The Corporation of the County of Brant

Drinking Water Quality Management Standard Operational Plan (062-401)

Airport Drinking Water System

MDWL: 062-101
DWWP: 062-201

Cainsville Distribution System

MDWL: 062-102
DWWP: 062-202

Mt. Pleasant Drinking Water System

MDWL: 062-103
DWWP: 062-203

Paris Drinking Water System

MDWL: 062-105
DWWP: 062-205

St. George Drinking Water System

MDWL: 062-104
DWWP: 062-204

Element	Current Revision Date (dd/mm/yyyy)	Revision Number
Element 1: Quality Management System	19/12/2025	3.1
Element 2: Quality Management System Policy	05/06/2025	3
Element 3: Commitment and Endorsement	11/08/2024	12
Element 4: Designated QMS Representative	19/12/2025	7.1
Element 5: Document and Record Control	19/12/2025	10.1
Element 6: Drinking Water Systems	19/12/2025	18.1
Element 7: Risk Assessment	19/12/2025	7.1
Element 8: Risk Assessment Outcomes	19/12/2025	14.1
Element 9: Organizational Structure, Roles, Responsibilities, and Authorities	22/12/2025	15.1
Element 10: Competencies	19/12/2025	8.1
Element 11: Coverage	19/12/2025	14.1
Element 12: Communications	19/12/2025	7
Element 13: Essential Supplies and Services	24/06/2025	14.1
Element 14: Review and Provision of Infrastructure	19/12/2025	9.1
Element 15: Infrastructure Maintenance, Rehabilitation, and Renewal	19/12/2025	6.1
Element 16: Sampling, Testing, and Monitoring	19/12/2025	8.1
Element 17: Measurement & Recording Equipment Calibration, and Maintenance	22/12/2025	8.1
Element 18: Emergency Management	19/12/2025	6.1
Element 19: Internal Audits	19/12/2025	4.1
Element 20: Management Review	19/12/2025	12.1
Element 21: Continual Improvement	19/12/2025	6.1
Operational Plan Schedule C	03/09/2024	3

Revision number	Revisions	Date of revision	Revision completed by:
1	Creation of index.	02/17/2022	Water Technologist
2	Element 5 Updated Element 9 Updated	03/30/2022	Water Technologist
3	Element 8	04/13/2022	Water Technologist
4	Elements 3,6,8,9,10,11,13, 14, 17, and 20	10/20/2022	Water Technologist

5	Element 11	02/27/2023	Water Technologist
6	Element 6	03/14/2023	Water Technologist
7	Element 13	10/06/2023	Water Technologist
8	Element 14	10/26/2023	Environmental Services Technologist
9	Elements 4, 5, 7, 9, 10, 12	11/13/2023	Environmental Services Technologist
10	Element 11	11/24/2023	Environmental Services Technologist
11	Operational Plan Schedule C	06/04/2024	Environmental Services Technologist
12	Elements 4, 6, 9, 10, 11, 12, 13, 16, 17, 18, and 20	04/10/2024	Environmental Services Technologist
13	Operational Plan Schedule C Elements 4, 7, 9	09/13/2024	Manager of Compliance and Quality
14	Element 20	09/20/2024	Manager of Compliance and Quality
15	Element 3	11/08/2024	Manager of Compliance and Quality
16	Element 8	01/07/2025	Manager of Compliance and Quality
17	Reformatted. All Elements excluding Element 3. Change to revision number.	17/07/2025	Manager of Compliance and Quality
17.1	Added location of controlled copies to all Elements excluding Elements 2 and 3.	12/22/2025	Environmental Services Technologist

CONTROLLED COPIES

Location of Controlled Copy	Number of Copies

Airport WTP	1
Cainsville Elevated Tank	1
Mt. Pleasant WTP	1
Bethel WTP	1
Gilbert WTP	1
Telfer WTP	1
St. George WTP	1

Schedule “C”

Subject System Description Form	
Municipal Residential Drinking Water System	
Owner of Municipal Residential Drinking Water System:	The Corporation of the County of Brant

Subject Systems

Name of Drinking Water System	Licence Number	Name of Operational Subsystems	Name of Operating Authority	DWS Number
Airport Drinking Water System	062-101	NA	The Corporation of the County of Brant	220002743
Cainsville Distribution System	062-102	NA	The Corporation of the County of Brant	260002616
Mt. Pleasant Drinking Water System	062-103	NA	The Corporation of the County of Brant	210000069
Paris Drinking Water System	062-105	NA	The Corporation of the County of Brant	220002752
St. George Drinking Water System	062-104	NA	The Corporation of the County of Brant	220002734

Contact Information for Questions Regarding the Operational Plan

Name	Title	Phone No.(s)	Email
Primary: Amanda Dubeckyj	Manager of Compliance and Quality	548-328-2298	Amanda.Dubeckyj@brant.ca
Secondary: Andrea Bazzard	Director of Environmental Services	519-770-6066	Andrea.Bazzard@brant.ca

1 QUALITY MANAGEMENT SYSTEM

The County of Brant Drinking Water Quality Management System (QMS) is documented in this Operational Plan as part of the County's efforts to ensure that clean, safe and reliable drinking water is supplied to all customers served by the County of Brant's Drinking Water Systems.

The development, implementation and continual improvement of the Quality Management System will ensure that all regulatory and legislative requirements are met and that consumers can be confident that their drinking water will be protected through the effective application of the QMS.

This Quality Management System was developed to meet the Ministry of the Environment Drinking Water Quality Management Standard 2.0 (DWQMS).

Revision number	Revisions	Date of revision	Revision completed by:
1	Minor revisions to wording.	05/02/2017	David Stevenson
2	Revised to note DWQMS 2.0	04/18/2019	David Stevenson
3	Reviewed and updated to new standard formatting.	05/06/2025	Manager of Compliance and Quality
3.1	Added Controlled Copy location	12/19/2025	Environmental Services Technologist

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Mt. Pleasant WTP	1
Gilbert WTP	1
Telfer WTP	1
Bethel WTP	1
St. George WTP	1

The County of Brant
Quality Management Policy

"The County of Brant is committed to providing its consumers a safe drinking water supply that meets the requirements of all applicable regulations and legislation. We are committed to the implementation, maintenance, and continual improvement of the Drinking Water Quality Management Standard. The County shall require the principles of the Quality Management System in the operation, design and construction of the County's Drinking Water Systems be followed."

2 QUALITY MANAGEMENT SYSTEM POLICY

This policy serves as the foundation of the County of Brant's Quality Management System. The policy will be communicated to all Environmental Services Water Operations personnel through orientation sessions and by being posted at specific drinking water facilities and the Environmental Services office. The policy is posted on the County's web site for communication to staff and the public. Owners of the systems are made aware of the policy through orientation sessions.

The County of Brant Quality Management Policy

"The County of Brant is committed to providing its consumers a safe drinking water supply that meets the requirements of all applicable regulations and legislation. We are committed to the implementation, maintenance, and continual improvement of the Drinking Water Quality Management Standard. The County shall require the principles of the Quality Management System in the operation, design and construction of the County's Drinking Water Systems be followed."

Revision number	Revisions	Date of revision	Revision completed by:
1	Included the word regulations to conform to the wording provided in the standard.	04/18/2019	David Stevenson
2	Updated term Water Division personnel to Environmental Services Drinking Water personnel and Water Division office to Environmental Services office	06/17/2020	David Stevenson
3	Reviewed and updated to new standard formatting.	05/06/2025	Manager of Compliance and Quality

CONTROLLED COPIES

Location of Controlled Copy (Poster only: ES-QA-V-001)	Number of Copies
Burford Office	1
Airport WTP	1
Cainsville Tower	1
Mt. Pleasant WTP	1
Bethel WTP	1

Gilbert WTP	1
Telfer WTP	1
St. George WTP	1

3. Commitment and Endorsement

The Owner, represented by the Mayor and Municipal Council, the members of Top Management (as defined by the DWQMS) and the Quality Management System Representative of the Corporation of the County of Brant have demonstrated their endorsement of this Operational Plan by applying their signatures below. The Operational Plan will always be reviewed and continually improved. The Operational Plan will be used for the planning, operation, and maintenance of the County of Brant's Municipal Residential Drinking Water Systems.

Endorsed by:

Mayor
(Owner)

May 23-23
Date

General Manager of Operations
(Top Management)

June 5, 2023
Date

Director of Environmental Services
(Top Management)

June 5, 2023
Date

Environmental Services Manager
(Top Management)

May 30 - 23
Date

Water Technologist
(QMS Representative)

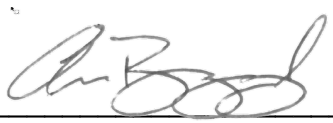
June 9, 2023
Date

REVISION NUMBER	REVISION	DATE OF REVISION (MM/DD/YYYY)	REVISION COMPLETED BY:	CURRENT VERSION NUMBER
1	Added the Water Operation Superintendent as a member of Top Management	11/14/2013	Water Technologist	7
2	Added the General Manager of Operations as a member of Top Management	06/03/2019	Water Technologist	8
3	Director of Water updated to Director of Environmental Services.	06/17/2020	Water Technologist	9
4	Updated Water Operations Superintendent to Environmental Services Manager	10/18/2022	Water Technologist	10
5	New term of Council. Element 3 signed.	05/16/2023	Water Technologist	11

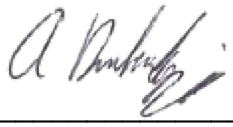
3. Commitment and Endorsement

The Owner, represented by the Mayor and Municipal Council, the members of Top Management (as defined by the DWQMS) and the Quality Management System Representative of the Corporation of the County of Brant have demonstrated their endorsement of this Operational Plan by applying their signatures below. The Operational Plan will always be reviewed and continually improved. The Operational Plan will be used for the planning, operation, and maintenance of the County of Brant's Municipal Residential Drinking Water Systems.

Endorsed by:



Director of Environmental Services (Top Management) — November 8, 2024 — Date



Manager of Compliance and Quality (QMS Representative) — November 8th, 2024 — Date

This page is added supplemental to the original commitment and endorsement as there was a staff change to the Director of Environmental Services and QMS Representative. The new signatures demonstrate their endorsement of the quality management system as documented in the Operational Plan.

4 QMS REPRESENTATIVE

4.1 The County of Brant has designated the Manger of Quality and Compliance as the QMS Representative.

4.2 In the event that the manager of Compliance and Quality is away for an extended period or QMS related items need to be addressed immediately during their absence, one of the Compliance and Quality Technologists will fulfill the requirements of the QMS Representative.

4.3 The QMS Representative will be responsible for the following:

a) Administer the Quality Management System by Ensuring that processes and procedures needed for the Quality Management System are established and maintained.
b) Reporting to the Owner and Top Management on the Performance of the Quality Management System and any need for improvement.
c) Ensure that current version of documents required by the Quality Management System are being used at all times.
d) Ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system.
e) Promote awareness of the Quality Management System throughout the operating authority.
f) Act as liaison for internal auditing and external audits.

Revision number	Revisions	Date of revision	Revision completed by:
1	Revised to note the change from Public Works Division to Operations Division	10/05/2015	David Stevenson
2	Revised to note the Water Records Management Clerk as the back up to the Water Technologist.	05/04/2017	David Stevenson
3	Revised to note the Water Quality Technician as the back up to the Water Technologist.	08/20/2018	David Stevenson
4	Updated Water Technologist to Environmental Services Technologist.	11/09/2023	Environmental Services Technologist
5	4.2 – The Director of Environmental Services replaces the Water Quality Technician as the back-up to the QMS Representative.	04/10/2024	Environmental Services Technologist

6	Revised to make the Manager of Compliance and Quality the primary QMS representative and the Environmental Services Technologist the back-up to the QMS representative.	09/03/2024	Manager of Compliance and Quality
7	Reviewed and updated to new standard formatting. Updated 4.3 to better align with wording of the DWQMS Standard.	05/06/2025	Manager of Compliance and Quality
7.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

CONTROLLED COPIES

Location of Controlled Copy	Number of Copies
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5 DOCUMENT AND RECORDS CONTROL

5.1 QMS Internal and External Document Control (Other than Records)

5.1.1 Overview

This procedure is applicable to the following QMS Documents:

a) Internal Documents

- Operational Plan
- Standard Operating Procedures
- QMS and Regulatory Forms and Documents
- Operation and Maintenance Manuals
- Emergency Response and Contingency Plan

b) External Documents

- Equipment Manuals
- Applicable Provincial Drinking Water Regulations, Forms and Applications
- Applicable Municipal Bylaws
- Applicable Industry Standards

5.1.2 Documents will be created, revised, distributed and controlled as per ES-QA-P-001 Document Control.

5.2 QMS Record Control

5.2.1 Overview

This procedure is applicable to all records that demonstrate conformance to DWQMS and compliance with Provincial legislative and regulatory requirements.

a) All QMS and regulatory drinking water records will be retained and protected from damage or loss in Environmental Services for a minimum of 5 years. However, if by regulation a record is required to be maintained for a period longer than 5 years, then the retention time will be as per the regulation.

b) Once the record retention time has been reached, records will be securely destroyed. Some records may be retained if they are applicable to ongoing operations.

c) Retention or the secure destruction of records will be in accordance with By-law 229-10. Older records that are not frequently referenced can be transferred to the County of Brant Records Centre and stored for the duration

of their required retention period until they are eligible for destruction as authorized by By-law 229-10.

5.2.2 Manual Records

a) All manually recorded data and information must be recorded on approved internal QMS forms and documents, forms provided by a Ministry approved laboratory, and the Ministry.

b) In the event the required form is not accessible, the recorded data must be recorded in a personal and/or a facility logbook and then transferred the required document when possible.

c) All internal QMS forms and documents, forms provided by a Ministry approved laboratory, and Ministry regulatory documentation will be recorded in a way that all entries are accurate, complete, concise, and as required by the form or document to ensure conformance and compliance. All applicable spaces must be completed.

d) Manual records must be legible.

e) Pencils, water soluble ink or any other erasable marker must not be used to record information or data. Blue or black non-soluble ink must be used.

f) All drinking water-related records will be filed in Environmental Services and protected from damage or loss.

g) If any file is required to be removed from the Environmental Services filing shelves for any period, the request for the file must be made through a member of the Operations Administration Division.

h) A “file record card” must be completed by any individual removing a file from the Environmental Services filing shelves. The file record card will be placed in the location of the removed file and the file record card must note the name of the file removed, the date the file was removed, and the individual who removed the file. When the file is returned, it must be placed in its original location, the file card removed, and the information that was recorded on card crossed out.

i) Files should not be removed from the Burford Administration Building without advising a member of the Operations Administration Division.

5.2.3 SCADA Records

a) Daily SCADA Reports generated by e.RIS, are stored in e.RIS server and a pdf copy of the report is filed electronically by the QMS Representative in:

- \\eddie.fs2.brant.ca\E08enviro_Water_Works\SCADA Daily Reports

b) In the event of an extended absence of the QMS Representative, the Water Quality Technologist will file the reports electronically.

5.2.4 Drinking Water Facility Logbooks

a) Facility logbooks must be stored in a location where they are protected from damage and loss.

b) Logbook entries must be made with blue or black waterproof ink.

c) Logbook entries must be legible.

d) Logbook entries must meet the requirements of O. Reg. 128/04 Condition 27.

e) Upon the completion of a facility logbook, the completed logbook must be returned to the Water Quality Technologist to be filed.

f) The Water Quality Technologist will label the logbook and provide it to a member of the Operations Administration group as identified by the Administrative Coordinator to be scanned.

g) The logbook will be scanned and both copies returned to the Water Quality Technologist who will file the hard copy and electronic copy in:

- \\eddie.fs2.brant.ca\E08enviro_Water_Works\Logbooks

h) Logbooks must be retained for 5 years.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 5.1.1 updated. Section 5.1.2 updated. Section 5.1.3 revised to Document Distribution. Section 5.1.4 revised to Reviewing Documents. Section 5.1.5 revised to Document Availability.	10/07/2013	David Stevenson
2	Element 5 received a complete review and update. Reviewed with staff May 17, 2017.	05/18/2017	David Stevenson
3	Section 5.2.2 revised to note the daily reports generated by e.RIS.	11/01/2017	David Stevenson
4	Section 5.2.1 revised to remove reference to the Water Division Records Management Clerk and replace with the Operations Administration Division. Section 5.2.2 revised to remove reference to the Water Division Records Management Clerk and replace with the Water Clerk.	01/29/2020	David Stevenson

5	Reference to the Water Division updated to Environmental Services.	06/17/2020	D. Stevenson
6	Section 5.2.2 revised to note that the Water Clerk has been replaced by the Water Technologist for filing the daily SCADA reports.	10/07/2021	D. Stevenson
7	Element reformatted. 5.1.2(c) – updated to note an email can be submitted. 5.1.3 (a and b) – updated to note that the QMS Rep. reviews and approves. 5.1.6 (a) – Updated to note OneDrive file. 5.2.2 (b) – Updated to note that if a form is not available, the information must be stored in a logbook and transferred to the document when possible. 5.2.4 Updated to expand the logbook process.	03/30/2022	D. Stevenson
8	Water Technologist updated to Environmental Services Technologist.	11/09/2023	Environmental Services Technologist
9	Reviewed and updated to new standard formatting. Minor rewording throughout. Changes to clarify blue or black waterproof/non-soluble ink is required on records. Changed 5.1 to reference new Document control procedure.	05/06/2025	Manager of Compliance and Quality
9.1	Added location of controlled copies.	12/19/2025	Environmental Services Technologist

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6 DRINKING WATER SYSTEMS

The County of Brant owns and operates five (5) Municipal Residential Drinking Water Systems. They are identified as the; Airport Drinking Water System, Cainsville Distribution System, Mt. Pleasant Drinking Water System, Paris Drinking Water System (Bethel, Gilbert, and Telfer), and St. George Drinking Water System. A description of each system follows. Individual system Process Flow Diagrams and P&ID Diagrams are included as a reference at the back of this Element.

6.1 Airport Drinking Water System

The Airport Drinking Water System is a groundwater system owned and operated by the County of Brant. The well system is classified as Water Distribution and Supply Subsystem Class 2.

6.1.1 Water Source

The Airport Drinking Water System obtains raw water from two (2) drilled non-GUDI wells. Both wells are equipped with submersible pumps. Characterization of the aquifer can be found as part of the Assessment Report for the Grand River Watershed Source Protection Area.

6.1.2 Raw Water Characteristics

The chemistry of the water makes it suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards. The water temperature is relatively constant, turbidity is low, and pH is considered normal for a ground water system.

The raw water consistently tests negative for total coliforms and E. coli bacteria.

Past historical data indicates that the water source is stable and consistent in terms of both quantity and quality. There have been no historical challenges or event driven fluctuations encountered for this drinking water system and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

6.1.3 Water Treatment

The Airport Drinking Water System consists of the following:

- Sodium Hypochlorite Dosing System consisting of two Chlorine Pumps (1 duty, 1 standby), and two chemical storage tanks.

- An in-ground dedicated Chlorine Contact Pipe, 2.28 m inside diameter, 12.3 m long with perforated baffle plates, located adjacent to the well house to provide the required chlorine contact time.
- A continuous point of entry chlorine residual analyzer and an alarm system.
- One 1,831 m^3 total volume and 1,600 m^3 useable volume elevated storage reservoir.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation and control systems.
- One 410 kW diesel generator with subbase fuel storage provides uninterrupted supply.
- A Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

Raw water is pumped from the wells through a flow meter into a discharge header via a vertical turbine pump where it undergoes chemical treatment via chlorination (sodium hypochlorite) dosed into the header to achieve disinfection. The discharge header from the well pumps is connected to the on-site contact chamber, where proper chlorine contact time is achieved. Treated water leaving the contact tank is stored in the elevated reservoir prior to being pumped into the distribution system.

On-line equipment and SCADA monitors and records treated water flow, pressure, chlorine residual and other parameters prior to entry into the distribution system to ensure water quality.

6.1.4 Water Distribution

The Airport Drinking Water System is the single pumping and water treatment facility which supplies treated potable water to the Airport Distribution System. Secondary disinfection is practiced through chlorination. Chlorine residual grab samples are taken from the distribution system and recorded daily by an Operator to confirm acceptable chlorine concentrations. Operators are to be aware of the secondary chlorine concentration residual critical control limits noted in SOP-14-09 or Element 8 of the Operational Plan and follow SOP-14-09 for the actions to be taken when a critical control limit is exceeded.

