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Alexandria Wastewater System 2019 Annual Report

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A. Performance Assessment

Summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in condition 7, including an overview of success and adequacy of works

The Alexandria sewage works system is comprised of a sewage collection system and a wastewater lagoon treatment facility. The system is categorized as a continuously discharge class 2 facility. The collection system includes 22.9kms of sewer mains containing approximately 1585 service connections, 2.1kms of force mains, 3 sanitary sewage lift stations and 1 pumping station. The wastewater lagoon treatment facility consists of an aeration cell, with coagulant addition for phosphorus removal, followed by 3 facultative lagoons cells that run-in series towards a disinfection and dechlorination chamber that discharges to the Delisle River system. The lagoon effluent sewage is disinfected by sodium hypochlorite and dechlorinated with sodium bisulfate prior to discharge into the receiver.

During the 2019 calendar year 1,453,856m³ of untreated sewage was directed to the Alexandria Lagoon system, based on the metered totals from the main pumping station. It should be mentioned that during the last quarter of 2019 flow metering discrepancies were noted, with metering potentially under reading values intermittently. See Figure 1 below for a 5-year annual flow comparison. Included in the total untreated sewage flows were 4,997m³ of untreated landfill leachate and 5,746m³ of creek water. The untreated leachate was hauled from the Alexandria Landfill leachate pond by Axel Automotive Inc. between April 29 and May 24, 2019. The leachate was introduced into the influent flow of the east well of the Alexandria Main Station and volumes were estimated based on truck capacities and number of trips. The creek water was observed back flowing into the wet well from the by-pass channel during spring peak flows/snow melt. The by-pass meter was used to estimate the total volume.

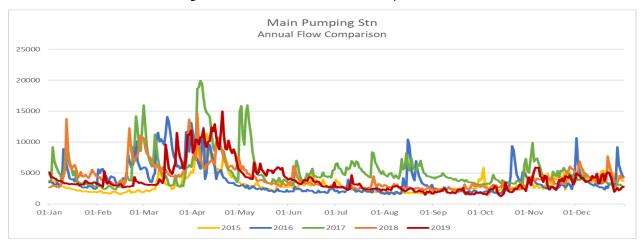


Figure 1: 5 Year Main Station Flow Comparison

The wastewater lagoon treatment system operated well for the most part of 2019 and produced an annual average effluent concertation below the annual Environmental Compliance Approval limits. Refer to Table 1 below for all annual average concentration values. Limit exceedances were noted between January through April, please refer to section G for more details on effluent sampling

4.1/100mL



quality, all issued were noted under ice cover as per previous trending observances. Appendix A summarizes flows, raw influent and treated effluent results.

Average Concentration 2019 Average **Effluent Parameter** Limit Concentration CBOD₅ 30 mg/L 18.9 mg/L **TSS** 40 mg/L 24.3 mg/L TP 0.5 mg/L 0.44 mg/L **Total Chlorine Residual** 0.02 mg/L 0.01 mg/L 6.0-9.5 7.53 (maintained inclusive at all times)

Table 1: 7(1) of the ECA states effluent limits are as follows:

B. Groundwater Monitoring

(geometric mean density)

Summary and interpretation of all ground water monitoring data

A groundwater monitoring plan was prepared by McIntosh & Perry in 2012 and submitted to the then titled MOE. As per the report, the Township had 2 monitoring wells installed on March 5, 2013 and samples for background counts were taken on March 6, 2013. Please find below the summary of the background samples and the samples taken in 2019. Samples are to continue to be sampled annually in March.

<200 organisms/100 mL

	Monitori	ng Well #1	Monitori	ng Well [#] 2
Parameter	Background results	2019 Sampling Results	Background Results	2019 Sampling Results
TOC	8 mg/L	9.3 mg/L	15.2 mg/L	8.5 mg/L
TP	3.8 mg/L	0.68 mg/L	0.47 mg/L	0.36 mg/L
TKN	0.83 mg/L	0.7 mg/L	1.12 mg/L	0.90 mg/L
Nitrogen	< 0.01 mg/L	0.08 mg/L	0.22 mg/L	0.20 mg/L
Nitrite	< 0.1 mg/L	< 0.1 mg/L	0.5 mg/L	< 0.1 mg/L
Nitrate	< 0.1 mg/L	< 0.1 mg/L	<0.1 mg/L	< 0.1 mg/L
E. coli	<2 cfu/100 mL	< 2/100 mL	<2 cfu/100 mL	< 2/100 mL

Table 2: Results from March 14, 2019 sampling:



C. Operational Problem Summary

Description of any operating problems encountered, and corrective actions taken

Collection System:

