conveyor and Classifier Inspection
- Perforated Plate Screen Inspection and lubrication

• Monthly activities

- Screw Conveyor Inspection and Maintenance.
- Pneumatic Actuated Knife Gate Valves Exercise.
- Exercise and inspect actuated sluice gates.
- Perforated Plate Screen Inspection & Lubrication and Spray Nozzle Cleaning
- Screen Actuated Sluice Gate Exercise and Inspection
- P Building Elevator routine inspection and maintenance
- Grit Tank and Channel Blower Inspection & Maintenance
- Solenoid Valve testing and inspection
- Dewatering Pump Inspection & Maintenance
- Grit and Screenings Conveyor Inspection
- Plant Water Strainer Reducer Oil Level Inspection
- Grit Tank Actuated Sluice Gate Exercise and Inspection
- Hydrocyclone Inspection
- Washer Compactor Inspection & Maintenance
- Inspect Odour Control Dampers and fan discharge expansion joints.
- Leak check of the isolation valve packing
- Perform a megger test on the fan motor winding insulation.
- Inspection of VFDs for dust
- Wet Well Grinder Control Panel Inspection
- Inspect the sump pit pump flanges.

- Perforated Plate Screen Motor Megger Test
- Combustible and H2S Gas detectors & Alarm Testing
- Washer Compactor Motor Megger Test, Washer Compactor Control Panel Inspection, Motor Lubrication, Control Panel Light Inspection, Washer Compactor Inspection
- Test and verify the actuated damper emergency shutdown circuit.
- Classifier cleaning and inspection of belt, control panel, control panels lights and testing of estop.
- Classifier gearbox oil replacement, guard inspection, megger test, motion detection cleaning, motor bearing lubrication, safety contact test, seal leakage inspection and valve inspection
- Cyclone cleaning, hardware inspection, cyclone liner inspection, cyclone vortex finder inspection
- Functional test of the PLC battery fault alarm circuit operation
- Inspection of conveyor connection welds, conveyor motor to gearbox flexible element, conveyor screw, conveyor trough liner,
- Inspect the damper actuator gearbox and discharge chute.
- Inspect the level indicating transmitter electrical connections.
- Inspect the motor variable frequency drive cabinet cooling fan bearings for signs of excessive vibration, heat, and noise.
- Inspect the sump pit pump impellers & pump oil seals.
- Inspection of the fan pillow block lip seal
- Lubricate the Biofilter fan bearings.
- Inspection of Grit Air Blower Flow Transmitter
- Perforated Plate Screen Baldor Motor Lubrication,
- Inspection of perforated plate screen control panel, control panel lights, Tactile Inspection, TECO Motor Lubrication
- Inspection of Submersible Pump Control Panel Inspection, Submersible Pump Current Draw, Submersible Pump Inspect Cables, Submersible Pump Megger Testing
- Test the actuated gate emergency shutdown circuit and actuated valve emergency shutdown circuit.
- Test the gate & damper actuator RAM battery.
- Test the fan E-stop button.
- Vacuum truck unloading bay basket screen cleaning.
- Valve Inspection and Back Flushing of system
- Verification checks of the differential pressure transmitters, pressure transmitters, temperature transmitters and level indicating transmitters.
- Verify the damper actuator closed limit setting, gate actuator closed limit setting and valve actuator closed limit setting.
- Visually inspect the grit channel air piping & diffuser condition.
- Inspection of Washer Compactor Bar Screen Inspection, Washer Compactor Clean Outside of Unit, Washer Compactor Corrosion Inspection, Washer Compactor Gearbox Oil Change, Washer Compactor Housing Inspection, Washer Compactor Test the E-Stop
- Wet Well Grinder Control Panel Light Inspection and Wet Well Grinder Megger Test

Quarterly activities:

- Lubricate the pump motor bearings.
- Leak check of the pump suction valve packing.
- Inspect the pump mechanical seal plastic sight tubing.

- Grit Tank and Channel Blowers Quarterly maintenance
- Flow Transmitter Sensor Cleaning
- Pump Inspection for Obstructions
- Perforated Plate Screen Inspection & Maintenance
- Test and check the UPS for RPU
- Conduit Flow Transmitter Verification
- Actuated Butterfly valve Maintenance and Exercise
- Washer Compactor Inspection & Maintenance
- Visual inspection of the pump/motor coupling
- Check and check Conveyor Outlet gate valve instrument air filter, gate valve instrument air filter
- Classifier Motor Inspection and Screen Lubrication
- Influent Sampler Inspection and Maintenance
- Dewatering Pumps Lubrication and Inspection
- Sump Pumps Lubrication and Inspection
- Inspect the oil level in the Screw conveyor gearbox.
- Inspect the oil level in the grit conveyor gearbox.
- Classifier wearing shoe inspection.
- Change the conveyor gearbox oil and conveyor screw flange welds.
- Grit Tank and Channel Blower Coupling Screw Inspection
- Inspect and verify air transmitters flow meters, pressure, and temperature instrumentation.
- Leak check of the pump discharge valve packing
- Sampler Refrigerator Cleaning
- Visual Inspection of Biofilter Humidifier
- Washer Compactor Brush Reset, Washer Compactor Tighten Wear Strip, Washer Compactor Worm Blade Wear Inspection

PRM Maintenance Tasks

Monthly activities

- Submersible Sump Pump Operational Inspection
- Functional test of the gas detector high alarm -Transmitter & Control Panel
- Check Hazardous Gas Monitor and Sensors
- Auditory check of odour control air handler unit fan bearings for wear
- P Building Coagulant Metering Pump Inspection
- P Building Dry Polymer Chemical Feeder Inspection
- P Building, Dry Polymer Mixer Disperser maintenance

Bi-Monthly activities

- Lubricate odour control air handler fan bearings.
- Inspect the scum pump motor and pump drive belt and scum pump sheave for signs of wear.

Quarterly activities:

- Test and check UPSs for RPUs
- Pump Drive Casing Bearing Greasing & Shaft seal Inspection-
- Visual Inspection of media filter
- Raw sludge pump mechanical seal water line check
- Lubricate odour control air handler fan bearings

- Sampler Inspection and Maintenance
- Primary Tank Gate Inspection, Exercise and Lubrication
- P Bldg Angle Valve inspection and Maintenance

Bi-annual activities:

- P Bldg Sampler Thermal Sensor verification and Calibration
- P Bldg Suspended solid analyzer cleaning
- Inspection of sump pumps, suction, and discharge lines, check valves, switches and floats.
- Bridge cog wheel drive shaft bearing automatic lubricator replacement.
- Bridge rail wheel wear check
- Check for looseness on the bridge driven sprocket retaining collar.
- Flow Transmitter inspection and Sensor Cleaning
- Check for looseness on the bridge collector control panel wiring.
- Inspection of the scum collector emergency shutdown pushbutton
- Polymer Motorized Valve inspection
- Pump Drive Casing Bearing Greasing & Shaft seal Inspection.
- Valve Inspection and exercise
- Polymer Dilution Water Solenoid Valve Inspection
- P Bldg-Propeller Mixer Lubrication
- Primary Tank Valve inspection and exercise

Annual activities:

- Verification/check of pressure switches- Low & High
- Calibration of fixed gas detectors.
- Inspect the scum pump motor sheave for signs of wear.
- Scum pump motor and pump alignment check and gearbox oil level check.
- Bridge travel stop switch functional test.
- Check for looseness on the bridge collector stop limit switch striker plate bolts.
- Verification and testing of Primary Effluent Auto Sampler.
- Inspect the sump pit pump impellers and sump pit pump oil seals.
- Bridge rail wheel bearing wear and bridge collector drive tooth assembly checks.
- Scum pump high discharge pressure switch calibration and suction pressure switch calibration
- Bridge cog wheel drive sprocket assembly checks.
- Bridge collector rail mounting hardware checks.
- Cog wheel drive roller assembly corrosion check.
- Bridge drive gearbox oil level check
- Lubricate the bridge cog wheel drive sprocket/chain assembly, bridge collector scraper arm pivot point, bridge drive coupling and bridge main drive bearing.
- Bridge collector scraper hoist motor brake check.
- Bridge collector cable hoist drum cable wear check.
- Lubricate the bridge collector cable hoist sheave bearings.
- Bridge collector cable hoist gearbox oil level check.
- Bridge drive assembly alignment check.
- Bridge collector cable hoist sheave wear check.
- Bridge collector sludge rubber scraper blade wear check.

