



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2019 Client Monthly Operations Report

Lambton Area Water Supply System

September 30, 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 then 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 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: Sept 18: Annual ESA inspection at the water treatment plant and East Lambton Pumping Station.

Maintenance, Operations & Distribution Works Summary 2019

Maintenance

September:

Date	(P)reventative Capital Major Mtc (C)orrective	Description
Sept 3	P	Annual inspection of PLC panel #1 in the RMS is complete.
Sept 3	P	Annual inspection of the PLC panel in the PLC Control Room is complete.
Sept 3	C	Cleared reset warning log on chlorine analyzer for Station 5.
Sept 3	P	Completed monthly inspection of water treatment plant compressor.
Sept 3	P	Completed annual inspection of air dryer at the water treatment plant.
Sept 3	P	Annual test of UPS at West Lambton Pumping Station is complete.
Sept 4	C	Polair in to look at HVAC system at West Lambton Pumping Station.
Sept 4	P	Completed monthly maintenance on East Lambton Pumping Station chlorine analyzers.
Sept 4	P	Completed annual calibration of East Lambton pressure transmitters.
Sept 4	P	Completed monthly inspection of eyewash and emergency showers at the water treatment plant.
Sept 4	P	Tested generator at East Lambton Pumping Station.
Sept 5	P	Tested closing and opening operation of all valves in the

		Valve House at West Lambton Pumping Station.
Sept 5	P	Completed annual inspection of Butterfly valve 21 on the high lift discharge header.
Sept 5	C	Ainsworth in to inspect generator batteries at the water treatment plant.
Sept 5	P	Conducted annual inspection of SCADA control panel at Indian Rd Tower.
Sept 5	P	Conducted annual calibration of Indian Rd Tower pressure transmitter.
Sept 5	P	Completed monthly maintenance of West Lambton Pumping Station chlorine analyzers.
Sept 5	P	Completed annual inspection of the hot water cleanout system in the polymer room of the water treatment plant.
Sept 6	P	Completed annual inspection of meter chamber control panels.
Sept 9	P	Completed annual inspection of Port Lambton SCADA panel.
Sept 9	P	Completed monthly maintenance on all water treatment plant chlorine analyzers.
Sept 9	P	Completed monthly inspection of the vacuum priming system at East Lambton Pumping Station.
Sept 9	P	Completed annual inspection of diaphragm valve #518 at East Lambton Pumping Station.
Sept 9	P	Completed annual inspection of Forest and Watford surge tanks at East Lambton Pumping Station.
Sept 9	P	Completed annual inspection of compressor at East Lambton Pumping Station.
Sept 10	P	Conducted monthly maintenance on the lab turbidity meter.
Sept 10	P	Completed monthly maintenance on all water treatment plant online turbidity meters.
Sept 10-11	C	Repaired East and West flocculator exhaust fan motor.
Sept 10	C	UPS battery at West Lambton Pumping Station replaced.
Sept 11	C	Repaired leak on the South Clearwell Injector.
Sept 11	P	Conducted monthly maintenance on both streaming current meters.
Sept 16	C	Replaced batteries on generator #5.
Sept 16	Capital	In meeting with LAWSS GM in regards to the radio project.
Sept 16-17	P	Completed monthly inspection on all flocculator gear drives.
Sept 17	Major Mtc	ASL Roteq on site to do vibration analysis on all low lift pumps, highlift pumps, flocculators and East and West Lambton Pumping Station pumps.
Sept 17	P	Albert's Generator Service on site do annual inspection of generator at East Lambton Pumping Station.
Sept 17	P	Completed quarterly maintenance on fluoride analyzer.
Sept 17	P	Conducted monthly maintenance on Stations 5 and 7 pH probes.
Sept 18	P	Conducted monthly maintenance on Stations 1 and 2 pH

		probes.
Sept 18	P	Annual ESA inspection at East Lambton Pumping Station and the water treatment plant.
Sept 18	C	Completed site security audit default repairs at East Lambton Pumping Station and Indian Rd Tower.
Sept 18	C	Replaced Station 1 sample pump.
Sept 19	P	Conducted monthly verification of all Hach Pocket Colorimeters.
Sept 19	C	Completed site security audit default repairs at West Lambton Pumping Station and Watford Standpipe.
Sept 20	P	Tested generators at West Lambton Pumping Station.
Sept 23	P	West alum tank cleaned out.
Sept 24	P	Replaced hinges on East Travelling Screens observation hatch door.
Sept 25	P	Conducted monthly maintenance on travelling screens.
Sept 26	C	Repaired HFS transfer pump #1 controls.
Sept 27	C	Replaced belt cover on AHU #4 in the high lift pump area.
Sept 27	P	Conducted annual panel inspection of water treatment plant polymer system.
Sept 30	P	Working with Damar Security on mapping out of security system at the water treatment plant.
Sept 30	C	Repaired faulting sodium bisulphite pump #1.

