Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2020 Client Monthly Operations Report

Lambton Area Water Supply System

April 30, 2020

Facility Description

Facility Name:	Lambton Area Water Supply System
Facility Type:	Municipal
Classification:	Class 4 Water Treatment Class 4 Water Distribution
Title Holder:	Municipality
Operation Status:	OCWA
Sr. Operations Manager:	Mark Harris (519) 344-7429 Ext. 251
Business Development Manager:	Susan Budden
Capacity (m3/d):	181844
Service Area:	City of Sarnia, Village of Point Edward, Township of St. Clair, Township of Warwick-Watford, Municipality of Lambton Shores, Town of Plympton-Wyoming
Service Population:	104,162
In service Date:	1975

Operational Description

The Lambton WTP is a direct filtration surface water facility consisting of chemically assisted filtration with disinfection. The facility consists of an intake system (and alternate intake), a low lift pump station, a treatment system and distribution pumping system situated in the City of Sarnia. Water is drawn into the plant (a zebra mussel system is available as needed) and screened at the surge wells (pre-disinfection is utilized). Water flows to the pump wells where a total of 4 vertical turbine pumps are located and used as needed which pump to a discharge header. Coagulant is added, flashed mixed (PAC is also applied at this location when needed) the raw water is than flocculated (Polymer is added at the flocculation trains as needed) and diverted to filtration (10 dual media filters). The gravity fed filter effluents combine into two clear wells where sodium hypochlorite is injected. To maximize the contact time the water is diverted to the two baffled reservoirs (in series). Six vertical turbine pumps are available for supplying the distribution demand as needed. The entire water treatment system is continuously monitored (via SCADA) with continuous on-line analyzers equipped throughout the processes. The utility serves a large part of Lambton County and has over 250 kilometers of pipeline of various sizes and materials. There is also the East Lambton Booster Station with 9,000 cubic meters of storage capacity which is remotely monitored and controlled from the Lambton WTP via SCADA. During the 1997 calendar year the West Lambton Pumping Station, with the largest above ground water storage in the province with a capacity of 90,000m^3, was brought on-line. This pumping station is also remotely monitored and controlled from Lambton WTP via SCADA. The LAWSS distribution system has 5 towers/elevated tanks that the utility monitors via SCADA. In 2007 the Residual Management System (RMS) which treats backwash effluent was brought on-line.

Treatment Process

Pre-treatment Chemicals:	Prechlorination (sodium hypochlorite); Zebra mussel control
Coagulation/Flocculation:	Aluminum Sulphate (Clar+Ion A7)
Filtration:	Dual Media; Filter Aid polymer
Disinfection Method:	Sodium hypochlorite
Post Treatment Chemical Addition:	Fluoride
Waste Residue Management:	Filter backwash effluent is treated by an Actiflo system.
Waste effluent/residue Disposal:	Sludge is hauled to Sarnia WPCP on a needed basis.

Inspections

April: None

Maintenance, Operations & Distribution Works Summary 2020

Maintenance

April:

Date	(P)reventative Capital Major Mtc (C)orrective	Description
April 1	**P**	Completed annual inspection of air handling units at West Lambton Pumping Station.
April 1	**P**	Completed annual inspection of Ross PRV at West Lambton Pumping Station.
April 1	**P**	Completed monthly maintenance on fluoride analyzer.
April 2	**P**	Completed monthly inspection of eyewash and safety showers at the water treatment plant.
April 2	**P**	Conducting monthly maintenance on online chlorine analyzers at West Lambton Pumping Station.
April 3	**P**	Conducted monthly inspection of water treatment plant compressors.
April 3	**P**	Completed monthly maintenance on pH probes at the water treatment plant.
April 3	**P**	Completed annual inspection of emergency life ring at the water treatment plant.
April 6	**P**	Completed annual inspection of air handling units at the water treatment plant.
April 6	**P**	Completed annual inspection of pressure relief valve in the high lift room for valve 32.
April 6	**P**	Completed annual inspection of pressure relief valve in the

