

A background image showing a close-up of a water tap with water flowing into a clear glass. The water is captured in motion, creating a dynamic, splashing effect. The image is in a light blue and white color scheme, matching the report's theme.

The Township of North Glengarry Alexandria Drinking Water System 2024 Annual and Summary Report

In compliance with O. Reg 170/03, section 11 and O. Reg 170/03 schedule 22

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Section 1: Introduction

This report is an annual summary of water quantity, quality system information, system operations and major expenditures for the Alexandria Water Treatment plant and distribution system during the reporting period of January 1, 2024, to December 31, 2024. It was prepared in accordance with section 11 and schedule 22 of the of Ontario's Drinking Water Systems Regulation O. Regulation 170/03.

Section 2: System Description

The Alexandria Drinking Water System is made up of a surface water treatment plant, two elevated storage towers, and two separate distribution systems connected by a transmission main and booster station. All components are located within the North Glengarry municipal boundary. The drinking water system is categorized as a large municipal residential system, with the water treatment plant rated as a class 3 facility and the distribution system rated as a class 2 system, through the Ministry of Environment, Conservation and Parks.

The water treatment plant is located within the town limits of Alexandria, adjacent to the Mill Pond, which is utilized as the source water to supply the residential and commercial users within Alexandria and Maxville with safe and reliable drinking water.

The distribution system is comprised of three major components, the Alexandria Distribution System, The Alexandria-Maxville Transmission Main/Booster Station and the Maxville Distribution System. Each distribution system is located within the individual town limits of Alexandria and Maxville, with the transmission main connecting the two. The booster station is utilized to monitor and increase the chloramine residuals, as well as to pump water to the Maxville Water Tower to supply the distribution system.

Throughout 2010-2011, upgrades were completed throughout the Alexandria Water Treatment Plant and the Alexandria Water Tower to strengthen the treatment and distribution processes. In 2020, the Alexandria-Maxville Transmission Main/Booster Station and the Maxville Distribution was placed into service as part of the Alexandria Drinking Water System.

Section 3: Process and Equipment Description

Raw Water Intake

The Mill Pond is part of Garry River system, which is monitored through the Raisin Region Conservation Authority and levels are controlled by dam systems to ensure levels will be sufficient to supply the raw water demands and to provide recreational water usage. The raw water is conveyed into the raw well through gravity and as such, the levels in the raw well are heavily influenced by water levels in the Mill Pond.

The raw water intake consists of a screened intake structure located in the Mill Pond approximately 425m southwest of the water treatment plant, positioned just after the river confluence area. The intake piping runs from the intake structure, east through the Island Park, then north on Park Avenue, before turning east again to enter the water plant. The influent flows are regulated through the Permit to Take Water, allowing for a maximum daily intake total of 5,616m³. At any time if the flows are near the Permit

to Take Water (PTTW) restrictions, alarms will notify operational staff, who will respond and ensure the limits are not exceeded.

Low Lift Chamber/Raw Water Well

There are two coarse screens, located between the raw well and the low lift chamber to provide a coarse screening prior to pumping. The low lift pumps consist of two vertical turbine pumps, rated at 6,200m³/day at 14.6m total dynamic head (TDH). Each pump is controlled through the SCADA system and runs based on process limits. A flow meter and electric valve are used to control the flows from the low lift pumps, into the flocculation tank, based on process limits through the SCADA system.

Potassium permanganate is typically added to the raw well only during cold water temperatures in order to oxidize manganese, which generally only increase under ice cover. The chemical addition is only applied when the water is below 13°C as required, based on treated and raw water monitoring. The application is not utilized above 13°C due to potential oxidation of harmful algae blooms which can occur in warmer water.

Coagulation/Flocculation/Sedimentation

Coagulant and polymer feed systems are in place at the water treatment plant to provide the initial sediment removal from the raw water. The coagulant feed enters the process just after the low lift pumps prior to an in-line static mixer and the polymer feed is located after mixer. The water then flows through a flow meter and past control valves before entering the first flocculation tank.

