

January 19, 2023 Revised January 31, 2023

Clerk Administrator Don McArthur and Council
The Corporation of the Village of South River
63 Marie Street,
South River, ON P0A 1X0

Re: 2022 Annual/Summary Report for the South River Drinking Water System

Dear Don McArthur and Council:

Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03), made under the *Safe Drinking Water Act in 2002*, requires that the owner of a drinking water system prepare an Annual Report and an Annual Summary Report of the operation of the system and the quality of its water.

Annual Report

The annual report must cover the period of January 1st to December 31st in a year and must be prepared not later than February 28th of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2022 Annual Report for the South River Drinking Water System.

In accordance with Section 11 (6), the annual report must:

- (a) contain a brief description of the drinking-water system, including a list of water treatment chemicals used by the system during the period covered by the report;
- (b) summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;
- (c) summarize the results of tests required under the Regulation, or an approval or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;
- (d) describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;
- (e) describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment; and
- (f) if the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4) O. Reg. 170/03, s. 11 (6).

In addition, Section 11 (7) gives the direction that a copy of an annual report for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the Village, or at a location that is accessible to the users of the water system.

Summary Report

The annual summary report must cover the period of January 1st to December 31st in a year and must be prepared not later than March 31st of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2022 Annual Summary for the South River Drinking Water System.

As required in *Schedule 22, Summary Reports for Municipalities*, the annual summary must:

- (2) (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and
 - (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.
- (3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:
 1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
 2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

In addition, Section 12 (1) – 4 – gives the direction that a copy of the annual summary for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the Village, or at a location that is accessible to the users of the water system.

These reports were prepared by the Ontario Clean Water Agency on behalf of the Village of South River and are based on information kept on record by OCWA at the South River WTP. The reports cover the period January 1st to December 31st 2022.

Please note that any Provincial Officers Orders or non-compliance issues that you have received directly from the MOE should be reviewed. Where non-compliance with the Order or Issue is evident and it is not included in the attached 2022 Annual/Summary Report, then we recommend that this information be added to the report.

After your review and inclusion of any additional information, this report is to be provided to the Council members representing the Village of South River before March 31, 2023. Please ensure this distribution.

Yours truly,
Ontario Clean Water Agency

Joshua Gravelle
Process and Compliance Technician

Copy to: Erin Spires, Drinking Water Inspector, Ministry of the Environment, Conservation and Parks

South River Drinking Water System

2022 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency
on behalf of the Village of South River



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INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This annual report must be completed by February 28th of each year.

Section 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31st of each year for the preceding calendar year.

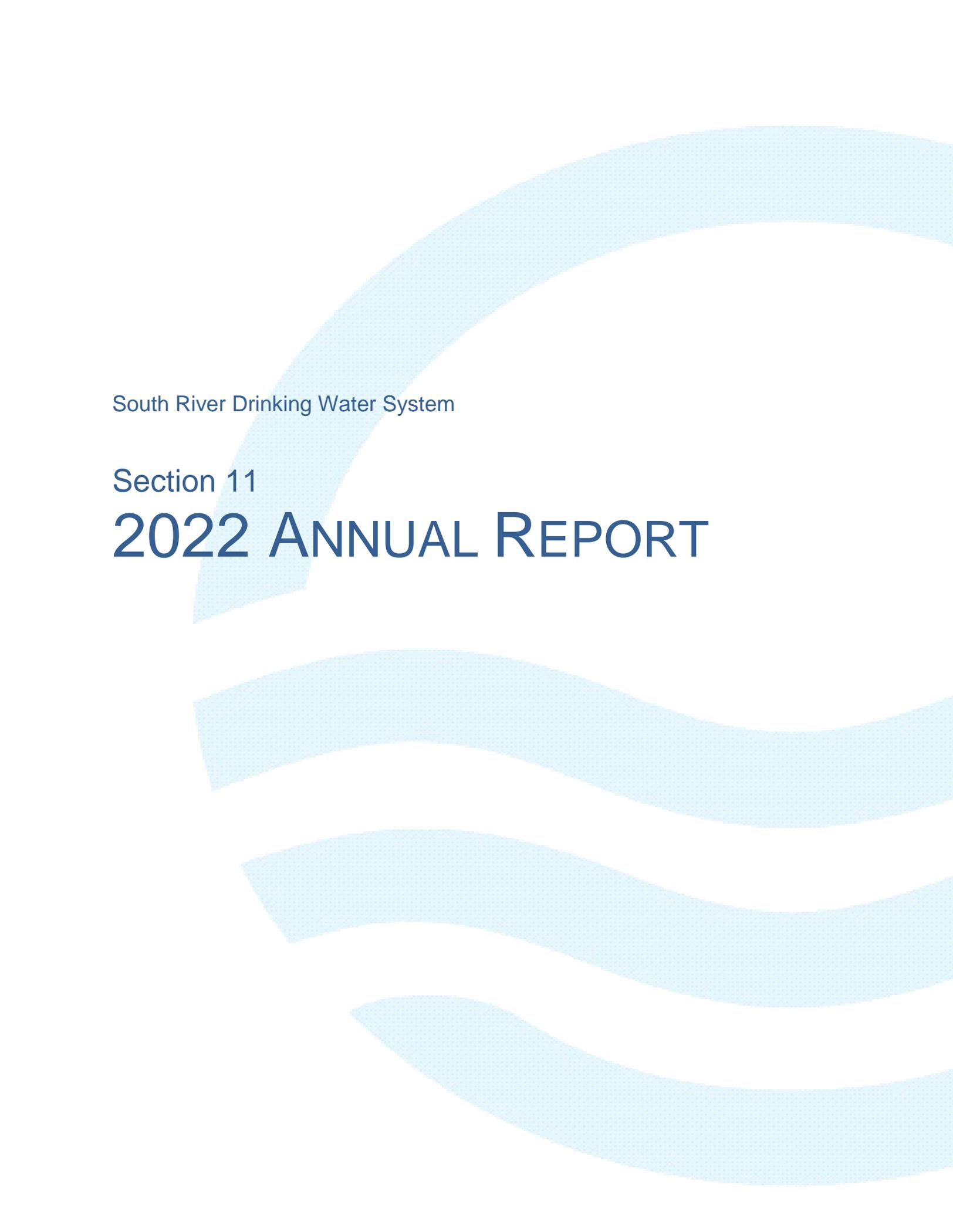
The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act (2002) and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows,
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2022 Annual/Summary Report.



South River Drinking Water System

Section 11

2022 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 Introduction

Drinking-Water System Name: SOUTH RIVER DRINKING WATER SYSTEM
Drinking-Water System No.: 220013562
Drinking-Water System Owner: The Corporation of the Village of South River
Drinking-Water System Category: Large Municipal, Residential System
Period being reported: January 1, 2022 to December 31, 2022

Does your Drinking Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? Yes,

<https://southriver.ca/en/community-services/water-department>

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

South River Municipal Office,
63 Marie Street,
South River, Ontario
P0A 1X0

Drinking Water Systems that receive drinking water from the South River Drinking Water System

The South River Drinking Water System (DWS) provides all drinking water to the community of South River.

The Annual Report was not provided to any other Drinking Water System Owners.

The Ontario Clean Water Agency prepared the 2022 Annual/Summary Report for the South River DWS and provided a copy to the system owner; the Corporation of the Village of South River. The South River DWS is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

- A notice which is posted on the Village website that the annual report is available for viewing in the public binder at the municipal office.