		high lift room for valve 36.
April 6	**P**	Completed annual inspection of filter inlet channel sluice gates.
April 6	**P**	Completed semi-annual inspection of Highlift pumps 3 and 6.
April 7	**P**	Completed annual inspection of reservoirs at West Lambton Pumping Station.
April 7	**P**	Completed monthly maintenance on all chlorine analyzers at the water treatment plant.
April 7	**P**	Conducted annual exercise and inspection of valve house valves at West Lambton Pumping Station.
April 8	**P**	Completed monthly inspection of travelling screens at the water treatment plant.
April 9	**P**	Conducting monthly maintenance on Station 5 and all filter effluent turbidity units.
April 14	**P**	Conducted monthly maintenance on Station 1, 3 and 7 turbidity units.
April 14	**P**	Conducted monthly maintenance on lab turbidity unit.
April 14	**P**	Conducted monthly maintenance on RMS turbidity units.
April 14	**P**	Conducted monthly maintenance on pH probes for Stations 1 and 5.
April 15	**P**	Conducted monthly maintenance on pH probes for Stations 2.
April 16	**P**	Conducted monthly maintenance on streaming current meters.
April 16	**P**	Completed monthly maintenance on pocket chlorine testers.
April 17	**P**	Conducted quarterly test of critical control point alarms.
April 17	**P**	Replaced reagents and buffers on the fluoride monitor at the water treatment plant.
April 21	**P**	Completed annual inspection of air handling units at the water treatment plant.
April 17	**Capital**	Meeting in regards to generator switchgear.
April 20-21	**Capital**	Reviewing PLC/HMI code for radio project.
April 21	**P**	Conducted annual test of overflow at Forest Tower.
April 22	**P**	Tested water treatment plant polymer system as per SOP.
April 22	**P**	Conducted semi-annual inspection of Chambers 5, 9, 10 and 11.
April 23	**P**	Switched Station 2 to run off of East Low Lift Header.
April 23	**P**	Conducted annual meter calibration of alum flow meters.
April 23	**P**	Conducted annual flow meter calibration of filter effluents.
April 23	**P**	Cleaned out filter inlet channels.
April 24	**C**	Repaired sump at Chamber 10.
April 24	**P**	Completed annual inspection of flow control on meter chamber 7.
April 24	**P**	Completed monthly maintenance on chlorine analyzer at East Lambton Pumping Station.
April 24	**P**	Completed monthly inspection of vacuum priming system at

		East Lambton Pumping System.
April 24	**P**	Conducted generator test at the water treatment plant.
April 27	**P**	Conducted monthly generator test at West Lambton Pumping Station.
April 27-28	**P**	Completed monthly inspection of floc gear drives at the water treatment plant.
April 28	**P**	Completed annual inspection of flow control on meter chamber 1, 2, 3, and 4.
April 29	**P**	Conducted monthly test of East Lambton Pumping Station generator.
April 29	**C**	Alberts Generator Service on site at East Lambton Pumping Station to troubleshoot startup issues with generator.
April 29	**P**	Conducted annual test of overflow at Watford Tower.
April 30	**Major Mtc**	Low lift cleanout with Badger.

Operations and Compliance

April:

April 1	Using treated flow instead of raw water flow to calculate CT as per MECP suggestions from inspection.
April 1	Review stock of health and safety equipment.
April 1	Added backwash total flow to monthly Client WISKI report.
April 2	Having to manually close filter to waste for Filter #6 as it will not reach closed setpoint limit.
April 3	Ran Pump 5 at West Lambton Pumping Station.
April 3	Prepare contingency to deal with possible COVID 19 staff shortages.
April 6	TSS sample taken from the Residual Management System final effluent.
April 6	Ran Pump 5 at West Lambton Pumping Station.
April 7	Winter 2019 lead sampling complete.
April 7	Pre chlorine pump #2 failed with P+. Pump and panel was reset.
April 8	Both pre chlorine pumps failed with P+. Both pumps and panel was reset.
April 9	South clearwell pump 2 failed with P+. Pump and panel was reset.
April 10	Both pre chlorine pumps failed with P+. Both pumps and panel was reset.
April 12	Both pre chlorine pumps failed with P+. Both pumps and panel was reset.
April 14	Lead and lag Forest and Watford pumps switched at East Lambton Pumping Station.
April 14-20	Completed annual review of O&M Manual at the water treatment plant.
April 16	Lead reports completed and sent.
April 21	Pre chlorine pump #2 failed with P+. Pump and panel was reset.
April 22	Created new chain of custody for COVID 19 due to loss of sample locations.
April 24	Conducted annual review of operations plan.
April 24	Pre chlorine pump #2 and 3 failed with P+. Pump and panel was reset.
April 26	South clearwell pump 1 and 2 failed with P+. Pump and panel was reset.