The system consists of one pressure zone, approximately 11 km of watermain ranging in size from 100 mm – 400 mm which services 314 service connections (285 residential and 29 commercial). There are approximately 61 fire hydrants and 517 curb stops and valves.

The Airport Elevated Reservoir provides a useable volume of 1,600 m^3.

6.2 Cainsville Distribution System

The County owns and operates the Cainsville Distribution System. This system is classified as Water Distribution Subsystem Class 1.

The County of Brant purchases treated drinking water from the City of Brantford. This water is treated at the City of Brantford Water Treatment Plant (BWTP) which is owned and operated by the City of Brantford. The City of Brantford is responsible for treating, sampling, testing, and monitoring at the BWTP. The City of Brantford has an on-line chlorine residual analyzer on the treated water leaving the BWTP to ensure water quality. The water supplied by the BWTP maintains a chlorine residual that is sufficient to ensure that the secondary disinfection regulatory requirements are met within the Cainsville Distribution System. Re-chlorination is not practiced within the Cainsville Distribution System.

Secondary disinfection is practiced through chloramination. Chlorine residual grab samples are taken from the distribution system and recorded daily by an Operator to confirm acceptable chlorine concentrations. Operators are to be aware of the secondary chlorine concentration residual critical control limits noted in SOP-14-09 or Element 8 of the Operational Plan and follow SOP-14-09 for the actions to be taken when a critical control limit is exceeded.

While sodium levels are below the aesthetic concentration of 200 mg/L, the concentrations are such that the County must advise the Medical Officer of Health as per O. Reg. 170/03.

The Cainsville Elevated Tank is designed to maintain pressure within the prescribed operating limits in the Cainsville portion of the distribution system, while also providing the required pressure equalization and an emergency storage capacity of 1,100 m^3.

A Supervisory Control and Data Acquisition System (SCADA) monitors and records the flow entering the system.

The Cainsville portion of the distribution system consists of one pressure zone, approximately 9 km of watermain ranging in size from 50 mm – 300 mm which services 131 service connections (36 residential and 95 commercial). There are approximately 55 hydrants and 265 curb stops and valves.

There have been no historical challenges or event driven fluctuations encountered for this distribution system.

6.3 Mt. Pleasant Drinking Water System

The Mt. Pleasant Drinking Water System is a groundwater system owned and operated by the County of Brant. The well system is classified as Water Treatment Subsystem Class 1 and Water Distribution Subsystem Class 2.

6.3.1 Source Water

The Mt. Pleasant Drinking Water System obtains its raw water from two (2) drilled non-GUDI wells (Well 1 and Well 2). Wells 1 and 2 are each equipped with a vertical turbine well water pump. Characterization of the aquifer can be found as part of the Assessment Report for the Grand River Watershed Source Protection Area.

6.3.2 Raw Water Characteristics

The chemistry of the water makes it suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards. The water temperature is relatively constant, turbidity is low, and pH is considered normal for ground water systems. Iron, manganese, and sodium is present. While sodium levels are below the aesthetic concentration of 200 mg/L, the concentrations are such that the County must advise the Medical Officer of Health as per O. Reg. 170/03. The raw water consistently tests negative for total coliforms and E. coli bacteria.

Past historical data indicates that the water source is stable and consistent in terms of both quantity and quality.

There have been no historical challenges or event driven fluctuations encountered for this drinking water system and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

6.3.3 Water Treatment

The Mt. Pleasant Drinking Water System consists of the following:

- Two pressure filters to remove iron and manganese from the raw water.
- Sodium Hypochlorite Dosing System which consists of four chlorine pumps (3 duty, 1 standby) and two chemical storage tanks.
- Two continuous chlorine residual analyzers (pre reservoir and point of entry) and alarm system.
- Five high lift pumps.
- Two baffled underground reservoirs, with reservoirs No. 1 and 2 having effective storage volumes of 450 and 1,490 m^3 respectively to give a total storage volume of 1,940 m^3.
- One 350 kW diesel generator provides uninterrupted supply.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation and control systems.
- A Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

Raw groundwater is pumped from one of the two water wells, through a flow meter and then enters the treatment facility where sodium hypochlorite is dosed as a pre-treatment chemical to oxidize iron and manganese. Then, the water is filtered using two (2) pressure filters for iron and manganese removal. Following pressure filtration, the

filtered water is dosed with sodium hypochlorite for disinfection. The filtered and chlorinated water is then conveyed to the facility's underground reservoirs to achieve adequate contact time.

On-line equipment and SCADA monitors and records treated water flow, turbidity, chlorine residual and other parameters prior to entry into the distribution system to ensure water quality.

6.3.4 Water Distribution

The Mt. Pleasant Drinking Water System is the single pumping and disinfection facility which supplies treated potable water to the Mt. Pleasant Water Distribution System. One Bulk Fill Station is located within the Mt. Pleasant Distribution System.

Secondary disinfection is practiced through chlorination. Chlorine residual grab samples are taken from the distribution system and recorded daily by an Operator to confirm acceptable chlorine concentrations. Operators are to be aware of the secondary chlorine concentration residual critical control limits noted in SOP-14-09 or Element 8 of the Operational Plan and follow SOP-14-09 for the actions to be taken when a critical control limit is exceeded.

The system consists of one pressure zone, approximately 20 km of watermain ranging in size from 150 mm – 250 mm which services 403 service connections (376 residential and 27 commercial). There are approximately 135 fire hydrants and 715 curb stops and valves.

6.4 Paris Drinking Water Systems (Bethel, Gilbert, and Telfer)

The Paris Drinking Water System is a groundwater system owned and operated by the County of Brant. The Bethel, Gilbert and Telfer facilities are rated as a Class 1 Water Treatment Subsystem. The Paris Distribution Subsystem is rated as a Class 3.

6.4.1 Water Source

The Paris Drinking Water System consists of three (3) separate well fields (Bethel, Gilbert, and Telfer), three (3) separate treatment facilities (Bethel, Gilbert, and Telfer) and the distribution system that connects all three (3) facilities.

The Bethel water facility obtains its raw water from four (4) wells (P51 (PW 1/12), P52 (TW 1/05), P53 (PW 2/12) and P54 (PW 4/12)). The wells are in an unconfined aquifer and have been classified as Groundwater Under the Direct Influence (GUDI) with adequate in-situ filtration.

The Gilbert water facility obtains its raw water from eight (8) wells. P28 and P29 are true groundwater wells drilled into bedrock and are not considered to be under the influence of surface water. Wells P210, P211, P212, P213, P214 and P215 are in an unconfined aquifer and have been classified as Groundwater Under the Direct Influence (GUDI)

with adequate in-situ filtration during regional storm events (defined as Hurricane Hazel, 1954).

The Telfer water facility obtains its raw water from two (2) drilled non-GUDI wells (P31 and P32) drilled into bedrock. Characterization of the aquifer for both well fields can be found as part of the Assessment Report for the Grand River Watershed Source Protection Area.

6.4.2 Raw Water Characteristics

a) Bethel

The chemistry of the raw ground water at Bethel is suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards. The water temperature is relatively constant, turbidity is low, pH is considered normal for ground water systems, and sodium is present. While sodium levels are below the aesthetic concentration of 200 mg/L, the concentrations are such that the County must advise the Medical Officer of Health as per O. Reg. 170/03. Since the wells have been developed, there have been occasional instances of very low concentrations of total coliforms and/or E. coli bacteria.

There have been no challenges or event driven fluctuations encountered to date for these wells and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

b) Gilbert

The chemistry of the raw ground water at Gilbert is suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards except for sulphates in Wells P28 and P29. The water temperature is relatively constant, turbidity is low, and pH is considered normal for ground water systems. The high sulphates in the bedrock wells at Gilbert (P28 and P29) are quenched via blending with water from the overburden wells to create acceptable sulphate levels in the drinking water.

The raw water occasionally tests positive for total coliforms in the overburden wells. Nitrates in production wells P210 through P215 are slightly elevating.

Past historical data indicates that the water source is stable and consistent in terms of both quantity and quality.

There have been no historical challenges or event driven fluctuations encountered for these wells and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

c) Telfer

The chemistry of the raw ground water at Telfer is suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards except for nitrates in Well P31. The water temperature is relatively constant, turbidity is low, and pH is considered normal for ground water systems. The elevated nitrates in the water from Well P31 are blended with water from Well P32 to create acceptable nitrate levels in the drinking water.

The raw water consistently tests negative for total coliforms and E. coli bacteria.

Past historical data indicates that the water source is stable and consistent in terms of both quantity and quality.

There have been no historical challenges or event driven fluctuations encountered for these wells and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

6.4.3 Water Treatment

a) Bethel Water Treatment Facility (97 Bethel Road, Paris)

The Bethel Water Treatment Facility consists of the following:

- Two (2) Trojan UV Swift 2L12TM reactors (1 duty, 1 standby).
- Chemical feed systems as follows:
  - Two (2) parallel (1 duty, 1 standby) Sodium Hypochlorite Dosing Systems consisting of a metering pump and chemical storage tanks.
  - Two (2) parallel (1 duty, 1 standby) Hydrofluosilicic Acid (Fluoridation) Dosing Systems consisting of a metering pump and chemical storage tanks.
- Continuous chlorine (pre contact chamber and point of entry) and fluoride residual analyzers and alarm systems.
- Three (3) horizontal split case pumps.
- Duel chambered chlorine contact chamber.
- Three (3) Ion Exchange vessels (2 duty, 1 standby) and brine tank (offline).
- Online turbidity analyzer.
- A Sodium Hypochlorite Dosing System (1 duty) for touch up chlorination. Consists of a metering pump, drawing from the same storage tank as the first sodium hypochlorite system.
- One 200 kW diesel generator.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation, and control systems.
- Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

Groundwater is pumped from each well through a flow meter to the facility. The raw water may pass through the Ion Exchange vessels for nitrate reduction if required. The Ion Exchange vessels are offline but remain in the facility. The water then branches into one of two (2) Ultraviolet (UV) reactors (1 duty and 1 standby) which provide a minimum UV dosage of 20 mJ/cm^2. The UV reactors provide pathogen and virus inactivation for the groundwater prior to chemical treatment via chlorination (sodium hypochlorite) and fluoridation (hydrofluosilicic acid).

On-line equipment monitors and a SCADA system records the treated water flow, turbidity, fluoride, pressure, chlorine residual and other parameters prior to entry into the distribution system to ensure water quality.

b) Gilbert Water Treatment Facility (319 Grand River Street North, Paris)

The Gilbert Treatment Facility consists of the following:

- Two (2) Trojan UV Swift 2L12TM reactors (1 duty, 1 standby).
- Chemical feed systems as follows:
  - Two (2) parallel (1 duty, 1 standby) Sodium Hypochlorite Dosing Systems consisting of a metering pump and chemical storage tanks.
  - Two (2) parallel (1 duty, 1 standby) Hydrofluosilicic Acid (Fluoridation) Dosing Systems consisting of a metering pump and chemical storage tanks.
- Two (2) continuous chlorine (pre reservoir and point of entry) and fluoride residual analyzers and alarm systems.
- Three (3) high lift pumps.
- Two (2) underground reservoirs, with reservoirs No. 1 and 2 having effective storage volumes of 684 and 1,105 m^3, respectively, to give a total storage volume of 1,789 m^3.
- Two (2) underground high lift clear wells each having an effective storage volume of 71.5 m^3 (i.e., excludes volume below low water level).
- Two (2) parallel (1 duty, 1 standby) Sodium Hypochlorite Dosing Systems for touch up chlorination consisting of a metering pump drawing from the same chemical storage tank.
- One 600 kW diesel generator.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation, and control systems.
- Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

At Gilbert, groundwater is pumped by six (6) upper aquifer wells and two (2) bedrock aquifer wells. The water from the upper aquifer wells is metered and combines in a 250 mm diameter pipe; that branches into one of two (2) Ultraviolet (UV) reactors (1 duty and 1 standby) providing a minimum UV dosage of 40 mJ/cm^2. The UV reactors provide pathogen and virus inactivation for the groundwater prior to being combined with the metered raw water from the two (2) bedrock aquifer wells. Primary chlorination (sodium hypochlorite) and fluoridation (hydrofluosilicic acid) occurs in this combined header

before being discharged through flow meters into one of two on-site reservoirs for disinfection and storage.

On-line equipment monitors and a SCADA system records the treated water flow, turbidity, fluoride, pressure, chlorine residual and other various parameters prior to entry into the distribution system to ensure water quality.

c) Telfer Water Treatment Facility (166 West River Road, Paris)

The Telfer Water Treatment Facility consists of the following:

- Chemical feed systems as follows:
  - Two (2) parallel (1 duty, 1 standby) Sodium Hypochlorite Dosing Systems consisting of a metering pump and chemical storage tanks.
  - One (1 duty) Hydrofluosilicic Acid (Fluoridation) Dosing System consisting of a metering pump and chemical storage tank.
- A continuous chlorine (pre contact chamber and point of entry) and fluoride (point of entry only) residual analyzers and alarm systems.
- Two (2) 52.2 m^3 contact chambers.
- One 350 kW diesel generator.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation, and control systems.
- Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

Groundwater is pumped through a flow meter to the facility where it undergoes chemical treatment via chlorination (sodium hypochlorite) and fluoridation (hydrofluosilicic acid). Following treatment, water is pumped from the facility through flow meters to two (2) 52.2 m^3 buried chlorine contact pipes that normally operate in parallel prior to entry into the distribution system.

On-line equipment monitors and a SCADA system records the treated water flow, fluoride, pressure, chlorine residual and other parameters prior to entry into the distribution system to ensure water quality.

6.4.4 Paris Water Distribution

The Bethel, Gilbert, and Telfer well fields are the three (3) active sources that supply potable water to the Paris Drinking Water System. Off-site distribution facilities include the following:

- M. Sharpe Reservoir and Pumping Station (5,400 m^3)
- Parkhill Booster Station
- Oak Park Elevated Storage (3,700 m^3)
- North Paris Elevated Storage (2,000 m^3)
- South Paris Elevated Storage (2,400 m^3)

The above facilities provide storage and/or maintain system pressure and convey pressurized treated water throughout the Paris distribution system. The only exception is the M. Sharpe Reservoir, which has the potential to operate booster chemical metering pumps for chlorine residual maintenance, if required. However, this provision is not regularly utilized due to adequate chlorination practices at Bethel, Gilbert, and Telfer Water Treatment Facilities.

Under normal operating conditions, treated water to the Paris Distribution System is provided by the Gilbert Facility. During peak demands or maintenance, the Bethel and Telfer Facilities provide back-up capacity to maintain system pressure and operating levels. The Bethel and Telfer Facilities are to be operated regularly to ensure readiness to perform when required.

Secondary disinfection is practiced through chlorination. Chlorine residual grab samples are taken from the distribution system and recorded daily by an Operator to confirm acceptable chlorine concentrations. Operators are to be aware of the secondary chlorine concentration residual critical control limits noted in SOP-14-09 or Element 8 of the Operational Plan and follow SOP-14-09 for the actions to be taken when a critical control limit is exceeded.

The system consists of approximately 116 km of watermain ranging in size from 19 mm – 600 mm which services 7,087 service connections (6,754 residential and 333 commercial). There are approximately 491 fire hydrants and 7,526 curb stops and valves.

There are four (4) distinct pressure zones in the Paris service area as follows:

- Gilbert and Telfer supply potable water to Zone No. 1 and the North Paris Elevated Tank, which services the portion of Paris located to the north of the railway tracks on Grand River Street North and west of the Grand River.
- Zone No. 1 also supplies Zone No. 2, which consists of the low areas near the rivers, through pressure regulating valves which maintain the downstream pressure at 310 kPa (45 psi). The M. Sharpe Reservoir water level is maintained from Pressure Zone No. 2.
- Pumps at the M. Sharpe Reservoir and the South Paris Elevated Tank provide water to Zone No. 3.
- Pressure Zone No. 2 also supplies water to Zone No. 4 via the Parkhill Booster Station, and the Oak Park Elevated Storage Tank services Zone No. 4.

6.5 St. George Drinking Water System

The St. George Drinking Water System is a groundwater system owned and operated by the County of Brant. The well system is classified as Water Distribution and Supply Subsystem Class 3.

6.5.1 Water Source

The St. George Drinking Water System obtains its raw water from three (3) drilled non-GUDI wells; Well 1, Well 2, and Well 3. Wells 1 and 2 are each equipped with a vertical line shaft turbine well water pump. Well 3 is equipped with a submersible well water pump. Characterization of the aquifer can be found as part of the Assessment Report for the Grand River Watershed Source Protection Area.

6.5.2 Raw Water Characteristics

The chemistry of the water makes it suitable as a source of drinking water with all parameters below the Ontario Drinking Water Quality Standards. The water temperature is relatively constant, turbidity is low, and pH is considered normal for ground water systems.

The raw water consistently tests negative for total coliforms and E. coli bacteria. Historical data indicates that the water source is stable and consistent in terms of both quantity and quality.

There have been no historical challenges or event driven fluctuations encountered for this drinking water system and none are anticipated. The County tests and monitors the raw and treated water according to O. Reg. 170/03 and will respond appropriately should monitoring note any abnormalities.

6.5.3 Water Treatment

The St. George Treatment Facility consists of the following:

- Two (2) parallel (1 duty, 1 standby) Sodium Hypochlorite Dosing Systems consisting of a metering pump and chemical storage tanks.
- A continuous online chlorine residual analyzer (pre contact chamber and point of entry) and alarm system.
- Two (2) 52.2 m^3 Chlorine Contact Chambers.
- One 150 kW Diesel Generator.
- All associated piping, valves, mechanical and electrical equipment, monitoring instrumentation, and control systems.
- Supervisory Control and Data Acquisition System (SCADA).

A more detailed description is provided in the system's DWWP.

Raw groundwater is pumped through a flow meter on each well to the facility where it undergoes chemical treatment via chlorination (sodium hypochlorite) and dosed at one of two injection points on the main discharge header to achieve disinfection. Following injection, the chlorinated water is then conveyed to the two (2) 52.2 m^3 buried chlorine contact pipes that operate in parallel to achieve adequate disinfection prior to entry into the distribution system.

Prior to entry into the distribution system, on-line equipment and a SCADA system monitors, and records treated water flow, pressure, chlorine residual, and other parameters to ensure the quality.

6.5.4 Water Distribution

There are two (2) distinct pressure zones in the St. George service area as follows:

- Zone 1 encompasses the southern portion of St. George.
- Zone 2 encompasses the northern portion of St. George.

The St. George Water Supply and Treatment Facility is the single pumping and disinfection facility which supplies treated potable water to the St. George Water Distribution System.

Within the St. George Distribution Water Distribution System are two (2) water storage facilities and one (1) bulk fill facility:

- St. George Elevated Water Storage Facility (2,876 m^3)
- St. George Standpipe (437 m^3)
- St. George Bulk Water Depot

Following disinfection in the parallel chlorine contact chambers, the facility supplies treated potable water directly to Zone No. 2, which includes the elevated water storage tank and standpipe.

The elevated storage tank is interconnected with the standpipe. The standpipe supplies potable water directly to Pressure Zone 1. The interconnecting watermain from the elevated water storage tank to the standpipe is equipped with an electrically actuated control valve.

Secondary disinfection is practiced through chlorination. Chlorine residual grab samples are taken from the distribution system and recorded daily by an Operator to confirm acceptable chlorine concentrations. Operators are to be aware of the secondary chlorine concentration residual critical control limits noted in SOP-14-09 or Element 8 of the Operational Plan and follow SOP-14-09 for the actions to be taken when a critical control limit is exceeded.

