

The Town of Cobalt

OPERATIONAL PLAN

for the


Cobalt Drinking Water System




This Operational Plan is designed for the exclusive use of the system(s) specified in this Operational Plan.

This Operational Plan has been developed with OCWA's operating practices in mind and utilizing OCWA personnel to implement it.

Any use which a third party makes of this Operational Plan, or any part thereof, or any reliance on or decisions made based on information within it, is the responsibility of such third parties. OCWA accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Operational Plan or any part thereof.

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	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-01 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 2</p>
QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS)		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document OCWA's Quality & Environmental Management System (QEMS). This Operational Plan defines and documents the QEMS for the Cobalt Drinking Water System operated by the Ontario Clean Water Agency (OCWA). It sets out OCWA's policies and procedures with respect to quality and environmental management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard (DWQMS).

2. Definitions

Drinking Water Quality Management Standard (DWQMS) – means the quality management standard approved by the Minister in accordance with section 21 of the SDWA.

Operational Plan – means the operational plan required by the Director's Direction.

Quality & Environmental Management System (QEMS) – a system to:

- a) Establish policy and objectives, and to achieve those objectives; and
- b) Direct and control an organization with regard to quality.

3. Procedure

3.1 The Cobalt Drinking Water System is owned by the Town of Cobalt. OCWA is the contracted Operating Authority for the Cobalt Drinking Water System, which includes the Cobalt Water Treatment Plant and the Cobalt Distribution System.


3.2 OCWA's Quality & Environmental Management System (QEMS) is structured and documented with the purpose of:

1. Establishing policy and objectives with respect to the effective management and operation of water/wastewater facilities;
2. Understanding and controlling the risks associated with the facility's activities and processes;
3. Achieving continual improvement of the QEMS and the facility's performance.

3.3 The Operational Plan for the facility listed above fulfils the requirements of the MECP's DWQMS. The 21 QEMS Procedures within this Operational Plan align with the 21 elements of the DWQMS.

4. Related Documents


All QEMS Procedures and Documents referenced in this Operational Plan
MECP's Drinking Water Quality Management Standard

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<p align="center">QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS)</p>		
Reviewed by: QEMS Representative		Approved by: SPC Manager

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued



 Ontario Clean Water Agency	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-02 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 2
QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS) POLICY		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document a QEMS Policy that provides the foundation for OCWA's Quality & Environmental Management System.

2. Definitions

Quality Management System Policy – means the policy described in Element 2 developed for the Subject System or Subject Systems

3. Procedure

- 3.1 The Ontario Clean Water Agency, its Board of Directors, Officers and entire staff are committed to the principles and objectives set out in our QEMS Policy.

OCWA's Policy is to:


- Deliver safe, reliable and cost-effective clean water services that protect public health and the environment.
- Comply with applicable legislation and regulations.
- Promote client, consumer and stakeholder confidence through service excellence, effective communications and reporting.
- Train staff on their QEMS responsibilities.
- Maintain and continually improve the QEMS.

Originally issued as Environmental Policy on June 8, 1995

Last revised, approved by OCWA's Board of Directors on April 6, 2016

(This policy is annually reviewed)

- 3.2 Our Board of Directors, Officers and entire staff will act to ensure the implementation of this Policy and will monitor progress of the Quality & Environmental Management System (QEMS).
- 3.3 OCWA's QEMS Policy is readily communicated and available to all OCWA personnel, the Owner and the public through OCWA's intranet and public websites. A hardcopy of the QEMS Policy is posted as specified in the OP-05 Document and Records Control procedure.
- 3.4 Essential suppliers and service providers are advised of OCWA's QEMS Policy as per the OP-13 Essential Supplies and Services procedure.

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QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS) POLICY		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

3.5 Corporate Compliance coordinates the annual review and approval of the QEMS Policy by the Board of Directors and communicates the approval to all OCWA employees via an electronic communication.


3.6 The current version of the policy indicates the date of the last revision and that the policy is annually reviewed. Electronic and hard-copy documents that include the QEMS Policy will only be required to be updated in years when the Policy has been revised. A complete review/revision history of the QEMS Policy (documenting the annual policy review and/or revision approval date) is maintained on OCWA's intranet.

4. Related Documents

Current QEMS Policy (Posted on OCWA's intranet and internet)
 QEMS Policy Revision History (Posted on OCWA's intranet)
 OP-05 Document and Records Control
 OP-13 Essential Supplies and Services

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued

 Ontario Clean Water Agency	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-03 Rev Date: 2022-03-17 Rev No: 0 Pages: 1 of 1
COMMITMENT AND ENDORSEMENT		
Reviewed by: QEMS Representative		Approved by: SPC Manager

1. Purpose

To document the endorsement of the Operational Plan for the Cobalt Drinking Water System by OCWA Top Management and the Town of Cobalt (Owner) and to set out when re-endorsement would be required.

2. Definitions

Top Management – a person, persons or a group of people at the highest management level within an Operating Authority that makes decisions respecting the QEMS and recommendations respecting the Subject System or Subject Systems

3. Procedure

3.1 The Operational Plan is provided to OCWA Top Management and to the Owner for endorsement. The signed written endorsement is presented in Appendix OP-03A. At a minimum, two members of Top Management must endorse the Operational Plan; however, the Operational Plan is made available to all members of Top Management in the specified document control location (refer to OP-05 Document and Records Control). Endorsement by OCWA's Top Management is represented by the Safety Process and Compliance Manager and the Regional Hub Manager.

3.2 Any major revision of the operational plan will be re-endorsed by Top Management. Major revisions include:

1. A revision to the QEMS Policy;
2. A change to both representatives of the facility's Top Management that endorsed the Operational Plan;
3. A modification to the drinking water system processes/components that would require a major change to the description in OP-06 Drinking Water System;
4. The addition of a drinking water subsystem.


Any other changes would be considered a minor change and would not require the Operational Plan to be re-endorsed.

4. Related Documents

OP-03A Signed Commitment and Endorsement
 OP-05 Document and Records Control
 OP-06 Drinking Water System

5. Revision History

Date	Revision #	Reason for Revision
2022-03-17	0	Procedure issued

	<p align="center">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Doc: OP-03A Rev Date: 2022-09-14 Rev No: 1 Pages: 1 of 1</p>
<p align="center">SIGNED COMMITMENT AND ENDORSEMENT</p>		
<p>Reviewed by: QEMS Representative</p>		<p>Approved by: SPC Manager</p>

This Operational Plan sets out the framework for OCWA's Quality & Environmental Management System (QEMS) that is specific and relevant to your drinking water system(s) and supports the overall goal of OCWA and the Town of Cobalt (Owner) to provide safe, cost-effective drinking water through sustained cooperation. OCWA will be responsible for developing, implementing, maintaining and continually improving its QEMS with respect to the operation and maintenance of the Cobalt Drinking Water System and will do so in a manner that ensures compliance with applicable legislative and regulatory requirements.

Through the endorsement of this Operational Plan, the Owner commits to work with OCWA to facilitate this goal.

