

Tweed Drinking Water System Annual Water Report

Reporting period of January 1, 2012 – December 31, 2012

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.twp.tweed.on.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 (OAP #568)
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2012 – December 31, 2012

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	May 8	Announced Focused Routine Inspection Rating 100%
Ministry of Labour Inspections	0		
DWQMS Audits	1	Feb 27	Received Full Scope Entire Accreditation
AWQI's	0		
Non-Compliance	1	Feb 16	Bell Canada feeder line severed – loss of Alarm capabilities
Community Complaints	0		
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 who live and work in the community.

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.
 - Process Data Collection (PDC) 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.
 - Outpost 5 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 ultra violet 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

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
O Reg 170/03, Schedule 6, 10(1)	Records & Alarm Capabilities	Feb 16 – 17, 2012	Bell Canada has been contacted and advised OCWA that the repair would take a minimum of two days	Communications to the affected Water and Wastewater facilities restored Feb 17, 2012

Non-Compliance Identified in a Ministry Inspection:

Ministry of Environment Inspection Rating: 100%

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

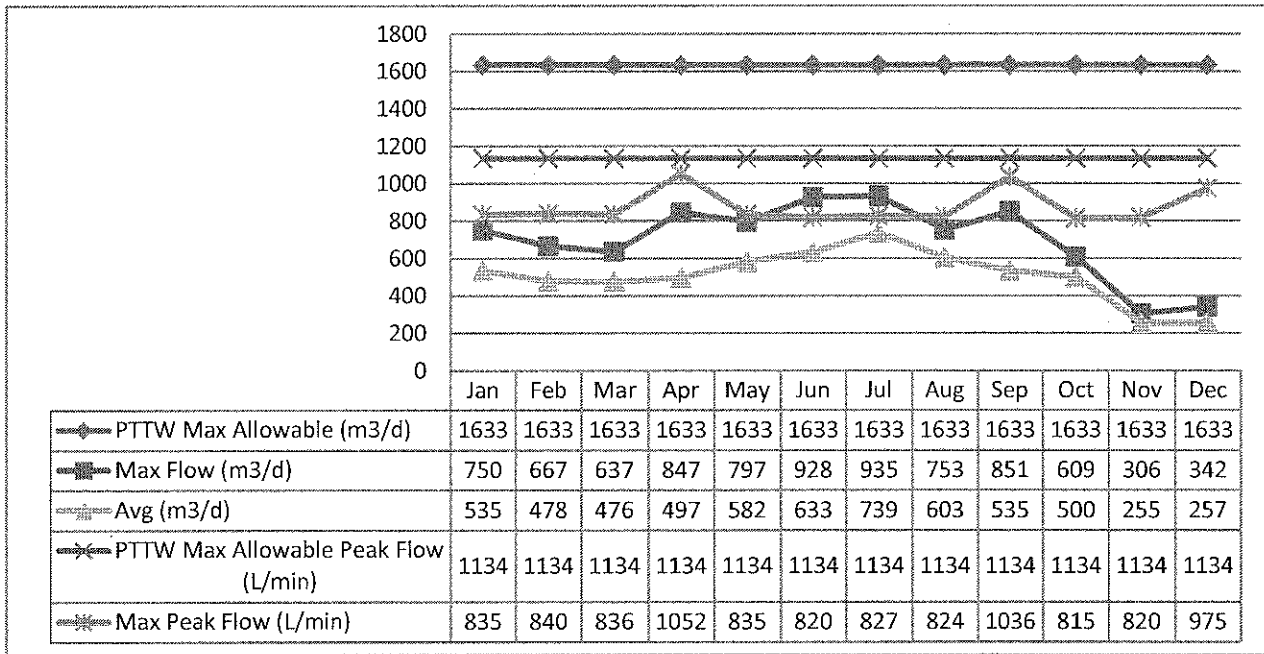
Flows

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

Raw Water Flows

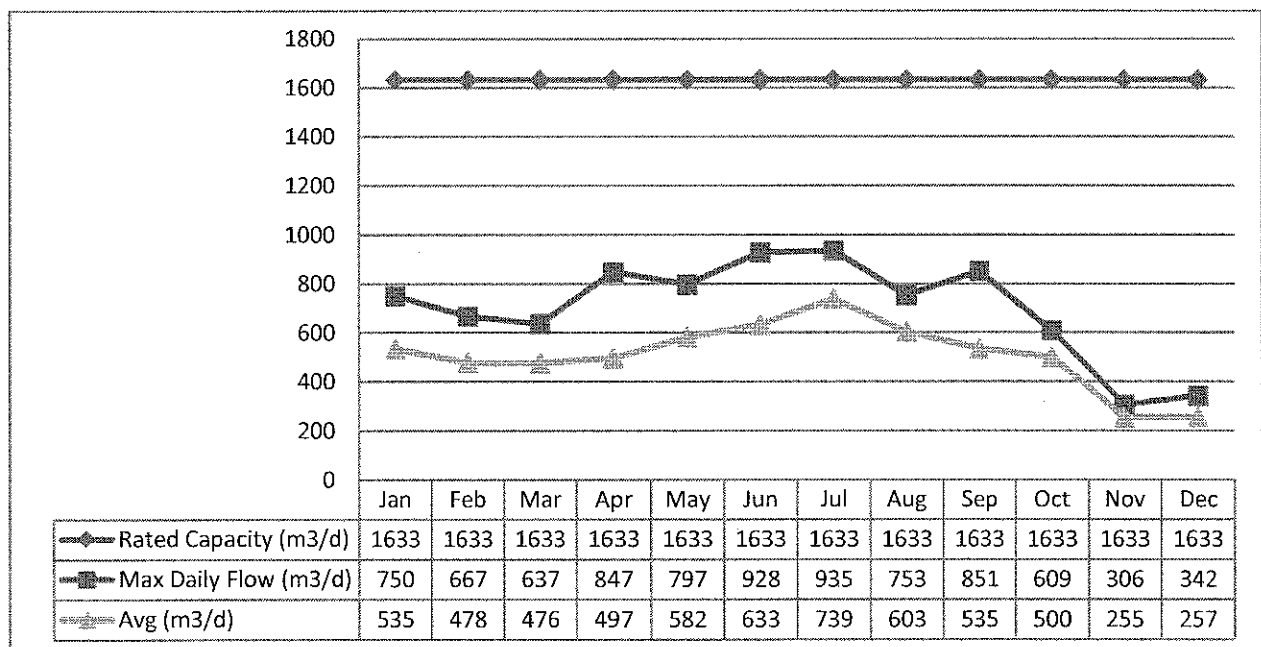
The Raw Water flows are regulated under the Permit to Take Water.

Raw Water Volume Taken: RW3



Treated Water Flows

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 - Table 1

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 - 10	~	~
Raw Water – RW 3	52	0 - 0	0 - 0	~	~
Treated Water - TW	52	0 - 0	0 - 0	52	0 - 8
Distribution - DW	126	0 - 0	0 - 0	113	0 - 288

Operational Testing - Table 2

On-Line

	Range of Results (min # - max #)
Raw Well 3 Turbidity	0.0-1.99 NTU
Treated Water Chlorine	0.62 – 3.26 mg/L
Distribution Free Chlorine	0.40 – 4.95 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	0.18 - 1.81 NTU
Raw Well 3 Turbidity	12	0.13 - 0.33 NTU
Treated Free Chlorine	54	1.27 – 2.17
Distribution Free Chlorine	130	0.24 – 2.08

Laboratory - MOE/MOH Recommendation

Parameter	# of grab samples taken	Range of Results (min # - max #)
Treated Well 3 Uranium	7	8.52 – 11.8 ug/L
Treated Well 3 Fluoride	4	0.70 – 0.91 mg/L
Distribution Uranium	6	8.53 – 12.7 ug/L