The distribution system consists of approximately 30 km of watermain ranging in size from 25 mm – 300 mm which services 1,419 service connections (1,311 residential and 108 commercial). There are approximately 169 fire hydrants and 1,788 curb stops and valves.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 6.3 Updated to reflect facility upgrades.	10/07/2013	Water Technologist
2	Sections 6.1.4, 6.2, 6.3.4 and 6.4.4: Updated to note most recent service connection numbers.	05/30/2014	Water Technologist
3	Sections 6.1.4, 6.4.4 and 6.5.4: Updated the length of watermains for each section noted.	09/05/2014	Water Technologist
4	Section 6.1.3 revised to 100 kW diesel generator. Section 6.2 Removed the reference to the online chlorine analyzer at the Cainsville Elevated Tank. Section 6.4 revised to note that the Paris Drinking Water System was re-classified to a Class 2 Water Treatment Subsystem. Reference to the Scott facility was removed as the facility was decommissioned. Section 6.4.4 revised to remove the reference to the re-chlorination equipment at the Oak Park Elevated Tank. Sections 6.1.3, 6.3.3 and 6.4.3 (Gilbert and Bethel) revised to note high lift pumps.	03/27/2015	Water Technologist
5	Section 6.4.1 revised to note the new production well and the new identification names of the production wells at Bethel. 6.4.2 (Bethel) revised to note changes in raw water characteristics. Sections 6.1.4, 6.2, 6.3.4 and 6.4.4: Updated to note most recent service connection numbers. Section 6: Updated to note that P&ID drawings are included.	09/23/2015	Water Technologist
6	Section 6.4.4: Updated to add the North Elevated Tank	02/01/2016	Water Technologist
7	Section 6.5.3: Updated to note the upgraded 150 kW emergency gen set.	04/06/2016	Water Technologist
8	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers.	08/04/2016	Water Technologist
9	Sections 6.0 and 6.2: Removed reference to the KGR Distribution System.	12/21/2016	Water Technologist

10	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers.	10/18/2017	Water Technologist
11	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers.	03/27/2019	Water Technologist
12	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent length of watermain, number of valves and number of hydrants. Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers.	05/09/2019	Water Technologist
13	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers. Section 6.1.4: Updated to note the Airport Elevated Reservoir being brought online. Sections 6.1.4, 6.2, 6.3.4, 6.4.4 and 6.54: Updated to note and identify secondary disinfection. Section 6.1.1 – Updated to note 2 production wells with submersible well pumps.	09/04/2020	Water Technologist
14	Section 6.4: Updated to note the Paris DWS was reclassed to a Class 1 Water Treatment Subsystem. Section 6.4.3: The Ion Exchange system in noted to be offline and the online nitrate analyzer has been removed.	10/07/2021	Water Technologist
15	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent service connection numbers. Section 6.4.2 raw water information updated to include nitrates.	03/30/2022	Water Technologist
16	Section 6.4.4 - Updated to note the South Paris Elevated Tank. Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent length of watermain, number of hydrants and curb stops/valves.	03/14/2023	Water Technologist
17	Sections 6.1.4, 6.2, 6.3.4 6.4.4 and 6.54: Updated to note most recent length of watermain, and service connections. Section 6.4.2 (a) – Updated to note sodium at Bethel. Sections 6.1.3, 6.4.3(c), and 6.5.3 – Removed reference to turbidity analyzers.	04/04/2024	Environmental Services Technologist
18	Full Reviewed and update. Updated to new standard formatting.	05/06/2025	Manager of Compliance and Quality

18.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

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Location of Controlled Copy	Number of Copies
Airport WTP	1
Cainsville Elevated Tank	1
Mt. Pleasant WTP	1
Bethel WTP	1
Gilbert WTP	1
Telfer WTP	1
St. George WTP	1

7 RISK ASSESSMENT

7.1. Overview

The following procedure will be used to assess risks to the County of Brant municipal residential drinking water and distribution systems.

7.1.1. The Operation Authority for the County of Brant's drinking water systems, through this the procedure, will:

a) Consider potential hazardous events and associated hazards, as identified in the Ministry of the Environment document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment (April 2022)", as amended.

b) Identify additional potential hazardous events and associated hazards.

c) Assess the risks associated with the occurrence of hazardous events.

d) Ranks the hazardous events according to the associated risk.

e) Identify control measures to address the potential hazards and hazardous events.

f) Identify Critical Control Points (CCP's) and associated methods of monitoring and controlling them.

g) Consider the reliability and redundancy of equipment.

7.1.2. The results of the assessment shall include a list of hazards that will identify:

a) Control measures where appropriate.

b) CCP's.

c) Control limits for CCP's.

d) Monitoring methods for CCP's.

e) A method for reporting and recording deviations from CCP limits.

7.2. Risk Assessment Procedure

7.2.1. The Director of Environmental Services, QMS Representative, Manager of Water Operations, and Environmental Services Superintendent will meet at least once per calendar year to identify and verify the currency of the information and the validity of the assumptions used in the risk assessment. The General Manager of Operations, the Water Lead Hand, and other Environmental Services Water Operations staff may be consulted or included in the review.

7.2.2. Positions noted in the above section will also ensure that risks are assessed at least once every 36 months. The 36-month full review was last completed in 2024 and is scheduled to be completed at least once every 36 months going

forward. Whether a full review or partial review was completed is to be documented in the meeting minutes. Previous meeting minutes should be utilized to verify when a full 36-month review is required.

7.2.3. All aspects of the County's municipal residential drinking water and distribution systems and Provincial requirements shall be reviewed to identify risks. These aspects will include, but are not limited to the following:

a) Raw source water (Source Protection).

b) Production wells and their components.

c) Primary disinfection/treatment systems.

d) Secondary disinfection.

e) Distribution systems.

f) Storage.

g) High lift pumping.

h) Facility and system security.

i) Potential hazardous events and associated hazards, as identified in the Ministry of the Environment document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment (April 2022)".

7.2.4. Each identified risk will be "ranked", based on the table below, as to the probability of the events occurring, what impact (severity) the event would have on the drinking water system, how detectable the hazard is, and the reliability and redundancy of equipment is to be considered when assigning ratings to the hazardous or non-hazardous event.

Probability		Severity		Detectability	
1	**Rare** May occur in exceptional circumstances and has not occurred in the past.	**1**	**Insignificant** Insignificant impact, little public exposure, little or no health risk.	**1**	**High** Immediately detectable, alarms.
2	**Unlikely** Could occur at some point, historically has occurred less than once every 5-10 years.	**2**	**Minor** Limited public exposure, minor health risk.	**2**	**Moderate** Indicated by alarm or lab results.
3	**Possible** Has occurred or may occur once or more per year.	**3**	**Moderate** Minor public exposure, minor health risk.	**3**	**Detectable** Visually detectable, rounds or maintenance.
4	**Likely** Has occurred or may occur on a monthly to quarterly basis.	**4**	**Major** Large population at risk.	**4**	**Poor** Would not be detected until problem occurred.

5	**Certain** One or more occurrences on a monthly or more frequent basis.	**5**	**Catastrophic** Major impact for large population, complete failure of systems.	**5**	**Undetectable** Cannot be detected under any circumstance.

7.2.5. The total risk rank shall be determined by multiplying the individual scores of probability, severity, and detectability as defined by the table below.

7.2.6. A score of twenty-one (21) is the High-Risk Critical Control Point Threshold.

7.2.7. Once the rankings have been determined for each identified risk, Top Management and Environmental Services Drinking Water staff will identify applicable control measures, critical control points, and methods to monitor the identified risks.

7.2.8. Top Management and Environmental Services Drinking Water Staff will also identify where procedures are needed to respond to any deviations from established critical control point limits.

7.2.9. The QMS Representative will work with Top Management and Environmental Services Drinking Water staff to develop response procedures for deviations to the critical control point limits and associated procedures.

7.2.10. All notes, meeting minutes, action items and decisions shall be documented and kept as part of the record-keeping process.

7.2.11. The QMS Representative (or designate) shall ensure that relevant information is circulated to all Environmental Services Drinking Water staff.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 7.1, 1.- Updated to note the Ministry of the Environment document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems. Section 7.2, 1. – Added the Water Lead Hand as a position to conduct the Risk Assessment. Added the General Manager of Operations as a position they may be asked for input or to attend the Risk Assessment. Section 7.2, 3 - Updated to note the Ministry of the Environment document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems.	04/18/2019	David Stevenson
2	Section 7.2, 6, 7 and 9 - Revised reference to Water Division staff to Environmental Services Drinking Water staff.	06/17/2020	D. Stevenson
3	Entire element was reformatted.	01/31/2022	D. Stevenson

4	Section 7.2.1 – Water Operations Superintendent updated to Environmental Services Manager. Added Environmental Superintendent.	09/21/2022	D. Stevenson
5	7.2.1 – Added the Director of Environmental Services to staff that will annually.	11/09/23	Environmental Services Technologist
6	7.1.1 & 7.2.3 – Updated to reference the newer MECP document "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment (April 2022)"	09/03/2024	Manager of Compliance and Quality
7	Reviewed and updated to new standard formatting. Update to 7.2.2 to clarify when 36-month full review is to be completed.	10/06/2025	Manager of Compliance and Quality
7.1	Added location of controlled copies.	12/19/2025	Environmental Services Technologist

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8 RISK MANAGEMENT OUTCOMES

8.1 All Drinking Water Systems

All Systems									
Process Step	**Hazardous Event**	**Potential Result of Hazardous Event**	**Available Monitoring Control Measures and Critical Control Points**	**Emergency Procedure or Contingency Plan**	**Probability**	**Severity**	**Detectability**	**Total Risk Rank (CCP Threshold = 21 or >)**	**Critical**
Source Water	**Water Supply Shortfall**	• Loss of Water	• Monthly groundwater level monitoring, annual aquifer monitoring	• SOP- 01-09 Operating Strategy in the Event of Failures to Produce Water	1	5	3	15	No
	Sudden Change to Raw Water Characteristics (e.g., Turbidity, pH) (including chemical spills)	• Deterioration of raw water quality	• Quarterly groundwater monitoring program, O. Reg 170 Sch. 23 and 24 sampling, weekly grab samples, annual aquifer monitoring program	• Water Advisory Procedures (currently draft)	1	2	2	4	No
	Deterioration of Ground Water Quality	• Chemical or biological contamination of source water	• Raw and treated water samples are collected weekly and analyzed by an accredited laboratory. Quarterly water samples are collected from various monitoring wells and analyzed by an accredited laboratory. O. Reg. 169/03 MAC Levels	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • SOP 04-09 Reporting an Adverse Condition	1	3	4	12	No
Distribution	**Backflow**	• Contamination of the distribution system	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing. • By-law 116-06 – Drinking Water By-law	• SOP-04-09 Reporting an Adverse Condition	1	4	4	16	No
Entire System	**Long Term Impacts of Climate Change**	• Loss of Raw Water Source	• Monthly groundwater level monitoring, annual aquifer monitoring	• SOP- 01-09 Operating Strategy in the Event of Failures to Produce Water	1	2	2	4	No

	Extreme Weather Events	• Loss of Treated Water Supply • Damage to equipment/infrastructure resulting in an inability to produce/provide water	• Weather Forecast Reports	•	3	4	1	12	No
Facility Security	**Vandalism/ Introduction of contaminant**	• Damage to equipment resulting in an inability to produce water • Potential contamination	• Locks, alarms, and daily site visits by operations staff	•	2	4	1	8	No
Cyber Security	**Loss of internet and electronic records**	• Loss of treated water supply • Loss of SCADA	• Data loggers on electronic analyzers would continue to record regulatory parameters	• Security for the SCADA system is handled by the County's integrator and IT Department. Some of the security measures include the SCADA system not physically being connected to the internet. This is like a CCTV system where there is a network but no outside connections direct to the internet. When a connection is required to view the SCADA system there are firewalls in place, VPN's required and multiple passwords required on specific platforms to gain access	3	2	1	6	No

8.2 Airport Drinking Water System

Airport Drinking Water System

Process Step	Hazardous Event	Potential Result of Hazardous Event	Available Monitoring Control Measures and Critical Control Points	Emergency Procedure or Contingency Plan	Probability	Severity	Detectability	Total Risk Rank (CCP Threshold = 21 or >)	Critical
Water Taking	**Raw Water Pump/motor Failure**	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Second production well for redundancy • Sections B.40.50 and B.40.60 – Airport O&M Manual	1	2	1	2	No
	Well Casing Collapse	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Second production well for redundancy • Sections B.40.50 and B.40.60 – Airport O&M Manual	1	2	1	2	No
Primary Disinfection	**Chemical Feed Pump Failure**	• Loss of disinfection	• SCADA will alarm and shut down the raw water well pump when the online chlorine analyzer analyzes a minimum low chlorine residual • UPS and Diesel Gen Set provide backup power • SOP-30-09 Maintenance and Calibration of monitoring Equipment	• If the duty chlorine pump fails, SCADA will switch to the standby chlorine pump automatically until the repairs are made to the failed pump.	2	5	1	10	No

Chlorine Contact Pipe	**Failure of Contact Pipe**	• Inadequate contact time and potentially the loss of treated water being provided to the distribution system	• Chlorine residuals on effluent • Production well flow, total flow monitoring • POE discharge pressure	• Section 7.4 Emergency Response Contingency Plan • Use of certified water haulers to transmit treated water from another drinking water system to the distribution system via fire hydrant. Alternatively, tanker trucks can be used as a temporary reservoir to meet CT requirements.	2	5	4	40	Yes
Elevated Storage Reservoir	**Mechanical Failure**	• Damage to equipment resulting in the inability to produce water • Loss of water available for fire flow	• The County inspects reservoirs approximately every 5-7 years. • SCADA will shut down outlet when Lo Lo level alarm is reached.	• The elevated storage tower can be bypassed.	2	3	1	6	No
Distribution	**Watermain Break**	• Loss of pressure • Contamination of distribution water	• Customers typically call advising of service disruptions or water flowing from the ground. • Leak detection program • Maintain positive distribution pressure	• SOP 53-11 Procedure for Responding to Watermain Breaks • Ontario Watermain Disinfection Procedure, AWWA Standard C-651 Disinfecting Watermains and Ontario Regulation 170/03 • A contractor to assist with the repair is available 24/7 (See Element 13)	3	3	3	27	Yes
	Loss of Chlorine Residual (Secondary Disinfection)	• Contamination of distribution water	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing • **Critical Control Point = 0.30 mg/L (free)**	• SOP-14-09 Procedure for Required Action in the Event of a Low Chlorine Residual in the Distribution System • Refer to O.Reg 170/03	2	4	3	24	Yes

	Sustained Pressure Loss	• Loss of water • Possible contamination of the distribution system	• SCADA Monitors pressure • By-law 116-06 – Drinking Water By-law	• SOP-53-11 Procedure for Responding to Watermain Breaks	1	3	4	12	No
Control Systems	**Power Failure**	• Loss of monitoring devices	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Section 2 G.40 –Airport O & M Manual	3	2	1	6	No
Entire System	**Power Failure (Grid)**	• Loss of treated water supply	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Section 2 G.40 –Airport O & M Manual	3	1	1	3	No
	Power Failure (Back-up power)	• Loss of treated water supply	• SCADA would advise of loss of power	• The County would obtain the services of back-up power portable generators from a local rental company.	2	4	1	8	No

8.3 Cainsville Distribution System

Cainsville Drinking Water System									
Process Step	**Hazardous Event**	Potential Result of Hazardous Event	Available Monitoring Control Measures and Critical Control Points	Emergency Procedure or Contingency Plan	Probability	Severity	Detectability	Total Risk Rank (CCP Threshold = 21 or >)	Critical
Water Taking	**Contamination of water supply**	• Chemical/Biological contamination of source water (Supplied by the City of Brantford)	• Chlorine residuals (via grab samples) are taken from distribution systems daily and weekly. Distribution grab samples are collected and analyzed weekly by an accredited laboratory. • Communication with the City of Brantford is essential.	• SOP-04-09 Reporting an Adverse Condition • Close valve between the Brantford and Cainsville Distribution systems.	1	3	2	6	No
Elevated Storage Reservoir	**Mechanical Failure**	• Damage to equipment resulting in the inability to produce water	• The County inspects reservoirs approximately every 5-7 years. • SCADA will shut down outlet when Lo Lo level alarm is reached.	• The elevated storage tower can be bypassed.	2	3	1	6	No
Distribution	**Watermain Break**	• Loss of pressure • Contamination of distribution water	• Customers typically call advising of service disruptions or water flowing from the ground. • Leak detection program • Maintain positive distribution pressure	• SOP 53-11 Procedure for Responding to Watermain Breaks • Ontario Watermain Disinfection Procedure, AWWA Standard C-651 Disinfecting Watermains and Ontario Regulation 170/03 • A contractor to assist with the repair is available 24/7 (See Element 13)	3	3	3	27	Yes

	Loss of Chlorine Residual (Secondary Disinfection)	• Contamination of distribution water	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing • **Critical Control Point = 0.80 mg/L (combined)**	• SOP-14-09 Procedure for Required Action in the Event of a Low Chlorine Residual in the Distribution System • **Refer to O.Reg 170/03**	2	4	3	24	Yes
	Sustained Pressure Loss	• Loss of water • Possible contamination of the distribution system	• SCADA Monitors pressure • **By-law 116-06 – Drinking Water By-law**	• SOP-53-11 Procedure for Responding to Watermain Breaks	1	3	4	12	No

8.4 Mt. Pleasant Drinking Water System

Mt. Pleasant Drinking Water System									
Process Step	**Hazardous Event**	**Potential Result of Hazardous Event**	**Available Monitoring Control Measures and Critical Control Points**	**Emergency Procedure or Contingency Plan**	**Probability**	**Severity**	**Detectability**	**Total Risk Rank (CCP Threshold = 21 or >)**	**Critical**
Water Taking	**Raw Water Pump/motor Failure**	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Second production well for redundancy • Sections B.40.50 and B.40.60 – Mt. Pleasant O&M Manual	1	2	1	2	No
	Well Casing Collapse	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Second production well for redundancy • Sections B.40.50 and B.40.60 – Mt. Pleasant O&M Manual	1	2	1	2	No
Treated Water Supply	**Exceedance of the Systems Rated Capacity and PTTW Daily Taking Limit**	• Loss of treated water supply through high water use in the late spring and summer months.	• Daily review of SCADA to ensure point of entry volumes do not exceed the systems rated capacity. • Outdoor water use program and outdoor water use restrictions.	• SOP-100-22 Mt. Pleasant Water Restrictions	4	3	1	12	No

Primary Disinfection	**Chemical Feed Pump Failure**	• Loss of disinfection	• SCADA will alarm and shut down the raw water well pump when the online chlorine analyzer analyzes a minimum low chlorine residual • UPS and Diesel Gen Set provide backup power • SOP-30-09 Maintenance and Calibration of monitoring Equipment	• If the duty chlorine pump fails, SCADA will switch to the standby chlorine pump automatically until the repairs are made to the failed pump.	2	5	1	10	No
Reservoirs	**Failure of Contact Chamber**	• Inadequate contact time and potentially the loss of treated water being provided to the distribution system	• Two (2) independent reservoirs. Flow can be transferred to reservoir one or two for maintenance • SCADA will shut down pumps when Lo Lo level is reached.	• Section 7.4 Emergency Response Contingency Plan • Use of certified water haulers to transmit treated water from another drinking water system to the distribution system via fire hydrant. Alternatively, tanker trucks can be used as a temporary reservoir to meet CT requirements.	2	3	1	6	No
High lift Pumps	**Pump Failure**	• Loss of treated water / pressure to the distribution system. • Loss of water available for fire flow (both large high lift pumps required)	• SCADA monitors pump activity and alarms with pump failure • Multiple back-up high lift pumps • Diesel Gen Set provides backup power	• Four (4) high lift pumps capable of providing water to the distribution system	1	2	1	2	No
Distribution	**Watermain Break**	• Loss of pressure • Contamination of distribution water	• Customers typically call advising of service disruptions or water flowing from the ground. • Leak detection program • Maintain positive distribution pressure	• SOP 53-11 Procedure for Responding to Watermain Breaks • Ontario Watermain Disinfection Procedure, AWWA Standard C-651 Disinfecting Watermains and Ontario Regulation 170/03 • A contractor to assist with the repair is available 24/7 (See Element 13)	3	3	3	27	Yes

	Loss of Chlorine Residual (Secondary Disinfection)	• Contamination of distribution water	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing • **Critical Control Point = 0.30 mg/L (free)**	• SOP-14-09 Procedure for Required Action in the Event of a Low Chlorine Residual in the Distribution System • Refer to O.Reg 170/03	2	4	3	24	Yes
	Sustained Pressure Loss	• Loss of water • Possible contamination of the distribution system	• SCADA Monitors pressure By-law 116-06 – Drinking Water By-law	• SOP-53-11 Procedure for Responding to Watermain Breaks	1	3	4	12	No
Control Systems	**Power Failure**	• Loss of monitoring devices	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Section 2 G.40 –Mt. Pleasant O & M Manual	3	2	1	6	No
Entire System	**Power Failure (Grid)**	• Loss of treated water supply	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Section 2 G.40 – Mt. Pleasant O & M Manual	3	1	1	3	No
	Power Failure (Back-up power)	• Loss of treated water supply	• SCADA would advise of loss of power	• The County would obtain the services of back-up power portable generators from a local rental company.	2	4	1	8	No

