



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Tri County Drinking Water System Operations Report Fourth Quarter 2021

Ontario Clean Water Agency, Southwest Region
Mark Harris, Sr. Operations Manager, Aylmer Cluster
Date: January 17, 2022

Facility Description

Facility Name:	Tri-County Drinking Water System
Regional Manager:	Dale LeBritton (519) 476-5898
Sr. Operations Manager:	Mark Harris (226) 545-0414
Business Development Manager:	Susan Budden (519) 318-3271
Facility Type:	Municipal
Classification:	Class 2 Water Distribution, Class 2 Water Treatment
Title Holder:	Municipality

Service Information

Area(s) Serviced:	West Elgin, Dutton/Dunwich, Southwest Middlesex, Newbury and Bothwell
Population Serviced:	9,985
No. of Connections:	
Water Meters:	Commercial / Residential
In Service Date:	2009

Capacity Information

Total Design Capacity:	12.160 (1000 m ³ /day)
Total Annual Flow:	1,381 (1000 m ³ /year)
Average Day Flow:	3.770 (1000 m ³ /day)
Maximum Day Flow:	5.380 (1000 m ³ /day)

Operational Description

Water treatment with intake in Lake Erie, 4 low lift pumps, lifting up to the treatment plant. Membrane filtration followed by injection with Sodium Hypochlorite for primary disinfection and into the 2 Storage Tanks. Pumping to tower & distribution system with 4 high lift pumps.

SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

There were no compliance issues to report during the first quarter.

SECOND QUARTER:

There were no compliance issues to report during the second quarter.

THIRD QUARTER:

On October 1st, 2021 an AWQI was reported to the MECP and the MOH as the monthly filter performance was not met for the month of September. To ensure inactivation of viruses, bacteria and microorganisms the membrane filtration system is required to meet performance criteria for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month. The filter performance was not met due to the coloured water event experienced at the Tri-County WTP during the month of September. The coloured water was produced as a result of elevated levels of iron and manganese in the source water (Lake Erie). The integrity of the membranes were not compromised and the UV disinfection system was in operation for the advance oxidation process during the entirety of the month. No corrective action was required.

FOURTH QUARTER:

There were no compliance issues to report during the fourth quarter.

SECTION 2: INSPECTIONS

FIRST QUARTER:

The report for the MECP inspection that was conducted on December 15th, 2020 was received on February 12th, 2021. The inspection had questions covering the following topics: Source, Capacity Assessment, Treatment Processes, Operations Manuals, Logbooks, Certification and Training, Water Quality Monitoring, Reporting & Corrective Actions, and Treatment Process Monitoring. The inspection rating was 95.44%. There was one non-compliance with regulatory requirements that was identified during the inspection. There was no follow up action required.

SECOND QUARTER:

There was no Ministry of Environment, Conservation and Parks (MECP) or MOL inspections conducted during the second quarter.

THIRD QUARTER:

MECP Inspector Angela Stroyberg was on site on September 9th, 2021 to observe the lake conditions which were causing the Tri-County WTP to produce yellow water. The cause of the yellow water was higher than normal levels of iron and manganese in Lake Erie.

FOURTH QUARTER:

A routine MECP inspection was conducted on December 17th, 2021 by Angela Stroyberg. The inspection report has not yet been received.

SECTION 3: QEMS UPDATE

FIRST QUARTER:

On January 14th, 2021 the thirty-six-month risk assessment was conducted to satisfy the requirements of Element 7 of the Operational Plan.

OCWA has been working on an initiative to modernize and enhance its current hard copy operational logbook practices to ensure compliance with regulatory requirements and to facilitate better record-keeping and communication regarding the operation of the drinking water and wastewater facilities that OCWA operates. This initiative has been accomplished by implementing electronic logbooks using the eRIS Logbook software at the facilities OCWA operates. These electronic logbooks meet the requirements of Ontario Regulations 128 and 129 as well as the Electronic Commerce Act. The MECP have been notified and have acknowledged OCWA's efforts in improving documentation with logbooks.

The implementation of electronic logbooks is expected to result in benefits for OCWA staff, the MECP and the clients in the following ways:

- Improved efficiency by being able to provide logbook records electronically.
- Facilitation of virtual inspections and logbook reviews, now and in the future. With the current ongoing challenges due to the COVID-19 pandemic, adherence to social distancing and other public health measures is critical. The accessibility of electronic logbooks makes it easier for OCWA and Ministry staff to adhere to such measures by reducing/eliminating the need for on-site visits.
- Better quality logbook entries, particularly those documenting unusual or abnormal operating conditions.
- Improved communication and operational oversight as the information is available immediately after entry through both desktop and mobile applications.
- Improved ability to proactively identify and respond to potential process and compliance issues.
- More consistent record-keeping practices

SECOND QUARTER:

There were no QEMS updates this quarter.

THIRD QUARTER:

An Internal Audit was conducted on August 25th, 2021 by Cindy Sigurdson. The audit report identified no non-conformances and eleven opportunities for improvement. These findings will be discussed at the next Management Review meeting, scheduled for November 4th, 2021.

The Essential/Emergency Service and Supply Contact List was updated by the QEMS Representative on August 23rd, 2021 to satisfy the requirements of Element 13 and 18.

FOURTH QUARTER:

On November 4th, 2021 a Management Review was conducted to discuss the standing agenda items and to review the Internal Audit findings in preparation for the re-accreditation audit scheduled for December 3rd, 2021. The annual Risk Assessment review was also conducted on November 4th, 2021.