- A newsletter is included Bi-monthly with the municipal utility billing.
- Discussions during public council meetings.

2.0 Description of the Drinking Water System (DWS No. 220013562)

The South River Drinking Water System (DWS) is owned by The Corporation of the Village of South River and consists of a Class 3 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency is designated as the Overall Responsible Operator for the South River Water Treatment Plant (WTP) and the South River Water Distribution System.

The South River DWS has an approved rated capacity of 1680 m³/day and provides a potable water supply to the Village of South River.

Raw Water Supply

The plant raw water intake consists of a 300 millimeter (mm) diameter intake pipe extending 232 meters (m) into Forest Lake, with a flared elbow in a wooden and concrete crib located at a depth of 4.5 m. The low lift pumping station is located approx. 170 m south of Howard Street off the gravel access road. The low lift pumping station consists of a raw water well, dual manual screens and three (3) submersible pumps (two duty pumps and one standby), each rated at 10.0 litres per second (L/s) at 11.0 m of total dynamic head (TDH) that pump water to the treatment plant. In accordance with the Permit To Take Water (PTTW), the allowable rate of water taking is 19.3 L/s with a maximum daily volume of 1680 cubic meters per day (m³/d).

Water Treatment

The South River Water Treatment facility, owned by the Village of South River, was commissioned in May of 2000. The plant provides full conventional treatment to raw water drawn from Forest Lake, a dam controlled section of the South River. Treatment consists of chemically assisted coagulation, flocculation, clarification and filtration in dual package plants followed by disinfection with sodium hypochlorite before entering the distribution system. This is a pressurized system due to there being no elevated treated water storage reservoir in the community. The water treatment facility consists of two (2) Conventional Napier Reid package plants each rated at 840 m³/d with flocculation tanks, up flow clarifiers, and filters each consisting of multi-media that includes Garnet Sand, Silica Sand, Greensand Plus and Granular Activated Carbon (GAC) both with surface areas of 4.49 square meters (m²). The chemical feed system consists of two (2) coagulant (polyaluminum chloride (PACl)) metering pumps, one (1) duty and one (1) standby, each with the capacity of 30 litres per hour (L/hour) and one (1) 15 cubic meters (m³) storage tank; three (3) alkalinity and pH adjustment (soda ash) metering pumps with a capacity of 30 L/hour and one storage tanks; two (2) post disinfection (sodium hypochlorite) metering pumps, each rated at 7.5 L/hour and two storage tanks; two (2) pre-oxidizer (potassium permanganate (KMNO₄)) metering pump with a capacity of 18 L/hour and one (1) storage tank. Raw water entering the plant is injected with soda ash and PACl. Sodium hydroxide was replaced by Soda Ash August 10, 2016. Soda ash offers numerous advantages such as affordability, ease and safety of handling and transportation. Furthermore, Soda Ash is more effective at increasing alkalinity. Aluminum sulphate (Alum) was replaced by PACl June 7, 2017. PACl has greater flexibility, coagulates at a wider pH range, creates better floc formation at low temperatures, requires lower dosage, reduces sludge production and reduces wear on pumping



equipment due to the lower dosing rates. Following rapid mixing, the water flows into the flocculation tank. Treated water overflows from the clarifiers through two multimedia filters consisting of Garnet Sand, Silica Sand and GAC. Recently, Greensand Plus was incorporated to assist with iron and manganese removal. Filtered water is then injected with a 12% sodium hypochlorite solution and directed to a baffled clear well reservoir located beneath the plant. Treated water is pumped from the clearwell, and directed to the distribution system by a high lift pumping system. A second chlorination point and pH adjustment is available prior to the point of entry to the distribution system, if needed.

A six month trial using KMNO_4 began December 20, 2017. The six month trial involved injecting KMNO_4 at the raw water header. An existing pre-chlorination injection system originally incorporated at the facility on the raw water header intended for sodium hypochlorite was utilized for the KMNO_4 . Sodium hypochlorite was trialed in 2016 at 12% concentration, but with near freezing surface water temperatures and detention time of the package plants the oxidation process was ineffective. In an attempt to improve treated water quality KMNO_4 was used as a pre-oxidizing agent. Based on a review of published jar testing reports with similar raw characteristics, it was proposed that depending on iron and manganese concentrations the dosage range for KMNO_4 would be approximately 1.5 to 4.0 milligrams per litre (mg/L). Continuous monitoring of the iron and manganese concentrations as well as subsequent jar testing was the basis for dosage. However, the intention was to slightly under-dose KMNO_4 which would oxidize most of the iron and manganese to eliminate potential colour related issues in the drinking water system rather than overshoot with potential for pink treated water occurrences. Using KMNO_4 suited the water quality in South River due to fluctuations of iron and manganese levels caused by thermal turnover. KMNO_4 trial successful as of June 20, 2018 and is now permanently being used as a pre-oxidizing agent.

Water Storage and Pumping Capabilities

An in ground clearwell reservoir located under the facility has the approximate capacity of 1,536 m^3 of useable storage. The water supply system is a pressurized system. High lift pumps at the treatment facility run continually to maintain water pressure in the water distribution system piping which delivers the treated water to the systems users. There are four high lift pumps, two (2) pumps each rated at 7 L/s at a TDH of 45 m; two (2) pumps each rated at 14 L/s at a TDH of 45 m. The high lift pumps are controlled by variable frequency drives and sequence automatically to maintain system pressure and flow demands. In addition there are two (2) high lift fire pumps each rated at 56 L/s at a TDH of 38 m.

Waste Management

A wastewater treatment system consists of a two cell backwash holding tank / settling tank with approximately 210 m^3 total capacity; one (1) sludge pump rated at 5.0 L/s pumping to a 4500 L sludge storage tank and a two (2) unit bag sludge dewatering system. Process waste is generated at the South River WTP from clarifier blowdown to remove sludge and filter backwashing. The sludge from the clarifier blow down is directed to the sludge thickening tank with the decant from this tank being directed to the clarification tank. The filter backwash water goes to the clarification tank with the sludge that is built up pumped to the sludge thickening tank. The supernatant from the clarification tank is decanted and discharged to a storm sewer which discharges to the lake. The sludge from the sludge thickening tank is pumped to the sludge bagging system 3-5 times/week for disposal. Composite samples of the effluent are collected monthly.



Emergency Power

Standby emergency power is provided by one (1) 135 kilowatt (kW) radiator cooled diesel generator housed in a separate building. It has one (1) double walled external fuel tank with the capacity of 1135 L for diesel fuel storage.

Distribution System

The South River DWS is classified as a Large Municipal Residential Drinking Water System which serves a population of approximately 1100 consumers, with around 500 connections. The South River distribution system consists of a mixture of cast iron, ductile iron, asbestos and polyvinyl chloride (PVC) piping ranging in size from 300 mm in diameter down to 50 mm diameter. As of December 2010 there is: 250 m of 50 mm, 1984 m of 100 mm, 6657 m of 150 mm, 1401 m of 200 mm, 1451 m of 250 mm, and 685 m of 300 mm. The length of the entire system is therefore approximately 12.43 kilometers (km). There are 11 dead end locations and 66 fire hydrants. There is no water storage tower or reservoir in the distribution system. The distribution system typically undergoes routine flushing twice a year, in the spring and in the fall.

3.0 List of Water Treatment Chemicals Used Over the Reporting Period

The following chemicals were used in the treatment process at the South River Water Treatment Plant.

