

Tweed Drinking Water System Annual Water Report

Reporting period of January 1, 2021 – December 31, 2021

Prepared For: The Corporation of the Municipality of Tweed

Prepared By:  **Ontario Clean Water Agency**
Agence Ontarienne Des Eaux

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

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Report Availability

Population Served:	< 10,000
Website where the annual report can be viewed by the public:	www.tweed.ca
Alternate location where annual report will be available for inspection and is free of charge:	Municipal Office
How are system users notified that the annual report is available and is free of charge?	Public access/notice via Municipal Website and Bi-weekly Municipal News Column
Number of Designated Facilities served:	None
Has a copy of this report been provided to all Designated Facilities?	N/A
Number of Interested Parties reported to:	N/A
Has a copy of this report been provided to all Interested Parties?	N/A
The following Drinking-Water Systems receive drinking water from this system:	N/A
Has a copy of this report been provided to connected owners?	N/A

Compliance Report Card

Drinking Water System Number:	220001557
System Owner:	The Corporation of the Municipality of Tweed
Operating Authority:	Ontario Clean Water Agency
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2021 – December 31, 2021

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	Sept 20, 2021	Announced-Focused Drinking Water Inspection - Final Inspection Risk Rating of 100.00%
Ministry of Labour Inspections	0		
DWQMS Audits	1	Feb 26, 2021	Systems Surveillance Audit & Re-Accreditation Audit – SAI Global
AWQI's	0		
Non-Compliance	0		
Community Complaints	0		

Spills	0
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Quality Control Measures

The Corporation of the Municipality of Tweed facilities are part of OCWA's operational Trent Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff that live and work in the surrounding area.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Corporation of the Municipality of Tweed benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
 - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
 - PDM (WISKI) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
 - Work Management System (WMS) tracks and reports maintenance activities, and creates predictive and preventative reports.
 - WonderWare wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

System Process Description

Raw Source

Raw water sources for the Tweed Drinking Water System are from two separate groundwater wells. The main service well is the Crookston Well or Well #3, Well #1 is only utilized as an emergency stand-by well.

Treatment

No treatment exists at the Well #1 pump house. In the event that this standby well is needed to be put into operation, it is designed to pump water to the Well 3 treatment subsystem for further treatment and disinfection. Well #3 subsystem is equipped with submersible pumps ultraviolet light for primary disinfection and sodium hypochlorite for secondary disinfection. Well #3 (Crookston) has a nitrate uranium removal system (ion exchange). The facility is equipped with on-line, alarmed continuous monitoring for treated water free

chlorine residual and turbidity and distribution system free chlorine residual. The facility also contains a well pump lock out system in the case of disinfection failure.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Chloride	Softener	Sifto Canada Corp
Sodium Hypochlorite	Disinfection	Brenntag & Jutzi

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Cause			Corrective Action Taken
		Parameter	Result	Exceedance of	
N/A					

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
N/A				

Non-Compliance Identified in a Ministry Inspection:

Ministry of Environment Inspection Rating: **100.00%**

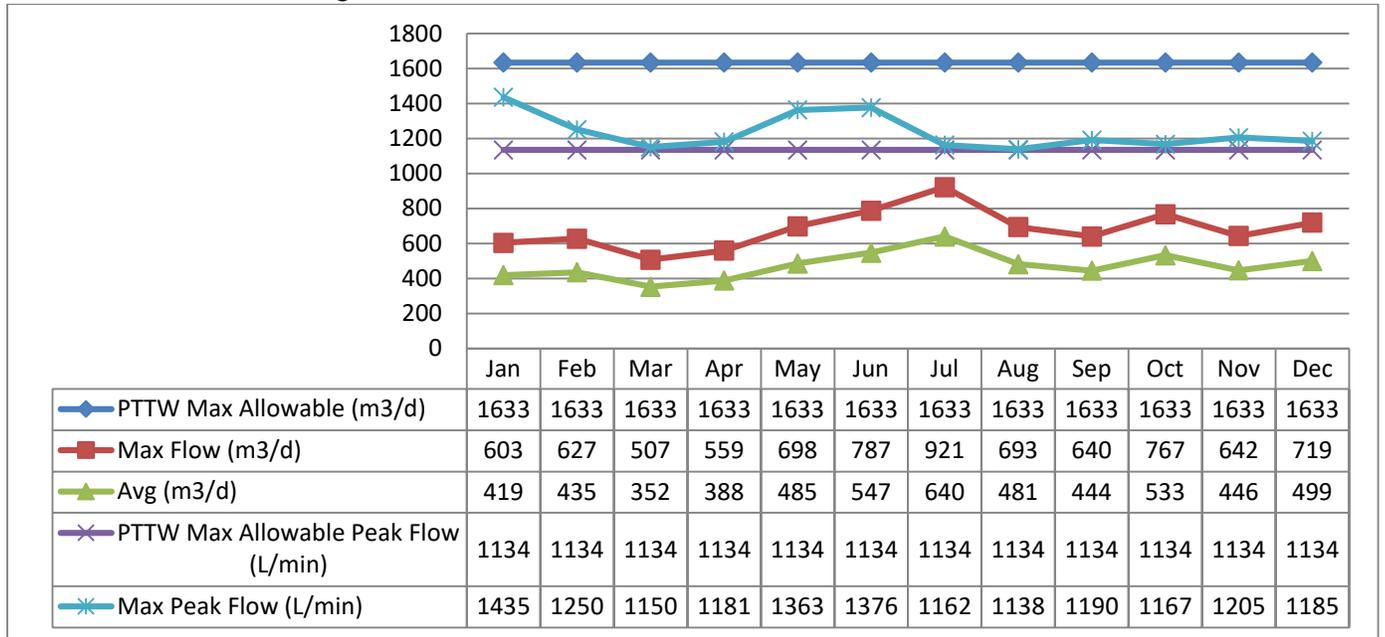
Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
N/A				

Flows

The Tweed Drinking Water System is has a rated capacity of 1633 m3/day.

Raw Water Flows – RW3

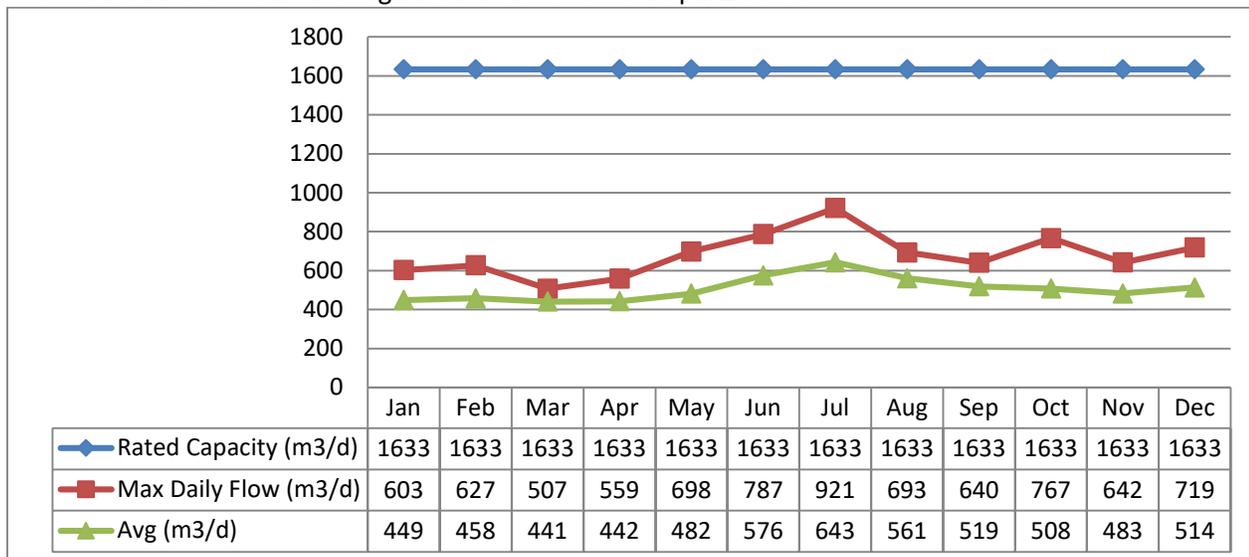
The Raw Water flows are regulated under the Permit to Take Water.



The above table shows there were spikes in instantaneous peak flow rate (L/min) and max flow rate these occurrences were caused during pump start-up/pump to waste. The Peak Flow rate was increased in May 2021 during scheduled flow meter calibrations.

Treated Water Flows - TW

The Treated Water flows are regulated under the Municipal Licence.