Flows are directed through four flocculation tanks before heading to the sedimentation process. Each tank is equipped with an agitator for slow and gentle mixing and level monitoring equipment is located at the outlet of tank 2 and tank 4, which are used to control flows from the low lift pumps and monitor settling basin levels.

Process water from the flocculation tanks is directed into four separate settling basins via a common header channel, these basins are utilized to reduce the flow velocity and allow the flocculant and sediment to fall out of suspension. These basins contain a baffle wall and conventional tube settlers to aid in flocculant and sediment removal. Each basin is also equipped with sludge removal equipment which is through the SCADA process setpoint.

Filtration

The filtration process consists of four filters operating in parallel, and each filter is composed of GAC, silicate sand, an underdrain system and backwash equipment. The filters run based on demand through the SCADA process setpoints. All filters also contain monitoring equipped to monitor media pressure loss, effluent turbidity and water levels. Effluent flow from filters is directed to the clearwell for disinfection through a main header pipe.

The backwash system is used to clean the filter media as required through the SCADA program trigger points, which would initiate an automatic backwash process. These points including time in operation, effluent turbidity levels, and filter media pressure loss. All backwash effluent water is directed to the sludge holding tank and then directed to the sanitary sewer system.

Disinfection

Chlorine gas is used as the only disinfectant in the water treatment process and is injected into the header pipe from the filters prior to entering the clearwell. The clearwell is divided into two wells (east

and west), with each well divided into smaller sections, which are labelled 1-4. The wells are interconnected through piping or sluice gate opening.

Influent water typically enters clearwell 4 and travels towards clearwell 1, which allows for the appropriate contact time for disinfection requirements. After disinfection is achieved, the water is pumped into the distribution and ammonia sulfate is added to the chlorinated water to create a combined chlorine residual. The treated water is then metered, and chlorine residual are verified as it enters the distribution.

Distribution

The Alexandria distribution system is categorized as a class 2 distribution system. It is comprised of distribution piping in within Alexandria and Maxville. The section within Alexandria contains 28.2kms of water mains of varying sizes, a 3,000m³ capacity elevated storage tank, located in the northwest section of Alexandria, 145 fire hydrants and approximately 1,500 service connections. The Maxville distribution system is made up of 10.2kms of water mains, a 1,500m³ capacity elevated storage tank, located on the southern boundary of Maxville, 82 fire hydrants and approximately 450 service connections. The two elevated storage are utilized for pressure monitoring, water storage, water supply and are both equipped with flow metering and residual monitoring equipment.

A 20.4 kms transmission main ties the 2 distribution systems together. The transmission main contains 17 fires hydrants, 32 air relief valves and a booster station, which is used to supply water to the Maxville Water Tower and to boost chloramine residuals.

Automated Monitoring and Control

A fully automated SCADA system was installed in 2011 and in 2020 it the system was upgraded and expanded to include the Maxville Booster Station and Maxville Water Tower. This system is capable of monitoring, controlling, and recording all the plant processes and data, such as flows, filter backwash, chemical dosing and parameter monitoring. The system is also fully alarmed with multiple alarm set points, so that if any parameter is exceeded an alarm will be triggered on the SCADA desktop and through the auto dialer system. The on-call operator is then notified by the monitoring centre, which operates 24 hours a day, 365 days a year.

Emergency Power

Multiple generators are in place at key locations throughout the drinking water system to ensure treatment operations are always sustained and system monitoring is maintained. All units are equipped with automatic transfer switch for power transfer during the event of utility power fail. Most generators are capable to sustain the systems for a minimum of 24hrs, allowing time for operational staff and management to assess the magnitude of the outage and make arrangement to sustain the systems if required.

Additional Equipment.