- Polyaluminum Chloride (PACl) - Coagulation/Flocculation
- Potassium Permanganate (KMNO₄) – Iron and Manganese Control
- Magnafloc LT27AG Anionic Polymer – Sludge Waste System
- Sodium Carbonate (Soda Ash) – Alkalinity and pH Adjustment
- Sodium Hypochlorite – Disinfection

4.0 Significant Expenses Incurred in the Drinking Water System

OCWA is committed to maintaining the assets of the drinking water system and maintains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS). OCWA implemented a new Workplace Management System (Maximo) in 2015, which better maintains and optimizes facility assets. All routine maintenance activities conducted at the water treatment plant were accomplished in 2022.

Significant expenses incurred in the drinking water system include:

- Replaced lab sample preservation refrigerator that failed.
- Waste decant line was cleaned out.
- New treated free chlorine residual analyzer installed to replace obsolete and dying equipment.
- New alarm keypad installed to replace obsolete and dying equipment.
- Numerous waste tank pump outs throughout the year.
- New ultrasonic waste tank level sensor installed.
- New fiber-optic internet installed.
- High lift pump P6 failed motor was replaced with spare.



- Mixer motor replaced.
- Repaired leak on raw water header with pipe clamp.
- The Village has begun a substantial rebuilding of the water mains in South River. Together with Canada and Ontario, two substantial Investing in Canada Infrastructure Programs are underway. A complete engineered assessment of the distribution system was completed in October 2021 outlining the path forward. The \$2.7 million first phase along Ottawa Ave and Eagle Lake Road is fifty percent complete. The \$4.5 million second phase throughout the Village will be going to construction tender in February of 2023. The entire project, both phases, is scheduled to be completed by December 31, 2024. This is the most significant investment in water quality and safety since the construction of the water treatment plant in 2000 and represents \$14,000 in capital costs for each user on the South River Water distribution network.

5.0 Drinking Water System Highlights

- The Ministry of the Environment, Conservation and Parks (MECP) inspection held on September 21, 2022. The inspection included a physical assessment of the South River WTP and a document review. Two non-compliance items identified and addressed. The system received a risk rating of 4.09 % and a final inspection rating of 95.91%.
- SAI Global conducted an off-site external 12-month surveillance audit of the South River Drinking Water System's Quality and Environmental Management System (QEMS). The system and processes associated with the QEMS were evaluated on May 18, 2022 to ensure implementation of the Operational Plan and procedures and conformance to the Drinking Water Quality Management Standard. There were two (2) opportunity for improvement (OFI) identified, which has been resolved. Re-accreditation achieved on June 9, 2022.
- Proactively sampling for microcystins from June to October, to ensure no contamination due to blue green algae. One sample had detectable raw microcystins, see below for more details. All other samples were non-detectable.

6.0 Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Action Center

Based on information kept on record by OCWA, six (6) adverse water quality incidents were reported to the Ministry of the Environment's Spills Action Centre (MOE SAC) in 2022. Additionally, one spill and one observed HAB occurred.

Observed HAB

Raw microcystins result of 0.1 ug/L from sample taken at the South River WTP on June 6 @ 1332, treated result was <0.1 ug/L at 1338. Reference Number - 1-1UCXZV. OCWA completes weekly proactive sampling for microcystins (raw and treated) from June 1 to October 31 every year. Incident will be resolved when 3 sets of results are non-detectable for microcystins. Details documented on AWQI form; however not an AWQI. Form emailed to MECP SAC, NBPSDHU, local MECP and owner as notification of potential HAB. Sample results received June 14, reported on June 14 with forms completed. Sample collected June 14, 20 and 27 had raw microcystins result of <0.1 ug/L. Resolution completed July 5, 2022, as three consecutive raw microcystins results were non-detectable.



Supernatant Spill

SAC Ref No.:1-UEJ40

Type of Event: Spill

Start Date & Time: June 14, 2022 @ 1845 hrs.

Termination: June 14, 2022 @ 1915 hrs.

Duration: approx. 30 minutes

Approximate volume: 1.5 m³

Details: Filter 2 experienced high turbidity effluent following a scheduled backwash resulting in additional sequences. Package Plants 1 and 2 were deactivated. The incident overwhelmed the waste system resulting in clear supernatant exiting overflow.

Receiver: N/A

Downstream Users: No

Actions: Package plant deactivation to allow recovery of the waste system through normal operation of the Decant Pump drawing level down. Process adjustments performed including increased coagulant dosing.

Reporting: Verbal & written reports to MOE SAC, Local MECP and EC.

AWQI 159950

Water break; repaired 12" PVC main at intersection of Ottawa Avenue and Lincoln Avenue.

Category one with precautionary AWQI and Drinking Water Advisory (DWA) due to LOP.

Flushed water main at closest hydrants achieved free chlorine residual of 2.0 mg/L. Notified all residents affected with written boil water advisory on September 12, 2022. 10 Houses and 1 Arena affected. The NBPSDHU issued a DWA for these affected residences. The watermain was repaired, the pressure was restored and the affected area was flushed. Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the break) on September 12/13 and 14, 2022. Sample results indicated no total coliforms or E.coli. DWA was lifted on September 16, 2022 by the Health Unit. Resolution completed September 19, 2022.

AWQI 159971

Valve installation being done at the corner of Eagle Lake Rd. and Ottawa Ave. Loss of pressure in 8" water main for valve installation between Eagle Lake Road and Fitz Ave. Category one with precautionary AWQI and DWA due to LOP. Flushed water main at closest hydrants achieved free chlorine residual of 2.0 mg/L. Notified all residents affected with written drinking water advisory on September 14, 2022. 16 houses affected. The NBPSDHU issued a DWA for these affected residences. The watermain was repaired, the pressure was restored and the affected area was flushed. Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the break) on September 14 and 15, 2022. Sample results indicated no total coliforms or E.coli. DWA was lifted on September 19, 2022 by the Health Unit. Resolution completed September 19, 2022.

AWQI 160331

Low lift pump was started in HAND on October 17 at 07:00 due to low coagulant level interlock shutting them off in AUTO. It was unknown that coagulant pumps do not run when Low Lift pumps are in HAND. Raw water was filtered without coagulant from 07:00 to 10:05 hrs. Upon observation at 10:05 of increasing turbidity up to approximately 0.45 NTU's the Low Lift pumps were shut off in HAND. At approximately 10:30 it was discovered that the coagulant pumps were not running for 3 hours and 5 minutes. Additional comment: Called and left a message with MOH at 10:40, Called SAC at 10:50. Called MOH back at 11:20 and spoke with Peter Chorekdjian. Notified owner verbally. Called local MECP Vesna at 12:00 and called SAC back at 15:35 as per instructions. Spoke with plant operator: he will have programming installed to prevent re-occurrence. Programming completed on November 1, 2022. Required C.T. for POE is 64.00 mg/L-minute, actual C.T. at time of shut off (10:05) was 1958 mg/L-minute minimum. Verbally

notified local MECP (Vesna Alimpic). NBPSDHU issued Boil Water Advisory, Village of South River posted notices at public locations and notified residents through the Code Red system. Normal weekly samples collected October 19th. AWQI samples to be collected Thursday October 20th with a 24 Hr. re-sample collected Friday October 21st before BWA will be lifted. Samples were zero for EC/TC. BWA was lifted October 22, 2022. Resolution completed October 26, 2022.