- > Excessive grease build-up in sanitary lift stations causing pump operation issues. Stations or floats were cleaned to return pumping operations.
- > Debris in wastewater impeding pump operations or check valve operations. Units taken out of service and debris removed or repairs prior to being placed back in service.
- > Excessive flows during spring thaw, with a large amount of infiltration noted at Bishop pumping station and at the main pumping station.
- > Issues noted with flow metering, meter found to be under reading, unit was re-calibrated multiple times, but issues continue to re-occur intermittently.
- Marginal number of residential sewer back-ups, most issues were on owners' side and caused by root penetration or lateral degradation.
- > Rodents found in electrical panel. Damaged wiring repaired by electrician and pest control was brought in monthly to vulnerable areas.

Treatment System:

- > Aeration by-pass isolation gate found to be leaking into Cell A. Divers used to install a plug in the by-pass piping located in Cell A.
- > Out of compliance for CBOD, TSS and TP from January until April. Historical trending observed when lagoons systems are under ice cover. Primary design of lagoon upgrades was completed and submitted for ministry approval. Township is actively seeking funding solution to ensure proposed upgrades are completed in a timely manner.
- > Environment Canada Officers on-site and tested for acute lethality, testing failed. Increased sampling was completed and MacIntosh Perry were retained to perform system analysis. Report was sent to Officer, but no response was ever received.
- Complaints for nuisance odors were observed during summer months.
- > Elevated levels cobalt, copper, zinc and toluene were found in PWQO testing completed in April and November.
- > Aerator operation issues caused by debris build up on impellers
- Issues noted with chemical addition found to be caused by crystallization of chemical in discharge piping. System piping cleaned or replaced as required.

D. Maintenance Summary

Summary of all maintenance carried out on any structure, equipment, apparatus, mechanism or thing forming part of the works.

Collection System:

- > Relined section of sanitary sewer main due to observed damage during CCTV field investigation.
- Lift Station cleaning (Jan, Apr, Aug, Oct, Nov)
- Pumping Station cleaning (Oct)
- Repair check valves at Leroux and Bishop station due to wear/tear
- > Replacement of defective equipment such as check valve, breakers, and chain blocks.
- > Sewage pump from Main Pumping Station sent out for refurbishment.
- Monthly Pumping Station pest control inspections
- Annual chain block and lifting device inspections (Feb)
- Annual gas analyzer calibrations (Oct)
- Annual Lift Station Level Monitor calibrations (Nov)



Treatment System:

- > Trapper retained to remove increased numbers of muskrats from nearby ditch areas prior to becoming nuisance
- > Minor repairs/part replacement to chlorination and dechlor system
- > Replacement of damaged entry gate
- > Repair to coagulant lines to prevent sewage backflow into Alum building
- > Lagoon flow adjustments to ensure freeboard was maintained during higher influent flows
- Annual sludge measurements completed by operational staff (Oct)
- Annual Lift Station Level Monitor calibrations (Nov)
- Annual fire extinguishers inspections (Dec)

E. Effluent Quality Control and Assurance

Summary of any effluent quality assurance or control measures undertaken in the reporting period

All sampling was performed within provincial guidelines by licensed operators. Effluent quality control and assurance measures were undertaken by a MOE certified laboratory, Caduceon Environmental laboratories and AGAT Laboratories, which conduct analysis for the Township.

F. Flow Measurement and Equipment Calibration

Summary of the calibration and maintenance carried out on all effluent monitoring equipment

Annual calibrations were completed by St- Laurent Instrumentation between October 2019 and December 2019. Calibrations were performed on all detection units (pumping station level indicators and chemical tank level indicators), hour meters/counters and flow sensing devices (magmeter, miltronics, etc).

G. Effluent Objectives

Description of effort made, and results achieved in meeting the effluent objectives of condition 6

All parameters between April and December were well below all Provincial MECP effluent guidelines, the Provincial MECP effluent design objectives and the Federal effluent sewage regulations limits. Between January and April, the following parameters were found to have exceeded the provincial and federal limits, CBOD5, TSS and TP. Table 3 shows a summary of the provincial sampling summary and Table 4 shows the federal sampling summary. Please refer to Appendix A full summary of flows, raw and treated effluent quality analysis for the Alexandria Sewage Treatment Works.