All piping, valves, controls, and appurtenances along with associated mechanical and electrical equipment not mentioned in the description but are utilized to make up the system.

Section 4: Flow Summary

In order to assess the rated capacity of the WTP in terms of meeting existing and planned uses of the system, a summary of the treated flow rates of water supplied during this period covered by this report was prepared and is presented below. In accordance with License #181-101, the Alexandria Drinking Water System was not operated to exceed the rated capacities of the treatment system. The permit to take water allows for a maximum daily raw flow of 5,616 m³/day and the water works license allows for a maximum treated water flow of 8,014m³.

The average treated daily flow for 2024 is calculated to be 1,707m³ and the maximum treated daily flow for the year was reported to be 2,699m³. This represents 21.3% of the total plant rated capacity. Refer to the appendices for full 2024 data summary

2024 Treated Flow Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum Daily Flow (m ³)	1,915	2,144	1,993	1,814	2,341	2,699	2,412	2,228	2,129	2,042	1,782	1,769
Monthly Average Flow (m ³)	1,610	1,733	1,630	1,593	1,882	1,925	1,871	1,833	1,733	1,663	1,481	1,514
Monthly Average Daily Maximum Instantaneous Flow (m ³ /sec)	0.041	0.041	0.041	0.041	0.041	0.042	0.042	0.041	0.041	0.041	0.042	0.041
Rated Maximum Daily Flow for the approved system										8014 m ³ /day		
Rated Maximum Instantaneous Flow										0.093 L/s		

Section 5: Sampling and Laboratory Analysis Summary

The Township of North Glengarry uses Caduceon Laboratories as the primary provider for all sample analysis. Caduceon Laboratories is an accredited laboratory under the Ministry of the Environment, Conservation and Parks requirements. Refer to table below for all results as required.

2024 Microbiological Testing Completed as per Schedule 10 of O. Reg 170/03					
Location	Number of Samples	Range of E. Coli or Fecal Results	Range of Total Coliform Results	Number of HPC Samples	Range of HPC Results
Raw Water	55	0 - 161	0 - 130	0	
Treated Water	54	0 - 0	0 - 0	54	< 2 - 52
Distribution Water	230	0 - 0	0 - 0	210	< 2 - 202

2024 Operational Testing as per Schedule 7 of O. Reg 170/03		
Parameter	Number of Grab Samples	Range of Results unit of measure is mg/L unless otherwise indicated
Raw Turbidity	249	0.48 – 5.97 NTU
Free Chlorine	Continuous	1.00 – 3.63
Distribution Combined Chlorine	Continuous	0.58 – 2.51
Fluoride <i>(if DWS provides fluoridation)</i>	n/a	

Additional Sampling or Testing in Accordance with Municipal License Requirement or Order				
Date of Order or Approval Amendment	Parameter	Date Sampled	Result	Unit of Measure
March 16, 2021	NDMA	15-Jan-2024	0.0040	µg/L
		15-Apr-2024	0.0062	µg/L
		22-Jul-2024	0.0050	µg/L
		15-Oct-2024	0.0077	µg/L

2024 Summary of Inorganic Chemical Parameters Tested as per Schedule 13 of O. Reg 170/03 <i>(1ug/L = 0.001mg/L; RAA=Rolling Annual Average)</i>					
Parameter	Sample Date	Standard (maximum concentration)	Result Value	Unit of Measure	Exceedance
Antimony	19-Sep-2024	0.006 mg/L	< 0.0001	mg/L	No
Arsenic	19-Sep-2024	0.01 mg/L	0.0002	mg/L	No
Barium	19-Sep-2024	1.0 mg/L	0.014	mg/L	No
Boron	19-Sep-2024	5.0 mg/L	0.007	mg/L	No
Cadmium	19-Sep-2024	0.005 mg/L	< 0.000015	mg/L	No
Chromium	19-Sep-2024	0.05 mg/L	< 0.0010	mg/L	No
Mercury	19-Sep-2024	0.001mg/L	< 0.00002	mg/L	No
Selenium	19-Sep-2024	0.01 mg/L	< 0.001	mg/L	No
Uranium	19-Sep-2024	0.02 mg/L	< 0.00005	mg/L	No