OCWA Top Management Endorsement

Owner Endorsement


Yvan Rondeau
Safety, Process and Compliance
Manager

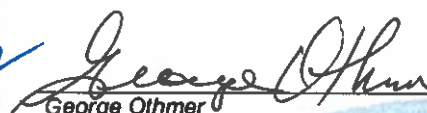
Sep 19/22
Date


Steven Darby
Town Manager

Oct. 27/22.
Date

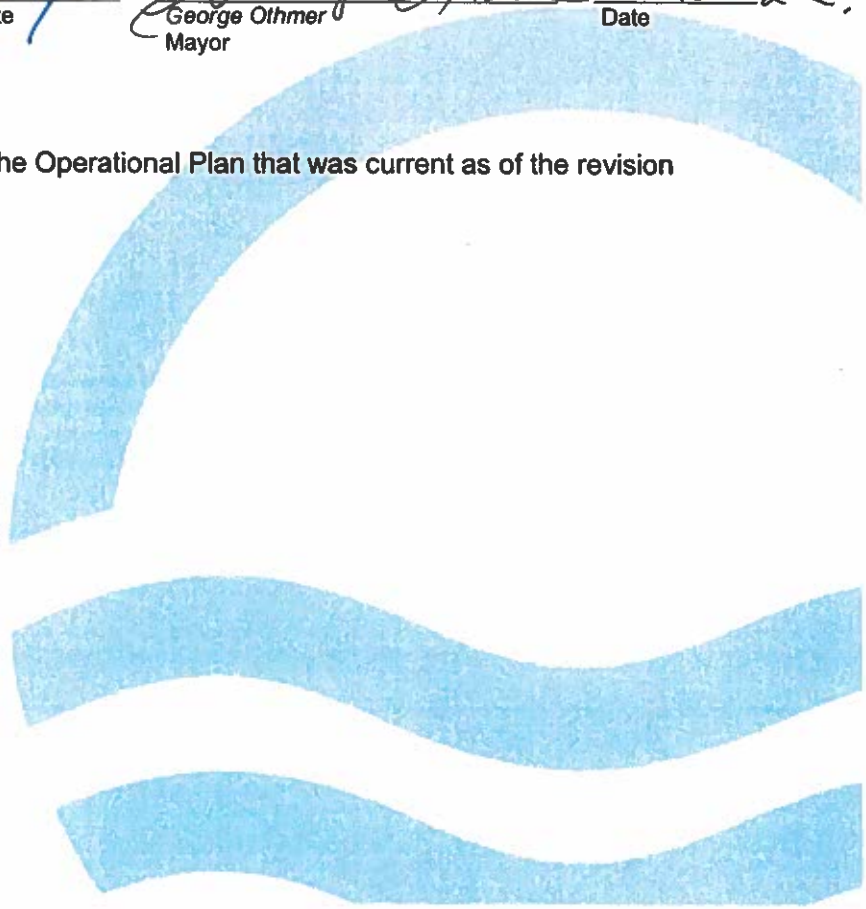

Eric Nielson
Regional Hub Manager, Northeastern
Ontario Regional Hub


Sep 19/22
Date


George Othmer
Mayor

10-27-22.
Date

The endorsement above is based on the Operational Plan that was current as of the revision date of this document (OP-03A).



	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-04 Rev Date: 2022-03-17 Rev No: 0 Pages: 1 of 1
QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS) REPRESENTATIVE		
Reviewed by: QEMS Representative		Approved by: SPC Manager

1. Purpose

To identify and describe the specific roles and responsibilities of the QEMS Representative(s) for the Cobalt Drinking Water System.

2. Definitions

None

3. Procedure

3.1 The role of QEMS Representative for the Cobalt Drinking Water System is the Ontario Clean Water Agency, represented by the designated Process and Compliance Technician (PCT). The Safety, Process and Compliance Manager (or alternate PCT) will act as an alternate QEMS Representative when required.

3.2 The QEMS Representative is responsible for:


- Administering the QEMS for the Cobalt Drinking Water System by ensuring that processes and procedures needed for the facility's QEMS are established and maintained;
- Reporting to Top Management on the facility's QEMS performance and identifying opportunities for improvement;
- Ensuring that current versions of documents related to the QEMS are in use;
- Promoting awareness of the QEMS to all operations personnel; and
- In conjunction with Top Management, ensuring that operations personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the system.

4. Related Documents

None

5. Revision History

Date	Revision #	Reason for Revision
2022-03-17	0	Procedure issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-05 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 5</p>
DOCUMENT AND RECORDS CONTROL		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe how OCWA's QEMS documents are kept current and how QEMS documents and records are kept legible, readily identifiable, retrievable, stored, protected, retained and disposed of. This procedure applies to QEMS Documents and QEMS records pertaining to the Cobalt Drinking Water System as identified in this procedure.

2. Definitions

Document – includes a sound recording, video tape, film, photograph, chart, graph, map, plan, survey, book of account, and information recorded or stored by means of any device

Record – a document stating results achieved or providing proof of activities performed

QEMS Document – any document required by OCWA's QEMS as identified in this procedure

QEMS Record – any record required by OCWA's QEMS as identified in this procedure

Controlled – managed as per the conditions of this procedure


Retention Period – length of time that a document or record must be kept; starts from the date of issue for QEMS records or from the point of time when a QEMS document is replaced by a new or amended document

3. Procedure

- 3.1 Documents and records required by OCWA's QEMS and their locations are listed in Appendix OP-05A Document and Records Control Locations.
- 3.2 Internally developed QEMS documents and QEMS records (whenever possible) are generated electronically to ensure legibility and are identified through a header/title and revision date. Handwritten records must be legible and permanently rendered in ink or non-erasable marker.
- 3.3 Controls for the Operational Plan include the use of an authorized approval and a header on every page that includes a title, alpha-numeric procedure code, revision date, revision number and page numbers. A revision history is also included in the body of each procedure.

Authorized personnel for review and approval of this Operational Plan are:

Review: QEMS Representative, Team Lead or ORO
Approval: SPC Manager or Operations Management

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DOCUMENT AND RECORDS CONTROL		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

The QEMS Representative ensures that updated documents are provided to the above authorized personnel for review or approval prior to issuance.

Authorized personnel authenticate their review/approval of this Operational Plan via email.

- 3.4 The QEMS Representative is responsible for ensuring that current versions of QEMS documents are being used at all times. Current QEMS documents and records are readily accessible to operations personnel and to internal and external auditors/inspectors at established document control locations. The currency of internal documents is ensured by comparing the date on the document to that of the master hardcopy and/or electronic copy residing in the designated document control location(s) specified in Appendix OP-05A.

Document control locations are established in areas that provide adequate protection to prevent unauthorized use/access, damage, deterioration or loss of QEMS documents and records. Copies of QEMS documents and records located outside of designated control locations are considered uncontrolled.


- 3.5 Access to OCWA's computer network infrastructure is restricted through use of individually-assigned usernames and passwords and local area servers. Network security is maintained by OCWA's Information Technology department through a number of established mechanisms and practices such as daily back-up of files stored on servers, password expiry, limitations on login attempts and policies outlining specific conditions of use.

Access to facility QEMS records contained within internal electronic databases and applications (e.g., Wonderware, OPEX, PDM, WMS) is administered by designated application managers/trustees, requires the permission of Operations Management and is restricted through use of usernames and passwords. Records are protected by means of regular network back-ups of electronic files stored on servers and/or within databases.

SCADA records are maintained as per Appendix OP-05A and are accessible to all staff when required.

- 3.6 Any employee of the drinking water system may make a verbal or written request for a revision be made to improve an existing internal QEMS document or the preparation of a new document. These requests are to be made to the QEMS Representative and should indicate the reason for the change. The need for new or updated documents may also be identified through the Management Review or system audits.


The QEMS Representative communicates any changes made to QEMS documents to relevant operations personnel and coordinates related training (as required). Changes to corporately controlled QEMS documents are communicated and distributed to facility

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Reviewed by: QEMS Representative	Approved by: SPC Manager	

QEMS Representatives by OCWA's Corporate Compliance Group through e-mails, memos and/or provincial, regional hub/cluster or facility-level training sessions.


- 3.7 When a QEMS document is superseded, the hardcopy and the electronic copy of the document (as applicable) are promptly removed from the applicable designated document control locations specified in OP-05A. The QEMS Representative ensures that the hardcopy and electronic copy are disposed of or retained (as appropriate)
- 3.8 The authorized method for disposal of hardcopy documents and records after the specified retention requirements have been met is shredding. The authorized method for disposal of electronic documents and records after the specified retention requirements have been met is deleting.
- 3.9 QEMS documents and records are retained in accordance with applicable regulations and legal instruments. Relevant regulatory and corporate minimum retention periods are as follows:

Type of Document/Record	Minimum Retention Time	Requirement Reference
Operational Plan (OP-01 to OP-21 and appendices, including Schedule "C" – Subject System Description Form) FEP Long term forecast of major infrastructure maintenance, rehabilitation and renewal activities Sampling plan/schedule/ calendar	10 years	Director's Direction under SDWA
Internal QEMS Audit Results	10 years	OCWA Requirement
External QEMS Audit Results	10 years	OCWA Requirement
Management Review Documentation	10 years	OCWA Requirement
Documents/records required to demonstrate conformance with the DWQMS (specifically all the documents/records listed in OP-05A)	3 years*if no specified legislative requirement below* identified in this table or in the facility's legal instruments *	OCWA Requirement
Log Books or other record-keeping mechanisms	5 years	O. Reg. 128/04
Training Records for water operators and water quality analysts	5 years	O. Reg. 128/04
Operational checks, sampling and testing (e.g., chlorine residuals, turbidity, fluoride, sampling records), microbiological sampling and testing and chain of custodies	2 years	O. Reg. 170/03

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DOCUMENT AND RECORDS CONTROL		
Reviewed by: QEMS Representative		Approved by: SPC Manager

Type of Document/Record	Minimum Retention Time	Requirement Reference
Schedule 23 & 24 (LMR) and THM, HAA, nitrates, nitrites and lead program sampling and testing, Section 11 Annual Reports and Schedule 22 Summary Reports	6 years	O. Reg. 170/03
Sodium test results and related corrective action records/reports, 60 month fluoride test results (if the system doesn't fluoridate), Engineering Reports	15 years	O. Reg. 170/03
Lead samples, correction action records/reports for E. Coli, Total Coliforms and bacterial species	2 years	O. Reg. 170/03
Corrective action records/reports for chemical and radiological parameters under SDWA O. Reg. 169/03, pesticides not listed under O. Reg. 169/03 and health-related parameters in an order or approval	6 years (LMR) 15 years (SMR)	O. Reg. 170/03
Flow Meter Calibration Records, Analyzer Calibration Reports Maintenance Records/Work Orders	2 years	O. Reg. 170/03
Records by or created in accordance with the Municipal Drinking Water Licence (MDWL) or Drinking Water Works Permit (DWWP). Except records specifically referenced in O. Reg. 170/03 or otherwise specified in the MDWL or DWWP.	5 years	MDWL
Ministry forms referenced in the DWWP, including Form 1, Form 2, Form 3 and Director Notifications (applies to forms that have been completed by OCWA as the authorized by the owner)	10 years	DWWP

3.10 The Operational Plan is reviewed for currency by the QEMS Representative during internal/external audit and Management Review processes. Other QEMS-related documents are reviewed as per the frequencies set out in this Operational Plan or as significant changes (e.g., changes in regulatory requirements, corporate policies or operational processes and/or equipment, etc.) occur. QEMS documents and records are reviewed for evidence of control during each internal system audit as per OP-19 Internal QEMS Audits.