8.5 Paris Drinking Water System

Paris Drinking Water System									
Process Step	**Hazardous Event**	**Potential Result of Hazardous Event**	**Available Monitoring Control Measures and Critical Control Points**	**Emergency Procedure or Contingency Plan**	**Probability**	**Severity**	**Detectability**	**Total Risk Rank (CCP Threshold = 21 or >)**	**Critical**
Water Taking	**Raw Water Pump/motor Failure**	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Redundant production wells • Sections B.40.50 and B.40.60 – Gilbert, Telfer & Bethel O&M Manuals	1	2	1	2	No
	Well Casing Collapse	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Redundant production wells • Sections B.40.50 and B.40.60 – Gilbert, Telfer & Bethel O&M Manuals	1	2	1	2	No

Primary Disinfection	**Chemical Feed Pump Failure**	• Loss of disinfection	• SCADA will alarm and shut down the raw water well pump when the online chlorine analyzer analyzes a minimum low chlorine residual • UPS and Diesel Gen Set provide backup power • SOP-30-09 Maintenance and Calibration of monitoring Equipment	• If the duty chlorine pump fails, SCADA will switch to the standby chlorine pump automatically until the repairs are made to the failed pump.	2	5	1	10	No
	UV Lamp Failure (Bethel and Gilbert only)	• Loss of disinfection	• Duty and Standby UV lamps, SCADA will transfer to standby lamp in the event of a malfunction of the duty UV	• SCADA will shut down well pumps if both UV's lamps fail	3	4	1	12	No
Reservoir (Gilbert), Contact Chambers (Telfer), Chlorine Contact Tank (Bethel)	**Failure of reservoir/chamber/tank**	• Inadequate contact times and potentially the loss of treated water being provided to the distribution system	• The County typically inspects reservoirs/ chambers/tanks every 5-7 years. • SCADA will shut down pumps when Lo Lo level is reached.	• Redundant infrastructure. Flow can be transferred to allow for maintenance. • Three systems provide backup to each other • North Paris and Oak Park Elevated Tanks and Sharpe reservoir provide emergency storage of treated water within the distribution system.	1	2	1	2	No
High Lift Pumps	**Pump Failure**	• Loss of treated water/ pressure to the distribution system	• SCADA monitors pump activity and alarms wit pump failure • Multiple backup high lift pumps • Diesel Gen Set provides backup power	• Redundant high lift pumps capable of providing water to the distribution system	1	1	1	1	No

Distribution	**Watermain Break**	• Loss of pressure • Contamination of distribution water	• Customers typically call advising of service disruptions or water flowing from the ground. • Leak detection program • Maintain positive distribution pressure	• SOP 53-11 Procedure for Responding to Watermain Breaks • Ontario Watermain Disinfection Procedure, AWWA Standard C-651 Disinfecting Watermains and Ontario Regulation 170/03 • A contractor to assist with the repair is available 24/7 (See Element 13)	3	3	4	36	Yes
	Loss of Chlorine Residual (Secondary Disinfection)	• Contamination of distribution water	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing • **Critical Control Point = 0.30 mg/L (free)**	• SOP-14-09 Procedure for Required Action in the Event of a Low Chlorine Residual in the Distribution System • Refer to O.Reg 170/03	2	4	3	24	Yes
	Sustained Pressure Loss	• Loss of water • Possible contamination of the distribution system	• SCADA Monitors pressure By-law 116-06 – Drinking Water By-law	• SOP-53-11 Procedure for Responding to Watermain Breaks	1	3	4	12	No
Elevated Storage Reservoir	**Mechanical Failure**	• Damage to equipment resulting in the inability to produce water	• The County inspects reservoirs approximately every 5-7 years. • SCADA will shut down outlet when Lo Lo level alarm is reached.	• The elevated storage tower can be bypassed.	2	3	1	6	No
Control Systems	**Power Failure**	• Loss of monitoring devices	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Sections G.40 – Gilbert, Telfer & Bethel O&M Manuals	3	2	1	6	No

Entire System	**Power Failure (Grid)**	• Loss of treated water supply	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Sections G.40 – Gilbert, Telfer & Bethel O&M Manuals	3	1	1	3	No
	Power Failure (Back-up power)	• Loss of treated water supply	• SCADA would advise of loss of power	• The County would obtain the services of back-up power portable generators from a local rental company.	2	4	1	8	No

8.6 St. George Drinking Water System

St. George Drinking Water System									
Process Step	**Hazardous Event**	Potential Result of Hazardous Event	Available Monitoring Control Measures and Critical Control Points	Emergency Procedure or Contingency Plan	Probability	Severity	Detectability	Total Risk Rank (CCP Threshold = 21 or >)	Critical
Water Taking	**Raw Water Pump/motor Failure**	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Redundant production wells • Sections B.40.50 and B.40.60 – St. George O&M Manuals	1	2	1	2	No
	Well Casing Collapse	• Loss of raw water	• SOP-09-09 Well Inspection Schedule, Maintenance Procedures and Remedial Action Plan	• SOP 01-09 Operating Strategy in the Event of Failure to Produce Water • Redundant production wells • Sections B.40.50 and B.40.60 – St. George O&M Manuals	1	2	1	2	No
Primary Disinfection	**Chemical Feed Pump Failure**	• Loss of disinfection	• SCADA will alarm and shut down the raw water well pump when the online chlorine analyzer analyzes a minimum low chlorine residual • UPS and Diesel Gen Set provide backup power • SOP-30-09 Maintenance and Calibration of monitoring Equipment	• If the duty chlorine pump fails, SCADA will switch to the standby chlorine pump automatically until the repairs are made to the failed pump.	2	5	1	10	No

Contact Chamber	**Failure of Contact Chamber**	• Inadequate contact time and potentially the loss of treated water being provided to the distribution system	• Two (2) independent reservoirs. Flow can be transferred to reservoir one or two for maintenance • SCADA will shut down pumps when Lo Lo level is reached.	• SOP-24-09 Procedure fpr Isolating and Flushing the St. George Contact Chambers • Section 7.4 Emergency Response Contingency Plan • Use of certified water haulers to transmit treated water from another drinking water system to the distribution system via fire hydrant. Alternatively, tanker trucks can be used as a temporary reservoir to meet CT requirements.	2	3	1	6	No
Elevated Storage Reservoir & Standpipe	**Mechanical Failure**	• Damage to equipment resulting in the inability to produce water	• The County inspects reservoirs approximately every 5-7 years. • SCADA will shut down outlet when Lo Lo level alarm is reached.	• The elevated storage tower & standpipe can be bypassed.	2	3	1	6	No
Distribution	**Watermain Break**	• Loss of pressure • Contamination of distribution water	• Customers typically call advising of service disruptions or water flowing from the ground. • Leak detection program • Maintain positive distribution pressure	• SOP 53-11 Procedure for Responding to Watermain Breaks • Ontario Watermain Disinfection Procedure, AWWA Standard C-651 Disinfecting Watermains and Ontario Regulation 170/03 • A contractor to assist with the repair is available 24/7 (See Element 13)	3	3	4	36	Yes

	Loss of Chlorine Residual (Secondary Disinfection)	• Contamination of distribution water	• Distribution sampling (daily and weekly grab samples) and scheduled distribution system flushing • **Critical Control Point = 0.30 mg/L (free)**	• SOP-14-09 Procedure for Required Action in the Event of a Low Chlorine Residual in the Distribution System • Refer to O.Reg 170/03	2	4	3	24	Yes
	Sustained Pressure Loss	• Loss of water • Possible contamination of the distribution system	• SCADA Monitors pressure • By-law 116-06 – Drinking Water By-law	• SOP-53-11 Procedure for Responding to Watermain Breaks	1	3	4	12	No
Control Systems	**Power Failure**	• Loss of monitoring devices	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Sections G.40 – St. George O&M Manuals	3	2	1	6	No
Entire System	**Power Failure (Grid)**	• Loss of treated water supply	• Back-up power - Diesel generator set (automatic transfer switch via SCADA) / UPS. • UPS provides temporary power.	• Sections G.40 – St. George O&M Manuals	3	1	1	3	No
	Power Failure (Back-up power)	• Loss of treated water supply	• SCADA would advise of loss of power	• The County would obtain the services of back-up power portable generators from a local rental company.	2	4	1	8	No

Revision number	Revisions	Date of revision	Revision completed by:
1	All Systems: Distribution (Loss of Residual) – Revised to note the chlorine residual concentration that would initiate an operator to open a hydrant to increase residual and the chlorine residual concentration that the operator to stop flushing the system. Airport, Mt. Pleasant and Paris: High Lift Pumps – Loss of Treated Water and System Pressure – Severity re-classed to 1 as their impact to public health. Airport: Source Water – Raw Water P ump Failure - Detectability reassessed to a 3. Now makes this critical as the Airport system only has one production well. Procedures are in the Emergency Response Contingency Plan to deal with this item. Airport: Source Water – Well Casing Collapse - Detectability reassessed to a 3. Now makes this critical as the Airport system only has one production well. Procedures are in the Emergency Response Contingency Plan to deal with this item. All Systems: Distribution – Watermain Break / Leak – Added "maintain positive pressure" as control measure. All Systems: Source Water – Contamination of Source Water – Added Source Protection. Mt. Pleasant, Paris and St. George: – Raw Water Pump Failure and Well Casing Collapse – Detectability reassessed to a 3. This does not make this item critical. Paris: Source Water – Raw Water Pump Failure and Well Casing Collapse – Added multiple wells as a control measure	October 7, 2013	Water Technologist
2	Airport: Control Systems – Removed gas and diesel pump references during power failure under "available control measures" as a diesel gen set was installed at Airport. Airport: Entire System – Removed gas and diesel pump references during power failure under "available control measures" as a diesel gen set was installed at Airport.	January 21, 2014	Water Technologist
3	Cainsville/KGR – Added SOP-04-09 to Source Water	11/02/2015	Water Technologist
4	Airport, Mt. Pleasant, Paris and St. George –Added O. Reg. 169/03 to Source Water Control Measure. Paris (Gilbert, Bethel and Telfer Storage) – Added reference to North Paris Elevated Tank	09/23/2016	Water Technologist
5	Cainsville/KGR – Removed reference to KGR.	12/21/2016	Water Technologist
6	A complete review was conducted as part of the 36-month review. Revisions were made to incorporate the requirements of the Ministry of the Environment document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems (February 2017)".	09/06/2018	Water Technologist
7	Revised to note Critical Control Limits for various monitoring points throughout the systems.	04/18/2019	Water Technologist
8	Revised Entire System - Power Failure - into 2 categories, Loss of Grid Power and Loss of Back-up Power. (all systems) Revised scoring for Loss of Grid power. No change to critical level. (all systems) Added scoring for Loss of Back-up Power. (all systems) Added Cyber Security (all systems)	09/23/2019	Water Technologist

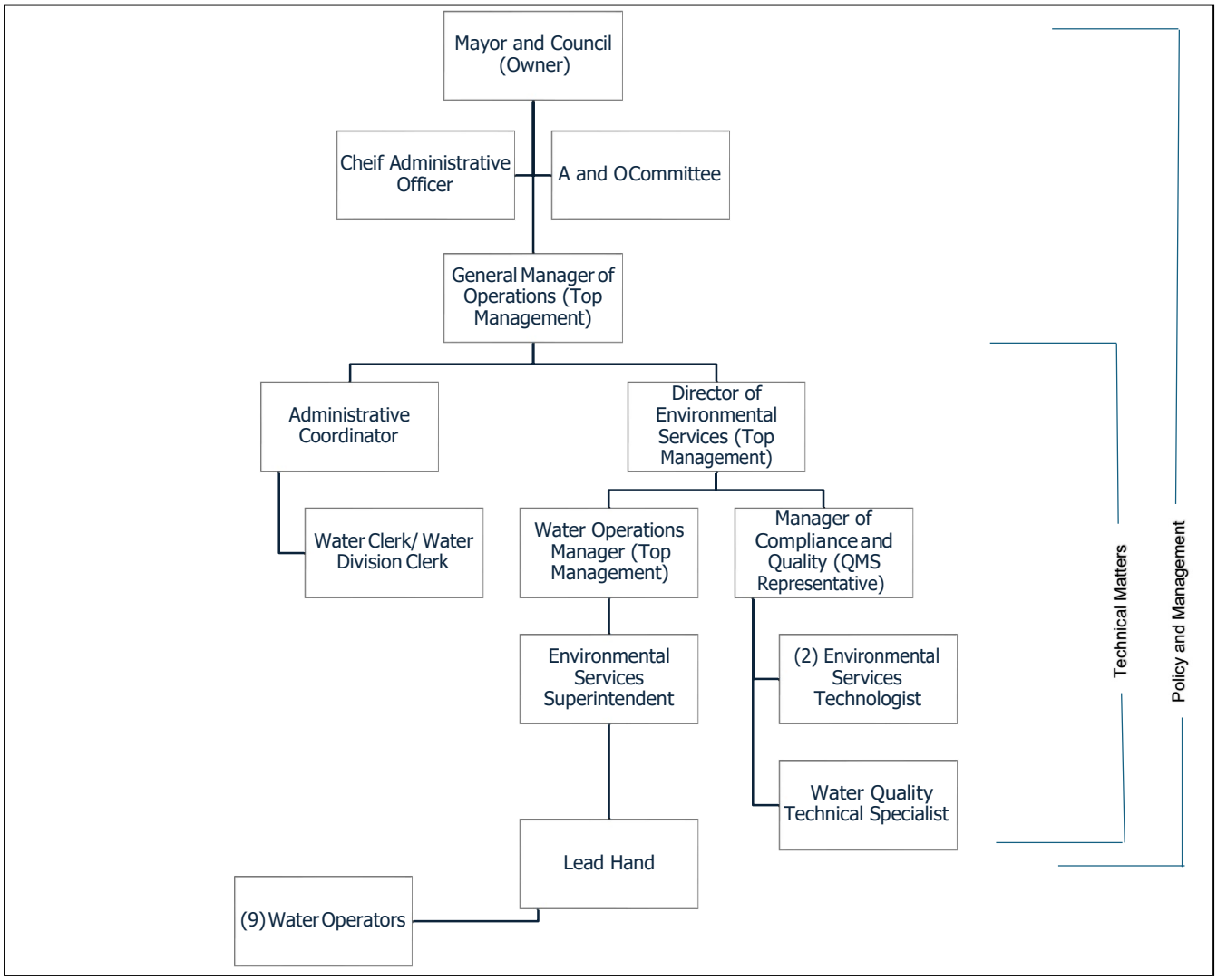
9	Airport reassessed and updated to note upgrades to the facility. • Source Water Well pump/Motor Failure and Well Casing Collapse– New Well • Primary Disinfection – Updated CPP's • Chlorine Contact Pipe Added • Elevated Storage All Systems - Secondary Disinfection Identified	11/30/2020	Water Technologist
10	Cyber Security (All Systems) – The Emergency Procedure or Contingency Plan for this item was updated.	04/13/2022	Water Technologist
11	Section 8.3 – Added Treated Water Supply due to the high water use the system experiences in the late spring and summer months. Section 8.4 – Added to Source Water, Contamination of Source Water – Overflow from the Bethel SPS that is within the 100m well head protection area.	10/19/2022	Water Technologist
12	Annual review conducted. Section 8.1 – Updated Chlorine Contact Tank monitoring measures. Sections 8.1, 8.2, 8.4, and 8.5 – Updated the description of the hazard and potential for hazard result for elevated storage reservoirs and standpipe in St. George.	10/17/2023	Water Technologist
13	Updates as per annual risk assessment review meeting. A full summary of changes is documented in the meeting minutes.	01/07/2025	Manager of Compliance and Quality
14	Reviewed and updated to new standard formatting. Note that the 2024 Risk Assessment was a full review.	10/06/2025	Manager of Compliance and Quality
14.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

CONTROLLED COPIES

Location of Controlled Copy	Number of Copies
Airport WTP	1
Cainsville Elevated Tank	1
Mt. Pleasant WTP	1
Bethel WTP	1
Gilbert WTP	1
Telfer WTP	1
St. George WTP	1

9 ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES AND AUTHORITIES

9.1 Operating Authority Organizational Structure Chart



***Note:** The organizational structure shown above provides the organizational structure specific to the Drinking Water Quality Management Standard.

9.2 The Corporation of the County of Brant Council (Owner)

The County of Brant Council have the authority and responsibility to allocate the necessary resources for the safe operation of the drinking water systems typically resulting from the recommendations of the Administration and Operations Committee.

9.3 Administration and Operations Committee

The Administration and Operations Committee is a standing committee of Council. The committee is responsible for reporting matters related to operations and maintenance of the drinking water systems to Council.

The Committee has the authority to make recommendations to Council typically based upon the recommendations of County of Brant staff.

9.4 Chief Administrative Officer (CAO)

The CAO provides oversight to all operational and administrative matters at the County of Brant. The CAO has the authority to review and approve reports regarding the County's municipal residential drinking water systems to ensure consistency with the policy and managerial procedures of the County.

9.5 General Manager of Operations (Top Management)

The General Manager of Operations is responsible for the oversight of the Environmental Services Division and its role in the County of Brant Operations Division. The General Manager has the authority to review and approve reports regarding the County's municipal residential drinking water systems to ensure consistency with the policy and managerial procedures of the County.

The General Manager of Operations will participate in Management Reviews.

9.6 Director of Environmental Services

The Director of Environmental Services is responsible for ensuring that the municipal drinking water supply is safe and that the County's drinking water systems follow all current regulations and legislation.

The Director of Environmental Services provides the municipal organization with; current technical information, administrative information, short and long-term planning, short and long-term budgeting and will also advise of any deficiencies and any resources required as related to the County's drinking water systems.

The Director of Environmental Services has the authority to manage the municipal drinking water systems.

The Director of Environmental Services will participate in Management Reviews.

9.7 Water Operations Manager (Top Management)

The Water Operations Manager has the authority to be the Overall Responsible Operator.

The Water Operations Manager rotates with the Environmental Services Superintendent as the Overall Responsible Operator (ORO). The Water Operations Manager is responsible for the management of the daily operations of the County's municipal residential drinking water systems.

The Water Operations Manager is responsible for ensuring that all County of Brant municipal residential drinking water systems are following Safe Drinking Water Act, O. Reg. 170/03, O. Reg. 128/04, the Ontario Watermain Disinfection Procedure, industry standards (AWWA), Municipal Drinking Water Licences, Drinking Water Works Permits, County procedures, and the DWQMS.

The Water Operations Manager has the authority to deem when new Water Operators are competent and can go on the On-Call rotation.

Responsibilities also include, oversight of process operations and controls, scheduling water operations staff, ensuring that employees' certifications, and minimum training requirements are up to date, confirming all required tests are completed, reporting normal and abnormal conditions to the Director of Environmental Services and the Environmental Services Superintendent.

The Water Operations Manager will provide guidance to and receive feedback from Operators on regular operations and future needs. The Water Operations Manager also ensures that standard operational procedures are followed as documented. The Water Operations Manager is authorized to direct operators, develop policies, and communicate with regulatory and technical authorities.

The Water Operations Manager is authorized to provide direction and supervise any on-site contractors, to make process adjustments to ensure the supply of an adequate and safe supply of drinking water. Authorization also includes the purchasing of process chemicals, lab supplies, testing services and equipment parts.

The Water Operations Manager will participate in Management Reviews.

9.8 Environmental Services Superintendent

The Environmental Services Superintendent has the authority to be the Overall Responsible Operator.

The Environmental Services Superintendent rotates with the Water Operations Manager as the Overall Responsible Operator (ORO). The Environmental Services Superintendent is responsible for the management of the daily operations of the County's municipal residential drinking water systems.

The Environmental Services is responsible for ensuring that all County of Brant municipal residential drinking water systems are following Safe Drinking Water Act, O. Reg. 170/03, O. Reg. 128/04, the Ontario Watermain Disinfection Procedure, industry standards (AWWA), Municipal Drinking Water Licences, Drinking Water Works Permits, County procedures, and the DWQMS.

Responsibilities also include, oversight of process operations and controls, scheduling water operations staff, confirming all required tests are completed, reporting normal and abnormal conditions to the Director of Environmental Services and the Water Operations Manager.

The Environmental Services Superintendent will provide guidance to and receive feedback from Operators on regular operations and future needs. The Environmental Services Superintendent also ensures that standard operational procedures are followed as documented. The Environmental Services Superintendent is authorized to direct operators, develop policies, and communicate with regulatory and technical authorities.

