The Municipality of Port Hope

QMS Operational Plan
146 – 401

Port Hope Drinking Water System

in compliance with

Drinking Water Quality Management Standard
Version 2.0 – February 2017

Disclaimer Statement

This QMS Operational Plan is designed for the exclusive use of the Municipality of Port Hope. As stated in Section 17 of the *Safe Drinking Water Act*, 2002, “all operational plans for a drinking water system remain the property of the owner of the system, irrespective of who prepares or revises the plans, 2002, c. 32, s. 17 (1).” Therefore, this QMS Operational Plan is the property of the Municipality of Port Hope.

The QMS Operational Plan has been developed with the Municipality’s operating practices in mind and utilizing the Municipality’s personnel to implement it. Any use which a third party makes of this QMS Operational Plan, or any part thereof, is the responsibility of such third party. The Municipality of Port Hope accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this QMS Operational Plan or any part thereof.

Any documents developed and owned by the Municipality, which are referred to in the QMS Operational Plan, including but not limited to the System Level Documents, the Standard Operating Procedures, the Municipality of Port Hope Water System Emergency Response Plan, the risk assessment outcomes, and other policies, protocols and records, remain the property of the Municipality.

List of all documents that are part of the Operational Plan

SLD 05A - Control of Documents Rev.14.3_2021.08.11

SLD 05B - Control of Records Rev.10.3_2021.06.01

SLD 07 - Risk Assessment and Risk Assessment Outcomes Rev.8_2020.10.19

SLD 09 - Organizational Structure Roles and Responsibilities Rev.12_2020.12.10

SLD 10 - Competencies Rev.12_2020.10.14

SLD 11 - Personnel Coverage Rev.8.2_2021.06.03

SLD 13 - Essential Supplies and Services Rev.6.6_2021.06.01

SLD 14 - Infrastructure Management Rev.12.3_2021.08.11

SLD 16 -Sampling and Monitoring Rev.9.2_2021.05.28

SLD 17 - Instrument Calibration Maintenance Rev. 6.4_2021.04.14

SLD 18 - Emergency Preparedness Rev.7.2_2021.08.11

SLD 19 - Internal Auditing - Rev.6.4_2021.05.28

SLD 20 - Management Review Rev.4.1_2020.10.13

SLD 21 - Continual Improvement Rev.6.3_2021.05.28

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Revision History

Revision	Description of Change	Author	Effective Date (mm/dd/yy)
0	Initial Release	Rick Trumper	08/24/09
1	Revision of Element 4 - Update of Section 4-1 Activity Description of Element 4 QMS Rep. to reflect the appointment of the Environmental Compliance Technician as QMS Representative. (pg. 4-1)Revisions of Element 6 - Update of the Municipality of Port Hope water treatment and distribution system description (pg.6-1 to 6-2). Update of the Process Flow Chart – Port Hope Drinking Water System (pg.6-3). Revision of Table of Contents (pg. ii to v)	Beata Odziemkowska	01/25/10
2	Revision of Disclaimer Statement (pg. i) - updated with correct title of Water System ERP. Revision to Element 6 – Update of Section 6-2, subsections 6.2.2, 6.2.3 and 6.2.5. Revision of Element 12 – Update to Section 12-2 to reflect methods of internal communication and QMS Policy public communication. Revision of Element 18 – Updated with correct title of the Water System ERP document	Beata Odziemkowska	03/12/10
3	Revision to Element 6 – Update of Section 6-2 and subsection 6.2.5 – reservoir capacity corrected	Beata Odziemkowska	07/18/11
4	Operational Plan number 146 – 401 added throughout the document	Beata Odziemkowska	06/04/12
5	Section 6 – updated Zebra mussels temperature; Section 12 – updated to reflect current communication protocol;	Beata Odziemkowska	12/04/13
6	Full review of entire OP for content - new font and logo used; El. 20 – Added CAO to the attendees list;	Beata Odziemkowska	09/24/14
7	Full review of entire OP for content – replaced CAO with Executive Director where applicable; El.6 – updated Process Flow Chart; updated Table 6-1;	Beata Odziemkowska	08/05/15
8	Removed the Executive Director position throughout the document;	Beata Odziemkowska	11/04/15
8.1	Full review – minor changes: updated municipal logo; added “QMS” to “Operational Plan” throughout;	Beata Odziemkowska	08/18/16
8.2	Full review – El.3 enhanced with re-endorsement requirement when Council/Top Management change;El.4-changed QMS Rep duties to Water/Wastewater Compliance Technician; El.20 –revised Objectives and Scope section;	Beata Odziemkowska	08/08/17