Operations and Compliance

September:

Sept 1	Pre chlorine pump failed with airlock. Reset pump and panel with no issues.
Sept 1	Surface wash on filter #7 failed to reach limit during backwash. Valve was closed.
Sept 3	DWSP samples taken.
Sept 3	Monthly sample for TSS taken from the Actiflo effluent in the Residual Management System.
Sept 4	Ravenswood interconnect opened and closed same day to let Lambton Shores take water.
Sept 4	Pre chlorine pump failed with airlock. Reset pump and panel with no issues.
Sept 8	Power bump at the water treatment plant. Reset all pumps no issues.
Sept 11	Conducted annual risk assessment for DWQMS.
Sept 11	Power bump at the water treatment plant. Reset all pumps no issues.
Sept 12	Internal audit corrective actions for OFIs completed.
Sept 12-16	Reviewed O & M Manual. Adding in new polymer system.
Sept 12	North Clearwell level transmitter no longer working. Transmitter has been placed out of service.
Sept 14	Pre chlorine pump #3 failed with airlock. Reset pump and panel with no

	issues.
Sept 15	Pre chlorine pump #3 failed with airlock. Reset pump and panel with no issues.
Sept 17	Ravenswood interconnect opened and closed same day to let Lambton Shores take water.
Sept 17	Conducted monthly test of RMS Actiflo effluent for chlorine residuals.
Sept 18	Switched low lift sample pump station.
Sept 18	Switched from alum pump #1 to alum pump #2.
Sept 18	Switch Stations 5 & 6 sample pumps. Station 5 sample pump did not work. Work order created.
Sept 18	Start summer 2019 lead sampling.
Sept 20	Customer complaint from homeowner at 4910 Lakeshore Rd in Plympton Wyoming. Issue appears to be with homeowners PRV and not LAWSS watermain.
Sept 20	Summer 2019 lead sampling is complete
Sept 24	Created new Critical Control Limits for alum and sodium hypochlorite tank levels.
Sept 25-26	Emergency test of SCADA/PLC contingency
Sept 26	Power bump at the West Lambton Pumping Station. No issues.
Sept 27	Staff meeting.
Sept 27	Pre chlorine pump #3 failed with airlock. Reset pump and panel with no issues.
Sept 27	Created new SOPs for operating chemical dosing pump in manual and for running HL#6 in manual. Adjusted Working Alone SOP.
Sept 28	Pre chlorine pump #3 failed with airlock. Reset pump and panel with no issues.
Sept 29	South Clearwell pump faulted. Pump and panel was reset with no issues.

Distribution

September:

Sept 5	Onsite for third party work by Vink near LAWSS 42" main on Venetian Blvd in Point Edward.
Sept 6-12	Flushing in St Clair Township.
Sept 9	Onsite for third party work for the exposure of LAWSS main on Bickford Line.
Sept 10	Onsite for third party work near LAWSS main at LaSalle Line and Highway 40.
Sept 10	Flushing hydrants on Confederation Line.
Sept 10	Investigated possible hydrant leak at 3955 Leeland Drive in St. Clair Township.
Sept 11	Onsite for third party work for the exposure of LAWSS main on Bickford Line.
Sept 11	Emergency locate at 621 French Line. #20193718722
Sept 13	Flushing hydrants in Lambton Shores.
Sept 16	Onsite for third party work for the exposure of LAWSS main on Bickford Line.

Sept 17	Flushing hydrants in City of Sarnia.
Sept 17	Onsite for third party work for crossing of LAWSS main on Queen St.
Sept 23	Onsite for third party work for the exposure of LAWSS main on Bickford Line.
Sept 24	Flushing in Plympton-Wyoming and Lambton Shores.
Sept 25	Onsite for third party work for the exposure of LAWSS main on Bickford Line.
Sept 26	Flushing in Plympton-Wyoming.
Sept 27	Site meet at Indian Rd Overpass with LAWSS GM.