Additional Legislated Samples – Table 3

Legal Document	Date of Issuance	Parameter	# of grab samples taken	Range of Results (min # - max #)
PTTW - #0687-6K5JCW	March 22, 2006	Total Ammonia Nitrogen Raw Well 1	4	<0.04 - 0.06 mg/L
		Total Ammonia Nitrogen Raw Well 3	4	<0.04 – 0.20 mg/L
		Uranium Raw Well 1	4	300 – 334 ug/L
		Uranium Raw Well 3	6	19.4– 22.5 ug/L

Lead Sampling – Table 4

The Lead Sampling Program is required under O.Reg 170/03. This system qualified for the plumbing exemption.

Location	Date	pH	Alkalinity (mg/L) as CaCO ₃	Lead: Pb (ug/L)
Hydrant #1	07-Mar-12	7.30	259	0.17
Hydrant #88	07-Mar-12	7.40	259	0.34
Hydrant #1	11-Sept-12	7.71	230	0.35
Hydrant #88	11-Sep-12	7.82	228	0.51

Inorganic Parameters – Table 5

- 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.

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Antimony: Sb (ug/L) - TW3	2012/03/05	0.22	6.0	No	No
Arsenic: As (ug/L) - TW3	2012/03/05	1.50	25.0	No	No
Barium: Ba (ug/L) - TW3	2012/03/05	313.00	1000.0	No	No
Boron: B (ug/L) - TW3	2012/03/05	25.00	5000.0	No	No
Cadmium: Cd (ug/L) - TW3	2012/03/05	0.0040	5.0	No	No
Chromium: Cr (ug/L) - TW3	2012/03/05	1.00	50.0	No	No
Lead: Pb (ug/L) - DW	2012/03/07	0.34	1.0	No	No
Mercury: Hg (ug/L) - TW3	2012/03/05	< 0.020	1.0	No	No
Selenium: Se (ug/L) - TW3	2012/03/05	< 1.00	10.0	No	No
Sodium: Na (mg/L) - TW3	2008/08/06	19.20	20.0	No	No
Uranium: U (ug/L) - TW3	2012 Average	10.04	20.0	No	Yes
Fluoride Residual: Mean (mg/L) - TW3	2012/10/01	0.81	1.5	No	No
Nitrite (mg/L) - TW3	2012/10/01	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2012/01/09	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2012/04/02	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2012/07/03	< 0.0050	1.0	No	No
Nitrate (mg/L) - TW3	2012/10/01	2.24	10.0	No	No
Nitrate (mg/L) - TW3	2012/01/09	1.82	10.0	No	No
Nitrate (mg/L) - TW3	2012/04/02	3.13	10.0	No	No
Nitrate (mg/L) - TW3	2012/07/03	2.90	10.0	No	No

