Town of Perth Drinking Water System

DWS # 220001272

2024 Annual Report

Document created
January 27, 2025

Drinking-Water System Number:	**220001272**
Drinking-Water System Name:	Perth Drinking Water System
Drinking-Water System Owner:	The Corporation of the Town of Perth
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2024 to Dec 31, 2024

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [x] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** The 2024 Summary Report will be prepared and forwarded to the Town of Perth Municipal Council by March 30, 2025. Paper copies will be available at the Water Treatment Plant and electronic copies available on the municipal website.	**Number of Designated Facilities served:** 20-25 **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ] Available on Website** **Number of Interested Authorities you report to:** **n/a** **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** **Yes [ ] No [ ] n/a**

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Tay Valley Township	**260097682**

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [x] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- **[x] Public access/notice via the web**
- **[ ] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[x] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[ ] Public access/notice via other method**

Describe your Drinking-Water System

Water Treatment Subsystem

The Water Treatment Plant is a Class III facility and was constructed in 1964 replacing the old Plant on Leslie Street, which was built in 1897. The water source is the Tay River, with the intake located at the Links O' Tay Golf Course. At the plant, conventional filtration practices are followed using a multiple barrier approach, including disinfection at various points in the process.

The surface water, or raw water, flows into the plant's intake wells, pretreated as required, and then onward to the raw water wells. The raw water's quantity and quality is monitored in order for proper chemical dosages to occur. Raw water pretreatment consists of double screening for solids, and disinfection when needed with chlorine dioxide. Water is then subject to the clarification process, involving coagulation, flocculation, and sedimentation stages. Clarified water is then directed to the filtration process, where filter beds consisting of granular activated carbon and sand, further removes suspended solids. The filtered water's turbidity is continuously monitored and the filters are regenerated (backwashed) when required. Filter effluent water is directed to the clearwell for primary disinfection.

In the clearwell, the initial primary disinfection occurs as filter effluent water is exposed to the disinfecting agent, Sodium Hypochlorite. The treated water then passes to the reservoir, where further contact time is allowed to occur with the disinfectant. Prior to entering the reservoir, calcium hydroxide (lime) is added for pH adjustment, and fluoride (as recommended by the Ministry of Health). The underground reservoir at the plant has a storage capacity of approximately 750,000 gallons (3,000,000 liters). It remains there until demand requires it in the distribution system. Before pumping the water directly into the distribution system, secondary disinfection occurs (sodium hypochlorite) to bring the free chlorine residual up to a level required to maintain a residual throughout the distribution system.

A process wastewater residue management system is used to reduce solids and dechlorinate the wastewater prior to discharge back into the Tay River. Wastewater sludge is directed to a treatment system involving geo membranes. Sedimentation tank sludge goes directly to treatment, while backwash wastewater is given settling time so supernatant water can be decanted off prior to sludge treatment. Any wastewater from the geo membrane dewatering process or backwash settling process is sent back to the Tay River.

Water Distribution Subsystem

The distribution subsystem is comprised of approximately 45 km of water mains constructed primarily of cast, PVC and ductile iron pipe ranging in diameter from 100 mm to 400mm. The system serves a population of approximately 6000, supplies approximately 2400 service connections, and has approximately 270 hydrant installations. A hydrant flushing program occurs twice a year, to help maintain the system integrity and proper operations.

An elevated tank, with storage capacity of 945 m^3, provides system pressure and storage. A water mixing system helps ensure adequate disinfection is maintained while water is stored in the tank. The system is checked on a weekly basis to ensure that drinking water remains safe, free of bacteria and disinfected.

List all water treatment chemicals used over this reporting period

Poly-Aluminum Chloride (PAX XL-6 - coagulant)
Activated Carbon (GAC – filter beds)
Sodium Hypochlorite (Primary disinfection)
Sodium Hypochlorite (Secondary Disinfection)
Calcium Hydroxide (Lime – pH adjustment)
Sodium Silicofluoride (Fluoride)
Polymer (Geo-tube process sludge)
Hydrochloric Acid (Chlorine Dioxide)
Sodium Chlorite (Chlorine Dioxide)
Sodium Hypochlorite (Chlorine Dioxide)
Calcium Thiosulphate (CAPTOR – dechlorination)

Were any significant expenses incurred to?