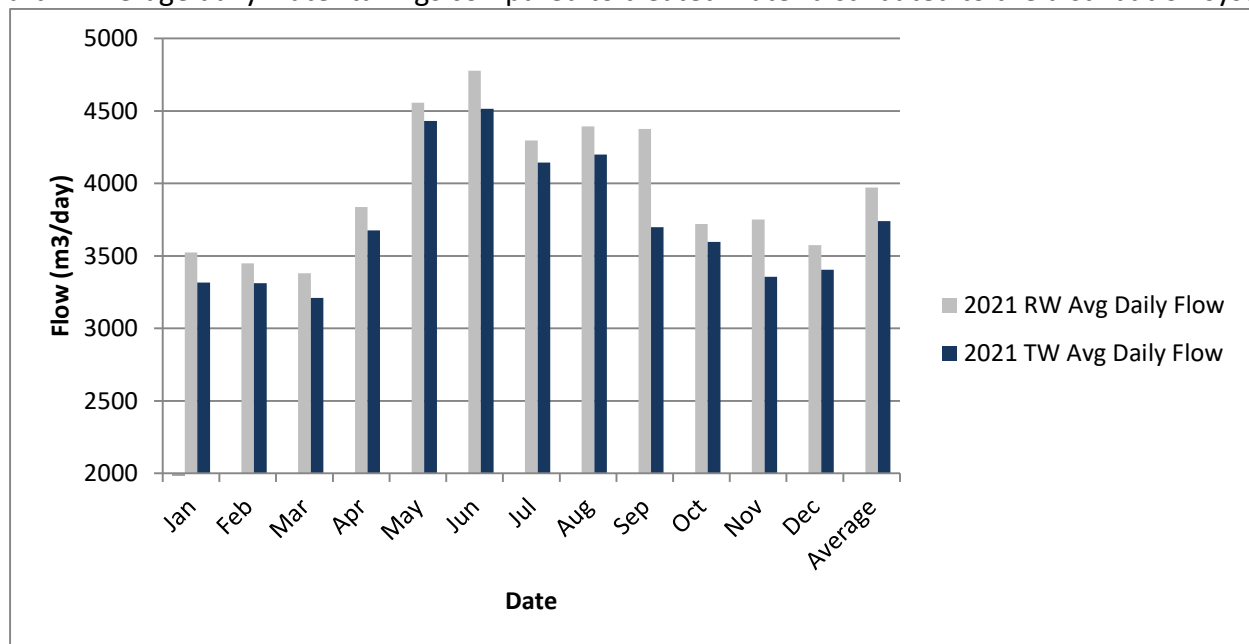
On December 3rd, 2021 Sandra Tavares from SAI Global was on site to conduct a re-accreditation audit. The audit report identified no non-conformances and three opportunities for improvement.

Facility Emergency Plan testing was conducted on December 7th, 2021 to satisfy the requirements of OP-18. Two contingency plans were reviewed and tested.

SECTION 4: PERFORMANCE ASSESSMENT REPORT

The plant is at 94.2% efficiency with the water taken from Lake Erie that is treated and sent to the distribution systems. Chart 1 below shows the raw water takings compared to the treated water distributed to the distribution system in 2021. The treated water average daily flow in September was reduced as the supply to Dutton-Dunwich was temporarily suspended during the yellow water event. The larger difference between raw water volumes and treated water volumes (reduced plant efficiency) is also due to the continuous operation of the water plant during the yellow water event. In November, plant efficiency was also reduced due to maintenance performed on the south storage tank that required the water to be overflowed as part of the disinfection procedure.

Chart 1: Average daily water takings compared to treated water distributed to the distribution system



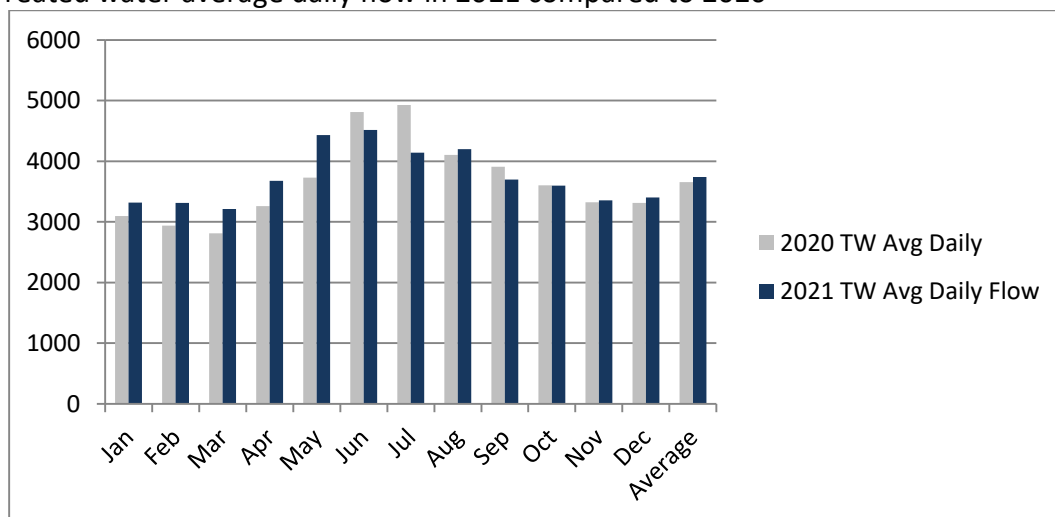
Raw water is sampled on a weekly basis and tested for E. coli and Total coliforms as per regulatory requirements. There are no limits identified in the regulations for E. coli and total coliform found in the raw water source. Table 1 below identifies the sample results for 2021.

Table 1: Raw water sample results 2021

	# Samples	E. Coli Range (cfu/100mL)	Total Coliform Range (cfu/100mL)
January	4	2 – 10	100 – 3300
February	4	0 – 2	2 – 1100
March	5	2 – 10	8 – 330
April	4	2 – 10	1 – 30
May	5	0 – 100	1 – 200
June	4	2 – 10	10 – 360
July	4	2 – 10	2 – 300
August	5	0 – 2	2 – 820
September	4	2 – 10	46 – 800
October	4	100 – 100	100 – 500
November	5	2 – 100	2 – 300
December	4	2 – 100	2 – 13400

The raw water is treated through membrane filtration and chlorine disinfection. The treated water is distributed to the systems it serves through the high lift pumps. The average daily treated water sent to the distribution in 2021 was 3,741.03m³/d. The average treated water flow in 2021 is up 2.3% when compared against the average daily flow in 2020. The Tri-County Drinking Water System is currently at 30.8% of its rated capacity. Chart 2 below depicts the treated water flow for 2021 compared to 2020 average daily flows.

