

2019 Client Monthly Operations Report

Lambton Area Water Supply System

August 31, 2019



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: Dave Hunt (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 90,000m³, was brought online. 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: None

Maintenance, Operations & Distribution Works Summary 2019

Maintenance

August:

Date	(P)reventative Capital Major Mtc (C)orrective	Description
August 1	P	Completed monthly maintenance on online fluoride analyzer.
August 6	С	Door and lighting work at West Lambton Pumping Station.
August 6	Р	Completed monthly maintenance on chlorine analyzers at East and West Lambton Pumping Stations.
August 6-7	Р	Completed monthly maintenance on all chlorine analyzers at the water treatment plant.
August 8	Major Mtc	Working with Elektek on first phase of annual electrical maintenance at West Lambton Pumping Station.
August 8- 10	Р	Completed annual maintenance on all ten filter Loss of Head pressure transmitters.
August 8	С	PAC room flooding. Reset system with no issues.
August 9	С	Removed anthracite and sand from Actiflo #2 clarifier unit.
August 12	Capital	Meeting with LAWSS GM in regards to radio project.
August 12	С	Replaced hard drive on SCADA Server 1
August 13	Р	Running diesel generators at West Lambton Pumping Station.
August 13	Р	Completed monthly maintenance on lab turbidity meter.
August 13	Р	Completed monthly inspection of compressors at the water treatment plant.
August 13	Major Mtc	Working with Elektek on second phase of annual electrical maintenance at West Lambton Pumping Station.



Aug 13-14	Р	Completed monthly maintenance on all water treatment plant online turbidity meters.
August 14	Р	Conducted monthly inspection on emergency eyewash stations and safety shower.
August 14	Р	Repaired sump pump discharge house at Watford Tower.
August 15	С	Replaced sand auger sleeve on the Residual Management System.
August 15	Р	Running diesel generator at East Lambton Pumping Station.
August 16	С	Repaired broken valve box at Port Lambton Tower.
August 16	Р	Completed annual inspection and maintenance on Pumps 1, 2 and 5 at West Lambton Pumping Station.
August 16	Capital	Meeting with LAWSS GM in regards to radio project.
August 16	Р	Completed monthly inspection of the vacuum priming station at East Lambton Pumping Station.
August 19- 20	С	Working with Electrozad and Rockwell in order to troubleshoot frequency issue with the VFD running under generator power at West Lambton Pumping Station.
August 19- 20	Р	Completed monthly maintenance on all online pH probes at the water treatment plant.
August 21	С	Set up new torque limits on Filter #5 effluent valve actuator.
Aug 19-20	Р	Completed monthly inspection of all six floc gear drives.
August 21	С	Set up new torque limits on Filter #5 surface wash valve actuator.
August 21	С	Replaced lighting in the chemical room of the water treatment plant.
August 22- 23	Р	Completed monthly calibration on all chlorine handheld units.
August 23	Р	Completed monthly maintenance on online fluoride analyzer.
August 23	Р	Completed monthly maintenance on the Residual Management System turbidity meters.
August 26	Capital	Powered up MCC room A/C units after terminations were completed.
August 26	Р	Completed monthly inspection of travelling screens at the water treatment plant.
August 26- 29	Capital	Assist contractors with HVAC capital project work.
August 28	Р	Testing generators at water treatment plant. During test battery on generator #5 failed.
August 28	С	Clean up failed batteries from generator #5.
August 29	С	Replaced generator batteries on generator #5.
August 30	Р	Alberts Generator Service on site for annual maintenance on generators at West Lambton Pumping Station.



Operations and Compliance

August:

August 1	Conducted quarterly test of critical control point alarms.
August 2	Prechlorine pump #3 failed due to air lock. Pump and panel was reset.
August 3	All 3 prechlorine pumps failed due to air lock. Changed over hypo tank,
	pumps and panel was reset.
August 6	South clearwell pump #2 failed due to air lock. Pump and panel was reset.
August 7	Actiflo #2 having issues with high turbidity spikes.
August 7	South clearwell pump #2 failed due to air lock. Pump and panel was reset.
August 7	Prechlorine pumps 1 and 3 failed due to air lock. Pumps and panel was
_	reset.
August 8	Prechlorine pump failed due to air lock. Pump and panel was reset.
August 10	Running Pump #5 at West Lambton Pumping Station.
August 11	Running Pump #1 at West Lambton Pumping Station.
August 12	Switched over lead/lag pumps for Forest and Watford at East Lambton
_	Pumping Station.
August 12	Quarterly THM, nitrates and HAA samples taken.
August 12	South clearwell pump failed due to air lock. Pump and panel was reset.
August 13	Changed over PAC bag.
August 15	Running polymer system as per SOP to test system at the water treatment
	plant.
August 15	Prechlorine pump #3 failed due to air lock. Pump and panel was reset.
August 16	South clearwell #1 pump failed due to air lock. Pump and panel was reset.
August 20	Prechlorine pump #3 failed due to air lock. Pump and panel was reset.
August 20	Surface wash for filter #67 failed to hit close limit.
August 29	Prechlorine pump #1 failed due to air lock. Pump and panel was reset.