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DOCUMENT AND RECORDS CONTROL		
Reviewed by: QEMS Representative		Approved by: SPC Manager

4. Related Documents

OP-05A Document and Records Control Locations
OP-19 Internal QEMS Audits
OP-20 Management Review

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued



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DOCUMENT AND RECORDS CONTROL LOCATIONS		
Reviewed by: QEMS Representative	Approved by: Senior Operations Manager	

Designated locations for documents and records required by OCWA's QEMS

Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
Internal QEMS Documents	
Operational Plan (OP-01 to OP-21 and appendices, including Schedule "C" – Subject System Description Form)	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
QEMS Policy	E - OCWA's Sharepoint site and public website HC – Haileybury WTP
OCWA's Safety Manual	E – OCWA's Sharepoint site
Facility Emergency Plans	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
Emergency Response Plan (corporate)	E - OCWA's Sharepoint site
Standard Operating Procedures (referenced in Operational Plan and QEMS Procedures)	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
Essential Supplies & Services List	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
Vacation/On-call Schedule	E – Maintained on Outlook Shared Calendar
Sampling Schedule	E- Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
Chain of Custody Forms	E- Maintained on \\ocwfilereg\NEO Collab
External QEMS Documents	
Maintenance/equipment manuals	HC – Cobalt Water Treatment Plant
Engineering schematics/plans/drawings	HC – Cobalt Water Treatment Plant
Municipal Drinking Water Licence	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant HC – Cobalt Town Office
Drinking Water Works Permit	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
Permit to Take Water	E – Maintained on \\ocwfilereg\NEO Collab HC – Cobalt Water Treatment Plant
MECP Inspection Reports	E – Maintained on \\ocwfilereg\NEO Collab
Operator certificates	HC – Cobalt Water Treatment Plant
AWWA Standards	E - \\Torwan\PC\TAWWA Standards
Ontario's Watermain Disinfection Procedure	E - https://www.ontario.ca
DWQMS Standard	E - https://www.ontario.ca
ANSI/NSF product registration documentation for Chemicals/Materials Used	HC – Cobalt Water Treatment Plant
Applicable federal and provincial legislation and municipal by-laws	Online at www.e-laws.gov.on.ca
Operations Manual	HC – Cobalt Water Treatment Plant
Original Equipment Manuals (OEM)	HC – Cobalt Water Treatment Plant



Ontario Clean Water Agency

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DOCUMENT AND RECORDS CONTROL LOCATIONS

Reviewed by: QEMS Representative

Approved by: Senior Operations Manager


Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
QEMS Records	
Rounds sheets	Process data maintained electronically through PDM HC – Cobalt Water Treatment Plant
Facility Operations Logbook(s)	HC – Cobalt Water Treatment Plant E - https://ocwa.eriscloud.com/
Visitor's Logbook	HC – Cobalt Water Treatment Plant
Operator training records	E – Electronic records are maintained in OCWA's Training Summary Database (OPEX)
Maintenance records	E - maintained through WMS
Internal Calibration records	E - maintained through WMS
Chain of Custody forms	E – Maintained on \\ocwfilereg\NEO Collab
Laboratory analyses	Electronic reports from Laboratory – Maintained on \\ocwfilereg\NEO Collab E - maintained through PDM
Additional Sampling records	E – Maintained on \\ocwfilereg\NEO Collab
SCADA records (Wonderware, OCWA)	E - maintained through Wonderware
SCADA Records (Plant SCADA, Client Owned)	E - Cobalt Water Treatment Plant E - maintained through PDM
Internal Audit Reports	E – Maintained on \\ocwfilereg\NEO Collab
External Audit Reports	E – Maintained on \\ocwfilereg\NEO Collab
Management Review documentation	E – Maintained on \\ocwfilereg\NEO Collab
Ministry forms referenced in the Drinking Water Works Permit, including Form 1, Form 2, Form 3 and Director Notifications	E – Maintained on \\ocwfilereg\NEO Collab
Summary of Findings Spreadsheet (Preventive/Corrective) records	E - Maintained on \\ocwfilereg\NEO Collab
External QEMS Communications (including essential suppliers and service providers)	E – Microsoft Outlook E-mail E - Maintained on \\ocwfilereg\NEO Collab
Annual Reports	E – Maintained on \\ocwfilereg\NEO Collab
Summary Reports for Municipalities	E – Maintained on \\ocwfilereg\NEO Collab
AWQI Reports	E – Maintained on \\ocwfilereg\NEO Collab
Incidents of Non-Compliance Records	E – Maintained on \\ocwfilereg\NEO Collab
Analysis and Action Plan (AAP) Report	E – Maintained on \\ocwfilereg\NEO Collab
Contingency Plan Review/Test Summary	E – Maintained on \\ocwfilereg\NEO Collab
Infrastructure review (Capital Letter & Capital and Major Maintenance Recommendations Report)	E – Maintained on \\ocwfilereg\NEO Collab
Community complaint records	E – Maintained on \\ocwfilereg\NEO Collab
Call In Reports	E – Maintained in WMS
Quarterly Operations Report (to the Owner)	E – Maintained on \\ocwfilereg\NEO Collab

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<p align="center">DOCUMENT AND RECORDS CONTROL LOCATIONS</p>		
Reviewed by: QEMS Representative		Approved by: Senior Operations Manager

Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Appendix issued



	<p align="center">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-06 Rev Date: 2022-03-17 Rev No: 0 Pages: 1 of 2</p>
DRINKING WATER SYSTEM		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document the following for the Cobalt Drinking Water System:

- The name of the Owner and Operating Authority; and
- Provide a description of the system, including all applicable water sources, treatment system processes and distribution system components.

2. Definitions

Distribution System - means the part of a drinking water system that is used in the distribution, storage or supply of water and that is not part of a treatment system.

Primary Disinfection - means a process or series of processes intended to remove or inactivate human pathogens such as viruses, bacteria and protozoa in water.

Secondary Disinfection - means a process or series of processes intended to provide and maintain a disinfectant residual in a drinking water system's distribution system, and in plumbing connected to the distribution system, for the purposes of:

- (a) protecting water from microbiological re-contamination;
- (b) reducing bacterial regrowth;
- (c) controlling biofilm formation;
- (d) serving as an indicator of distribution system integrity; and

includes the use of disinfectant residuals from primary disinfection to provide and maintain a disinfectant residual in a drinking water system's distribution system for the purposes described in clauses (a) to (d).

Treatment System - means any part of a drinking water system that is used in relation to the treatment of water and includes,

- (a) anything that conveys or stores water and is part of a treatment process, including any treatment equipment installed in plumbing,
- (b) anything related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the system, and
- (c) a well or intake that serves as the source or entry point of raw water supply for the system;

3. Procedure

3.1 Refer to OP-6A for a description of the Cobalt Drinking Water System.



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Cobalt Drinking Water System

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DRINKING WATER SYSTEM

Reviewed by: QEMS Representative


Approved by: SPC Manager

3 Related Documents

None

4 Revision History

Date	Revision #	Reason for Revision
2022-03-17	0	Procedure issued.

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DRINKING WATER SYSTEM		
Reviewed by: QEMS Representative		Approved by: SPC Manager

Cobalt Drinking Water System Overview

Owner / Operating Authority

The Cobalt Drinking Water System is owned by The Corporation of the Town of Cobalt. The treatment and distribution systems are operated by the Ontario Clean Water Agency. The Cobalt Drinking Water System also provides water to the Coleman Distribution System which is owned by the Township of Coleman.