Organic Parameters – Table 6

- 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	2012/03/05	< 0.020	5.0	No	No
Aldicarb (ug/L) - TW3	2012/03/05	< 0.010	9.0	No	No
Aldrin + Dieldrin (ug/L) - TW3	2012/03/05	< 0.010	0.7	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2012/03/05	0.040	5.0	No	No
Azinphos-methyl (ug/L) - TW3	2012/03/05	< 0.020	20.0	No	No
Bendiocarb (ug/L) - TW3	2012/03/05	< 0.010	40.0	No	No
Benzene (ug/L) - TW3	2012/03/05	< 0.32	5.0	No	No
Benzo(a)pyrene (ug/L) - TW3	2012/03/05	< 0.0040	0.0	No	No
Bromoxynil (ug/L) - TW3	2012/03/05	< 0.33	5.0	No	No
Carbaryl (ug/L) - TW3	2012/03/05	< 0.010	90.0	No	No
Carbofuran (ug/L) - TW3	2012/03/05	< 0.010	90.0	No	No
Carbon Tetrachloride (ug/L) - TW3	2012/03/05	< 0.16	5.0	No	No
Chlordane:Total (ug/L) - TW3	2012/03/05	< 0.010	7.0	No	No
Chlorpyrifos (ug/L) - TW3	2012/03/05	< 0.020	90.0	No	No
Cyanazine (ug/L) - TW3	2012/03/05	< 0.030	10.0	No	No
Diazinon (ug/L) - TW3	2012/03/05	< 0.020	20.0	No	No
Dicamba (ug/L) - TW3	2012/03/05	< 0.20	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2012/03/05	< 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2012/03/05	< 0.36	5.0	No	No
Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW3	2012/03/05	< 0.010	30.0	No	No
1,2-Dichloroethane (ug/L) - TW3	2012/03/05	< 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW3	2012/03/05	< 0.33	14.0	No	No
Dichloromethane (ug/L) - TW3	2012/03/05	< 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW3	2012/03/05	< 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2012/03/05	< 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW3	2012/03/05	< 0.40	9.0	No	No
Dimethoate (ug/L) - TW3	2012/03/05	< 0.030	20.0	No	No
Dinoseb (ug/L) - TW3	2012/03/05	< 0.36	10.0	No	No
Diquat (ug/L) - TW3	2012/03/05	< 1.00	70.0	No	No
Diuron (ug/L) - TW3	2012/03/05	< 0.030	150.0	No	No
Glyphosate (ug/L) - TW3	2012/03/05	< 6.00	280.0	No	No
Heptachlor+Hepachlor Epoxide (ug/L) - TW3	2012/03/05	< 0.010	3.0	No	No

Lindane (ug/L) - TW3	2012/03/05	< 0.010	4.0	No	No
Malathion (ug/L) - TW3	2012/03/05	< 0.020	190.0	No	No
Methoxychlor (ug/L) - TW3	2012/03/05	< 0.010	900.0	No	No
Metolachlor (ug/L) - TW3	2012/03/05	< 0.010	50.0	No	No
Metribuzin (ug/L) - TW3	2012/03/05	< 0.020	80.0	No	No
Monochlorobenzene (ug/L) - TW3	2012/03/05	< 0.30	80.0	No	No
Paraquat (ug/L) - TW3	2012/03/05	< 1.00	10.0	No	No
Parathion (ug/L) - TW3	2012/03/05	< 0.020	50.0	No	No
Pentachlorophenol (ug/L) - TW3	2012/03/05	< 0.15	60.0	No	No
Phorate (ug/L) - TW3	2012/03/05	< 0.010	2.0	No	No
Picloram (ug/L) - TW3	2012/03/05	< 0.25	190.0	No	No
Polychlorinated Bichenysl(PCB) (ug/L) - TW3	2012/03/05	< 0.040	3.0	No	No
Prometryne (ug/L) - TW3	2012/03/05	< 0.030	1.0	No	No
Simazine (ug/L) - TW3	2012/03/05	< 0.010	10.0	No	No
THM (ug/L) - DW	2012 Average	20.50	100.0	No	No
Temephos (ug/L) - TW3	2012/03/05	< 0.010	280.0	No	No
Terbufos (ug/L) - TW3	2012/03/05	< 0.010	1.0	No	No
Tetrachloroethylene (ug/L) - TW3	2012/03/05	< 0.35	30.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	2012/03/05	< 0.14	100.0	No	No
Triallate (ug/L) - TW3	2012/03/05	< 0.010	230.0	No	No
Trichloroethylene (ug/L) - TW3	2012/03/05	< 0.44	50.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	2012/03/05	< 0.25	5.0	No	No
2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW3	2012/03/05	< 0.22	280.0	No	No
Trifluralin (ug/L) - TW3	2012/03/05	< 0.020	45.0	No	No
Vinyl Chloride (ug/L) - TW3	2012/03/05	< 0.17	2.0	No	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards – Table 7.