Distribution

August:

· 10.3,0.0 t.	
August 1	Completed July meter reads.
August 1	Site meet on Highway 40 and LaSalle Line in regards to new drain system.
August 7	After hours emergency locate at 3565 St Clair Parkway.
August 8	Site meet on Michigan Ave.
August 12	Onsite at 1717 London Line for exposure of LAWSS line.
August 13	Flushing and hydrant inspection on St Clair Parkway in Sombra.
August 18	After hours emergency locate #2019340767.
August 22	After hours emergency locate #20190822001 in St Clair Township.
August 22	Installed valve extension at chamber at Port Lambton Tower.
August 26	Found small water main leak on the service at 3188 St Clair Parkway.
August 26	Site meet at Bickford Line for work around LAWSS main.
August 27	Site meet at Bickford Line and Moore Line for work around LAWSS main.
August 27	Installed new 7ft valve extension on valve at Front St and London Rd.
August 28	Flushing and hydrant inspection on St Clair Parkway.
August 29	Flushing and hydrant inspection on St Clair Parkway.



August 29	Site meet at Bickford Line for work around LAWSS main.
August 29	Repaired service at 3188 St Clair Parkway.
August 30	Flushing hydrants in St Clair Township.
August 30	August meter reads completed.

Call Outs 2019

<u>August:</u> August 4 call out to investigate possible leak near Sipkins Nursery on London Line. Issue was with Petrolia water system not LAWSS. Petrolia water system was notified.

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
2018	50	64	107	149	189	166	163	146	141	163	111	58
2019	69	62	104	164	189	149	182	153				

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 m³

YEAR	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2018	493	300	239	320	230	318	240	240	79	227	238	234
2019	236	158	237	236	216	158	313	237				