Source Water

Raw Water Supply

The Raw water is taken from Sasaginaga Lake, a protected water body, and directed to the low lift pumping station located about 300 meters West of Pyrite Street in Cobalt. The intake structure is located 191 meters into the lake, at a depth of 7.5 meters. The raw water is monitored for pH, temperature, and turbidity.

General Characteristics


Bacteriological analysis of the raw water indicates a source of relatively good quality. The results of chemical analyses are consistently below the Ontario Drinking Water Quality Standards.

Sasaginaga Lake: Raw Water Characteristics

Characteristics	2017		2018		2019		2020		2021	
	Min - Max	Mean	Min - Max	Mean	Min - Max	Mean	Min - Max	Mean	Min -Max	Mean
<i>E. coli</i> (CFU/100 mL)	<2 - 5	2.16	<2 - 5	2.2	<2 - 130	5	0 - 5	2.1	<2 - 10	3.18
Total Coliforms (CFU/100 mL)	<2 - 158	26	<2 - 158	49	<2 - 400	80	<2 - 348	53.4	<2 - 620	88
Turbidity (NTU)	0.5 - 4.7	1.6	0.5 - 4.7	2.35	0.34 - 4.5	0.93	0.9 - 2.2	1.3	0.8 - 6.8	1.58
pH	6.5 - 7.7	7.4	6.5 - 7.7	7.14	6.2 - 8	6.8	6.6 - 7.6	7	6.9 - 7.4	7.2

Common Fluctuations

During the spring and fall the lake turns over due to alkalinity and there is a slight change in turbidity

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Reviewed by: QEMS Representative	Approved by: SPC Manager	

Treatment System Description

Water Treatment

The Cobalt water treatment facility is a direct filtration facility with two treatment trains operating in parallel, and each consisting of a pre-contact tank, where coagulation is undertaken, and two dual media pressure filters.

The low lift pumping station consists of two submersible pumps (one duty and one standby), a wet well, a flow meter and two pre-contact vessels, each having a volume of 3.6 cubic meters. The pumps feed four pressurized dual media sand/anthracite filters. A parallel UV irradiation system is used to achieve most of the required primary disinfection.

Chlorine gas is injected into the water following the UV system treatment using two booster pumps and two manually controlled v-chlorination feed units capable of providing 45.0 kilograms/day of chlorine. The chlorine is added to meet the remaining primary disinfection requirements and maintain the required secondary disinfection within the distribution systems.

Water Storage and Pumping Capabilities


The water then goes into a 8.527 m diameter and 10.869 m high glassed fused to steel standpipe, having a total volume of 621 m³. Two submersible high lift pumps (one duty and one standby) pump water from the standpipe to the Cobalt and Coleman Distribution Systems and to the Cobalt water tower.

The treated water is monitored for pH, free chlorine residual and turbidity using continuous on-line analyzers. The plant is protected with alarms and a stand-by generator in the event of power loss.

The water tower is a 1400 cubic meter elevated water storage tank located on Ferland Avenue in Cobalt. The tank is 15m in diameter and 43.4m high. Re-chlorination equipment is on hand at the water tower to provide secondary disinfection if required.

Treatment System Process Flow Chart

Refer to Figure 1 on page 4

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Description of the Distribution System Components

The Cobalt drinking water system services an approximate population of 1350 residents, including the connected population in the Coleman Distribution System. The Cobalt Distribution

System is comprised of PVC water mains and includes 89 hydrants, 139 valve and approximately 615 service connections.

Downstream Processes

Treated water is supplied to the Coleman Distribution System which consists of 47 service connections, 18 Fire Hydrants and associated valves. There are 2 connection points to the Town of Cobalt distribution system. The distribution system infrastructure is owned by the Corporation of Coleman Township and the Operating Authority is the Ontario Clean Water Agency.

Distribution System Components Flow Chart

Refer to Figure 2 on page 5

Revision History

Date	Revision #	Reason for Revision
2022-03-17	0	Procedure issued

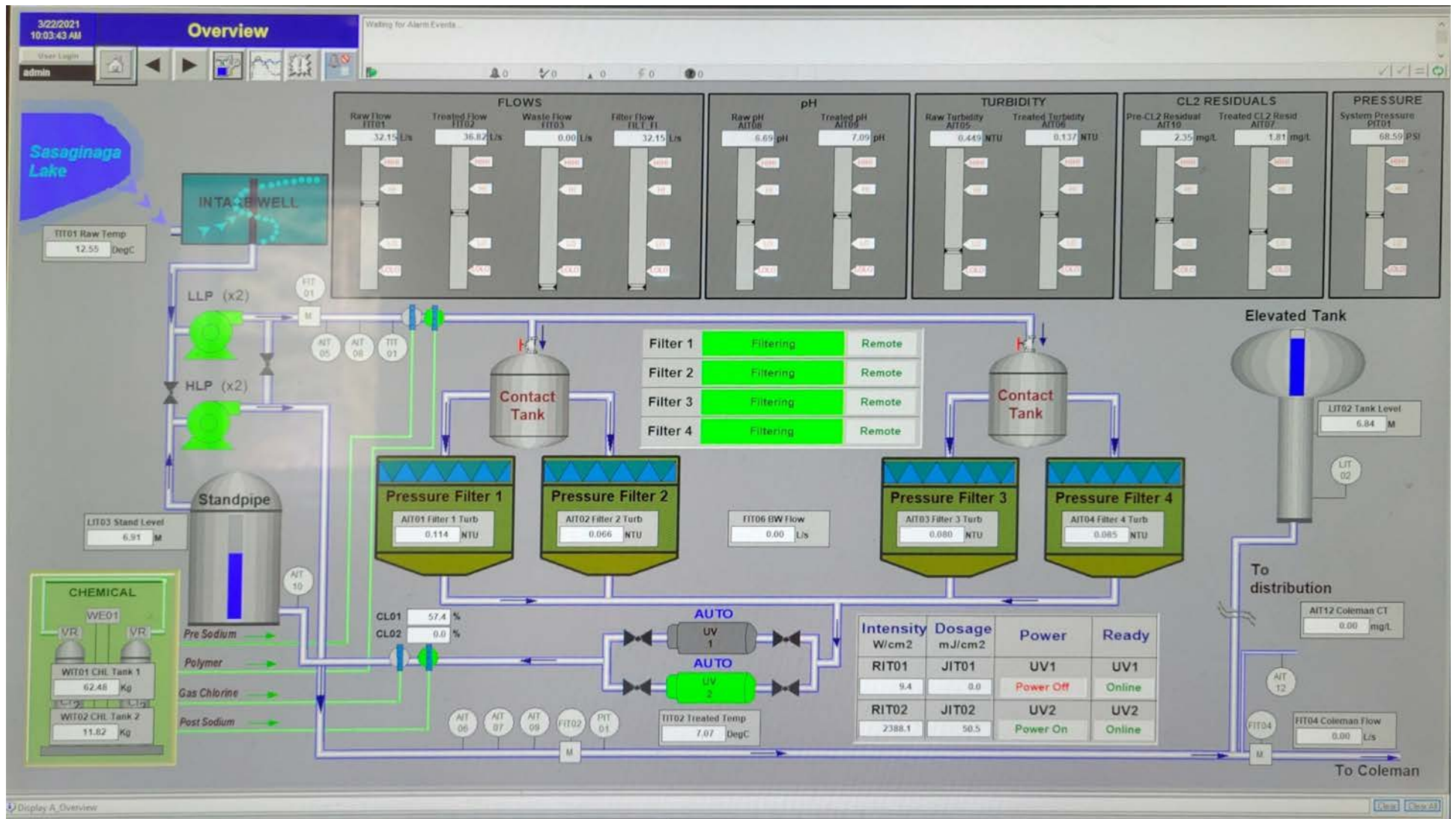


Figure 1 - Cobalt Water Treatment Plant - Process Flow Chart (2021)