The Environmental Services Superintendent is authorized to provide direction and supervise any on-site contractors, to make process adjustments to ensure the supply of an adequate and safe supply of drinking water. Authorization also includes the purchasing of process chemicals, lab supplies, testing services and equipment parts.

The Environmental Services Superintendent will participate in Management Reviews.

9.9. Manager of Compliance and Quality (QMS Representative)

The Manager of Compliance and Quality has been appointed as the QMS Representative.

The Manager of Compliance and Quality's responsibilities include: promoting awareness within the Operating Authority for drinking water legislation, regulations and the DWQMS as documented in the County's Operational Plan, developing and maintaining regulatory and quality management documentation and procedures, assisting Provincial Officer's and responding to Provincial Officer's enquiries, preparing regulatory applications (PTTW, MDWL, DWWP, DWIS and facility and system classifications), PTTW Aquifer Annual Report consultant liaison, review and file daily SCADA data reports, regulatory and quality management documentation QA/QC, preparing the O. Reg 170/03 Schedule 20 Summary Reports, updating system and facility Operation and Maintenance Manuals, the Water Emergency Response and Contingency Plan and the Operational Plan, and preparing compliance, regulatory and information reports for the Director of Environmental Services, General Manager of Operations and Council.

The Manager of Compliance and Quality has the authority to create and revise controlled QMS documents, develop and revise standard operating procedures, forms, and to distribute controlled documents.

The Manager of Compliance and Quality will participate in Management Reviews.

9.10. Environmental Services Technologist

The Environmental Services Technologist has been appointed as the backup QMS Representative. They will assume the role of the QMS Representative in the event the Manager of Compliance and Quality is unable to act.

The Environmental Services Technologist's responsibilities include: promoting awareness within the Operating Authority for drinking water legislation, regulations and the DWQMS as documented in the County's Operational Plan, developing and maintaining regulatory and quality management documentation and procedures, assisting Provincial Officer's and responding to Provincial Officer's enquiries, preparing regulatory applications (PTTW, MDWL, DWWP, DWIS and facility and system classifications), PTTW Aquifer Annual Report consultant liaison, review and file daily SCADA data reports, regulatory and quality management documentation QA/QC, preparing the O. Reg. 170/03 Schedule 20 Summary Reports, updating system and facility Operation and Maintenance Manuals, the Water Emergency Response and Contingency Plan and the Operational Plan, and preparing compliance, regulatory and information reports for the Director of Environmental Services, General Manager of Operations and Council.

The Environmental Services Technologist has the authority to create and revise controlled QMS documents, develop and revise standard operating procedures, forms, and to distribute controlled documents.

The Environmental Services Technologist will participate in Management Reviews.

9.11. Water Quality Technical Specialist

The Water Quality Technical Specialist administers and regulates compliance of water quality matters through the design, development, implementation, and maintenance of the water quality procedures/programs/protocols including but not limiting to; sampling, testing, analysis, disinfection of watermains and facilities, recording and reporting programs. This includes ensuring that various water sampling/monitoring equipment is verified/calibrated and is in satisfactory working order.

The position also provides input to recommendations for treatment methods to meet water quality objectives for both the municipal residential and non-residential water supply systems.

The Water Quality Technical Specialist oversees and operates the County's Non-Residential Drinking Water Systems and conducts the monthly/quarterly monitoring well inspection and sampling program.

The Water Quality Technical Specialist responds to water quality concerns and complaints received by Environmental Services Water Operations.

The Water Quality Technical Specialist provides an oversite roll for the disinfection and commissioning of new watermain installation projects and service connections 100 mm and over. The Water Quality Technical Specialist has the authority to review, request

revisions and approve disinfection procedures and final disinfection reports submitted by third parties.

The Water Quality Technical Specialist has the authority to verify/calibrate sampling and monitoring equipment and to collect regulated and non-regulated drinking and raw water samples.

The Water Quality Technical Specialist provides direct supervision to the Water Quality Technician.

The Water Quality Technical Specialist will prepare reports to the Ministry, Council, Committees, Departments, the Brant County Health Unit, the public, and as required by legislative requirements.

The Water Quality Technical Specialist will always follow the requirements of the Safe Drinking Water Act, O. Reg. 170/03, O. Reg. 128/04, the Ontario Watermain Disinfection Procedure, industry standards (AWWA), Municipal Drinking Water Licences, Drinking Water Works Permits and County procedures. If non-compliant incidents occur, the Water Quality Technical Specialist must act upon, report to the ORO, and record all information as required regulations and County Procedures when working in the drinking water systems.

The Water Quality Technical Specialist will participate in Management Reviews.

The Water Quality Technical Specialist has received the Walkerton Clean Water Center training on conducting internal audits.

9.12. Lead Hand Water Operator

The Lead Hand, in coordination with the Overall Responsible Operator, is responsible for the supervision of daily operations and maintenance of the water facilities and distribution systems.

The Lead Hand has the authority to be the Overall Responsible Operator when the Environmental Services Manager and the Environmental Services Superintendent are unable to act.

The Lead Hand has the authority to direct Operators and contractors in the repair and maintenance of all aspects of the water facilities and distribution systems, which includes watermains, pumps, regulatory and non-regulatory monitoring equipment, hydrants, valves, services, and shut offs.

Recording of daily activities, following current regulations and legislation, and reporting of normal and abnormal conditions to the Environmental Services Superintendent are included in the duties.

The Lead Hand is required to carry out daily duties for the treatment and distribution processes to ensure operations are completed and recorded in compliance with Safe

Drinking Water Act, O. Reg. 170/03, O. Reg. 128/04, the Ontario Watermain Disinfection Procedure, industry standards (AWWA), Municipal Drinking Water Licences, Drinking Water Works Permits and County procedures. If non-compliant incidents occur, the Lead Hand must act upon, report to the ORO, and record all information as required regulations and County Procedures.

The Lead Hand has authorization to take control of emergency situations (e.g. watermain breaks) to ensure repairs are completed in a safe and efficient manner.

The Lead Hand may participate in the Management Review.

9.13. Certified Water Operators

All Certified Operators are responsible for maintaining the County of Brant's Large and Small Municipal Residential Drinking Water Systems (Water Treatment and Water Distribution and Supply).

Operators are required to carry out daily duties for the treatment and distribution processes to ensure operations are completed and recorded in compliance with Safe Drinking Water Act, O. Reg. 170/03, O. Reg. 128/04, the Ontario Watermain Disinfection Procedure, industry standards (AWWA), Municipal Drinking Water Licences, Drinking Water Works Permits, and County procedures. If non-compliant incidents occur, Operators must act upon, report to the ORO, and record all information as required regulations and County Procedures.

Certified Operators have the authority to collect regulatory and non-regulatory drinking water samples, perform testing, monitor, and adjust treatment processes (with direction from the Overall Responsible Operator as required) and perform maintenance, calibration and verification on the treatment and distribution equipment within the systems, in accordance with standard operating procedures, to ensure a safe and adequate water supply.

9.14. Water Division Clerk

The Water Division Clerk is responsible and has the authority for, but not limited to; arranging and logging fire flow tests, procurement of water treatment chemicals, equipment and parts for water operations, processing invoices and forwarding them to accounts payable, coordinating and tracking staff training, processing water connection and demolition permit applications, arranging locates and trench numbers (emergency and non emergency), maintaining records of watermain breaks, the liaison for renewals and/or upgrades to operator certification, records management (both hard and electronic copies), filing, and provides support to water operations, including customer concerns (receive, dispatch, log and follow up to ensure satisfactory closure), checks and prepares weekly microbiological samples for pickup, tracking scheduled absences, and updating the daily operator assignments. The position will also provide general administrative support and coverage for the Operations Administration staff as required.

9.15. Water Clerk

The Water Clerk is responsible and has the authority for, but not limited to; the scheduling of consumer water meter maintenance/replacements, reconciliation of consumer water and waste water accounts, recording/control of water meters for temporary watermain projects and recording the associated water use, liaison with GrandBridge Energy in regards to water account billing and collection, consumer water billing inquires, management and coordination of water operations data for regulatory and non-regulatory reporting, , records management (both hard and electronic copies), provides support to water operations, including customer concerns (receive, dispatch, log and follow up to ensure satisfactory closure), checks and prepares weekly microbiological samples for pickup, tracking scheduled absences, and updating the daily operator assignments. The position will also provide general administrative support and coverage for the Operation Administration staff as required.

Revision number	Revisions	Date of revision	Revision completed by:
1	Updated sections 9.1 to 9.15 to note authorities for the various positions.	07/12/13	Dave Stevenson
2	Sections 9.1 and 9.5: Updated General Manager of Public Works to General Manger of Operations	01/11/2016	Dave Stevenson
3	Section 9.15: Updated to note that the Water Records Management Clerk has received the Walkerton Clean Water Center training on conducting internal audits and will act as the QMS Representative in the event the Water Technologist is unable to act.	11/21/2016	Dave Stevenson
4	Section 9.14 to note Energy+ replacing Brant County Power, added recording and control of temporary water meters and water usage. Section 9.13 Added notification for watermain/service connection leaks/breaks and interruption of service notices. Section 9.9 and 9.12 Added monitoring well inspections and sampling, non-residential drinking water systems and responds to water quality concerns and complaints.	11/23/2017	Dave Stevenson
5	Section 9.9 revised to note the position has received the Walkerton Clean Water Center training on conducting internal audits.	08/16/2018	Dave Stevenson

	Section 9.12 revised to note the position has received the Walkerton Clean Water Center training on conducting internal audits and will assume the role of the QMS Representative in the event the Water Technologist is unable to act. Section 9.15 revised to note that the position no longer position has training on conducting internal audits and will not assume the role of the QMS Representative in the event the Water Technologist is unable to act.		
6	Sections 9.1 and 9.5 revised to note that GM of Operations is a member of Top Management.	06/03/2019	Dave Stevenson
7	Revoked Section 9.15 as the position of the Water Division Records Managements Clerk no longer exists. Sections 9.13 and 9.14 were updated to both include the roles, responsibilities and authorities that were carried out by the Water Records Management Clerk. Section 9.1 revised to note the new structure for the Administration Division.	01/29/2020	Dave Stevenson
8	Reference to the Director of Water has been revised to the Director of Environmental Services Sections 9.1 and 9.3 was updated to identify the new Administration and Operations Committee which replace Public Works and Corporate Development Committees.	03/17/2020	D. Stevenson
9	Section 9.13 and 9.14 – Water Division replaced by Environmental Services	06/17/2020	D. Stevenson
10	Section 9.12, 9.13 and 9.14 had the descriptions updated.	03/30/2022	D. Stevenson
11	Section 9.1 – Water Operations Superintendent updated to Environmental Services Manager. Added Environmental Services Superintendent. Updated Operators to 9. Sections 9.6 and 9.10 – Water Operations Manager updated to Environmental Services Manager. Environmental Services Superintendent added. Environmental Services Superintendent added as Section 9.8. All other sections following renumbered.	09/21/2022	D. Stevenson
12	Updated Water Technologist to Environmental Services Technologist in all required sections. 9.6 and 9.11– Removed the Director of Environmental Services can be the ORO. 9.7, 9.8, 9.10, 9.11, 9.12 and 9.13 – Added regulatory requirements to be followed when working in the drinking water systems.	11/09/2023	Environmental Services Technologist
13	Section 9.6 – Added as backup to the QMS Representative.	04/10/2024	Environmental Services Technologist

	Section 9.13 – Removed as backup to the QMS Representative and removed having internal auditor training.		
14	Section 9.1 - Updated Organizational Chart Section 9.6 – Removed as backup to the QMS Representative. Section 9.9 – Added Manager of Compliance and Quality Minor rewording for clarity throughout.	09/13/2024	Manager of Compliance and Quality
15	Reviewed and updated to new standard formatting. Change in title from Environmental Services Manager to Water Operations Manager throughout. Removal of Environmental Services Technician position which was converted to be a second technologist.	06/10/2025	Manager of Compliance and Quality
15.1	Added location of controlled copies.	12/22/2025	Environmental Services Technologist

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10 COMPETENCIES

10.1 Identifying Competencies

The following identifies the competencies required of County of Brant staff whose performance may have a direct impact on drinking water quality.

10.2 Director of Environmental Services

10.2.1 The Director of Environmental Services must possess advanced theoretical and working knowledge of administrative skills expected of a senior level manager. In addition, an advance theoretical and working knowledge of the Safe Drinking Water Act, all applicable drinking water regulations, County of Brant Water Standard Operating Procedures and Guidance Documentation, AWWA/ANSI Standards, the DWQMS, the Operational Plan, Source Water Protection Program, and the County of Brant Municipal Residential Drinking Water Systems.

10.3 Water Operations Manager

10.3.1 The Water Operations Manager must possess intermediate theoretical and working knowledge of administrative skills expected of a senior level manager. Posses advanced theoretical and working knowledge of scheduling work and maintenance, the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, County of Brant Water Standard Operating Procedures and Guidance Documentation, AWWA/ANSI Standards, the DWQMS, the Operational Plan and the County of Brant Municipal Residential Drinking Water Systems.

10.3.2 The Water Operations Manager is designated as an Overall Responsible Operator. The Environmental Services Manager will meet and comply with Section 23 of O. Reg. 128/04 regarding operator certification.

10.4 Environmental Services Superintendent

10.4.1 The Environmental Services Superintendent must possess theoretical and working knowledge of administrative skills expected of an intermediate level manager. Posses advanced theoretical and working knowledge of scheduling work and maintenance, the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, County of Brant Water Standard Operating Procedures and Guidance Documentation, AWWA/ANSI Standards, the DWQMS, the Operational Plan, the operation of the County of Brant Municipal Residential Drinking Water Systems and their Operation and Maintenance manuals.

10.4.2 The Environmental Services Superintendent is designated as an Overall

Responsible Operator. The Environmental Services Superintendent will meet and comply with Section 23 of O. Reg. 128/04 regarding operator certification.

10.5 Lead Hand

10.5.1 The Lead Hand will posses working knowledge of scheduling work and maintenance, the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, County of Brant Water Standard Operating Procedures and Guidance Documentation, AWWA/ANSI Standards, the DWQMS, the Operational Plan, the operation of the County of Brant Municipal Residential Drinking Water Systems and their Operation and Maintenance Manuals.

10.5.2 The Lead Hand can be designated as an Overall Responsible Operator when the Water Operations Manager and Environmental Services Superintendent cannot act. The Lead Hand will meet and comply with Section 23 of O. Reg. 128/04 regarding operator certification.

10.6 Manager of Compliance and Quality

10.6.1 The Manager of Compliance and Quality is designated as the Quality Management System Representative (QMS Representative).

10.6.2 The Manager of Compliance and Quality will possess an advanced knowledge of the DWQMS, the County's Quality Management System as documented in the Operational Plan, Water Operations Standard Operating Procedures and Guidance Documentation, and Water Operations Field Documentation. A Working Knowledge of the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, and AWWA/ANSI/NSF Standards and Drinking Water Facility Operations and Maintenance manuals.

10.6.3 The Manager of Compliance and Quality will possess significant experience in internal auditing.

10.7 Environmental Services Technologist (Compliance and Quality)

10.7.1 The Environmental Services Technologist acts as the backup Quality Management System Representative (QMS Representative), in the absence of the Manager of Compliance and Quality.

10.7.2 The Environmental Services Technologist will possess a working knowledge of the DWQMS, The County's Quality Management System as documented in the Operational Plan, Water Operations Standard Operating Procedures and Guidance Documents, and Water Operations Field Documentation. Familiar with the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, and AWW/ANSI/NSF Standards and Drinking

Water Facility Operations and Maintenance Manuals.

10.7.3 The Environmental Services Technologist will have a working knowledge of internal auditing gained through on-the-job experience and/or formal training.

10.8 Water Quality Technical Specialist

10.8.1 The Water Quality Technical Specialist and Water Quality Technician will posses working knowledge of scheduling work and maintenance, the Safe Drinking Water Act, all applicable drinking water regulations, Ontario Watermain Disinfection Procedure, County of Brant Water Standard Operating Procedures and Guidance Documentation, AWWA/ANSI/NSF Standards, the DWQMS, the Operational Plan, the operation of the County of Brant Municipal Residential Drinking Water Systems.

10.8.2 The Water Quality Technical Specialist will have a working knowledge of internal auditing gained through on-the-job experience and/or formal training.

10.9 Water/Wastewater Operators

10.9.1 Section 22 of O. Reg. 128/04 requires that all Water Treatment and Distribution Operators possess certification appropriate to the type of subsystem where they are employed.

10.9.2 All operators must have at least an OIT level certificate, while ultimately working toward obtaining Class 3 Water Distribution and Supply and Class 1 Water Treatment certification.

10.9.3 Newly hired and current Water Operators are competent when they have completed their training, have appropriate certification, and are placed on the “Duty Roster (On-Call)” by the Water Operations Manager.

10.9.4 Count of Brant certified Water Operators are required to have skills and knowledge in the following areas:

- The concepts of waterborne diseases, pathogens and other bacteria related to water and the reason for water treatment and disinfection.
- The math, science and chemistry used in drinking water treatment processes.
- Drinking water treatment processes including the CT concept to ensure proper disinfection.
- All applicable Provincial drinking water legislation and regulations.
- The requirements of Municipal Drinking Water Licences (MDWL), Drinking Water Works Permits (DWWP) and Permits To Take Water (PTTW).
- The County’s Operational Plan and the DWQMS.
- The Ontario Watermain Disinfection Procedure.

- AWWA, NSF and ANSI Standards.
- Identifying, reporting, and responding to adverse drinking water conditions as required by regulations and County procedures.
- Critical Control Limits.
- The importance of following County of Brant and provincial policies and procedures and the potential consequences for not following them.
- Performing certain bench top lab analysis and interpreting the results.
- Working knowledge of the operation of the County of Brant's water treatment system using the SCADA (Supervisory Control and Data Acquisition) system.
- Working knowledge of the operation of the County of Brant's water treatment system without the SCADA system.
- Retrieving, trending, and analyzing data from the SCADA Historian and the e.RIS software system.
- An ability to handle emergency situations.
- Adjust, check, and calibrate/verify chemical feed rates.
- Knowledge of sodium hypochlorite; it's use in the water treatment process and safe handling practices.
- Knowledge of the use of hydrofluorosilicic acid and it's use in the water treatment process and safe handling practices.
- Knowledge of the use of sodium thiosulphate acid and it's use in the water treatment process and safe handling practices.
- The operation and maintenance of the UV systems at Bethel and Gilbert.
- The operation of the filtration system at Mt. Pleasant.
- Conducting equipment maintenance, calibrations, verifications, and repairs.
- Conducting online analyzer maintenance, calibrations, verifications, and repairs.
- The County's drinking water distribution systems and their operation, including under and above ground storge facilities, booster pumping facilities, and PRV chambers.
- Primary and secondary disinfection.
- Modifying and repairing water distribution piping and appurtenances safely while following regulatory and County requirements for disinfection of all new and repaired water mains.
- Conducting valve maintenance and repair.
- Conducting hydrant maintenance and repair.
- Certified in water meter installations.

10.10 Satisfying Competencies

10.10.1 The County of Brant may administer certain tests, conduct interviews, verify references and/or request specific documentation as part of the hiring process to verify skills, experience, and knowledge.

10.10.2 To meet ongoing changes to technology, software, the requirements of O. Reg. 128/04 and County of Brant drinking water system processes, all Operators holding certification will obtain training as required by O. Reg. 128/04, as a minimum. The training may be provided on or off site by qualified employees or contracted subject matter experts. Training effectiveness is evaluated when appropriate through testing or a demonstration of knowledge gained.

10.10.3 Once Operators have been deemed competent by the Environmental Services Manager in the system (North/South) they started their employment in, they will be integrated into the other system (when possible) to gain competencies in operating all five County drinking water systems.

10.10.4 Training and information on regulatory information and documentation, the DWQMS and the County's QMS will be presented to all County of Brant drinking water staff by the QMS Representative through monthly meetings. Meetings may not be conducted in July and August to accommodate staff vacations.