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 –Q3 due October 30

Semi-Annual "Schedule G" Reconcilable Commodities Report - Due January 30, 2020

From: 01/01/2019 to 31/08/2019

Report extracted 09/10/2019 10:42

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

Second Second Processes Se		01/2019	02/2	019	03/20	19	04/2019	05/2019		06/2019	07/2019	08/2019	Total		Avg	Max	Mir	n
March	Coagulation/Floculation / Coagulant Dosage-Calculated - m																	
March	Max IH	38.605	29.	517	32.26	8	31.172	26.559		26.095	23.836	25.822		П		38.605	1	
Company Comp	Mean IH	26.801	24.0	002	23.83	9	22.375	22.91		21.551	20.805	20.898			22.892			
Max of the component	Min IH	21.912	18.	131	18.00	19	17.868	19.041		18.452	18.086	19.041					17.8	68
Man	Coagulation/Floculation / Coagulant Used - kg																	
March 1972 3074 3076	Max IH	1792	14	08	1651	2	1241.6	1344		2150.4	2060.8	1804.8				2150.4		
Total Programma	Mean IH	1220.542	1167	.086	1160.6	71	1009.067	1129.29	1	339.307	1594.632	1397.677			1253.979			
Comparison Com	Min IH	972.8	94	7.2	832		768	934.4		921.6	1088	1100.8					76	8
Man	Total IH	37836.8	326	78.4	35980	8.0	30272	35008	4	40179.2	49433.6	43328	304716.8					
Mone	Coagulation/Floculation / Coagulant Volume Used - I	n³																
March 1,000 1,00	Max IH	1.4	1.	.1	1.29		0.97	1.05		1.68	1.61	1.41				1.68		
Total M	Mean IH	0.954	0.9	12	0.90	7	0.788	0.882		1.046	1.246	1.092			0.98			
Companies Progress Design Progress Design Progress Associated Section 1	Min IH	0.76	0.	74	0.65		0.6	0.73		0.72	0.85	0.86					0.6	ò
Mars	Total IH	29560	255	530	2811	0	23650	27350		31390	38620	33850	238060					
Man H	Coagulation/Floculation / Polymer Dosage - mg/L																	
Mars H Ma	Max IH	0.042					0.024									0.042		
Computer Position Playment Lead - 1969 1.00 1	Mean IH	0.02					0.024								0.021			
Max IN	Min IH	0.002					0.024										0.00)2
Man H	Coagulation/Floculation / Polymer Used - kg																	
March	Max IH	2.1					1.1									2.1		
Table H March Lab March La	Mean IH	1.025					1.1								1.04			
No. Company No.	Min IH	0.1					1.1										0.1	1
Max Lab 30 24 37 38 58 58 58 58 58 58 58	Total IH	4.1					1.1						5.2					
Man Lab	DW THM Data / Trihalomethane: Total - μg/l																	
Min Lab	Max Lab		3	0				37				58				58		
Part	Mean Lab		2	7				31.667				52.667			37.111			
Max No. 1.74	Min Lab		2	4				25				46					24	į.
Man OC	East Lambton Booster Station / CI Residual: Inlet Free - mg	/L																
Min OL	Max OL	1.74	2.4	49	1.68		1.58	1.43		1.4	1.36	1.29				2.49		
Filer Backwash Volume - m? Max H Ma	Mean OL	1.535	1.4	01	1.42	3	1.388	1.3		1.277	1.22	1.124			1.334			
Max H	Min OL	0	()	0		0	0		0	0	0					0	
Mean H	Filter Backwash / Backwash Volume - m ³																	
Min H	Max IH	4792	24	08	2992	2	3006	3004		3004	2998	3002				4792		
HES / Fluoride Dosage - mg/L Max H Max H Max H Max B Max B Max H Max B	Mean IH	2268.323	1929	.786	2028.1	94	1927.733	1900.774		2043	2095.032	2056.903			2032.848			
Max H	Min IH	1794	17	88	179	1	1198	1204		1792	1788	1059					105	9
Mean IH	HFS / Fluoride Dosage - mg/L																	
Min H	Max IH	0.64	0.6	44	0.61	4	0.622	0.592		0.628	0.612	0.589				0.644		
HES / Flooride Used - 1 Max IH Max IH Max IH Max IH Max IB Max IH Max IH Max IH Max III Max	Mean IH	0.556	0.5	57	0.55	9	0.557	0.542		0.548	0.535	0.537			0.549			
Max IH	Min IH	0.46	0.4	17	0.48	2	0.487	0.486		0.464	0.486	0.49					0.4	17
Mean IH	HFS / Fluoride Used - I																	
Min H	Max IH	108.877	97.4	419	97.41	9	94.553	100.284	1	186.246	171.916	143.263				186.246		
Total IH HES / HFS (kg) - kg Max IH Max IH Max IB	Mean IH	85.495	87.	.63	89.65	5	83.952	90.041	1	115.949	139.658	123.298			102.153			
HES / HES / Kg) · kg	Min IH	65.901	66.3	384	71.63	1	71.631	74.497		88.823	111.745	103.149					65.9	01
Max IH	Total IH	2650.36	2453	.634	2779.3	05	2518.562	2791.284	3	3478.466	4329.406	3822.244	24823.26					
Man IH	HFS / HFS (kg) - kg																	
Min H	Max IH	132.83	118.	851	118.8	51	115.355	122.347		227.22	209.737	174.781				227.22		
Total IH 3233.439 2993.434 3390.752 3072.646 3405.367 4243.728 5281.875 4663.138 30284.38	Mean IH	104.304	106.	908	109.3	79	102.422	109.851	1	141.458	170.383	150.424			124.627			