- Bridge collector sludge scraper wear shoe check.
- Bridge scum skimmer blade wear check.
- Bridge collector drive teeth wear check.
- Bridge drive gearbox oil change.
- Bridge collector cable hoist gearbox lubricant change
- Verification checks of the raw sludge magnetic flow meters.
- Scum tank ultrasonic level sensor cleaning
- 600 VAC power strip trolley brush replacement.
- Primary treatment tank safety rail mounting support check.
- Sludge pump discharge valve actuator closed limit setting.
- Busbar/MCC Panel Single line Diagram Update Inspection
- Scum pump mechanical seal water line check
- Scum pump mechanical seal oil level check
- Lubricate the dewatering pump bearings.
- Inspect the dewatering pump mechanical seal plastic sight tubing.
- Temperature transmitter verification and maintenance.
- Level Transmitter Sensor Cleaning and verification.
- Verification checks of Flow switch low.
- Scum collector skimmer plate spring torque check.
- Functional test of the odour control air handler low pressure alarm.
- Inspection of the scum pump motor gearbox oil level and seals.
- Inspect the scum collector motor sheave/gearbox drive belt.
- Propeller Mixer motor Insulation Checks.

Secondary Treatment

Secondary Treatment includes eleven Aeration Tanks, eleven Final Clarification Tanks, and the Plant Water System. The following maintenance was completed in 2023.

Daily activities:

- Inspection of aeration blower air and drive motor inlet filter for build up of dirt.
- Inspection of blower main lubricating pump.
- Flush the water side of the oil heat exchange.
- Observe the glycol pump outlet pressure and record and analyze vibration data for all bearings.

Weekly activities:

- Bi-weekly exercise and lubrication of aeration tank sluice gates.
- Inspect the activated sludge valve packing glands for signs of wear.
- Inspect the aeration tank sluice gate stem covers for signs of cracking and deterioration and mechanical drive.
- Inspection of scum skimmer driver gearbox
- Verification and testing of autosamplers.
- Verification of aeration air flow meters.

- Verification/check of the gas detector (Bump Testing)
- Testing of eye wash stations

Monthly activities:

- Inspection of the clarifier tank RAS and WAS pumps.
- Testing of hazardous gas monitors
- Clean RAS motor variable frequent drives (VFDs).
- Clean WAS motor variable frequent drives (VFDs).
- Emergency/Exit light inspections.
- Functional test the ground fault interrupters.
- Perform a megger test of the RAS/WAS pumps and blower motor winding insulation.
- Oil analysis of the heat exchanger oil.
- Perform an accuracy test for the RAS and WAS flow meters.
- Perform an accuracy test for the WAS suspended solids analyzer.

Bi-Monthly activities:

- Lubricate final clarifier scum skimmer collector mechanism bearings.
- Inspection of RAS, WAS, Scum pump's motor
- Inspection of sludge collection drive, chains, flight shoes, etc.,
- Verify the operation of the bearing lubrication oil low level alarm circuit.
- Replace the bearing lubricating oil for the blowers/motors.

Quarterly activities:

- Test and check UPSs for RPUs
- Calibration of gas detectors
- Maintenance and calibration of final effluent flow meters
- Exercise of inspection of the effluent bypass gates
- Inspection of the dry well foundation
- Conduit flow transmitter verification

Bi-annual activities:

- Inspection of sump pumps, suction, and discharge lines, check valves, wiring, switches and floats.
- Inspection of A/C equipment
- Inspection of fans for damage, wear on belt driver fan motor belts
- Primary Pump Suction Diffuser Strainer Inspection and Service

Annual activities:

- Replacement of TSS/pH/Temp Electrode for AT2
- Calibration of final effluent turbidity indication transmitter
- Maintenance and calibration of final effluent flow meters
- D Bldg Plant Water Self cleaning strainer inspection & maintenance

- Conduit flow transmitter calibration
- Inspection of door, building, roof, insulation
- Update of Busbar/MCC SLD inspection
- Verification of the seal water pressure indicating transmitter
- Clean seal water tank mechanical floats
- Fire Detection & Alarm System Test and Inspections-
- Perform a Calibration test for the Mixed Liquor flow meter.
- Inspection, Cleaning, Maintenance & lubrication of the soft start controller
- Inspection of the wet well foundation

Phosphorous Removal:

Daily activities:

- Inspection of the chemical feed pumps
- Inspections of the ferrous chloride tanks
- Inspection of the ferrous chloride sump pumps

Quarterly activities:

- Test sump pump control wiring, mechanical floats, etc.,
- Inspection of the ferrous chloride tanks & containment Areas
- Verify ferrous chloride instrumentation, FITs, LITs, LSL, LSH, LSHH
- Test and check UPSs for RPUs
- Bag strainer Inspection and maintenance
- Exercise of 3-way valves for bag strainers

Bi-annual activities:

- Inspection of Chemical Tank heat tracing system
- Inspection of PRS flow meters for secondary dosing
- FIT inspection of secondary treatment dosing flow meters
- Inspection of sump pumps, suction, and discharge lines, check valves, switches and floats.

Annual activities:

• Phosphorous System Inspection and exercise of all valves.

Dewatering

Dewatering includes the Centrifuges, Schwing Silo Pumps, Polymer/Sludge Feed Pumps and all electrical control equipment for dewatering operations. The following maintenance was completed in 2023.

Weekly activities:

- Check and exercise actuated System ball valves.
- Verify accuracy of sludge transfer density transmitter
- Check visually for any damage or wear on equipment.
- Sludge Feed Sampling Station Inspection

- Inspection and Maintenance of Fan and Fan Motor
- Inspect and Clean Polymer Feeder Screw
- Inspect odour control canister and replace medium if necessary.
- Lubricate and exercise gas three-way valves.
- Check for damage on the fan, lubricate all levers and linkages.
- Inspection of Sludge Transfer pumps.
- Visually check tank level and pressure transmitter for any damage or wear
- Check and tighten, if necessary, the stuffing the stuffing box
- Check oil level in Screw Feeder Gear Box
- Check the function of the emergency controls and emergency cord.
- Drain condensate water from the hydraulic oil tank.
- Exercise gate valves to fully open and close position
- Filter the oil using an external filtration unit.
- Inspect the condition of the loop filter
- Remove the sump pump suction debris, inspect sump pump discharge line, sump pump start float switch, sump pump discharge check valve, sump pump stop float switch, sump pump control wiring and sump pump high float switch
- Auditory inspection of the grinder unit
- Check grinder ACC buffer fluid level.
- Visual inspection of the grinder unit
- Lubricate and Exercise Actuated Plug Valves
- Check and ensure the automatic greasers is working properly.
- Check the bearing temperature using infrared thermometer and check the bearing fastener.
- Check the sludge pump bearing lubrication oil level, oil seal of the polymer metering pump, oil seal of the dewatering centrate pump, centrate pump bearing lubrication oil level
- Inspection of the sliding frame gland and ensure there are no leaks.
- Lubricate and exercise gas isolation valves.
- Inspect and clean the flame arrester baffle for signs of deterioration.

Monthly activities:

- Lubricate and Exercise Actuated Knife Gate Valves
- Check the polymer storage and mixing tank level indicating transmitter electrical connections and level indicating transmitter accuracy.
- Flush and clean drains remove any obstructions.
- Inspect odour control canister and replace medium if necessary.
- Check Gas Monitor
- Inspection and verification of instrumentation
- Perform a megger test of the polymer feed pump motor,
- Visual inspection on the polymer metering pump motor variable speed drive start/stop/reset/jog contacts for corrosion, polymer metering pump motor emergency shutdown circuit, check the polymer metering pump high discharge pressure shutdown circuit.
- Functional test of the sludge transfer pump discharge to centrifuge pressure indicator.
- Inspection of the centrifuge bowl discharge end wear saddles, centrifuge frame liners, centrifuge lid wear liner, oil level in the centrifuge back drive gearbox
- Change the conditioning loop filter.

