



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2019 Client Monthly Operations Report

Lambton Area Water Supply System

July 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 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: None

Maintenance, Operations & Distribution Works Summary 2019

Maintenance

July:

Date	(P)reventative Capital Major Mtc (C)orrective	Description
July 1	P	Completed monthly inspection of eyewash and emergency shower stations at the water treatment plant.
July 4	P	Completed annual inspection of High Pump #2 discharge valve.
July 5	P	Completed monthly calibration of East and West Lambton chlorine analyzers.
July 8	P	Conducted monthly inspection of compressor at the water treatment plant.
July 8	P	Completed monthly calibration of all chlorine analyzers at the water treatment plant.
July 9-10	P	Completed monthly calibration of all online turbidity meters at the water treatment plant.
July 10	P	Completed monthly inspection of East Lambton Pumping Station vacuum priming system.
July 10	P	Completed monthly inspection of online fluoride monitor.
July 10	P	Completed monthly verification of lab turbidity meter.
July 11	C	Reset ground fault which caused radio failure for Wyoming.
July 12	P	Completed monthly inspection of travelling screens at the water treatment plant.
July 12	P	Completed monthly verification of all hand held chlorine analyzers.
July 15	C	Cleaned/sanded valve #1 at West Lambton Pumping Station.

July 15	Major Mtc	Vector Crack injection on site at water treatment plant.
July 16	C	Replaced leaking valve on the hot water tank in the Residual Management System.
July 17-19	P	Completed monthly maintenance on flocculator gear drives.
July 18	C	Troubleshoot and corrected issue with Flocculator #3 controls.
July 18	C	Installed repaired valve for Pump #1 at West Lambton Pumping Station.
July 22	P	Tested generators at East Lambton Pumping Station.
July 23	P	Tested generators at West Lambton Pumping Station.
July 24	C	Removing vegetation from transformer area at West Lambton Pumping Station.
July 26	Major Mtc	EQ cleanout.
July 29	C	Rotork in to check/repair Filter #5 surface wash valve that is not hitting limit.
July 30	Capital	Meeting with LAWSS GM and Expertees in regards to radio project.
July 30	P	Tested generators at the water treatment plant.
July 30	C	Replaced lighting above chlorine dosing pumps at the water treatment plant.

Operations and Compliance

July:

July 2	Annual security audit starts.
July 2-4	Setting up sodium bisulphite dosing pump for storm drain dechlorination.
July 2	Nova Chemicals taking water.
July 5	Switched to large treated water mag meter due to high demand.
July 7	Pre Cl pump failed (air lock). Pump and panel were reset.
July 7	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 8	Tested dechlorination on the storm drain.
July 8	Power spike shut down pumps. Pumps were reset with no issues.
July 9	Nova Chemicals no longer taking water.
July 10	Chlorine pump fault at East Lambton Pumping Station. Pump was primed and reset.
July 10	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 10	Pre Cl pump #3 failed (air lock). Pump and panel were reset.
July 11	Pre Cl pump #3 failed (air lock). Pump and panel were reset.
July 12	Pre Cl pump #3 failed (air lock). Pump and panel were reset.
July 12	Pump #2 valve at West Lambton Pumping Station failed to open 100%. Pumps was stopped and restarted with no issues.
July 13	Ran Pump #1 at West Lambton Pumping Station. Valve failed to open 100%.
July 13	Pre Cl pumps # 1 and 3 failed (air lock). Pumps and panel were reset.