Call Outs 2019

September: Sept 14: Callout for failed bisulphite pump. Pump #1 failed for no reason. Pump was reset and tested.

Sept 14: Call out for afterhours emergency locate #20193729791.

Sept 21: Called out to take emergency bacteriological samples for the City of Sarnia.

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	121			

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	160			

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

Ontario Clean Water Agency
Time Series Info Report

Report extracted 10/03/2019 09:46

From: 01/01/2019 to 30/09/2019

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

	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	Total	Avg	Max	Min
Coagulation/Floculation / Coagulant Dosage-Calculated - mg/L													
Max IH	38.605	29.517	32.268	31.172	26.559	26.095	23.836	25.822	22.272			38.605	
Mean IH	26.801	24.002	23.839	22.375	22.91	21.551	20.805	20.898	19.819		22.554		
Min IH	21.912	18.131	18.009	17.868	19.041	18.452	18.086	19.041	17.621				17.621
Coagulation/Floculation / Coagulant Used - kg													
Max IH	1792	1408	1651.2	1241.6	1344	2150.4	2060.8	1804.8	1356.8			2150.4	
Mean IH	1220.542	1167.086	1160.671	1009.067	1129.29	1339.307	1594.632	1397.677	1108.139		1237.952		
Min IH	972.8	947.2	832	768	934.4	921.6	1088	1100.8	844.8				768
Total IH	37836.8	32678.4	35980.8	30272	35008	40179.2	49433.6	43328	33244.16	337961			
Coagulation/Floculation / Coagulant Volume Used - m³													
Max IH	1.4	1.1	1.29	0.97	1.05	1.68	1.61	1.41	1.06			1.68	
Mean IH	0.954	0.912	0.907	0.788	0.882	1.046	1.246	1.092	0.866		0.967		
Min IH	0.76	0.74	0.65	0.6	0.73	0.72	0.85	0.86	0.66				0.6
Total IH	29560	25530	28110	23650	27350	31390	38620	33850	25972	264032			
Coagulation/Floculation / Polymer Dosage - mg/L													
Max IH	0.042			0.024								0.042	
Mean IH	0.02			0.024							0.021		
Min IH	0.002			0.024									0.002
Coagulation/Floculation / Polymer Used - kg													
Max IH	2.1			1.1								2.1	
Mean IH	1.025			1.1							1.04		
Min IH	0.1			1.1									0.1
Total IH	4.1			1.1						5.2			
DW THM Data / Trihalomethane: Total - µg/l													
Max Lab		30			37			58				58	
Mean Lab		27			31.667			52.667			37.111		
Min Lab		24			25			46					24
East Lambton Booster Station / CI Residual: Inlet Free - mg/L													
Max OL	1.74	2.49	1.68	1.58	1.43	1.4	1.36	1.29	1.56			2.49	
Mean OL	1.535	1.401	1.428	1.388	1.3	1.277	1.22	1.124	1.344		1.335		
Min OL	0	0	0	0	0	0	0	0	0				0
Filter Backwash / Backwash Volume - m³													
Max IH	4792	2408	2992	3006	3004	3004	2998	3002	2418			4792	
Mean IH	2268.323	1929.786	2028.194	1927.733	1900.774	2043	2095.032	2056.903	1966.067		2025.509		
Min IH	1794	1788	1794	1198	1204	1792	1788	1059	1796				1059