- Check the condition of the screw feeder oil and replace if necessary.
- Check the setting of the throttle valves.
- Check the strainer on the water/oil cooler inlet and clean if necessary.
- Lubricate the pillow block bearing.
- Replace the return line hydraulic oil filter.
- Take a sample of the hydraulic oil from the hydraulic tank for analysis.
- Replace the tension bar thrust bearing.
- Record and analyze vibration data of all bearings/
- Verify the pressure setting of the pressure switch.
- Inspect, lubricate and service the electric motor.
- Replace Rams on Schwing Pumps
- Check the pressure setting of the relief valves.
- Lubricate and Exercise Valves on the system.
- Inspection of Activated Carbon for Odour Control Systems
- Quarterly activities
- Check the equalization tank odor control fan drive pulley belt.
- Inspection the centrifuge bowl, centrifuge conveyor accelerator, centrifuge conveyor feed nozzles, centrifuge conveyor flights, centrifuge conveyor inserts and retainers, chute section between main conveyor and transfer conveyor.
- Inspect the digested sludge flame arresters baffles for signs of deterioration
- Lubricate the equalization tank odor control fan shaft bearings.
- Oil analysis of the centrifuge back drive gearbox oil

Bi-annual activities:

- Check the extraction conveyor coupling.
- Inspect the recirculating oil system reservoir breather cap strainer.
- Replace the centrifuge main motor bearing automatic greaser.
- Inspection of the recirculating system flexible feed oil lines
- Calibration and Recertification of the Portable Gas Detectors
- Clean and Inspect Centrate Wet Well Tank.
- Drain, pump out and clean Sludge Holding tank using vacuum truck.
- Exercise and Lubricate System Valves
- Centrifuge oil analysis
- Check the condition of the extraction conveyor gearbox oil.
- Change the gate valve actuator oil and power pack hydraulic oil.
- Check and repair the internal walls of the sludge storage silos.
- Drain, pump out and clean Equalization tanks using vacuum truck.
- Check for wear from the sliding frame hold downs.

Annual activities:

- Calibration check of the polymer powder suction pressure indicating transmitter and sludge holding tanks pressure differential transmitter.
- Check the hydraulic oil level and temperature.
- Inspect the back drive system flexible element.

- Inspect the centrifuge back drive toothed driven pulley.
- Inspect the centrifuge flexible connector to cake drop chute.
- Inspect the centrifuge flexible connector to centrate drop chute.
- Inspect the centrifuge main motor drive belts and motor drive pulley.
- Inspect the centrifuge toothed drive pulley.
- Fire Detection & Alarm System Test and Inspections
- Check auto lubricator on Screw Feeder and Agitator Hopper and replace if necessary.
- Check Hydraulic Oil Level and Temperature and panel lights.
- Check water to drain for signs of contamination.
- Check/Adjust screw feeder packing.

Digestion, Dissolved Air Flotation, and Bio-Gas

Digestion, Air floatation, and Bio-gas includes twenty Anaerobic Digesters, ten DAF tanks and five Waste Gas Burners. The following maintenance were completed in 2023.

Dissolved Air Flotation

Weekly activities:

- Inspection of Flotation Tank Chains
- Scheduled restoration of the dissolved air floatation (DAF) tank flight chain oiler needle valve drippers
- Lubricate the dissolved air floatation (DAF) tank top skimmer flight inboard shaft bearings.
- Inspection of the dissolved air floatation (DAF) tank top skimmer flight rubbers for wear and tank top skimmer flight support pipe mounting brackets
- Biweekly Leak check of the polymer metering pumps.
- Check, clean and verify Polymer tanks Level Transmitter, Pressure Transmitters, and the DAF Tank Level Transmitter

Monthly activities:

- Verification checks of DAF Tanks flow meters.
- Replace the TWAS transfer pump gearbox oil.
- Testing of hazardous gas monitors
- Inspection of the polymer metering pump high discharge pressure shutdown circuit, polymer metering pump motor emergency shutdown circuit, and polymer metering pump motor variable speed drive components condition for corrosion
- Inspection of the polymer metering pump inlet pneumatically operated isolation valve instrument feed air filter
- Inspection of the polymer metering pump run dry shutdown circuit and the k the polymer metering pump system pneumatically operated discharge isolation valve instrument feed air filter condition.
- Replace oil in the dissolved air floatation (DAF) tank top skimmer main gearbox.
- Perform a megger test of the dissolved air floatation tank subnatant recirculating pump motor winding insulation.

- Perform a megger test of the polymer mixing tank motor winding insulation and the mixing tank transfer pump motor winding insulation.
- Perform a megger test of the TWAS transfer pump motor winding insulation
- Lubricate the TWAS pump gearbox to pump coupling, the TWAS transfer motor bearings and the TWAS transfer pump bearing
- Inspection for wear of the dissolved air floatation (DAF) tank top skimmer drive chain,
- Inspection of the DAF flight skimmer drive motor emergency shutdown circuit
- Inspection of the dissolved air floatation (DAF) tank hopper level indicating transmitter, tank hopper level indicating transmitter electrical connection for corrosion
- Check the dissolved air floatation (DAF) tank inlet isolation plug valve instrument feed air filter.
- Flush the dissolved air floatation (DAF) tank air distribution subnatant header.
- Flush the subnatant recycle pump circuit.
- Inspection of the subnatant recirculating pump motor emergency shutdown circuit, subnatant recirculation pump motor high-high discharge pressure. Shutdown, subnatant recirculation pump motor low-low discharge pressure shutdown, subnatant recycle pump seal water 'Y' strainer for dirt build-up
- Inspection o fthe dissolved air floatation (DAF) tank pneumatically operated plant water fill valve instrument feed air filter, dissolved air floatation (DAF) tank subnatant recirculating pump inlet isolation plug valve instrument air feed filter for dirt, Check the dissolved air floatation (DAF) tank subnatant recirculating pump pneumatically operating discharge isolation valve instrument air feed filter
- Check the dissolved air floatation (DAF) tank subnatant recycle pump discharge valves.
- Check the dissolved air floatation (DAF) tank top skimmer flight rubbers for wear, skimmer flight support pipe mounting brackets and the dissolved air floatation (DAF) tanks flow control valve instrument feed air filter condition.
- Check the TWAS pump seal water 'Y' strainer for dirt build-up.
- Inspection of the TWAS transfer pump high discharge pressure shutdown circuit function, pump motor emergency shutdown circuit, TWAS transfer pump performance, and the TWAS transfer pump run dry shutdown circuit.

Bi-Monthly activities:

- Inspection of the mixing tank polymer transfer pump performance.
- Leak check/inspection of the dissolved air floatation (DAF) knife gate valves and unwatering valves.
- Inspection of the polymer mixing tank high-high level polymer batching system shutdown circuit.
- Verification of the polymer mixing tank level indicating transmitter accuracy.
- Check the tension on the dissolved air floatation (DAF) tank top skimmer flight chain.

Quarterly activities:

- Test and check UPSs for RPUs
- Replace the TWAS transfer pump gearbox oil, polymer mixing tank mixer gearbox oil and the polymer mixing tank polymer transfer system gearbox oil.
- Replace the oil for the dissolved air floatation (DAF) tank top skimmer intermediate gearbox.
- Lubricate of the TWAS pump motor to gearbox coupling

- Inspection of the polymer mixing tank polymer transfer pump air operated outlet isolation valve instrument feed air filter, transfer pump inlet isolation valve air filter and polymer mixing tank to day tank pneumatically operated rerouting valve inlet air filter
- Inspection of the polymer day tank pneumatically operated inlet isolation valve instrument feed air filter and polymer metering pump system pneumatically operated routing valve instrument feed air filter
- Inspection of the polymer mixing tank transfer pump stuffing box.
- Inspect the sump pit pump flanges, impellers, and oil seals.
- Inspection of the Vogelsang pump pressurized lubrication system pressure.
- Inspection of polymer mixing tank polymer transfer system gearbox oil level.