2024 Summary of Organic Chemical Parameters Tested as per Schedule 13 of O. Reg 170/03 <i>(1ug/L = 0.001mg/L; RAA=Rolling Annual Average)</i>					
Parameter	Sample Date	Standard (maximum concentration)	Result Value	Unit of Measure	Exceedance
Alachlor	19-Sep-2024	0.005 mg/L	< 0.3	µg/L	No
Atrazine + N-dealkylated metabolites	19-Sep-2024	0.005 mg/L	< 0.5	µg/L	No
Azinphos-methyl	19-Sep-2024	0.02 mg/L	< 1	µg/L	No
Benzene	19-Sep-2024	0.001 mg/L	< 0.5	µg/L	No
Benzo(a)pyrene	19-Sep-2024	0.00001 mg/L	< 0.006	µg/L	No
Bromoxynil	19-Sep-2024	0.005 mg/L	< 0.5	µg/L	No
Carbaryl	19-Sep-2024	0.09 mg/L	< 3	µg/L	No
Carbofuran	19-Sep-2024	0.09 mg/L	< 1	µg/L	No

2024 Summary of Organic Chemical Parameters Tested as per Schedule 13 of O. Reg 170/03					
(1ug/L = 0.001mg/L; RAA=Rolling Annual Average)					
Parameter	Sample Date	Standard (maximum concentration)	Result Value	Unit of Measure	Exceedance
Carbon Tetrachloride	19-Sep-2024	0.002 mg/L	< 0.2	µg/L	No
Chlorpyrifos	19-Sep-2024	0.09 mg/L	< 0.5	µg/L	No
Diazinon	19-Sep-2024	0.02 mg/L	< 1	µg/L	No
Dicamba	19-Sep-2024	0.12 mg/L	< 1.0	µg/L	No
1,2-Dichlorobenzene	19-Sep-2024	0.2 mg/L	< 0.5	µg/L	No
1,4-Dichlorobenzene	19-Sep-2024	0.005 mg/L	< 0.5	µg/L	No
1,2-Dichloroethane	19-Sep-2024	0.005 mg/L	< 0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	19-Sep-2024	0.014 mg/L	< 0.5	µg/L	No
Dichloromethane	19-Sep-2024	0.05 mg/L	< 5	µg/L	No
2-4 Dichlorophenol		0.9 mg/L	< 0.2	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	19-Sep-2024	0.1 mg/L	< 1.0	µg/L	No
Diclofop-methyl	19-Sep-2024	0.009 mg/L	< 0.9	µg/L	No
Dimethoate	19-Sep-2024	0.02 mg/L	< 1	µg/L	No
Diquat	19-Sep-2024	0.07 mg/L	< 5	µg/L	No
Diuron	19-Sep-2024	0.15 mg/L	< 5	µg/L	No
Glyphosate	19-Sep-2024	0.28 mg/L	< 25	ug/L	No
Malathion	19-Sep-2024	0.19 mg/L	< 5	ug/L	No
2 Methyl-4 Chlorophenoxyacetic (MCPA)	19-Sep-2024	0.1 mg/L	< 10	ug/L	No
Metolachlor	19-Sep-2024	0.05 mg/L	< 3	ug/L	No
Metribuzin	19-Sep-2024	0.08 mg/L	< 3	ug/L	No
Monochlorobenzene	26-Sep-2023	0.08 mg/L	< 0.5	ug/L	No
Paraquat	19-Sep-2024	0.01 mg/L	< 1	ug/L	No
Pentachlorophenol	19-Sep-2024	0.06mg/L	< 0.2	ug/L	No
Phorate	19-Sep-2024	0.002 mg/L	< 0.3	ug/L	No
Picloram	19-Sep-2024	0.19 mg/L	< 5.0	ug/L	No
Polychlorinated Biphenyls (PCB)	19-Sep-2024	0.003 mg/L	< 0.05	ug/L	No
Prometryne	19-Sep-2024	0.001 mg/L	< 0.1	ug/L	No
Simazine	19-Sep-2024	0.01 mg/L	< 0.5	ug/L	No
Terbufos	19-Sep-2024	0.001 mg/L	< 0.5	ug/L	No
Tetrachloroethylene	19-Sep-2024	0.03 mg/L	< 0.5	ug/L	No
2,3,4,6-Tetrachlorophenol	19-Sep-2024	0.1 mg/L	< 0.2	ug/L	No
Triallate	19-Sep-2024	0.23 mg/L	< 10	ug/L	No
Trichloroethylene	19-Sep-2024	0.005 mg/L	< 0.5	ug/L	No
2,4,6-Trichlorophenol	19-Sep-2024	0.005 mg/L	< 0.2	ug/L	No
Trifluralin	19-Sep-2024	0.045 mg/L	< 0.5	ug/L	No
Vinyl Chloride	19-Sep-2024	0.002 mg/L	< 0.2	ug/L	No