[x] Install required equipment
[x] Repair required equipment
[x] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

- Low Lift Pump #2 – full pump replacement, upgrade to motor capability
- Flocculation (Tank 2) drive shaft repair work
- Settling Tank 1 repairs to sludge collection system (chains replaced, broken scrapper flights)
- Reservoir – cleaning, diver inspections to valves
- Upgrades to diesel engine noise suppression system

- Continued SCADA upgrades -better facilitate process automation, implement security measures
- SCADA storage improvements and increased capabilities
- New GEO operations PLC installation (more input capability, more SCADA compatible)
- New chemical gas detector purchased and installed (more cost efficient that replacing sensor(s)
- New SCADA 4500 controller purchase and install

- WTP roof repairs and membrane replacements
- WTP roof (filter gallery exterior walls) siding installed
- Replacement of GEO greenhouse cover

- Elevated tank 10” fill valve purchase and electric actuator
- New watermain install Thom St
- New watermain install Cockburn St (Arthur St to Rogers Rd)
- Restocking of water distribution water repair equipment inventory

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Aug 27, 2024	AWQI 166105 – • Class 2 WD watermain break - main was already isolated (inactive) due to construction work on street			Repairs done, line flushed, sampling done - results of 0 CFU/100 mL	Date resolved Aug 29 2024

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	53	4 - 240	80 - 940	n/a	n/a
Treated	53	Absent in all Samples	Absent in all Samples	53	<10 - 20
Distribution	212	Absent in all Samples	Absent in all Samples	212	<10 - 160

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Free Chlorine Residual (Primary Disinfection)	**8760**	**0.20 – 2.45**	**mg/L**
Free Chlorine Residual (Secondary Disinfection – WTP Effluent)	**8760**	**1.00 – 2.27**	**mg/L**
Free Chlorine Residual (Secondary Disinfection – Water Distribution)	**431**	**0.22 – 1.90**	**mg/L**
Turbidity (Filter #1)	**8760**	**0.02 – 0.37**	**NTU**
Turbidity (Filter #2)	**8760**	**0.02 – 0.81**	**NTU**
Fluoride (WTP Effluent)	****	**0.20 – 1.44**	**mg/L**

***NOTE**: For continuous monitors use 8760 as the number of samples.*
*Note:** Fluorination operations off for portion of year due to equipment failures*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 160-101 Sched C, sec 4.4	**TSS** **(Residue Mgmt)** **(Phase I)** **(Geo-bag discharges)** **Annual Average** Concentration limit (15 mg/L)	**Annual Avg.** (16 Jan 2024) (14 Feb 2024) (13 Mar 2024) (09 Apr 2024) (14 May 2024) (17 Jun 2024) (19 Jul 2024) (16 Aug 2024) (17 Sep 2024) (18 Oct 2024) (13 Nov 2024) (17 Dec 2024)	**6.69** (4.33) (11.33) (17.67) (3.67) (14.00) (3.33) (4.67) (3.00) (3.67) (7.67) (3.00) (4.00)	mg/L

MDWL 160-101 Sched C, sec 4.4	**TSS** **(Residue Mgmt)** **(Phase II)** **(BET supernatant)** **Annual Average** Concentration limit (15 mg/L)	**Annual Avg.** (17 Jan 2024) (14 Feb 2024) (13 Mar 2024) (09 Apr 2024) (15 May 2024) (17 Jun 2024) (19 Jul 2024) (16 Aug 2024) (17 Sep 2024) (18 Oct 2024) (13 Nov 2024) (18 Dec 2024)	**4.28** (4.00) (3.33) (3.00) (14.67) (3.00) (3.00) (3.00) (3.00) (4.33) (4.00) (3.00) (3.00)	mg/L
MDWL 160-101 Sched C, sec 4.4	**Total Chlorine Residual** **(Residue Mgmt)** **(Phase I)**	**Annual Avg.** (Monthly Range)	**0.003** (0.00-0.01)	mg/L
MDWL 160-101 Sched C, sec 4.4	**Total Chlorine Residual** **(Residue Mgmt)** **(Phase II)**	**Annual Avg.** (Monthly Range)	**0.006** (0.00-0.03)	mg/L
MDWL 160-101 Sched C, sec 4.1	**Chlorate**	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	0.13 0.08 0.34 0.14	mg/L mg/L mg/L mg/L
MDWL 160-101 Sched C, sec 4.1	**Chlorite**	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	<0.01 <0.01 <0.01 <0.02	mg/L mg/L mg/L mg/L