AWQI 160668

Watermain repair at Marie St. and Eagle Lake Rd. Loss of pressure category two BWA. Flushed water main at closest hydrants achieved adequate free chlorine residual. The local HU and MOE SAC were notified and a BWA was issued for the affected area. Notified all residents affected with written boil water advisory on November 15, 2022. 17 houses affected. The NBPSDHU issued a Boil Water Advisory for these affected residences. The watermain was repaired, the pressure was restored and the affected area was flushed. Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the break) on November 16 and 17, 2022. One sample indicated NDOGT EC/TC. Second set had TC of >200 for two locations. Additional adverse reported and additional flushing and sampling as required. Re-sample results indicated no total coliforms or E.coli. BWA was lifted on November 21 by the Health Unit. Resolution completed November 21, 2022. One section 2B completed for AWQI 160668, 160693 and 160718.

AWQI 160693

Sample collected on November 16, 2022 at 58 Marie had EC/TC count of NDOGT. Free chlorine residual = 1.10 mg/L. Area was flushed. Two sets of re-samples collected from location of adverse, upstream, downstream and one extra. All resamples were zero EC/TC. BWA lifted and resolution submitted November 21, 2022.

AWQI 160718

Sample collected on November 17, 2022 at 58 Marie and 62 Marie had TC count of >200. Free chlorine residual = 1.20 mg/L and 1.40 mg/L respectively. Area was flushed. Two sets of re-samples collected from location of adverse, upstream, downstream and one extra. All resamples were zero EC/TC. BWA lifted and resolution submitted November 21, 2022.

7.0 Microbiological Testing Performed During the Reporting Period

Summary of Microbiological Data

Sample Type	No. of Samples	Range of <i>E. coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw (Lake)	52	0 to NDOGT	2 to NDOGT	0	N/A
Treated	55	0 to 0	0 to 0	55	0 to 3
Distribution	201	0 to NDOGT*	0 to NDOGT*	54	0 to 44

Maximum Allowable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

“<” denotes less than the laboratory’s method detection limit.

NDOGT = No Data, Overgrown with Target

NDOGHPC = No Data, Overgrown with HPC

*Please refer to AWQI section above with details.

Notes: One microbiological sample is collected and tested each week from the raw and treated water supply. A total of three microbiological samples are collected and tested each week from the South River distribution system.



Refer to *Appendix A* for a monthly summary of microbiological test results.

8.0 Operational Testing Performed During the Reporting Period

Continuous Monitoring in the Treatment Process

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure
Filter #1 Turbidity	8760	0.0 to 1.82	NTU
Filter #2 Turbidity	8760	0.01 to 0.62	NTU
Free Chlorine	8760	1.01 to 4.99	mg/L

Notes: For continuous monitors 8760 is used as the number of samples.

CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed and/or CT is verified via plant SCADA for the South River water plant if the free chlorine residual level drops below 1.00 mg/L to ensure primary disinfection is achieved. Worst Case CT updated December 2, 1.25 mg/L is new min as of December 2.

Effective backwash procedures, including filter to waste are in place to ensure that the effluent turbidity requirements are met all times. The plant is configured to shut down and creates a callout whenever turbidity reaches 1.00 NTU for 0 seconds.

Summary of Chlorine Residual Data in the Distribution System

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine	364	0.07 to 3.20	mg/L	0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data (sampled at the water treatment plant)

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 25	0.068	< 0.003	mg/L	No
April 19	0.180	< 0.003	mg/L	No
July 11	0.082	< 0.003	mg/L	No
October 25	0.061	< 0.003	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L
MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
Jan. 25	42.0	ug/L	55.50	No
Apr. 19	39.0			
July 11	64.0			
Oct. 25	77.0			

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Summary of Total Haloacetic Acids Data (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
Jan. 25	29.0	ug/L	32.73	No
Apr. 19	31.7			
July 11	41.2			
Oct. 25	29.0			

Maximum Allowable Concentration (MAC) for Total Haloacetic Acids= 80 ug/L (Four Quarter Running Average)

Summary of Most Recent Lead Data

(Applicable to the following drinking water systems; large municipal residential systems, small, municipal residential systems, and non-municipal year-round residential systems)

The South River DWS was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for lead, total alkalinity and pH in two distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of lead, alkalinity and pH testing were carried out on April 11th and September 14th of 2022. Results are summarized in the table below.

Summary of Lead, pH & Alkalinity Data

Date of Sample	No. of Samples	Sample Location/ID	Lead (mg/L)	Field pH	Alkalinity (mg/L)
April 11	1	Hydrant #61	0.0001	7.70	20.3
April 11	1	Hydrant #26	0.0033	7.47	20.4
Sept. 14	1	Hydrant #18	<0.001	7.38	32.7
Sept. 14	1	Hydrant #61	0.001	7.47	35.8

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<MDL 0.6	ug/L	6	No
Arsenic	<MDL 0.2	ug/L	10	No
Barium	14.2	ug/L	1000	No
Boron	8.0	ug/L	5000	No
Cadmium	<MDL 0.003	ug/L	5	No
Chromium	0.65	ug/L	50	No
Mercury	<MDL 0.01	ug/L	1	No
Selenium	0.06	ug/L	50	No
Uranium	0.003	ug/L	20	No

Note: Sample required every 12 months (sample date = January 25, 2022)



Most Recent Schedule 24 Organic Data Tested at Water Treatment Plant

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2022/01/25	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) -	2022/01/25	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2022/01/25	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2022/01/25	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2022/01/25	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2022/01/25	<MDL 0.33	5.0	No	No
Carbaryl (ug/L) - TW	2022/01/25	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2022/01/25	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2022/01/25	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2022/01/25	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2022/01/25	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2022/01/25	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/25	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/25	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2022/01/25	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/25	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2022/01/25	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/25	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2022/01/25	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2022/01/25	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2022/01/25	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2022/01/25	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2022/01/25	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2022/01/25	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2022/01/25	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2022/01/25	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2022/01/25	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) -	2022/01/25	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2022/01/25	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2022/01/25	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2022/01/25	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2022/01/25	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2022/01/25	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2022/01/25	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2022/01/25	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2022/01/25	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2022/01/25	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/25	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2022/01/25	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2022/01/25	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/25	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (2022/01/25	<MDL 0.12	100.0	No	No
Trifluralin (ug/L) - TW	2022/01/25	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2022/01/25	<MDL 0.17	1.0	No	No

Note: Sample required every 12 months (sample date = January 25, 2022)

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.



Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 18, 2021	1	49.3	mg/L	20	Yes (see note)
January 20, 2020	1	50.3	mg/L	20	Yes (see note)
January 22, 2018(Compliance)	1	24.6	mg/L	20	Yes (AWQI #138657)
January 30, 2018 (resample)	1	24.0	mg/L	20	Yes (AWQI #138657)

Note: Sample required every 60 months. Next sampling scheduled for January 2023.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to MOE SAC and the NBPSDHU on January 29, 2018 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 138657).

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 18, 2021	1	<0.06	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for January 2026.

Summary of Additional Testing Performed in Accordance with a Legal Instrument.

Condition 1.5 of Schedule C to Municipal Drinking Water Licence (MDWL) #200-101 requires that the annual average concentration of total suspended solids (TSS) from the effluent discharged to Forest Lake not exceed 25 mg/L. Further, Condition 4.4 of Schedule C to the MDWL requires that composite samples are collected every month.

The South River Water Treatment Plant did exceed this limit in 2022. *Info on exceedance can be found on page 16.