8.3	Full review – El.18, 19, 20 revised with minor changes	Beata Odziemkowska	07/16/18
9.0	El.3 – re-endorsed statement of commitment included;	Beata Odziemkowska	09/05/18
10.0	Full Review – Change to reflect DWQMS Version 2.0 and other wording changes – MOE definition; Remove MOECC and change to MOE; E1 Add definitions and Acronyms pertinent to body of OP; E4 Change W/WW Compliance Technician to Coordinator; E6 Update RW quality parameters from 2009-2013 to 2014-2018, add Schedule C Subject System Description Form as per Director's Directions for Ops; E7, E18, E19, E20 Change yearly or annually to once per calendar year; E12 Add OP found at principal office (Town Hall) and one other 'publicly accessible' location (website) as per Director's Directions for Ops; E19 Change that the entire QMS (all elements), if not completed once per Calendar year, will be audited within 36 months of the issue date of current accreditation certificate; E21 Change wording to reflect QMS V2 which includes where actions can arise from.	Christine Smith	16-NOV-2018
10.1	Commitment and Endorsement – Re-Endorsement (April 16, 2019) by Council following Statutory Standard of Care Training, April 2, 2019. Received signed Resolution on May 1, 2019.	Christine Smith	01-MAY-2019
10.2	Revised DWS Process Flow Diagram on Pg. 6-5 to include new coagulant addition injection point as per Form 2. Did not include in DWS description under Chemical Addition, as it is a trial at the moment. Full review – Updated Table 6-1 Selected Raw Water Parameters to include 2019 data.	Christine Smith	14-JAN-2020
10.3	Section 4, include alternate QMS Rep if appointed can not perform, add in promote awareness via email and video meeting as well; Section 6.2.3 DWS-remove wording (secondary disinfection) as it is not considered this; Section 7-RA-denote a "full" risk assessment will be conducted every 36 months, not the risk assessment process; Section 14-Infrastructure Review-include communicated through annual budget process as well; Section 18-EM-actual emergencies discussed through emergency training and risk assessment review as well, remove reviewing Emergency Contact List once per calendar year as this is done more frequently, on a regular basis.	Christine Smith	07.08.2020
10.4	Section 6.2.1-Revised intake extension to match DWWP (738m)	Christine Smith	2020.10.13
10.5	Section 4-2, 11-2, and 20-2 – revise Water Operations Manager to read Manager of Water Operations as job title (Manager, Water Operations) has changed; Section 12 – as per OFI recommendation from external audit May 17, 2021, include verbiage regarding two-way communication between water division staff and - internal staff, providers of essential supplies and services and the public. Also revise wording in regard to essential supplies and	Christine Smith	2021.05.28

	services to make clear that the supplies and services are essential, not the providers; Section 6 - addition of wording so sentences read better; Section 17-2 – Remove “how” equipment is uniquely identified; Section 6.2.2, 6.2.3, 6.2.4 – revised some wording to make clearer or correct information.		
11.0	First Page – Add list of QMS documents that are part of the OP, but not included in it, and include revision number and date, as per newly updated Director’s Direction; Replace Schedule C form in section 6-3 with new one from MOE’s May 2021 Directors Direction document.	Christine Smith	2021.08.11

1. Quality Management System

1-1 Objectives and Scope

The objectives of the Municipality of Port Hope's Quality Management System (QMS) are:

- Ensure the effective management and operation of the water system;
- Understand and control the risks associated with activities and processes related to the water system; and
- Achieve continuous improvement of the QMS and the water system performance.

The QMS Operational Plan applies to all activities, processes, and practices related to the provision of safe drinking water by the Municipality of Port Hope.

1-2 Definitions and Acronyms

Calendar Year is a period of one year beginning and ending with the dates conventionally accepted as marking the beginning and end of a year (January 1st to December 31st).

Operating Authority means, in respect of a Subject System, the person or entity that is given responsibilities by the Owner for the operation, management, maintenance or alteration of the Subject System.

Top Management is a person, persons or a group of people at the highest management level within an Operating Authority that makes decisions respecting the QMS and recommendations to the Owner respecting the Subject System(s).

MOE is the Ministry of the Environment, Conservation and Parks. This acronym will be used in all documentation related to the Port Hope Drinking Water Quality Management System.

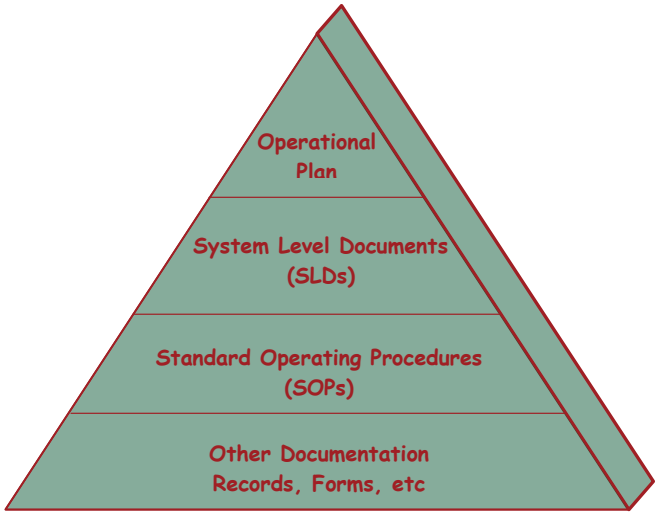
1-3 Activity Description

The QMS Operational Plan defines and documents the Quality Management System (QMS) for the Port Hope Drinking Water System which is owned and operated by the Municipality of Port Hope. It sets out the policies and procedures with respect to quality management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard (DWQMS).

The numbering of the sections of the QMS Operational Plan directly corresponds to the numbering of the elements of the DWQMS.

Figure 1 below illustrates the documentation structure of the Municipality's QMS. This "Documentation Pyramid" is based on four levels. It is important to note that not all 21 elements of the DWQMS require four levels of documentation (i.e. all information related to some DWQMS elements might be fully contained within the first or second levels of documentation). The four documentation levels are explained below.

Figure 1 – DWQMS Documentation Pyramid



1.3.1 QMS Operational Plan

The QMS Operational Plan presents an overview of the QMS and makes reference to all applicable System Level Documents (SLDs), Standard Operating Procedures (SOPs), reference documents, records, etc, as they relate to the 21 elements of the DWQMS. This document contains:

- Statement about the Municipality's commitment to quality;
- The Quality Management System Policy;
- Information about responsibilities of personnel for quality related processes;
- References to other quality documents not contained in the QMS Operational Plan; and
- High-level information about key areas of the quality system and the overall operation of the Municipality's drinking water system.

1.3.2 System Level Documents

System Level Documents (SLDs) as indicated in Figure 1, describe who is responsible for completing the described procedure, when is the procedure applicable, what documentation is needed, etc. SLDs may also refer to other procedures that contain more specific information.