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	15 Jul 2024	<0.0001	mg/L	N
Arsenic	15 Jul 2024	0.0003	mg/L	N
Barium	15 Jul 2024	0.064	mg/L	N
Boron	15 Jul 2024	0.018	mg/L	N
Cadmium	15 Jul 2024	<0.000015	mg/L	N
Chromium	15 Jul 2024	<0.0010	mg/L	N
Mercury	15 Jul 2024	<0.00002	mg/L	N
Selenium	15 Jul 2024	<0.001	mg/L	N
Uranium	15 Jul 2024	<0.00005	mg/L	N
Nitrite	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	0.05 <0.05 <0.05 <0.05	mg/L mg/L mg/L mg/L	N
Nitrate	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	0.12 0.06 0.09 <0.05	mg/L mg/L mg/L mg/L	N
Sodium	15 Jul 2024	14.6	mg/L	N
***Lead** *Done along with Sched 15.1*				

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing	n/a			
Distribution	n/a			

The Municipality Distribution staff did record pH and Alkalinity of two separate sampling times (winter and summer).

Period	Number of Distribution Samples	Range of pH results (min#)–(max #)	Range of Alkalinity Results (min#)-(max #)	Temperature Range (min#)-(max #)
Winter (March 13, 2024)	4	6.69 – 7.22	74-78	5.7 – 10.2
Summer (August 22, 2024)	4	6.97 – 7.54	64-68	19.6 – 20.5

The Municipality also conducted non-regulatory Inorganic Parameter Testing as part of a self-initiated drinking water quality assurance program.

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Copper	08 Jan 2024 15 July 2024	<0.002 0.002	mg/L	N
Iron	08 Jan 2024 15 July 2024	<0.005 <0.005	mg/L	N
Manganese	08 Jan 2024 15 July 2024	0.010 0.016	mg/L	N
Lead (WTP discharge)	15 Jul 2024	0.00003	mg/L	N
Lead (WD sample)	15 Jul 2024	0.00038	mg/L	N
Sulphate	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	10.0 7.0 8.0 6.0	mg/L	N
Chloride	08 Jan 2024 25 Apr 2024 15 Jul 2024 07 Oct 2024	30.0 22.9 41.9 24.7	mg/L	N
Aluminum	15 Jul 2024	0.03	mg/L	N
Calcium	15 Jul 2024	33.7	mg/L	N
Magnesium	15 Jul 2024	6.79	mg/L	N
Hardness (as CaCO3)	15 Jul 2024	112	mg/L	N