July 14	Power spike shut down pumps. Pumps were reset with no issues.
July 14	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 14	Ran Pump #5 at West Lambton Pumping Station.
July 15	Power spike shut down pumps. Pumps were reset with no issues.
July 16	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 17	Floculator #3 controls not working correctly.
July 18	Tested repaired valve for Pump #1 at West Lambton Pumping Station.
July 19	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 20	Pre CI pumps # 1 and 2 failed (air lock). Pumps and panel were reset.
July 22	Surface wash valve on filter 5 failed to close after backwash. Valve was manually closed.
July 22	Ran Pump #1 at West Lambton Pumping Station.
July 23	Tested polymer system at the water treatment plant.
July 23	Ran Residual Management System to test for chlorine residuals from RMS outlet. Tested plant discharge water to river to ensure there is no chlorine residual.
July 24	Pre CI pump # 1 failed (air lock). Pump and panel was reset.
July 24	Adjusted flow to Filter #4 turbidity meter causing high turbidity (>1 NTU). Filter was shut down until turbidity dropped to normal range.
July 25	Pre CI pumps # 1 and 2 failed (air lock). Pumps and panel were reset.
July 25	South clearwell pump # 1 failed (air lock). Pump and panel was reset.
July 29	Pre CI pump failed (air lock). Pump and panel were reset.
July 30	Tested water treatment plant generators dechlorination system.
July 30	Chlorine pump fault at East Lambton Pumping Station. Pump was primed and reset.
July 30	Valve on Pump #2 at West Lambton Pumping Station failed to open 100%. Pump was reset and restarted with no issues.
July 31	Resampled a number of bacteriological samples due to an issue with Purolator failing to deliver samples within holding time.

Distribution

July:

July 2	Site meet with Cope on Michigan Rd for future hydrovac work.
July 3	Onsite for hydrovac on isolation valve on Michigan Ave.
July 4	Exercised blow off on Sandy Lane in the City of Sarnia.
July 4	Emergency locate #20172719422.
July 7	Emergency locate 1149 on Confederation Street in Sarnia.
July 8	Repaired hydrant isolation valve at Michigan Rd and Colborne.
July 9	Onsite for crossing of LAWSS watermain at 3073 London Line.
July 17	Flushing on London Line completed.
July 18	Onsite for 2 inch hot tap to LAWSS watermain on Lakeshore.
July 18	Site meet on Moore Line for future culvert work.
July 18	Flushing hydrants on Nauvoo Rd and Zion Line in Warwick-Watford.

July 19	Onsite for hot tap for new hydrant at 3962 Lakeshore.
July 22	Onsite for hot tap of LAWSS watermain at Country Corners at 3962 Lakeshore.
July 22	Emergency locate #2019306392 in St Clair Township.
July 23	Site meet at Bear Creek Bridge.
July 23	Flushing hydrants from Zion Line to Lakeshore in Warwick-Watford.
July 23	Bagged hydrant #21 at 6838 Zion line as the operator stem is broken.
July 24	Onsite for 1.5" hot tap at 4091 Confederation Line.
July 24	Flushing hydrants on Lakeshore Rd in Plympton-Wyoming.
July 25	Flushing hydrants on St Clair Parkway and Lakeshore Rd.
July 31	Meter reads completed.
July 31	Onsite for third party work on Greenfield Line.

Call Outs 2019

July: None

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					

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					

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 –Q2 was due July 30, 2019. Q3 due October 30

Semi-Annual “Schedule G” Reconcilable Commodities Report –Was due July 30, 2019. Next due January 30, 2020