Parameter	Location	Date of Sample	Value	½ MAC
Uranium: U (ug/L)	TW 3	01/09/2012	10.70	10.00
Uranium: U (ug/L)	TW 3	04/02/2012	11.80	10.00
Uranium: U (ug/L)	TW 3	07/03/2012	11.30	10.00
Uranium: U (ug/L)	TW 3	10/01/2012	10.10	10.00

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential) Small Municipal Non-Residential has been removed and Non Municipal Year Round Residential has been added.

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 Maintenance Work Orders Completed	163
Operational Maintenance Work Orders Completed	15
Capital Maintenance Work Orders Completed	1
Weekly Maintenance Work Orders Completed	420

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

• 2 Preventive Maintenance kits for chlorine pumps
• 2 chlorine injector check valves
• Annual Backflow preventer re-certification.
• Annual flowmeter calibrations.
• 2 - Spare membrane cap kits for the chlorine analyzer probes.
• Annual U.V calibration
• Diesel inspection
• Spare chlorine analyzer probe
• 12 U.V. Bulbs
• Replacement of a 5’ section of PVC Pipe with stainless steel at Chlorine Injection Point
• Spare 4” schedule 80 PVC pipe, 2 Couplings, 2 Flanges & 2 Elbows
• Replacement of three Hydrants
• Valve Cap Lifter

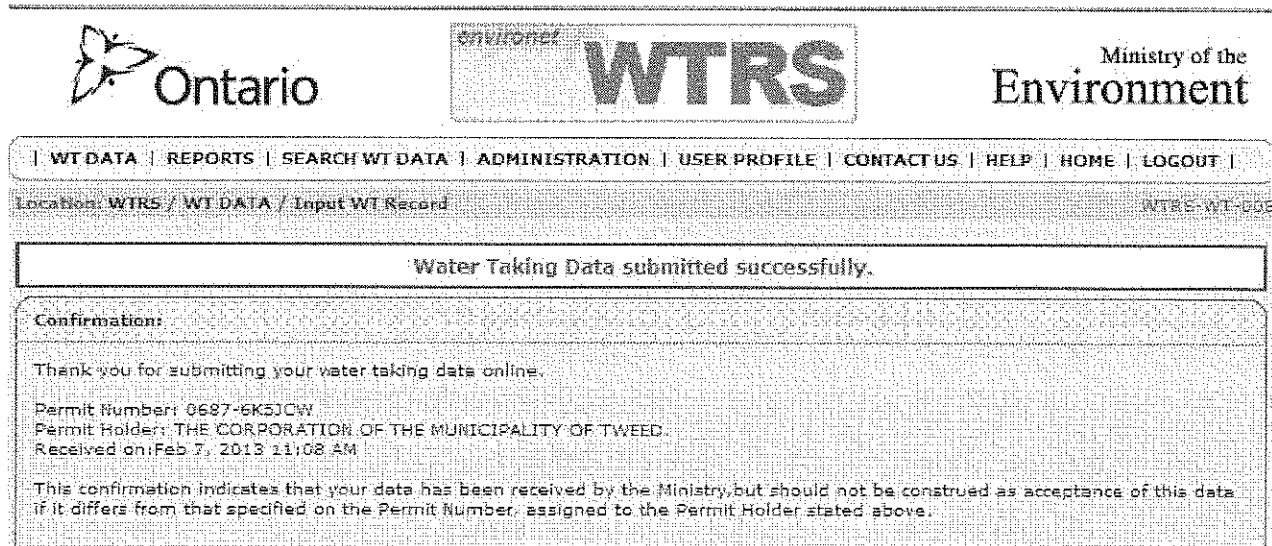
QEMS

The Ontario Clean Water Agency has been awarded full scope – entire accreditation from the Canadian General Standards Board (CGSB) on February 27, 2012.