Inorganic or Organic Parameters that exceeded half the standard prescribed in Schedule 2 and 3 of O. Reg 169/03 (requiring increased monitoring for future sampling)			
Parameter	Result Value	Unit of Measure	Date of Sample
n/a			

2024 Summary of Additional Chemical Parameters Tested as per Schedule 13 of O. Reg 170/03 (1ug/L = 0.001mg/L; RAA=Rolling Annual Average)					
Parameter	Sample Date	Standard (maximum concentration)	Result Value	Unit of Measure	Exceedance
THM (RAA)	13-Jan-2025	0.100 mg/L	75	ug/L	No
Haloacetic Acid (RAA)	13-Jan-2025	0.08 mg/L	51.7	ug/L	No
Nitrate	13-Jan-2025	10.0 mg/L	0.06	mg/L	No
Nitrite	13-Jan-2025	1.0 mg/L	< 0.05	mg/L	No
Sodium	12-Jan-2022	20 mg/L	12.9	mg/L	Yes
Fluoride	12-Sep-2022	1.5 mg/L	< 0.1	mg/L	No

2024 Summary of Lead Testing as per Schedule 15.1 of O. Ref 170/03 (1ppm = 1mg/L)							
Location/ Type	Number of Samples	Range of Lead Results	Unit of Measure	Range of Alkalinity Results	Unit of Measure	Average pH	Exceedance
Residential Plumbing	0						
Non-Residential Plumbing	0						
Distribution	3			77 - 102	mg/L	6.73	No

Section 6: Significant Expenses Incurred

There were 6 capital works projects during the 2024 budgetary period. All significant expenses were regarding maintenance or equipment replacement, as described below.

Significant expenses included,

- Install required equipment
- Repair required equipment
- Replace required equipment
- None during this period

Briefly Describe Incident and/or Expenses Incurred:

No.	Project Name	Description	Cost
1	Dominion St Water Main Replacement	<ul style="list-style-type: none"> • Replace the existing 100mm cast iron main with 150mm PVC • work completed on Dominion St South and Derby St East to improve flows and water quality • work completed over 8 weeks 	\$ 729,579
2	Bulk Fill Station	<ul style="list-style-type: none"> • Install bulk fill station for tankers or large tanks 	\$ 98,131
3	Locating and	<ul style="list-style-type: none"> • replace equipment with newer technology 	\$ 27,271