1.3.3 Standard Operating Procedures

Standard Operating Procedures (SOPs) detail how an activity is carried out, specifying the tools and materials (if any), locations, specific steps, etc.

1.3.4 Other Documentation

This documentation level includes all records and documentation required to demonstrate compliance of the drinking water QMS and to track performance. These records document the results of activities carried out following SLDs and SOPs. Records include work orders, calibration records, water quality test results, etc.

1-4 Associated System Level Documents

Not Applicable

1-5 References

Drinking Water Quality Management Standard – Element 1

2. Quality Management System Policy

2-1 Objectives and Scope

The Quality Management System Policy (QMS Policy) establishes the principles and commitments of the Municipality of Port Hope with regards to their Quality Management System (QMS), as related to the drinking water system.

The QMS Policy is the foundation of the QMS and it relates to all activities, processes, and practices involved in the provision of safe drinking water by the Municipality of Port Hope.

For information regarding the approach by which the QMS Policy will be communicated to all stakeholders, refer to Section 12 of the QMS Operational Plan, Communications.

2-2 Activity Description

2-3 Associated System Level Documents

Not Applicable

2-4 References

Drinking Water Quality Management Standard – Element 2

3. Commitment & Endorsement

3-1 Objectives and Scope

This statement establishes the commitment by Top Management of the Operating Authority and the Owner to the implementation and maintenance of an effective Quality Management System (QMS), as related to the drinking water system. It refers to the QMS and all activities associated with its implementation and maintenance as documented in the QMS Operational Plan and related documentation.

3-2 Activity Description

The Municipality of Port Hope is committed to ensuring that the QMS is developed and implemented for the Municipality's drinking water system in accordance with the requirements of the Drinking Water Quality Management Standard. The Owner and Top Management are committed to ensuring that the established QMS complies with all applicable legislation and regulations and that all resources required for the maintenance and continual improvement of the system are identified and provided. They are also committed to ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements governing the provision of safe drinking water. To promote awareness and understanding of the QMS, the Municipality of Port Hope's QMS will be communicated to relevant parties according to the procedures outlined in Section 12 of the QMS Operational Plan, Communications.

This QMS Operational Plan is endorsed and supported by the Owners and Top Management of the Municipality of Port Hope Drinking Water System. Re-endorsement of the QMS Operational Plan shall be obtained from the Owner and/or Top Management when there is a change in Mayor/Council/Top Management personnel or where is a major change in the QMS Operational Plan.

April 16, 2019
Mayor – Robert J. Sanderson Date
"Owner Representative"

April 16, 2019
Director of Corporate Services – Brian Gilmer Date
"Top Management"

April 16, 2019
Director of Works & Engineering – Jeanette Davidson Date
"Top Management"

3-3 Associated System Level Documents

Not Applicable

3-4 References

Drinking Water Quality Management Standard – Element 3

4. Quality Management System Representative

4-1 Objectives and Scope

The QMS Representative is responsible for the upkeep of the QMS as well as ensuring that staff are aware of all applicable legislative and regulatory requirements relevant to their duties regarding the provision of safe drinking water. The description below details the QMS Representative's roles and responsibilities, as it pertains to the QMS.

4-2 Activity Description

The Water/Wastewater Compliance Coordinator has been appointed the QMS Representative by the Top Management. The Manager of Water Operations or designate will fulfil such duties, in the event that the Water/Wastewater Compliance Coordinator is unable to perform them.

The QMS Representative is authorized and responsible for managing all processes and procedures associated with the management of the QMS. The QMS Representative will report to Top Management on the performance and effectiveness of the QMS and continual improvement activities. Clear communication channels between Top Management and the QMS Representative are required to deal with issues as they arise.

The QMS Representative responsibility is to ensure that current versions of documents related to the QMS are in use. The procedures outlined in Section 5 of the Operational Plan, Document and Records Control will be used to ensure that all personnel have access to the most current versions of all required procedures and documents.

It is the responsibility of the QMS Representative to promote awareness of the QMS to all Port Hope Drinking Water System personnel. The QMS policies and procedures will be presented to personnel during internal training sessions, internal audits, management review meetings or electronically via email or video meetings All presentations to promote awareness will be initiated/coordinated by the QMS Representative.

A detailed description of the roles and responsibilities of the QMS Representative is included in Section 9, Organizational Structures, Roles, Responsibilities and Authorities.

4-3 Associated System Level Documents

Not Applicable

4-4 References

Drinking Water Quality Management Standard – Element 4

5. Document and Records Control

5-1 Objectives and Scope

This Section outlines the procedures followed to ensure that documents and records pertaining to the provision of safe drinking water are maintained and controlled.

5-2 Activity Description

Procedures for documents and records control have been established to describe the methods and activities for ensuring that documents and records are properly managed. These are included in System Level Documents *SLD 05A – Control of Documents* and *SLD 05B – Control of Records*.

5-3 Associated System Level Documents

SLD 05A – Control of Documents

SLD 05B – Control of Records

5-4 References

Drinking Water Quality Management Standard – Element 5

6. Drinking Water System

6-1 Objectives and Scope

This Section presents an overview of the main components of the Port Hope Drinking Water System.

6-2 Activity Description

The Port Hope Drinking Water System is owned and operated by the Municipality of Port Hope. The system supplies water to the community of Port Hope for combined residential, commercial, industrial, and institutional use. The system is divided into two zones and its water infrastructure consists of a Class 2 Water Treatment Plant and Class 3 Water Distribution System.

6.2.1 Water Source

The Port Hope Water Treatment Plant obtains its raw water from Lake Ontario. Lake Ontario is considered to be a source of good quality surface water with minor seasonal variations in turbidity levels. Spring runoff discharged from the Ganaraska River into the lake and turbulence caused by storm events in the spring and fall can impact the raw water quality on an intermittent basis.