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Total Trihalomethanes) (NOTE: show latest annual average)	**Annual Average** 08 Jan 2024 25 Apr 2024 15 Jul 2024 06 Aug 2024 09 Sept 2024 07 Oct 2024	**60.0** (53) (40) (152)* (92)* (72)* (42) (Jul-Sep 105 avg)	µg/L	N
HAA (Haloacetic Acids)	**Annual Average** 08 Jan 2024 25 Apr 2024 15 Jul 2024 06 Aug 2024 09 Sept 2024 07 Oct 2024	**51.7** (36.2) (48.7) (136)* (64.7)* (61.2)* (34.6) (Jul-Sep 87.3 avg)	µg/L	N
Alachlor	15 Jul 2024	<0.3	µg/L	N
Atrazine	15 Jul 2024	<0.5	µg/L	N
Atrazine (Desethyl)	15 Jul 2024	<0.5	µg/L	N
Atrazine + N-dealkylated metobolites	15 Jul 2024	<0.5	µg/L	N
Azinphos-methyl	15 Jul 2024	<1	µg/L	N
Benzene	15 Jul 2024	<0.5	µg/L	N
Benzo(a)pyrene	15 Jul 2024	<0.006	µg/L	N
Bromoxynil	15 Jul 2024	<0.5	µg/L	N
Carbaryl	15 Jul 2024	<3	µg/L	N
Carbofuran	15 Jul 2024	<1	µg/L	N
Carbon Tetrachloride	15 Jul 2024	<0.2	µg/L	N
Chlorpyrifos	15 Jul 2024	<0.5	µg/L	N
Diazinon	15 Jul 2024	<1	µg/L	N
Dicamba	15 Jul 2024	<1.0	µg/L	N
1,2-Dichlorobenzene	15 Jul 2024	<0.5	µg/L	N
1,4-Dichlorobenzene	15 Jul 2024	<0.5	µg/L	N
1,2-Dichloroethane	15 Jul 2024	<0.5	µg/L	N
1,1-Dichloroethylene (vinylidene chloride)	15 Jul 2024	<0.5	µg/L	N
Dichloromethane (methylene chloride)	15 Jul 2024	<5	µg/L	N
2-4 Dichlorophenol	15 Jul 2024	<0.2	µg/L	N
2,4-Dichlorophenoxy acetic acid (2,4-D)	15 Jul 2024	<1.0	µg/L	N
Diclofop-methyl	15 Jul 2024	<0.9	µg/L	N
Dimethoate	15 Jul 2024	<1	µg/L	N
Diquat	15 Jul 2024	<5	µg/L	N
Diuron	15 Jul 2024	<5	µg/L	N
Glyphosate	15 Jul 2024	<25	µg/L	N
Malathion	15 Jul 2024	<5	µg/L	N
MCPA (2-methyl-4-chlorophenoxyacetic acid)	15 Jul 2024	<10	µg/L	N
Metolachlor	15 Jul 2024	<3	µg/L	N
Metribuzin	15 Jul 2024	<3	µg/L	N
Monochlorobenzene (Chlorobenzene)	15 Jul 2024	<0.5	µg/L	N

Paraquat	15 Jul 2024	<1	µg/L	N
Pentachlorophenol	15 Jul 2024	<0.2	µg/L	N
Phorate	15 Jul 2024	<0.3	µg/L	N
Picloram	15 Jul 2024	<5.0	µg/L	N
Polychlorinated Biphenyls (PCB)	15 Jul 2024	<0.05	µg/L	N
Prometryne	15 Jul 2024	<0.1	µg/L	N
Simazine	15 Jul 2024	<0.5	µg/L	N
Terbufos	15 Jul 2024	<0.5	µg/L	N
Tetrachloroethylene	15 Jul 2024	<0.5	µg/L	N
2,3,4,6-Tetrachlorophenol	15 Jul 2024	<0.2	µg/L	N
Triallate	15 Jul 2024	<10	µg/L	N
Trichloroethylene	15 Jul 2024	<0.5	µg/L	N
2,4,6-Trichlorophenol	15 Jul 2024	<0.2	µg/L	N
Trifluralin	15 Jul 2024	<0.5	µg/L	N
Vinyl Chloride	15 Jul 2024	<0.2	µg/L	N

The Municipality also conducted non-regulatory Organic Parameter Testing as part of a self-initiated drinking water quality assurance program.

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (WTP discharge)	**Annual Average** 08 Jan 2024 25 Apr 2024 15 Jul 2024 06 Aug 2024 09 Sept 2024 07 Oct 2024	**46.68** (38) (32) (125)* (67)* (62)* (32) (Jul-Sep 84.7 avg)	µg/L	N

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
THM (Total Trihalomethanes) (WD)	105	ug/L	Quarterly Average (July-Sept)
HAA (Haloacetic Acids) (WD)	87.3	ug/L	Quarterly Average (July-Sept)
THM (Total Trihalomethanes) (WD)	84.7	ug/L	Quarterly Average (July-Sept)