No.	Project Name	Description	Cost
	Correlator Equipment	<ul style="list-style-type: none"> improve locating leaks in system to help reduce water loss 	
4	Chlorine System Upgrades	<ul style="list-style-type: none"> Replace defective chlorinators and switch over equipment 	\$ 22,901
5	Valve and Hydrant Proactive Replacement	<ul style="list-style-type: none"> Annual budget item to ensure infrastructure renewal is on-going throughout the distribution system. 	\$ 17639.00

Section 7: Compliance with Licenses, Permits, Approvals and Orders

The operating authority strives to remain compliant with the Drinking Water Quality Management Standard 2.0, the Safe Drinking Water Act and all associated procedures or a guideline. This approach is utilized for creating a multi-barrier approach to ensure safe drinking water. The following table is a listing of all permits and or licenses that apply to this system:

Description	Number	Version	Issue Date	Expiry Date
Water Works License	181-101	3	March 16, 2021	March 16, 2026
Water Works Permit	181-201	4	March 16, 2021	March 16, 2026
Permit to Take Water	2285-CEDRDN		May 26, 2022	May 14, 2032
Water Treatment Classification	1463		October 28, 2005	n/a
Water Distribution Classification	2007		April 8, 2023	n/a

The Alexandria Drinking Water System and Operating Authority currently upholds the accreditation certification by maintaining and promoting the current Quality Management System currently in place. The Operational Staff actively participates in all system auditing requirements, and the annual system inspections as conducted through the Ministry of the Environment. All conformance and compliance issues identified throughout these system reviews have been addressed and are in the process of being corrected.

During this period, all raw water flows were compliant with all permits to take water and are currently at 34.2% of the allowable limit. All treated flows were well within the rated capacity for the system and as previously stated the system is currently only at 21.3% of the rated capacity.

All disinfection equipment was operated in such a manner that all license requirements were met at all times. The treatment system was operated at all times to ensure compliance with the Procedure for Disinfection of Drinking Water in Ontario.

All equipment was maintained as per operations manuals and/or calibrated annually by a certified technician

Section 8: Non-Compliance with Licenses, Permits, Approvals and Orders

There were 2 instances of minor non-conformances in regard to documentation currency noted during the annual internal audit during this report period. All documentation was updated as per requirements and all corrective actions were closed. There were no non-conformances noted during the annual external audit.

Parameter	Regulatory Document	Requirement	Date of Correction
Documentation Currency	-The DWQMS Operational Plan, section 2 QMS System Policy	-ensure open communication through various levels from the consumer to the owner concerning matters of drinking water quality -communication board for operational staff was not up to date	31-Oct-2024
Documentation Currency	-The QMS Operational Plan, section 18 Emergency Management	-QMS SYS-T13 was not updated to reflect staffing changes	30-Oct-2024

There was 1 instance of non-compliance reported in association to regulatory sampling during this period. Sampling results indicated that samples were mislabelled. All corrective actions were followed as advised through the MECP and the EOHU.

2024 Reported Incident in accordance to subsection 18(1) of the Safe Drinking Water Act or Schedule 16 of O. Reg 170/03					
Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
31-Jan-2024	E.coli & Total Coliform	Overgrown	CFU/100mL	<ul style="list-style-type: none"> • Increase chlorine dosage • Resample January 31 • Resample February 1 	02-Feb-2024

Section 9: Township of North Glengarry Endorsement of Summary Report

A copy of the report will be presented to all members of the municipal council through the Public Works Committee. The report was also made available to the public through the Township of North Glengarry website or upon individual request at the Main office, located at 3720 County Road 34, south of Alexandria.

This report has been endorsed by Tim Wright, Director of Public Works on behalf of Township of North Glengarry Council.