Chart 2: Treated water average daily flow in 2021 compared to 2020



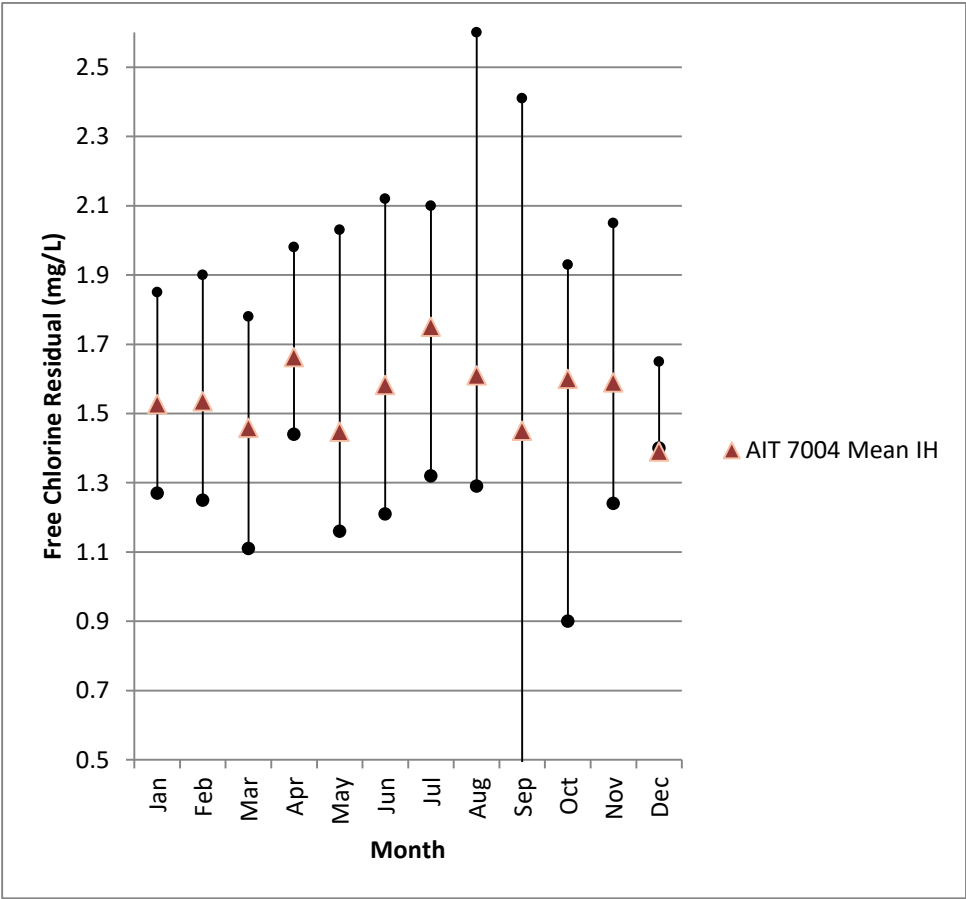
To ensure inactivation of viruses, bacteria and microorganisms the membrane filtration system is required to meet performance criteria for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month. The Tri-County Water Treatment Plant did not meet all regulatory requirements for inactivation in 2021. See Compliance Summary for details. Table 2 below shows the performance of each filter rack and the overall filter rack performance.

Table 2: Filter Rack Performance in 2021

	Rack 1 % Readings <0.1ntu	Rack 2 % Readings <0.1ntu	Rack 3 % Readings <0.1ntu	Rack 4 % Readings <0.1ntu	Overall Filter Performance (% readings <0.1ntu)
January	100.00	100.00	100.00	99.90	99.98
February	100.00	100.00	100.00	99.70	99.92
March	100.00	100.00	100.00	99.90	99.98
April	100.00	100.00	100.00	99.7	99.92
May	100.00	100.00	100.00	100.00	100.00
June	100.00	100.00	100.00	99.90	99.98
July	100.00	100.00	99.90	99.90	99.95
August	100.00	100.00	100.00	99.90	99.98
September	97.80	98.40	98.20	97.50	98.00
October	100.00	100.00	100.00	99.90	99.98
November	100.00	100.00	100.00	100.00	100.00
December	100.00	100.00	100.00	99.90	99.98

Along with turbidity, chlorine residuals are monitored throughout the treatment process by continuous online free chlorine analyzers. Residuals are maintained in order to provide adequate primary disinfection to meet inactivation of viruses, bacteria and microorganisms. The chlorine also provides adequate residuals in the distribution systems the treatment plant serves (secondary disinfection). Chart 3 below provides the online minimum, maximum and average readings of free chlorine provided to the distribution systems. All results have met regulatory requirements. The minimum chlorine reading for September was 0.38 ppm. Lower than normal readings were recorded due to the high chlorine demand caused by the high levels of iron and manganese.

Chart 3: Distribution System Free Chlorine Residuals



On a weekly basis the treated water is tested for E. coli, Total Coliforms and heterotrophic plate count (HPC). The limit for Total Coliform and E. coli is zero; heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 3 below shows the number of samples taken each month along with the range of results. All samples have met regulatory requirements.

Table 3: Treated water sample results for 2021.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	4	0 - 0	0 - 0	<10 – <10
February	4	0 - 0	0 - 0	<10 – <10
March	5	0 - 0	0 - 0	<10 – 40
April	4	0 - 0	0 - 0	<10 – <10
May	5	0 - 0	0 - 0	<10 – <10
June	4	0 - 0	0 - 0	<10 – <20
July	5	0 - 0	0 - 0	<10 – <10
August	5	0 - 0	0 - 0	<10 – <10
September	4	0 - 0	0 - 0	<10 – 40
October	5	0 - 0	0 - 0	<10 – <10
November	5	0 - 0	0 - 0	<10 – <10
December	5	0 - 0	0 - 0	<10 – <10

*additional sample in October for the replacement of parts on PRV-7051 and in December for HLP-7020 return to service

The transmission main (distribution system) is sampled on a weekly basis at two locations for E. coli, Total Coliforms and heterotrophic plate count (HPC) to meet regulatory requirements. As with the treated water the limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 4 below shows the number of samples taken each month along with the range of results.