Regulatory Sample Results Summary

- RW1 =Raw Water Well 1
- RW3 = Raw Water Well 3
- TW=Treated Water
- DW=Distribution Water

Microbiological Testing

Location	Number of Samples	E.coli Results (min) - (max)	Total Coliform Results (min) – (max)	Number of HPC Samples	HPC Results (min) - (max)
Raw Water – RW 1	52	0 - 1	0 – 3	~	~
Raw Water – RW 3	52	0 - 0	0 – 0	~	~
Treated Water - TW	52	0 - 0	0 - 0	52	0 – 2
Distribution - DW	127	0 - 0	0 - 0	127	0 - 85

Operational Testing

On-Line

Parameter	Range of Results (min # - max #)
Treated Free Chlorine	0.00 – 5.85 mg/L*
Distribution Free Chlorine	0.0 – 4.98 mg/L*
Treated Water Fluoride	Fluoride is not added at this facility

*Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted, are reported to the Ministry of Environment as Adverse Water Quality Incidents

In-House

Parameter	# of grab samples taken	Range of Results (min # - max #)
Raw Well 1 Turbidity	12	0.24 – 0.32 NTU
Raw Well 1 UVT	12	97.3 – 97.9 %
Raw Well 3 Turbidity	12	0.17 - 0.29 NTU
Raw Well 3 UVT	12	97.4 – 97.8 %
Treated Free Chlorine	52	1.30 – 2.4 mg/L
Distribution Free Chlorine	133	0.44 – 2.3 mg/L

Laboratory - Reg. 170/03

Parameter	# of grab samples taken	Range of Results (min # - max #)	MAC
Treated Well 3 Uranium	5	8.35-10.50ug/L	20
Distribution Uranium	4	8.60-10.20 ug/L	20

Additional Legislated Samples

Legal Document	Date of Issuance	Parameter	# of grab samples taken	Range of Results (min # - max #)	
PTTW # 4464-A9NRHH Section 4 (4.3.1)	May 10, 2016	Raw Well 1	Ammonia	4	<0.04 – <0.04 mg/L
			Uranium	4	358 – 393 ug/L
			Nitrate	4	3.88 – 4.14mg/L
			Nitrite	4	0.18 – 0.21 mg/L
		Raw Well 3	Ammonia	4	<0.04 – <0.04 mg/L
			Uranium	4	14.70 – 19.50ug/L
			Nitrate	4	4.62 – 5.51 mg/L
			Nitrite	4	0.00 – 0.00 mg/L

Lead Sampling

The Schedule 15 Sampling is required under O.Reg 170/03. This system is under reduced sampling. No plumbing samples were collected. This facility is on a reduced sampling schedule and lead is sampled every 36 months, the last samples were taken in 2021

Location	Date	Lead	pH	Alkalinity (mg/L) as CaCO3
Limit/Ranges		10	6.5-8.5	30-500
Hydrant #13	15-Mar-21	0.02	7.72	264
Hydrant #88		0.27	7.82	265
Hydrant #13	05-Oct-21	0.11	8.29	260
Hydrant #88		0.40	8.29	257

Inorganic Parameters

- MAC = Maximum Allowable Concentration as per O. Reg 169/03
- BDL = Below the laboratory detection level
- Note: Fluoride and Sodium are only required to be tested every 60 months.

TREATED WATER	Sample Date	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW3	2021/03/08	<MDL 0.9	6	No	No
Arsenic: As (ug/L) - TW3	2021/03/08	1.3	25	No	No
Barium: Ba (ug/L) - TW3	2021/03/08	382.0	1000	No	No
Boron: B (ug/L) - TW3	2021/03/08	25.0	5000	No	No
Cadmium: Cd (ug/L) - TW3	2021/03/08	0.006	5	No	No
Chromium: Cr (ug/L) - TW3	2021/03/08	0.51	50	No	No
Mercury: Hg (ug/L) - TW3	2021/03/08	<MDL 0.01	1	No	No
Selenium: Se (ug/L) - TW3	2021/03/08	0.22	50	No	No
Uranium: U (ug/L) - TW3	2021/10/12	10.5	20	No	No
Additional Inorganics					
Uranium: U (ug/L) - TW3	01/11/2021	8.35	20	No	No
Uranium: U (ug/L) - TW3	03/08/2021	8.93	20	No	No
Uranium: U (ug/L) - TW3	04/12/2021	9.10	20	No	No
Uranium: U (ug/L) - TW3	07/05/2021	8.49	20	No	No
Uranium: U (ug/L) - TW3	10/12/2021	10.50	20	No	Y
Nitrite (mg/L) - TW3	01/11/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	04/12/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	07/05/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	09/13/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	10/04/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	10/12/2021	0.00	20	No	No