Table 3: 6(1) of the ECA states effluent objectives and 7(1-3) of the ECA stated the effluent limits are as follows:

			Provincial E	ffluent Paran	neters	
	CBOD₅	TSS	TP	Total Chlorine Residual	pH (maintained inclusive at all time)	E. Coli (geometric mean density)
	mg/L	mg/L	mg/L	mg/L		organisms/100 mL
Concentration Objective	25	25	0.4	non-detect	6.0 - 9.5	< 150
Concentration Limits	30	40	0.5	0.2	6.0 - 9.5	< 200
January	24.3	47.0	0.71	0.01	7.46	10.7
February	47.0	47.1	0.83	0.01	7.11	6.7
March	53.2	36.7	0.81	0.01	7.25	6.5
April	16.0	25.7	0.42	0.01	7.44	5.3
May	7.4	26.0	0.20	0.01	8.08	2.0
June	5.2	4.5	0.18	0.01	7.59	2.0
July	3.2	4.4	0.17	0.01	7.57	2.0
August	3.0	5.5	0.18	0.01	7.67	1.3
September	3.2	3.7	0.15	0.01	7.68	0.9
October	3.4	7.0	0.16	0.01	7.75	0.5
November	5.3	13.5	0.27	0.01	7.87	5.5
December	22.4	29.3	0.59	0.01	7.28	35.1
Annual	18.8	24.3	0.44	0.01	7.53	4.1

Table 4: Pat 1: Authorization to Deposit as per Wastewater System Effluent Regulations limits are as follows:

		Federal Efflue	nt Parameters	
	CBOD₅	TSS	Un-ionized Ammonia	Total Flows
	mg/L	mg/L	mg/L	m³
Concentration Limit	25	25	1.25	n/r
January - March	40.1	44.1	0.2	332,950
April - June	10.6	20.5	0.11	625,066
July - September	3.1	4.5	0.10	166,530
October - December	12.2	12.2	0.84	419,147

The annual average daily flow for 2019 was calculated to be 3,982 m³/day, and the maximum daily flow for the year was reported to be 14,966 m³/day. This represents 123% of the total rated capacity for this facility, which is out of compliance for the rated capacity of this facility. Please refer



to Figure 2 below and to Appendix A for a full summary of flows, for the Alexandria Sewage Treatment Works

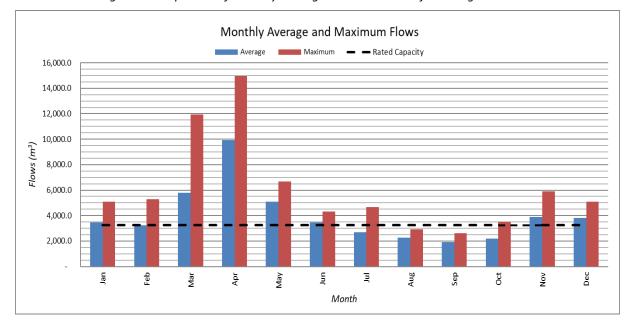


Figure 2: Comparison of Monthly Average and Maximum Influent Lagoon Flows

There were no reports made in regard to floating or settleable solids within the wastewater effluent. There were also no reports made that the effluent wastewater contained oil or any other substance that created a visible film, sheen, foam or discoloration to the receiving waters.

H. Sludge Accumulation

Tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and summary of the locations to where the sludge was disposed

A Sludge Management Plan was put into place in 2008. The sludge levels in Cells C were measured on October 28, 2019 and the levels in Cells A and B were measured on October 29, 2019. Cell A is divided into 21 locations, Cell B into 20 locations and Cell C into 27 locations, of these locations the following number of measurements were found to have exceeded the elevated sludge warning levels within the cells, 4 locations in Cell A, 19 locations in Cell B and 17 locations in Cell C. It was also found that the total sludge levels increased in all cells with Cell C noting the highest increase at 32 % and exceeding the total sludge volume for the first time since the sludge management plan was put into place. Cell B maintained an elevated total sludge volume as previously observed and increased 12% from the previous year.

I. Complaints

Summary of any complaints received during the reporting period and any steps taken to address the complaints

There were just over a dozen received complaints from homeowners, the majority of these complaints were in regard to sewage back-ups into private property. In 43% of the cases, the issues were on the homeowner's side resulting in private contracted services. In 36% of the cases the



laterals were inspected by CCTV and services were repaired by the township or arrangements were made for future repair by township. All other complaints were in regard to ground water infiltration or nuisance order complaints.

J. Bypass, Overflow, Spill, Abnormal Discharge Events

Summary of all bypass, spill or abnormal discharge event

There were 2 primary bypasses reported in 2019. Bypasses were due to heavy precipitation and/or pump failure. All bypasses were reported as soon as possible to the MOE through Spills Action Center; also spill report forms were completed for each incident and sent to Spills Action Center upon incident completion. Actions were taken to try to minimize the amount of sewage bypassed in each event. The total annual volume for bypasses was estimated to be 803.5m³, with the main pumping station metered contribution of 792 m³, and the estimated Bishop Station contribution was 11.5m³. Please refer to Bypass Summary report for full summary.