A 750 mm diameter raw water intake pipe extends 738 metres into the lake and terminates at a concrete intake crib at a depth of approximately 9 metres. A Zebra Mussel control system is installed at the entrance of the intake.

The general characteristics of the raw water are described in the *Port Hope Water Treatment Plant Operations Manual* and listed below in Table 6-1.

Table 6-1: Selected Raw Water Quality Parameters

Parameter	2014 - 2019		
	Minimum	Maximum	Average
Alkalinity (as $CaCO_3$)	86	95	91
Aluminum	0.008	0.158	0.039
Chloride	23	28	25
Colour (TCU)	<3 (MDL)	4	3.5
Copper	0.002	0.022	0.006
Dissolved Organic Carbon	2.0	2.7	2.2
Ethylbenzene	<0.00033 (MDL)	<0.00033 (MDL)	<0.00033 (MDL)
Hardness (as $CaCO_3$)	111	132	121
Iron	<0.007 (MDL)	0.091	0.040
Manganese	0.00058	0.012	0.003
Methane (L/m3)	<0.36 (MDL)	<0.36 (MDL)*	<0.36 (MDL)*
Odour	Occasional odour problems from Geosmin and MIB during summer		

Organic Nitrogen	0.09	0.24	0.15
pH (pH units)	5.60	8.27	8.41
Sodium	12.4	14.7	13.6
Sulphate	21	24	23
Sulphide	<0.006 (MDL)	<0.006 (MDL)	<0.006 (MDL)
Taste	Occasional taste problems from Geosmin and MIB during summer		
Toluene	<0.00036 (MDL)	<0.00036 (MDL)	<0.00036 (MDL)
Total Dissolved Solids	194	209	205
Xylenes	<0.00043 (MDL)	<0.00043 (MDL)	<0.00043 (MDL)
Zinc	0.004	0.008	0.005

All results are expressed in mg/L, unless specified otherwise

MDL – Method Detection Limit (< indicates that concentration was less than MDL value indicated)

*MDL changed in 2016

The following may pose operational challenges and threats:

- Zebra Mussel infestation - Zebra Mussels are prevalent throughout the rivers and lakes of southern Ontario. If not controlled, Zebra Mussels multiply and grow rapidly. They have been known to block intakes, intake pipes and screens within one season. Zebra Mussels only become active and begin feeding and breeding when the water temperature approaches 8°C to 12°C (normally June to September – depending on a year);
- Stormy weather leading to raw water turbidity above 5 NTU;
- Presence of algae in raw water leading to elevated turbidity; and
- Contamination from sewage.

There are no critical upstream or downstream processes that are relied upon to ensure the provision of safe drinking water.

A more detailed description of the water treatment and distribution system is included in the *Port Hope Water Treatment Plant Operations Manual*.

6.2.2 Treatment

The Port Hope Water Treatment Plant (WTP) has a capacity of processing 20,000 m^3/day. The low lift pumping station pumps raw water from Lake Ontario via a 750 mm diameter intake pipe to two screening systems (stationary and travelling), following which the water is pumped via three (3) low lift pumps through two (2) micro-strainers. The low lift pumps are rated at 15,000 m^3/d; with total discharge head (TDH) of 22.5 m. The WTP has provisions to add chlorine at the intake to minimize operational problems associated with potential biological growth on the filters.

The WTP processes consist of the membrane filtration and disinfection using chlorine gas. The plant utilizes the SUEZ/Zenon's ZeeWeed ZW1000 Ultrafiltration Membrane technology, which eliminates the need for traditional coagulation, flocculation and conventional filtration processes. The raw water is filtered using ultrafiltration membrane modules. This process step removes bacteria, pathogens including cryptosporidium and Giardia, and some viruses . There are four membrane ultrafiltration tanks; each contains two membrane cassettes, with additional capacity of two more cassettes to be added to each tank in the future. The membrane surfaces are cleaned by back-pulsing intermittently throughout the filtering process in order to remove any accumulated particulates. Additional cleaning of the membranes includes daily maintenance cleans and also more rigorous recovery cleans every 4 weeks. Chemicals Addition

Primary disinfection is achieved by the addition of chlorine gas to the filtered water, which is referred to as permeate. A dual cell contact tank provides sufficient contact time (CT) for the disinfection. The CT value required for primary disinfection is provided by two serpentine baffled chlorine contact chambers. Treated water then flows into two on-site storage reservoirs prior to being pumped by the high lift pumps (HLP) to the distribution system. The high lift pumping facility consists of five (5) vertical turbine high lift pumps, HLP 1 is rated at 5,500 m^3/d at 80m TDH, HLPs 2 and 4 are rated at 10,000 m^3/d at a TDH of 80 m, HLPs 3 and 5 are rated at 15,000 m^3/d at a TDH of 80m, which feeds the distribution system. Additional chlorine is added to the treated water prior to leaving the plant, to achieve sufficient chlorine residual throughout the distribution system.

Process wastewater from various plant processes is discharged into a common backwash water pipe, which conveys the wastewater into two wastewater equalization tanks, and then the wastewater is pumped to the wastewater clarifiers for further treatment. At this point of treatment, a polymer solution can be added if needed to assist in the floc formation. As the wastewater is being transferred into the clarifiers, the clarification/separation process takes place, whereby the sludge settles to the bottom and the clarified fraction of the wastewater (supernatant) is allowed to overflow the clarifier via a weir arrangement. The settled sludge is pumped to the sanitary sewage pumping station and the clarified supernatant is discharged into Lake Ontario. Prior to a discharge to Lake Ontario, sodium bisulphite is added to the supernatant to neutralize any chlorine present.