Section 10: Contact

All efforts have been made to provide accurate and up to date information in a relevant format. In the event that additional information is required please submit all verbal requests by phone at 613-525-3087; in writing by mail to 3720 County Road 34, RR2, Alexandria Ontario, K0C 1A0; or in writing by email to enviro@northglengarry.ca

Appendix A: Alexandria 2024 Daily Treated Flows (m³/day)

	January	February	March	April	May	June	July	August	September	October	November	December
1	1,495	1,642	1,993	1,508	1,698	2,206	1,484	1,863	1,415	1,734	1,421	1,505
2	1,575	1,727	1,856	1,534	1,584	1,955	2,412	1,954	1,474	1,512	1,532	1,401
3	1,294	1,720	1,920	1,555	1,960	2,235	1,703	2,048	2,129	1,754	1,430	1,433
4	1,831	1,583	1,952	1,458	1,480	2,699	2,217	1,927	1,705	1,799	1,466	1,602
5	1,360	1,766	1,703	1,652	1,495	2,038	2,125	2,031	1,803	1,566	1,468	1,288
6	1,772	1,737	1,772	1,637	2,141	1,973	1,591	1,869	1,598	1,527	1,443	1,650
7	1,726	1,545	1,591	1,543	1,905	1,514	2,010	1,849	1,630	2,018	1,615	1,691
8	1,295	1,592	1,553	1,456	1,893	1,943	2,324	1,582	1,717	1,998	1,415	1,535
9	1,582	1,946	1,730	1,814	1,890	1,432	1,680	1,781	1,878	1,974	1,567	1,250
10	1,630	1,569	1,430	1,408	1,938	1,985	2,015	1,568	1,697	1,877	1,779	1,585
11	1,725	1,615	1,482	1,618	1,682	1,909	1,588	1,636	1,635	1,647	1,496	1,508
12	1,888	1,499	1,729	1,589	1,680	1,685	1,913	1,884	1,818	1,489	1,122	1,645
13	1,409	1,697	1,459	1,648	1,946	2,193	1,536	1,911	2,009	1,430	1,707	1,620
14	1,514	1,538	1,695	1,604	1,992	2,122	1,673	2,228	1,449	1,693	1,332	1,557
15	1,549	1,572	1,436	1,656	2,178	1,535	2,041	1,653	1,663	1,779	1,273	1,495
16	1,790	1,897	1,677	1,743	1,876	1,883	1,706	2,126	2,006	1,948	1,481	1,488
17	1,686	1,450	1,595	1,493	1,934	2,109	2,216	1,535	1,585	1,271	1,488	1,769
18	1,358	1,617	1,448	1,505	1,653	2,393	1,540	1,982	1,853	1,680	1,372	1,594
19	1,590	1,566	1,534	1,588	1,927	1,744	1,899	2,195	1,871	2,006	1,579	1,581
20	1,571	1,731	1,876	1,658	1,848	2,335	1,695	1,612	1,800	1,423	1,782	1,469
21	1,654	1,561	1,439	1,564	2,341	941	1,725	1,628	1,601	2,042	1,280	1,528
22	1,573	2,144	1,452	1,471	1,822	2,119	2,117	1,780	1,916	1,485	1,385	1,464
23	1,839	1,860	1,598	1,623	1,962	1,931	2,005	2,156	1,669	1,461	1,699	1,319
24	1,509	1,939	1,609	1,670	1,708	1,580	1,709	1,403	1,988	1,840	1,417	1,569
25	1,621	1,975	1,493	1,674	1,802	2,094	1,641	1,760	1,671	1,337	1,477	1,368
26	1,915	2,110	1,879	1,644	1,879	1,687	1,691	2,181	1,379	1,732	1,724	1,495
27	1,508	1,960	1,523	1,724	1,987	2,080	2,144	1,496	1,631	1,309	1,314	1,468
28	1,550	1,959	1,352	1,646	1,686	2,122	1,579	1,903	1,556	1,347	1,436	1,505
29	1,867	2,208	1,634	1,544	2,175	1,277	1,905	1,760	1,881	1,513	1,386	1,466
30	1,763		1,602	1,561	2,210	2,026	2,256	1,893	1,958	1,911	1,538	1,557
31	1,476		1,517		2,081		1,854	1,632		1,444		1,520
Minimum	1,294	1,450	1,352	1,408	1,480	941	1,484	1,403	1,379	1,271	1,122	1,250
Average	1,610	1,733	1,630	1,593	1,882	1,925	1,871	1,833	1,733	1,663	1,481	1,514
Maximum	1,915	2,144	1,993	1,814	2,341	2,699	2,412	2,228	2,129	2,042	1,782	1,769
Total	49,914	48,517	50,528	47,787	58,355	57,746	57,991	56,825	51,987	51,544	44,424	46,925

