

Tweed Drinking Water System Annual Water Report

Reporting period of January 1, 2022 – December 31, 2022

Prepared For:
Prepared By:

The Corporation of the Municipality of Tweed



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.

Table of Contents

Report Availability.....	3
Compliance Report Card	3
Quality Control Measures	4
System Process Description	5
Raw Source.....	5
Treatment	5
Treatment Chemicals used during the reporting year:	5
Summary of Non-Compliance	6
Adverse Water Quality Incidents	6
Non-Compliance	7
Non-Compliance Identified in a Ministry Inspection:.....	7
Flows	8
Raw Water Flows – RW3.....	8
Treated Water Flows - TW	8
Regulatory Sample Results Summary	8
Microbiological Testing.....	9
Operational Testing.....	9
On-Line.....	9
In-House	9
Laboratory – Reg. 170/03	9
Additional Legislated Samples	10
Lead Sampling	10
Inorganic Parameters.....	11
Organic Parameters	10
Maintenance Summary.....	15
Maintenance Highlights	15
QEMS.....	15
Water Taking and Transfer Data	16

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, 2022 – December 31, 2022

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	Aug 23, 2022	Announced-Focused Drinking Water Inspection no Non-Compliances or Best Management Practices identified.
Ministry of Labour Inspections	0		
DWQMS Audits	1	Feb 22, 2022	Systems Surveillance Audit – SAI Global

AWQI's	2	May 21, 2022	A power outage occurred over the May long weekend, OCWA lost the chlorine continuous analyzer in distribution and reported as a proactive measure. Upon resuming regular operations, it was found that the chart recorder actually remained operational and no trending was lost during the outage.
		Sept 11, 2022	Tweed Duty Well Raw Water Pump failed and OCWA was unable to follow AWWA Standard C654 completely when putting the duty well back online. Precautionary Boil Water Advisory was issued.
Non-Compliance	0		
Community Complaints	2	Jun 8 th , 2022	Complaint received regarding additional Fluoride in the drinking water, OCWA informed consumer that the Tweed Drinking Water System does not add fluoride to the system. Any present in the water is naturally occurring.
		Sept 26 th , 2022	Consumer concerned with water quality from refrigerator tap. Microbiological and chlorine sample were collected. Results from the lab indicated no presence of Total Coliforms and E. Coli and the Free Chlorine result indicated adequate disinfection.
Spills	0		

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	
Sept 11 th , 2022	159919	Operational	n/a	n/a	<p>On September 11, 2022 it was determine that the Raw Well failed in Tweed and OCWA was not able to produce water for the Municipality. OCWA contacted SAC and the Health Unit who then issued a Precautionary Boil Water Advisory for the Municipality. Tweed Well #3 is the only well for the Municipality. OCWA advised that once the well was repaired we would follow AWWA Standard C654 as required and disinfect at greater than 100ppm. Although the well was disinfected at greater than 100pm we would not be able to follow Section 5.1 "allowed to rest for at least 12 hr.. a minimum of two water samples shall be collected not less than 30 minutes apart while the well is continuously pumped.." as the tower was calling for water. Once the well was disinfected it was flushed to ensure all chlorine was removed from the well per AWWA standard C654.</p> <p>A precautionary boil water issued from the Health Unit and stated the following:</p> <p>The system is unable to follow AWWA Corrective Action Standards of allowing for 12 hours disinfection rest time following the repair and</p>

					maintenance of water treatment equipment.
May 21 st , 2022	158452	Operational	n/a	n/a	The Derecho event over the May long weekend caused a power outage. OCWA initially thought the chlorine continuous monitoring in the distribution was lost, but it was later discovered that the Chart Recorder remained operational during the outage and therefore no loss of continuous monitoring.