Distribution

April:

April 1	On site for third party work for bore work on LaSalle Line.
April 2	On site for third party work on Zion Line in Watford for daylighting of LAWSS watermain.
April 3	Third party work in Watford on Nauvoo Rd.
April 4	After hours emergency locate 2020150002 on Christina and Errol Rd.
April 15	Site meet on highway 40 and Whitebread Line
April 15	Valve operations and chamber checks in Lambton Shores and Plympton Wyoming.
April 16	Chamber checks and valve operations on Lakeshore.
April 21	Site meet on Venetian Blvd. for daylighting of LAWSS watermain.
April 21-22	Chamber checks on Fleming Rd in Plympton Wyoming.
April 24	Chamber checks and valve operations on Plowing Match.
April 24	Isolated and bagged out of service hydrant #172 due to leak.
April 27	Onsite for third party work with Bluewater Plumbing in Brights Grove.
April 28	Chamber checks and valve operation on Plowing Match complete.
April 30	Meter reads complete.
April 30	Valve operations and chamber checks on Zion Line in Warwick.

Call Outs 2020

April: Call out April 16th for SCADA failure at the water treatment plant.

One Call Utility Locates

These numbers represent the number of locate notifications that were cleared from LAWSS assets

Number of Locates/Month

YEAR	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2019	69	62	104	164	189	149	182	153	121	148	81	50
2020	57	54	107	131								

RMS Sludge Haulage

These numbers represent total monthly amounts of sludge produced by the Residual Management System and hauled to Sarnia WPCP

Amount of sludge produced per month in m^3

YEAR	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2019	236	158	237	236	216	158	313	237	160	160	159	163
2020	241	228	231	240								

Required Monthly Reports

Monthly System Flows- see separate attached summary report

Workplace Management System Reports – see separate attached reports

Performance Data and Compliance – See separate attached report

Required Financial Reports

Quarterly Financial Summary – Q1 was due April 30, 2020. Q2 due July 30, 2020.

Semi-Annual "Schedule G" Reconcilable Commodities Report – Due July 30, 2020.

Health & Safety Work Order Summary by Facility

Start Date: 2020-04-01
End Date: 2020-04-30
Hub: Lambton

Cluster	ORG ID	Facility ID	Health and Safety					Closure Rate		
			Initiated	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, East Lambton PS (5544-WPEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	6	6	5	6.50	246.45	85.00%	83.33%	1.67%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West ST.Clair Distribution (5544-WDWS)	1	1	1	1.00	37.79	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Total	7	7	6	7.50	284.24	85.00%	85.71%	-0.71%

Key Column	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

Health & Safety Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-04-30
Hub: Lambton

Cluster	ORG ID	Facility ID	Health and Safety					Closure Rate		
			Initiated	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, East Lambton PS (5544-WPEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	17	17	16	27.00	1121.98	85.00%	94.12%	-9.12%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West ST.Clair Distribution (5544-WDWS)	3	3	3	3.00	113.37	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	2	2	2	3.00	131.69	85.00%	100.00%	-15.00%
		Total	22	22	21	33.00	1367.04	85.00%	95.45%	-10.45%

Key Column	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

Work Order Summary by Facility

Start Date: 2020-04-01
End Date: 2020-04-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Corrective Maintenance					Emergency Maintenance					Call Back				
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	5544, East Lambton Distribution (5544-WDEL)	1	1	1	7	305.77	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton PS (5544-WPEL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	2	2	1	1	37.11	0	0	0	0	0	1	1	1	4	197.7
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, West ST.Clair Distribution (5544-WDWS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Lambton Area Water Treatment Plant (5544)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			3	3	2	8	342.88	0	0	0	0.00	0.00	1	1	1	4.00	197.70

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Work Order Summary by Facility

Start Date: 2020-04-01
End Date: 2020-04-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Preventive Maintenance					Operational					Capital/Project Work					Closure Rate		
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	5544, East Lambton Distribution (5544-WDEL)	3	3	0	0	0	4	4	4	10.75	386.65	0	0	0	0	0	85%	62.5%	22.49%
		5544, East Lambton PS (5544-WPEL)	4	4	4	5.5	215.57	2	2	2	9	301.79	0	0	0	0	0	85%	100%	-15.0%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area RMS (5544-WWLA)	2	2	2	3	158.94	2	2	2	4	166.39	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	49	49	46	129.25	5569.01	17	17	13	1511	42167.52	0	0	0	0	0	85%	88.40%	-3.40%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West Lambton Booster Stn (5544-WPWL)	21	21	12	19.5	746.59	2	2	2	12.5	476.92	0	0	0	0	0	85%	60.86%	24.13%
		5544, West ST.Clair Distribution (5544-WDWS)	2	2	0	0	0	3	3	3	6	250.6	0	0	0	0	0	85%	60%	25%
		Lambton Area Water Treatment Plant (5544)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
Grand Total			81	81	64	157.25	6690.11	30	30	26	1553.25	43749.87	0	0	0	0	0	85%	100%	-15.0%