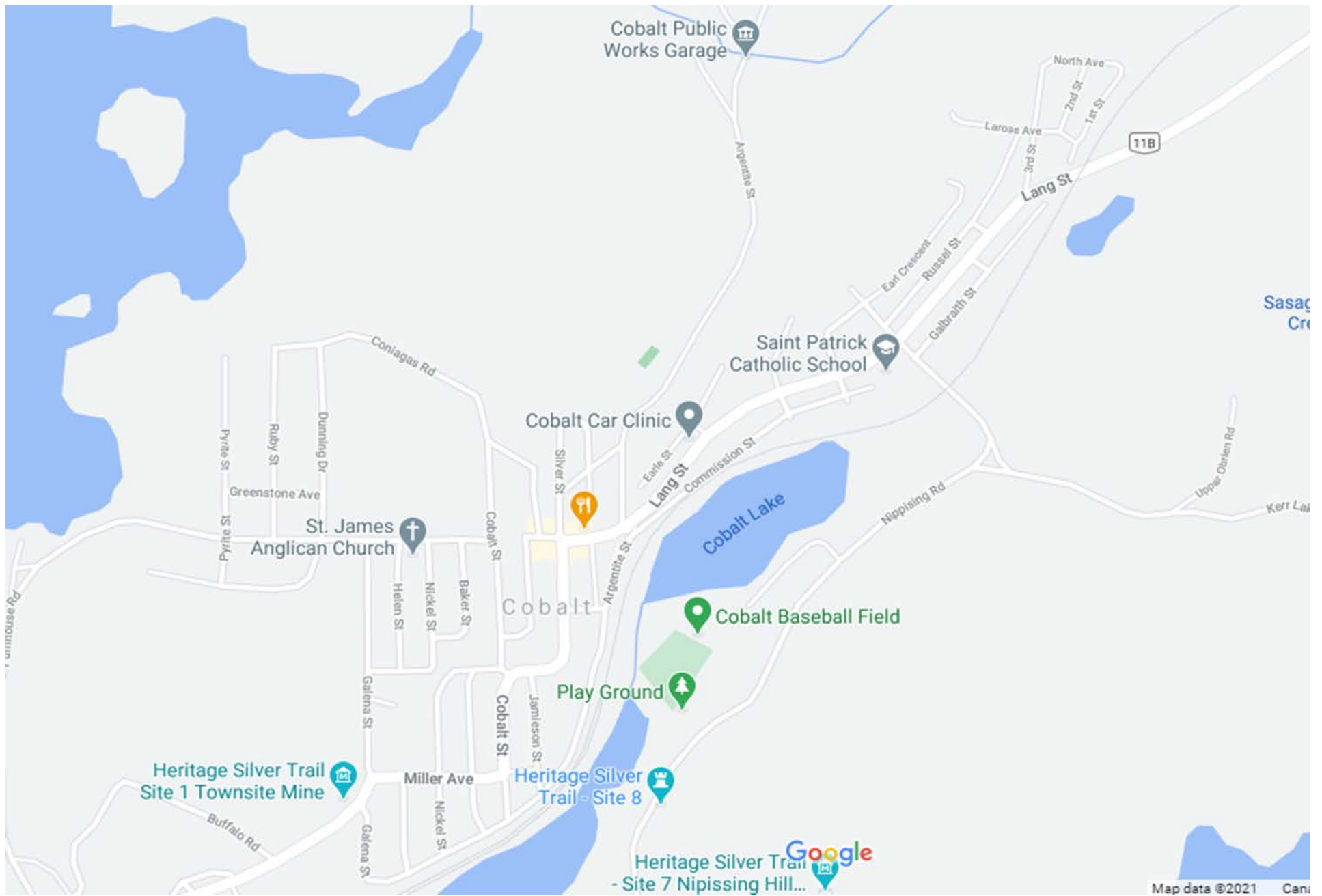



Figure 2 – Cobalt Distribution System Map

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RISK ASSESSMENT		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document the process for conducting a risk assessment to identify and assess potential hazardous events and associated hazards that could affect drinking water safety.

2. Definitions

Consequence – the potential impact to public health and/or operation of the drinking water system if a hazard/hazardous event is not controlled

Control Measure – includes any processes, physical steps or other practices that have been put in place at a drinking water system to prevent or reduce a hazard before it occurs

Critical Control Point (CCP) – An essential step or point in the subject system at which control can be applied by the Operating Authority to prevent or eliminate a drinking water health hazard or reduce it to an acceptable level

Drinking Water Health Hazard – means, in respect of a drinking water system,

- a) a condition of the system or a condition associated with the system's waters, including anything found in the waters,
 - i. that adversely affects, or is likely to adversely affect, the health of the users of the system,
 - ii. that deters or hinders, or is likely to deter or hinder, the prevention or suppression of disease, or
 - iii. that endangers or is likely to endanger public health,
- b) a prescribed condition of the drinking water system, or
- c) a prescribed condition associated with the system's waters or the presence of a prescribed thing in the waters


Hazardous Event – an incident or situation that can lead to the presence of a hazard

Hazard – a biological, chemical, physical or radiological agent that has the potential to cause harm

Likelihood – the probability of a hazard or hazardous event occurring

3. Procedure

- 3.1 Operations Management ensures that operations personnel are assigned to conduct a risk assessment at least once every thirty-six months. At a minimum, the Risk Assessment Team must include the QEMS Representative, at least one Operator for the system and at least one member of Operations Management.
- 3.2 The QEMS Representative is responsible for coordinating the risk assessment and ensuring that documents and records related to the risk assessment activities are maintained.

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RISK ASSESSMENT		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

3.3 The Risk Assessment Team performs the risk assessment as follows:

3.3.1 OP-07 Risk Assessment and OP-08 Risk Assessment Outcomes are reviewed.

3.3.2 For each of the system's activities/process steps, potential hazardous events and associated hazards (possible outcomes) that could impact the system's ability to deliver safe drinking water are identified. At a minimum, potential hazardous events and associated hazard as identified in the most current version of the Ministry's document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as applicable to the system type) must be considered.

3.3.3 For each of the hazardous events, control measures currently in place at the system to eliminate the hazard or prevent it from becoming a threat to public health are specified. Control measures may include alarms, monitoring procedures, standard operating procedures/emergency procedures/contingency plans, preventive maintenance activities, backup equipment, engineering controls, etc.


3.3.4 To ensure that potential drinking water health hazards are addressed and minimum treatment requirements as regulated by SDWA O. Reg. 170/03 and the Ministry's "Procedure for Disinfection of Drinking Water in Ontario" (as amended) are met, OCWA has established mandatory Critical Control Points (CCPs).

As a minimum, the following must be included as CCPs (as applicable):

- Equipment or processes required to achieve primary disinfection (e.g., chemical and/or UV disinfection system, coagulant dosing system, filters, etc.)
- Equipment or processes necessary for maintaining secondary disinfection in the distribution system
- Fluoridation system

3.3.5 Additional CCPs for the system are determined by evaluating and ranking the hazardous events for the remaining activities/process steps (i.e., those not included as OCWA's minimum CCPs).

3.3.6 Taking into consideration existing control measures (including the reliability and redundancy of equipment), each hazardous event is assigned a value for the likelihood and a value for the consequence of that event occurring based on the following criteria:

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Value	Likelihood of Hazardous Event Occurring
1	Rare – Estimated to occur every 50 years or more (usually no documented occurrence at site)
2	Unlikely – Estimated to occur in the range of 10 – 49 years
3	Possible – Estimated to occur in the range of 1 – 9 years
4	Likely – Occurs monthly to annually
5	Certain – Occurs monthly or more frequently


Value	Consequence of Hazardous Event Occurring
1	Insignificant – Little or no disruption to normal operations, no impact on public health
2	Minor – Significant modification to normal operations but manageable, no impact on public health
3	Moderate – Potentially reportable, corrective action required, potential public health impact, disruption to operations is manageable
4	Major – Reportable, system significantly compromised and abnormal operations if at all, high level of monitoring and corrective action required, threat to public health
5	Catastrophic – Complete failure of system, water unsuitable for consumption

The likelihood and consequence values are multiplied to determine the risk value (ranking) of each hazardous event. Hazardous events with a ranking of 12 or greater are considered high risk.

3.3.7 Hazardous events and rankings are reviewed and any activity/process step is identified as an additional CCP if all of the following criteria are met:

- ✓ The associated hazardous event has a ranking of 12 or greater;
- ✓ The associated hazardous event can be controlled through control measure(s);
- ✓ Operation of the control measures can be monitored and corrective actions can be applied in a timely fashion;
- ✓ Specific control limits can be established for the control measure(s); and
- ✓ Failure of the control measures would lead to immediate notification to the Medical Officer of Health (MOH) and/or Ministry.

3.4 The outcomes of the risk assessment are documented as per OP-08 Risk Assessment Outcomes.

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3.5 At least once every calendar year, the QEMS Representative facilitates the verification of the currency of the information and the validity of the assumptions used in the risk assessment in preparation for the Management Review (OP-20). When performing this review, the following may be considered:

- Process/equipment changes
- Reliability and redundancy of equipment
- Emergency situations/service interruptions
- CCP deviations
- Audit/inspection results
- Changes to the Ministry document “Potential Hazardous Events for Municipal Residential Drinking Water Systems” (as amended)

4. Related Documents

Ministry’s “Potential Hazardous Events for Municipal Residential Drinking Water Systems” (as amended)


Ministry’s “Procedure for Disinfection of Drinking Water in Ontario” (as amended)

OP-08 Risk Assessment Outcomes

OP-20 Management Review

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure Issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-08 Rev Date: 2022 09 14 Rev No: 0 Pages: 1 of 2</p>
RISK ASSESSMENT OUTCOMES		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document the outcomes of the risk assessment conducted as per OP-07 Risk Assessment.