6.2.3 Monitoring

The treated, raw and permeate water flow rates throughout the plant are monitored by magnetic flow meters while online analyzers continuously monitor chlorine residuals, turbidity and particle size/counts; all online analyzers are programmed with predetermined alarm set-points. The drinking water system is controlled and continuously monitored at all times. Data from the meters and monitors is continuously uploaded to a Supervisory Control And Data Acquisition (SCADA) system, which allows operators to monitor and control the treatment processes within the plant and also the distribution system. Computers contain specialized software and various types of measuring and monitoring equipment to provide a constant status of the drinking water

system to the certified operators who maintain it. The SCADA system is programmed to automatically respond to process adjustments and alarms. Coverage is assured through a telecommunications system and auto-dialer that notifies the on-call Operator of any condition within the drinking water system that requires attention.

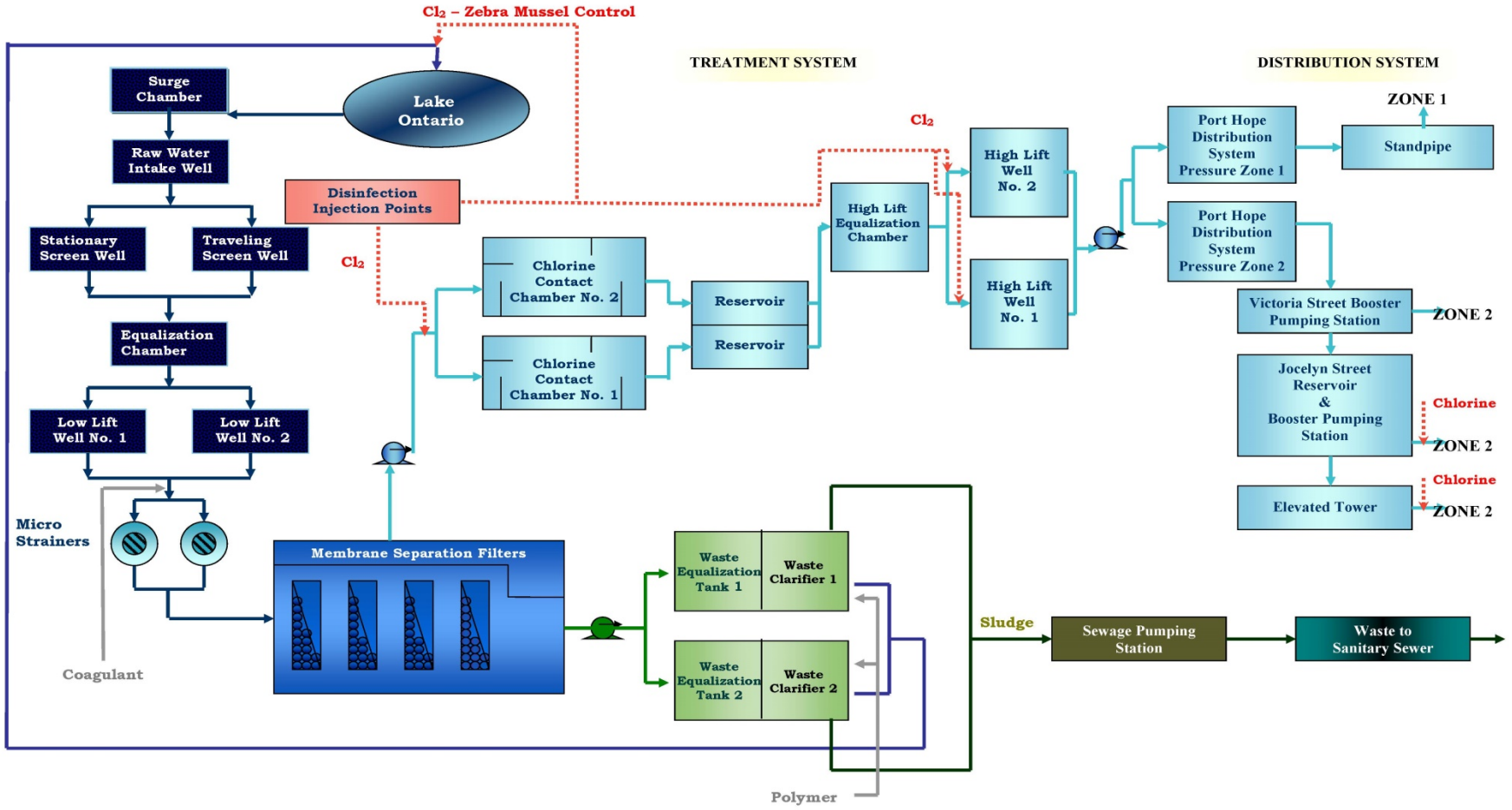
6.2.4 Distribution System

The distribution system is divided into two (2) zones: Zone 1 and Zone 2. Zone 1 is located in the eastern portion (lower elevation) of the community and includes a 1,082 m^3 Standpipe. The Dorset Street Standpipe provides storage and helps regulate the pressure in Zone 1.

Zone 2 encompasses the elevated lands to the west which includes: a 2,270 m^3 reservoir, a 3000 m^3 elevated water tank, and two (2) booster pumping stations. These facilities help maintain system pressures to ensure that it remains within the MOE guidelines, while also providing storage. The Victoria Street Booster Pumping Station and the Jocelyn Street Booster Pumping Station/ Reservoir maintain system pressure and flow rates in the Zone 2 area, while the elevated tank is filling. On-line chlorine analyzers continuously monitor chlorine residuals at the Fox Rd. elevated water tank and the Jocelyn Street Reservoir, where additional chlorine is added when required.

The above description is presented graphically in the following Process Flow Chart below.