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Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-04-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Corrective Maintenance					Emergency Maintenance					Call Back				
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	133000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton Distribution (5544-WDEL)	2	2	2	19.25	840.67	0	0	0	0	0	2	2	2	16	3764.87
		5544, East Lambton PS (5544-WPEL)	1	1	1	9	381.78	0	0	0	0	0	0	0	0	0	0
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	1	1	1	1.5	55.67	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	12	12	7	155.25	7765.78	0	0	0	0	0	1	1	1	4	197.7
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	2	2	2	10	429.69	0	0	0	0	0	0	0	0	0	0
		5544, West ST.Clair Distribution (5544-WDWS)	1	1	0	0	0	0	0	0	0	0	1	1	1	6	211.62
Grand Total			19	19	13	195	9473.59	0	0	0	0.00	0.00	4	4	4	26.00	4174.19

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Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-04-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Preventive Maintenance					Operational					Capital/Project Work					Closure Rate		
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	133000	0	0	0	0	0	0	0	0	0	0	1	1	0	68.5	4001.82	85%	100%	-15.0%
		5544, East Lambton Distribution (5544-WDEL)	6	6	0	0	0	16	16	16	37.75	1418.35	0	0	0	0	0	85%	76.92%	8.076%
		5544, East Lambton PS (5544-WPEL)	22	22	21	33.25	1668.7	8	8	8	30.25	1133.28	0	0	0	0	0	85%	96.77%	-11.7%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area RMS (5544-WWLA)	8	8	8	16	755.15	8	8	8	19.5	734	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	141	141	131	423.25	18450.51	56	56	51	6300	182734.1	4	4	2	23	17209.88	85%	90.47%	-5.47%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West Lambton Booster Stn (5544-WPWL)	39	39	30	44.5	2007.84	8	8	8	73.25	3592	0	0	0	0	0	85%	81.63%	3.367%
		5544, West ST.Clair Distribution (5544-WDWS)	3	3	0	0	0	12	12	11	28	1138.75	1	1	0	10.5	651.94	85%	70.58%	14.41%
Grand Total			219	219	190	517	22882.2	108	108	102	6488.75	190750.4	6	6	2	102	21863.64	85%	100%	-15.0%

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Ontario Clean Water Agency
Time Series Info Report

From: **01/01/2020 to 30/04/2020**

Report extracted 05/08/2020 09:31

Facility Org Number: **5544**

Facility Works Number: **210000906**

Facility Name: **LAMBTON AREA WATER SUPPLY SYSTEM (LAWSS)**

Facility Owner: **Local Services Board: LAMBTON AREA WATER SUPPLY SYSTEM**

Facility Classification: **Class 4 Water Treatment**

Receiver:

Service Population: **100000.0**

Total Design Capacity: **181844.0 m3/day**

	01/2020	02/2020	03/2020	04/2020	Total	Avg	Max	Min
Coagulation/Floculation / Coagulant Dosage-Calculated - mg/L								
Max IH	26.437	30.355	29.818	28.267			30.355	
Mean IH	20.802	24.673	25.189	23.287		23.47		
Min IH	15.602	20.415	20.129	16.333				15.602
Coagulation/Floculation / Coagulant Used - kg								
Max IH	1241.6	1459.2	1638.4	1190.4			1638.4	
Mean IH	964.129	1110.069	1104.103	979.2		1038.704		
Min IH	691.2	870.4	793.6	780.8				691.2
Total IH	29888	32192	34227.2	29376	125683.2			
Coagulation/Floculation / Coagulant Volume Used - m³								
Max IH	0.97	1.14	1.28	0.93			1.28	
Mean IH	0.753	0.867	0.863	0.765		0.811		
Min IH	0.54	0.68	0.62	0.61				0.54
Total IH	23350	25150	26740	22950	98190			
DW THM Data / Trihalomethane: Total - µg/l								
Max Lab	31						31	
Mean Lab	29.667					29.667		
Min Lab	28							28
East Lambton Booster Station / Cl Residual: Inlet Free - mg/L								
Max OL	1.49	1.49	1.83	1.63			1.83	
Mean OL	1.359	1.372	1.434	1.424		1.397		
Min OL	0	0	0	0				0
Filter Backwash / Backwash Volume - m³								