2. Definitions

Critical Control Point (CCP) – An essential step or point in the subject system at which control can be applied by the Operating Authority to prevent or eliminate a drinking water health hazard or reduce it to an acceptable level

Critical Control Limit (CCL) – The point at which a Critical Control Point response procedure is initiated

3. Procedure

3.1 The QEMS Representative is responsible for updating the information in OP-08A Summary of Risk Assessment Outcomes as required.

3.2 The results of the risk assessment conducted as per OP-07 are documented in Table 1 of OP-08A. This includes:


- Identified potential hazardous events and associated hazards (possible outcomes) for each of the system's activities/process steps;
Note: Hazards listed in the Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended) are indicated in the appropriate column using the reference numbers in Table 4 of OP-08A.
- Identified control measures to address the potential hazards and hazardous events; and
- Assigned rankings for the hazardous events (likelihood x consequence = risk value) and whether the hazardous event is a Critical Control Point (CCP) (mandatory or additional).
Note: If the hazardous event is ranked as 12 or higher and it is not being identified as a CCP, provide rationale as to why it does not meet the criteria set out in section 3.3.7 of OP-07).

3.3 Operations Management is responsible for ensuring that for each CCP:

- Critical Control Limits (CCLs) are set;
- Procedures and processes to monitor the CCLs are established; and
- Procedures to respond to, report and record deviations from the CCLs are implemented.

The identified CCPs, their respective CCLs and associated procedures are documented in Table 2 of OP-08A.

3.4 A summary of the results of the annual review/36-month risk assessment is recorded in Table 3 of OP-08A.

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3.5 Operations Management considers the risk assessment outcomes during the review of the adequacy of the infrastructure (Refer to OP-14 Review and Provision of Infrastructure).

4. Related Documents

OP-07 Risk Assessment
OP-08A Summary of Risk Assessment Outcomes
OP-14 Review and Provision of Infrastructure
Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems"
(as amended)

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued




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Reviewed by: QEMS Representative		Approved by: SPC Manager	

Table 1 - Risk Assessment Table

Note: Processes referred to in OP-07 Risk Assessment and OP-08 Risk Assessment Outcomes must be identified as mandatory Critical Control Points (CCPs) as applicable. Mandatory CCPs are not required to be ranked.

Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
Source/Intake	2, 5, 6, 9	Spill of chemical material into Sasiginiga Lake (fuel from WTP generator)	Contamination of source water	-Monitor and sample SOP for Chemical/Fuel Spill SOP for Contaminated Raw Water	1	4	4	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No
	1, 2, 3, 6, 7	Collapse of intake pipe	Loss of water supply	-Occasional inspections Limited supply from stand pipe and tower	1	5	5	
	1, 3, 10, 12	Algal Blooms	Biological contamination of raw water source	Weekly visual checks	1	3	3	
	2, 6, 7	Wet well collapse	Unable to produce volume	None	1	5	5	
	2, 7	Stationary screen clogs	Restricted flow - unable to produce sufficient volume	Approx 2 days' supply from Tower Supply from standpipe	1	2	2	
	2,10	Flowmeter failure	Loss of Chemical feed	Alarmed Plant shut down	1	1	1	
Low Lift Pumps	2, 7	Pump failures	No Water	Redundancy (2 pumps), scheduled maintenance activities, back-up generator for loss of power situations, alarms	3	2	6	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No
Air Compressor for all valves	2, 6, 7, 10	Compressor failure	Loss of water	Alarmed Standpipe & tower Back up compressor on site	3	1	3	<input type="checkbox"/> Yes – Mandatory CCP

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
								<input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No
Filtration Process (includes flocculation, coagulation, dual media gravity filters)	10	Sodium Hydroxide Pump Failure After filter and UV	Lowered pH In Distribution System	Redundancy (1 back-up pump), automatic switchover, operator inspections, scheduled maintenance activities, chemical pump failure alarm and plant shut down	3	1	3	<input checked="" type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input type="checkbox"/> No
	2, 10	Polymer feed pump failure	Increased turbidity, ineffective removal of pathogens, biological contamination	Redundancy (1 back-up pump), automatic switchover, operator inspections (tank levels, calculate dosage), scheduled maintenance activities, chemical pump failure alarm				
	2, 10	Filter breakthrough	Increased turbidity, ineffective removal of pathogens, potential for AWQI	On-line monitoring of filter effluent turbidity, alarm on high turbidity, redundancy (2 filters), regular backwashes, scheduled maintenance activities, visual inspection of media Plant shut down				
	10	Backwash system failure	Increased turbidity, ineffective removal of pathogens, potential for loss of treated water supply	Pump failure alarms, two backwash pumps (redundancy), on-line monitoring, scheduled maintenance activities,				

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
				alternate system for backwashing (manual) Lock filters and rinse with raw water (low lift)				
	10	Turbidity meter failure	Unknown turbidity levels, potential for AWQI	Filter redundancy (take filter out of service until analyzer replaced/repared), scheduled maintenance activities, in- house readings, operator inspections Alarm and lock out filters				
	10	Backwash, effluent and filter to waste filter valve failures	Backwash failure, loss of water, inability to filter to waste	Regular maintenance Alarms Spare valve and parts				
Primary Disinfection	10	UV System failure	Biological contamination	2 Trains, 1 duty, 1 spare, fail safe, on process timed cycle, spare bulbs and parts on-site Alarmed and plant shut down Redundancy				<input checked="" type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input type="checkbox"/> No
	10	Chlorine Gas Controller failure	Biological contamination	Alarm and plant s shut down Redundancy Manual system				
	10	Chlorine gas flowmeter Failure	Biological contamination	Alarmed/shut down – Chemical feed is pace to flow				
	10	Chlorine gas feed pump failure	Loss of disinfection Low chlorine residual Inadequate inactivation of pathogens Potential for AWQI	Redundancy (1 main and 1 back-up pumps), on-line monitoring with alarms/plant shut down, in-house residual testing and dosage calculations, scheduled maintenance activities				

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
				Spare on site				
	10, 11	Chlorine Analyzer Failure – unable to confirm CT	Unknown chlorine residual levels, potential for AWQI	Low level Alarm/plant shut down, in-house residual testing, scheduled maintenance activities, back- up analyzer on-site				
	2, 3, 10	Low supply of chlorine gas	Inadequate disinfection, potential for AWQI	Operator checks Auto switch over Always 2 months supply on- site				
Primary Disinfection (Standpipe off- line)	10	Coleman Flowmeter Failure – unable to confirm CT	Biological contamination, potential for AWQI	Alarmed/plant shut down – max limit 18 L/s				<input checked="" type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input type="checkbox"/> No
	10, 11	Coleman Chlorine Analyzer Failure – unable to confirm CT	Biological contamination, potential for AWQI	Alarmed/plant shut down				
High Lift	2, 7	High lift pump failures	Low pressure in distribution system, possible contamination due to infiltration	Redundancy (2 pumps), scheduled maintenance activities, operational control, on-line monitoring of discharge pressure, alarms for low pressure, tower as a back- up for pressure and supply .	3	1	3	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No
WTP – SCADA	2, 3, 6, 7, 10, 11	Fire in Plant	Complete loss of service and water supply	Alarmed Operators are fire fighters	1	5	5	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
								<input checked="" type="checkbox"/> No
Stand Pipe		Loss of standpipe due to collapse, break, leak etc.	Inability to backwash, water supply shortage	Low level alarmed, tower, stand pipe can be bypassed and still meet CT	1	1	1	
Tower	1, 2, 3, 7	Loss of tower due to collapse, break, leak etc.	Loss of pressure to the distribution, inability to backwash, water supply shortage, biological contamination	Low level alarmed, tower, stand pipe can be bypassed and still meet CT	1	1	1	
Secondary Disinfection	11	Loss of residual in distribution system	Failure to control biofilm and pathogens (long term), AWQI	Continuous on-line monitoring of chlorine residual into the distribution system, System-wide residual testing twice weekly Regulatory scheduled maintenance (performed by municipality), Alarms for low/high chlorine residual in water entering distribution system, EEP for Reporting and Responding to Adverse Water quality				<input checked="" type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input type="checkbox"/> No
Water Treatment System/Plant	2, 3, 6, 7, 10, 11	Fire in Plant	Loss of SCADA, complete loss of service and water supply	Alarmed	1	5	5	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility
	1, 2, 3, 4, 6, 10	Power failure	Loss of treated water supply	Scheduled maintenance activities for back-up generator, Genset low fuel level alarm	1	1	1	<input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
	1, 2, 3, 4, 6, 10	Standby power failure	Loss of treated water supply	Power failure alarm, scheduled maintenance, Tower (Back up supply)	1	5	5	
	6, 10, 11	Vandalism/terrorism	Contamination of the water supply, Damage to critical equipment	Locked (water plant , Signage, Visited daily by operational staff, Cameras Fenced in Remote monitoring of cameras on phones Intrusion alarms on doors and windows	1	5	5	
	1	Pandemic	Shortage of staff, supply shortages, loss of sampling locations	Notifications, media. ERP for Pandemic, staff training, PPE	3	2	6	
	13	Cybersecurity threats	Loss of system process visibility for operators (e.g., unable to monitor treatment processes) Interruption of data recording leading to a loss of critical/compliance data Inability to remotely control processes and/or loss of	Implementing Identity and Access Management throughout the account management lifecycle. Privileges are granted to users with two principles – need to know and least privileges. Users are assigned only the privileges they need to perform their job. Employing default to fail secure. The application or system failure will cause	2	4	8	13