HFS / Fluoride Dosage - mg/L															
Max IH	0.64	0.644	0.614	0.622	0.592	0.628	0.612	0.589	0.573			0.644			
Mean IH	0.556	0.557	0.559	0.557	0.542	0.548	0.535	0.537	0.531		0.547				
Min IH	0.46	0.417	0.482	0.487	0.486	0.464	0.486	0.49	0.474					0.417	
HFS / Fluoride Used - l															
Max IH	108.877	97.419	97.419	94.553	100.284	186.246	171.916	143.263	117.475			186.246			
Mean IH	85.495	87.63	89.655	83.952	90.041	115.949	139.658	123.298	101.43		102.074				
Min IH	65.901	66.384	71.631	71.631	74.497	88.823	111.745	103.149	85.957					65.901	
Total IH	2650.36	2453.634	2779.305	2518.562	2791.284	3478.466	4329.406	3822.244	3042.903	27866.17					
HFS / HFS (kg) - kg															
Max IH	132.83	118.851	118.851	115.355	122.347	227.22	209.737	174.781	143.32			227.22			
Mean IH	104.304	106.908	109.379	102.422	109.851	141.458	170.383	150.424	123.745		124.53				
Min IH	80.399	80.989	87.39	87.39	90.886	108.364	136.329	125.842	104.868					80.399	
Total IH	3233.439	2993.434	3390.752	3072.646	3405.367	4243.728	5281.875	4663.138	3712.342	33996.72					
HFS / Treated Water Fluoride Residual - mg/L															
Max OL	0.71	0.7	0.7	2	0.84	0.82	0.79	0.7	0.68			2			
Mean OL	0.631	0.601	0.578	0.597	0.611	0.575	0.63	0.611	0.576		0.601				
Min OL	0.56	0.54	0.51	0	0.51	0.24	0.49	0.55	0.42					0	
Post Disinfection / Chlorine Dosage - mg/L															
Max IH	1.668	1.854	1.682	1.832	1.795	3.071	2.185	2.463	2.654			3.071			
Mean IH	1.434	1.391	1.458	1.468	1.535	1.696	1.952	2.087	2.142		1.687				
Min IH	1.215	0.891	1.048	1.271	1.05	1.097	1.594	1.842	1.522					0.891	
Post Disinfection / Hypochlorite Dosage - mg/L															
Max IH	13.899	15.45	14.016	15.268	14.96	25.593	18.208	20.526	22.113			25.593			
Mean IH	11.947	11.588	12.152	12.232	12.79	14.136	16.268	17.39	17.847		14.058				
Min IH	10.126	7.428	8.737	10.593	8.747	9.142	13.282	15.347	12.686					7.428	
Post Disinfection / Hypochlorite Used - kg															
Max IH	653.3	665.05	681.5	706.175	808.4	1975.175	1590.95	1434.675	1257.25			1975.175			
Mean IH	543.456	564	590.191	552.994	632.264	885.167	1241.672	1162.454	997.614		799.034				
Min IH	444.15	326.65	454.725	407.725	431.225	460.6	956.45	930.6	689.725					326.65	
Total IH	16847.15	15792	18295.93	16589.83	19600.18	26555	38491.83	36036.08	29928.43	218136.4					
Post Disinfection / Hypochlorite Volume-Total - m³															
Max IH	0.556	0.566	0.58	0.601	0.688	1.681	1.354	1.221	1.07			1.681			
Mean IH	0.463	0.48	0.502	0.471	0.538	0.753	1.057	0.989	0.849		0.68				
Min IH	0.378	0.278	0.387	0.347	0.367	0.392	0.814	0.792	0.587					0.278	
Total IH	14338	13440	15571	14119	16681	22600	32759	30669	25471	185648					
Post Disinfection / Station 7 Cl Residual: Free - mg/L															
Max OL	1.89	1.85	1.92	1.78	1.71	1.75	5	1.76	1.91			5			
Mean OL	1.699	1.712	1.716	1.608	1.521	1.504	1.533	1.562	1.716		1.619				
Min OL	1.52	1.54	1.53	1.4	1.29	0	1.26	1.33	1.44					0	
PrTr / P.A.C. Dosage - mg/L															
Max IH						0.464	0.367	0.54	0.624			0.624			
Mean IH						0.338	0.291	0.409	0.525		0.396				
Min IH						0.176	0.218	0.274	0.431					0.176	
PrTr / P.A.C. Used - kg															
Max IH						28.9	25.634	29.462	29.452			29.462			
Mean IH						22.199	21.929	26.752	29.152		25.331				
Min IH						12.27	16.36	22.089	26.179					12.27	
Total IH						377.381	679.812	829.31	874.545	2761.048					
Pre-chlorination / Chlorine Dosage - mg/L															
Max IH	1.248	1.52	1.193	1.467								1.52			