Total IH		62545		59502		62054		53256		237357							
Max IH		2988		4208		3666		2702						4208			
Mean IH		2017.581		2051.793		2001.742		1775.2				1961.628					
Min IH		1208		1200		0		602								0	
HFS / Fluoride Dosage - mg/L																	
Max IH		0.63		0.633		0.647		0.645						0.647			
Mean IH		0.55		0.556		0.555		0.554				0.554					
Min IH		0.477		0.516		0.433		0.491								0.433	
HFS / Fluoride Used - l																	
Max IH		88.823		94.553		91.689		88.823						94.553			
Mean IH		83.185		82.796		81.437		77.934				81.342					
Min IH		68.766		77.361		63.295		68.762								63.295	
Total IH		2578.73		2401.087		2524.546		2338.016		9842.38							
HFS / HFS (kg) - kg																	
Max IH		108.364		115.355		111.86		108.364						115.355			
Mean IH		101.486		101.011		99.353		95.079				99.237					
Min IH		83.895		94.38		77.22		83.89								77.22	
Total IH		3146.051		2929.326		3079.946		2852.38		12007.7							
HFS / Treated Water Fluoride Residual - mg/L																	
Max OL		2		0.81		0.92		0.8						2			
Mean OL		0.544		0.63		0.692		0.666				0.633					
Min OL		0		0.23		0.51		0.55								0	
Post Disinfection / Chlorine Dosage - mg/L																	
Max IH		2.078		1.897		2.157		2.232						2.232			
Mean IH		1.449		1.561		1.676		1.599				1.571					
Min IH		0.822		1.03		1.288		0.933								0.822	
Post Disinfection / Hypochlorite Dosage - mg/L																	
Max IH		17.316		15.809		17.977		18.596						18.596			
Mean IH		12.072		13.011		13.971		13.325				13.094					
Min IH		6.854		8.586		10.733		7.779								6.854	
Post Disinfection / Hypochlorite Used - kg																	
Max IH		777.85		680.325		1083.35		707.35						1083.35			
Mean IH		559.262		585.231		615.927		560.867				580.401					
Min IH		254.975		358.375		440.625		420.65								254.975	
Total IH		17337.13		16971.7		19093.75		16826		70228.58							
Post Disinfection / Hypochlorite Volume-Total - m^3																	
Max IH		0.662		0.579		0.922		0.602						0.922			
Mean IH		0.476		0.498		0.524		0.477				0.494					
Min IH		0.217		0.305		0.375		0.358								0.217	
Total IH		14755		14444		16250		14320		59769							

Post Disinfection / Station 7 Cl Residual: Free - mg/L																		
Max OL		5		1.75		3.1		1.84						5				
Mean OL		1.608		1.636		1.816		1.664				1.681						
Min OL		0		1.45		1.45		0								0		
Raw Water / Background - cfu/100mL																		
Max Lab		10		5		0		0						10				
Mean Lab		2.5		1.25		0		0				0.882						
Min Lab		0		0		0		0								0		
Raw Water / Conductivity - µS/cm																		
Max IH		223.4		235.2		231.1		229.8						235.2				
Mean IH		220.597		226.503		222.677		222.918				223.121						
Min IH		217.1		217.6		217.8		218.65								217.1		
Raw Water / E. Coli: EC - cfu/100mL																		
Max Lab		0		0		0		0						0				
Mean Lab		0		0		0		0				0						
Min Lab		0		0		0		0								0		
Raw Water / Raw Flow Daily - m³/d																		
Total IH		1432917		1305322		1363013		1269958		5371210								
Max IH		51462		49347		68210		54076						68210				
Mean IH		46223.13		45011.1		43968.16		42331.93				44390.17						
Min IH		37203		38233		26615		30479								26615		
Raw Water / Raw Flow Rate - l/s																		
Max IH		595.62		571.15		789.47		600.16						789.47				
Mean IH		534.99		523.03		508.89		482.67				512.47						
Min IH		430.59		442.51		308.04		352.77								308.04		
Raw Water / Raw Water Turbidity - NTU																		
Max OL		14		11.4		23		6.6						23				
Mean OL		2.445		3.495		3.194		1.747				2.72						
Min OL		0.26		0.51		0.587		0.41								0.26		
Raw Water / Raw Water pH - ---																		
Max IH		8.27		8.16		8.13		8.16						8.27				
Mean IH		8.114		8.051		8.051		8.065				8.071						
Min IH		8.02		7.98		7.96		7.9								7.9		
Raw Water / Temperature - °C																		
Max IH		10		8		12		11.7						12				
Mean IH		7.466		6.083		9.203		9.432				8.067						
Min IH		5.5		3		5.9		6.87								3		
Raw Water / Total Coliform: TC - cfu/100mL																		
Max Lab		0		0		0		0						0				
Mean Lab		0		0		0		0				0						

