Ministry of the Environment, Conservation and Parks
Eastern Region
Belleville Area Office
345 College Street East
Belleville ON K8N 5S7

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
Bureau du secteur de Belleville
345, rue College Est
Belleville (Ontario) K8N 5S7

Ontario

November 19, 2019

Sent by Email: cao-treasurer@tweed.ca

Gloria Raybone,
CAO, Treasurer
The Corporation of the Municipality of Tweed
255 Metcalf St, P.O Bag Delivery 729
Tweed, Ontario
K0K 3J0

Dear: Gloria Raybone

Re: 2019-20 Inspection Report

The enclosed report documents findings of the inspection that was performed at the Tweed drinking water system on September 25, 2019.

Two sections of the report, namely "Non-compliance with Regulatory Requirements and Actions Required" and "Summary of Recommendations and Best Practice Issues", if found, may cite due dates for the submission of information or plans to my attention.

Please note that "Non-compliance with Regulatory Requirements and Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an act, a regulation, or site-specific approvals, licenses, permits, orders, or instructions. Such violations may result in the issuance of mandatory abatement instruments which could include orders, tickets, penalties, or referrals to the ministry's Environmental Enforcement and Compliance Office.

"Summary of Recommendations and Best Practice Issues" convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers, and conformance with existing and emerging industry standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

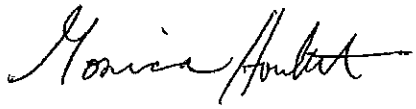
In order to measure individual inspection results, the ministry continues to adhere to an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Rating Record (IRR), appended to the inspection report, provides the ministry, the system owner and the local Public Health Unit with a

summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. Please note the IRR methodology document, also appended to the inspection report, describes how the risk model was improved to better reflect any health related and administrative non-compliance issues that may be cited in our inspection reports. IRR ratings are published in the ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Jim Mahoney, Water Compliance Supervisor, at 613-548-6902.

Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) cites a number of obligations of individuals who exercise decision-making authority over municipal drinking water systems. The ministry encourages individuals, particularly municipal councilors, to take steps to be well informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings.

Thank you for the assistance afforded to me during the conduct of the compliance assessment. Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,



Monica Howlett
Water Compliance Inspector/ Provincial Officer
(613) 847-3525 (office/mobile)

Enclosure (1)

ec: - Allan Broek, Public Works Manager, The Corporation of the Municipality of Tweed, pubwks@twp.tweed.on.ca

- Amber Coupland, Senior Operations Manager, Ontario Clean Water Agency, abevan@ocwa.com

- Wesley Henneberry, Safety Process and Compliance Manager, Ontario Clean Water Agency, whenneberry@ocwa.ca

- Natalie Iezzi, Process & Compliance Technician, Kawartha-Trent Regional Hub Ontario Clean Water Agency, nIezzi@ocwa.com

- Derek Chapman, Operator-In-Charge, Ontario Clean Water Agency, dchapman@ocwa.com

- Piotr Oglaza, Medical Officer of Health, Hastings Prince Edward Public Health, moh@hpeph.ca

- Andrew Landy, Senior Public Health Inspector, Hastings Prince Edward Public Health, alandy@hpeph.ca

- Brad McNevin, Chief Administrative Officer, Quinte Conservation Authority, bmcnevin@quinteconservation.ca

- Amy Dickens, Source Protection Manager, Quinte Conservation Authority, adickens@quinteconservation.ca

c: File SI-HA-TW-RI-540 (2019-2020)

Ontario

Ministry of the Environment, Conservation and Parks

TWEED DRINKING WATER SYSTEM

Inspection Report

Site Number:	220001557
Inspection Number:	1-KXU32
Date of Inspection:	Sep 25, 2019
Inspected By:	Monica Howlett

Table of Contents:

OWNER INFORMATION:

Company Name:	TWEED, THE CORPORATION OF THE MUNICIPALITY OF		
Street Number:	255	**Unit Identifier:**	
Street Name:	METCALF St		
City:	TWEED		
Province:	ON	**Postal Code:**	K0K 3J0

CONTACT INFORMATION

Type:	Owner	**Name:**	Gloria Raybone
Phone:	(613) 478-2535	**Fax:**	(613) 478-6457
Email:	cao-treasurer@tweed.ca		
Title:	CAO/Treasurer		
Type:	Owner	**Name:**	Allan Broek
Phone:	(613) 478-2535	**Fax:**	(613) 478-6457
Email:	pubwks@twp.tweed.on.ca		
Title:	Public Works Manager		
Type:	Operating Authority	**Name:**	Amber Coupland
Phone:	(613) 472-2131	**Fax:**	(613) 472-6045
Email:	abevan@ocwa.com		
Title:	Sr. Operations Manager, Trent Valley Hub, OCWA		
Type:	Operating Authority	**Name:**	Natalie Iezzi
Phone:	(613) 962-5454 x23	**Fax:**	
Email:	niezzi@ocwa.com		
Title:	Process & Compliance Technician		
Type:	Other - specify	**Name:**	Derek Chapman
Phone:	(613) 921-8049	**Fax:**	(613) 472-6045
Email:	dchapman@ocwa.com		
Title:	Operator-In-Charge, OCWA		
Type:	Medical Officer of Health	**Name:**	Piotr Oglaza
Phone:	(613) 966-5500 x200	**Fax:**	(613) 966-4290
Email:	moh@hpeph.ca		
Title:	Medical Officer of Health, Hastings Prince Edward Public Health		
Type:	Hastings & P.E. Public Health	**Name:**	Andrew Landy
Phone:	(613) 966-5500 x249	**Fax:**	(613) 968-1461
Email:	alandy@hpeph.ca		
Title:	Senior Public Health Inspector		
Type:	Quinte Conservation	**Name:**	Brad McNevin
Phone:	(613) 968-3434	**Fax:**	(613) 968-8240
Email:	bmcnevin@quinteconservation.ca		
Title:	CEO		

Type:	Conservation Authority	**Name:**	Amy Dickens
Phone:	(613) 968-3434 x132	**Fax:**	(613) 968-8240
Email:	adickens@quinteconservation.ca		
Title:	Source Water Protection Coordinator, Quinte Conservation		

INSPECTION DETAILS:

Site Name:	TWEED DRINKING WATER SYSTEM
Site Address:	430 RIVER Street West TWEED ON K0K 3J0
County/District:	TWEED
MECP District/Area Office:	Belleville Area Office
Health Unit:	HASTINGS AND PRINCE EDWARD COUNTIES HEALTH UNIT
Conservation Authority:	Quinte Conservation
MNR Office:	
Category:	Large Municipal Residential
Site Number:	220001557
Inspection Type:	Unannounced
Inspection Number:	1-KXU32
Date of Inspection:	Sep 25, 2019
Date of Previous Inspection:	Oct 25, 2018

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**

Site (Name): WELL 3 (Crookston)
Type: Source **Sub Type:** Ground
Comments:
The Crookston well is located at 430 River Street West. The well was constructed in 1995 to enhance the water supply availability of the municipal system. The 122.2 m deep well penetrates the 10.1 m of glaciofluvial (esker) sand and gravel deposits and 112.1 m of Precambrian granite. The 250 mm diameter well is cased to bedrock for 11 m and equipped with a submersible pump having a rated capacity of 18.9 L/s at a TDH of 110 m. This is the production well that is normally used to supply raw water to the community. The well has a permitted capacity of 1633 cu m/day and an average withdrawal of 619 cu m/day. Significant water-producing fractures were encountered at a depth of 15.5 m and 47.2 m. Uranium concentrations in the raw water are near the Ontario Drinking Water Quality Standard (ODWQS) of 0.020 mg/L.