10.10.5 Operator training records and Operator certification are tracked and maintained by the Water Division Clerk.

Revision number	Revisions	Date of revision	Revision completed by:
1	Revised Sections 10.2 and 10.3 to note the DWQMS	04/18/2019	D. Stevenson
2	Updated Director of Water to Director of Environmental Services.	03/17/2020	D. Stevenson
3	Section 10.4 – Updated to note Operators work towards obtaining Class 1 Water Treatment certification. Section 10.4 – Removed reference to the Bethel Ion Exchange units.	01/04/2021	D. Stevenson
4	Entire Element reformatted.	01/31/2022	D. Stevenson
5	Sections 10.2 and 10.3 – Updated and title of Water Operations Superintendent to Environmental Services Manager. Section 10.4 - Added to note the new Environmental Services Superintendent.	09/22/2022	D. Stevenson

	Section 10.5 – Added to include the Lead Hand. Section 10.7 – Added to include the Water Quality Technical Specialist and Water Quality Technician. 10.6.4 – Updated list of requirements.		
6	10.2.2 and 10.5.2 – Removed section noting the Director as ORO. 10.6.4 – Added sodium thiosulphate. 10.8.3 – Added to document how competencies are developed for County DWS's.	11/09/2023	Environmental Services Technologist
7	Added 10.6 – Added Quality Management System Representative	04/10/2024	Environmental Services Technologist
8	Reviewed and updated to new standard formatting. Changed all references of "Environmental Services Manager" to "Water Operations Manager". Updated Job titles throughout to reflect organizational changes/new positions. Added QMS Rep Backup.	10/06/2025	Manager of Compliance and Quality
8.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

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11 PERSONNEL COVERAGE

11.1 Overview

11.1.1 The County of Brant employs certified Water Operators. All Operators are required to hold Operator certification for water treatment and/or water distribution and supply.

11.1.2 The Lead Hand and Operators are employed according to the terms and conditions of a collective agreement between the County of Brant and C.U.P.E. Local 1000.

11.1.3 In the event of a strike or lock-out, drinking water system coverage will be provided by Environmental Services administrative staff that possess Ministry Drinking Water Operator certification.

11.1.4 In the event of an emergency or extended strike or lock-out the County may follow the MECP requirements for the use of “emergency substitute operators” as per O. Reg. 128/04 and O. Reg. 129/04. A draft plan and forms have been prepared and are maintained offline by the Manager of Compliance and Quality.

11.1.5 The Water Operations Manager and Environmental Services Superintendent rotate as the Overall Responsible Operator (ORO) for the County of Brant water facilities and distribution systems. In the event the Environmental Services Manager and Environmental Services Superintendent are absent or unable to act, the Lead Hand is designated as the ORO.

11.1.6 A rotating On-Call Operator schedule is prepared annually and is revised as required by the Water Operations Manager and Environmental Services Superintendent.

11.1.7 In the event of a pandemic, the County of Brant Pandemic Plan will be reviewed and followed. A copy of the plan is available in the Environmental Services Division at the Burford Administration Building.

11.2 On-site Coverage Normal Weekdays

11.2.1 The following describes coverage in the County’s drinking water office, facilities, and distribution systems during regular business hours.

a) The water facilities and distribution systems are staffed Monday through Friday 7:00 a.m. to 3:30 p.m. (except for observed holidays).

b) The Environmental Services Division, Water Operations office is staffed Monday through Friday 8:30 a.m. to 4:30 p.m. (except for observed holidays).

c) The County designates all Operators with Class 1 Certification or higher as an Operator-In-Charge (OIC) (except for Compliance and Quality Staff). This allows these Operators to perform tasks requiring an OIC.

d) An Operator with Class 1 Certification or higher that is assigned a task is considered as the OIC for that designated task.

11.3 After-hours / Weekend / Observed Holiday Coverage

11.3.1 The following describes coverage in the County's drinking water facilities and distribution systems after hours, weekends and observed holidays.

a) After-hours, weekend and observed holiday shifts are covered by the North On-Call Duty Operator and the South On-Call Duty Operator.

b) If additional staff are required, the On-Call Duty Operator can request the assistance of other Operator(s).

11.4 Additional Information

11.4.1 Emergency contact information is documented in Section 3, of the Water Systems Emergency Response Contingency Plan (D-01-10).

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 11 – Included reference to County of Brant Pandemic Plan	October 7, 2013	Water Technologist
2	Section 11.2 b) – Revised to note on-call schedule is now prepared twice annually from quarterly. Section 11.2 c) – Revised to note WIN 911 calls out alarms to operators SCADA auto dialler is a back up to WIN 911. Section 11.2 f) – Updated call sequence of staff.	November 12, 2014	Water Technologist
3	Section 11.2 – Added bullet b) Section 11.2 updated to note the term OIC. Section 11.2 g) – OIT added.	August 1, 2017	Water Technologist

4	Sections 11.1 and 11.2 – Sections revised to reflect coverage more accurately.	May 10, 2018	Water Technologist
5	Section 11.2 b) – Revised to note review changed from twice annually to annually.	04/19/2019	Water Technologist
6	Updated title of Director of Water to Director of Environmental Services.	03/17/2020	Water Technologist
7	Section 11 – Revised Water Division Administration staff to Environmental Services staff.	06/17/2020	Water Technologist
8	Section 11.1 – b, c and d updated to describe coverage.	01/04/2021	Water Technologist
9	Entire element revised.	01/31/2022	Water Technologist
10	11.1.4 – Added. 11.1.5 - Revised to note that the Environmental Services Manager and Environmental Services Superintendent rotate as ORO. 11.3.1 c) – Added scheduling of the ORO.	09/22/2022	Water Technologist
11	11.1.5 - Added reference to SOP-49-10. 11.1.6 - Added section. 11.2 and 11.3 - Updated to address OIT's as On-Call Duty Operator.	02/27/2023	Water Technologist
12	11.1.5 – Remove the Director as ORO. 11.2.1 c) – Removed Director. 11.2, 11.3, and 11.4 received a complete update.	11/24/2023	Environmental Services Technologist
13	11.1.5 – Removed reference to SOP-49-10	04/10/2024	Environmental Services Technologist
14	Reviewed and updated to new standard formatting. 11.1.4 updated to include labour dispute scenario and reference draft plan.	10/06/2025	Manager of Compliance and Quality
14.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

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12 COMMUNICATIONS

The QMS Representative, in conjunction with Top Management, will ensure that the QMS, as documented in the Operational Plan, is communicated to the Owner of the County's drinking water systems, members of the Operating Authority, other County of Brant employees (as required), suppliers, service providers, and consumers.

12.1 Owner

12.1.1 The Owner will be kept informed of any changes to the Operational Plan, the County's QMS, internal and external audit results, and the outcome of on-going activities from the Management Review and other QMS issues through various reports.

12.1.2 The Owner will be kept informed of legislative and regulatory requirements through various reports.

12.1.3 The Operating Authority will ensure an orientation session on the DWQMS, the QMS Policy and the Operational Plan is provided when a new Council is elected. This will be provided as part of the Standard of Care Training.

12.1.4 Minutes of QMS related meetings and/or reports will be filed at the Environmental Services office.

12.2 Operating Authority and County of Brant Staff

12.2.1 Operating Authority staff and other County staff will be kept informed on the QMS (Operational Plan, SOP's, Guidance Documents, Forms) and legislative/regulatory requirements though monthly Water Operations Health and Safety and Staff meetings or via email messages.

12.2.2 New permanent staff and/or temporary Operating Authority staff directly working with drinking water will be provided with an overview of the DWQMS, the Operational Plan and legislative/regulatory requirements during orientation. Details of the overview session will be provided in the staff members personal training file.

12.2.3 Some County of Brant employees will be advised of how their roles may impact the quality management system.

12.2.4 A current version of the Operational Plan is available for review by staff electronically on the Environmental Services Sharepoint.

12.2.5 Details of all QMS related meetings will be archived in the Environmental Services files.

12.2.6 The QMS Policy is posted at select water facilities, Burford Administration Office, and on the County website.

12.3 Critical Suppliers

12.3.1 Suppliers are required to submit documentation for certain supplies and services to ensure conformance of regulatory or County of Brant requirements as required.

12.3.2 Essential suppliers and service providers are provided guidance document GD-04-18 Notification to Contractors, Consultants, Developers, Supplier, Services Providers Quality Management System and Regulatory Information as required.

12.4 Consumers

12.4.1 Water bill inserts are used to communicate the QMS to County of Brant water customers at least once each calendar year advising of the QMS Policy and further information on the DWQMS is available for viewing on the County's website.

12.4.2 Water service interruptions, planned maintenance, and unplanned maintenance is communicated to the consumers and the public as described by SOP-46-10 - Procedure for Providing a Notice of a Service Disruption.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 12.1: Updated General Manager of Public Works to General Manager of Operations.	01/11/2016	David Stevenson
2	Section 12.1 and 12.2 – Revised Water Division reference to Environmental Services.	06/17/2020	D. Stevenson
3	Section 12.1 – Updated to note DWQMS training is provided through the Standard of Care Training. Section 21.1 – Updated to note keeping Owners informed of legislative and regulatory requirements. Section 12.3 – Updated to describe the requirement to potentially submit documentation. Section 12.4 – Updated to note that Operational if on the website. Section 12.4 – SOP-46-10 used to communicate to the public.	01/04/2021	D. Stevenson
4	Entire element revised. Section 12 updated to note that the QMS Rep, in conjunction with top management, will ensure the QWS is communicated. Section 12 and 12.2.3 –was added to include other County staff.	01/31/2022	D. Stevenson

5	Section 12.1.3 – Removed WCWC. Section 12.3.1 and 12.3.2 revoked. Section 12.3.2 – Added reference to GD-04-18 Notification to Contractors, Consultants, Developers, Supplier, Services Providers Quality Management System and Regulatory Information	11/09/2023	Environmental Services Technologist
6	Section 12.2.1 – Updated the monthly meeting title.	04/10/2024	Environmental Services Technologist
7	Reviewed and updated to new standard formatting. 12.2.4 updated to reference digital copy and remove controlled hard copies. 12.4.1 reworded to remove reference to full operational plan on the website.	10/06/2025	Manager of Compliance and Quality
7.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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13 ESSENTIAL SUPPLIES AND SERVICES

13.1 Overview

13.1.1 This procedure identifies the supplies and services deemed essential to the delivery of safe drinking water and to ensure the quality of the essential supplies and services that can affect water quality or the provision of drinking water.

13.1.2 Environmental Services Water Operations staff will immediately notify the QMS Representative (or designate) in the event an essential supplier or service, noted in this section, needs to be revised or added to the list.

13.1.3 Suppliers and service providers will not be retained until this element has been revised (except for emergency situations).

13.1.4 All process chemicals and materials used in the alteration or operation of a 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 (*Always review and follow Schedule B, Condition 14.0 Chemicals and Materials of the County's MDWLs*).

13.1.5 Proof of chemicals and products meeting these standards must be provided to the County upon request.

13.1.6 All contractors authorized to carry out work on or operate any aspect of the County's drinking water systems, must be made aware of Schedule B, Condition 5.0 Compliance of the County's MDWLs.

13.1.7 All drinking water tests (raw and treated water) must be conducted by a Ministry of the Environment, Conservation and Parks accredited laboratory.

13.1.8 Environmental Services Water Operations staff will ensure that all procurements of supplies or services follow the County of Brant Purchasing Policy 45-13 as well as the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) and the Continental Free Trade Area (CFTA), where applicable.

13.1.9 The products (supplies) and service providers noted on the following pages are deemed to be essential by the County of Brant for the delivery of safe drinking water.

13.2 List of Essential Suppliers and Service Providers

Supply or Service	Primary Supplier	Contingency Supplier
Accredited Laboratory Service (Bacti)	**SGS Lakefield Environmental** 657 Consortium Court London, ON N6E 2S8 (877)-848-8060 (519)-672-4500	**Bureau Veritas** 6740 Campobello Road Mississauga, ON L5N 2L8 (800)-563-6266 (905)-817-5700
Accredited LaboratoryService (Chemistry)	**Bureau Veritas** 6740 Campobello Road Mississauga, ON L5N 2L8 (800)-563-6266 (905)-817-5700	**SGS Lakefield Environmental** 657 Consortium Court London, ON N6E 2S8 (877)-848-8060 (519)-672-4500
Sodium Hypochlorite (Primary disinfection)	**D.H. Jutzi Ltd.** 279 Lorne Ave. Stratford, ON N5A 6T1 (833)-299-2837 (519)-814-9283	**Brenntag Canada Inc.** 60 Titan Road Toronto, ON M8Z 2J8 (416)-259-8231
Hydrofluosilicic Acid (Fluoride - Paris Only)	**D.H. Jutzi Ltd.** 279 Lorne Ave. Stratford, ON N5A 6T1 (833)-299-2837 (519)-814-9283	**Brenntag Canada Inc.** 60 Titan Road Toronto, ON M8Z 2J8 (416)-259-8231
Construction Contracting Services (watermain breaks, water service connections, watermain maintenance)	**Sierra Construction** 1401 Dundas Street Woodstock, ON N4S 8X8 (866)-421-7413 **Morley's Contracting Ltd.** 257 Governors Road East Paris, ON N3L 3E1 (519)-752-3316 **AB Contracting** 219 River Road R.R. #3 Brantford, ON N2T 2L6 (519)-758-5053 **D.W. Cooper Contracting Ltd.** 22 Garnet Rd Brantford ON, N2M 5P4 (519)-756-4761 **Clean Shot Environmental Services** 171 Pleasant Ridge Rd Brantford ON N3T 5L5 (888) 632-6658	**Sierra Construction** 1401 Dundas Street Woodstock, ON N4S 8X8 (866)-421-7413 **Morley's Contracting Ltd.** 257 Governors Road East Paris, ON N3L 3E1 (519)-752-3316 **AB Contracting** 219 River Road R.R. #3 Brantford, ON N2T 2L6 (519)-758-5053 **D.W. Cooper Contracting Ltd.** 22 Garnet Rd Brantford ON, N2M 5P4 (519)-756-4761 **Clean Shot Environmental Services** 171 Pleasant Ridge Rd Brantford ON N3T 5L5 (888) 632-6658
Flow Meters (Calibration/Service)	**SPD Sales Ltd.** 6415 Northam Drive Mississauga, ON L4V 1J2 (905)-678-2882 (800)-811-2811	**ERTH Corporation** 180 Whiting Street Unit B Ingersoll, ON N5C 3B5 (866)-765-2217
Chlorine Analyzers (Calibration/Service)	**Evoqua Water Technologies Ltd. (Siemens)** 215 Konrad Crescent, Unit 1	**SCG Process** 1000 Edgeley Blvd Concord, ON L4K 4V4

	Markham, ON L3R 8T9 (905)-944-2800	(905)-738-2355
Fluoride Analyzers (Calibration/Service)	**Evoqua Water Technologies Ltd. (Siemens)** 215 Konrad Crescent, Unit 1 Markham, ON L3R 8T9 (905)-944-2800	**SCG Process** 1000 Edgeley Blvd Concord, ON L4K 4V4 (905)-738-2355
Turbidity Analyzers (Calibration/Service)	**Hach** 400 Britannia Road East. Unit 1 Mississauga, ON L4Z 1X9 (800)-665-7635	**Summa Engineering** 6423 Northam Drive Mississauga, ON L4V 1J2 (905)-678-3388
Temperature and pH Analyzers (Calibration and Service)	**Hach** 400 Britannia Road East. Unit 1 Mississauga, ON L4Z 1X9 (800)-665-7635	**Evoqua Water Technologies Ltd.** 25 Konrad Cresent Unit 1 Markham, ON L3R 8T9 (905)-944-2800
UV Systems (Calibration/Service)	**Trojan** 3020 Gore Road, London, ON N5V 4T7 (888)-220-6118	**H2Flow Equipment Inc.** 470 North Rivermede Road, Unit 7 Concord, ON L4K 3R8 *(888)-575-8642*
Chemical Metering Pumps (Paris)	**SCG Process** 1000 Edgeley Blvd Concord, ON L4K 4V4 (905)-738-2355	**Prominent** 490 Southgate Drive Guelph, ON N1G 4P5 (888)-709-9933
Chemical Metering Pumps (Airport, Mt. Pleasant and St. George)	**SPD Sales Ltd.** 6415 Northam Drive Mississauga, ON L4V 1J2 (905)-678-2882	**Grundfos Canada Inc.** 2941 Brighton Rd Oakville, ON L6H 6C9 (905)-829-9533
Generator Fuel	**Davis Fuels/McDougall Energy** 22 King St RR 2, Burford, ON N0E 1A0 (519)-449-2417	**Renway Energy** 56 Henry Street Brantford, ON N3S 7J4 519-752-6777
Potable Water Haulers	**Brights Water** 360 Melair Drive Ayr, ON N0B 1E0 1-877-696-3609	**Keith Hall** 297 Bishopsgate Road Burford, ON N0E 1AO (519)-449-2401
Generator Service Airport & Paris (Gilbert, Telfer, Sharpe)	**TPG Pritchard Power Systems** 5159 Bradco Blvd. Mississauga ON L4W 2A6 905-366-6125	**Toromont Cat Power Systems** 50 Enterprise Drive London, ON N6N 1A7 (519) 681-1900
Generator Service Mt. Pleasant, Paris (Bethel & Parkhill) and St. George	**Toromont Cat Power Systems** 50 Enterprise Drive London, ON N6N 1A7 (519) 681-1900	**Mississauga Power Gen.** 7175 Pacific Circle Mississauga ON L5T 2A5 (905) 795-0050
Power (Hydro)	**GrandBridge Energy** 1500 Bishop Street N., Cambridge, ON 1-(877) 871-2215	**Hydro One (St. George and Telfer)** 1-800-434-1235
SCADA	**Summa Engineering** 6423 Northam Drive Mississauga ON L4V 1J2 (905)-678-3388.	**Eramosa Engineering** 90 Woodlawn Road West Guelph, ON N1H 1B2 (519)-763-7774 (24 hr. Pager:(519)-763-7774 (Ex. 9)

Electrical & Instrumentation	**Wireworks** 169 Copernicus Blvd. Brantford, ON N3P 1N4 (519)-753-8453 **Instrumentation and Control Solutions Inc** 525 Highland Road West Kitchener, ON N2M 5P4 (519)-465-2489 **Brantworth Mechanical** 163 Copernicus Blvd Unit B Brantford, ON, N3P 1N4 855-753-5929	**Wireworks** 169 Copernicus Blvd. Brantford, ON N3P 1N4 (519)-753-8453 **Instrumentation and Control Solutions Inc** 525 Highland Road West Kitchener, ON N2M 5P4 (519)-465-2489 **Brantworth Mechanical** 163 Copernicus Blvd Unit B Brantford, ON, N3P 1N4 855-753-5929
Well Service	**Lotowater Ltd.** 92 Scott Avenue Paris, ON N3L 3R1 (519)-442-2086	**IWS** 342 Bayview Drive P.O. Box 310 Barrie, ON L4M 4T5 (705)-733-0111
Distribution Parts ♦ Pipe ♦ Valves Hydrants	**Emco Brantford** 455 Henry Street, Unit A Brantford, ON N3A 7V6 (519)-754-4333	**Wolseley Plumbing and Mechanical** 1144 Industrial Rd. Unit 2 Cambridge, ON N3H 4W4 (519)-650-4027
Instrument Parts	**Evoqua Water Technologies Ltd. (Siemens)** 215 Konrad Crescent, Unit 1 Markham, ON L3R 8T9 (905)-944-2800	**SCG Process** 1000 Edgeley Blvd Concord, ON L4K 4V4 (905)-738-2355
Mechanical (High Lift Pumps)	**Smart Turner** 392 Hardy Road Brantford, ON N3T 5L8 (519)-757-1746	**ASL Roteq Ltd.** 253 Summerlea Road Unit 12 Brampton, ON L6T 5A8 (905)-791-2420

Revision number	Revisions	Date of revision	Revision completed by:
1	Revised Primary Generator Service Supplier. Added 24 hr. pager number for Eramosa under SCADA Secondary Supplier.	June 10, 2014	D. Stevenson
2	Revised Chlorine, Fluoride and Instrument Part Supplier suppliers name for Siemens to Evoqua Water Technologies Ltd. (Siemens). Revised Chemical Scales to note Summa as the primary to secondary. Revised Chemical Metering Pumps. Metcon is primary for Paris, and SPD is now for Airport, Mt. Pleasant, and St. George.	October 28, 2014	D. Stevenson

3	Revised Primary Generator Service Suppliers as there is now 2 primary suppliers for system specific gen sets	April 24, 2017	D. Stevenson
4	Revised primary Sodium Hypochlorite and Hydrofluosilicic Acid suppliers phone numbers (D.H. Jutzi).	November 28, 2017	D. Stevenson
5	Removed Selectra Inc. as a supplier for electrical and instrumentation.	December 12, 2017	D. Stevenson
6	Added paragraph 2 on page 1 regarding revisions to this element. Updated paragraph 2 on page 1 to note NSF/372 and the requirements of the County's MDWL's. Paragraph added to page 1 noting the requirement of MDWL, Schedule B, Condition 5.0. Added ALS Global as on accredited laboratory for chemical sampling (Telfer). Maxxam is the contingency supplier. Flow Meter Primary and Contingency Supplier updated. Chemical Scale Primary Supplier updated. Distribution Parts Contingency Supplier updated. Mechanical (High Lift Pumps) Contingency Supplier updated. Added Clean Shot Environmental to the contractor section.	May 10, 2018	D. Stevenson
7	Added Potable Haulers and removed pH/Temp and Scale contractors as they are not essential. Added Power (hydro) providers.	04/18/2019	D. Stevenson
8	Generator Service – Mt. Pleasant Updated. Water Division Staff revised to Environmental Services Drinking Water Staff. Added Temperature and pH analyzer contractor.	04/16/2020	D. Stevenson
9	Updated laboratory name change (Maxxam to Bureau Veritas). Updated the order of generator service for Mt. Pleasant and the order for water haulers.	0305/2021	D. Stevenson
10	Updated the Secondary Temp and pH secondary, UV the primary and secondary switched, Generator Fuel both suppliers, added an Electrical and Instrumentation supplier, distribution parts primary supplier updated.	10/12/2022	D. Stevenson
11	Removed ALS Labs as Telfer sampling has stopped. Update Hydro for Telfer and St. George and changed Energy+ to GrandBridge Energy.	10/06/2023	Water Technologist

12	Removed Nitrate service providers.	04/10/2024	Environmental Services Technologist
13	Changes to generator service providers	11/25/2024	Manager of Compliance and Quality
14	Full review of current list by Water Operations Manager and Water Quality Technical Specialist. Reviewed and updated to new standard formatting. Update to Generator service providers, and change in company name from Metcon to SCG Process.	06/24/2025	Manager of Compliance and Quality
14.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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14 QUALITY MANAGEMENT SYSTEM

14.1 Overview

14.1.1 An infrastructure review ensures the periodic evaluation of the condition and capacity of the County's drinking water system's infrastructure components.