Min Lab		0		0		0		0								0		
Treated Water / Background - cfu/100mL																		
Max Lab		0		0		0		0						0				
Mean Lab		0		0		0		0				0						
Min Lab		0		0		0		0								0		
Treated Water / E. Coli: EC - cfu/100mL																		
Max Lab		0		0		0		0						0				
Mean Lab		0		0		0		0				0						
Min Lab		0		0		0		0								0		
Treated Water / Electrical Consumption - kWh																		
Total IH		1060323		1063396		1033647		1058808		4216174								
Treated Water / Flow: Total of All Sources - m^3/d																		
Max IH		48147		47888		47433		45327						48147				
Mean IH		44815.48		44078.86		43484.03		41675.97				43519.43						
Min IH		37737		38449		35292		38147								35292		
Total IH		1389280		1278287		1348005		1250279		5265851								
Treated Water / HPC - cfu/mL																		
Max Lab	<	10	<	40	<	10	<	10					<	40				
Mean Lab	<	10	<	17.5	<	10	<	10			<	11.765						
Min Lab	<	10	<	10	<	10	<	10							<	10		
Treated Water / Total Coliform: TC - cfu/100mL																		
Max Lab		0		0		0		0						0				
Mean Lab		0		0		0		0				0						
Min Lab		0		0		0		0								0		
Treated Water / Turbidity - NTU																		
Max OL		0.094		0.11		0.741		0.1						0.741				
Mean OL		0.069		0.069		0.082		0.072				0.073						
Min OL		0.052		0.052		0.048		0.05								0.048		
West Lambton Booster Station / Cl Residual: Outlet Free - mg/L																		
Max OL		4.98		1.88		2.22		2.26						4.98				
Mean OL		1.666		1.694		1.735		1.63				1.681						
Min OL		0		0		0		0								0		
Zebra Mussel Control / Chlorine Dosage - mg/L																		
Max IH		1.251		1.294		1.283		1.49						1.49				
Mean IH		1.057		1.137		1.143		1.125				1.115						
Min IH		0.972		0.971		1.039		0.83								0.83		
Zebra Mussel Control / Cl Residual: Free - mg/L																		
Max IH		0.66		0.67		0.71		0.71						0.71				
Mean IH		0.597		0.599		0.634		0.61				0.61						
Min IH		0.46		0.44		0.51		0.42								0.42		

Zebra Mussel Control / Cl Residual: Total - mg/L																		
Max IH		0.84		0.82		0.86		0.83						0.86				
Mean IH		0.759		0.754		0.785		0.746				0.761						
Min IH		0.61		0.6		0.67		0.53								0.53		
Zebra Mussel Control / Hypochlorite Dosage - mg/L																		
Max IH		10.423		10.787		10.696		12.413						12.413				
Mean IH		8.812		9.472		9.521		9.375				9.292						
Min IH		8.102		8.095		8.656		6.916								6.916		
Zebra Mussel Control / Hypochlorite Used - kg																		
Max IH		470		492.325		667.4		504.075						667.4				
Mean IH		407.081		425.512		418.262		393.938				411.104						
Min IH		339.575		358.375		278.475		312.55								278.475		
Total IH		12619.5		12339.85		12966.13		11818.15		49743.63								
Zebra Mussel Control / Hypochlorite Volume-Total-1 - m^3																		
Max IH		0.4		0.419		0.568		0.429						0.568				
Mean IH		0.346		0.362		0.356		0.335				0.35						
Min IH		0.289		0.305		0.237		0.266								0.237		
Total IH		10740		10502		11035		10058		42335								