Ontario Clean Water Agency
Time Series Info Report

From: 01/01/2019 to 31/07/2019

Report extracted 08/10/2019 17:55

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	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			38.605	
Mean IH	26.801	24.002	23.839	22.375	22.91	21.551	20.805		23.183		
Min IH	21.912	18.131	18.009	17.868	19.041	18.452	18.086				17.868
Coagulation/Floculation / Coagulant Used - kg											
Max IH	1792	1408	1651.2	1241.6	1344	2150.4	2060.8			2150.4	
Mean IH	1220.542	1167.086	1160.671	1009.067	1129.29	1339.307	1594.632		1232.966		
Min IH	972.8	947.2	832	768	934.4	921.6	1088				768
Total IH	37836.8	32678.4	35980.8	30272	35008	40179.2	49433.6	261388.8			
Coagulation/Floculation / Coagulant Volume Used - m³											
Max IH	1.4	1.1	1.29	0.97	1.05	1.68	1.61			1.68	
Mean IH	0.954	0.912	0.907	0.788	0.882	1.046	1.246		0.963		
Min IH	0.76	0.74	0.65	0.6	0.73	0.72	0.85				0.6
Total IH	29560	25530	28110	23650	27350	31390	38620	204210			
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					37	
Mean Lab		27			31.667				29.333		
Min Lab		24			25						24
East Lambton Booster Station / Cl Residual: Inlet Free - mg/L											
Max OL	1.74	2.49	1.68	1.58	1.43	1.4	1.36			2.49	
Mean OL	1.535	1.401	1.428	1.388	1.3	1.277	1.22		1.364		
Min OL	0	0	0	0	0	0	0				0
Filter Backwash / Backwash Volume - m³											
Max IH	4792	2408	2992	3006	3004	3004	2998			4792	
Mean IH	2268.323	1929.786	2028.194	1927.733	1900.774	2043	2095.032		2029.33		
Min IH	1794	1788	1794	1198	1204	1792	1788				1198
HFS / Fluoride Dosage - mg/L											
Max IH	0.64	0.644	0.614	0.622	0.592	0.628	0.612			0.644	
Mean IH	0.556	0.557	0.559	0.557	0.542	0.548	0.535		0.55		
Min IH	0.46	0.417	0.482	0.487	0.486	0.464	0.486				0.417
HFS / Fluoride Used - l											
Max IH	108.877	97.419	97.419	94.553	100.284	186.246	171.916			186.246	
Mean IH	85.495	87.63	89.655	83.952	90.041	115.949	139.658		99.061		
Min IH	65.901	66.384	71.631	71.631	74.497	88.823	111.745				65.901
Total IH	2650.36	2453.634	2779.305	2518.562	2791.284	3478.466	4329.406	21001.02			
HFS / HFS (kg) - kg											
Max IH	132.83	118.851	118.851	115.355	122.347	227.22	209.737			227.22	
Mean IH	104.304	106.908	109.379	102.422	109.851	141.458	170.383		120.855		
Min IH	80.399	80.989	87.39	87.39	90.886	108.364	136.329				80.399
Total IH	3233.439	2993.434	3390.752	3072.646	3405.367	4243.728	5281.875	25621.24			
HFS / Treated Water Fluoride Residual - mg/L											
Max OL	0.71	0.7	0.7	2	0.84	0.82	0.79			2	
Mean OL	0.631	0.601	0.578	0.597	0.611	0.575	0.63		0.603		
Min OL	0.56	0.54	0.51	0	0.51	0.24	0.49				0
Post Disinfection / Chlorine Dosage - mg/L											
Max IH	1.668	1.854	1.682	1.832	1.795	3.071	2.185			3.071	
Mean IH	1.434	1.391	1.458	1.468	1.535	1.696	1.952		1.564		
Min IH	1.215	0.891	1.048	1.271	1.05	1.097	1.594				0.891
Post Disinfection / Hypochlorite Dosage - mg/L											
Max IH	13.899	15.45	14.016	15.268	14.96	25.593	18.208			25.593	
Mean IH	11.947	11.588	12.152	12.232	12.79	14.136	16.268		13.035		
Min IH	10.126	7.428	8.737	10.593	8.747	9.142	13.282				7.428
Post Disinfection / Hypochlorite Used - kg											
Max IH	653.3	665.05	681.5	706.175	808.4	1975.175	1590.95			1975.175	
Mean IH	543.456	564	590.191	552.994	632.264	885.167	1241.672		717.792		
Min IH	444.15	326.65	454.725	407.725	431.225	460.6	956.45				326.65
Total IH	16847.15	15792	18295.93	16589.83	19600.18	26555	38491.83	152171.9			