14.1.2 The results of the evaluation are to be used to prioritize future resource allocation.

14.2 Meetings and Meeting Records

14.2.1 At least once per year, the Director of Environmental Services, Water Operations Manager, Environmental Services Superintendent, and the QMS Representative will meet to conduct an infrastructure review.

14.2.2 The General Manager of Operations, Director of Engineering & Infrastructure Planning, Director of Infrastructure and Asset Management, Lead Hand, and Water Operators may attend the meeting or will be asked for input prior to the meeting.

14.2.3 Minutes or a summary of the meeting(s) and records of attendance will be documented by the QMS Representative and will be filed in Environmental Services Records within 30 days of the conclusion of the meeting(s).

14.3 Infrastructure Review Items

14.3.1 The Director of Environmental Services, Water Operations Manager, and Environmental Services Superintendent will consider:

a) The outcomes of the risk assessment documented under Element 8 and ensure that the adequacy of the infrastructure necessary to operate and maintain the County's municipal residential drinking water and distribution systems is reviewed.

b) Buildings, storage, and distribution:

- New infrastructure required in the upcoming year (due to regulations, growth, or unforeseen circumstances).
- Recommended infrastructure maintenance for the upcoming fiscal year and looking forward five years.
- Recommended infrastructure rehabilitation or renewal for the upcoming year and looking forward ten years.
- Recommended infrastructure upgrading or replacement for the upcoming year and looking forward beyond ten years.

c) Machinery, equipment, software:

- New machinery, equipment (includes tools and vehicles), computers and software required in the upcoming year and looking forward three years.
- Planned and unplanned machinery and equipment maintenance and replacement parts for the upcoming fiscal year.
- Machinery and equipment maintenance costs (based upon the original manufacturer's recommended maintenance frequency).
- Machinery and equipment planned maintenance costs (based upon normal operating life and past planned and unplanned maintenance history).

d) Drinking water related projects identified by the General Manager of Operations, Director of Infrastructure, Director of Roads, and other County of Brant staff.

e) Other items that are to be reviewed to determine priority needs:

- Previous year's Review and Provision Infrastructure Report.
- Input from Operating Authority staff.
- Future Infrastructure Division projects.
- MECP Compliance Inspection Reports.
- Water production and consumption trends.
- Flow data trends.
- Watermain break records.
- Water quality reports.
- Operations maintenance records.

14.4 Notification to Owners

14.4.1 At the conclusion of the review, an Infrastructure Review Report must be presented to the Owners prior to budget deliberations.

14.4.2 The report must include a summary of the finding from section 14.3.

14.4.3 The report will be provided to the Administration and Operations Committee and then forwarded to Council (Owners).

Revision number	Revisions	Date of revision	Revision completed by:
1	Added the Director of Roads to paragraph 3.	October 7, 2013	Water Technologist
2	Updated the title of Director of Engineering to the Director of Infrastructure Services.	November 15, 2017	Water Technologist
3	Section 2 – Updated to note that the General Manager of Operations, Director of Infrastructure Services, Director of Roads, Water Lead Hand and Water Operators should be considered or asked to provide input. Section 3 – Added the requirement to consider the outcomes from Element 8. Section 3 – Added or updated items that should be considered as part of the review. Added Section 6 – The requirement to keep and file minutes and record of attendance.	04/18/2019	Water Technologist
4	The Director of Water was revised to Director of Environmental Services. Section 5 – Public Works Committee updated to Administration and Operations Committee.	03/17/2020	Water Technologist
5	Section 6 Revised Water Division to Environmental Services.	06/17/2020	Water Technologist
6	Entire element revised. 14.2.4 – Added requirement to file meeting minutes within 30 days of the meeting.	01/31/2022	Water Technologist
7	Sections 14.2.1 and 14.3.1 – Updated Environmental Services Manager title and added Environmental Services Superintendent.	09/22/2022	Water Technologist
8	14.2.1, 14.2.2, 14.2.3, and 14.2.4 – Updated position title changes in these sections. 14.2.2 and 14.2.3 were merged to note positions that can attend the annual meeting.	10/26/2023	Environmental Services Technologist
9	Reviewed and updated to new standard formatting.	16/06/2025	Manager of Compliance and Quality
9.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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15 INFRATRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL

15.1 Overview

15.1.1 The Environmental Services Water Operations (Operating Authority) will:

a) Keep the summary of the infrastructure maintenance, rehabilitation, and renewal programs current.

b) Ensure that the long-term forecast is reviewed at least once every year.

c) Communicate the programs to the Owner (Council).

d) Monitor the effectiveness of the maintenance program.

15.2 Planned Maintenance, Replacement and Renewal: Distribution System

15.2.1 Whenever practical, the planned maintenance, rehabilitation, or renewal of distribution infrastructure will be in conjunction/coordination with other divisions (Infrastructure Services, Development Services, Roads Division), and utilities (GrandBridge Energy/Hydro One, Union Gas, Bell Canada, etc.).

15.2.2 All work to existing distribution infrastructure will comply with all applicable County of Brant Standard Operating Procedures, O. Reg. 128/04, O. Reg. 170/03, MDWL, DWWP, AWWA standards, and the Ontario Watermain Disinfection Procedure.

15.2.3 If the planned maintenance, replacement, or renewal can be conducted by County of Brant Water Operators, then the ORO and/or Water Lead Hand will direct staff accordingly.

15.2.4 For work beyond the capability of available resources (staff and equipment), the County will engage a qualified contractor through the tender process, or a contractor noted in Element 13.

15.2.5 All operational work must be conducted and documented by or under the supervision of a certified Operator or an Operator In Charge (OIC) as required by regulation.

15.2.6 Long term maintenance, rehabilitation, and renewal forecasting for distribution infrastructure is conducted and documented during the annual Element 14 Review and Provision of Infrastructure.

15.2.7 Planned distribution system maintenance includes but is not limited to the annual watermain flushing and hydrant inspections, the valve turning program, reservoir and elevated tank inspections (5-7 years), and leak detection program.

15.3 Unplanned Maintenance, Replacement and Renewal: Distribution System

15.3.1 Unplanned maintenance tasks result from unexpected malfunction or breakage.

15.3.2 Unplanned maintenance is conducted as required.

15.3.3 Unplanned maintenance typically consists of watermain breaks, service pipe leaks, curb stop repairs, and valve, hydrant, or meter replacements.

15.3.4 All unplanned maintenance activities are authorized by the ORO and/or the Water Lead Hand.

15.3.5 The County engages a qualified contractor for work related to watermain breaks, service leaks, valve, and hydrant repairs.

15.3.6 A list of acceptable contractors is contained within Element 13 of the Operational Plan.

15.3.7 All operational work must be conducted and documented by or under the supervision of a certified Operator or an OIC as required by County of Brant Standard Operating Procedures, O. Reg. 128/04, O. Reg. 170/03, AWWA standards, MDWL, DWWP, and the Ontario Watermain Disinfection Procedure.

15.3.8 All records are retained in the Environmental Services office.

15.4 Planned Maintenance, Replacement and Renewal: Buildings, Machinery and Equipment – Water Treatment

15.4.1 Planned maintenance includes annual calibrations of flow meters and online analyzers, annual calibrations, and quarterly verification of Hach kits, annual service of UV units (Gilbert and Bethel), and reservoir/elevated tank inspections.

15.4.2 Planned maintenance must be conducted and documented by or under the supervision of a certified Operator or OIC. All maintenance will follow the requirements of County of Brant Standard Operating Procedures, MDWL, DWWP, Provincial Regulations, AWWA Standards and manufacturers' specifications.

15.4.3 Details of all maintenance must be recorded in the facility/system's logbook.

15.4.4 Completed logbooks will be forwarded to the Water Quality Technologist for filing.

15.4.5 Long term maintenance, rehabilitation, and renewal forecasting for buildings, machinery, and equipment is conducted and documented during the annual Element 14 Review and Provision of Infrastructure.

15.5 Unplanned Maintenance: Buildings, Machinery and Equipment – Water Treatment

15.5.1 Unplanned maintenance is completed as required and must be conducted and documented by or under the supervision of a certified Operator or OIC. All maintenance will follow the requirements of County of Brant Standard Operating Procedures, MDWL, DWWP, Provincial Regulations, AWWA Standards and manufacturers' specifications.

15.5.2 If the repair is beyond the capabilities of an Operator or OIC, the County will engage a qualified contractor(s), noted in Element 13, to carry-out the work under the supervision of an Operator or OIC.

15.5.3 All unplanned maintenance will follow the requirements of County of Brant Standard Operating Procedures, MDWL, DWWP, Provincial Regulations, AWWA Standards and/or manufacturers' specifications.

15.6 Planned Maintenance: Wells (Production and Monitoring)

15.6.1 Planned Maintenance, Replacement, and Renewal for wells follows the requirements of SOP-09-09.

15.6.2 Major components of production wells are inspected and serviced approximately every 5 years.

15.6.3 An above surface, physical inspection of all County wells is conducted and documented by Water Operators and Water Quality staff monthly.

15.6.4 All planned maintenance will follow the requirements of County of Brant Standard Operating Procedures, MDWL, DWWP, Provincial Regulations, AWWA Standards and/or manufacturers' specifications.

15.6.5 All work to a well will be conducted by a licenced well contractor.

15.6.6 Long term maintenance, rehabilitation, and renewal forecasting for wells is conducted and documented during the annual Element 14 Review and Provision of Infrastructure.

15.7 Unplanned Maintenance: Wells (Production and Monitoring)

15.7.1 Unplanned maintenance of wells is conducted as required by a certified Well Contractor (noted in Element 13).

15.7.2 All unplanned maintenance will follow the requirements of County of Brant Standard Operating Procedures, MDWL, DWWP, Provincial Regulations, AWWA Standards and/or manufacturers' specifications.

15.8 Monitoring the Effectiveness of the Maintenance Program

15.8.1 The Water Operations Manager and Environmental Services Superintendent will seek input from Water Operators and the Water Quality staff as required to determine the effectiveness of the maintenance program and to receive recommendations to improve the maintenance program.

15.9 Communicating the Program to the Owner (Council)

15.9.1 The Operating Authority will provide the Owners an overview of the infrastructure, maintenance, and renewal programs annually as part of the Element 14 Review and Provision of Infrastructure and the Element 20 Management Review summary.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 15.1: Revised Brant County Power to Energy +	01/11/2016	Dave Stevenson
2	Element 15 has had a complete revision to meet the requirements of DWQMS 2.0.	04/18/2019	D. Stevenson
3	Section 15.1(iv) Water Records Management Clerk updated to Water Clerk.	03/17/2020	D. Stevenson
4	Entire element reformatted. 15.2.2, 15.3.7 and 15.4.2 updated to note requirements of SOPs, regulatory documentation and AWWA standards.	01/31/2022	D. Stevenson
5	15.2.1 – Updated Energy + to GrandBridge Energy and added Hydro One. 15.2.5, 15.3.7, 15.4.2, 15.5.1, 15.5.2– Added Operator or OIC. 15.8.1 – Updated Top Management to Environmental Services Manager and Environmental Services Superintendent. 15.9.2 – Updated Water Division to Operating Authority. 15.2.7 – Added reservoir and elevated tank inspections.	11/10/2023	Environmental Services Technologist

6	Reviewed and updated to new standard formatting. Updated job titles throughout.	16/06/2025	Manager of Compliance and Quality
6.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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16 SAMPLING, TESTING AND MONITORING

16.1 Sampling, testing, and monitoring of the upstream raw groundwater for the County of Brant groundwater systems is conducted by Compliance and Quality staff as required by O. Reg. 170/03, O. Reg. 169/03, the systems' Municipal Drinking Water Licence and Permits to Take Water.

16.2 For the Airport, Mt. Pleasant, Paris and St. George Drinking Water Systems, Certified Water Operators ensure that raw water is treated and that the treated water supplied to the distribution systems meets the requirements of O. Reg. 170/03 via grab samples, online analyzers, and the SCADA system. Typical parameters that are monitored by online continuous analyzers include: chlorine concentration (pre reservoir/contact chamber and Point of Entry), turbidity, fluoride (Paris only), flows, pressure, and UV dose (Paris - Gilbert and Bethel only).

16.3 UV Transmittance is tested and recorded weekly for Paris (Bethel and Gilbert) via grab samples.

16.4 Daily operational tests for chlorine residuals are conducted by Certified Water Operators on the treated water, via grab samples, at the facilities and in the distribution systems.

16.5 In accordance with O. Reg. 170/03, weekly bacti samples are collected from each production well (raw), each treatment facilities' Point of Entry (treated) and each systems' distribution system (treated) by Certified Operators and submitted to an accredited lab. Weekly bacti test results from the accredited lab are emailed to the Compliance and Quality staff to be reviewed.

16.6 The results, once reviewed, are provided to the acting Overall Responsible Operator and all other Environmental Services Water Operations staff via email by Compliance and Quality staff.

16.7 The results are entered electronically on the server by Compliance and Quality staff.

16.8 Regulatory samples for new watermain disinfection, disinfection of service connections, the disinfection of wells, treatment facilities and water storage facilities are collected by Certified Water Operators, Compliance and Quality staff or a Certified Well Technician, and submitted to an accredited lab.

16.9 Bacti test results from the accredited lab are emailed to the Compliance and Quality staff to be reviewed.

16.10 The results, once reviewed, are provided to the acting Overall Responsible Operator via email by Compliance and Quality staff. The results are entered

electronically on the server by Compliance and Quality staff.

16.11 A SCADA system monitors and records regulatory and non-regulatory parameters for each drinking water system via online continuous analyzers and other equipment.

16.12 In accordance with O. Reg. 170/03 and "SOP-55-11 Procedure for Review and Retrieval of Operational Data Stored by the SCADA Historian or e.RIS and the Regeneration of Dream Reports", daily SCADA data reports are reviewed by the On-Call Duty Operator within 72 hours of the report being generated.

16.13 The acting Overall Responsible Operator and/or Operators in Charge may adjust processes affecting water quality based upon the information and data provided by the analyzers or by the SCADA system.

16.14 Any adjustments made to process parameters and analyzers must be recorded in the facility's logbook.

16.15 Compliance and Quality staff and Certified Water Operators are responsible for the monthly regulatory turbidity sampling from the production wells (grab samples).

16.16 Compliance and Quality staff collect and analyze monthly turbidity samples for Mt. Pleasant, and Paris (Bethel and Gilbert).

16.17 Certified Water Operators collect and analyze monthly turbidity samples for Airport, Paris (Telfer), and St. George. For due diligence, Operators also collect and analyze weekly turbidity samples.

16.18 Compliance and Quality staff complete calibrations/verifications and/or repairs to the online turbidity analyzers.

16.19 The Bethel online turbidity analyzer is a regulatory analyzer.

16.20 Visual inspections of the treatment facilities are conducted by the Certified Water Operators daily. Equipment and building conditions, if changed, are noted in the daily logbook and are to be reported to the ORO.

16.21 Sampling is to be conducted as noted in "SOP-57-12 Procedure for Sampling Municipal Residential Drinking Water Systems".

16.22 The Annual Reports will show all sample test results. The report is provided to the Owner when complete and is made available to the public via the County of Brant website.

Revision number	Revisions	Date of revision	Revision completed by:
1	Updated paragraph 1 to note monitoring requirements of the Permit's to Take Water	07/13/2015	David Stevenson
2	Revised paragraph 3 to note nitrates are now monitored at Telfer and Bethel. Gilbert was removed. Revised paragraph 2 to note that data is entered by the Water Clerk (or designate).	10/06/2015	David Stevenson
3	Removed reference to the KGR system.	12/21/2016	David Stevenson
4	Section 1 – Revised to note Airport, Mt. Pleasant, Paris and St. George have a minimum free chlorine residual of at least 0.20 mg/L POE. Section 2 – Revised to note that the Water Quality Technician also reviews the weekly lab results. Also revised to note that the results, once reviewed, are provided to all Water Division staff via email. The results are entered electronically on the server by the Water Clerk (or designate). The Water Quality Technical Specialist or Water Quality Technician were added as positions that upload lab results. Section 3 – Added Bethel as a location where nitrates are monitored. Section 4 – Revised to note that the SCADA system records and monitors regulatory parameters for all systems.	04/18/2019	David Stevenson
5	Section 1 - Revised to note raw water testing, sampling and monitoring. Section 2 – Revised to note treated water sampling testing and monitoring. Section 3 – Updated to note daily operational checks for Cl2. Section 4 and 5 – Updated to note Environmental Services Drinking Water Staff/Operators. Section 4 - Removed Airport, Mt. Pleasant, Paris and St. George have a minimum free chlorine residual of at least 0.20 mg/L POE. Section 5 – Expanded to identify sampling for watermain, connections, facilities, wells, and water storage. Added Section – Turbidity Sampling, testing and monitoring,	06/17/2020	D. Stevenson
6	Entire element renumbered and reformatted.	01/20/2022	D. Stevenson

7	16.2 Nitrate analyzer at Telfer removed. 16.3 Added to note weekly grab sampled for UV Transmittance for Bethel and Gilbert. 16.15 Updated to add Water Operator for monthly turbidity and weekly turbidity at Airport, St. George, and Telfer.	04/10/2024	Environmental Services Technologist
8	Reviewed and updated to new standard formatting. Job titles updated throughout. Removed filing of hardcopies, maintained digitally only now.	06/14/2025	Manager of Compliance and Quality
8.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

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17 MEASURING AND RECORDING EQUIPMENT CALIBRATIONS AND MAINTENANCE

17.1 On-line analyzers throughout the County are calibrated and/or verified at the frequency and using the method specified by the manufacturer, the system's Municipal Drinking water Licence, or O.Reg. 170/03.

17.2 Manufacturer specifications can either be found in the system specific facility or on the internet

17.3 At Gilbert, results of these calibrations/verifications are recorded in the facility's Instrument Calibration Logbook

17.4 For all other County of Brant Water Facilities, results of calibrations/verifications will be recorded in the facility's logbook.

17.5 For all other County of Brant Water Facilities, results of calibrations/verifications will be recorded in the facility's logbook.