K. Other

Any other information the District Manager requires from time to time

EOS 2000

A. Equipment Summary

The date of installation and removal of the EOS-2000 unit within each unit

The unit was not installed throughout this reporting period.

B. Monitoring

Summary of all monitoring data (pH, BOD, TSS, Ammonia, TP, Sludge depth, Dissolved Oxygen)

Not applicable as unit was not installed throughout this reporting period.

C. Results Summary

An interpretation of all monitoring data (raw data, graphs, trend analysis and statistical analysis)

Not applicable as unit was not installed throughout this reporting period.

D. Recommended Actions

Recommendations regarding any changes to the monitoring program or operational changes of the EOS-2000 unit

No actions or changes required at this time.

NORTH GLENGARRY WATER WORKS WASTEWATER TREATMENT WORKS PERFORMANCE RESULTS

Municipality: North Glengarry Year: 2019

Project: Alexandria STP Receiving Stream: Delisle River **Description:**1 Pumping Station, 1 Aerated Cell, 3 Faculative Cells
Continuous Discharge with Phosphorous Removal Design Capacity: 3237 m³/day

		Flows		Bioche	mical O₂ D	emand	Sus	pended So	lids		Phosphorus	3
MONTH	Total Flows	Average Daily Flow	Maximum Daily Flow	Average Raw CBOD ₅	Average Effluent CBOD ₅	Percent Removal	Average Raw SS	Average Effluent SS	Percent Removal	Average Raw TP	Average Effluent TP	Percent Removal
	(m ³)	(m ³)	(m ³)	(mg/L)	(mg/L)	%	(mg/L)	(mg/L)	%	(mg/L)	(mg/L)	%
Jan	109,226	3,471	5,103	238.3	24.3	89.8	145.0	47.0	67.6	2.20	0.71	67.6
Feb	90,574	3,235	5,278	242.0	47.0	80.6	125.0	47.1	62.3	1.86	0.83	55.5
Mar	179,973	5,806	11,924	65.5	53.2	18.8	62.5	36.7	41.3	0.82	0.81	0.6
Apr	298,308	9,944	14966	61.5	16.0	74.0	91.0	25.7	71.7	1.24	0.42	66.1
May	158,359	5,108	6692	193.0	7.4	96.2	250.0	26.0	89.6	3.95	0.20	95.0
Jun	103,692	3,456	4301	404.5	5.2	98.7	220.0	4.5	98.0	3.39	0.18	94.8
Jul	82,822	2,672	4680	259.7	3.2	98.8	181.7	4.4	97.6	4.36	0.17	96.0
Aug	69,675	2,248	2907	306.5	3.0	99.0	132.5	5.5	95.8	2.29	0.18	92.0
Sep	57,909	1,930	2622	281.0	3.2	98.8	275.0	3.7	98.6	3.93	0.15	96.2
Oct	68,236	2,201	3493	237.0	3.4	98.6	225.0	7.0	96.9	2.46	0.16	93.6
Nov	117,225	3,908	5905	152.0	5.3	96.5	160.0	13.5	91.6	0.94	0.27	71.1
Dec	117,857	3,802	5097	192.0	22.4	88.3	225.0	29.3	87.0	2.22	0.59	73.4
Total	1,453,856											
Average		3,982		219.4	16.1	87	174.4	20.9	83	2.47	0.39	75
Maximum			14966	404.5	53.2	99	275.0	47.1	99	4.36	0.83	96
Criteria		3,237			30			40			0.50	

		Ammonia			TKN			Nitrite			Nitrate	
монтн	Average Raw Ammonia (mg/L)	Average Effluent Ammonia (mg/L)	Percent Removal %	Average Raw TKN (mg/L)	Average Effluent TKN (mg/L)	Percent Removal %	Average Raw Nitrite (mg/L)	Average Effluent Nitrite (mg/L)	Percent Removal	Average Raw Nitrate (mg/L)	Average Effluent Nitrate (mg/L)	Percent Removal %
Jan	n/a	9.06		19.30	15.06	22.0	n/a	0.09		n/a	0.1	
Feb	n/a	10.28		22.00	16.48	25.1	n/a	0.09		n/a	0.1	
Mar	n/a	10.04		11.55	16.68	-44.4	n/a	0.09		n/a	0.1	
Apr	n/a	4.51		9.40	19.30	-105.3	n/a	0.09		n/a	0.1	
May	n/a	1.95		18.20	3.76	79.3	n/a	0.09		n/a	0.6	
Jun	n/a	2.07		22.40	3.35	85.0	n/a	0.07		n/a	0.6	
Jul	n/a	2.72		27.27	4.64	83.0	n/a	0.09		n/a	6.7	
Aug	n/a	1.90		36.20	4.08	88.7	n/a	0.07		n/a	0.7	
Sep	n/a	1.87		32.20	3.48	89.2	n/a	0.09		n/a	0.5	
Oct	n/a	4.73		19.85	6.88	65.3	n/a	0.09		n/a	0.5	
Nov	n/a	7.47		11.15	10.60	4.9	n/a	0.09		n/a	0.3	
Dec	n/a	5.62		15.70	13.72	12.6	n/a	0.09		n/a	0.1	
Total												
Average		5.18		20.43	9.83	34		0.09			0.87	
Maximum	-	10.28		36.2	19.3	89		0.09			6.74	
Criteria												