Post Disinfection / Hypochlorite Volume-Total - m³													
Max IH	0.556	0.566	0.58	0.601	0.688	1.681	1.354				1.681		
Mean IH	0.463	0.48	0.502	0.471	0.538	0.753	1.057		0.611				
Min IH	0.378	0.278	0.387	0.347	0.367	0.392	0.814					0.278	
Total IH	14338	13440	15571	14119	16681	22600	32759	129508					
Post Disinfection / Station 7 Cl Residual: Free - mg/L													
Max OL	1.89	1.85	1.92	1.78	1.71	1.75	5				5		
Mean OL	1.699	1.712	1.716	1.608	1.521	1.504	1.533		1.613				
Min OL	1.52	1.54	1.53	1.4	1.29	0	1.26					0	
PrTr / P.A.C. Dosage - mg/L													
Max IH						0.464	0.367				0.464		
Mean IH						0.338	0.291		0.308				
Min IH						0.176	0.218					0.176	
PrTr / P.A.C. Used - kg													
Max IH						28.9	25.634				28.9		
Mean IH						22.199	21.929		22.025				
Min IH						12.27	16.36					12.27	
Total IH						377.381	679.812	1057.193					
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		
Mean Lab	69.2	33.25	21.5	105.8	69.25	346.25	729		189.067				
Min Lab	18	0	1	13	0	0	0					0	
Raw Water / Conductivity - µS/cm													
Max IH	228.5	223.2	231.5	232.3	243.7	238.2	238.8				243.7		
Mean IH	221.019	219.725	222.174	225.038	233.042	232.617	236.165		227.2				
Min IH	217.8	218	217.9	170	222.6	228.5	232.2					170	
Raw Water / E. Coli: EC - cfu/100mL													
Max Lab	1	0	0	1	0	0	10				10		
Mean Lab	0.4	0	0	0.2	0	0	4.75		0.733				
Min Lab	0	0	0	0	0	0	0					0	
Raw Water / Raw Flow Daily - m³/d													
Max IH	52987	56479	56245	51694	56670	100783	98594				100783		
Mean IH	45445.45	48755.75	48621.65	45139.4	49348.52	62028.87	76680.9		53788.68				
Min IH	40082	40763	41664	36877	42212	47569	60157					36877	
Raw Water / Raw Flow Rate - l/s													
Max IH	613.27	653.69	650.98	598.31	654.75	1166.47	1141.13				1166.47		
Mean IH	526.72	565.27	562.75	522.45	571.13	717.93	887.51		622.78				
Min IH	463.91	471.79	482.22	426.82	488.56	550.57	696.26					426.82	
Raw Water / Raw Water Turbidity - NTU													
Max OL	21.4	7.14	13.7	12.2	6.8	3.1	7				21.4		
Mean OL	2.887	1.135	2.448	2.458	1.769	1.08	0.97		1.821				
Min OL	0.46	0.23	0.201	0.57	0.445	0.365	0.33					0.201	
Raw Water / Raw Water pH - ---													
Max IH	8.22	8.12	8.2	8.9	8.35	8.35	8.41				8.9		
Mean IH	8.045	8.008	8.056	8.197	8.239	8.269	8.331		8.165				
Min IH	7.94	7.88	7.86	8.09	8.18	8.2	8.26					7.86	
Raw Water / Temperature - °C													
Max IH	8.01	6	8	11.5	13.1	18.5	23				23		
Mean IH	6.396	5.025	5.653	9.285	11.661	15.612	21.142		10.745				
Min IH	3	3.25	4	7	10	13	17.8					3	
Raw Water / Total Coliform: TC - cfu/100mL													
Max Lab	39	15	10	31	4	2	100				100		
Mean Lab	10.2	4.5	2.5	8.2	1.25	0.75	29.5		8.2				
Min Lab	2	0	0	0	0	0	0					0	
Treated Water / Background - cfu/100mL													
Max Lab	0	0	0	0	0	0	0				0		