Table 4: Distribution system sample results for 2021.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	8	0 - 0	0 - 0	<10 – <10
February	8	0 - 0	0 - 0	<10 – <10
March	10	0 - 0	0 - 0	<10 - <10
April	8	0 - 0	0 - 0	<10 - <10
May	10	0 - 0	0 - 0	<10 - <10
June	8	0 - 0	0 - 0	<10 - <10
July	8	0 - 0	0 - 0	<10 – <10
August	11*	0 - 0	0 - 0	<10 – <10
September	8	0 - 0	0 - 0	<10 - 30
October	8	0 - 0	0 - 0	<10 - <10
November	10	0 - 0	0 - 0	<10 – <10
December	8	0 - 0	0 - 0	<10 – <10

*Additional sample due to stratification testing at the WL standpipe

On a quarterly basis trihalomethanes are tested at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the THMs are forming in the system with retention time. There is an issue with elevated THMs in the distribution systems that the Tri-County Drinking Water System provides water to. Table 5 below provides the running average quarterly results; the running average limit for THMs is 100µg/L. All results are within regulatory requirements. However, THMs increase with increased retention time

therefore THMs in the distribution system the WTP serves can be much higher, even reaching the regulatory limit.

Table 5: Trihalomethane sampling results.

	Limit (µg/L)	Treated Water THM Result (µg/L)	West Lorne Standpipe THM Result (µg/L)
January 2021	-	16	25
April 2021	-	21	31
July 2021	-	31	34
October 2021	-	62	90
Running Average	100	32.5	45

On a quarterly basis Haloacetic Acids (HAAs) are now required to be tested as per regulatory requirements. They are sampled at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the HAAs are forming in the system with retention time. Table 6 below provides the current running average quarterly results; the running average limit for HAAs is 80µg/L. All results are within regulatory requirements.

Table 6: Haloacetic Acid sampling results.

	Limit (µg/L)	Treated Water HAA Result (µg/L)	West Lorne Standpipe HAA Result (µg/L)
January 2021	-	<5.3	12.5
April 2021	-	<5.3	13.5
July 2021	-	15.6	15.9
October 2021	-	27.2	40.3
Running Average	80	13.3	20.5

SECTION 5: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER:

Due to the on-going COVID-19 pandemic, precautionary protection measures remain in place at all facilities.

There were no additional Health & Safety issues identified during the first quarter.

SECOND QUARTER:

There were no additional Health & Safety issues identified during the second quarter.

THIRD QUARTER:

There were no additional Health & Safety issues identified during the third quarter.

FOURTH QUARTER:

There were no additional Health & Safety issues identified during the fourth quarter.

SECTION 6: GENERAL MAINTENANCE

FIRST QUARTER:

JANUARY:

04: Replaced CFP-8030 CI pump with spare.

06: Koolen Electric on site to finish installing new LED lights in the plant, received new CO2 tank from Air Liquide.

08: Replaced Pneumatics card on rack #4 as old one had failed.

11: Flow control valve on Rack #4 failed closed. Replaced with new valve and actuator.

12: Franklin Empire on site for storage tank milltronics annual calibration.

14: Lakeside on site to complete annual calibration on raw temp. meter TIT-1403.

15: Farmington on site to replace mechanical seal on RFR Pump 4370.

18: Farmington on site to finish replacing mechanical seal on RFRP-4370.

19: VFD Solutions on site to troubleshoot LLP1030 VFD.

21: Received chemical delivery from FloChem: Captor, Citric Acid, Sodium Hydroxide.

FEBRUARY:

01: Changed raw aquarium DO sensor cap.

03: Venture Automations on site to changed air cards and air lines on Rack #2.

05: Contractor on site for compressor servicing.

09: Changed flow meter sensor FSL 4270 on EFM and CIP pump.

10: Air Liquide delivered new CO2 tank.

17: Air Liquide delivered new CO2 tank.

22: Changed pH probe and chlorine cap on AIT-5006.

25: Farmington on site to change PRV on air tank and fix pilot system on altitude valve at standpipe.

MARCH:

03: Air Liquide delivered a new tank of CO2.

09: Gerber Electric on site to install new controller SC 4200 on rack # 3 and 4, Hach also on site to install new turbidimeters (TU5300) on Racks 3 and 4.

11: Dielco on site to discuss plans for Phase 1 of discharge header work.

15: Flowmetrix on site for annual verification on flowmeters and pressure gauges.

17: Flowmetrix returned to complete annual verification of equipment.

17: ASL Roteq on site to remove HLP-7010 for servicing/repair.

23: Fixed the 2" PVC drain line on Rack #3, pre V3331.

23: Gerber Electric on site for HVAC maintenance/servicing.

24: Air Liquide delivered new CO2 tank.

SECOND QUARTER:

APRIL:

01: Eramosa remotely made some programing changes, allowing the high lift pumps to commence normal shutdown after the distribution PRVs reach <2% (original was <1.5%).

07: Air Liquide delivered new CO2 tank.

08: Eramosa on site for communications systems mapping/inspection.

14: Changed Low Lift PLC UPS with new unit.

15: Anchem on site to delivery bulk sodium hypochlorite.

21: Changed LL UPS for the aquarium controller (for pH and DO probes) as the current one has failed. (Used recently changed out low lift PLC UPS).

21: Completed annual maintenance of Kubota lawn mower. Changed air filter, oil filter, and oil.

22. Installed new second sample pump at the low lift.
27: Air Liquide delivered new CO2 tank.
28: Changed segment of 3/4" PVC hypo pipe from the hypo storage tank to the caustic tank due to a small leak.

MAY:

05: Air Liquide delivered new CO2 tank.
12: Repaired 3/4" PVC piping at union post-CFP-8030.
13: Air Liquide delivered new CO2 tank.
18: Chubb on site to work with Gerber on installation of new fire panel.
18: Gerber Electric on site to work with Chubb on installation of new fire panel.
18: Brenntag Canada delivered 8 chlorine gas cylinders to the low lift chemical building, and took back 7 empty cylinders.
19: Chubb on site to finish work on new fire panel.
19: Was performing maintenance on post-strainer turbidimeter AIT-2006. Changed bulb. Tried calibrating unit, but was unsuccessful after many attempts. Spoke with Hach tech. support who had us try making a dilution with our 4000NTU Formazin, which was unsuccessful. Hach tech. support thinks it may be an issue with the detector/sensor. Purchased new sensor and Formazin. Cleaned the lens, calibrated and now it is working properly.
26: Changed leaking 1/4" air hose from V4213 to its pneumatics card in chemical room.
26: Air Liquide delivered new CO2 tank.