Process Flow Chart – Port Hope Drinking Water System



6-3 Schedule C – Director's Directions for Operational Plans (Subject System Description Form)

The Director's Directions: Minimum Requirements for Operational Plans provide instructions respecting the preparation and content of operational plans prepared by owners of municipal residential drinking water systems pursuant to subsection 16(2) of *the Safe Drinking Water Act, 2002*, and where otherwise required under the Act. Paragraph 3.4.1 requires that all operational plans shall contain a completed copy of the Schedule C - Subject System Description Form.

Schedule "C"

Subject System Description Form				
Municipal Residential Drinking Water System				
Owner of Municipal Residential Drinking Water System:[1]	The Corporation of the Municipality of Port Hope			
Subject Systems				
Name of Drinking Water System[2]	**Licence Number**	**Name of Operational Subsystems (if Applicable) [3]**	**Name of Operating Authority [4]**	**DWS Number(s) [5]**
Port Hope DWS	146 – 101	Treatment + Distribution	MPH	260058006
Add attachments if there are additional Drinking Water Systems or Operational Subsystems				
Contact Information for Questions Regarding the Operational Plan				
Name	**Title**	**Phone No(s).**	**Email Address**	
Primary: Christine Smith	Water/Waste Water Compliance Coordinator – QMS Rep	905-885-2209 x4214	csmith@porthope.ca	
Alternate: Mike Stewart	Manager, Water Operations	905-885-2209 x4212	mstewart@porthope.ca	

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6-4 Associated System Level Documents

Not Applicable

6-5 References

Drinking Water Quality Management Standard – Element 6

Port Hope Water Treatment Plant Operations Manual

Director's Directions: Minimum Requirements for Operational Plans

Schedule C – Subject System Description Form

7. Risk Assessment

7-1 Objectives and Scope

This Section refers to the methodology and approach taken by the Municipality of Port Hope to identify, assess, and where possible, mitigate and/or eliminate potential risks within the drinking water system.

The risk assessment applies to the entire drinking water system within the Municipality of Port Hope. The focus of the assessment is on risks affecting the water quality and water quantity (capacity).

7-2 Activity Description

A risk assessment process has been established to collectively identify, assess, rank, and prioritize potential drinking water related hazards and associated risks. A full risk assessment is conducted at least once every thirty-six (36) months. A review of the validity of the risk assessment information is conducted at least once per calendar year.

The methodology and approach taken to conduct the risk assessment are described in detail in *SLD 07 – Risk Assessment and Risk Assessment Outcomes*.

7-3 Associated System Level Documents

SLD 07 – Risk Assessment and Risk Assessment Outcomes

7-4 References

Drinking Water Quality Management Standard – Element 7

8. Risk Assessment Outcomes

8-1 Objectives and Scope

This Section describes the approach taken by the Municipality of Port Hope to document the outcomes of the risk assessment activities undertaken according to the risk assessment procedures outlined in Section 7, Risk Assessment.

8-2 Activity Description

The results of the risk assessments are documented in the *Port Hope Water Treatment Plant Risk Assessment Table*, the *Port Hope Water Distribution System Risk Assessment Table*, and the *Port Hope Critical Control Points Table*. These tables are maintained in accordance with the guidelines identified in Section 5, Document and Records Control. The risk assessment tables include all identified hazards and hazardous events, their assessed risk values, and existing control measures to prevent or mitigate them.

8-3 Associated System Level Documents

SLD 07 – Risk Assessment and Risk Assessment Outcomes

8-4 References

Drinking Water Quality Management Standard – Element 8

Port Hope Water Treatment Plant Risk Assessment Table

Port Hope Water Distribution System Risk Assessment Table

Port Hope Critical Control Points Table

9. Organizational Structure, Roles, Responsibilities and Authorities

9-1 Objectives and Scope

This section outlines the organizational structure, as well as the roles, responsibilities, and authorities of personnel that relate to the operation and performance of the Municipality's QMS as related to the drinking water system. This Section and all associated procedures apply to all personnel of the Municipality involved in the provision of safe drinking water.

9-2 Activity Description

The structure of the Operating Authority and roles and responsibilities of personnel, as they relate to provision of safe drinking water, are included in *SLD 09 – Organizational Structure, Roles & Responsibilities*.

9-3 Associated System Level Documents

SLD 09 – Organizational Structure, Roles & Responsibilities

9-4 References

Drinking Water Quality Management Standard – Element 9

10. Competencies

10-1 Objectives and Scope

This Section and associated procedures identify how the Municipality of Port Hope ensures that personnel responsible for the provision of safe drinking water remain competent.

10-2 Activity Description

SLD 10 – Competencies includes the procedure to ensure that staff, who are involved in the provision of safe drinking water, meet and maintain their competency requirements.

10-3 Associated System Level Documents

SLD 10 – Competencies

10-4 References

Drinking Water Quality Management Standard – Element 10

11. Personnel Coverage

11-1 Objectives and Scope

This Section relates to the procedures followed to ensure that competent individuals are available to fulfill the responsibilities needed for the ongoing operation of the drinking water system, and the maintenance of the QMS, as related to the drinking water system.

11-2 Activity Description

The Director of Works and Engineering with assistance from the Manager of Water Operations will ensure that competent personnel are available at all times to fulfill the required duties for the provision of adequate and safe drinking water within the Municipality. This includes ensuring that positions requiring back-up personnel have an appropriate number of qualified and competent replacements, and that employees have access to all the tools and resources needed to perform their roles. The procedures are detailed in *SLD 11 – Personnel Coverage*.

11-3 Associated System Level Documents

SLD 11 – Personnel Coverage

11-4 References

Drinking Water Quality Management Standard – Element 11

12. Communications

12-1 Objectives and Scope

This Section describes the process of communicating information on the Municipality's drinking water QMS to appropriate internal and external parties.

12-2 Activity Description

12.2.1 Internal Communication

The QMS Operational Plan, including the QMS Policy, is made available to all Municipal personnel involved in the provision of safe drinking water including new, part-time, temporary, and student employees. A hardcopy of the QMS Operational Plan is available from the QMS Representative. An electronic copy of the QMS Operational Plan is available on the internal network.