17.6 All logbook entries are to be made in non-soluble blue ink and logbooks are to be protected from damage or loss

17.7 All logbook entries are to be made in non-soluble blue ink and logbooks are to be protected from damage or loss

17.8 SOP-30-09 Procedure for the Maintenance and Calibration of Monitoring Equipment will be referenced.

17.9 Portable Hach kits are calibrated every 12 months by a certified manufacturer's representative.

17.10 Quarterly verifications of Hach kits are conducted by Compliance and Quality staff. Records of calibration/verifications will be retained in the Environmental Services office.

17.11 Flow meters will be calibrated/verified every 12 months by a qualified/certified contractor in accordance with Schedule C, Condition 3.0 of each system's Municipal Drinking Water Licence.

17.12 Records of calibration are recorded in the facility logbook and electronic records received from third parties are retained in the Environmental Services office.

17.13 Calibration of CT monitoring equipment will be conducted in accordance with Schedule C, Condition 4.0 of each system's Municipal Drinking Water Licence.

17.14 Compliance and Quality staff are responsible for the monthly adjustments to the online turbidity analyzers, calibration/verifications, and/or repairs to the analyzers. The Bethel turbidity analyzer is a regulatory analyzer. Records of calibration for turbidity analyzers are recorded in the facility logbook and electronic records received from third parties are retained in the Environmental Services office.

Revision number	Revisions	Date of revision	Revision completed by:
1	Updated to note that manufacturers specifications can be found in the facility or via the internet	10/06/2015	David Stevenson
2	Section 2 – Revised to note Quarterly verifications are conducted by the Water Quality Technical Specialist and/or the Qater Quality Technician. Records of calibration/verifications shall be retained in the Water Divison office. Revised Section 1 to note that entries for Gilbert are to be made in the instrument Calibration Logbook. All other systems, entries are made in the facility logbook with non-soluble ink.	04/18/2019	David Stevenson
3	Section 1 – reference to MDWL and Reg 170/03 was added. Section 3 – Updated to reference MDWL requirement Added Section 4. Revised references to Water Division to Environmental Services	06/17/2020	D. Stevenson
4	Revised Section 2 and 3 – Changed annually to every 12 months	11/30/2020	D. Stevenson
5	Entire element reformatted.	01/31/2022	D. Stevenson
6	17.13 Added to note verification and calibration for online turbidity units.	10/18/2022	D. Stevenson
7	Combined sections 17.14 and 17.13	04/10/2024	Environmental Services Technologist
8	Reviewed an updated to new standard formatting. Job titles updated throughout	06/17/2025	Manager of Compliance and Quality

8.1	Added locations of controlled copies.	12/22/2025	Environmental Services Technologist

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18 EMERGENCY MANAGEMENT

18.1 Emergency Documentation

18.1.1 Detailed documented procedures for emergency situations which could result in an adverse water quality event, are kept for reference at the County's main drinking water system facilities and are available electronically in the Environmental Services Water Operations OneDrive account folder and staff DWQMS folder on the County's electronic server.

These documents include:

- The Operations and Maintenance Manuals
- The Water Supply Systems Emergency Response Contingency Plan
- Environmental Services Water Operations SOP electronic files. These procedures outline the roles and responsibilities of the Owner and the Operating Authority for emergency conditions.

18.1.2 Procedures for responding to adverse water quality and reporting procedures are documented in SOP's:

- SOP 04-09 Procedure for Reporting Adverse Condition Large and Small Municipal Residential System
- SOP 14-09 Procedure for Low Chlorine Residual in Distribution System

18.1.3 Detailed procedures for responding to all other emergencies are kept for reference at the County's main drinking water system facilities and are available electronically in the Environmental Services OneDrive account folder.

These documents include:

- The Operation and Maintenance Manuals
- The Water Supply Systems Emergency Response Contingency Plan
- Environmental Services Drinking Water Facility SOP binder/electronic files. These procedures outline the roles and responsibilities of the Owner and the operating authority for the emergency conditions.

18.1.4 A complete hard copy set of all facility Operations and Maintenance Manuals is kept at water treatment facilities.

18.1.5 The County of Brant Emergency/Pandemic Plan has a documented emergency plan for the County of Brant as a whole. This document is kept at the County of Brant Burford Administration Office.

18.2 Preparedness

18.2.1 All Water Operators working for the County of Brant have been made be aware of the County's emergency procedures, have been provided training on the emergency procedures, and have been made aware of where these procedures are stored for reference (hard and electronic copies) for water treatment, the water treatment facilities, and the water distribution system emergencies.

18.2.2 The Water Supply Systems Emergency Response Contingency Plan which covers emergency situations, response, and recovery procedures is reviewed annually at a monthly DWQMS meeting.

18.2.3 Once a year, a desk top exercise is conducted to test selected emergency procedures. If present methods should change, or new employees are brought into the system, training will occur in dealing with emergency situations. The QMS Representative, or direct supervisors will provide training. All training will be documented and placed into the employee personnel files**.**

18.2.4 Twenty-four hour On-Call Operators and water facility alarms ensure that a qualified Water Operator attends and assesses any emergency within a reasonable period of time.

18.2.5 An Emergency Contact List is provided in Section 3 of the Water Supply Systems Emergency Response Contingency Plan binder.

18.3 Water Emergencies

18.3.1 During regular business hours (Monday to Friday - 8:30 to 16:30hrs), calls will be received at the Burford Administration Office.

18.3.2 After hours and weekends, calls are directed to the County's after-hours dispatch provider.

18.3.3 Dispatch will have a current On-Call Operators call out list for the North and South water zones. Any changes to the list are provided to Dispatch as required.

18.3.4 After hours problems at the water facilities are indicated by alarms, which will be attended to by the On-Call Operator (North and South).

18.4 Roles and Responsibilities

18.4.1 Owner

a) The Owner designates the responsibility of emergency response and repairs for the municipal residential drinking water systems to the Operating Authority.

b) The Owner is responsible for approving budgets that allow the Operating Authority to acquire resources to address emergency situations related to the municipal residential drinking water systems.

18.4.2 Operating Authority

a) The Operating Authority is responsible for responding to and addressing drinking water system emergencies.

b) The Operating Authority may call in applicable contractors, consultants, or other County Division's to assist with emergencies.

c) The Operating Authority will inform the Owner of all emergency situations related to the drinking water systems.

18.5 Customer Concerns

18.5.1 If a member of the public calls during regular business hours with a drinking water concern, County staff receiving the call will always follow SOP 45-10 Procedure for Customer Concerns.

18.5.2 After hour calls will be received by The County's after-hours dispatch provider. Dispatch will immediately contact the On-Call Operator (North or South).

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 18: Removed reference to SOP-12-09 and revised SOP- 04-09 which now covers both large and small systems.	11/02/15	David Stevenson
2	Section 18.3: Updated to the County of Brant Emergency Plan. Section 18.1.2 – Updated to note an Emergency Contact is provided in the Water Supply Systems Emergency Response Contingency Plan binder and the facilities Operations Manual.	04/18/2019	David Stevenson
3	Revised reference from Water Division to Environmental Services.	06/17/2020	D. Stevenson
4	Complete update and reformat of the element.	01/21/2022	D. Stevenson
5	Added Section 18.4 Roles and Responsibilities.	04/10/2024	Environmental Services Technologist

6	Reviewed and updated to new standard formatting. Updated locations of digital and hard copy documents. Change in after-hours dispatch provider.	06/24/2025	Manager of Compliance and Quality
6.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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19 INTERNAL AUDITS

19.1 Overview

19.1.1 Internal audits are conducted to ensure that the County's Quality Management System (QMS), as documented in the County of Brant Operational Plan, conforms to the requirements of the DWQMS. These requirements include ensuring that the QMS has been effectively implemented and properly maintained.

19.1.2 The County of Brant may, from time to time, request that internal audits be conducted by trained auditors from a neighbouring municipality. In turn, the County of Brant may provide the same service to other municipalities.

19.1.3 The County of Brant may, from time to time, request that internal audits be conducted by trained auditors from a third-party accreditation-body.

19.2 Internal Audits Conducted by the County of Brant

19.2.1 All internal auditors must have successfully completed the WCWC Internal Auditor training sessions or other approved training.

19.2.2 Internal audits can be scheduled throughout the year but should take into account operational workload when scheduling.

19.2.3 Each element of the DWQMS will be audited at least once per year.

19.2.4 The auditor will review all QMS related documentation, the results from the previous internal and external audits, and ongoing corrective and preventative actions prior to the audit.

19.2.5 The auditor(s), in conjunction with the QMS Representative, will develop an audit checklist prior to the audit, which will include the Plan and Do requirements of the DWQMS.

19.2.6 The auditor and QMS Representative will conduct an Audit Kickoff Meeting with Top Management. At least two of the three members of Top Management must attend the kickoff meeting. The scope of the audit will be presented to Top Management at this meeting. The QMS Representative will keep a record of this meeting and place it in the audit electronic file.

19.2.7 The auditor will observe activities, review records and interview personnel as necessary to ensure that the status of the audited element meets the requirements of the Operational Plan and the DWQMS.

19.2.8 At the conclusion of the audit, the auditor will submit a completed checklist and

discuss the findings with the QMS Representative. The checklist will note non-conformances, opportunities for improvement and preventative actions identified during the audit.

19.2.9 After reviewing the checklist and the audit results with the QMS Representative, the auditor will document the findings in an Internal Audit Report. The report will identify non-conformances, opportunities for improvement and preventative actions.

19.2.10 Once the QMS Representative receives the Internal Audit Report, an Audit Closeout Meeting will be conducted with the QMS Representative, the auditor, and Top Management. At least two of the three members of Top Management must attend this meeting.

19.2.11 The Auditor will chair the Audit Close Meeting. The meeting will discuss the audit findings and will determine which members of the Operating Authority will be assigned to any required Corrective or Preventive Actions. Timelines will be set to address the audit findings.

19.2.12 The audit report and the audit checklist will be filed electronically by the QMS Representative in the Compliance and Quality Network Drive.

19.2.13 The QMS Representative will document and track all Corrective and Preventative Actions identified by the County on form R-29-11. These forms and resolutions will be stored electronically in the Compliance and Quality Network Drive.

19.2.14 The Internal Audit Report will be provided to and reviewed with Operating Authority staff at monthly DWQMS meeting once the final report has been issued.

19.3 Audits Conducted by Another Municipality or a Third-Party Accreditation Body

19.3.1 Outside auditors must provide proof of competency prior to conducting the audit and are required to have completed a minimum of two internal audits or external of a municipal DWQMS quality management system.

19.3.2 Audits are to be conducted per the County of Brant schedule.

19.3.3 Audits may be planned and conducted per the procedures of the auditing Municipality or third-party auditors' standards. Prior approval by the County of Brant's QMS Representative and Top Management is required. Section 19.2 will be followed at a minimum.

19.3.4 Audit results may be reported as per the procedures of the auditing municipality or

third-party's standards, as long as the results are documented and approved by the County of Brant's QMS Representative. Requirements for noted corrective actions must be indicated.

19.4 Findings and Corrective or Preventative Actions

19.4.1 The following documents the process for the identification and management Findings and their related Corrective or Preventative Actions:

a) Findings are typically identified through internal audits, external audits, and Ministry Annual Inspections and include non-compliances, non-conformances or opportunities for improvement. Occasionally, findings will be identified through items that come up during day-to-day operations.

b) Upon the identification of a finding, it will be added to the DWQMS Element 19 – Audit Tracking Sheet.

c) The DWQMS Element 19 – Audit Tracking Sheet will include the following information:

   a. Element Number
   b. Finding Description
   c. Finding Type (Non-Compliance/Non-Compliance, Major/Minor, Opportunity for Improvement)
   d. Objective Evidence
   e. Root Cause
   f. Corrective/Preventative Actions
   g. Current Status
   h. Status Notes
   i. Primary Responsibility
   j. Goal Date
   k. Completion Notes

d) Previously Corrective Actions were documented on R-29-11 Corrective Action Records and filed electronically. These records will be maintained as per document control but will not continue to be utilized going forward.

e) Once findings have been identified and primary responsibility assigned by the QMS Rep or designate, the responsible persons are required to notify the QMS of any changes in status to maintain tracking up-to-date.

f) Root Cause analysis and determination of appropriate Corrective and preventative actions should be completed between the QMS representative and responsible person.

g) The resolution to the Findings, as documented in a the DWQMS Element 19 – Audit Tracking Sheet, will be reviewed by the Internal Auditor(s) prior to the next internal audit. The Auditor(s) will verify that the documented action(s) have been implemented and are effective in correcting and preventing the re-occurrence of the non-conformity.

Revision number	Revisions	Date of revision	Revision completed by:
1	Section 19.1 - Internal Audit Schedule revised.	10/07/2013	D. Stevenson
2	Section 19.1 (1) – Removed the term 16 hours for length of workshop.	06/17/2020	D. Stevenson
3	Entire element reformatted, re-numbered and expanded. 19.1.3 added allowing for a third party to conduct internal audits. 19.2.6 and 19.2.10added the requirement to keep a record of the meeting and 2 or 3 members of Top Management must attend. 19.2.12 and 19.2.13 added to include file paths. 19.2.14 and 19.2.15 added to describe how the audit report is communicated.	01/21/2022	D. Stevenson
4	Reviewed and updated to new standard formatting.19.2.2 removed specific months. 19.2.14 Removed mention of specific council report as this is no longer utilized. Added 19.4 “Findings and Corrective or Preventative Actions” which was previously included under element 21.	16/07/2025	Manager of Compliance and Quality
4.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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20 MANAGEMENT REVIEW

This element defines the Management Review process to ensure the continuing suitability, adequacy, and effectiveness of the County of Brant's Quality Management System.

20.1 Review Frequency

20.1.1 Management reviews will be conducted at least once every calendar year.

20.2 Review Participants

20.2.1 The Management Review is arranged and chaired by the QMS Representative.

20.2.2 Attendees at the meeting include:

- General Manager of Operations (Top Management)
- Director of Environmental Services (Top Management)
- Water Operations Manager (Top Management)
- Environmental Services Superintendent
- Manager of Compliance and Quality (QMS Representative)
- Water Quality Technical Specialist (Optional)
- Environmental Services Technologist (back-up to the QMS Representative - optional)

20.2.3 For there to be a quorum, the QMS Representative and the 3 members of Top Management or designates must be in attendance.

20.2.4 Attendees may also include Council members (Owner), Water Operators and Operations Administration staff.

20.3 Review Input

20.3.1 The QMS Representative will provide information regarding the following categories and facilitate discussions regarding them:

a) Incidents of regulatory non-compliance.
b) Incidents of adverse drinking water tests.
c) Deviations from identified Critical Control Point limits and response actions.
d) The effectiveness of the risk assessment process.
e) Results of internal and 3rd party audits.
f) Results of relevant emergency response testing.

g) Operational performance.
h) Raw water supply and drinking water quality trends.
i) Follow up on action items from previous management reviews.
j) Status of management action items identified between management reviews.
k) Changes that could affect the Quality Management System.
l) Consumer feedback.
m) Resources needed to maintain the QMS.
n) The results of the Element 14 Infrastructure Review
o) Element 15 Infrastructure Maintenance, Rehabilitation and Renewal programs.
p) Operational Plan currency, content, and updates.
q) Best Management Practices - This will include anything published by the Ministry and available on www.ontario.ca/drinkingwater
r) Staff suggestions.
s) Continual improvements associated with the above items or related to the QMS or Operations.

20.4 Review Process

20.4.1 The Management Review will be a planned event.

20.4.2 A minimum of 2 hours shall be set aside by the participants to ensure a thorough review of the QMS is conducted.

20.4.3 At a minimum, each item noted in Section 20.3 will be reviewed by the QMS Representative with meeting attendees to identify, where and when improvements to the QMS and its procedures are required and any other updates to the County's QMS.

20.4.4 The management review group will review and consider applicable best management practices. This will include anything published by the Ministry and available on www.ontario.ca/drinkingwater.

20.4.5 The QMS Representative will document any requested changes to QMS processes, documentation, action items and recommendations identified during the review.

20.5 Review Output

20.5.1 Minutes of Management Review will be recorded and maintained by the QMS Representative. These minutes shall include the date and time of the review activity and the name of participants and attendees. The approved meeting

minutes will be provided to the Owners (Council).

20.5.2 At the conclusion of the meeting, action items identified and recorded during the Management Review will be added to the Management Review Action Item tracking spreadsheet by the QMS Representative.

20.5.3 All action items will identify an individual responsible (lead) and a timeline to implement/review/update the action item.

20.5.4 The QMS Representative is responsible for keeping the tracking sheet current.

20.5.5 Outstanding or recently completed Action Items will be reviewed at each DWQMS Monthly meeting.

Revision number	Revisions	Date of revision	Revision completed by:
1	Removed December from Section 20.1	09/23/2013	David Stevenson
2	Section 20.2 Updated General Manager of Public Works to General Manger of Operations.	01/11/2016	Dave Stevenson
3	Section 20.1.1 – Revised to note shall be conducted at least once every calendar year. Section 20.3.1. – Updated to conform to DWQMS 2.0.	04/18/2019	David Stevenson
4	Section 20.2.1 – Updated to add the General Manager of Operations an attender to the Management Review Meetings.	06/03/2019	David Stevenson
5	Section 20.2 – Director of Water revised to Director of Environmental Services	06/17/2020	D. Stevenson
6	Section 20.2 – Reformatted section noted that the Water Technologist chairs the meeting and the requirements for a quorum. Section 20.4 (1) – Updated minimum of 4 hours to 2 hours. Section 20.4 (2) – Updated to make reference Section 20.3 and that the QMS Rep will conduct review. Section 20.4 (3) – Updated to describe what the QMS Rep records. Section 20.5 – Section reordered. Section 20.5 (1) – Updated to note the systems for recording and tracking action items. Section 20.5 (1) – Changed timeline for submission of meeting minutes to Owner from next Council meeting will be submitted to Council.	11/30/2020	D Stevenson

7	Updated formatting.	01/24/2021	D. Stevenson
8	Section 20.2.2 – Updated titles and added Environmental Services Superintendent.	10/18/2022	D. Stevenson
9	20.2.1 and 20.2.2 – Removed reference to Water Technologist, replaced with QMS Representative. 20.4.4 – Added	11/10/2023	Environmental Services Technologist
10	30.3.1 – Added items j and q.	04/10/2024	Environmental Services Technologist
11	20.2.2, 20.2.3 Updated to reflect changes in positions	09/20/2024	Manager of Compliance and Quality
12	Reviewed and updated to new standard formatting. Update to 20.3.1 to include reviewing input for continual improvement. Removed requirement to review at monthly meetings as these items are not relevant to frontline staff who attend. Added clarification of review of best management practices to align with Element 21.	07/02/2025	Manager of Compliance and Quality
12.1	Added location of hard copies	12/19/2025	Environmental Services Technologist

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21 CONTINUAL IMPROVEMENT

21.1 Overview

21.1.1 The County of Brant will establish and maintain a Drinking Water Quality Management System that will be regularly reviewed and improved by Top Management and the Operating Authority of the County of Brant's municipal residential drinking water systems.

21.1.2 As required, the County of Brant will modify/update, adjust processes and procedures (while remaining compliant with Provincial legislation and regulations) to improve operations and customer satisfaction.

21.1.3 Continual Improvement will be tracked and kept current by the QMS Representative (or designate) on the tracking sheet located in DWQMS Element 21 electronic file. Continual Improvement will be provided to the Owners once every 12 months as part of the Management Review.

21.1.4 The Environmental Services Drinking Water staff will strive to continually improve the effectiveness of its Quality Management System by implementing and conforming to this procedure.

21.2 Best Management Practices

21.2.1 At least once every 36 months, as part of the Management Review, the management review group will review and consider applicable best management practices. This will include anything published by the Ministry and available on www.ontario.ca/drinkingwater.

Revision number	Revisions	Date of revision	Revision completed by:
1	The entire element has been revised to meet the requirements of DWQMS 2.0.	04/18/2019	David Stevenson
2	Revised Water Division (staff) to Environmental Services (Drinking Water staff)	06/17/2020	D. Stevenson
3	Section 21 updated to identify the continual improvement tracking sheet.	11/30/2020	D. Stevenson

4	Element reformatted. 21.3.1 (b) and 21.4.1 (b) meeting attendees were updated.	01/24/2022	D. Stevenson
5	21.3.1 (b) and 21.4.1 (b) – Environmental Services Superintendent was added.	09/22/2022	D. Stevenson
6	Reviewed and updated to new standard formatting. Sections 21.3 and 21.4 for corrective and preventative actions have been moved to Element 19.	07/16/2025	Manager of Compliance and Quality
6.1	Added location of controlled copies	12/19/2025	Environmental Services Technologist

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