Appendix A

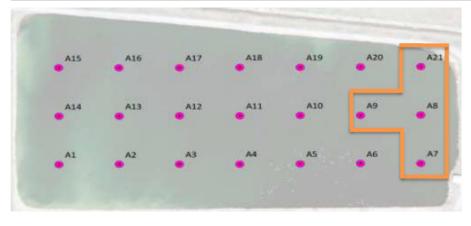
NORTH GLENGARRY WATER WORKS WASTEWATER TREATMENT PERFORMANCE RESULTS 2019

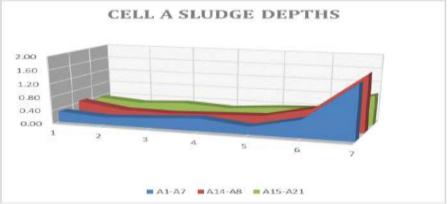
	Hydi	rogen Sulp	hide		E. coli		рН	Temp	Cl ₂
MONTH	Average Raw H ₂ S	Average Effluent H ₂ S	Percent Removal	Average Raw E.coli	Average Effluent E.coli	Percent Removal	Average Effluent pH	Average Effluent Temp	Average Effluent Cl ₂
	(mg/L)	(mg/L)	%	cts/100ml	cts/100ml	%		°C	mg/L
Jan	n/a	0.26		n/a	10.7		7.46	3.80	0.01
Feb	n/a	0.52		n/a	6.7		7.11	1.87	0.01
Mar	n/a	0.67		n/a	6.5		7.25	2.23	0.01
Apr	n/a	0.15		n/a	5.3		7.44	5.63	0.01
May	n/a	0.02		n/a	2.0		8.08	13.02	0.01
Jun	n/a	0.02		n/a	2.0		7.59	19.83	0.01
Jul	n/a	0.04		n/a	2.0		7.57	24.52	0.01
Aug	n/a	0.01		n/a	1.3		7.67	22.70	0.01
Sep	n/a	0.01		n/a	0.9		7.68	18.30	0.01
Oct	n/a	0.04		n/a	0.5		7.75	11.46	0.01
Nov	n/a	0.07		n/a	5.5		7.87	3.75	0.01
Dec	n/a	0.12		n/a	35.1		7.28	4.40	0.01
Total									
Average		0.16			3.4		7.62	13.06	0.01
Maximum		0.67			35.1		8.68	26.80	0.01
Criteria					200		6.0 - 9.5		0.02

Appendix B

Cell A

											Cell	A- Samp	le Point	Sludge V	olume m	3									Total Sludge Volume		Sludge Volume
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				(m³)	Warning Trigger	%
17-Sep-09	1224	318	584	524	1106	656	1116	902	911	608	608	405	608	565	1413	1235	576	1049	593	214	730				15943		30.4
11-May-10	291	185	266	131	316	394	921	564	405	142	405	203	203	113	558	309	144	131	119	150	355				6302		12.0
11-Nov-10	204	265	398	1180	395	918	418	857	911	304	142	344	243	271	744	370	288	577	356	321	522				10028		19.1
12-Dec-11	437	450	266	1311	395	1312	921	857	770	547	547	405	405	339	632	1080	778	446	522	428	689				13534		25.8
24-Oct-12	379	344	266	262	658	787	1423	1037	608	567	506	770	263	1153	558	556	1037	393	309	321	1169				13364		25.5
06-0ct-14	525	397	717	550	1000	1758	2399	2187	871	466	365	446	567	543	558	926	922	1101	997	684	1294				19271		36.8
04-Nov-15	437	397	398	393	395	787	837	1375	608	608	304	304	608	678	558	926	864	1599	1448	321	960				14804		28.2
18-May-16	787	847	1274	1127	1922	2440	4017	1871	830	770	365	608	547	452	1190	525	490	1651	1021	919	2358				26011		49.6
17-Nov-16	641	609	611	603	605	1653	3850	744	668	668	466	770	243	611	818	1173	346	708	902	599	1315				18601		35.5
01-Jun-17	379	477	743	865	869	1679	2762	2232	891	668	466	263	263	633	1227	864	230	79	309	492	376				16767		32.0
15-Nov-17	350	344	611	734	605	1784	2288	744	972	567	-243	162	142	520	260	556	518	996	309	1347	1294				14859		28.3
07-Jun-18	816	79	823	682	1527	2047	3013	1420	1175	365	668	668	263	633	669	1729	720	734	831	1026	1315				21202		40.4
29-0ct-19	933	609	797	996	605	1391	4436	3810	1276	668	567	466	506	1018	1413	864	1008	708	878	919	1899				25766		49.1
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0		0.0
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0		0.0