Bi-annual activities:

- Inspection of the dissolved air floatation (DAF) tank top skimmer motor variable speed drive potentiometer for corrosion, tank top skimmer motor variable speed drive start/stop/reset/jog contacts for corrosion and tanks top skimmer motor variable speed drive components for corrosion.
- Performance check on the dissolved air floatation (DAF) tank subnatant recirculating pump
- Inspection of the dry polymer feed auger fail safe shutdown circuit, dry polymer feed auger polymer build-up above eductor shutdown circuit.
- Check the mixing tank level indicating transmitter, mixing tank polymer transfer pump high discharge pressure shutdown circuit.
- Inspection of the TWAS transfer pump gearbox condition oil level.
- Inspection of the polymer mixing tank mixer gearbox oil level, polymer mixing tank polymer transfer system gearbox oil level
- Inspection of the polymer mixing tank level indicating transmitter sensor, mixing tank lowlow level polymer batching system shutdown circuit, mixing tank level indicating transmitter electrical connections, mixing tank transfer pump to drive motor coupling flexible element.
- Check the polymer transfer pump motor emergency shutdown circuit.
- Check the polymer metering pump pneumatically operated rerouting valve inlet air filter.
- Check the mixing tank polymer transfer pump seal water 'Y' Strainer Ref
- Check the mixing tank transfer pump run dry shutdown circuit.
- Inspection of the polymer day tank level indicating transmitter accuracy, the polymer day tank level indicating transmitter sensor, polymer day tank level indicating transmitter wiring connection for corrosion
- Inspection of the polymer metering pump seal water 'Y' strainer and the polymer mixing tank for wear

Annual activities:

- Visual inspection on the polymer metering pump motor variable speed drive potentiometer for corrosion and start/stop/reset/jog contacts for corrosion.
- Submersible Pump Inspection.
- Check the dry polymer auger feeders for wear.

Digestion/Bio-Gas:

Weekly activities:

- Drain the condensate from the primary digester header condensate trap and the condensate from the primary digester mixing header.
- Drain the digester gas compressor condensate trap.
- Lubricate and exercise the digester gas isolation valves.
- Inspection of the Check Mixing Pump and Recirculating Pump
- Functional test of the gas detector high alarm circuit operation
- Functional test of the gas detection audible and visual annunciating devices

Monthly activities:

- Atmosphere Monitoring Alarm Testing.
- Calibration of the digester dome pressure indicating transmitter.
- Clean and inspect the digester gas compressor inlet thermal valve seat for signs of corrosion.
- Clean the digester dome pressure indicating transmitter orifice.
- Functional test of the gas detector high alarm circuit operation control Panel and transmitter
- Inspect and clean the compressor flame arrester baffle for signs of deterioration.
- Inspect and lubricate the isolation valve gearbox.
- Inspect the digester dome pressure indicating transmitter wire connections for signs of corrosion and looseness.
- Inspect the digester gas compressor inlet thermal fuse and valve pin for signs of corrosion.
- Visual inspection of the digester gas compressor inlet flexible anti vibration joints for signs of fatiguing
- Visually inspect digester gas sediment and condensate tank sight glass for signs of deterioration
- Clean the digester gas compressor pressure switch orifice.
- Verify the calibration of the digester gas compressor pressure switch.
- Lubricate and exercise the digester gas dome relief gas isolation valve.
- Remove the sump pump suction debris, test the sump pump start float switch, sump pump high float switch, sump pump stop float switch.
- Inspect the sump pump discharge check valve and sump pump discharge line and test the sump pump control wiring.
- Check for looseness of the digester gas compressor mounting bolts.
- Lubrication of the duty digester gas compressor/motor coupling
- Clean the condensate tank and sediment accumulator.
- Inspect the digester gas compressor drive motor cooling fan blade for signs of cracking or fatigue.
- Perform a megger test of the digester gas compressor motor winding insulation.
- Record and analyze vibration data of all bearing.
- Verify the digester gas low pressure trip circuit operation.
- Verify the temperature trip circuit operation.

Quarterly activities:

- Clean digester gas compressor pressure indicating transmitter orifices.
- Exercise and Lubricate Digester Gas Valves

- Functional test of the PLC battery fault alarm circuit operation and test the RPU UPS low battery alarm circuit operation.
- Inspect and clean the flame arrester trap for signs of deterioration.
- Inspect digester gas pressure relief valves.
- Inspect the digester gas compressor condensate trap for signs of plugging.
- Inspect the digester gas compressor pressure indicating transmitter wire connections for signs of corrosion and looseness.
- Inspect the gas compressor lubrication drive motor fan cooling shroud screen for signs of plugging with debris.
- Leak inspection of the routing and isolation valve flange gaskets
- Lubricate the gas compressor inboard and outboard motor bearings.
- Measure the resistance of the influent flow meter to digestion tanks.
- Observe the sludge recirculation pump discharge pressure.
- Replace the RPU UPSs
- Verify the calibration of the digester gas compressor pressure indicating transmitter.

Bi-annual activities:

- Calibrate Gas monitor and certify.
- Check Digester Level Indicating Transmitter Electrical Connections
- Check recirculation pump seal water line.
- Check the main digester gas burner regulating valve diaphragm for signs of leakage.
- Cleaning of the hot water boiler digester/natural gas flow control butterfly valve
- Flush the digester gas scrubber water line and spray nozzles.
- Inspect the digester check valve axle shaft for signs of corrosion.
- Inspect the digester compressor check valve hinge pin for signs of wear, check valve seat, spring for signs of fatigue.
- Inspect the digester gas flame arrester bank assembly.
- Inspect the hot water boiler combustion air fan impeller for signs of contamination.
- Lubricate the gas compressor inboard and outboard motor bearing.
- Measure the resistance of the digester sludge flow meter element to the equalization tanks.
- Measure the resistance of the digester sludge transfer pump flow meter element.
- Measure the resistance of the overflow flowmeter.
- Perform leak test of the digester/natural gas boiler pressure regulating valve diaphragm.
- Remove and clean the digester gas compressor low lubrication pressure switch.
- Replace digester/natural gas boiler pressure regulating sensing line filter.
- Replace the gas compressor mechanical seals.
- Test the digester gas compressor bypass valve.
- Verify the pressure alarm circuit operation.
- Accuracy checks of the mixing gun gas flow gauge.
- Clean and inspect the digester gas inlet thermal valve seat for signs of corrosion.
- Clean the digester gas low pressure switch orifice.
- Clean the gas compressor lubrication system strainer.
- Inspect and clean the flame arrester baffle for signs of deterioration.
- Inspect the digester content tank sludge temperature probe.
- Inspect the digester gas inlet thermal fuse and valve pin for signs of corrosion.
- Lube oil vacuum pressure switch calibration
- Lubricate and exercise digester gas compressor outlet isolation valve.
- Lubricate the hot water boiler digester/natural gas flow control valve actuator mechanism.
- Lubricate the sludge transfer pump bearings.
- Oil analysis of the sludge mixing pump, sludge recirculation pump and analysis of the sludge transfer pump bearing
- Operational test of the digester gas compressor lubrication flow switch shutdown circuit
- Seal and operate the digester/natural gas plug valve.
- Tactile inspection of the MSA panel connections for looseness
- Validate the digester gas compressor low lubrication pressure switch and shutdown circuit operation.
- Verify Calibration Accuracy of Level Indicating Transmitter
- Verify the boiler gas safety shut off valve shut off integrity.

Annual activities:

- Busbar/MCC Panel Single line Diagram Update Inspection
- Calibration and Recertification of the Portable Gas Detectors-MSA
- Calibration checks of the digester gas regulating valve and flow meter transmitter.
- Clean and inspect the digester gas inlet thermal valve seat for signs of corrosion.
- Fire Detection & Alarm System Test and Inspection
- Functional test of the low seal water flow switch trip circuit operation
- Functional test of the primary sludge transfer pump failed to start alarm circuit operation.
- Functional test of the recirculation pump failed to start alarm circuit operation.
- Functional test of the sludge mixing pump failed to start alarm circuit operation.
- Functional test of the transfer valve fail to close alarm operation.
- Inspect and clean the flame arrester baffle for signs of deterioration.
- Inspect the digester gas inlet thermal fuse and valve pin for signs of corrosion.
- Inspect the digester gas compressor temperature transmitter wire connections for signs of corrosion and looseness.
- Inspect the hot water recirculation pump discharge check valve pin, check valve seat or flapper.
- Inspect the sludge mixing motor/pump drive belts, sheaves and discharge check valve pin.
- Inspect the sludge transfer pump discharge check valve pin, check valve seat and/or flapper.
- Leak inspection of the routing and isolation valve packing glands
- Leak inspection of the sludge recirculation valves.
- Exercise Automatic Safety Shutoff Hydramotor valves
- Sludge mixing pump oil level check.
- Ultrasound inspection of the digester condensate/sediment tank and digester gas scrubber tank for signs of corrosion.
- Isolation Valve Exercise and Lubrication
- Verification checks of MASS flow meter, control valve and the low seal water flow switch.
- Verification checks of the sludge mixing pump discharge pressure alarm switch.
- Verification checks of the sludge transfer pump discharge pressure alarm switch.
- Verify the calibration of the digester gas compressor temperature transmitter.
- Visual inspection of digester gas pipe flange gaskets or valve "O" rings for deterioration.