Site (Name): WELL 1 (Hungerford)
Type: Source **Sub Type:** Ground
Comments:
The Main Well is located at 404 Hungerford Road. It was drilled in June, 1954 and was the primary source of drinking water for Tweed for over 40 years until the Crookston well was constucted in 1995. The Main Well is currently not in service and the water system control documentation stipulates that this well will be used only in an emergency. The well is 200 mm in diameter,132 m deep, cased to bedrock and equipped with a submersible pump with a rated capacity of 15.1 L/s at a TDH of 87.9 m.
The top 12.5 m of the well penetrates a sand and gravel esker deposit. A major water producing feature was intercepted at 130.5 metres.Testing conducted at the time of drilling indicated that the well was capable of producing 755L/min. The well has a permitted capacity of 950 cu m/day and an average withdrawal of 307 cu m/day.

The raw water quality from the main well has had a history of elevated uranium and fluoride concentrations. The source of these chemical parameters is considered to be natural to the aquifer formation. Uranium has been detected at concentrations ranging from the ~0.100 to the ~0.350 mg/L range which exceeds the Ontario Drinking Water Quality Standards (ODWQS) of 0.020 mg/L. Similarly, fluoride has been historically detected at concentrations ranging from 1.3 to 1.7mg/L which exceeds the Ontario Drinking Water Quality Standards of 1.5 mg/L.

Site (Name): DISTRIBUTION (WATER INSPECTIONS)
Type: Other **Sub Type:**
Comments:
The distribution system supplies water to approximately 1,500 persons. The distribution system consists of an elevated storage tank, valves, piping, hydrants and associated appurtenances.
The Tweed distribution system pipe material consists of cast iron, ductile iron and PVC. The total length of the distribution system is approximately 18.2 km.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water related policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment and distribution components as well as management practices.**

  This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

  This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

  On September 25th and October 30th 2019, Water Inspector Monica Howlett was on-site at the Tweed Drinking Water System (DWS) to conduct an unannounced focused drinking water compliance inspection. The Corporation of the Municipality of Tweed is the owner of the drinking water system and the Ontario Clean Water Agency (OCWA) Kawartha-Trent Regional Hub is designated as the operating authority. The following individuals from OCWA were on-site for the inspection: Amber Coupland, Senior Operations Manager, Wesley Henneberry, Safety, Process & Compliance Manager, Natalie Iezzi, Process and Compliance Technician and Jordan Easton, Operator-In-Training. Documentation for the inspection pertaining to the distribution was obtained from Allan Broek, Public Works Manager with the Corporation of the Municipality of Tweed. Documentation for the inspection period related to maintenance and repair in the distribution was reviewed at the office for the Municipality of Tweed on October 30, 2019.

  The inspection included a physical inspection of the works including the water treatment plant, the production and stand-by wells, the elevated storage tank and documentation for the inspection period was reviewed. The inspection period covered by this report is October 26, 2018 to September 25th, 2019.

  Documents reviewed in association with this report included, but were not limited to:
  1. Ministry of the Environment, Conservation and Parks (MECP) Municipal Drinking Water Licence (MDWL), number 168- 101(Issue Number 2) dated June 7, 2016.
  2. MECP, Drinking Water Works Permit (DWWP), number 168-201(Issue Number 2) dated May 19, 2016.
  3. MECP, Permit to Take Water #4464-A9NRHH, dated May 10, 2016.

  Under Ontario Regulation (O. Reg.) 170/03, a large municipal residential system, is a drinking water system that serves more than 100 private residences. A major residential development is defined in the Safe Drinking Water Act, 2002 (SDWA), as a development of six or more private residences of one or more properties. The Tweed Drinking Water System serves approximately 1500 persons and therefore the system is considered a Large Municipal Drinking Water System (DWS) under O. Reg. 170/03.

Introduction

The previous drinking water compliance inspection was conducted on October 25, 2018 and it cited one (1) issue of non-compliance and three (3) Recommendations and Best Practice Issues.

Source

- **The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.**

  Connected to the Tweed drinking water system are two wells: Well #1 (Main Well) and Well #3 (Crookston Well). Condition 3.3 of PTTW #4464-A9NRHH requires that water shall be taken exclusively from Well #3 and that Well #1 is an emergency back-up supply. Well #1 was not required to be used during the inspection period.

  Both wells were visually assessed during the inspection. Well #3 was found to have a vermin proof cap with intact screens and no surface water ponding was found in the vicinity. However, a gap was observed between the electrical conduit and the well cap that could allow foreign material to enter the well. This issue was also identified in the last inspection of the drinking water system and log records indicate that this was repaired on November 19, 2018. Prior to the release of this inspection report, OCWA had the gap repaired using more durable materials.

  Well #1 is located in a pumphouse beside the elevated storage tank for the Tweed DWS and was observed to have no surface water ponding around the casing. The pumphouse structure was observed to have signs of deterioration that may allow water to enter the building. OCWA had advised that funds have been allocated to fix the pumphouse structure as this was recommended in the last inspection of the drinking water system.

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

  OCWA has implemented two Standard Operating Procedures (SOPs) for inspecting well components at the Tweed drinking water system, these are SOP #22 Above Grade Well Inspection and SOP #23 Below Grade Well Inspection both issued July 28, 2016. As per SOP #22 above grade components are inspected annually with the last inspection of Well #3 and Well #1 on June 11, 2019. Below grade well inspections are covered in SOP #23 and state that the need for a below grade inspection is based on operational and/or mechanical needs or analytical results that may indicate potential water quality/quantity issues. Various conditions are used to assess if a below grade inspection is required such as changes in the appearance or physical quality of the raw water, failure or signs of wear of the well equipment and decrease in well efficiency. It is still recommended that below grade components of the wells be assessed at least every ten years to identify any potential issues before they become problematic. Records were reviewed that showed that the last above grade inspection of the two monitoring wells TW 05-01 and TW 05-02 were conducted by the Municipality of Tweed on June 24, 2019.