Annual Flows Summary
941
1,707
2,699
624,753

Appendix B: Alexandria 2024 Maximum Instantaneous Treated Flows (m³/sec)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0.041	0.041	0.041	0.041	0.041	0.040	0.041	0.041	0.041	0.041	0.041	0.041
2	0.041	0.041	0.041	0.042	0.041	0.041	0.043	0.041	0.042	0.041	0.041	0.041
3	0.041	0.041	0.041	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041
4	0.042	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
5	0.042	0.041	0.044	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.042	0.041
6	0.041	0.041	0.041	0.042	0.044	0.042	0.041	0.041	0.042	0.041	0.041	0.041
7	0.041	0.042	0.041	0.041	0.045	0.042	0.041	0.041	0.041	0.042	0.041	0.041
8	0.041	0.041	0.042	0.041	0.043	0.042	0.041	0.041	0.042	0.042	0.041	0.041
9	0.041	0.041	0.041	0.041	0.042	0.041	0.043	0.041	0.041	0.041	0.041	0.041
10	0.041	0.041	0.041	0.042	0.043	0.041	0.041	0.041	0.041	0.041	0.042	0.041
11	0.041	0.041	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.041	0.041	0.041
12	0.041	0.042	0.041	0.042	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041
13	0.041	0.042	0.041	0.041	0.042	0.046	0.041	0.042	0.042	0.042	0.041	0.041
14	0.041	0.041	0.041	0.042	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041
15	0.041	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.041	0.041	0.042	0.041
16	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.042	0.041	0.041	0.041	0.041
17	0.041	0.042	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.041	0.041	0.041
18	0.041	0.041	0.041	0.041	0.041	0.041	0.042	0.041	0.042	0.041	0.041	0.041
19	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.040	0.041
20	0.040	0.042	0.041	0.041	0.041	0.041	0.042	0.041	0.042	0.041	0.042	0.041
21	0.041	0.042	0.041	0.042	0.041	0.042	0.041	0.041	0.041	0.042	0.041	0.041
22	0.041	0.041	0.041	0.042	0.042	0.062	0.044	0.041	0.042	0.041	0.041	0.041
23	0.041	0.042	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.040	0.041
24	0.041	0.042	0.041	0.042	0.041	0.042	0.042	0.041	0.043	0.041	0.041	0.043
25	0.041	0.042	0.041	0.042	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041
26	0.041	0.042	0.043	0.041	0.041	0.041	0.041	0.041	0.042	0.041	0.061	0.041
27	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
28	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.042
29	0.041		0.041	0.041	0.041	0.042	0.042	0.042	0.041	0.040	0.041	0.041
30	0.041		0.041	0.042	0.041	0.041	0.045	0.041	0.041	0.041	0.041	0.042
31	0.041		0.041		0.037		0.041	0.041		0.041		0.041
Minimum	0.040	0.041	0.041	0.041	0.037	0.040	0.041	0.041	0.041	0.040	0.040	0.041
Average	0.041	0.041	0.041	0.041	0.041	0.042	0.042	0.041	0.041	0.041	0.042	0.041
Maximum	0.042	0.042	0.044	0.042	0.045	0.062	0.045	0.042	0.043	0.042	0.061	0.043

Annual Flows Summary
0.037
0.041
0.062

Appendix C: Comparison of Average and Maximum Monthly Treated Flow Rates