Solids Handling:

Solids Handling includes the Biosolids Storage Silos, Sludge Cake Transfer Pumps, Truck Loading Facility and Biofilters, Odour Control Building, and maintenance for the Lab Building. The following maintenance was completed in 2023.

Weekly activities:

- Lubricate Conveyor Shaft Packing
- Check and top up grease for the auto greaser and other lubrication points.

Monthly activities:

- Change the conditioning loop filter
- Check all the bolts and nuts for tightness and wear
- Check the condition of the screw feeder oil and replace if necessary
- check the condition of the spiral screw.
- Check the condition of the trough and casing with the end partitions and any trough sections.
- Check the condition of the trough lids and safety provisions.
- Check the poppet valves for wear, the setting of the throttle valves.
- Check the valve operating cylinder for leakage at the seal and piston cups.
- Lubricate the pillow block bearing
- Take a sample of the hydraulic oil from the hydraulic tank for analysis.
- Combustible, Hydrogen Sulfide Gas & Oxygen Detectors & Alarm Test- Monthly
- Lubrication and Exercise of System Knife Gate Valves
- Record and analyze vibration data of all bearing.
- Replace the return line hydraulic oil filter.
- Check all pneumatic connections are in good condition and not leaking.
- Check for leakage around the packing of the gate.
- Check that no foreign material is jammed in the screw.
- Check that the trough sections bolts are tight enough.
- Check the connection at the drive shaft that the bolts are tight enough.
- Check the drive gearbox oil level.
- Check the gate operating cylinder yoke connection.
- check the gate rollers for wear and seizure.
- Check the screw drive gearbox and motor mounting bolts ensuring that they are tight enough.
- Check the stuffing box and gland packing for leakage and lubricate.
- Check the trough welded joints for cracks and various welded joints on the screw for cracks.
- Remove cover and check the auto lubricators.
- Visually check for leakage around the gate valves.
- Visually inspect the limitorque actuator.

Quarterly activities:

- Check for debris build-up on the HVAC unit filters.
- Check the condition of the spiral screws in conveyors.
- Check the connection of the trough and casing with the end partitions and any trough sections.
- Check the valve actuating cylinder for leakage at the seal and piston cups and check the condition of the trough lids and the safety provisions.

- Check the gate rollers for wear and seizure.
- Remove the conveyors covers and examine the liners for wear.
- Check and clean the oil cooler if necessary.
- Check the pressure setting of the pressure switch, pressure setting of the pump relief valve, the setting of the throttle valve and service the pump electric motors.

Bi-annual activities:

- Calibrate Gas monitor and certify.
- Change the gate valve actuator and power pack hydraulic oil
- Check and repair the internal walls of the cake storage silo.
- Check for debris build-up on the HVAC unit filter (East) and HVAC unit filter (West)
- Check for wear from the sliding frame hold downs.
- Check the condition of the extraction conveyor gearbox oil, extraction conveyor coupling.
- Check the function & setting of safety and emergency stop.
- Check the pressure setting of the relief valve.
- Check the screw feeder end bearing, screw feeder shaft and flights for wear.
- Check the tension on the HVAC unit blower motor belts.
- Check for corrosion on the HVAC unit blower motor contactor contacts.
- Check for damage on the HVAC unit structure.
- Check for fatigue on the HVAC unit electrical wiring insulation.
- Check for looseness on the terminal screws for air handler unit control panel.
- Inspect the air handler unit for moisture infiltration.
- Inspect the sump pit pump flanges, impellers, oil seals.
- Remove the covers and examine the liners for wear.

Annual activities:

- Check and tighten stuffing boxes as needed.
- Check for damage on the fan, wear on the belt driven fan motor belts and lubricate fan bearings.
- Remove debris from the belt driven fan inlet/outlet screen.
- Flush and clean air handling unit heating coil.
- Internal flushing of heating coil tubes.
- Take an oil sample from the conveyor gearbox for analysis.

Boilers, Air Compressors, and HVAC

Boilers, Air Compressors, and HVAC include the plant-wide hot water system, heating, ventilation, and air conditioning (HVAC), and instrument air compressors (Auxiliary Building). The following maintenance was completed in 2023.

Boilers/HVAC:

Weekly:

• Remove the debris build-up from the cooling unit evaporator coils.

- Corrosion checks three-way hot water valve linkage.
- Calibration of the three-way hot water valve.
- Internal flushing of heating coil tubes.
- Flush and clean air handling unit heating coil.
- Inspect Fire Pump Skid Alarm Panel.
- Check for fatigue on the cooling unit condenser fan blades.
- Inspect, maintain, and test air conditioning equipment.
- Check for debris in the HVAC unit condensate drain lines.
- Inspect, test and power down the actuators.
- Visually inspection of discharge pressure, temperature & mechanical seals for leakage.

Monthly:

- Verification of Flow Indicating Transmitters
- Visual inspect the gas level indicators.
- Functional test of the gas detector high alarm circuit operation
- Observe the primary loop pump VFD cabinet fan for unusual noise.
- Visual inspection of hot water recirculation pump for mechanical seal leak.
- Calibration of the pressure transmitter & gas detector
- Check the tension on the HVAC unit blower motor belts.
- Check for corrosion on the HVAC unit blower motor contactor contacts.
- Check for fatigue on the HVAC unit electrical wiring insulation.
- Inspect the air handler unit for moisture infiltration.
- Check for looseness on the terminal screws for air handler unit control panel.
- Remove debris from the belt driven fan inlet screen.
- Lubricate the fan bearings.
- Check for wear on the HVAC unit damper linkage.
- Inspection of VFD Cabinet Fan and cleaning.

Quarterly:

- Lift tests the pressure relief valves.
- Lubricate motor bearings.
- Lubricate the hot water recirculation pump bearings.
- Visual inspection of the hot water recirculation pump bearing cover seal.
- Verify the operation of natural gas pilot safety shut off valve.
- Perform a megger test of the steam/hot water heat exchanger feed water pump motor winding insulation.
- Verify the operation of the natural gas pilot safety vent valve.
- Check the hot water recirculation pump/motor coupling lubricant.
- Check for debris build-up on the HVAC unit filter.
- Check calibration of refrigerant monitor system.
- Visual inspection of the hot water boiler burners for proper alignment and refractory condition.

Bi-Annually:

- Fan Lubrication and Inspection Tasks for all Fans across facility
- Accuracy test of the boiler feed water outlet temperature transmitter
- Check for debris in the HVAC unit condensate drain lines.
- Visually inspect the steam/hot water heat exchanger feed water pump mechanical seals for leakage
- Visual inspection of the hot water boiler burners for proper alignment and refractory condition
- Check for the wear on the HVAC unit damper linkages.
- Visually inspect the primary loop pump mechanical seals for leakage
- Calibration test of the boiler flue gas analyzers
- Exercise the digester three-way hot water valves.
- Replace the primary loop pump variable frequency drive (VFD) cabinet filters.
- Verification checks of the digester three-way hot water valve.
- Verification checks on boiler instrument low air pressure trip switch operation.
- Verification checks on the digester gas high pressure cut out switch.
- Accuracy test of the combustion air low pressure cut-out switch.
- Verification checks on the digester gas low pressure cut out switch.
- Verification of the primary loop pump discharge check valve operation.
- Verification test of the boiler stack temperature thermocouple.
- Verify the uptake draft actuator operation.
- Verify of the inlet damper start limit switch circuit operation.
- Flush and clean heat exchanger.
- Verify the boiler digester gas flow control valve low fire start position switches/circuit operation.
- Lubricate the hot water recirculation pump bearings.
- Verify the boiler instrument air low pressure trip switch and circuit operation.
- Calibration test of the boiler flue gas analyzer
- Verify the boiler stack discharge damper limit switch and circuit function.
- Calibration checks of the combustion/stack uptake pressure transmitter.
- Verify the boiler stack O2 analyzer alarm and shut down circuit operation.
- Lubricate hot water boiler combustion air fan drive motor bearings.
- Verify the digester gas high pressure trip switch/circuit operation.
- Lubricate the hot water boiler air inlet vane bearings.
- Verify the digester gas low pressure cut out switch and circuit operation.
- Verification checks of the boiler stack temperature transmitter.
- Verify the feed pump low flow trip switch and trip circuit operation.
- Lubricate the boiler outlet damper.
- Verify the inlet damper actuator low fire position limit switch and circuit operation.
- Internal flushing of heat exchanger tubes.
- Verify the inlet damper low purge pressure switch and circuit operation.
- Lubricate the hot water recirculation pump bearings.
- Verify the inlet damper purge limit switch and circuit operation.