Summary of Total Suspended Solids Data from the Effluent Discharge

Date of Sample	No. of Samples	Result Value	Unit of Measure	Annual Average	Limit
January	1	9	mg/L	50.93*	25
February	1	57			
March	1	3			
April	1	13			
May	1	3			
June	1	4			
July	1	82, 7			
August	1	28, 2, 119, 14, 68			
September	1	3,9,6,5			
October	1	2, 7, 2, 168, 4			
November	1	129, 57, 313, 177			
December	1	191, 4, 27, 15			



South River Drinking Water System

Schedule 22

2022 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 Introduction

Drinking-Water System Name:	SOUTH RIVER DRINKING WATER SYSTEM
Municipal Drinking Water Licence (MDWL) No.:	200-101-4 (issued January 15, 2021)
Drinking Water Work Permit (DWWP) No.:	200-201-4 (issued January 15, 2021)
Permit to Take Water (PTTW) No.:	4340-BA6RUQ (issued March 14, 2019)
Period being reported:	January 1, 2022 to December 31, 2022

2.0 Requirements the System Failed to Meet

According to information kept on record by OCWA, the South River Drinking Water System has complied with all the requirements set out in the system’s MDWL, its DWWP, the Act and its Regulations. With the exceptions noted below.

The latest MECP inspection report dated September 21, 2022 identified two non-compliance items. Items have been addressed.

According to the information kept on record by OCWA; there were four non-compliance issues during 2022.

Also, it should be noted that, six (6) adverse water quality incidents were reported to the MOE’s Spills Action Center; also, one spill and one observed HAB were reported. Refer to *Section 6.0 – Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Actions Center* on page 7 of this report for details.

1. 2022 MECP inspection findings: All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order were not equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6. Section 5-1(1.1)1 of Schedule 6 of O. Reg. 170/03 requires that continuous monitoring equipment must cause an alarm to signal immediately at a location where the equipment conducts tests and at a location where a person is present if the equipment malfunctions, loses power or a test result for free chlorine residual is below the minimum alarm standard. The South River WTP Alarm Set-point sheet indicates that: There is a high filter effluent turbidity alarm set at 0.4 NTU with a 1 minute delay. At 1 NTU, the package plant will shutdown without delay and alarm out. A backwash is triggered when filter effluent turbidity reaches 0.5 NTU. There is a low free chlorine alarm set at 1.75 mg/L which triggers an alarm without delay. Clearwell No. 1 has a low chlorine alarm of 2 mg/L for operational purposes. There is a low clearwell level alarm which is triggered at 2.7 m. A review of the continuous trends, Maximo Alarm Summary, and information provided by the operating authority indicates that for the majority of the inspection period the filter effluent turbidity alarm and the free chlorine analyzer alarms were operational. However, there were several occasions between June 3rd to June 17th, 2022 where there was a low free chlorine residual after power fluctuations. The low free chlorine residuals did not trigger an alarm and were observed during the 72-hour review. Failure to ensure that the free chlorine analyzer caused an alarm to signal immediately at a location where a person is present if a test result for free chlorine residual is below the minimum alarm standard is a



violation of Section 5-1(1.1)1.(i)and(ii) of Schedule 6 of O. Reg. 170/03. Corrective Actions: The operating authority investigated including reviewing the alarm system and replacing the keypad, installing a solenoid valve to control the pH fluctuations on the chlorine analyzer during loss of power events, replacing the free chlorine analyzer, and the sample point was moved 16 ft. away from the soda ash injection point. These actions have resolved soda ash being drawn into the chlorine analyzer sample line and negatively impacting the pH concentration. It was also indicated during the inspection that the alarm programming was not triggering an alarm as the low chlorine residual was restored too quickly for the programming to signal. No further action is required.

2. 2022 MECP inspection findings: The following instance(s) of non-compliance were also noted during the inspection: Condition 10.1 of the Licence states that "Nothing in this licence or the drinking water works permit shall be read as to permit the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect." Condition 31(1) of the Safe Drinking Water Act, 2002, specifies that no person shall use or operate a municipal drinking-water system that was established after this section comes into force except under the authority of and in accordance with a municipal drinking water licence. Waste streams from the facility are treated in the facility's wastewater system. The sludge from the clarifier blowdown is directed to the wastewater surge tank. The supernatant for the wastewater surge tank is directed to the clarification tank. The settled solids are directed to the sludge holding tank. The filter backwash water discharges to the clarification tank. The supernatant from the clarification tank is decanted and discharges to a storm sewer which discharges to the lake. Sludge built up in the clarification cell is pumped to the sludge holding tank. The tanks are equipped with level monitors triggering the pumping of supernatant to a storm sewer that discharges to the lake. Sludge from the sludge thickening tank is pumped to the bagging system and polymer is added. This dries out the sludge which is then disposed of at the landfill. The previous inspection report indicates that from 2011 to 2021 there have been fourteen (14) reported events of spills from the wastewater system. The volume of spilled supernate ranged from 0.05 to 280 m³. An action plan was submitted on January 7th, 2022 to address the spills including additional alarming, pumping out the waste tanks more frequently to better maintain a sludge blanket, modifying the waste decant pump operation to ensure that wastewater is pumped out quickly after a backwash sequence, and replacing the level sensor for increased accuracy. Replacing the level sensor is the remaining item that has not been completed due to delays with obtaining equipment. On June 14th, 2022 from 6:45 pm to 7:15 pm there was spill of 1.5 m³ supernatant to a drainage ditch. High turbidity after a backwash caused a second backwash which overwhelmed the waste system causing the spill. Operators responded and disabled the plant to allow the waste system to drain. Failure to ensure that the drinking water system was operated in accordance with the Municipal Drinking Water Licence is a violation of the Condition 10(1) of the Licence and Section 31(1) of the Safe Drinking Water Act, 2002. THIS IS A REPEAT VIOLATION. By no later than November 30th, 2022, the owner and operating authority is required to install the level sensor and provide written confirmation that the sensor has been replaced and is operational to Water Inspector Erin Spires, Ministry of the Environment, Conservation, and Park's North Bay Office. Corrective Action: Village approved following plan: In the near term: Waste Tanks to be pumped twice annually preferably in January/February and August/September to better maintain sludge blanket especially since historically rapid accumulation occurs beginning in December. Pumping of waste tanks on February 2, 2022, February 7, 2022, February 8, 2022, February 9, 2022, March 15, 2022, July 4, 2022, July 5, 2022, July 8, 2022, August 25, 2022, August 29, 2022, August 31, 2022, September 2, 2022 and September 13, 2022. Add external alarming. Completed on January 7, 2021. For planning and



future capital approval: Replace current pressure based transducer embedded in Waste Clarifier Tank where Decant Pump is located with an overhead Ultrasonic device to allow for more accurate measurements. To be completed within 6 months. As of June 15, still awaiting client approval. June 27, 2022 client approval acquired. Part ordered with delays in delivery, arrived on site mid-August. To be installed upon staff availability. To be installed prior to November 30, 2022. Ultrasonic level sensor installation complete on November 16, 2022. October 11, 2022 - Now complete are modifications to the SCADA for a process Interlock that disables the Low Lift Pumps and the Package Plants when the Waste Tank enters a High Level state with external Alarming separate from that of the two High Waste Tank Level Alarms in place through two separate services. The Package Plant Interlock like Actuator Valve Fault, Chlorine Pump Fault or High Filter Turbidity exceeding 1.0 NTU requires the Package Plants to be reset through the SCADA. In an effort to eliminate spills.