Mean Lab		0	0	0	0	0	0	0	0		0			
Min Lab		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		
Mean Lab		0	0	0	0	0	0	0	0		0			
Min Lab		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	6930858					
Treated Water / Flow: Total of All Sources - m³/d														
Max IH		51137	53292	51967	49343	52401	97988	96442				97988		
Mean IH		44841	46364	46748.23	44048.37	48460.74	61126.97	76220.23			52631.26			
Min IH		41397	41527	41284	39452	41184	41283	60988					39452	
Total IH		1390071	1298192	1449195	1321451	1502283	1833809	2362827	11157828					
Treated Water / HPC - cfu/mL														
Max Lab	<	10	<	10	<	10	<	10	<	10	<	10		
Mean Lab	<	10	<	10	<	10	<	10	<	10	<	10	<	10
Min Lab	<	10	<	10	<	10	<	10	<	10	<	10		<
Treated Water / Total Coliform: TC - cfu/100mL														
Max Lab		0	0	0	0	0	0	0	0			0		
Mean Lab		0	0	0	0	0	0	0	0		0			
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				0.117		
Mean OL		0.062	0.063	0.065	0.063	0.064	0.066	0.066			0.064			
Min OL		0.043	0.047	0.046	0.047	0.046	0.046	0.049					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				4.99		
Mean OL		1.684	1.685	1.595	1.586	1.429	1.413	1.395			1.541			
Min OL		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				1.327		
Mean IH					1.125	1.068	1.127	1.158			1.118			
Min IH					1.125	0.955	1.01	1.028					0.955	
Zebra Mussel Control / Cl Residual: Free - mg/L														
Max IH					0.36	0.67	0.66	0.63				0.67		
Mean IH					0.36	0.6	0.588	0.559			0.58			
Min IH					0.36	0.44	0.52	0.39					0.36	
Zebra Mussel Control / Cl Residual: Total - mg/L														
Max IH					0.54	0.81	0.8	0.79				0.81		
Mean IH					0.54	0.746	0.712	0.679			0.71			
Min IH					0.54	0.55	0.63	0.51					0.51	
Zebra Mussel Control / Hypochlorite Dosage - mg/L														
Max IH					9.374	9.777	10.417	11.057				11.057		
Mean IH					9.374	8.898	9.392	9.649			9.313			
Min IH					9.374	7.961	8.418	8.569					7.961	
Zebra Mussel Control / Hypochlorite Used - kg														
Max IH					433.575	514.65	848.35	851.875				851.875		
Mean IH					433.575	439.147	582.408	735.512			584.089			
Min IH					433.575	336.05	444.15	619.225					336.05	
Total IH					433.575	13613.55	17472.25	22800.88	54320.25					
Zebra Mussel Control / Hypochlorite Volume-Total-1 - m³														
Max IH					0.369	0.438	0.722	0.725				0.725		
Mean IH					0.369	0.374	0.496	0.626			0.497			
Min IH					0.369	0.286	0.378	0.527					0.286	
Total IH					369	11586	14870	19405	46230					

Health & Safety Work Order Summary by Facility

Start Date: 2019-07-01

End Date: 2019-07-31

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, 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	6.75	277.07	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)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
Total			3	3	3	6.75	277.07	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%

Health & Safety Work Order Summary by Facility

Start Date: 2019-01-01

End Date: 2019-07-31

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, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	27	27	27	51.75	2171.03	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	2	6.25	341.81	85.00%	100.00%	-15.00%
Total			29	29	29	58.00	2512.84	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%

Work Order Summary by Facility

Start Date: 2019-07-01
End Date: 2019-07-31
Hub: Lambton

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

			Corrective 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)	2	2	2	7.25	282.39	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton PS (5544-WPEL)	2	2	2	8	292.6	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)	3	3	1	14	696.08	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	1	1	1	16	588	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)	1	1	1	17.5	1061.73	0	0	0	0	0	0	0	0	0	0
Grand Total			9	9	7	62.75	2920.8	0	0	0	0.00	0.00	0	0	0	0.00	0.00

* NOTE: Capital/Project Work is not included in the calculation of the Closure Rate
16/08/19 10:07:25