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

  As required by Section 2.0, item 2.1, Schedule C, MDWL 168-101, Issue 2 the flow rate and daily volume of water that flows into the treatment system is monitored by two Endress & Hauser Promag 50 W raw water flow meters, one for each well. The flow rate and daily volume of treated water from the treatment system to the distribution system is monitored by three magnetic flow meters manufactured by Danfoss. These flow meters monitor raw and treated flows for the ion exchange unit used for uranium removal with blended flows also being monitored. Raw flow (not treated by the ion exchange unit) was 25% at the time of the field inspection, treated flow (75%) and blended flows (total flow meter) after the ion exchange unit were being monitored. Records were reviewed that showed that the flow meters were verified by Flowmetrix Technical Services Inc. on May 30, 2019.

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Capacity Assessment

The MDWL allows for a maximum daily volume of treated water from the treated subsystem to the distribution system as a rated capacity of 1,633 m3/day. A review of records for the inspection period, showed that the maximum treated water flow was 946 m3/day on April 9, 2019 during hydrant flushing in the distribution.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

  One Form 2 document Record of Minor Modifications or Replacements to the Drinking Water System dated August 7, 2019 was prepared during the inspection period for the replacement of chlorine pump #1.

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

  Throughout the inspection period, source water was used exclusively from Well #3 which has been deemed groundwater under the direct influence of surface water (GUDI) with effective in-situ filtration. The minimum required treatment that GUDI systems must achieve from the Ministry's Procedure for Disinfection of Drinking Water in Ontario is a 2-log removal or inactivation of Cryptosporidium oocysts, 3-log removal or inactivation of Giardia cysts and 4-log removal or inactivation of viruses. Treatment equipment at the Tweed drinking water system consists of two Trojan UV Swift SC ultraviolet units (UV) for primary disinfection with one duty and one stand-by that alternate on plant start-up. Schedule E of the MDWL for the drinking water system credits a 2-log removal or inactivation of Cryptosporidium oocysts, 3-log removal or inactivation of Giardia cysts and 2-log removal or inactivation of viruses to the UV disinfection. Each unit has a rated capacity of 18.9 L/s and minimum dose of 40 mJ/cm2. UV intensity is continually monitored and will lock-out the plant if the intensity falls below 46.1 W/m2 or the continuous pass-through UV dose falls below 40 mJ/cm2. Data reviewed for the inspection period indicated that minimum intensity for UV #1 was 56.54 W/m2 and for UV #2 minimum intensity was 58.72 W/m2. A greater than 2-log credit for virus removal is given to disinfection provided by chlorination using sodium hypochlorite. Free chlorine residual is monitored by two free chlorine residual analyzers; one monitoring chlorine prior to the contact pipe with the second monitoring free chlorine residual leaving the contact pipe. The analyzers are set with alarm set points of 1.00 mg/l that lock out the well pump. Two lock out events occurred during the inspection period that were responded to by operators on January 11, 2019 with a free chlorine residual at 0.667 mg/L and February 12th, 2019 with a free chlorine residual of 0.636 mg/L, the minimum free chlorine residual required at the Tweed drinking water system under worst case conditions is 0.54 mg/L.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

  Free chlorine residual is monitored in the distribution at the elevated water storage tank using both a chart recorder and an on-line continuous free chlorine analyzer. At the time of the field inspection, the analyzer was reading 1.65 mg/L and a grab sample taken by the undersigned provided a result of 1.76 mg/L. Records reviewed for the inspection period showed that the minimum recorded free chlorine residual was 0.35 mg/L from a grab sample collected July 22, 2019.

- **Where an activity has occurred that could introduce contamination, all parts of the drinking water system were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

- **The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the**

Treatment Processes

standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03.

Two Trojan UV Swift Small Community (SC) ultraviolet units (UV), model B08 are used at the Tweed drinking water system for primary disinfection. One unit is duty and the other is standby that alternate at plant start-up, each rated at 18.9 L/s. The units are continuously monitored and are equipped with visual alarms that will lock-out the plant if the intensity falls below 46.1 W/m2. If one unit were to fail, the second unit would automatically be switched over to resume treatment operations and should the second UV unit fail, then the entire water treatment plant would be locked out.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

  A 17 m3 capacity (750 mm diameter) chlorine contact pipe is located prior to the distribution system to provide contact time. Two free chlorine analyzers are used for primary disinfection chlorine monitoring. A (pre) free chlorine continuous analyzer measures chlorine residuals prior to the contact pipe and another (post) free chlorine residual continuous analyzer monitors free chlorine residual at the end of the contact pipe.

- **The secondary disinfectant residual was measured as required for the distribution system.**

  An analyser is in place to continuously monitor free chlorine residual in the distribution at the Tweed elevated storage tank along with a chart recorder. At the time of the field inspection, the continuous analyzer was reading a free chlorine residual of 1.65 mg/L and a grab sample obtained by the undersigned provided a reading of 1.76 mg/L.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

  Operators at the Tweed drinking water system use a MS Excel workbook entitled 'O. Reg. 170/03 - Schedule 6 - Operational Checks - 72 Hour Review Form' in which the operator records the daily min, max and mean values for the post free chlorine and distribution free chlorine residuals from continuous monitoring. The date and time along with the operators initials of who completed the 72 hour review are recorded for each day of data reviewed. Comments are also included to explain any anomalous data.

- **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 equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.**

  Continuous monitoring equipment at the Tweed drinking water system have the following alarm set points:

  -Pre-chlorine alarm with plant lock-out after 1 minute delay when free chlorine residual is 1.00 mg/L.
  -Post-chlorine alarm with plant lock-out when free chlorine residual is 1.00 mg/L, with high level alarm set at 4.00 mg/L.
  - Tower (distribution) alarms when free chlorine residual is 0.50 mg/L and high level alarm is set at 4.00 mg/L.
  - Turbidity alarm at Well #3 will lock-out if turbidity is greater than 1.0 Nephelometric Turbidity Units (NTU) for 10 minutes.

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**

  The polling frequency for the SCADA system is approximately every two minutes for continuous monitoring of treated and distribution water free chlorine residuals, turbidity and UV intensity data.

Treatment Process Monitoring

- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**

  Section 1.6, Schedule C of MDWL 168-101, Issue 2 requires flow rate, UV light intensity and UV lamp status to be recorded once every four (4) hours or less. Flow rate through the UV units is deemed to be equal to that monitored by the treated water flow meter. UV intensity is continually monitored and will lock out the plant when the intensity falls below 46.1 W/m2, data is recorded every two and a half minutes. UV intensity for the units, lamp elapsed time and lamp status are continuously monitored and displayed on the operator interface, located on the control panel door.

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

  Workorders were reviewed for the inspection period for monthly verification/calibration of the continuous analyzers by operators for pre, post and distribution (tower) free chlorine residual and turbidity monitoring, including the portable free chlorine residual analyser and turbidimeter.

- **All UV sensors were checked and calibrated as required.**

  Records were reviewed for the inspection period that showed that duty sensors for both UV units were checked monthly against a reference sensor. During the inspection period, calibration ratios were less than or equal to 1.2 as required.