Mean IH	1.173	1.106	1.07	1.111								1.115			
Min IH	1.061	0.931	0.91	0.972										0.91	
Pre-chlorination / Cl Residual: Free - mg/L															
Max IH	0.74	0.74	0.68	0.7									0.74		
Mean IH	0.632	0.657	0.623	0.623							0.634				
Min IH	0.55	0.59	0.5	0.56										0.5	
Pre-chlorination / Cl Residual: Total - mg/L															
Max IH	0.91	0.89	0.83	0.84									0.91		
Mean IH	0.783	0.824	0.774	0.783							0.79				
Min IH	0.69	0.78	0.66	0.72										0.66	
Pre-chlorination / Hypochlorite Dosage - mg/L															
Max IH	10.399	12.665	9.939	12.221									12.665		
Mean IH	9.773	9.216	8.92	9.258							9.294				
Min IH	8.838	7.76	7.581	8.098										7.581	
Pre-chlorination / Hypochlorite Used - kg															
Max IH	524.05	556.95	511.125	560.475									560.475		
Mean IH	443.657	447.717	433.461	417.692							435.629				
Min IH	383.05	394.8	340.75	338.4										338.4	
Total IH	13753.38	12536.08	13437.3	12113.08							51839.83				
Pre-chlorination / Hypochlorite Volume-Total-1 - m³															
Max IH	0.446	0.474	0.435	0.477									0.477		
Mean IH	0.378	0.381	0.369	0.355							0.371				
Min IH	0.326	0.336	0.29	0.288										0.288	
Total IH	11705	10669	11436	10309							44119				
Raw Water / Background - cfu/100mL															
Max Lab	160	82	82	410	260	720	2800	2800	8600				8600		
Mean Lab	69.2	33.25	21.5	105.8	69.25	346.25	751.2	1137.5	4243.333		626.105				
Min Lab	18	0	1	13	0	0	0	0	1930					0	
Raw Water / Conductivity - µS/cm															
Max IH	228.5	223.2	231.5	232.3	243.7	238.2	238.8	236.2	235.2				243.7		
Mean IH	221.019	219.725	222.174	225.038	233.042	232.617	236.165	235.252	231.17		228.55				
Min IH	217.8	218	217.9	170	222.6	228.5	232.2	234.1	223.8					170	
Raw Water / E. Coli: EC - cfu/100mL															
Max Lab	1	0	0	1	0	0	10	< 10	< 10			< 10			
Mean Lab	0.4	0	0	0.2	0	0	3.8	< 3.25	< 3.667		< 1.211				
Min Lab	0	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	61463				100783		
Mean IH	45445.45	48755.75	48621.65	45139.4	49348.52	62028.87	76680.9	66893.58	55870.33		55505.54				
Min IH	40082	40763	41664	36877	42212	47569	60157	54511	47226					36877	
Raw Water / Raw Flow Rate - l/s															
Max IH	613.27	653.69	650.98	598.31	654.75	1166.47	1141.13	933.63	926.67				1166.47		
Mean IH	526.72	565.27	562.75	522.45	571.13	717.93	887.51	774.13	653.31		643.32				
Min IH	463.91	471.79	482.22	426.82	488.56	550.57	696.26	630.91	546.6					426.82	
Raw Water / Raw Water Turbidity - NTU															
Max OL	21.4	7.14	13.7	12.2	6.8	3.1	7	2.17	2.4				21.4		
Mean OL	2.887	1.135	2.448	2.458	1.769	1.08	0.97	0.75	0.785		1.587				
Min OL	0.46	0.23	0.201	0.57	0.445	0.365	0.33	0.34	0.2					0.2	
Raw Water / Raw Water pH - ---															
Max IH	8.22	8.12	8.2	8.9	8.35	8.35	8.41	8.41	8.39				8.9		
Mean IH	8.045	8.008	8.056	8.197	8.239	8.269	8.331	8.355	8.307		8.202				