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: N/A

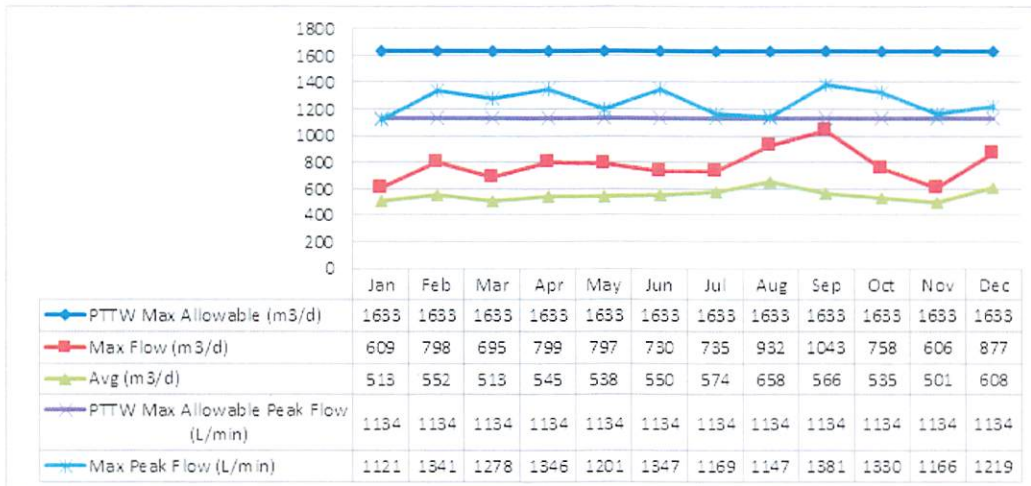
Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
N/A				

Flows

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

Raw Water Flows – RW3

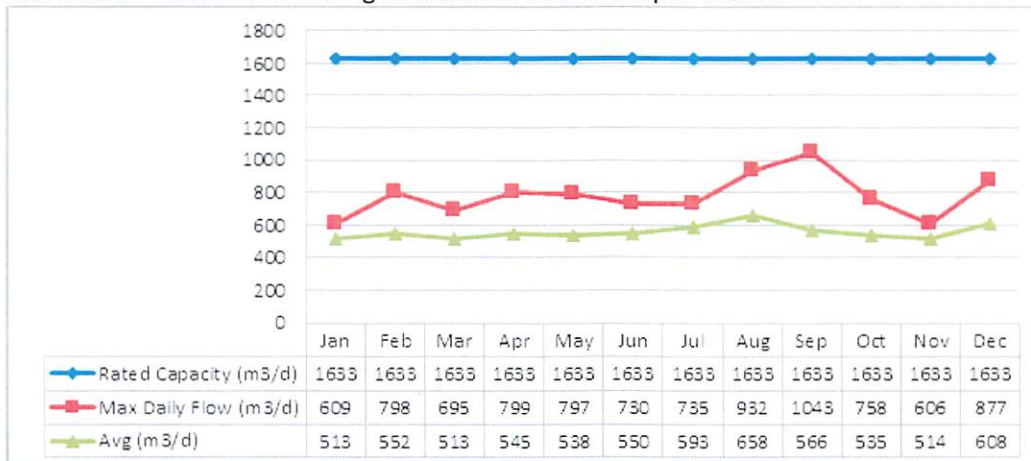
The Raw Water flows are regulated under the Permit to Take Water.



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 increased in September 2022 during Well #3 Pump maintenance after a failure.

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 - 0	0 – 0	~	~
Raw Water – RW 3	52	0 - 0	0 – 1	~	~
Treated Water - TW	54	0 - 0	0 - 0	54	0 – 2
Distribution - DW	128	0 - 0	0 - 0	126	0 - 67

Operational Testing

On-Line

Parameter	Range of Results (min # - max #)
Treated Free Chlorine	0.00 – 5.21 mg/L*
Distribution Free Chlorine	0.0 – 4.97 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	0.27 – 0.71 NTU
Raw Well 1 UVT	12	95.60 – 97.60 %
Raw Well 3 Turbidity	12	0.15 - 0.35 NTU
Raw Well 3 UVT	12	95.50 – 97.70 %
Treated Free Chlorine	52	1.64 – 2.50 mg/L
Distribution Free Chlorine	132	0.41 – 2.40 mg/L