HFS / Treated Water Fluoride Residual - mg/L Max OL 0.71	Min IH		80.9	989	87.3	9	87.39	90.886	1	108.364	136.329	125.842					80.3	99
Max OL 0.71 0.71 0.7 0.7 0.7 0.578 0.597 0.611 0.575 0.63 0.611 0.604 0.604 0.604 0.601 0.578 0.597 0.611 0.575 0.63 0.611 0.604 0.604 0.604 0.604 0.601 0.604 0.6		3233.439	2993	.434	3390.7	52	3072.646	3405.367	4	243.728	5281.875	4663.138	30284.38					
Mean OL	HFS / Treated Water Fluoride Residual - mg/L																	
Min OL Post Disinfection / Chlorine Dosage - mg/L Max IH 1.614.34 1.215	Max OL				_				\coprod		_			Ш		2		$\Box \mathbb{I}$
Post Disinfection / Chlorine Dosage - mg/L Max IH Max IH Man IH Max II Ma					_	_	0.597		\coprod		_	0.611		Ш	0.604			$\Box \mathbb{I}$
Max IH 1.668 1.854 1.682 1.832 1.795 3.071 2.185 2.463 1 3.071 3.071 4 Mean IH 1.434 1.391 1.458 1.468 1.535 1.696 1.952 2.087 1.631 1.631 0 0 0.891 0 0 0 0 0 0 0.891 0.891 0	Min OL	0.56	0.8	54	0.51		0	0.51		0.24	0.49	0.55					0	
Main H	Post Disinfection / Chlorine Dosage - mg/L																	
Min H	Max IH	1.668	1.8	54	1.68	2	1.832	1.795	Ш	3.071	2.185	2.463				3.071		$\bot \Gamma$
Post Disinfection / Hypochlorite Dosage - mg/L Max IH 13.899	Mean IH	1.434	1.3	91	1.45	3	1.468	1.535		1.696	1.952	2.087			1.631			
Max IH 13.899 15.45 14.016 15.268 14.96 25.593 18.208 20.526		1.215	8.0	91	1.04	3	1.271	1.05		1.097	1.594	1.842					0.89	∂1
Mean IH	Post Disinfection / Hypochlorite Dosage - mg/L																	
Min IH Post Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Used - kg Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Max IH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean IIH Sept. Disinfection / Hypochlorite Volume-Total - m² Nean III - N						_										25.593		
Post Disinfection / Hypochlorite Used - kg Max IH		11.947				_			\coprod	14.136	16.268			Ш	13.59			$\Box \mathbb{I}$
Max IH 653.3 665.05 681.5 706.175 808.4 1975.175 1590.95 1434.675 1 1 1975.175 1 1590.95 1434.675 1 1 1975.175 1 1 1975.175 1 1 1 1 1975.175 1 1 1 1 1 1975.175 1 2 2 2 4 4 1 2 3 2 2 2 4		10.126	7.4	28	8.73	7	10.593	8.747	\coprod	9.142	13.282	15.347					7.42	28
Mean IH 543.456 564 590.191 552.994 632.264 885.167 1241.672 1162.454 774.518 774.518 1 1 326.65 454.725 407.725 431.225 460.6 956.45 930.6 1 774.518 1 326.65 326.65 454.725 407.725 431.225 460.6 956.45 930.6 1 1 2 326.65 326.65 454.725 407.725 431.225 460.6 956.45 930.6 1 2 326.65 454.725 460.6 956.45 930.6 1 2 326.65 454.725 460.6 956.45 930.6 1 2 326.65 454.725 460.6 956.45 930.6 1 2 326.65 454.725 460.6 956.45 38491.83 36036.08 188208 1 326.65 454.725 460.01 460.01 460.01 460.01 460.01 460.01 460.01 460.01 460.01 460.01 460.01 460.01	Post Disinfection / Hypochlorite Used - kg																	
Min IH 44.15 326.65 454.725 407.725 431.225 460.6 956.45 930.6 930.6 1 326.65 18208	Max IH		665	.05					1	975.175						1975.175		
Total IH 16847.15 15792 18295.93 16589.83 19600.18 26555 38491.83 36036.08 188208 1 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Mean IH	543.456	56	64	590.1	91	552.994	632.264		885.167	1241.672	1162.454			774.518			
Post Disinfection / Hypochlorite Volume-Total - m³	Min IH	444.15	326	.65	454.7	25	407.725	431.225		460.6	956.45	930.6					326.	.65
Max IH 0.556 0.566 0.58 0.601 0.688 1.681 1.354 1.221 1.221 1.681 1.681 1.681 Mean IH 0.463 0.48 0.502 0.471 0.538 0.753 1.057 0.989 0.659 0.659 0.278 Min IH 0.378 0.278 0.387 0.347 0.367 0.392 0.814 0.792 0.792 0.792 0.278	Total IH	16847.15	157	792	18295	93	16589.83	19600.18		26555	38491.83	36036.08	188208					
Mean IH 0.463 0.48 0.502 0.471 0.538 0.753 1.057 0.989 0.659 0.659 Min IH 0.378 0.278 0.387 0.347 0.367 0.392 0.814 0.792 0.792 0.278	Post Disinfection / Hypochlorite Volume-Total - m³																	
Min IH 0.378 0.278 0.387 0.347 0.367 0.392 0.814 0.792 0.814 0.792 0 0.278	Max IH	0.556	0.5	66	0.58		0.601	0.688		1.681	1.354	1.221				1.681		
	Mean IH	0.463	0.4	48	0.50	2	0.471	0.538		0.753	1.057	0.989			0.659			
Total IH 14338 13440 15571 14119 16681 22600 32759 30669 160177	Min IH	0.378	0.2	78	0.38	7	0.347	0.367		0.392	0.814	0.792					0.2	78
	Total IH	14338	134	140	1557	1	14119	16681	П	22600	32759	30669	160177					\Box