Min IH		7.94		7.88		7.86		8.09		8.18		8.2		8.26		8.26		8.22							7.86	
Raw Water / Temperature - °C																										
Max IH		8.01		6		8		11.5		13.1		18.5		23		25		22.5						25		
Mean IH		6.396		5.025		5.653		9.285		11.661		15.612		21.142		23.064		19.033					13.055			
Min IH		3		3.25		4		7		10		13		17.8		22		16								3
Raw Water / Total Coliform: TC - cfu/100mL																										
Max Lab		39		15		10		31		4		2		100		71	<	66					<	100		
Mean Lab		10.2		4.5		2.5		8.2		1.25		0.75		23.6	<	20.25	<	40				<	11.763			
Min Lab		2		0		0		0		0		0		0	<	0	<	10						<	0	
Treated Water / Background - cfu/100mL																										
Max Lab		0		0		0		0		0		0		0		0		0						0		
Mean Lab		0		0		0		0		0		0		0		0		0					0			
Min Lab		0		0		0		0		0		0		0		0		0							0	
Treated Water / E. Coli: EC - cfu/100mL																										
Max Lab		0		0		0		0		0		0		0		0		0						0		
Mean Lab		0		0		0		0		0		0		0		0		0					0			
Min Lab		0		0		0		0		0		0		0		0		0							0	
Treated Water / Electrical Consumption - kWh																										
Total IH		963849.2		1042697		1022817		1067361		931726.5		922742.6		979665.2		1081486		978235.3		8990579						
Treated Water / Flow: Total of All Sources - m³/d																										
Max IH		51137		53292		51967		49343		52401		97988		96442		77634		64029						97988		
Mean IH		44841		46364		46748.23		44048.37		48460.74		61126.97		76220.23		67154.84		56044.43					54655.53			
Min IH		41397		41527		41284		39452		41184		41283		60988		56137		50125								39452
Total IH		1390071		1298192		1449195		1321451		1502283		1833809		2362827		2081800		1681333		14920961						
Treated Water / HPC - cfu/mL																										
Max Lab	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10					<	10		
Mean Lab	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10				<	10			
Min Lab	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10	<	10						<	10	
Treated Water / Total Coliform: TC - cfu/100mL																										
Max Lab		0		0		0		0		0		0		0		0		0						0		
Mean Lab		0		0		0		0		0		0		0		0		0					0			
Min Lab		0		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		0.096						0.117		
Mean OL		0.062		0.063		0.065		0.063		0.064		0.066		0.066		0.067		0.067					0.065			
Min OL		0.043		0.047		0.046		0.047		0.046		0.046		0.049		0.052		0.052								0.043
West Lambton Booster Station / Cl Residual: Outlet Free - mg/L																										
Max OL		2.19		1.86		1.83		1.8		1.6		1.62		4.99		1.67		2.17						4.99		
Mean OL		1.684		1.685		1.595		1.586		1.429		1.413		1.395		1.395		1.651					1.537			
Min OL		0		0		0		0		0		0		0		0		0							0	
Zebra Mussel Control / Chlorine Dosage - mg/L																										
Max IH						1.125		1.173		1.25		1.327		1.29		1.218								1.327		
Mean IH						1.125		1.068		1.127		1.158		1.206		1.126							1.137			
Min IH						1.125		0.955		1.01		1.028		1.113		0.948										0.948
Zebra Mussel Control / Cl Residual: Free - mg/L																										
Max IH						0.36		0.67		0.66		0.63		0.64		0.64								0.67		
Mean IH						0.36		0.6		0.588		0.559		0.586		0.59							0.583			
Min IH						0.36		0.44		0.52		0.39		0.52		0.52										0.36
Zebra Mussel Control / Cl Residual: Total - mg/L																										
Max IH						0.54		0.81		0.8		0.79		0.79		0.81								0.81		
Mean IH						0.54		0.746		0.712		0.679		0.72		0.736							0.717			

Min IH						0.54	0.55	0.63	0.51	0.66	0.66					0.51	
Zebra Mussel Control / Hypochlorite Dosage - mg/L																	
Max IH						9.374	9.777	10.417	11.057	10.753	10.149					11.057	
Mean IH						9.374	8.898	9.392	9.649	10.049	9.382		9.474				
Min IH						9.374	7.961	8.418	8.569	9.277	7.9						7.9
Zebra Mussel Control / Hypochlorite Used - kg																	
Max IH						433.575	514.65	848.35	851.875	774.325	598.075					851.875	
Mean IH						433.575	439.147	582.408	735.512	670.735	524.246		589.873				
Min IH						433.575	336.05	444.15	619.225	538.15	413.6						336.05
Total IH						433.575	13613.55	17472.25	22800.88	20792.8	15727.38	90840.43					
Zebra Mussel Control / Hypochlorite Volume-Total-1 - m³																	
Max IH						0.369	0.438	0.722	0.725	0.659	0.509					0.725	
Mean IH						0.369	0.374	0.496	0.626	0.571	0.446		0.502				
Min IH						0.369	0.286	0.378	0.527	0.458	0.352						0.286
Total IH						369	11586	14870	19405	17696	13385	77311					