Laboratory - Reg. 170/03

Parameter	# of grab samples taken	Range of Results (min # - max #)	MAC
Treated Well 3 Uranium	5	4.70-13.30 ug/L	20
Distribution Uranium	5	5.11-13.60 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	<0.04 – <0.04 mg/L
			Uranium	271 – 402 ug/L
			Nitrate	0.92 – 4.26mg/L
			Nitrite	0.00 – 0.20 mg/L
		Raw Well 3	Ammonia	<0.04 – <0.04 mg/L
			Uranium	17.50 – 20.30ug/L
			Nitrate	4.01 – 5.82 mg/L
			Nitrite	0.00 – 0.01 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 CaCO ₃
Limit/Ranges		10	6.5-8.5	30-500
Hydrant #13	15-Mar-22	--	7.61	264
Hydrant #88		--	7.67	271
Hydrant #13	05-Oct-21	--	7.59	284
Hydrant #88		--	7.64	268

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	2022/03/07	<MDL 0.6	6	No	No
Arsenic: As (ug/L) - TW3	2022/03/07	1.3	25	No	No
Barium: Ba (ug/L) - TW3	2022/03/07	408.0	1000	No	No
Boron: B (ug/L) - TW3	2022/03/07	30.0	5000	No	No
Cadmium: Cd (ug/L) - TW3	2022/03/07	0.003	5	No	No
Chromium: Cr (ug/L) - TW3	2022/03/07	0.55	50	No	No
Mercury: Hg (ug/L) - TW3	2022/03/07	<MDL 0.01	1	No	No
Selenium: Se (ug/L) - TW3	2022/03/07	0.23	50	No	No
Uranium: U (ug/L) - TW3	2022/10/03	6.4	20	No	No
Additional Inorganics					
Uranium: U (ug/L) - TW3	2022/01/10	11.60	20	No	Yes
Uranium: U (ug/L) - TW3	2022/03/07	11.80	20	No	Yes
Uranium: U (ug/L) - TW3	2022/04/04	13.30	20	No	Yes
Uranium: U (ug/L) - TW3	2022/07/04	4.70	20	No	No
Uranium: U (ug/L) - TW3	2022/10/03	6.40	20	No	No
Nitrite (mg/L) - TW3	2022/01/04	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/01/10	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/03/07	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/04/04	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/05/02	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/06/06	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/07/04	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/08/02	0.00	1	No	No

Nitrite (mg/L) - TW3	2022/09/12	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/10/03	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/11/14	0.00	1	No	No
Nitrite (mg/L) - TW3	2022/12/05	0.00	1	No	No
Nitrate (mg/L) - TW3	2022/01/04	4.07	20	No	No
Nitrate (mg/L) - TW3	2022/01/10	4.27	20	No	No
Nitrate (mg/L) - TW3	2022/02/07	4.41	20	No	No
Nitrate (mg/L) - TW3	2022/03/07	4.02	20	No	No
Nitrate (mg/L) - TW3	2022/04/04	4.28	20	No	No
Nitrate (mg/L) - TW3	2022/05/02	4.59	20	No	No
Nitrate (mg/L) - TW3	2022/06/06	5.72	20	No	No
Nitrate (mg/L) - TW3	2022/07/04	5.60	20	No	No
Nitrate (mg/L) - TW3	2022/08/02	5.29	20	No	No
Nitrate (mg/L) - TW3	2022/09/12	4.90	20	No	No
Nitrate (mg/L) - TW3	2022/10/03	5.07	20	No	No
Nitrate (mg/L) - TW3	2022/11/14	4.67	20	No	Yes
Nitrate (mg/L) - TW3	2022/12/05	4.72	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.