Work Order Summary by Facility

Start Date: 2019-07-01
End Date: 2019-07-31
Hub: Lambton

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

			Preventive 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	6	6	5	23.5	1064.12	0	0	0	0	0	85%	87.5%	-2.50%
		5544, East Lambton PS (5544-WPEL)	5	5	4	8.25	415.63	2	2	2	10.75	497.39	0	0	0	0	0	85%	88.88%	-3.88%
		5544, Lambton Area RMS (5544-WWLA)	2	2	2	3.5	182.71	2	2	2	1	43.17	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	30	30	28	83	3470.29	11	11	10	1608.25	39065.54	1	0	0	0	0	85%	88.63%	-3.63%
		5544, West Lambton Booster Stn (5544-WPWL)	3	3	3	9	485.4	2	2	2	22.5	1120.55	0	0	0	0	0	85%	100%	-15.0%
		5544, West ST.Clair Distribution (5544-WDWS)	0	0	0	0	0	2	2	2	7.5	340.5	0	0	0	0	0	85%	100%	-15.0%
		Lambton Area Water Treatment Plant (5544)	1	1	0	2	121.34	0	0	0	0	0	0	0	0	0	0	85%	50%	35%
Grand Total			41	41	37	105.75	4675.37	25	25	23	1673.5	42131.27	1	0	0	0	0	85%	89.33%	10.66%

* NOTE: Capital/Project Work is not included in the calculation of the Closure Rate
16/08/19 10:07:25

Work Order Summary by Facility

Start Date: 2019-01-01
End Date: 2019-07-31
Hub: Lambton

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

			Corrective 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)	8	8	8	106	4998.47	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)	5	5	5	52	2243.33	0	0	0	0	0	0	0	0	0	0	
		5544, Lambton Area WTP (5544-WTLA)	27	27	21	207.5	8654.63	1	1	1	1	46.68	4	4	4	36	1505.9	
		5544, West Lambton Booster Stn (5544-WPWL)	8	8	6	35.25	1484.02	0	0	0	0	0	1	1	1	54.75	2521.45	
		5544, West ST.Clair Distribution (5544-WDWS)	2	2	2	8.25	389.73	2	2	2	26.5	1867.46	0	0	0	0	0	0
		Lambton Area Water Treatment Plant (5544)	8	8	8	84.25	4095.26	0	0	0	0	0	0	0	0	0	0	0
Grand Total			62	62	54	511.25	22574.86	8	8	7	40.00	2583.42	5	5	5	90.75	4027.35	

* NOTE: Capital/Project Work is not included in the calculation of the Closure Rate
16/08/19 10:12:05

Work Order Summary by Facility

Start Date: 2019-01-01
End Date: 2019-07-31
Hub: Lambton

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

			Preventive 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)	9	9	6	17	1006.35	30	30	29	95	4146.39	5	4	1	36.25	11116.61	85%	90.38%	-5.38%
		5544, East Lambton PS (5544-WPEL)	38	38	36	74.5	3710.77	15	15	15	59.5	2724.09	0	0	0	0	0	85%	96.49%	-11.4%
		5544, Lambton Area RMS (5544-WWLA)	17	17	17	29.75	1358.01	14	14	14	25	1011.55	1	1	1	27.25	22007.7	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	243	243	230	907	46366.11	89	89	85	11396	296727.2	5	4	0	124.75	13066.88	85%	93.68%	-8.68%
		5544, West Lambton Booster Stn (5544-WPWL)	44	44	41	70.25	3407.43	14	14	14	134.25	6152.34	0	0	0	0	0	85%	92.53%	-7.53%
		5544, West ST.Claire Distribution (5544-WDWS)	3	3	1	4	161.84	14	14	14	43.5	1877.99	0	0	0	0	0	85%	90.47%	-5.47%
		Lambton Area Water Treatment Plant (5544)	4	4	3	19.5	1044.26	0	0	0	0	0	5	5	4	178.5	59173.76	85%	91.66%	-6.66%
Grand Total			358	358	334	1122	57054.77	176	176	171	11753.25	312639.6	16	14	6	366.75	105365	85%	93.76%	6.239%

* NOTE: Capital/Project Work is not included in the calculation of the Closure Rate
16/08/19 10:12:05