Operations Manuals

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

  The operations and maintenance manual for the Tweed drinking water system consists of the Facility Emergency Plan containing operating procedures and DWWP, MDWL and PTTW, the Contingency Plan, Sampling Binder, equipment manuals and Safety Data Sheets. Documents are available to operating staff in the water treatment plant and electronically.

Logbooks

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Security

- **The owner had provided security measures to protect components of the drinking water system.**

  The water treatment plant is fenced with posted no trespassing signs and has a locked gate. The elevated storage tank has a locked gate at the road. The water treatment plant, well #1 pumphouse and elevated storage tank have intrusion alarms with door sensors. Signage with emergency contact information is posted outside of the water treatment plant and at the pumphouse for Well #1.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

Certification and Training

Justin Cassidy, OCWA is designated as the Overall Responsible Operator for the water treatment plant and the distribution system. He is appropriately certified.

- **Operators-in-charge had been designated for all subsystems which comprised the drinking water system.**

  Derek Chapman, OCWA is the designated Operator In Charge (OIC) for the water treatment plant. Tim Cassidy, Municipality of Tweed is the designated OIC for the distribution system. Other operators who filled in as OIC during the inspection period were appropriately certified.

- **All operators possessed the required certification.**

- **Only certified operators made adjustments to the treatment equipment.**

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

  The Tweed drinking water system serves a population of approximately 1500 residents. As per Schedule 10-2, O. Reg. 170/03 at least nine samples per month, with at least one per week are required to be collected from the distribution. Samples are to be submitted for analysis of Escherichia coli (E. coli), total coliforms and 25% of samples are required to be analysed for Heterotrophic Plate Count (HPC). During the inspection period, two to three samples were collected per week and were analysed for E. coli, total coliforms and HPC.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

  During the inspection period, one treated water sample was collected weekly and submitted for E. coli, total coliforms and HPC analysis as required by Section 10-3 of Schedule 10 of O. Reg. 170/03.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The most recent treated water sample was collected on March 18, 2019 for analysis of Schedule 23, O. Reg. 170/03 inorganic parameters.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The most recent treated water sample was collected on March 18, 2019 for analysis of Schedule 24, O. Reg. 170/03 organic parameters.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

  During the inspection period, quarterly samples were collected and tested for haloacetic acids (HAAs) as required by legislation. The most recent running annual average is calculated as 8.45 ug/L with the most recent individual result of 17.5 ug/L from a sample collected July 8, 2019.

  The proposed Ontario Drinking Water Quality Standard (ODWQS), in O. Reg. 169/03 scheduled to become effective on January 1, 2020 is 80 ug/L based on a running average concentration of four quarterly sampling periods.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

  During the inspection period, quarterly samples were collected and tested for trihalomethane (THMs) as required by legislation. The most recent running annual average is calculated as 18.82 ug/L, with the most recent individual

Water Quality Monitoring

result of 39 ug/L from a sample collected July 8, 2019.

The ODWQS for THMs is 100 ug/L based on a running average concentration of four quarterly sampling periods.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

  During the inspection period, quarterly samples were taken and were analysed for nitrate/nitrite analysis as required by legislation. Nitrate results ranged from 3.68 mg/L to 4.80 mg/L and nitrite results were below the method detection limit for the laboratory at 0.003 mg/L. The O. Reg. 169/03 ODWQS for nitrate is 10 mg/L and the ODWQS for nitrite is 1.0 mg/L.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The most recent sample for sodium analysis was collected on June 25, 2018 from the Main Well which provided a result of 25.1 mg/L. As per O. Reg. 170/03, Schedule 16 subsection 16-3(1)8 this was an adverse result and was reported in adverse water quality incident (AWQI) # 140101. A resample was collected on June 28, 2018 and provided another adverse result of 26.1 mg/L. Hastings Prince Edward Public Health provided the Municipality of Tweed with a notice regarding elevated sodium in drinking water that the municipality indicated would be posted to the public.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The most recent sample for fluoride analysis was collected on April 3, 2018 which provided a result of 0.51 mg/L. The O. Reg. 169/03 ODWQS maximum allowable concentration for fluoride is 1.5 mg/L.

- **All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.**

  MDWL # 168-101, Issue #2, Schedule C, Section 4.0 Additional Sampling, Testing and Monitoring in subsection 4.1, Table 5 Drinking Water Health Related Parameters requires quarterly testing for the parameter uranium from the distribution. Samples were collected quarterly over the inspection period and uranium results ranged from 0.0038 mg/L to 0.0078 mg/L, O. Reg. 169/03 ODWQS MAC for uranium is 0.02 mg/L.

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

Water Quality Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

Reporting & Corrective Actions

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

Not Applicable

SIGNATURES

Inspected By:

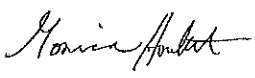
Monica Howlett

Signature: (Provincial Officer)

Reviewed & Approved By:

James Mahoney

Signature: (Supervisor)



Acting Supervisor

Review & Approval Date: 19/11/2019

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

APPENDIX A

INSPECTION RATING RECORD AND METHODOLOGY

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2019-2020)

DWS Name:	TWEED DRINKING WATER SYSTEM
DWS Number:	220001557
DWS Owner:	Tweed, The Corporation Of The Municipality Of
Municipal Location:	Tweed
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	September 25, 2019
Ministry Office:	Belleville Area Office

Maximum Question Rating: 493

Inspection Module	Non-Compliance Rating
Source	0 / 14
Capacity Assessment	0 / 30
Treatment Processes	0 / 102
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 112
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 130
TOTAL	**0 / 493**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 19-NOV-19 (Inspection ID: 1-KXU32).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2019-2020)

DWS Name:	TWEED DRINKING WATER SYSTEM
DWS Number:	220001557
DWS Owner:	Tweed, The Corporation Of The Municipality Of
Municipal Location:	Tweed
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	September 25, 2019
Ministry Office:	Belleville Area Office

Maximum Question Rating: 493

Inspection Risk Rating	**0.00%**
FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 19-NOV-19 (Inspection ID: 1-KXU32).

April 2012

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS

The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection results since fiscal year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains 15 inspection modules consisting of approximately 100 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections.

PIBS 6797e

Ontario

The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. The inspection protocol also contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system's operation can improve. The ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards, understanding the likelihood and consequences of the hazards, and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

RISK = LIKELIHOOD × CONSEQUENCE
(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

TABLE 1:

Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 – 10% (Unlikely)	L = 1
11 – 49% (Possible)	L = 2
50 – 89% (Likely)	L = 3
90 – 100% (Almost Certain)	L = 4

TABLE 2:

Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2.**

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:

Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?

Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	**Major** Administrative Consequence	**Minor** Environmental Consequence	**Minor** Health Consequence	**Medium** Environmental Consequence	**Major** Environmental Consequence	**Medium** Health Consequence	**Major** Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely	L=3 (Likely)	L=2 (Possible)
R=4	**R=2**	**R=6**	**R=12**	**R=15**	**R=6**	**R=21**	**R=16**

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions related to regulatory compliance and input their "yes", "no" or "not applicable" responses into the Ministry's Laboratory and Waterworks Inspection System (LWIS) database. A "no" response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone); type of inspection (i.e., focused, detailed); and source type (i.e., groundwater, surface water).

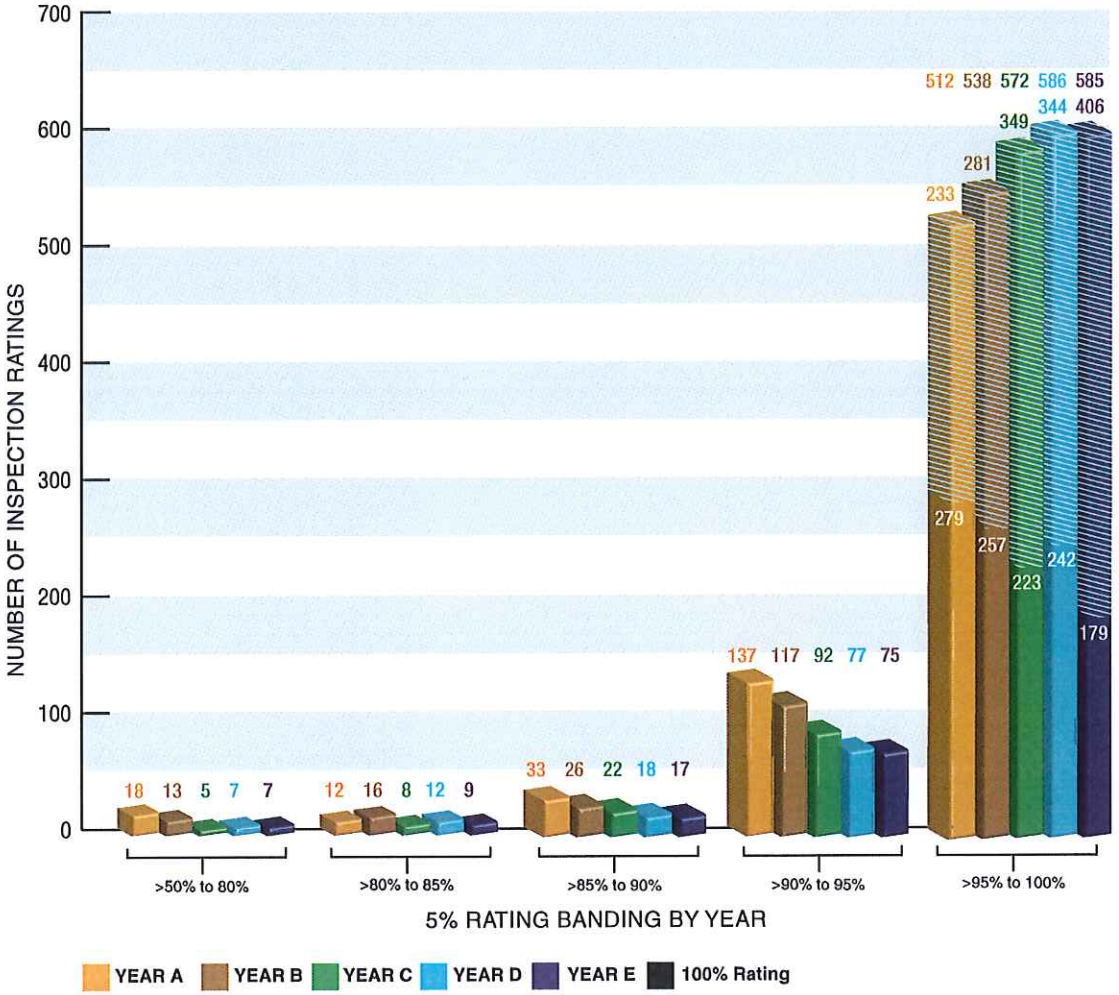
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 15 possible modules of the inspection protocol, which would provide the system owner/operator with information on the areas where they need to improve. The 15 modules are:

1. Source
2. Permit to Take Water
3. Capacity Assessment
4. Treatment Processes
5. Treatment Process Monitoring
6. Process Wastewater
7. Distribution System
8. Operations Manuals
9. Logbooks
10. Contingency and Emergency Planning
11. Consumer Relations
12. Certification and Training
13. Water Quality Monitoring
14. Reporting, Notification and Corrective Actions
15. Other Inspection Findings

For further information, please visit **www.ontario.ca/drinkingwater**

APPENDIX B

DRINKING WATER LICENCE AND WORKS PERMIT

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 168-101
Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Tweed

255 Metcalf St.
Tweed, ON
K0K 3J0

For the following municipal residential drinking water system:

Tweed Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

DATED at TORONTO this 7th day of June, 2016

Signature

A. Ahmed

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	**The Corporation of the Municipality of Tweed**
Licence Number	**168-101**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule A Issue Date	**June 7th, 2016**

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

Licence Issue Date	June 7th, 2016
Licence Expiry Date	June 6th, 2021
Application for Licence Renewal Date	December 5th, 2020

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Tweed Drinking Water System	168-201	June 7th, 2016

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Well No. 1 (standby) and Well No. 3 (duty)	1674-8WAL9T	September 27, 2012

Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	168-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	168-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Tweed Drinking Water System	Ontario Clean Water Agency	168-401	168-OA1

Schedule B: General Conditions

System Owner	**The Corporation of the Municipality of Tweed**
Licence Number	**168-101**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule B Issue Date	**June 7th, 2016**

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"**adverse effect**", "**contaminant**" and "**natural environment**" shall have the same meanings as in the EPA;

"**alteration**" may include the following in respect of this drinking water system:

(a) An addition to the system,
(b) A modification of the system,
(c) A replacement of part of the system, and
(d) An extension of the system;

"**compound of concern**" means a contaminant that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

"**Director**" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"**drinking water works permit**" means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**emission summary table**" means the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

"**EPA**" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"**financial plan**" means the financial plan required by O. Reg. 453/07;

"**licence**" means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"**operational plan**" means an operational plan developed in accordance with the Director's Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

"**owner**" means the owner of the drinking water system as identified in Schedule A of this licence;

"**permit to take water**" means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**point of impingement**" means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

"**point of impingement limit**" means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment and Climate Change publication titled "Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)", dated February 2008, as amended;

"**procedure document**" means the Ministry of the Environment and Climate Change procedure titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer who has been licenced to practice in the Province of Ontario;

"**provincial officer**" means a provincial officer appointed pursuant to section 8 of the SDWA;

"**publication NPC-300**" means the Ministry of the Environment and Climate Change publication titled "Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning" dated August 2013, as amended;

"**SDWA**" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32;

"**sensitive populations**" means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generators shall be considered using the point of impingement limit instead of the Ministry of the Environment and Climate Change screening level for emergency generators:

(a) health care units (e.g., hospitals and nursing homes),
(b) primary/junior public schools,
(c) day-care facilities, and
(d) playgrounds;

"**subsystem**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts);

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

2.0 Applicability

2.1 In addition to any other requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and

8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

9.1.1 The SDWA;

9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;

9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;

9.1.4 Any regulation made under the SDWA;

9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;

9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;

9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.