JUNE:

02: PALL on site for annual inspection/servicing.
03: PALL on site for annual inspection/servicing.
04: FloChem delivered 2 totes of Captor, and 1 tote of Citric Acid.
04: Ontario Compressor on site for compressor inspection/servicing.
04: Finished maintenance on LL raw turbidimeter, changed bulb.
08: Air Liquide delivered new CO2 tank.
08: Watech on site this morning at 8:30am to prepare and conduct intake inspection.
11: Farmington is on site to test backflow preventers.
16: Changed sump pump float in Eagle East Chamber.
21: Air Liquide delivered new CO2 tank.
22: Changed 3/4" Spears Y-strainer on Captor line in chemical room.
25: Albert's Generators at WTP and Low Lifts performing Annual generator inspections and servicing.
30: Changed LL sediment filter pre-AIT-1401.
30: Gerber Electric on site to troubleshoot HLP-7020, and look at Silver Clay chamber leaking copper pipe.

THIRD QUARTER:

JULY:

07: ASL Roteq on site for HL Pump 1 installation.
12: Invasive Phragmites Control Centre on site for settling ponds phragmites removal.
13: Invasive Phragmites Control Centre on site for settling ponds phragmites removal.
14: Gerber Electric on site for Quarterly HVAC PM/servicing.
14: Metcon on site for Cl gas system maintenance.
15: Anchem arrived to deliver bulk chlorine.
15: Gerber Electric on site to continue Quarterly HVAC system servicing.

15: Gerber Electric repaired the broken copper line on the altitude valve in the Silver Clay chamber.
22: Anchem on site to deliver remainder of bulk Cl order.
23: Air Liquide on site to deliver CO2 tank.
27: PALL called to assist with setup of new PALL computer.
27: ASL Roteq on site to remove HLP-7020 for servicing.
29: Andrew from Metcon arrived to complete work on Cl gas system.
30: Air Liquide delivered new CO2 tank.

AUGUST:

05: Air Liquide delivered new CO2 tank.
06: Gerber Electric on site to replace parts on plant A/C unit of the HVAC system following their Quarterly inspection/servicing last month.
10: AmPro on site to fix mechanical seal on Recycle Pump RFRP-4370.
13: Dielco on site to troubleshoot the 24" shore line valve. We found that while turning the valve wheel, the valve was neither opening nor closing. The Dielco tech said he will look into the drawings of the valve and discuss next steps with Syntec.
13: Changed out control room UPS (back up battery) with new unit.
18: Landmark on site to do stratification test on West Lorne standpipe and install new fall arrest equipment.
19: Dielco on site to inspect shore line valve.
19: Brenntag delivered 8 new Cl cylinders and took back empties.
25: Air Liquide delivered new CO2 tank.

SEPTEMBER:

01: H2Flow on site for Annual inspection/servicing on both UV Reactors. All bulbs were changed, but only 2 quartz sleeves were changed as the technicians told us the other 6 were cleaned and are good to keep using.
02: H2Flow on site to continue Annual inspection/servicing on both UV Reactors.
02: Hach on site to do Annual warranty maintenance/inspection on rack turbidimeters and controllers.
02: Air Liquide delivered new CO2 tank.
15: Gerber on site to replace ballasts in both UV reactors.
17: Trojan on site too work on UV system.
22: Trojan on site to repair UV Reactor 1. Henri replaced the PLC logix card, wiper plunger assembly, and quartz sleeves #1-6. Henri re-enabled the wiper, and set the frequency to 8hrs.
22: Air Liquide delivered new CO2 tank.
23: Dielco on site to look at Low lift long line valve, Eagle east Chamber isolation valve for flow meter, Stand pipe for altitude valve.
23: Flowmetrix on site to replace pressure transmitter.
23: Received bulk Cl delivery from Lavo.
28: Syntec at low lifts to quote long line intake valve replacement.

FOURTH QUARTER:

OCTOBER:

06: Air Liquide delivered new CO2 tank.
06: ASL Roteq on site at low lift building to remove low lift pump LLP-1040 for servicing.
07: ASL Roteq on site at low lift building to remove low lift pump LLP-1040 for servicing.
07: Ampro on site to fix mechanical seal on Revers Filtration Recovery Pump RFRP-4370.

07: Ontario Compressor on site for routine compressor servicing.
08: Farmington inspected and cleaned out the inlet and outlet of the pilot system copper lines. He found some fouling and cleaned it up. He also inspected the suspected failed check valve on the 1" hydraulic check line. He confirmed it is failed and likely not sealing properly. He will get us a quote on a new check valve.
12: Dielco on site to install new ceiling hangers in chemical room.
12: Farmington on site to replace failed 1" check valve on PRV-7051 1" hydraulic check line.
12: Greatario on site to check leaks on South storage tank.
13: Cla Val found that our issue with the Wallacetown Dist. PRV (PRV-7051) Peter also updated the programming on both PRVs with updated software.
14: Dielco on site to continue installing new ceiling hangers in chemical room.
15: Dielco on site to continue installing new ceiling hangers in chemical room.
18: Dielco on site to continue installing new ceiling hangers in chemical room.
19: changed old flow control meter FSL4203 with new TURCK flow control meter.
21: Dielco on site to continue ceiling hanger upgrades in chemical room.
21: Manitoulin delivered 5 Cl gas cylinders (on behalf of Brenntag), and took back 8 empties.
25: Dielco on site to continue chemical room ceiling hanger upgrades.
26: Dielco on site to continue chemical room ceiling hanger upgrades.
26: Darrel and Vince from Elgin Fire Extinguisher on site to examine fire extinguishers.
26: Air Liquide delivered new CO2 tank.
27: Dielco on site to continue chemical room ceiling hanger upgrades.
27: Elgin Fire Extinguishers swapped out the extinguisher in the low lift chemical building with a new one.
28: Gerber on site to replace CP-2000 PLC UPS batteries.
29: Invasive Phragmites Control Centre on site for settling ponds phragmites removal.