Post Disinfection / Station 7 Cl Residual: Free - mg/L																			Ш		
Max OL	1.89		1.85		1.92	1.78	1.71		1.75		5		1.76					5	\sqcup		ا_
Mean OL	1.699	++	1.712	_	1.716	1.608	1.521	-	1.504		1.533	_	1.562	_		_	1.607		₩		_
Min OL PrTr / P.A.C. Dosage - mg/L	1.52		1.54		1.53	1.4	1.29		0		1.26		1.33						H	0	_
Max IH		++		_					0.464		0.367	_	0.54	-				0.54	\vdash		_
Mean IH				1					0.338		0.291	1	0.409				0.347		Ħ		_
Min IH									0.176		0.218		0.274						Π	0.176	\neg
PrTr / P.A.C. Used - kg																					
Max IH		++		4					28.9		25.634	4	29.462			_		29.462	₩		!
Mean IH		╁┼		4				H	22.199 12.27		21.929	4	26.752	_		_	23.88		₩	12.27	
Min IH Total IH		++				1		<u> </u>	377.381		16.36 679.812		22.089 829.31	-	1886.503				₩	12.27	_
Pre-chlorination / Chlorine Dosage - mg/L				_				H	377.301		073.012	_	029.31		1000.505				H		=
Max IH	1.248	++	1.52		1.193	1.467								-				1.52	Ħ		_
Mean IH	1.173		1.106		1.07	1.111											1.115		Π		\neg
Min IH	1.061		0.931		0.91	0.972													Ш	0.91	
Pre-chlorination / Cl Residual: Free - mg/L																			ш		
Max IH	0.74	$\perp \perp$	0.74	_	0.68	0.7		<u> </u>				_						0.74	Н		_
Mean IH Min IH	0.632 0.55	₩	0.657 0.59	_	0.623	0.623 0.56		┢				_		-		_	0.634		₩	0.5	
Pre-chlorination / CI Residual: Total - mg/L	0.55		0.59		0.5	0.56		H											H	0.5	_
Max IH	0.91	++	0.89	_	0.83	0.84						_		-				0.91	\vdash		_
Mean IH	0.783	tt	0.824	7	0.774	0.783				П		7				\neg	0.79		Ħ		_
Min IH	0.69		0.78		0.66	0.72													ш	0.66	
Pre-chlorination / Hypochlorite Dosage - mg/L														珥							
Max IH	10.399	$oxed{oxed}$	12.665	_[9.939	12.221	1			Ц		_[Ц		_[12.665	Щ		_
Mean IH	9.773	++	9.216	_	8.92	9.258	1	┡		Ц		_		4		_	9.294		\vdash	7.50	_
Min IH Pre-chlorination / Hypochlorite Used - kg	8.838	+	7.76		7.581	8.098		H						H					H	7.581	
Max IH	524.05	H	556.95	-	511.125	560.475		F				-		۲				560.475	H		-
Mean IH	443.657	++	447.717	┪	433.461	417.692	1	H		H		┪		H		+	435.629	555.475	H		_
Min IH	383.05	tt	394.8	7	340.75	338.4		T		H		7		Ħ		7			Ħ	338.4	_
Total IH	13753.38	1	12536.08		13437.3	12113.08									51839.83				Ш		
Pre-chlorination / Hypochlorite Volume-Total-1 - m³																			П		
Max IH	0.446	$\perp \perp$	0.474	_	0.435	0.477		<u> </u>				_						0.477	Н		!
Mean IH	0.378	1	0.381	_	0.369	0.355		┡				_		_			0.371		${}+$	0.000	_'
Min IH Total IH	0.326 11705	++	0.336 10669		0.29 11436	0.288 10309		<u> </u>						-	44119				₩	0.288	_
Raw Water / Background - cfu/100mL	11705		10009		11430	10309									44119				H		
Max Lab	160	++	82		82	410	260		720		2800		2800	-				2800	Ħ		_
Mean Lab	69.2	ĦĦ	33.25	1	21.5	105.8	69.25		346.25		751.2	1	1137.5				316.057		Ħ		_
Min Lab	18		0		1	13	0		0		0		0						Ш	0	
Raw Water / Conductivity - μS/cm																			Ш		
Max IH	228.5	$\perp \perp$	223.2	_	231.5	232.3	243.7	<u> </u>	238.2		238.8	_	236.2					243.7	Н		!
Mean IH	221.019 217.8	₩	219.725 218	_	222.174 217.9	225.038 170	233.042 222.6	┢	232.617 228.5		236.165 232.2	_	235.252 234.1	-		_	228.227		₩	170	
Min IH Raw Water / E. Coli: EC - cfu/100mL	217.0		210		217.9	170	222.0	H	220.5		232.2		234.1						H	170	_
Max Lab	1		0	-	0	1	0		0		10	<	10				<	10	\vdash		_
Mean Lab	0.4	+	0		0	0.2	0		0		3.8	<	3.25	+		<	1		Ħ		_
Min Lab	0		0		0	0	0		0		0	<	0						<	0	
Raw Water / Raw Flow Daily - m³/d																					
Max IH	52987		56479		56245	51694	56670		100783		98594		80666					100783	Ш		
Mean IH	45445.45	5 4	48755.75	4	48621.65	45139.4	49348.52		62028.87		76680.9	4	66893.58			_	55460.5		₩		!
Min IH Raw Water / Raw Flow Rate - I/s	40082	++	40763	_	41664	36877	42212	H	47569		60157	_	54511						+	36877	
Max IH	613.27		653.69	-	650.98	598.31	654.75	+	1166.47		1141.13	-	933.63	-				1166.47	H		_
Mean IH	526.72	++	565.27	┪	562.75	522.45	571.13	H	717.93	H	887.51	┪	774.13	\dashv		-	642.09	. 100.47	\forall		_
Min IH	463.91	Ħ	471.79	7	482.22	426.82	488.56	T	550.57	Ħ	696.26	7	630.91	Ħ		7		l	Ħ	426.82	_
Raw Water / Raw Water Turbidity - NTU																					
Max OL	21.4	Щ	7.14		13.7	12.2	6.8	Ĺ	3.1	Ц	7		2.17	Ц				21.4	Ц		_
Mean OL	2.887	Ш	1.135	_[2.448	2.458	1.769	L	1.08	Ц	0.97	_[0.75	Ц	J	_]	1.687		\coprod		_
Min OL Row Weter / Row Weter pH	0.46	H	0.23		0.201	0.57	0.445	L	0.365		0.33		0.34						H	0.201	_
Raw Water / Raw Water pH Max IH	8.22	H	8.12		8.2	8.9	8.35		8.35		8.41		8.41	\dashv				8.9	H		4
Mean IH	8.045	++	8.008	+	8.056	8.197	8.239	H	8.269	H	8.331	+	8.355	H		+	8.189	0.9	\forall		_
Min IH	7.94	$\dagger \dagger$	7.88	H	7.86	8.09	8.18	Ħ	8.2	H	8.26	H	8.26	Ħ		-	2.100	<u> </u>	Ħ	7.86	_
Raw Water / Temperature - °C																					
Max IH	8.01	П	6		8	11.5	13.1		18.5		23		25	◨				25	П		_
Mean IH	6.396		5.025		5.653	9.285	11.661		15.612		21.142		23.064	П			12.317		П		_
Min IH	3	$\perp \perp$	3.25	_	4	7	10	L	13		17.8	_	22	Ц					$oldsymbol{\sqcup}$	3	
Raw Water / Total Coliform: TC - cfu/100mL	20	₩	15	-	10	24		H	2		100	-	71	4				100	H		
Max Lab Mean Lab	39 10.2	╁┼	15 4.5	-	10 2.5	31 8.2	1.25	1	2 0.75	\dashv	100 23.6	_	71 20.25	\dashv			9.343	100	+		
Min Lab	2	++	0	+	0	0.2	0	H	0.75	\dashv	0	-	0	\dashv		_	3.543	1	<	0	۳
Treated Water / Background - cfu/100mL		T	-		-			t			-		-	Ħ					Ħ	-	
Max Lab	0		0		0	0	0		0		0		0	Ħ				0	П		_
Mean Lab	0	П	0		0	0	0	L	0		0		0				0		口		\equiv
1	0		0	I	0	0	0		0	◨	0	I	0	J		╛			П	0	_
Min Lab														Ц					Щ		
Treated Water / E. Coli: EC - cfu/100mL			0		0	0	0	1	0	ı	0	- 1	0	1				0	1		
Treated Water / E. Coli: EC - cfu/100mL Max Lab	0	++		_	^		_				^	_		\rightarrow			_		${}^{-}$		-
Treated Water / E. Coli: EC - cfu/100mL Max Lab Mean Lab	0	††	0		0	0	0		0		0		0				0		H	0	
Treated Water / E. Coli: EC - cfu/100mL Max Lab Mean Lab Min Lab					0		_				0						0			0	
Treated Water / E. Coli: EC - cfu/100mL Max Lab Mean Lab	0		0			0	0		0				0		8012344		0			0	
Treated Water / E. Coli: EC - cfu/100mL Max Lab Mean Lab Min Lab Min Lab Treated Water / Electrical Consumption - kWh	0		0		0	0	0		0		0		0		8012344		0			0	
Treated Water / E. Coli: EC - cfu/100mL Max Lab Mean Lab Min Lab Min Lab Treated Water / Electrical Consumption - kWh Total IH	0	2	0		0	0	0		0		0		0		8012344		0	97988		0	