Annually:

- Calibration test of the boiler flue gas analyzers.
- Calibrate Gas monitor and certify.

- Check for damage on the fan unit structures.
- Calibrate the pressure switch.
- Inspect Filters.
- Visually inspect the filter feed pump mechanical seal for signs leakage.
- Inspect the air separator automatic vent valve for signs of contamination.
- Inspect the primary loop pump drive coupling for signs of wear.
- Replace the local control panel UPS cabinet filter and RPU filters.
- Test the central heating panel (CP-H) UPS battery.
- Calibration checks of the primary loop discharge header pressure transmitter.
- Verification checks of the primary loop flow indicating transmitter.
- Verification test of the low-pressure switch and the level alarm circuit operation.
- Verify the control circuit for the primary loop discharge header pressure switch high-high alarm and locking circuit.
- Inspection of Glycol System

Service Air Compressors:

Monthly Activities:

- Comairco service air compressor recommended monthly maintenance.
- Emergency / Exit light inspections.
- Quarterly activities.
- Test and check UPSs for RPUs.
- Glycol Conductivity meter Calibration verification.

Bi-annual Activities:

- Inspection of Auxiliary building sump pumps, seals, flanges, impellers suction, and discharge lines, check valves, wiring, switches, and floats.
- Electrical inspection of training center sewage pump.
- Comairco service air compressor recommended bi-annual maintenance.
- Flow Switch Calibration and verification.
- Trim Cooler Heat Exchanger Cleaning.

Annual activities:

- Inspection of motorized door and maintenance.
- Fire detection and fire alarm systems.
- Comairco service air compressor recommended annual maintenance.
- Pressure switch adjustment of service air setpoint.
- Pressure differential switch setpoint check and adjustment.
- Service Air compressor's Benshaw RC-130A wye-delta starter maintenance.
- Roof Top Dry Air Cooler Maintenance.
- Primary Glycol Pump Inspection & Maintenance.

Consumables, Mechanical and Welding, Grounds Keeping and Licensed Vehicles

The following maintenance was completed in 2023 for consumables, mechanical and welding, grounds keeping and licensed vehicles.

Machine Shop

- Fabricated parts in welding shop for various work areas.
- Fabricated bronze nuts for various gate valves.

City Water System & Backflow Preventers (BFP)

- Attending all service calls and repairing done on priority basis.
- Installation of oil filled pressure gauges at all main water feed lines.

Grounds keeping

- Snow plowing and salting throughout the plant.
- Spills clean up, retaining and disinfecting throughout the plant.
- Ensured that waste oil is removed from work areas pump into holding tank in a safe manner and scheduled pickup.
- Scheduled annual maintenance inspection and repairs for all RTVs, Pick-up truck, boom truck, case tractor forklifts.
- Scheduled annual maintenance inspection and repairs for all lifting devices in the plant.
- Implemented a comprehensive program across the plant with signs installed at the gate entrance, office entrance, along the roadway, in the washroom, meeting rooms, workshops, elevators etc. These signs provided information on social distancing, limitation of the number of persons inside a location the use of masks, hand washing hand sanitizing and other related safety requirements.
- Sanitizing stations were installed at various locations across the plant.
- Implemented new policy of disinfecting twice per day all offices and common rooms including change rooms, training room and stairwells.
- Scheduling waste oil pick up, ensure all empty drums, paint cans, etc. are in the storage area so they can be removed from the plant. All waste oil manifest copy is sent to the appropriate personnel.
- Reviewed and upgraded overhead crane maintenance operation and maintenance program.



ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2023 ANNUAL REPORT

APPENDIX H – Staff Training Courses

Training attended by Ashbridges Bay Treatment Plant operations and skilled trades staff in 2023 includes the list of courses below.

Capital Projects Training

- ABTP BOILER UPGRADES PROJECT CONTRACTOR H&S ORIENTATION
- ABTP KENAIDAN- SLUDGE PUMPS, HEX, HWR PUMPS, HYDRONIC HEATING SYSTEM DIGESTER 9-12
- ABTP WESSUC-DIGESTER CLEANING-DIGESTER 1-8 NEW TECHNOLOGY TRAINING
- ABTP CAPITAL PLANT WATER PUMPING STATION UPGRADES
- ABTP CAPITAL PLANT WATER: PHASE 1A (WEST SIDE) AND POWER MONITORING SCADA TRAINING
- ABTP CAPITAL PLANT WATER: PHASE 1A AND (WEST SIDE) AND POWER MONITORING SCADA TRAINING
- ABTP CAPITAL PLANT WATER: PHASE 1B (EAST SIDE) SCADA TRAINING
- ABTP CAPITAL PLANT WATER: VERTICAL TURBINE PUMP ELECTRICAL MAINTENANCE TRAINING
- ABTP CAPITAL PLANT WATER: VERTICAL TURBINE PUMP MECHANICAL MAINTENANCE TRAINING
- ABTP CAPITAL PLANT WATER: VERTICAL TURBINE PUMP OPERATION TRAINING
- ABTP CAPITAL PLANT WATER: PHASE 1B PROCESS TRAINING

Health and Safety Training

- ABTP AERIAL WORK PLATFORM TRAINING
- ABTP DIGESTER GAS E2 PLAN ANNUAL EXERCISE AND TAILGATE TRAINING
- ABTP MANAGING ASBESTOS AND OTHER DESIGNATED INDUSTRIAL SUBSTANCES AND MATERIALS IN CONSTRUCTION AND INDUSTRIAL WORK
- ABTP MOBILE ELEVATIONG WORK PLATFORMS-SCISSORS LIFT & ZOOM BOOM TRAINING
- AIR PURIFYING RESPIRATORS (2023) CEU
- ARC FLASH FOR NON-QUALIFIED PERSONS (CEU)
- ASBESTOS AWARENESS (CEU)
- CHAINSAW SAFETY AWARENESS (CEU)
- CONDENSED OHS COMPETENCY FOR FRONTLINE SUPERVISORS
- CONFINED SPACE AWARENESS 1/2 DAY (CEU)
- CONFINED SPACE ENTRY AND RESCUE 2 DAY (CEU)
- CONFINED SPACE RESCUE UPGRADE
- DESIGNATED SUBSTANCES AWARENESS (CEU)-2025
- FALL PROTECTION AWARENESS
- FALL PROTECTION IN AN INDUSTRIAL WORK SETTING (CEU)
- FUNDAMENTALS OF LADDER SAFETY AWARENESS
- FUNDAMENTALS OF LADDER SAFETY AWARENESS (CEU)
- HAZARDOUS NOISE IN THE WORKPLACE
- HEALTH AND SAFETY ASPECTS OF CONTRACTS FOR SERVICES
- HEALTH AND SAFETY COMPETENCY FOR SUPERVISORS
- HEALTH AND SAFETY ORIENTATION TRAINING PROGRAM PART B
- HYBRID WORK FIRE SAFETY REVIEW
- INCIDENT REPORTING
- JOINT HEALTH AND SAFETY COMMITTEE (JHSC) CERTIFICATION TRAINING CERTIFICATION REFRESHER
- JOINT HEALTH AND SAFETY COMMITTEES (JHSC) CERTIFICATION TRAINING PART I BASIC
- JOINT HEALTH AND SAFETY COMMITTEES (JHSC) CERTIFICATION TRAINING PART II WORKPLACE SPECIFIC HAZARD TRAINING
- MMR SELF-CONTAINED BREATHING APPARATUS (CEU) -(2022-2024)
- MOULD AWARENESS
- MOULD AWARENESS (CEU) -2025
- QUICK CUT SAW SAFETY AWARENESS (CEU)
- RESPIRATORY PROTECTION- AIR PURIFYING RESPIRATORS CONDENSED VERSION