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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
			automatic control installation of malicious programs like ransomware, which can disable business enterprise until money is paid Loss of data (stolen or maliciously deleted)	little or no harm to other systems. Data will not fall into the wrong hands. Applying multiple layers of defense including: o Intrusion detection systems constantly monitoring traffic flow (borders) o Firewalls that provide real-time filtering and blocking (walls) o Cryptography and layered authentication (zones) o Certified professionals ensuring system integrity (gatekeepers) Constant monitoring and tracking for quick and effective response to attacks Perform routine vulnerability scans and threat assessments Carry out periodic cyber security audits and risk compliance checks				



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Activity/ Process Step	MECP Potential Hazardous Event/Hazard Reference # (see Table 3)	Description of Hazardous Event	Possible Outcome (Hazards)	Existing Control Measures	Likelihood	Consequence	Risk Value	CCP?
Distribution System	1, 3, 4, 11	Adverse Water Quality Result as described in O. Reg. 170/03	Potential for unsafe drinking water	Site specific SOP Sampling Schedule EEP for Reporting and Responding to Adverse Results	3	3	9	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No – no control limits
	1, 2, 4, 6, 7, 11	Watermain structural failure/breaks	Contamination, loss of pressure, loss of supply, road damage	Notification/complaints from consumers, increased demand in treated water, increase in waste water flow Low pressure alarm	3	3	9	<input type="checkbox"/> Yes – Mandatory CCP <input type="checkbox"/> Yes – Additional CCP identified for facility <input checked="" type="checkbox"/> No
	2, 7, 11	Hydrant Failure (Open)	Loss of service pressure	Planned Maintenance isolate	3	1	3	
	2, 7, 11	Valve Failure (stuck open)	Loss of service pressure - consumer	Planned Maintenance	3	1	3	
	2, 6,7, 8	Accident/vandalism/terrorism	Contamination, loss of water supply, loss of pressure	Notifications, complaints, low level alarms, weekly sampling .	3	3	9	

Table 2 - Identified Critical Control Points (CCPs)

CCP	Critical Control Limits	Monitoring Procedures	Response, Reporting and Recording Procedures
Primary Disinfection	Ultra Violet System Dosage Alarm & Plant Shutdown Low set point = 40 mj/cm2 Chlorine Gas System - Treated Water Free Chlorine Residual Alarms & Plant Shutdown Low set point \geq 1.2 mg/L (warning alarm) Low Low – 1 – shut down High set point = 4.0 mg/L Shutdown \geq 1.0 mg/L	SCADA (continuous online analyzers) Daily operator checks including dosage calculations Trend review and sign-off as per O. Reg. 170/03	When a UV alarm is activated, the operator shall check to make sure the stand by UV is activated. If the standby unit fails the system shuts down and no water enters the standpipe. Refer to SOP for Reporting and Responding to AWQI's Refer to SOP for CT
Filtration Process	Sodium Hydroxide and PAC Feed If both pumps fail an alarm is initiated and the plant shuts down Filter Effluent Turbidity Alarms (Filters 1-4) High set point = 1.0 NTU BW at 0.3 - 2 min delay	SCADA (continuous online analyzers) Operator checks including dosage calculations Redundancy (4 filters) Trend review and sign-off as per O. Reg. 170/03	Refer to SOP for Reporting and Responding to AWQI's
Standpipe	Standpipe Level Alarm & Plant Shutdown Low set point = 4.0 m CCL – 1 m	SCADA (continuous online analyzers) Daily operator checks Trend review and sign-off as per O. Reg. 170/03	Refer to SOP for CT
Secondary Disinfection	Free Chlorine Residual - Distribution Low = 0.05 mg/L High = 4.0 mg/L	Distribution chlorine residuals monitored as per O. Reg. 170/03	Refer to SOP for Reporting and Responding to AWQI's

Table 3: Potential Hazardous Event/Hazard Reference Numbers (based on the Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" dated April 2022)

If the hazardous event/hazard is not applicable to this drinking water system (DWS), it will be noted in the first column of this table.

System Type (indicate all that apply to this DWS)		Reference Number	Description of Hazardous Event/Hazard
X	All Systems	1	Long Term Impacts of Climate Change
X	All Systems	2	Water supply shortfall
X	All Systems	3	Extreme weather events (e.g., tornado, ice storm)
X	All Systems	4	Sustained extreme temperatures (e.g., heat wave, deep freeze)
X	All Systems	5	Chemical spill impacting source water
X	All Systems	6	Terrorist and vandalism actions
X or N/A	Distribution Systems	7	Sustained pressure loss
X or N/A	Distribution Systems	8	Backflow
X or N/A	Treatment Systems	9	Sudden changes to raw water characteristics (e.g., turbidity, pH)
X or N/A	Treatment Systems	10	Failure of equipment or process associated with primary disinfection (e.g., coagulant dosing system, filters, UV system, chlorination system)
X or N/A	Treatment Systems and Distribution Systems providing secondary disinfection	11	Failure of equipment or process associated with secondary disinfection (e.g., chlorination equipment, chloramination equipment)
X or N/A	Treatment Systems using Surface Water	12	Algal blooms
X	All Systems	13	Cybersecurity threats

Table 4 - Record of Annual Review/36-Month Risk Assessment

The Drinking Water Quality Management Standard (DWQMS) requires that the currency of the information and the validity of the assumptions used in the risk assessment be verified at least once a year. In addition, the risk assessment must be conducted at least once every thirty-six months. Refer to OP-07 and OP-08.

Date of Activity	Type of Activity	Participants	Summary of Results
2022-09-12	Risk Assessment	R. Marshall (PCT), J. Dubois (ORO), V. Legault (Sr Ops Manager)	Risk assessment conducted

Revision History

Date	Revision	Description of Revision
2022-09-12	0	Risk assessment conducted

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ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES AND AUTHORITIES		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To document the following for the Cobalt Drinking Water Systems:

- Owner;
- Organizational structure of the Operating Authority;
- QEMS roles, responsibilities and authorities of staff, Top Management and individuals/groups that provide corporate oversight; and
- Responsibilities for conducting the Management Review

2. Definitions

Operations Management – refers to the Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Senior Leadership Team (SLT) – members include President and CEO, Executive Vice President and General Counsel, Vice Presidents of OCWA's business units and Regional Hub Managers

Top Management – 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 or subject systems

Operations Personnel – Employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality

3. Procedure

3.1 Organizational Structure

The Cobalt Drinking Water System is owned by the Corporation of the Town of Cobalt, represented by the Mayor, Town Manager and Council.

The organizational structure of OCWA, the Operating Authority, is outlined in appendix OP-09A: Organizational Structure.

3.2 Top Management

Top Management for the Cobalt Drinking Water System consists of:

- Operations Management – Temiskaming Shores Cluster
- Regional Hub Manager – Northeastern Ontario Regional Hub
- Safety, Process & Compliance Manager – Northeastern Ontario Regional Hub

Irrespective of other duties (see Table 9-2 below), Top Management's responsibilities and authorities include:

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Approved by: SPC Manager

- Endorsing the Operational Plan as per the Commitment and Endorsement procedure (OP-03);
- Ensuring that the QEMS meets the requirements of the DWQMS;
- Ensuring staff are aware of the applicable legislative and regulatory requirements;
- Communicating the QEMS according to the Communications procedure (OP-12);
- Providing resources needed to maintain and continually improve the QEMS;
- Appointing and authorizing a QEMS Representative (OP-04); and
- Undertaking Management Reviews as per the Management Review procedure (OP-20).

Note: Specific responsibilities of the individual members of Top Management are identified in the referenced procedures.

3.3 Corporate Oversight

Roles, responsibilities and authorities for individuals/groups providing corporate oversight of OCWA's QEMS are summarized in Table 9-1 below.