Nitrite (mg/L) - TW3	11/08/2021	0.00	20	No	No
Nitrite (mg/L) - TW3	12/06/2021	0.00	20	No	No
Nitrate (mg/L) - TW3	01/11/2021	0.00	20	No	No
Nitrate (mg/L) - TW3	04/12/2021	4.50	20	No	No
Nitrate (mg/L) - TW3	07/05/2021	4.76	20	No	No
Nitrate (mg/L) - TW3	09/13/2021	4.59	20	No	No
Nitrate (mg/L) - TW3	10/04/2021	4.57	20	No	No
Nitrate (mg/L) - TW3	10/12/2021	4.39	20	No	No
Nitrate (mg/L) - TW3	11/08/2021	4.14	20	No	No
Nitrate (mg/L) - TW3	12/06/2021	4.25	20	No	No
60 Month Samples					
Fluoride (mg/L) - TW3	2021/10/12	0.72	1.5	No	Yes
Sodium (mg/L) - TW3	2018/06/25	25.1	20.0*	Yes	Yes

*Uranium typically exceeds half of the maximum acceptable concentration (1/2 MAC) as these parameters are considered naturally occurring. To comply with Regulation 170/03 sampling is increased from annually to quarterly. There is no duty to report ½ MAC exceedances; Duty to report only occurs if we exceed the MAC.

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.⁴

Organic Parameters

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Alachlor (ug/L) - TW3	2021/03/08	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2021/03/08	0.03	5.00	No	No
Azinphos-methyl (ug/L) - TW3	2021/03/08	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW3	2021/03/08	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW3	2021/03/08	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW3	2021/03/08	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW3	2021/03/08	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW3	2021/03/08	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW3	2021/03/08	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW3	2021/03/08	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW3	2021/03/08	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW3	2021/03/08	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2021/03/08	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2021/03/08	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW3	2021/03/08	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW3	2021/03/08	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW3	2021/03/08	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW3	2021/03/08	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2021/03/08	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW3	2021/03/08	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW3	2021/03/08	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW3	2021/03/08	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW3	2021/03/08	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW3	2021/03/08	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW3	2021/03/08	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW3	2021/03/08	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW3	2021/03/08	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW3	2021/03/08	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW3	2021/03/08	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW3	2021/03/08	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW3	2021/03/08	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW3	2021/03/08	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW3	2021/03/08	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW3	2021/03/08	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW3	2021/03/08	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW3	2021/03/08	<MDL 0.01	1.00	No	No

Tetrachloroethylene (ug/L) - TW3	2021/03/08	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	2021/03/08	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW3	2021/03/08	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW3	2021/03/08	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	2021/03/08	<MDL 0.25	5.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW3	2021/03/08	<MDL 0.12	45.00	No	No
Trifluralin (ug/L) - TW3	2021/03/08	<MDL 0.02	1.00	No	No
Vinyl Chloride (ug/L) - TW3	2021/03/08	<MDL 0.17	100.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	2021/01/01	20.25	100.00	No	No
HAA Total (ug/L) Annual Average - DW	2021/01/01	7.675	80.00	No	No

Maintenance Summary

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the The Corporation of the Municipality of Tweed in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative/Weekly Maintenance Work Orders Completed	205
Operational Maintenance Work Orders Completed	25
Capital Maintenance Work Orders Completed	17

Maintenance Highlights: major expenses incurred to install, repair or replace required equipment-

Chlorine Pump	\$2,575
UV Part and Maintenance	\$3,983
Chlorine Part and Maintenance	\$1281

QEMS

A Surveillance Systems Audit was conducted by QMI-SAI Canada Limited on Feb 26, 2021. The Corporation of the Municipality of Tweed's Quality Management System conforms to the Standard.

Water Taking and Transfer Data

Data was submitted electronically on February 7th, 2022 to the Ministry of the Environment and Climate Change for the reporting period of January 1, 2021 – December 31, 2021 under Permit to Take Water #4464-A9NRHH.



Ministry of the Environment,
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#) WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 4464-A9NRHH
Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF TWEED.
Received on: Feb 7, 2022 9:30 AM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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