For new hires, QMS awareness training will be provided by the QMS Representative. Existing employees are notified of any changes to the QMS using one of the following methods as appropriate: information sessions, meetings, circulation of documents, e-mails, and postings on the internal network. Internal training sessions are also conducted to review QMS documentation to ensure that personnel understand the content. Attendance is documented with sign-in sheets.

Communication between the Operating Authority personnel and Top Management is managed by the QMS Representative in regard to QMS related issues.

Communication between Top Management and the Owner occurs as part of regular Council meetings. Information documented as a result of the Management Review meetings (see Section 20, Management Review) is forwarded by Top Management to the Owner in the form of a formal report that includes details such as updates on QMS progress and effectiveness. The QMS Representative is responsible for ensuring that the Owner has access to a current copy of the QMS Operational Plan.

Any suggested revisions or recommendations to improve the Quality Management System are submitted by the Owner, Top Management and Operating Authority personnel through in-person conversation, written correspondence, e-mail, phone calls, etc., and will be reviewed.

12.2.2 External Communication

Providers of Essential Supplies and Services

The QMS Policy and the quality requirements for essential supplies and services are communicated to the providers of the essential supplies and services during the procurement process.

The QMS Policy for the Municipality's drinking water system will be forwarded to the providers of essential supplies and services as appropriate by email, fax or hard copy.

Communication from providers of essential supplies and services to Operating Authority personnel can be through in-person conversation, written correspondence, e-mail, phone calls, etc., or through the procurement process. Water Operations staff contact providers directly if problems occur with the essential supplies or services delivered.

Public

The QMS Policy, Statement of Commitment and Endorsement, and the QMS Operational Plan are available for viewing by the public at the principal office of the Municipality (Town Hall) and via the publicly accessible Municipal website, or by other means upon request. The QMS Policy is posted at the municipal offices and other municipal facilities.

Public water-related inquires/queries are communicated via in-person conversation, phone calls, e-mails, letters, etc. Information is then forwarded to appropriate personnel to manage/investigate, if required.

Additional special communication procedures are detailed in other QMS Operational Plan sections if applicable.

12-3 Associated System Level Documents

Not Applicable

12-4 References

Drinking Water Quality Management Standard – Element 12

13. Essential Supplies & Services

13-1 Objectives and Scope

This Section and associated procedures apply to all supplies and services considered essential to the supply of safe drinking water for the Municipality of Port Hope.

13-2 Activity Description

SLD 13-Essential Supplies and Services describes and references methods for:

- Procuring essential supplies and services;
- Establishing and communicating quality expectations; and
- Ensuring quality expectations are met.

For all supplies and services related to the supply of safe drinking water, staff shall attempt, where possible, to multi-source and have an established, pre-approved supplier on-call in case of emergency.

More detailed information is included in *SLD 13 – Essential Supplies and Services*.

13-3 Associated System Level Documents

SLD 13 – Essential Supplies and Services

13-4 References

Drinking Water Quality Management Standard – Element 13

14. Review and Provision of Infrastructure

14-1 Objectives and Scope

This Section relates to the procedure for reviewing the adequacy of the existing and planned drinking water infrastructure needed to ensure an adequate supply of safe drinking water.

14-2 Activity Description

The review of the adequacy of existing drinking water system infrastructure to supply safe drinking water for the Municipality of Port Hope is conducted following the procedures outlined in *SLD 14 – Infrastructure Management*. The results and corresponding recommendations of the infrastructure review are communicated to Top Management and the Owner through the Management Review (see Section 20, Management Review) and annual budget preparation and approval processes.

14-3 Associated System Level Documents

SLD 14 – Infrastructure Management

14-4 References

Drinking Water Quality Management Standard – Element 14

15. Infrastructure Maintenance, Rehabilitation and Renewal

15-1 Objectives and Scope

This Section identifies the maintenance, rehabilitation, and renewal programs that the Municipality of Port Hope has in place for its drinking water system infrastructure.

15-2 Activity Description

The Municipality of Port Hope's infrastructure management program outlines scheduled activities to ensure all essential drinking water system infrastructure is maintained in good working order. *SLD 14 – Infrastructure Management* details the processes and activities conducted to ensure the adequacy of the infrastructure, including the maintenance, rehabilitation, and renewal/replacement programs that are in place. The summaries of these programs are communicated to Top Management and the Owner through the Management Review process (see Section 20, Management Review).

15-3 Associated System Level Documents

SLD 14 – Infrastructure Management

15-4 References

Drinking Water Quality Management Standard – Element 15

16. Sampling, Testing & Monitoring

16-1 Objectives and Scope

This Section refers to the sampling, testing, and monitoring program for drinking water quality that is currently in place for the Municipality of Port Hope's drinking water system. This Section and associated procedures apply to all sampling and testing conducted either internally or by a third-party.

16-2 Activity Description

The Municipality of Port Hope is responsible for establishing and maintaining a regular sampling, testing, and monitoring program that, at a minimum, meets regulatory requirements. Sampling and monitoring activities carried out by the Municipality can be categorized as follows:

- Regulatory sampling, testing, and reporting; and
- Special testing.

The procedures followed for each of these categories are detailed in *SLD 16 – Sampling, Testing and Monitoring*.

Personnel will be made aware of the sampling, testing, and monitoring requirements using one of the following methods as appropriate: information sessions, meetings, circulation of documents, internal training sessions and e-mails. (see Section 12, Communications).

16-3 Associated System Level Documents

SLD 16 – Sampling, Testing and Monitoring

16-4 References

Drinking Water Quality Management Standard – Element 16

17. Calibration of Sampling, Testing and Monitoring Equipment

17-1 Objectives and Scope

This Section describes the calibration programs for all water sampling, monitoring and testing equipment and devices.