NOVEMBER:

01: Ecoflo on site for annual septic system inspection.
01: Gerber Electric on site to change out UV MCP UPS batteries.
08: Greatario on site to repair leaks in storage tank 6020.
17: Air Liquide delivered CO2 tank.
18: Farmington on site to replace storage tank 6020 6" drain valve on front access hatch.
22: K&K locksmiths on site to replace lock on standpipe door.
25: Air Liquide delivered CO2 tank.

DECEMBER:

03: Flowmetrix on site to perform work on acid flow meter and pressure regulator post-Cl pump CFP-8030.
07: Venture Automation delivered new 240-214, G3 4-20mA input module for the acid and NoOH flow meters.
07: Gerber Electric on site to troubleshoot issue with acid flow meter output.
08: Air Liquide delivered CO2 tank.
10: Eramosa called to try and troubleshoot the issue with the acid flow meter reading higher on SCADA after the mA signal rises past 12mA.
13: Eramosa called to continue to try and fix the acid flow meter problem we are having and was successful.
14: ASL Roteq on site to return and install serviced high lift pump HLP-7020.

14: Installed new pressure regulating valve on the CI board in the chemical room post-CFP-8030 due to a small leak at the back of the old valve. Leak is now gone.

16: Gerber Electric on site to perform annual maintenance on HVAC system.

17: Nevro on site to replace inlet and outlet 12" gate valves in Eagle East Chamber.

29: Paris from Flowmetrix contacted me about the Wallacetown flow meter. He had me power the unit off and back on. Flow meter is now reading flow and is remaining out of fault.

29: Air Liquide delivered new CO2 tank.

SECTION 7: ALARM SUMMARY

FIRST QUARTER:

JANUARY:

No alarms received this month.

FEBRUARY:

07: Alarm received for Low Lift Pressure Fault. Operator attended site and changed the train at the low lift from East to West. Pressure returned to normal. Cause of the alarm due to cold weather.

20: Alarm received for Filtrate Tank Fault. Operator logged into SCADA and observed the duty storage tank level drop rapidly, caused by ice in the tank.

23: Alarm received for Low Lift Fault and High Lift Fault due to power flicker. Operator reset high lift and low lift pumps.

MARCH:

28: Alarm received for strainer inlet valve fault. Logged into SCADA. Valve MV-2002 was in fault in open position. Reset alarm. Put valve on manual and tried to open and close all was working as intended.

SECOND QUARTER:

APRIL:

09: Received alarm for Wallacetown elevated tank alarm. Logged onto SCADA and observed Wallacetown tower to be at 11.64m, high lift pumps were not running. High lift pumps to Wallacetown had not been running since 01:10. Disabled Wallacetown elevated tank alarm until level in tank drops below hi level to avoid callouts.

13: Got channel 12 alarm, surge relief valve stuck open. Checked SCADA. Low lift was running; PALL system was off. Try to reset PALL system, did not help. Called Pall support to help resolve the problem. Found that issue was in programming. PALL reinstalled the program and after everything returned to normal operation.

16: Received alarm due to Rack #2 failing IT. Checked SCADA and the differential pressure was 5.85 kPa. Found leak at top of one of the membrane cells at the fittings above and below the glass sight. Tightened fittings to resolve issue. Rack #2 underwent IT; passed, 1.26 kPa differential. Put rack back into Forward Flow.

MAY:

11: Received call from spectrum at 20:05 for UV discharge chlorine. Logged onto SCADA and observed chlorine at AIT5006 was 0.03ppm. Reset low lift pumps and system started. Storage tank was at 8.0m. Upon restart chlorine pumps started to inject chlorine and residual at AIT5006 increased. System now making water and dosing chlorine. Storage tank now at 8.4m. Will continue to monitor system remotely.

14: Got alarm for chlorine analyzer 5006 fault. Checked SCADA. pH and chlorine was high. System was off. Level in the tanks was 9.51 m. Reset the system and started to produce water. Everything returned to normal operation. Monitored the system to make sure all system is working normal. Chlorine and pH was high due to system stopped after rack # 2 finished EFM.

JUNE:

06: Received alarm at 14:29 for main generator running. Checked hydro one outage map but there were no recorded outages in the area. Logged onto SCADA and observed PALL system were disabled and from dialer menu, main generator was running. Placed compressor A online, once pressure had built up, PALL system was then placed into auto. High lift pump 3 appeared to be running at time of generator start, placed valve into manual, off and then back into auto. High lift pump 2 then started to send water to West Lorne tower. System currently producing water, high lift pumps currently sending water to both West Lorne and Wallacetown. Generator no longer running. Plant shut down due to power flicker and likely weather related. Will continue to monitor system remotely.

09: Received alarm for generator running and Pall system critical. Logged in on SCADA. Try to load Pall system; unsuccessful. Operator attended site and reset Pall system computer. Reset all systems and started to produce water. Monitored the system for 45 min to make sure everything working properly. Disruption to power due to power flicker.

12: Received alarm for Pall system critical. Logged into SCADA and all systems were off. Tried to reset remotely however could not reset VFD on RFR pumps. Operator attended site and reset VFD on electrical panel. Reset all systems and started to produce water. Monitored the system for 10 min. Thunderstorms in the area and a power flicker occurred.

THIRD QUARTER:

JULY:

03: Received call from Spectrum at 16:28 about civilians stuck in the low lift area. Contacted person who placed the call to Spectrum, then called ORO for directions. Was instructed to call D. LeBritton who then instructed me to go open gates at low lift. Elgin OPP was at low lift and wanted access to fenced area. Granted access to OPP. Boat onshore west of low lift building, civilians had left area upon arrival.

07: Received call from Spectrum at 19:34 for generator running. Logged onto SCADA remotely and observed from dialer both main generator and low lift generator were running. XRP2050 had also tripped and could not be reset from SCADA. Arrived at plant at 20:15, reset low lift pumps and MV7031 from SCADA, high lift pump 4 started up and is now sending water to West Lorne. Placed compressor B into duty and compressor A into standby. Once pressure had built up at PIT4711, placed the PALL system back into auto. The plant then started to produce water. Storage tank is currently at 9.0m, West Lorne is currently at 33.49m and Wallacetown at 10.22m.