9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.

9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:

9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry of the Environment and Climate Change to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.

14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.

14.1.2 The requirement for the owner to comply with NSF/372 shall come into force no later than June 15, 2018.

14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.

14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:

14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);

14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;

14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

14.3.4 Gaskets that are made from NSF approved materials;

14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use; or

14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment and Climate Change is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the substantial completion of the alteration.

15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference by all persons responsible for all or part of the operation or maintenance of the drinking water system.

16.2 The operations and maintenance manual or manuals, shall include at a minimum:

16.2.1 The requirements of this licence and associated procedures;

16.2.2 The requirements of the drinking water works permit for the drinking water system;

16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:

a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and

b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;

16.2.9 Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and

16.2.10 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

16.4 The requirement for the owner to comply with condition 16.2.3 shall come into force on December 15, 2016.

Schedule C: System-Specific Conditions

System Owner	**The Corporation of the Municipality of Tweed**
Licence Number	**168-101**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule C Issue Date	**June 7th, 2016**

1.0 System Performance

Rated Capacity

1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity

Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m^3/day)
Water Treatment Facility	1,633

Maximum Flow Rates

1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates

Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.

1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residue Management

1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:

1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and

1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

Table 3: Residue Management

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Not Applicable	Not Applicable	Not Applicable	Not Applicable

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system:

1.6.1 The UV disinfection equipment shall be operated such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row at the maximum design flow rate for the equipment;

1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less;

1.6.3 If there is a UV disinfection equipment alarm, the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;

1.6.4 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	**Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm²)**	**Column 3 Control Strategy**	**Column 4 Test Parameter**
UV Light Disinfection Unit	40 mJ/cm²	UV Intensity Set Point	Flow Rate
			UV Light Intensity
			UV Lamp Status

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.

2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices that are required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change, shall be checked and calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and calibrated at least once every 12 months during which the drinking water system is in operation.

3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

4.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Tweed Water Distribution System	Uranium	Quarterly	Distribution

Table 6: Drinking Water Non-Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

4.2 For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

4.3 For the purposes of Table 7:

4.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately

at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

4.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

4.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

4.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

4.5.1 The discharge of potable water from a watermain to a road or storm sewer;

4.5.2 The discharge of potable water from a water storage facility or pumping station:

4.5.2.1 To a road or storm sewer; or

4.5.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

4.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

4.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and

4.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

5.0 Studies Required

5.1 Not Applicable.

6.0 Source Protection

6.1 Not Applicable.

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**The Corporation of the Municipality of Tweed**
Licence Number	**168-101**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule D Issue Date	**June 7th, 2016**

1.0 Lead Regulatory Relief

1.1 Any relief from regulatory requirements previously authorized by the Director in respect of the drinking water system under section 38 of the SDWA in relation to the sampling, testing or monitoring requirements contained in Schedule 15.1 of O. Reg. 170/03 shall remain in force until such time as Schedule 15.1 of O. Reg. 170/03 is amended after June 1, 2009.

2.0 Other Regulatory Relief

Not Applicable.

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	**The Corporation of the Municipality of Tweed**
Licence Number	**168-101**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule E Issue Date	**June 7th, 2016**

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Tweed Water Treatment Facility

Well No.1 & Well No. 3 [GROUNDWATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Tweed Water Treatment Facility	2	3	4

Log Removal/Inactivation Credits Assigned [a]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
UV Disinfection [40 mJ/cm2]	2	3	2
Chlorination [CT: Contact Pipe]	-	-	2+

[a] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
UV Disinfection	Duty UV Sensor Checks and Calibration 1. Duty UV sensors shall be checked on at least a monthly basis against a reference UV sensor; 2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2; 3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved; 4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer; Operational Requirements 5. Ultraviolet light disinfection equipment shall have a feature that ensures that no water is directed to users of water treated by the equipment or that causes an alarm to sound in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; 6. Water shall not flow through a UV reactor when the reactor's UV lights are off or not fully energized; 7. UV lamp status shall indicate whether each UV lamp is on or off; 8. All UV sensors shall operate within their calibration range or corrective measures shall be taken; and 9. Installed or replaced UV equipment components shall be equal or better than the components used during validation testing unless the UV equipment was revalidated.
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 168-201
Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Tweed

255 Metcalf St.
Tweed, ON
K0K 3J0

For the following municipal residential drinking water system:

Tweed Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 19th day of May, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Municipality of Tweed**
Permit Number	**168-201**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule A Issue Date	**May 19th, 2016**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Tweed Drinking Water System** services the Village of Tweed and consists of two groundwater wells, a water treatment facility and a water distribution system. The water treatment facility includes an ion exchange unit and a disinfection system utilizing ultraviolet (UV) light and sodium hypochlorite. The distribution system consists of an elevated storage tank and approximately 18.2 km of watermains.

Tweed Water Treatment Facility

Groundwater Supply

Well No. 1 (For Emergency Use Only)

Location	351 Hungerford Road (adjacent to elevated water storage tank)
UTM Coordinates	NAD 27: UTM Zone 18: 315376.00 E, 4927669 N
Description	Drilled groundwater well cased in bedrock, a 4m x 4m x 2.5m concrete block well house, and appurtenances
Source Type	Groundwater
Well Dimensions	250 mm diameter, 132 m deep
Well Pump	Submersible well pump with a rated capacity of 15.1 L/s at a TDH of 87.9m to convey raw water from Well No. 1 to the Treatment Facility
Equipment	Pump discharge piping including pump-to-waste connection, raw water flowmeter and flow control valve
	Approximately 875 m of 150 mm diameter watermain from Well No. 1 site to the Treatment Facility
Notes	

Well No. 3 (Crookston Well)

Location	430 Crookston Road (54m north of County Road 38, 188 m west of College Street)
UTM Coordinates	NAD 27: UTM Zone 18: 315426.00 E, 4926973.00 N
Description	Drilled groundwater well cased in bedrock, a 14.1m x 7.8m x 3.5m high concrete block treatment plant, and 100mm diameter raw water supply line to the main treatment plant
Source Type	Groundwater under the direct influence of surface water (GUDI) with effective in-situ filtration
Well Dimensions	250mm diameter, 122.2m deep
Well Pump	Submersible well pump with a rated capacity of 18.9 L/s at a TDH of 110m
Equipment	Pump discharge piping from Well No. 3 to the Treatment Facility
	Pump-to-waste connection, raw water flowmeter, flow control valve, sample line and air release valve
Notes	Located outside on the south west side of the treatment building