Health & Safety Work Order Summary by Facility

Start Date: 2019-09-01

End Date: 2019-09-30

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)	4	4	4	8.50	337.59	85.00%	100.00%	-15.00%
		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)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	2	2	1	12.75	678.66	85.00%	50.00%	35.00%
Total			6	6	5	21.25	1016.25	85.00%	83.33%	1.67%

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

10/16/19 13:01:29

Health & Safety Work Order Summary by Facility

Start Date: 2019-01-01

End Date: 2019-09-30

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 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, 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)	34	34	34	66.00	2726.60	85.00%	100.00%	-15.00%
		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)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	5	5	4	19.50	1048.92	85.00%	80.00%	5.00%
		Total			39	39	38	85.50	3775.52	85.00%

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

10/16/19 13:11:21

Work Order Summary by Facility

Start Date: 2019-09-01
End Date: 2019-09-30
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)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton PS (5544-WPEL)	5	5	2	14	539.14	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	2	2	1	14	816.99	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	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)	1	1	1	4	169.68	0	0	0	0	0	1	1	1	15	662.4
		Lambton Area Water Treatment Plant (5544)	8	8	6	63.5	2606.65	0	0	0	0	0	0	0	0	0	0
Grand Total			16	16	10	95.5	4132.46	0	0	0	0.00	0.00	1	1	1	15.00	662.40

0
0

Work Order Summary by Facility

Start Date: 2019-09-01
End Date: 2019-09-30
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)	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1795.2	85%	100%	-15.0%
		5544, East Lambton PS (5544-WPEL)	0	0	0	0	0	4	4	4	7	307.36	0	0	0	0	0	85%	66.66%	18.33%
		5544, Lambton Area RMS (5544-WWLA)	8	8	8	12.25	550.61	2	2	2	13	657.21	0	0	0	0	0	85%	91.66%	-6.66%
		5544, Lambton Area WTP (5544-WTLA)	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)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West ST.Clair Distribution (5544-WDWS)	2	2	2	7	323.63	2	2	2	1.25	45.1	0	0	0	0	0	85%	100%	-15.0%
		Lambton Area Water Treatment Plant (5544)	35	35	29	109	6268.23	11	11	11	1513.5	39341.09	0	0	0	0	0	85%	85.18%	-0.18%
Grand Total			45	45	39	128.25	7142.47	19	19	19	1534.75	40350.76	1	1	1	0	1795.2	85%	100%	-15.0%

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Work Order Summary by Facility

Start Date: 2019-01-01
End Date: 2019-09-30
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)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton PS (5544-WPEL)	14	14	11	122.5	5651.11	5	5	4	12.5	669.28	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	6	6	5	32	1526.41	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	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)	8	8	8	70	2928.54	0	0	0	0	0	1	1	1	15	662.4
		Lambton Area Water Treatment Plant (5544)	40	40	34	295	13303.75	1	1	1	1	46.68	4	4	4	36	1505.9
Grand Total			68	68	58	519.5	23409.81	6	6	5	13.50	715.96	5	5	5	51.00	2168.30

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Work Order Summary by Facility

Start Date: 2019-01-01
End Date: 2019-09-30
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)	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1795.2	85%	100%	-15.0%
		5544, East Lambton PS (5544-WPEL)	9	9	6	17	1006.35	38	38	38	109.25	4789.76	5	4	1	36.25	11116.61	85%	89.39%	-4.39%
		5544, Lambton Area RMS (5544-WWLA)	50	50	50	103.75	5102.18	19	19	19	77.5	3610.2	0	0	0	0	0	85%	98.66%	-13.6%
		5544, Lambton Area WTP (5544-WTLA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West Lambton Booster Strn (5544-WPWL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West ST.Claire Distribution (5544-WDWS)	22	22	22	40.75	1874.84	18	18	18	29.25	1180.74	1	1	1	27.25	22007.7	85%	100%	-15.0%
		Lambton Area Water Treatment Plant (5544)	311	311	296	1202.5	64136.22	112	112	110	14459.25	375423.7	5	4	2	138.25	52408.68	85%	95.08%	-10.0%
Grand Total			392	392	374	1364	72119.59	187	187	185	14675.25	385004.4	12	10	5	201.75	87328.19	85%	100%	-15.0%