Completed plant walk through, no other issues. Currently producing water and sending to West Lorne. Will continue to monitor remotely.

AUGUST:

07: Received alarm call for low D.O (dissolved oxygen). D.O. was 3.99 mg/l. Came to site. D.O. was 4.27 mg/l. Started AOP (advanced oxidation process) system as per SOP. Turned off pre-chlor system. Increased NaOCl set points from 1.75 mg/l to 2.0 mg/l. Changed low lift start set point from 9.0 m. to 9.1 m. Notified PCT and manager.

10: Received alarm for low raw DO. Notified ORO, arrived at low lift at approximately 00:30. Took DO reading from inside aquarium and obtained a reading of 2.34ppm. Took reading from shoreline and

obtained a reading of 7.94ppm. Proceeded to open shoreline valve where DO is reading higher. Notified ORO.

12: Received alarm for low level in wet well. Low lift pumps were off and the wetwell level was 3.53m. Restarted low lift pumps and waited for the system to start. Low lift pump did start, however the level in the wetwell dropped quickly and low lift shut down due to low level alarm. Upon arrival to low lift, it was observed that the wetwell had increased, however, had still not equalized to lake level. No visible structures or blockages near the shoreline intake. Performed a shore line backwash. Observed that the valve was not closing, instead the platform the valve had been bolted to was starting to lift. Spoke with ORO about the situation, he then instructed me to perform a backwash with the valve open, the water circulated through the wetwell but did not flush out the line to the lake. He then instructed me to open the valve and try closing again, however the same issue did arise. Opened the long line 5% to allow more flow into wetwells. Wetwell levels now normal during pump runs.

SEPTEMBER:

01: Received alarm for low lift chlorine analyzer fault. Logged in on SCADA. Checked chlorine at the low lift, it was 4.97 mg/l. Changed speed coefficient for Cl₂ from 1.15 to 1.0. Check chlorine analyzer, chlorine is at 1.97 mg/l and going down, everything is back to normal.

02: Received alarm for UV reactor # 1 fault. Logged in on SCADA. Reactor # 1 was in fault. Check to make sure reactor # 2 start and working properly. Disable alarm for reactor # 1. Monitor the system for 30 min to make sure everything is working properly.

07: Received alarm for discharge chlorine analyzer fault. Logged in on SCADA. Checked chlorine it was 0.95 mg/l with no flow to distribution.

Changed chlorine set points from 2.4 mg/l to 2.6 mg/l. Change pre chlor set points residual from 0.4 to 0.5 and speed coefficient from 0.6 to 1.1. Came on site. Calibrated discharge chlorine analyzer from 0.95 mg/l to 1.02 mg/l. Check trending chlorine was 0.95 mg/l for 1 hour with no flow. Checked distribution turbidity it was 0.57. Start high lift pump to bring chlorine up. Chlorine is now 1.22 mg/l, turbidity 0.68. Came to low lift checked DO was 7.85. pH was lower than normal 7.2. Also pH at chlorine analyzer AIT 7001 and 7004 was lower than normal as well 7.63. Monitor the system to make sure everything is working normal. Chlorine at discharge chlorine analyzer AIT 7004 start to go down. Now it is 1.15 mg/l. Notified Sr. Operations Mgr and closed long line intake and opened shore line 90 %. Changed pre chlor from intake to wet well.

07: Received call from Spectrum for Strainer Raw Water Cl Analyzer AIT-2003 Fault. Looked on SCADA and saw that AIT-2003 was reading 2.55ppm and not in fault. The reading was coming down from a spike to 3.02ppm. Saw that a spike had passed through the Low Lift Raw Water Cl Analyzer AIT-1401 not long before, but was currently reading 0.51ppm. Monitored as AIT-2003 Cl reading dropped to 2.35ppm. Likely due to increasing the Cl gas dosage today. Notified ORO.

08: Received call from Spectrum for All Systems Critical Failure. Looked on SCADA and saw a power flicker had occurred. Both compressors, XRP and RFP pumps were faulted. Put compressor B back online. Could not remotely clear pump faults. Notified ORO and prepared to leave for the TCWTP. Arrived at WTP. Reset breakers on RFP-4320, XRP-2050 and XRP-2060. Started up plant and begun to observe it run. Air Compressor A is faulted out and will not turn back on. The fault is "VSD Fault 12". Looked through the manual and found there may be issues, observed the plant run for 30+ minutes and saw no further issues.

08: Received call from Spectrum for Raw Water Strainer Cl Analyzer fault. Operator reviewed SCADA and saw a spike had already passed by the analyzer, and was now reading 0.31ppm. Notified ORO, and then decreased the Cl gas dosage Speed Coefficient Multiplier down from 1.35 to 1.25. Decreased Cl dosage setpoint down from 2.70 to 2.60 due to rising Cl in distribution.

08: Received call from Spectrum for All Systems Critical Failure. Reviewed SCADA and saw an alarm for Too Few Racks Available. Rack #3 was disabled due to high turbidity. Started the rack up and the turbidity settled <0.1 NTU before the rack started producing water. Notified ORO.

08: Received a call from Spectrum for Distribution Turbidimeter AIT-7003 HI level alarm. Logged onto SCADA and saw that the analyzer was reading 1.02. The high lift pump had just shut down as Operator logged on as West Lorne Standpipe was full. Distribution Turbidimeter AIT-7003 is now reading 0.72 NTU. No alarms are present on the turbidimeter display. Filled PET bottles from the discharge line on AIT-7003, as well as the overflows of each storage tank. The colour seems pretty similar to the PET bottles filled yesterday for the overflow bottles. No noticeable colour change is present. Discussed with ORO, increased the AIT-7003 HI alarm setpoint up from 1.00 to 1.10, and the HIHI up from 1.05 to 1.15.