- RESPIRATORY PROTECTION TEST
- RIGGING SAFETY AWARENESS (2022-2024)
- SCAFFOLD SAFETY TRAINING (2023-2025)
- STANDARD FIRST AID LEVEL "C" CPR & AED 2 DAY (2022-2024)
- STANDARD FIRST AID LEVEL 'C' CPR & AED 2 DAY (FAST RESCUE)
- SUPERVISOR HEALTH AND SAFETY AWARENESS IN 5 STEPS
- WORKER HEALTH AND SAFETY AWARENESS IN 4 STEPS
- WORKING AT HEIGHTS (2022-2024)
- WORKING AT HEIGHTS REFRESHER (CEU) 2022-2024
- WORKPLACE VIOLENCE LEGISLATION & POLICY REVIEW
- WWT INTEGRATED QUALITY MANAGEMENT SYSTEM TRAINING

Site Specific Training

• ABTP MANUAL - DIGESTER OPERATIONS

Mandatory Tailgate

- ABTP TAILGATE FIRE EVACUATION
- ABTP TAILGATE FORKLIFT TRAINING
- ABTP TAILGATE INJURY REPORTING
- ABTP TAILGATE SAFE SHOVELING
- ABTP TAILGATE AIR QUALITY AND YOUR HEALTH
- ABTP TAILGATE AVOID THE PREVENTABLE ELECTRICAL DISASTERS-ELECTRICAL SAFETY FOR QUALIFIED EMPLOYEES
- ABTP TAILGATE CIVILITY IN THE WORKPLACE
- ABTP TAILGATE DISTRACTED DRIVING
- ABTP TAILGATE EQUIPMENT SAFETY INSPECT IT BEFORE YOU USE IT
- ABTP TAILGATE ERGONOMICS INJURIES SIMPLE PRECAUTIONS
- ABTP TAILGATE EYEWASH STATION AND EMERGENCY SHOWER
- ABTP TAILGATE FLUSHING SOP-TW-054
- ABTP TAILGATE HEAT STRESS
- ABTP TAILGATE INFECTION CONTROL
- ABTP TAILGATE LADDER SAFETY
- ABTP TAILGATE PHYSICAL AND CYBER SECURITY AWARENESS
- ABTP TAILGATE PREVENTING BACK INJURIES
- ABTP TAILGATE PSYCHOSOCIAL PROGRAM, RISK ASSESSMENTS & MENTAL HEALTH IN OUR WORKPLACE
- ABTP TAILGATE RIGHT TO REFUSE UNSAFE WORK
- ABTP TAILGATE SAFE LIFTING
- ABTP TAILGATE SAFETY ON THE ROAD
- ABTP TAILGATE SEWAGE WORKS AND SURFACE WATER SPILL RESPONSE
- ABTP TAILGATE TW EMERGENCY PLAN AWARENESS
- ABTP TAILGATE VEHICLE IDLING
- ABTP TAILGATE WINTER DRIVING SAFETY
- ABTP TAILGATE WORKING AT HEIGHTS REFRESHER TRAINING
- ABTP TAILGATE WORKPLACE VIOLENCE
- ABTP TIALGATE WHMIS 2015 NEW CHEMICAL SAFETY INFO SYSTEM
- ERGONOMICS SAFE LIFTING (TORONTO WATER NOVEMBER 2023 MANDATORY TAILGATE)
- PHYSICAL SECURITY AWARENESS- TORONTO WATER TAILGATE
- PREVENTING STRUCK -BY/CONTACT INJURIES (AUGUST 2023 MANDATORY TAILGATE)
- SITUATIONAL AWARENESS- TORONTO WATER MANDATORY TAILGATE FEBRUARY 2023

• TORONTO WATER EMERGENCY PLAN AWARENESS (MANDATORY TAILGATE MAY 2023)

Technical Training

- ABTP CSMP OTJ TRAINING
- ABTP ERIS SOLIDS MASS BALANCE SHIFT REPORT
- ABTP MAINTENANCE-PUMP RE-ASSEMBLY (WET END)
- ABTP THORDON BEARING/MANUAL
- ABTP VALVES FOR WASTEWATER AND WATER BY VAHN-TECH INTERNATIONAL
- ABTP WEAO 2023 SITE-SPECIFIC ENTERPRISE LEARNING INITIATIVE (ELI) TRAINING
- ABTP WEAO TECHNICAL SYMPOSIUM PRESENTATIONS
- ACTIVATED SLUDGE
- BACKFLOW PREVENTION AWARENESS (CEU) 2025
- CHLORINE SAFETY / B KIT -CEU (2022-2024)
- DISINFECTION OF POTABLE WATER PIPING (CEU)
- DRINKING WATER OPERATOR TRAINING AND CERTIFICATION REQUIREMENTS OVERVIEW (CEU)
- DRINKING WATER QUALITY MANAGEMENT STANDARD (CEU)
- ELECTRIC VEHICLE ORIENTATION
- ELECTRICAL SAFETY AWARENESS (CEU)
- ELECTRICAL SAFETY FOR DISTRICT OPERATIONS & MAINTENANCE OPERATORS (CEU)
- FIRE HYDRANT & VALVE OPERATION, INSPECTION, MAINTENANCE & INSTALLATION (CEU)
- G PERMIT VEHICLE OPERATOR ORIENTATION
- GAS CHLORINATION AND DISINFECTION TRAINING 4 DAYS (CEU)
- GENERATOR SET OVERVIEW (ON-THE-JOB)
- GIS BASICS VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- HOT WORK PERMIT SYSTEM AWARENESS
- INDUSTRIAL MAINTENANCE TECHNICIAN (IMT) E & M CERTIFICATION (2021-2024)
- LEAN SIX SIGMA GREEN BELT
- LOCK OUT, TAG OUT & TEST AWARENESS (CEU) -2024
- LOGBOOK ENTRY (CEU)
- MANDATORY CERTIFICATE RENEWAL COURSE (2021 2023)
- MATHEMATICS FOR OPERATORS: MODULE 1 (CEU)
- MATHEMATICS FOR OPERATORS: MODULE 2 (CEU)
- NUTRIENT REMOVAL SYSTEM (CEU)
- OIT EXAM IN ALL 4 DISCIPLINES (WATER TREATMENT, WATER DISTRIBUTION, WASTEWATER TREATMENT, AND WASTEWATER COLLECTION).
- ONTARIO ELECTRICAL SAFETY CODE (28TH EDITION/2022) GENERAL LEVEL 1
- OPERATIONAL IMPERATIVES (RM-58-CT) CEU
- PART 1: GETTING STARTED WITH ERIS
- PROCESS OPTIMIZATION ENERGY MANAGEMENT & ERIS REFRESHER
- SAFE DRINKING WATER ACT AND APPLICABLE DRINKING WATER REGULATIONS (CEU)
- SCADA CYBERSECURITY TRAINING
- SEWAGE WORKS AND SURFACE WATER SPILL RESPONSE
- TRAFFIC CONTROL & TRAFFIC CONTROL PERSON (2022-2024)
- TRAFFIC CONTROL ROADWAY WORK (CEU) 2025
- TRANSPORTATION OF DANGEROUS GOODS (2021-2023)
- TRENCHING AND EXCAVATION AWARENESS (CEU) -2024
- VALVE ACTUATOR (2019-2023)
- WASTEWATER COLLECTION EXAM PREP SET #1
- WASTEWATER TREATMENT EXAM PREP SET #1
- WASTEWATER TREATMENT EXAM PREP SET #2
- WASTEWATER TREATMENT LICENSE EXAM PREPARATION GUIDE