Water Treatment Facility

Location	430 Crookston Road (54m north of County Road 38, 188 m west of College Street)
UTM Coordinates	NAD 27: UTM Zone 18: 315426.00 E, 4926973.00 N
Description	Houses Ion Exchange unit, UV light disinfection unit, and sodium hypochlorite disinfection system
Notes	

Ion Exchange System

Ion Exchange Unit

Description	Ion exchange treatment system for both nitrate and/or uranium removal
Capacity	1,513 m^3/day
Equipment	One (1) ion exchange unit containing 3.12 m^3 of resin and inlet, outlet and bypass piping
	Electrically actuated valves and flowmeters to permit blending of raw and treated water
Notes	

Regeneration System

Description	Ion exchange regeneration system
Equipment	One (1) 1,200 L capacity brine storage day tank and
	One (1) transfer pump
	One (1) 31 m^3 twin compartment reinforced concrete brine make-up/bulk storage tank, transfer pump and piping to brine day tank
Notes	

Backwash System

Description	Ion exchange back flush system with softened water after every 9999 m^3
Equipment	One (1) water softener with rated capacity of 100 L/min, and discharge piping to wastewater holding tank
	One (1) 3,100 L capacity softened water storage tank
	One (1) transfer pump
	One (1) 29.3 m^3 reinforced concrete wastewater holding tank equipped with a gravity outlet and 50 mm diameter outlet orifice to limit the maximum discharge rate to 3.0 L/s
Notes	The backwash water discharged to the sanitary sewer

Disinfection

Ultraviolet (UV) Light Units

Description	UV light for primary disinfection
Capacity	18.9 L/s, each
Equipment	Two (2) UV light reactors (one duty and one standby)
	UV intensity sensor, a portable UV transmittance photometer and manual cleaning facilities
Notes	Minimum UV dose of 40 mJ/cm^2

Chlorination

Description	A sodium hypochlorite feed system for secondary disinfection
Equipment	One (1) solution tank
	Two (2) metering pumps
	A 17 m^3 capacity (750 mm diameter) chlorine contact pipe located prior to the distribution system to provide chlorine contact time
	One pre-chlorine and one post-chlorine residual analyzers/recorder and treated water sample line
Notes	

Instrumentation and Control

Description	An instrumentation and control system
Instrumentation Equipment	Backflow preventers on the plant service connection at the main header and on the treated water sample connection from the end of the chlorine contact pipe in the Well No. 3 building
Notes	

Emergency Power

Standby Power Supply

Description	One (1) 80 kilowatts standby diesel generator set to provide power for the drinking-water facility during emergency situations
Notes	The standby diesel generator is located outside on the north west end of the treatment building

Elevated Storage Tanks

Tweed Elevated Storage Tank

Location	351 Hungerford Road (adjacent to Well No. 1)
UTM Coordinates	NAD 27: UTM Zone 18: 315428.00 E, 4927580 N
Description	Elevated water storage tank
Capacity	1,370 m^3
Equipment	Chlorine residual analyzer/recorder
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
Tweed Distribution Map.pdf	January 28, 2016

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Municipality of Tweed**
Permit Number	**168-201**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule B Issue Date	**May 19th, 2016**

1.0 Applicability

1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.

1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.

2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.

2.3 All parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,

shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

a) The ministry's Watermain Disinfection Procedure, effective December 15, 2016;
b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
d) AWWA C654 – Standard for Disinfection of Wells.

2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.5.2 Constitutes maintenance or repair of the drinking water system; or

2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a Professional Engineer;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012", as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Raw water pumps and treatment process pumps in the treatment system;

4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;

4.1.3 Valves;

4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;

4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,

4.1.6 Spill containment works.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps and associated equipment;

4.2.2 Re-circulation devices within distribution system storage facilities;

4.2.3 In-line mixing equipment;

4.2.4 Chemical metering pumps and chemical handling pumps;

4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing of any unit process within a treatment subsystem;

4.4.3 A deterioration in the quality of drinking water provided to consumers;

4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.6 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System", as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system.

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on "Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere", as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable.

8.0 Source Protection

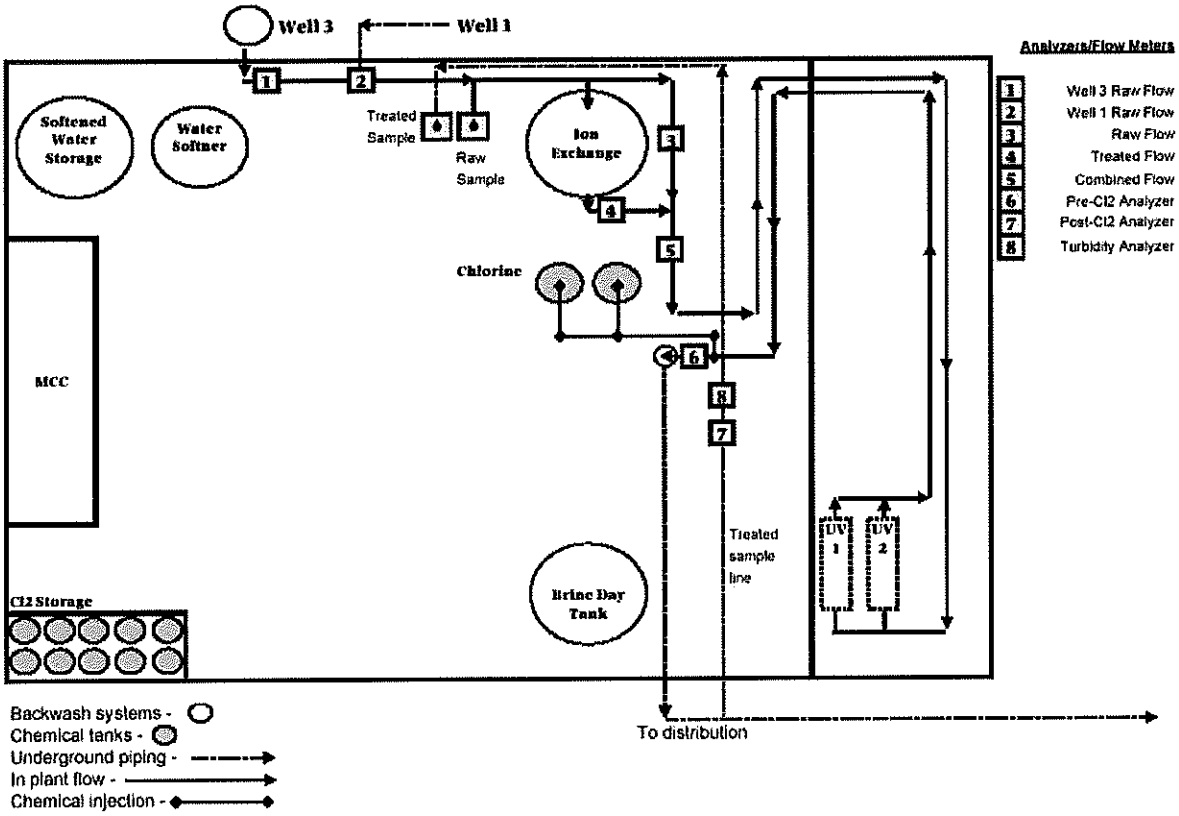
8.1 Not Applicable.