09: Received alarm call from Spectrum for All Systems Critical Failure. Reviewed SCADA and saw that an alarm was present for "Few Too Racks" alarm. Rack 4 disabled due to "Turbidity insta fail" alarm at 18:10, and Rack 2 disabled due to "Turbidity insta fail" alarm at 18:29. No spikes on trending are present for these two instances because these spikes occur after Air Scrubs and suspect they disable themselves during the delay time before the racks come back into production. Notified ORO and got ready to leave for the WTP. Arrived at WTP to respond to All Systems Critical Failure alarm, and to also watch the plant overnight. Upon arrival, Rack 4 turbidimeter was reading 0.51 NTU, and Rack 2 turbidimeter was reading 0.68 NTU. Put Racks 2 and 4 back into Auto and Forward Filter and the turbidimeters settled below 0.10 NTU by the time they were placed back into production. These spikes are occurring after air scrubs because the racks draw treated water from the storage tanks for back washing, and the treated water has high turbidity currently due to iron and manganese. Rack 3 disabled due to a "Turbidity Insta Fail" alarm. The reading on the Rack 3 turbidimeter is 1.19 NTU. Placed Rack 3 back into Auto and Forward Filter and the turbidimeter settled below 0.10 NTU by the time the rack was placed back into production. This spike occurred after an air scrub because the racks draw treated water from the storage tanks for back washing, and the treated water has high turbidity currently due to Iron and Manganese. No spike for this instance is present on trending likely because it disabled itself after the air scrub before it was put back into production.

FOURTH QUARTER:

OCTOBER:

09: Received call from spectrum at 11:40 for Wallacetown low level. It was observed the high lift pumps starting and then stopping because PRV-7051 would not open. Placed PRV-7051 into manual and open, however was unsuccessful. Placed PRV-7051 back into auto. Spoke with ORO and informed him the plant is unable to fill Wallacetown, and had not sent out water since 16:00 on 10/8/2021. Received call from ORO, who had just spoken with Dutton-Dunwich Operator. Wallacetown tower to be filled from alternate sources over the weekend.

09: Received alarm for discharge chlorine analyzer fault at 14:31. Logged onto SCADA and observed AIT-7004 was 0.98ppm, AIT-7001 had a reading of 1.43ppm. West Lorne Standpipe was at 35.76m, started up the high lift pumps and observed AIT-7004 residual to climb to 1.40ppm Called ORO, who instructed me to go into the plant and take grab samples at each analyzer. Arrived at plant, high lifts had just turned off. Took grab samples at analyzers AIT-7001, AIT-7004 and AIT-5006. All were reading correctly. Changed chlorine setpoint from 2.10ppm to 2.20ppm to increase the residual leaving the storage tanks.

10: Received call from spectrum for Wallacetown tower alarm. Logged onto SCADA and observed Wallacetown tower at 11.96m. Changed hi and hihi setpoints as we are not sending water to Wallacetown tower this weekend. Received call from spectrum for discharge header chlorine. Logged onto SCADA and observed AIT-7004 to be 0.89ppm.

10: Received call from spectrum for Discharge chlorine analyzer, notified ORO. Arrived at West Lorne Standpipe to take a grab sample from the distribution system. Obtained a reading of 0.93ppm, high lifts were not running at the time the sample was taken. Arrived at plant, AIT-7004 was reading 0.80ppm, grab sample was reading 0.83ppm. Notified ORO. Adjusted LO and LOLO setpoints to 0.70ppm and 0.65ppm to avoid future callouts. High lift pumps have started and sending water to West Lorne Standpipe. Residual at AIT-7001 is currently at 1.48ppm, residual at AIT-7004 is currently at 1.52ppm. Upon startup of the high lift pumps, it was observed that the residual at AIT-7004 rose to the current reading of 1.52ppm from 0.80ppm. Will continue to monitor remotely.

11: Received call from spectrum for discharge analyzer fault. Logged onto SCADA and observed AIT-7004 at 0.65ppm, High lift pumps had just turned off. Spoke with ORO and adjusted settings.

29: received call from spectrums for UV reactor 1 faulted.

31: received call from spectrums for UV reactor #2 fault.

NOVEMBER:

18: Received alarm for reactor 2 fault system automatically switched to reactor 1. Disabled reactor 2 alarm for the night will look into the problem the morning.

DECEMBER:

11: Received call from spectrum for low lift intrusion, low lift pump fault and high lift pump fault. Arrived at plant, low lift pumps and high lift pumps were in fault. Reset low lift pumps and high lift pumps. MV-7041 was open, placed in manual, stopped and placed back into auto. Upon reset of high lift pumps, high lift pump 1 started and is now sending water to Wallacetown. West Lorne Standpipe is currently at 34.19m and Wallacetown currently at 8.84m. Storage tanks at 9.56m and 9.67m. Alarms most likely due to power flicker from high winds in the area.

29: Received alarm call from answering service for, "West Elgin Water Treatment Plant, Gateway Net 1, Now Normal". Logged onto SCADA remotely and saw two high lift pumps feeding both dist. trains and one low lift pump on. Saw on the alarm page the alarm was for "Possible Data Historian Failure", but was brief and cleared itself before I logged on. Checked trending and data was still present and looked okay. Monitored for another 15min and everything is working fine. Issue suspected due to power flicker.

SECTION 8: COMMUNITY COMPLAINTS & CONCERNS

FIRST QUARTER:

No complaints or concerns this quarter.

SECOND QUARTER:

No complaints or concerns this quarter.

THIRD QUARTER:

JULY:

02: Received call from Municipality of West Elgin that a customer on Elm Street in West Lorne has lost water pressure. Grant S from West Elgin attending residence; and he will give us a call if there is an issue. Called Sr. Operations Manager for distribution system to notify.

AUGUST:

No complaints or concerns this month.

SEPTEMBER:

On September 8th, 2021 several community complaints were received at the Tri-County WTP from residences concerned about coloured water in their homes. Notification was sent to all Municipalities who receive water from the Tri-County System informing them of the elevated levels of iron and manganese in the source water causing coloured water to be produced at the treatment plant. The Tri-County Water Board also issued a statement informing residents of the reason for the issue and the measures being taken to rectify the situation.

FOURTH QUARTER:

No complaints or concerns this quarter.