Mean IH	П	44841	П	46364		46748.23		44048.37		48460.74		61126.97	П	76220.23		67154.84	T		ı	54484.07			П		П
Min IH	Н	41397	H	41527		41284		39452		41184		41283		60988	7	56137	1		7				\dashv	39452	П
Total IH	H	1390071	H	1298192	Н	1449195		1321451		1502283		1833809	Н	2362827	7	2081800	+	13239628	1				H		$\overline{}$
Treated Water / HPC - cfu/mL	H		Н										Н				T		1						
Max Lab	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10	7		7		<	10	T		_
Mean Lab	<	10	<	10	<	10	<	10	٧	10	<	10	<	10	<	10	1		<	10			T		П
Min Lab	<	10	<	10	<	10	<	10	٧	10	<	10	<	10	<	10	1		7				<	10	П
Treated Water / Total Coliform: TC - cfu/100mL																	1		1				T		
Max Lab	П	0		0		0		0		0		0		0		0	T		T		П	0	T		$\overline{}$
Mean Lab		0	m	0		0		0		0		0		0		0	T		T	0			T		$\overline{}$
Min Lab		0		0		0		0		0		0		0		0								0	
Treated Water / Turbidity - NTU																									
Max OL		0.117		0.08		0.1		0.082		0.11		0.095		0.096		0.097			T			0.117	T		П
Mean OL	H	0.062		0.063		0.065		0.063		0.064		0.066	П	0.066	1	0.067	T		1	0.064			Ħ		П
Min OL	H	0.043		0.047		0.046		0.047		0.046		0.046	П	0.049	1	0.052	T		1				Ħ	0.043	П
West Lambton Booster Station / Cl Residual: Outlet Free - n	ng/L	<u> </u>															T		T						
Max OL		2.19	П	1.86		1.83		1.8		1.6		1.62	П	4.99		1.67	T		T			4.99	T		\Box
Mean OL		1.684		1.685		1.595		1.586		1.429		1.413		1.395	T	1.395	T		T	1.523	Ħ		Ħ		\neg
Min OL		0		0		0		0		0		0		0		0	7		T				T	0	$\overline{}$
Zebra Mussel Control / Chlorine Dosage - mg/L																	T								П
Max IH								1.125		1.173		1.25		1.327		1.29			T			1.327	T		
Mean IH	H							1.125		1.068		1.127	П	1.158	1	1.206	T		1	1.14			Ħ		П
Min IH	П							1.125		0.955		1.01	П	1.028	T	1.113	T		T				Ħ	0.955	П
Zebra Mussel Control / Cl Residual: Free - mg/L																									
Max IH								0.36		0.67		0.66		0.63		0.64	T		T			0.67			
Mean IH								0.36		0.6		0.588		0.559		0.586				0.582					
Min IH								0.36		0.44		0.52		0.39		0.52								0.36	
Zebra Mussel Control / Cl Residual: Total - mg/L																									
Max IH								0.54		0.81		0.8		0.79		0.79	T		T			0.81			
Mean IH								0.54		0.746		0.712		0.679		0.72			1	0.713					
Min IH								0.54		0.55		0.63		0.51		0.66	T		T				П	0.51	
Zebra Mussel Control / Hypochlorite Dosage - mg/L																	T		T						
Max IH	П		П					9.374		9.777		10.417	П	11.057		10.753	T		T			11.057	T		\Box
Mean IH								9.374		8.898		9.392		9.649		10.049				9.497					
Min IH	П							9.374		7.961		8.418	П	8.569	T	9.277	T		T				T	7.961	П
Zebra Mussel Control / Hypochlorite Used - kg																									
Max IH								433.575		514.65		848.35		851.875		774.325			J			851.875			
Mean IH								433.575		439.147		582.408		735.512		670.735			J	605.75					
Min IH								433.575		336.05		444.15		619.225		538.15			J					336.05	
Total IH								433.575		13613.55		17472.25		22800.88		20792.8		75113.05	I						
Zebra Mussel Control / Hypochlorite Volume-Total-1 - m³																									
Max IH								0.369		0.438		0.722		0.725		0.659			J			0.725			
Mean IH								0.369		0.374		0.496		0.626		0.571			J	0.516					
Min IH								0.369		0.286		0.378		0.527		0.458			J					0.286	
Total IH								369		11586		14870		19405		17696		63926	I						
																	_		\neg						П