3. AWQI 160331 – See Details in AWQI section above.
4. Annual TSS Exceedance over 25 mg/L. The process wastewater discharge quality did not comply with the requirements of MDWL. The annual average for 2022 was 50.93 mg/L. This is greater than the 25 mg/L limit. Received final lab report from December 27 sample on January 3, 2023. Please note weekly sampling was started mid-way through the year after the lab mistakenly didn't run a TSS sample. With the increased sampling we have noticed some higher results. Results range from 2 to 313 mg/L. Spreadsheet attached with results. Also, the distribution system is currently experiencing approx. 50 % losses due to undetectable leaks. The Village has done extensive work to try to locate and repair the leaks; however, due to the sand that permeates throughout the system, the leaks do not surface and are very hard to find. Some have been repaired as discovered. This extra water usage leads to more sludge in the waste system. Resolution: Multiple pump outs being completed per year. Pumping of waste tanks on February 2, 7, 8 and 9, 2022, March 15, 2022, July 4, 5, and 8, 2022, August 25, 29 and 31, 2022, September 2 and 13, 2022, December 20, 2022 and January 5, 2023 in an effort to try and control the sludge. Operator went to an anionic polymer for the waste system to try and help the bagger system which did help control sludge. Currently, MECP is in process of reviewing the use of Shactivate to try and aid in the sludge removal process. Shactivate can potentially remove the organic portion of the sludge, thus helping with the overall volume of sludge to handle. Ref # 6287-CMSRXH. Incident of non-compliance reported to MECP SAC and local MECP inspector on January 5, 2022.

3.0 Summary of Quantities and Flow Rates

Flow Monitoring

MDWL No. 200-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required.



These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

Water Usage

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2022 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water

2022 - Monthly Summary of Water Takings from the Source (Forest Lake)

Regulated by Permit to Take Water (PTTW) #4340-BA6RUQ, issued March 14, 2019

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	13583	13588	16093	19304	19122	20320	22058	20715	20093	26887	27012	26493	245269
Average Volume (m ³ /d)	438	485	519	643	617	677	712	668	670	867	900	855	671
Maximum Volume (m ³ /d)	674	606	626	1105	846	862	898	785	822	1134	1154	979	1154
PTTW - Maximum Allowable Volume (m ³ /day)	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680
Maximum Flow Rate (L/min)	545	468	542	869	667	686	860	798	649	952	987	856	987
PTTW - Maximum Allowable Flow Rate (L/min)	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160

The system's Permit to Take Water #4340-BA6RUQ allows the municipality to withdraw a maximum volume of 1680 cubic meters from Forest Lake each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 1154 m³ in November 2022. The Permit also allows a maximum flow rate of 1160 litres per minute (L/min). At no point during the reporting period did the system exceed this rate having a maximum recorded flow of 987 L/min in November 2022.

Treated Water

2022 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #200-101 - Issue 4, issued Jan. 15, 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	10041	10539	12472	14714	14593	15343	17343	16315	15585	20917	20806	18948	187614
Average Volume (m ³ /d)	324	376	402	490	471	511	559	526	519	675	694	611	513
Maximum Volume (m ³ /d)	346	436	465	862	608	585	705	563	616	1004	813	652	1004
MDWL - Rated Capacity (m ³ /day)	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680

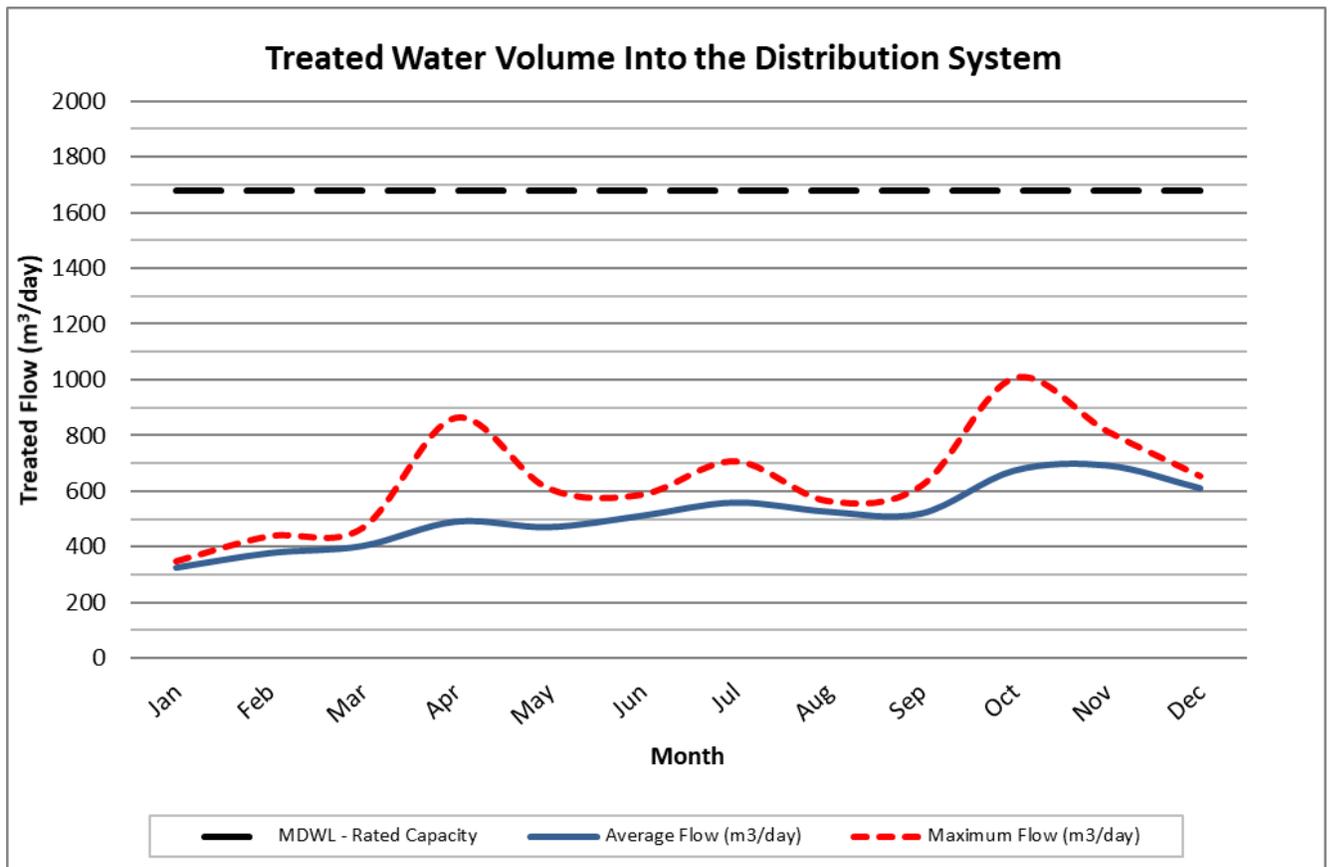
Schedule C, Section 1.1 of MDWL No. 200-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 1680 m³ on any calendar day. The South River DWS complied with this limit having a recorded maximum volume of 1004 m³/day in October 2022, which is 59.7% of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system’s existing and future planned water usage needs.