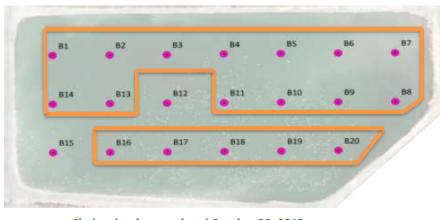


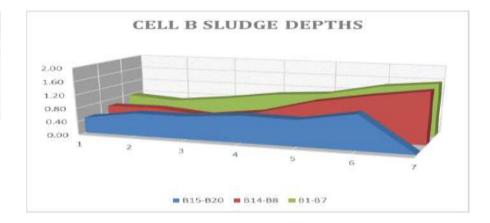
- Sludge depths completed October 29, 2019
- Cell A currently at 49.1% of allowable volume, this value is an increase of 8.7% from previous reading
- 4 points were over high-level trigger
- Higher elevation of sludge build-up located in north-east corner

Appendix B

Cell B

											Cell	B- Samp	le Point	Sludge V	olume m	3								Total Sludge Volume		Sludge Volume
Date	1	. 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				(m³)	Warning Trigger	%
17-Sep-09	753	995	844	1123	1264	1663	4850	2717	1438	1742	608	810	608	933	368	720	780	1067	846	1850				25978		51.0
11-May-10	452	1081	844	1067	3398	3354	3861	3413	1843	1215	770	770	608	542	490	480	1170	1404	1693	1388				29841		58.6
11-Nov-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0		0.0
12-Dec-11	2891	853	1069	1853	2836	5045	64	112	1013	2045	911	668	1337	651	49	959	1118	927	1778	3917				30096		59.1
24-Oct-12	1235	1308	1434	1488	1207	1968	2202	2740	1337	668	567	608	567	651	809	480	780	1629	2003	1264				24945		49.0
06-Oct-14	2168	2190	2391	2724	3229	4103	3446	1639	2592	1762	1053	1053	911	1345	1642	1247	1561	2303	2173	2991				42522	Total Sludge Volume High	83.5
04-Nov-15	2771	910	1744	899	3033	3687	3765	2201	2491	1883	1458	1154	749	911	1275	1127	1613	2303	2314	2097				38383	Total Sludge Volume High	75.3
18-May-16	2048	1934	2897	3678	4437	2994	5871	3211	2795	1985	2390	1580	911	1019	1593	1871	1743	2246	2173	3547				50921	Total Sludge Volume High	99.9
14-Nov-16	2048	1650	3319	2892	3594	4241	4244	1639	2187	1985	1377	1053	851	1995	1520	1367	1613	2190	2314	2991				45069	Total Sludge Volume High	88.5
01-Jun-17	2048	1650	1350	2050	3033	2744	4276	2987	1883	2693	1883	1175	1175	1041	1544	1271	1248	1769	2342	2560				40721	Total Sludge Volume High	79.9
16-Nov-17	1144	1081	2194	2050	3454	3964	2968	2201	1883	2187	1782	1175	972	1019	4094	1751	1899	2050	2624	2683				43173	Total Sludge Volume High	84.7
07-Jun-18	1897	2076	2616	3313	3454	1746	2617	2201	1458	1681	1580	1175	972	1019	1593	2351	1769	1881	2596	3176				41170	Total Sludge Volume High	80.8
29-Oct-19	2349	1934	2334	2892	3173	3964	5042	3458	2693	2187	1377	1013	1276	1345	1152	1631	1769	2246	2173	3176				47184	Total Sludge Volume High	92.6
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0		0.0
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0		0.0