- WATER QUALITY OPTIMIZATION (CEU)
- WATER SAMPLING WORKSHOP (CEU)
- WATER SYSTEM REPAIRS: INTRODUCTION TO OXY-ACETYLENE CUTTING AND STICK WELDING -2 DAY
 (CEU)
- WHMIS 2015 ELEARNING MODULE
- WORKING WITH WASTEWATER VIDEO COURSE

Other Training

- 12: THE ELEMENTS OF GREAT MANAGING
- 2022 CYBER AWARENESS REFRESHER TRAINING CURRICULUM
- 3 SECRETS OF RESILIENT PEOPLE | LUCY HONE
- ABTP BENCHMARK PRECISION LUNCH & LEARN
- ACCESSIBILITY 101
- ALLOW YOUR PEOPLE TO BRING THEIR HUMANITY TO WORK: WHAT LEADERS CAN DO TO IMPROVE EMPLOYEE ENGAGEMENT
- ANTI-ISLAMOPHOBIA VIRTUAL WORKSHOP
- AODA IASR AODA IASR TRANSPORTATION STANDARD
- AODA IASR DESIGN OF PUBLIC SPACES STANDARD
- AODA IASR EMPLOYMENT STANDARD
- AODA IASR INFORMATION AND COMMUNICATIONS STANDARD
- ATTENDANCE MANAGEMENT PROGRAM TRAINING FOR CITY OF TORONTO MANAGEMENT
- BECOMING A GREAT LEADER: CHARACTERISTICS
- BRAIN BITES EMPATHY: THE KEY TO ACTIVE LISTENING
- BUSINESS EMAIL COMPROMISE
- CHECKMARKET SURVEYS VIRTUAL INSTRUCTOR-LED TRAINING (VILT)
- CHOOSE YOUR OWN ADVENTURE: CURSE OF THE MUMMY'S DATA
- CHOOSE YOUR OWN ADVENTURE: DEEP SPACE DANGER
- CHOOSE YOUR OWN ADVENTURE: LEAGUE OF CYBERHEROES
- CHOOSE YOUR OWN ADVENTURE: PLUNGE INTO PERIL
- CHOOSE YOUR OWN ADVENTURE: YETI ESCAPE
- CHOOSE YOUR OWN ADVENTURE: ZOMBIE INVASION
- CITY BENEFIT AND PENSION SEMINARS
- CONFLICT RESOLUTION & NEGOTIATION SKILLS
- CONFRONTING ANTI-BLACK RACISM TRAINING -HALF DAY
- CRESTRON HOSTING EFFECTIVE HYBRID MEETINGS
- DEEP SPACE DANGER ASSESSMENT
- DOMESTIC/INTIMATE PARTNER VIOLENCE FOR EMPLOYEES
- DOMESTIC/INTIMATE PARTNER VIOLENCE FOR SUPERVISORS
- EMOTIONAL INTELLIGENCE: DEVELOPING EMPATHY
- EXECUTIVE CYBER SECURITY AWARENESS PROGRAM CURRICULUM
- GENERAL CYBER SECURITY AWARENESS PROGRAM CURRICULUM
- GETTING STARTED WITH OUTLOOK WEB APP AND DESKTOP APP
- HELPING EMPLOYEES USE THEIR TIME WISELY
- HOW TO OVERCOME THE MOST COMMON COACHING CHALLENGES
- HUMAN RIGHTS 101
- HUMAN RIGHTS AND WORKPLACE HARASSMENT ESSENTIALS FOR MANAGEMENT
- IMPROVE YOUR DELEGATION THROUGH COACHING
- INDIGENOUS AWARENESS TRAINING: TRUTH AND RECONCILIATION
- IN-SERVICE HEALTH & SAFETY ORIENTATION
- INTERVIEW PROCESS AT THE CITY FOR HIRING MANAGERS
- INTRODUCTION TO INDIGENOUS LEARNING

- INTRODUCTION TO PMI/PMP
- JUST THE FACTS: DATA DESTRUCTION
- JUST THE FACTS: INSIDER THREATS
- JUST THE FACTS: INTRODUCTION
- JUST THE FACTS: MALWARE
- JUST THE FACTS: MOBILE SECURITY
- JUST THE FACTS: PHISHING
- JUST THE FACTS: PHYSICAL SECURITY
- JUST THE FACTS: PUBLIC WI-FI
- JUST THE FACTS: RANSOMWARE
- JUST THE FACTS: SAFE WEB BROWSING
- JUST THE FACTS: SOCIAL ENGINEERING
- JUST THE FACTS: TRAVEL SECURITY
- JUST THE FACTS: WORKING REMOTELY
- LEAD WITH COMPASSION
- LEADERSHIP: PRACTICAL LEADERSHIP SKILLS
- LEARN FROM PEER FEEDBACK
- LET'S TALK ABOUT ALLYSHIP
- LET'S TALK ABOUT BIAS
- LET'S TALK ABOUT COLONIALISM
- LET'S TALK ABOUT EQUITY
- LET'S TALK ABOUT PRIVILEGE
- LET'S TALK ABOUT SYSTEMIC INJUSTICE
- MAKING HYBRID WORK FOR YOU & YOUR TEAM
- MANAGING LABOUR RELATIONS: AN INTRODUCTION PART 1
- MANAGING LABOUR RELATIONS: PART TWO
- MUSCULOSKELETAL DISORDER (MSD) AWARENESS ELEARNING COURSE
- NEW EMPLOYEE ORIENTATION: TECHNOLOGY ONBOARDING VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- OMERS FOR ALL THE OMERS HANDBOOK
- ONENOTE 2013 A COMPLETE GUIDE
- PART 4: DATA QUERIES
- PASSWORD SECURITY BRIEF
- PLUNGE INTO PERIL ASSESSMENT
- PMMD: INTRODUCTION TO THE PURCHASING BY-LAW: CHAPTER 195 CLIENT DIVISION
- PMP® CERTIFICATION PMBOK® 7 (PART 1 OF 5) : PMP AND CERTIFICATION OVERVIEW
- PMP® CERTIFICATION PMBOK® 7 (PART 2 OF 5) : PROJECT MANAGEMENT PRINCIPLES
- PROTECTING PRIVACY ON THE JOB
- PROVIDING FEEDBACK
- RECOGNIZE THE DIFFERENT COACHING STYLES
- RESPECT IN OUR WORKPLACE
- RETIREMENT PLANNING SEMINARS
- SAP ARIBA CLIENT DIVISION: SOURCING REQUEST
- SAP INTRODUCTION: NAVIGATION AND REPORTS
- SAP INVENTORY MANAGEMENT
- SAP PROCUREMENT
- SEEK ACTIONABLE FEEDBACK FROM YOUR PEERS
- SHARING KNOWLEDGE FOR SUCCESS (2020)
- SOURCE WATER PROTECTION (2022-2025)
- SUCCESSFACTORS FOR DIVISIONAL ADMINISTRATORS GETTING STARTED
- SUCCESSFACTORS FOR MANAGERS WITH DIRECT REPORTS
- SUPPORTING BLACK COLLEAGUES & THE ANTI-BLACK RACISM MOVEMENT

- TAKE OWNERSHIP OF YOUR MANAGER RELATIONSHIP
- THE CURSE OF THE MUMMY'S DATA ASSESSMENT
- THE ELEMENTS OF EVERY GREAT COACHING CONVERSATION
- THE IMPORTANCE OF FEEDBACK IN ANY COLLABORATION
- THE LEAGUE OF CYBERHEROES ASSESSMENT
- THE TORONTO PUBLIC SERVICE BY-LAW ELEARNING
- THE TORONTO PUBLIC SERVICE COMPETENCIES MODEL
- TORONTO WATER ORIENTATION
- TRANSITION TO SUPERVISOR PLAYLIST LEADING PEOPLE
- USE QUESTIONS WHEN COACHING EMPLOYEES
- VIRTUAL TPS NEW EMPLOYEE ORIENTATION (NEO)
- WHAT COACHING IS AND ISN'T
- WHAT IS THE DIFFERENCE BETWEEN MANAGEMENT AND LEADERSHIP?
- WHEN DOES AN EMPLOYEE NEED COACHING?
- WHY MEASURE OUTCOMES AND PERFORMANCE?
- YETI ESCAPE ASSESSMENT
- ZOMBIE INVASION ASSESSMENT