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	2022/03/07	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2022/03/07	0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW3	2022/03/07	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW3	2022/03/07	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW3	2022/03/07	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW3	2022/03/07	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW3	2022/03/07	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW3	2022/03/07	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW3	2022/03/07	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW3	2022/03/07	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW3	2022/03/07	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW3	2022/03/07	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2022/03/07	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2022/03/07	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW3	2022/03/07	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW3	2022/03/07	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW3	2022/03/07	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW3	2022/03/07	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2022/03/07	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW3	2022/03/07	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW3	2022/03/07	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW3	2022/03/07	<MDL 1.0	70.00	No	No

Diuron (ug/L) - TW3	2022/03/07	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW3	2022/03/07	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW3	2022/03/07	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW3	2022/03/07	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW3	2022/03/07	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW3	2022/03/07	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW3	2022/03/07	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW3	2022/03/07	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW3	2022/03/07	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW3	2022/03/07	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW3	2022/03/07	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW3	2022/03/07	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW3	2022/03/07	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW3	2022/03/07	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW3	2022/03/07	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	2022/03/07	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW3	2022/03/07	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW3	2022/03/07	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	2022/03/07	<MDL 0.25	5.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW3	2022/03/07	<MDL 0.12	45.00	No	No
Trifluralin (ug/L) - TW3	2022/03/07	<MDL 0.02	1.00	No	No
Vinyl Chloride (ug/L) - TW3	2022/03/07	<MDL 0.17	100.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	2022	20.60	100.00	No	No
HAA Total (ug/L) Annual Average - DW	2022	6.72	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	188
Operational Maintenance Work Orders Completed	25
Capital Maintenance Work Orders Completed	15

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

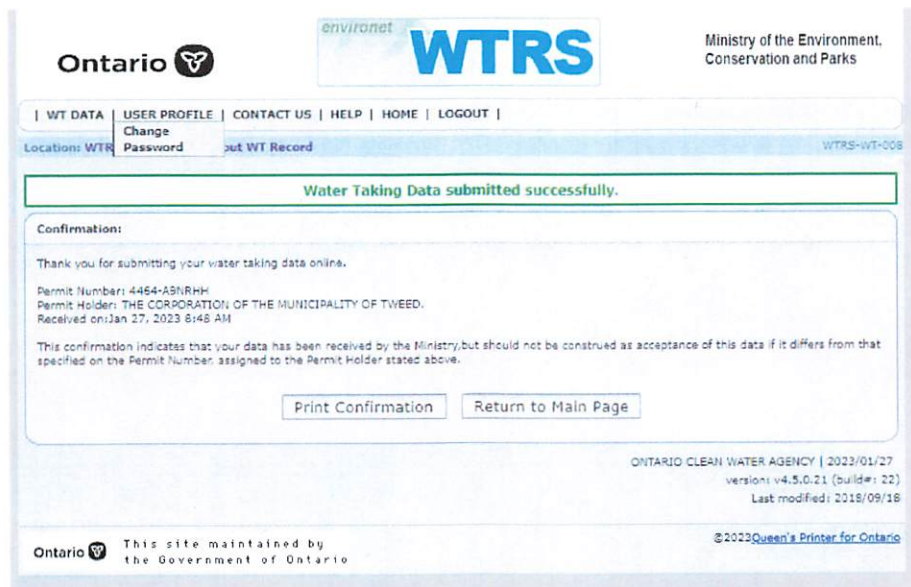
New pump and cable for Well#3
New heater for Well#3
Load of Salt


QEMS

A Surveillance Systems Audit was conducted by QMI-SAI Canada Limited on Feb 22, 2022. 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 January 27th, 2023 to the Ministry of the Environment and Climate Change for the reporting period of January 1, 2022– December 31, 2022 under Permit to Take Water #4464-A9NRHH.



Ontario  environet **WTRS** Ministry of the Environment, Conservation and Parks

| WT DATA | USER PROFILE | CONTACT US | HELP | HOME | LOGOUT |

Location: WTR Change Password Submit 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: Jan 27, 2023 8:48 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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