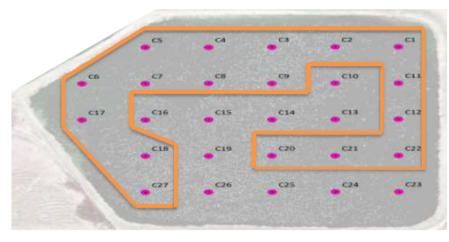


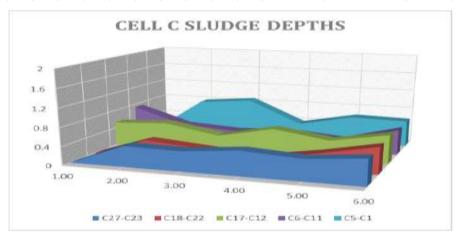
- Sludge depths completed October 29, 2019
- Cell B currently at 92.6% of allowable volume and exceeds the total sludge volume trigger, this value is an increase of 11.8% from previous reading
- 19 points were over high-level trigger
- Higher elevation of sludge build-up located in north side of the cell and through part of the south side of the cell. Highest elevations are from the center
 to east end of the cell

Appendix B

Cell C

											Cell	C- Sampl	e Point	Sludge V	olume m	3												Total Sludge Volume		Sludge Volume
Date	1	. 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	(m³)	Warning Trigger	%
17-Sep-09	311	837	615	913	1425	679	770	567	668	608	615	432	709	344	405	446	402	594	446	506	608	362	305	352	798	602	1172	12291		18.6
11-May-10	467	419	196	554	1344	113	608	203	506	1013	329	324	304	203	101	304	709	350	203	405	101	213	457	146	285	410	533	8651		13.1
11-Nov-10	373	419	475	830	1909	340	608	405	405	1438	549	367	203	344	405	446	591	699	446	344	405	319	457	0	570	410	533	11594		17.5
12-Dec-11	840	921	1397	1107	1479	747	1681	1114	446	506	373	540	405	446	344	405	1181	594	506	506	506	1171	457	439	342	465	959	15538		23.5
24-0ct-12	933	837	1146	1135	1102	815	729	1033	567	506	439	324	466	365	365	567	709	874	365	304	304	532	457	879	370	766	533	13579		20.5
06-0ct-14	1960	1395	1537	2574	2285	1924	1114	1296	1053	851	1405	1382	608	891	851	668	1772	1224	628	851	405	1703	2348	1025	1054	547	1456	26267 *		39.7
04-Nov-16	2085	2037	1761	3266	4517	2309	2187	1073	668	668	703	1123	446	446	142	648	1347	944	668	668	648	1107	1586	1084	1054	876	1491	27704		41.9
18-May-16	2894	2316	2878	3404	3441	1064	851	871	567	770	1823	929	668	446	608	567	1229	1993	749	648	547	1618	1738	1084	1054	876	1491	28713		43.4
14-Nov-16	2116	781	1202	1744	3119	1200	871	567	446	871	922	1361	567	770	567	466	756	1469	668	648	446	1341	1890	1318	1196	1833	2024	21108		31.9
01-Jun-17	1494	1339	1649	1218	2258	1879	972	1296	871	567	1713	1577	972	770	466	871	898	1503	365	567	972	1235	1616	1113	1082	766	1527	23242		35.1
17-Nov-17	2427	2762	3465	3958	3038	1766	1377	1073	871	567	1493	713	567	668	567	446	1016	1503	668	466	668	809	1768	1113	940	903	1349	29411		44.5
07-Jun-18	1805	1702	1062	2435	2097	1652	770	628	790	506	1208	1361	871	1215	770	1175	1229	1329	567	365	709	1235	1677	1318	1510	1176	1598	23534		35.6
28-Oct-19	3516	3292	3717	3542	4517	3237	2795	2086	1701	1175	2921	1469	770	668	871	1073	2433	2378	1175	1175	1478	1980	2531	1699	1510	1587	2414	44508	Total Sludge Volume High	67.3
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.0
00-Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.0





- Sludge depths completed October 28, 2019
- Cell C currently at 67.3% of allowable volume and exceeds the total sludge volume trigger, this value is an increase of 31.7% from previous values
- 17 points were over high-level trigger
- Higher elevation of sludge build-up located in north, east and west side of the cell, with the highest elevation be located on the north side.