Health & Safety Work Order Summary by Facility

Start Date: 2019-08-01 End Date: 2019-08-31

Hub: Lambton

				Н	ealth and Safe	ty			Closure Ra	ite
						Total	Total			
Cluster	ORG ID	Facility ID	Initiated	Approved	Completed	Labor Hrs	Cost \$	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	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, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	3	3	3	5.75	217.98	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)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	1	1	1	0.50	28.45	85.00%	100.00%	-15.00%
		Total	4	4	4	6.25	246.43	85.00%	100.00%	-15.00%

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

9/12/19 12:45:29



Health & Safety Work Order Summary by Facility

Start Date: 2019-01-01 End Date: 2019-08-31

Hub: Lambton

				Н	ealth and Safe	ty			Closure Ra	ate
						Total	Total			
Cluster	ORG ID	Facility ID	Initiated	Approved	Completed	Labor Hrs	Cost \$	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	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, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	30	30	30	57.50	2389.01	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)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	3	3	3	6.75	370.26	85.00%	100.00%	-15.00%
		Total	33	33	33	64.25	2759.27	85.00%	100.00%	-15.00%

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

9/12/19 12:47:34

 Start Date:
 2019-08-01

 End Date:
 2019-08-31

 Hub:
 Lambton

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

			Corrective	Maintenanc	е			Emergenc	y Maintenand	се			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	2.5	113.5	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, Lambton Area RMS (5544-WWLA)	2	2	2	14	492.68	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	5	5	1	11	789.29	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
		5544, West ST.Clair Distribution (5544-WDWS)	1	1	1	15.75	955.56	1	1	1	8.5	369.94	0	0	0	0	0
		Lambton Area Water Treatment Plant (5544)	2	2	1	8.5	467.86	0	0	0	0	0	0	0	0	0	0
Grand Total			11	11	6	51.75	2818.89	2	2	1	8.50	369.94	0	0	0	0.00	0.00