Comparison of the Flow Summary to Systems Licence & Permit

Rated Capacity of the Plant (MDWL)	1680 m ³ /day	
Average Daily Flow for 2022	513 m ³ /day	30.5% of the rated capacity
Maximum Daily Flow for 2022	1004 m ³ /day	59.7% of the rated capacity
Total Treated Water Produced in 2022	187,614 m ³	

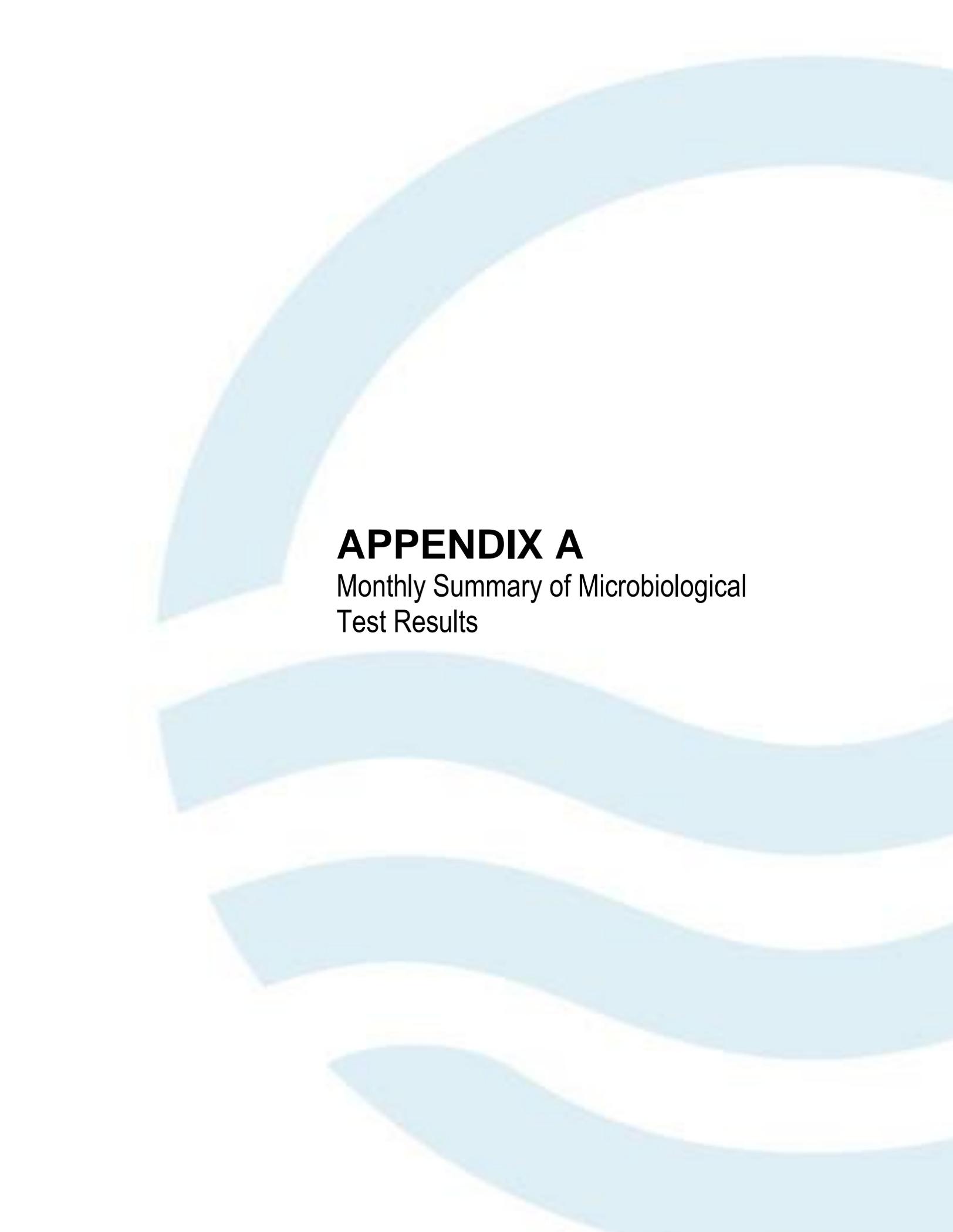
The South River WTP is rated to produce 1680 cubic meters of water per day as specified in the system’s Municipal Drinking Water Licence. The average daily flow was 513 m³ per day, which is 30.5% of the rated capacity. This information clearly shows that the plant is well within its rated capacity and is able to meet current demands of consumers.





CONCLUSION

In 2022, according to information kept on record by OCWA; the South River DWS met the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence having six adverse water quality incidents and four incident of non-compliance during the reporting period. The system was able to operate within the water taking limits of the permit and in accordance with the rated capacity of the licence while meeting the community's demand for water use.



APPENDIX A

Monthly Summary of Microbiological
Test Results

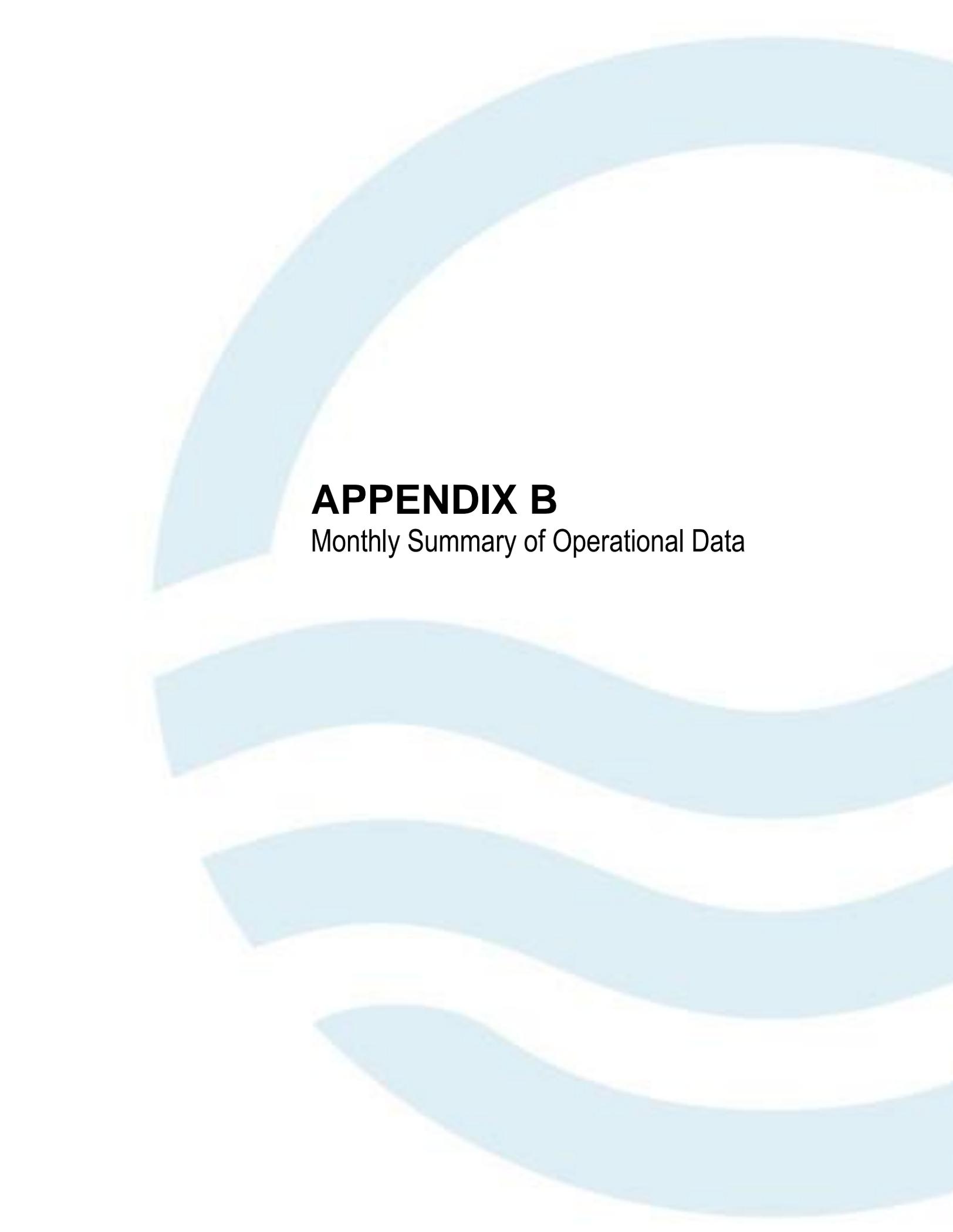
**South River Drinking Water System
Monthly Summary of Microbiological Test Results**