Facility Name: Alexandria WWTP Report Year: 2019

				17ebr	nt i cai.	2013					
1.0- Provide the each event.	he following information for e	each bypass th	nat occure at e	each sewage p	oumping statio	on or treatmen	nt plant bypass	location for the	reporting year	. Start with a	new line for
Гуре:											
Primary Bypass:	the discharge of raw se	wage subjec	t to no treatn	nent							
Secondary	except grit removal and				- (()		()	d			
Bypass:	the discharge of sewag	e that has un	ideraone soli	ds removal a	at the primar	v clairifiers b	out bypassed	the secondar	/ treatment r	rocess	
							Reason 1: Heavy	5: Sewer			
						Disinfect:		Problems			
		Type:				2.0	2: Snow Melt				
		турс.				Y: Yes	3: Equipment	Failure			
		P: primary				N: No	Failure	Design			
		S: Secondary	/			U: Unknown	4: Equipment Maintenance	8: Other			
Date	Location	Туре	Start Time	Duration	Volume	Disinfect	Reason Code		Sample	Results	
dd-mmm-yy	Location	P/S	Start Time	Hours	m ³	Y/N/U	Treason code	BOD5 (mg/L)	SS (mg/L)	TP (mg/L)	E. Coli (ma/L)
20-Apr-19	Bishop Pumping Station By-Pass	Р	11:45	14.42	11.5	N	1	5.8	19.8	0.17	7800
01-Nov-19	Main Pumping Station Overflow	Р	01:38	4.87	792	N	1 & 3	3.6	26.7	0.32	33666

Facility Name: Alexandria WWTP Report Year: 2019

2.0- Pumping Station and Plant Bypass Monthly Summary

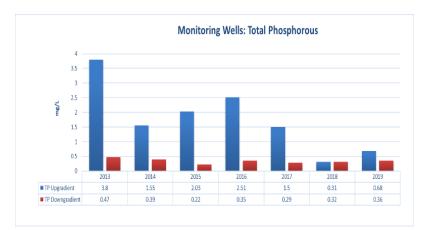
	Pr	imary Bypas	SS	Se	condary Byp	oass
Month	No. of Days	Duration	Volume	No. of Days	Duration	Volume
	(days)	(hours)	(m ³)	(days)	(hours)	(1000m ³)
January						
February						
March						
April	0.6	14.42	11.5			
May						
June						
July						
August						
September						
October						
November	0.2	4.87	792			
December						
Total			803.5			
Volume of Bypas Daily	ss as % of AA / Flow	DF*	0.05528			_

*ADDF(m³/d) = 3982 %= ((Volume of Bypass/ADDF)/365)*100

Comments Area- Pumping Stations and Plant Bypasses:
*AADF(Annual Average Daily Flow) taken from 207 annual performance sheet

Appendix D

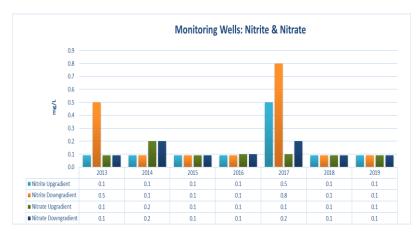
Alexandria Monitoring Wells Sampling



Total Phosphorous downgradient appears to be significantly lower than the upgradient results. It is worth noting that the sampling 2019 results are significantly lower than historically observed, but slightly increased over 2018 values.

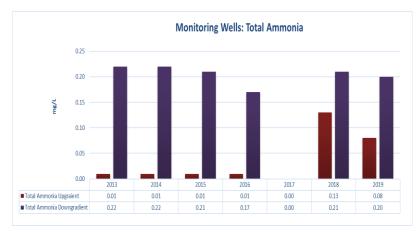


E. coli results downgradient and upgradient appear to be minimal, apart from an elevated sample in 2014. All results have been non-detect (represented by a reading of 0.1) or < 2, (represented by a reading of 2.0).



Nitrite/Nitrate samples have been minimal in nature, with most samples results indicating < 0.1mg/L. Increased levels for nitrites were visible in 2013 and 2017, while for nitrates increased levels were noted in 2014 and 2017. Current trending does not indicate any potential issues to note at this time.

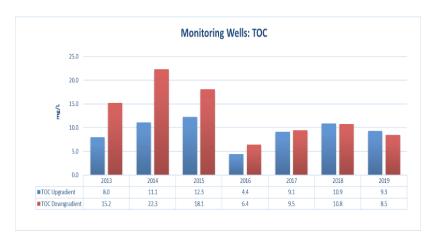
Appendix D



Nitrogen (Total Ammonia) samples have been marginal in nature, but all downgradient results are significantly higher than the upgradient samples. It is worth noting that due to operational error the total ammonia parameter was removed form the chain of custody in 2017, so no value was reported.



As per historical trending, the TKN values from 2019 are slightly higher in the downgradient samples, with exception to 2016 and 2018 values. Overall the samples downgradient were decreasing over time but the 2019 values show a 0.3mg/L increase from 2018.



TOC values were initially observed to be significantly higher in the downgradient well, but since 2018 the values have been roughly the same or marginally higher than the upgradient well values. The 2019 values have decreased from 2018 values.