These procedures apply to all devices, tools or equipment used for the purposes of taking water samples and conducting water quality testing, and monitoring water treatment and distribution processes to ensure continuous provision of safe drinking water.

17-2 Activity Description

The following instruments, tools, devices and equipment are used for sampling and testing activities:

- Chlorine Residual Analyzers;
- Pressure Transmitters;
- Turbidimeters;
- Flow Meters; and
- pH Meters.

Each item is uniquely identified. The calibration procedure and frequency of calibration for each piece of equipment, device, instrument, or tool is outlined in *SLD 17 – Instrument Calibration*.

17-3 Associated System Level Documents

SLD 17 – Instrument Calibration

17-4 References

Drinking Water Quality Management Standard – Element 17

18. Emergency Preparedness and Response

18-1 Objectives and Scope

This Section describes the procedure used by all Municipality of Port Hope personnel involved in the provision of safe drinking water to identify emergency situations and prepare response plans to deal with these emergency situations.

18-2 Activity Description

As an outcome of the risk assessment process (see Section 7, Risk Assessment and Section 8, Risk Assessment Outcomes) is the identification of potential emergencies that could impact the supply of safe drinking water. *SLD 18 – Emergency Preparedness* includes the appropriate procedures for preparedness, response, and recovery in case of emergency.

Employee training on emergency response is conducted at least once per calendar year to ensure that established emergency procedures are well understood by those responsible for carrying out response activities. Through this training, the Municipality of Port Hope will ensure that all personnel involved in the provision of safe drinking water are aware of:

- Individual roles and responsibilities;
- All relevant procedures;
- Existing threats and hazards, and associated preventive actions; and
- Details and location of any emergency equipment required.

Training may be in the form of desktop exercises, conducting mock scenarios, and/or via incident debriefing sessions following larger scale emergency situations. In the event of an actual emergency, the results of the response will be reviewed during the training sessions, through the Risk Assessment Review process (see Section 7, Risk Assessment), and through the Management Review process (see Section 20, Management Review).

The Municipality of *Port Hope Water System Emergency Response Plan* contains a Master Contact List that includes an up-to-date list of emergency contacts. The list of emergency contacts has been developed to ensure that the appropriate individuals will be contacted in the event of an emergency and that the necessary actions are taken to respond to the situation. This list is reviewed on a regular basis to ensure that it remains current.

18-3 Associated System Level Documents

SLD 18 – Emergency Preparedness

18-4 References

Drinking Water Quality Management Standard – Element 18

The Municipality of Port Hope Water System Emergency Response Plan

19. Internal Audits

19-1 Objectives and Scope

This Section outlines the approach for conducting internal audits of the Municipality of Port Hope's drinking water QMS to ensure proper implementation and continual conformance to the requirements of the DWQMS.

19-2 Activity Description

The QMS Representative is responsible for the following:

- Ensuring that an internal audit is scheduled and conducted at least once per calendar year;
- Ensuring an internal audit team is trained, competent and readily available to conduct audits;
- Ensuring that Top Management is informed if additional internal auditing resources are required; and
- Overseeing that system non-conformances are addressed and resolved in a timely manner.

The QMS Representative will ensure that the entire QMS (21 Elements) is audited, if not once per calendar year, at least within thirty-six (36) months of the date of issuance of the current certificate of accreditation.

The procedure followed by the Municipality to conduct an Internal Audit is explained in *SLD 19 – Internal Auditing.*

19-3 Associated System Level Documents

SLD 19 – Internal Auditing

19-4 References

Drinking Water Quality Management Standard – Element 19

20. Management Review

20-1 Objectives and Scope

This Section documents the process utilized by Top Management to conduct the Management Review of the QMS as related to the drinking water system. This Section and associated procedures describes the Management Review process used to evaluate the continuing suitability, adequacy and effectiveness of the QMS.

20-2 Activity Description

At a minimum, one Management Review meeting will be conducted at least once per calendar year to provide Top Management of the Operating Authority with the information required to review and evaluate the continued suitability, adequacy, and effectiveness of its QMS.

The QMS Representative is responsible for scheduling and coordinating the effort to bring the management team together for Management Review and ensure all the documentation and records required for this meeting are available.

At a minimum, the Director of Works and Engineering, Manager of Water Operations and QMS Representative will attend the Management Review meeting.

All relevant personnel are made aware of the Management Review procedure using one or more of the following methods as appropriate: information sessions, meetings, circulation of documents, internal training sessions and e-mails. (see Section 12, Communications).

The procedure followed to conduct the Management Review is detailed in *SLD 20 – Management Review.*

20-3 Associated System Level Documents

SLD 20 – Management Review

20-4 References

Drinking Water Quality Management Standard – Element 20

21. Continual Improvement

21-1 Objectives and Scope

This Section outlines the processes by which continual improvements to the drinking water QMS are identified, developed, and implemented. The entire QMS, as related to the drinking water system is subject to the approaches and procedures identified in this section of the QMS Operational Plan.

21-2 Activity Description

The procedure for continual improvement is defined in *SLD 21 – Continual Improvement*. It identifies the approach taken to track and measure continual improvement by reviewing and considering applicable best management practices and how to define and implement corrective and preventive action items arising from any of the following:

- MOE inspection (opportunities for improvement and best practices);
- Internal and external audits;
- Management review;
- Risk assessment;
- Incident debriefing;
- End-user complaints;
- Annual Drinking Water Quality Report; and
- Operator or staff feedback.

The procedure also describes how an action item is initiated, assigned, documented, implemented, and validated.

21-3 Associated System Level Documents

SLD 21 – Continual Improvement

21-4 References

Not Applicable