Schedule D: Process Flow Diagrams

System Owner	**The Corporation of the Municipality of Tweed**
Permit Number	**168-201**
Drinking Water System Name	**Tweed Drinking Water System**
Schedule D Issue Date	**May 19th, 2016**

1.0 Process Flow Diagrams

Tweed Water Treatment Facility



[Source: Operational Plan For the Tweed Drinking Water System, Revision 7, August 13, 2015]

APPENDIX C

PERMIT TO TAKE WATER

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

PERMIT TO TAKE WATER
Ground Water
NUMBER 4464-A9NRHH

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Municipality of Tweed
255 Metcalf Street
Tweed, Ontario K0K 3J0
Canada

For the water taking from: Well 1, Well 3

Located at: 404 Hungerford Road Village of Tweed
Tweed, County of Hastings

430 River Street West Village of Tweed
Tweed, County of Hastings

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment and Climate Change.

(d) "District Office" means the Belleville District Office.

(e) "Permit" means this Permit to Take Water No. 4464-A9NRHH including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means The Corporation of the Municipality of Tweed.

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated December 11, 2015 and signed by Betty Gallagher , and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **May 3, 2026**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Well 1	Well Drilled	Municipal	Water Supply	1,090	24	950,000	365	18 315376 4927669
2	Well 3	Well Drilled	Municipal	Water Supply	1,134	24	1,633,000	365	18 315426 4926973
						Total Taking:	2,583,000		

3.3 The Permit Holder shall take well-water exclusively from Well # 3 (also known as the Crookston Well) for the municipal supply and the Permit Holder shall only use well-water from Well # 1 (also known as the Main Well) as a back up well-water supply to supplement the municipal supply as prescribed in section G of the Permit Holder's December 6, 2004 Permit To Take Water application that was signed by Patricia Bergeron.

4. Monitoring

4.1 Record of Takings

4.1.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings and the total measured amounts of water pumped per day for each day that water is taken under the authorization of this Permit. A separate record shall be maintained for each source. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The total amounts of water pumped shall be measured using a manufactured flow meter and totalizer.

4.2 Well-Water Level Monitoring

4.2.1 The Permit Holder shall identify the locations of wells numbered TW 05-01, TW 05-02 by using Figure 1 titled *Well* Locations attached to a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.2.2 The Permit Holder shall measure water levels to the nearest centimetre at Well # 1 (or the Main Supply Well) and Well # 3 (the Crookson Well) on a daily basis using electronic water level measuring devices and the Permit Holder shall measure water levels to the nearest centimetre using an electronic water level indicator at three month intervals at TW 05-01, TW 05-02 commencing within one month of the date of issuance of this Permit and as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.2.3 The Permit Holder shall record and maintain a record of all water level measurements from the wells. This record shall include the dates and times of water level measurements. A separate record shall be maintained for each well. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.2.4 The Permit Holder shall provide the well-water level information to a practicing professional engineer or practicing professional geoscientist at two year intervals who shall review the information and determine if water use interference is occurring as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.3 Well-Water Quality Monitoring

4.3.1 The Permit Holder shall obtain well-water samples from Well # 1 (or the Main Supply Well) and Well # 3 (the Crookson Well) for nitrate, nitrite, ammonia, uranium and other parameters in accordance with its Drinking-water Permit made under the *Safe Drinking Water Act,* and the Permit Holder shall obtain well-water samples at a three month interval for nitrite, nitrate, ammonia, uranium, Escherichia coli (E. coli) bacteria and Total Coliform bacteria parameters from Domestic Well 3 commencing within one month of the date of issuance of this Permit and as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.3.2 The Permit Holder shall take the well-water samples identified in section 4.3.1 of this Permit to a laboratory licensed under the *Safe Drinking Water Act* and shall ensure that the laboratory analyses and reports the concentration of at least nitrite, nitrate, ammonia, uranium, Escherichia coli (E. coli) bacteria and Total Coliform bacteria for each water sample.

4.3.3 The Permit Holder shall record and maintain a record of all well water laboratory analyses from the wells. This record shall include the dates and times of water samples and reports from the laboratory. A separate record shall be maintained for each well. The Permit Holder shall keep

all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.3.4 The Permit Holder shall provide the well-water sample analysis information to a practicing professional engineer or practicing professional geoscientist at two year intervals who shall review the information and determine if quality interference is occurring as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

5. Impacts of the Water Taking

5.1 Notification
The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings
If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.3 Should the Permit Holder receive a well-water shortage complaint from the owners of TW 2-93 (presently owned by Granite Springs Water Company) or any other well near Well # 1 or Well # 3, or should the practicing professional engineer or practicing professional geoscientist determine water use interference is occurring with off-site wells, the Permit Holder shall

immediately arrange to provide temporary water supplies at its expense to the allegedly affected resident, shall undertake a scientific investigation to evaluate the validity of the well water problem, shall undertake mitigative action to permanently restore the well owner(s) supply and shall advise the District Office of the findings and the mitigative action as recommended in sections 1 and 2 of a four page September 5, 1997 letter to Totten Sims Hubicki Associates from Hydroterra Limited regarding Monitoring/Contingency Modifications, New Well Permit, Village of Tweed, TSH Project No. 52-20648, HT File: 1089M.

6. **Director May Amend Permit**
The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

*In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email:
ERTTribunalsecretary@ontario.ca

AND

The Environmental Commissioner
1075 Bay Street
6th Floor, Suite 605
Toronto, Ontario M5S 2W5

AND

The Director, Section 34.1,
Ministry of the Environment and Climate Change
1259 Gardiners Rd, PO Box 22032
Kingston, ON
K7P 3J6

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at	by Fax at	by e-mail at
(416) 212-6349	(416) 326-5370	www.ert.gov.on.ca
Toll Free 1(866) 448-2248	Toll Free 1(844) 213-3474	

*This instrument is subject to Section 38 of the **Environmental Bill of Rights** that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 1674-8WAL9T, issued on 2012/09/27.

Dated at Kingston this 10th day of May, 2016.

Greg Faaren
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 4464-A9NRHH, dated May 10, 2016.

APPENDIX D

STAKEHOLDER SUPPORT

March 2019

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater

PUBLICATION TITLE	PUBLICATION NUMBER
FORMS: Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	 012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

PIBS 8990b01

Ontario

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.

Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable Avis de demande de services de laboratoire Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-2149F 012-2148F 012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau portable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web

PIBS 8990b01

Ontario