^{*} NOTE: Capital/Project Work is not included in the calculation of the Closure Rate

9/17/19 08:56:43

Start Date: 2019-08-01 End Date: 2019-08-31 Hub: Lambton

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

			Preventive	e Maintenan	ce			Operation	al				Capital/Pr	roject Work				Closure R	ate	
			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)	0	0	0	0	0	4	4	4	7.25	336.01	0	0	0	0	0	85%	100%	-15.0%
		5544, East Lambton PS (5544-WPEL)	4	4	4	12.5	649.91	2	2	2	5	228.9	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area RMS (5544-WWLA)	3	3	3	4	193.2	2	2	2	3	124.09	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	33	33	30	65.25	2809.79	12	12	11	1473.75	36645.6	0	0	0	0	0	85%	84%	1.000%
		5544, West Lambton Booster Stn (5544-WPWL)	7	7	7	15.5	828.21	2	2	2	15.5	704.44	0	0	0	0	0	85%	90%	-5.00%
		5544, West ST.Clair Distribution (5544-WDWS)	2	2	1	9.25	530.66	2	2	2	15.75	713.94	0	0	0	0	0	85%	83.33%	1.666%
		Lambton Area Water Treatment Plant (5544)	1	1	1	0.5	28.45	0	0	0	0	0	1	1	0	19.5	1150.82	85%	66.66%	18.33%
Grand Total			50	50	46	107	5040.22	24	24	23	1520.25	38752.98	1	1	0	19.5	1150.82	85%	87.35%	12.64%

^{*} NOTE: Capital/Project Work is not included in the calculation of the Closure Rate 9/17/19 08:56:43

Start Date: 2019-01-01 End Date: 2019-08-31 Lambton

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

								Τ									
			Corrective	Maintenance)			Emergenc	y Maintenand	ce			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)	9	9	9	108.5	5111.97	5	5	4	12.5	669.28	0	0	0	0	0
	5544, East Lambton PS (5544-WPEL)	4	4	4	18	709.42	0	0	0	0	0	0	0	0	0	0	
		5544, Lambton Area RMS (5544-WWLA)	7	7	7	66	2758.86	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	32	32	26	223.5	9747.28	1	1	1	1	46.68	4	4	4	36	1505.9
		5544, West Lambton Booster Stn (5544-WPWL)	8	8	6	38.25	1594.27	1	1	0	0	0	1	1	1	54.75	2521.45
		5544, West ST.Clair Distribution (5544-WDWS)	3	3	3	24	1345.29	3	3	3	35	2237.4	0	0	0	0	0
		Lambton Area Water Treatment Plant (5544)	10	10	9	92.75	4563.12	0	0	0	0	0	0	0	0	0	0
Grand Total		Abo coloridation of the Classica Data	73	73	64	571	25830.21	10	10	8	48.50	2953.36	5	5	5	90.75	4027.35

^{*} NOTE: Capital/Project Work is not included in the calculation of the Closure Rate 9/17/19 08:53:00

Start Date: 2019-01-01 End Date: 2019-08-31 Hub: Lambton

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

			Preventiv	e Maintenan	ce			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		
Lambton Area Water Treatment Plant (5544)	5544, East Lambton Distribution (5544-WDEL)	9	9	6	17	1006.35	34	34	34	102.25	4482.4	5	4	1	36.25	11116.61	85%	92.98%	-7.98%			
		5544, East Lambton PS (5544-WPEL)	42	42	41	91.5	4551.57	17	17	17	64.5	2952.99	0	0	0	0	0	85%	98.41%	-13.4%		
		5544, Lambton Area RMS (5544-WWLA)	20	20	20	33.75	1551.21	16	16	16	28	1135.64	1	1	1	27.25	22007.7	85%	100%	-15.0%		
		5544, Lambton Area WTP (5544-WTLA)	276	276	264	1051.25	56335.77	101	101	98	12877.75	333786.8	5	4	2	125.25	51857.22	85%	94.92%	-9.92%		
		5544, West Lambton Booster Stn (5544-WPWL)	51	51	48	85.75	4235.64	16	16	16	149.75	6856.78	0	0	0	0	0	85%	92.20%	-7.20%		
		5544, West ST.Clair Distribution (5544-WDWS)	5	5	3	13.75	713.71	16	16	16	59.25	2591.93	0	0	0	0	0	85%	92.59%	-7.59%		
		Lambton Area Water Treatment Plant (5544)	5	5	5	20.5	1103.05	0	0	0	0	0	6	6	4	198	60324.58	85%	93.33%	-8.33%		
Grand Total			408	408	387	1313.5	69497.3	200	200	197	13281.5	351806.6	17	15	8	386.75	145306.1	85%	94.97%	5.028%		

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