Water Taking and Transfer Data

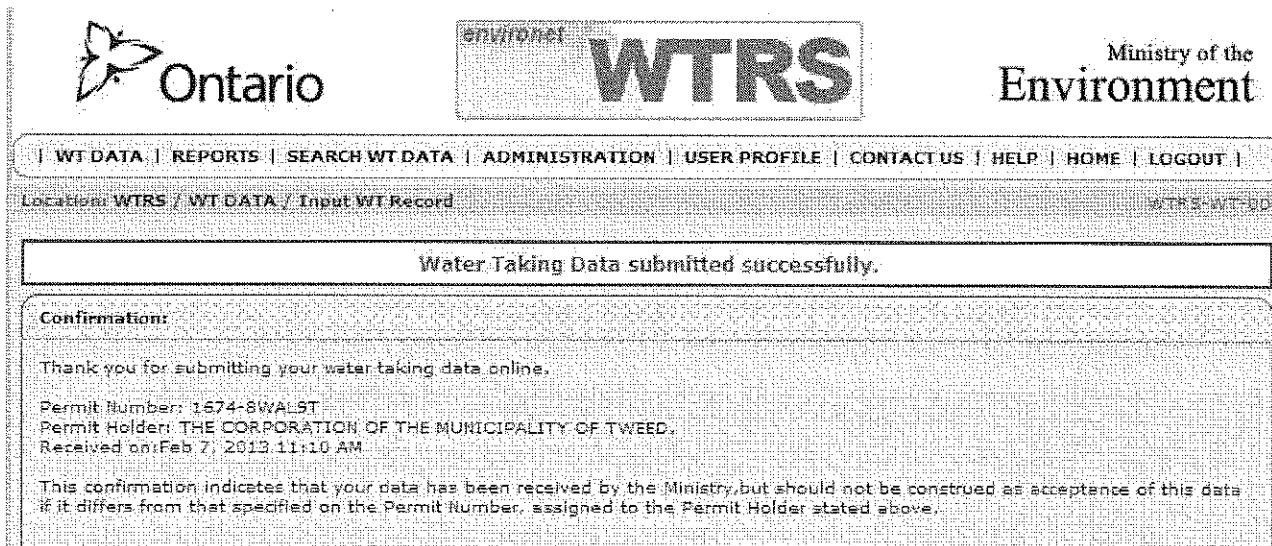
Data for the reporting period of January 1, 2012 - December 31, 2012 was submitted electronically to the Ministry of the Environment on February 6, 2013 under Permit to Take Water 0687-6K5JCW Issued March 22 2006 and PTTW 1674-8WAL9T September 27, 2012.

PTTW 0687-6K5JCW – Tweed (Jan 1, 2012 to Sep 27, 2012)



The screenshot shows the WTRS (Water Taking and Transfer Reporting System) interface. At the top, there are logos for Ontario, Environment Canada, and the Ministry of the Environment. A navigation bar contains links: WT DATA, REPORTS, SEARCH WT DATA, ADMINISTRATION, USER PROFILE, CONTACT US, HELP, HOME, and LOGOUT. The breadcrumb trail reads: Location: WTRS / WT DATA / Input WT Record. The main content area displays a confirmation message: "Water Taking Data submitted successfully." Below this, a "Confirmation:" section contains the following text: "Thank you for submitting your water taking data online. Permit Number: 0687-6K5JCW. Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF TWEED. Received on: Feb 7, 2013 11:08 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."

PTTW 1674-8WAL9T – Tweed (Sep 28, 2012 to Dec 31, 2012)



The screenshot shows the WTRS (Water Taking and Transfer Reporting System) interface. At the top, there are logos for Ontario, Environment Canada, and the Ministry of the Environment. A navigation bar contains links: WT DATA, REPORTS, SEARCH WT DATA, ADMINISTRATION, USER PROFILE, CONTACT US, HELP, HOME, and LOGOUT. The breadcrumb trail reads: Location: WTRS / WT DATA / Input WT Record. The main content area displays a confirmation message: "Water Taking Data submitted successfully." Below this, a "Confirmation:" section contains the following text: "Thank you for submitting your water taking data online. Permit Number: 1674-8WAL9T. Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF TWEED. Received on: Feb 7, 2013 11:10 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."