Report extracted 01/09/2023 15:35

From: 01/01/2022 to 31/12/2022

Facility Org Number: 5083
Facility Works Number: 220013562
Facility Name: SOUTH RIVER DRINKING WATER SYSTEM
Facility Owner: Municipality: The Corporation of the Municipality of South River
Facility Classification: Class 3 Water Treatment
Total Design Capacity: 1680.0 m3/day

	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Distribution Water / E. Coli - cfu/100mL																
Count Lab	12	12	15	12	19	12	12	19	30	21	25	12	201			
Max Lab	0	0	0	0	0	0	0	0	0	0	NDOGT	0			NDOGT	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Distribution Water / HPC - cfu/mL																
Count Lab	4	4	5	4	5	4	4	5	4	7	4	4	54			
Max Lab	0	0	0	0	1	0	0	44	1	0	0	1			44	
Mean Lab	0	0	0	0	0.2	0	0	9	0.5	0	0	0.5		0.926		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Distribution Water / Total Coliform: TC - cfu/100mL																
Count Lab	12	12	15	12	19	12	12	19	30	21	25	12	201			
Max Lab	0	0	0	0	0	0	0	0	0	0	NDOGT	0			NDOGT	
Mean Lab	0	0	0	0	0	0	0	0	0	0	16	0		0.893		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Raw Water / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	4	5	20	20	20	20	20	NDOGT	10	20	7			NDOGT	
Mean Lab	0	1.5	3.2	5.5	10.2	10.75	20	8.8	20	8	10.25	2		8.059		
Min Lab	0	0	1	0	0	0	20	0	20	0	0	0				0
Raw Water / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	5	4	4	52			
Max Lab	107	98	480	500	1280	8800	260	60	NDOGT	320	300	114			NDOGT	
Mean Lab	80.5	88.25	170	181.5	515.4	2398.5	95	26.4	140	208.4	175.75	67.5		340.569		
Min Lab	63	73	51	55	74	90	20	2	60	82	48	32				2
Treated Water / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	6	4	7	4	4	55			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / HPC - cfu/mL																
Count Lab	4	4	5	4	5	4	4	6	4	7	4	4	55			
Max Lab	0	0	1	3	1	0	0	0	1	1	0	1			3	
Mean Lab	0	0	0.4	1	0.2	0	0	0	0.5	0.143	0	0.25		0.2		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	6	4	7	4	4	55			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0



APPENDIX B

Monthly Summary of Operational Data

**South River Drinking Water System
Monthly Summary of Operational Data**

Report extracted 01/18/2023 14:49

From: 01/01/2022 to 31/12/2022

Facility Org Number: 5083
Facility Works Number: 220013562
Facility Name: SOUTH RIVER DRINKING WATER SYSTEM
Facility Owner: Municipality: The Corporation of the Municipality of South River
Facility Classification: Class 3 Water Treatment
Total Design Capacity: 1680.0 m3/day

	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Distribution Water / CI Residual: Free DW1 - mg/L																
Count IH	8	8	9	9	9	9	8	9	9	9	8	9	104			
Max IH	3.1	2.03	2.9	2.06	3.1	1.58	2.2	2.2	2	2.7	2.7	2.5			3.1	
Mean IH	1.819	1.45	1.434	1.242	1.654	1.081	1.672	1.337	1.52	2.11	2.036	1.989		1.607		
Min IH	1.17	0.58	0.47	0.67	0.38	0.3	1	0.07	0.65	1.56	1.57	1.13				0.07
Distribution Water / CI Residual: Free DW2 - mg/L																
Count IH	8	8	9	9	9	9	8	9	9	9	8	9	104			
Max IH	2.8	2.2	3	2.5	3.2	2.16	2.2	2.2	2.08	2.8	2.4	2.5			3.2	
Mean IH	1.861	1.636	2.106	1.962	2.012	1.711	1.833	1.689	1.813	1.892	1.733	1.658		1.828		
Min IH	1.46	1.29	1.27	1.68	1.13	1.29	1.23	1.18	1.42	1.36	1.23	0.95				0.95
Distribution Water / CI Residual: Free DW3 - mg/L																
Count IH	8	8	9	9	9	9	8	9	9	9	8	9	104			
Max IH	2.8	2.05	2.6	2.4	2.9	2.04	1.89	2.5	2.06	2.6	2.7	2.6			2.9	
Mean IH	1.958	1.536	2.103	1.701	1.629	1.639	1.76	1.452	1.467	2.096	1.566	1.563		1.706		
Min IH	1.55	0.51	1.33	1.18	0.81	1.21	1.61	0.09	0.99	1.56	0.84	0.47				0.09
Distribution Water / CI Residual: Free DW4 - mg/L																
Count IH	4	4	5	4	5	4	4	5	4	5	4	4	52			
Max IH	2	2.15	2.3	2.4	2.4	1.91	2.4	2.2	2.3	2.4	1.37	2.2			2.4	
Mean IH	1.848	1.805	1.918	2.09	2.132	1.748	1.905	1.886	1.92	1.858	0.825	0.89		1.752		
Min IH	1.57	1.58	1.37	1.67	1.74	1.58	1.6	1.59	1.67	1.19	0.32	0.41				0.32
Filter 1 / Turbidity - NTU																
Max OL	0.191	1.818	0.064	0.273	0.236	0.482	0.236	0.091	0.164	0.4	0.327	0.164			1.818	
Mean OL	0.015	0.017	0.016	0.016	0.023	0.048	0.019	0.019	0.018	0.021	0.017	0.02		0.021		
Min OL	0.009	0.009	0.009	0	0.018	0.018	0.018	0.018	0.009	0.009	0.009	0.018				0
Filter 2 / Turbidity - NTU																
Max OL	0.43	0.49	0.09	0.15	0.27	0.53	0.1	0.62	0.38	0.32	0.21	0.41			0.62	
Mean OL	0.025	0.025	0.02	0.017	0.02	0.033	0.02	0.021	0.02	0.024	0.021	0.023		0.022		
Min OL	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01				0.01
Treated Water / CI Residual: Free (Min = 1.0 mg/L) - mg/L																
Max OL	4.32	4.08	4.18	3.75	4.27	3.61	3.47	3	2.93	3.05	4.99	4.99			4.99	
Mean OL	2.535	2.549	2.745	2.75	2.866	2.466	2.526	2.283	2.443	2.516	2.432	2.244		2.53		
Min OL	1.08	1.38	1.14	1.12	1.74	1.01	1.22	1.36	1.46	1.77	1.77	1.82				1.01