Table 9-1: Corporate QEMS Roles, Responsibilities and Authorities

Role	Responsibilities and Authorities
Board of Directors	<ul style="list-style-type: none"> • Set the Agency's strategic direction, monitor overall performance and ensure appropriate systems and controls are in place in accordance with the Agency's governing documents • Review and approve the QEMS Policy
Senior Leadership Team (SLT)	<ul style="list-style-type: none"> • Establish the Agency's organizational structure and governing documents and ensure resources are in place to support strategic initiatives • Monitor and report on OCWA's operational and business performance to the Board of Directors • Review the QEMS Policy and recommend its approval to the Board • Approve corporate QEMS programs and procedures
Corporate Compliance	<ul style="list-style-type: none"> • Manage the QEMS Policy and corporate QEMS programs and procedures • Provide support for the local implementation of the QEMS • Monitor and report on QEMS performance and any need for improvement to SLT • Consult with the MECP and other regulators and provide compliance support/guidance on applicable legislative, regulatory and policy requirements • Manage contract with OCWA's DWQMS accreditation body

ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES AND AUTHORITIES

Reviewed by: QEMS Representative

Approved by: SPC Manager

3.4 Regional Hub Roles, Responsibilities and Authorities

QEMS roles, responsibilities and authorities of Northeastern Ontario Regional Hub personnel are summarized in Table 9-2 below. This information is kept current as per the Document and Records Control procedure (OP-05) and is communicated to staff as per the Communications procedure (OP-12).

Additional duties of employees are detailed in their job specifications and in the various QEMS programs and procedures that form, or are referenced in, this Operational Plan.

Table 9-2: QEMS Roles, Responsibilities and Authorities for the Regional Hub

Role	Responsibilities and Authorities
All Operations Personnel	<ul style="list-style-type: none"> Perform duties in compliance with applicable legislative and regulatory requirements Be familiar with the QEMS Policy and work in accordance with QEMS programs and procedures Maintain operator certification (as required) Attend/participate in training relevant to their duties under the QEMS Document all operational activities Identify potential hazards at their facility that could affect the environmental and/or public health and report to Operations Management Report and act on all operational incidents Recommend changes to improve the QEMS
Regional Hub Manager (Top Management)	<ul style="list-style-type: none"> Oversee the administration and delivery of contractual water/wastewater services on a Regional Hub level Fulfill role of Top Management Ensure corporate QEMS programs and procedures are implemented consistently throughout the Regional Hub Manages the planning of training programs for Regional Hub Report to VP of Operations/SLT on the regional performance of the QEMS and any need for Agency-wide improvement
Operations Management (Top Management)	<ul style="list-style-type: none"> Manage the day-to-day operations and maintenance of his/her assigned facilities and supervise facility operational staff Fulfill role of Top Management Ensure corporate and site-specific QEMS programs and procedures are implemented at his/her assigned facilities Determine necessary action and assign resources in response to operational issues Report to the Regional Hub Manager on facility operational performance Ensure operational training is provided for the cluster (in consultation with the SPC Manager as required) Act as Overall Responsible Operator (ORO) when required.



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Role	Responsibilities and Authorities
Safety, Process & Compliance (SPC) Manager (Top Management)	<ul style="list-style-type: none">• Supervise facility compliance staff and provide technical and program support to the Regional Hub related to process control and compliant operations• Fulfill role of Top Management• Ensure corporate/regional QEMS programs and procedures are implemented consistently throughout the Regional Hub• Assist in the development of site-specific operational procedures as required• Ensure training on applicable legislative and regulatory requirements and the QEMS is provided for the Regional Hub (in consultation with Operations Management as required)• Monitor and report to the Regional Hub Manager and Operations Management on the compliance status and QEMS performance within his/her Regional Hub and any need for improvement• Act as alternate QEMS Representative (when required)
Process & Compliance Technician - PCT (QEMS Representative)	<ul style="list-style-type: none">• Implement, monitor and support corporate programs relating to environmental compliance and support management by evaluating and implementing process control systems at his/her assigned facilities• Fulfill role of QEMS Representative (OP-04)• Monitor, evaluate and report on compliance/quality status of his/her assigned facilities• Implement facility-specific QEMS programs and procedures consistently at his/her assigned facilities• Participate in audits and inspections and assist in developing, implementing and monitoring action items to respond to findings• Report to the SPC Manager on QEMS implementation and identify the need for additional/improved processes and procedures at the regional/cluster/facility level (in consultation with the Operations Management as required)• Communicates to Owners on facility compliance and DWQMS accreditation as directed• Deliver/participate in/coordinate training including applicable legislative and regulatory requirements and the QEMS
Team Lead Operations & Maintenance	<ul style="list-style-type: none">• Perform duties as assigned by the Senior Operations Manager• Oversee maintenance activities on equipment and process in order to maintain compliance with applicable legislation, regulations, approvals and established operating procedures• Prepare and/or coordinate staff work assignments and follow up to ensure completion• Manage the On-Call & Vacation schedules• Recommend changes in operating procedures/processes to improve facility operations• Assist with facility operations including monitoring facility processes,



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Approved by: SPC Manager

Role	Responsibilities and Authorities
	<ul style="list-style-type: none">reviewing process data and trouble-shootingMeet with clients regularlyMeet with the Health and Safety representative regularly and manage any health & Safety issuesActs as Overall Responsible Operator (ORO).May act as Operator-in-Charge (OIC)
Team Lead - Capital	<ul style="list-style-type: none">Perform duties as assigned by the Senior Operations ManagerPlan and oversee capital projectsEnsure capital projects comply with applicable legislation, regulations, approvals and established operating proceduresCoordinate staffing with Operations & Maintenance Team LeadAssist with facility operations including monitoring facility processes, reviewing process data and trouble-shootingPerform Operations & Maintenance Team Lead responsibilities as requiredActs as Overall Responsible Operator (ORO).May act as Operator-in-Charge (OIC)
Overall Responsible Operator (ORO)	<ul style="list-style-type: none">Fulfill duties assigned by the Senior Operations ManagerParticipate as a technical advisor to staff and management and provide specialized training on technical or other issues.Prepare and/or coordinate staff work assignments and follow up to ensure completionAssist management in providing recommendation for annual capital forecasts and gathering information for operational reports as requiredAssist with facility operations including monitoring facility processes, reviewing process data and trouble-shootingOversee maintenance activities on equipment and process in order to maintain compliance with applicable legislation, regulations, approvals and established operating proceduresAssist in the preparation of facility manuals and documenting operating processes and procedures for staffActively participate in the development and maintenance of facility emergency plans and assist with emergencies as required.Act for management during vacations or periodic absences.Perform duties of Operator/Mechanic as requiredMaintain the facility log book according to regulatory requirementsMay act as Operator-in-Charge (OIC)
Operator and Operator/Mechanic	<ul style="list-style-type: none">Perform duties as assigned by Operations Management or designateMonitor, maintain and operate facilities in accordance with applicable regulations, approvals and established operating procedures



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Reviewed by: QEMS Representative

Approved by: SPC Manager

Role	Responsibilities and Authorities
	<ul style="list-style-type: none">• Collect samples and perform laboratory tests and equipment calibrations as required• Regularly inspect operating equipment, perform routine preventive maintenance and repairs and prepare and complete work orders as assigned• Participate in facility inspections and audits• May act as Operator-in-Charge (OIC) and/or Overall Responsible Operator (ORO) when required. Refer to ORO Letter
Instrumentation Technician	<ul style="list-style-type: none">• Provide advice and technical expertise on the services required for process control and automation systems• Discuss and advise on detailed system and programming requirements, modify existing and new software in response to plant requests, analyze and resolve problems/error conditions, document changes/modifications and configure, install and support related software, hardware and network for such systems• Conduct inspections of the process control and automation systems to validate that all is operating within established parameters as requested• Install and commission new electrical/electronic equipment and automation systems• May act as Operator-in-Charge (OIC)
Electronics Technician	<ul style="list-style-type: none">• Perform repairs, inspections, calibrations, preventive maintenance and/or scheduled maintenance on electrical systems, equipment, components and devices in accordance with established procedures and record the maintenance data• Monitor facility processes through visual inspection, the SCADA system or by taking readings from the process control equipment• Operate and adjust equipment/processes to maintain compliance with applicable legislation, regulations, approvals and established operating procedures• May act as Operator-in-Charge (OIC)

4. Related Documents

OP-03 Commitment and Endorsement
OP-04 QEMS Representative
OP-05 Document and Records Control
OP-09A Organizational Structure
OP-12 Communications
OP-20 Management Review

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Reviewed by: QEMS Representative		Approved by: SPC Manager

5. Revision History

Date	Revision #	Reason for Revision
2022-03-17	0	Procedure issued



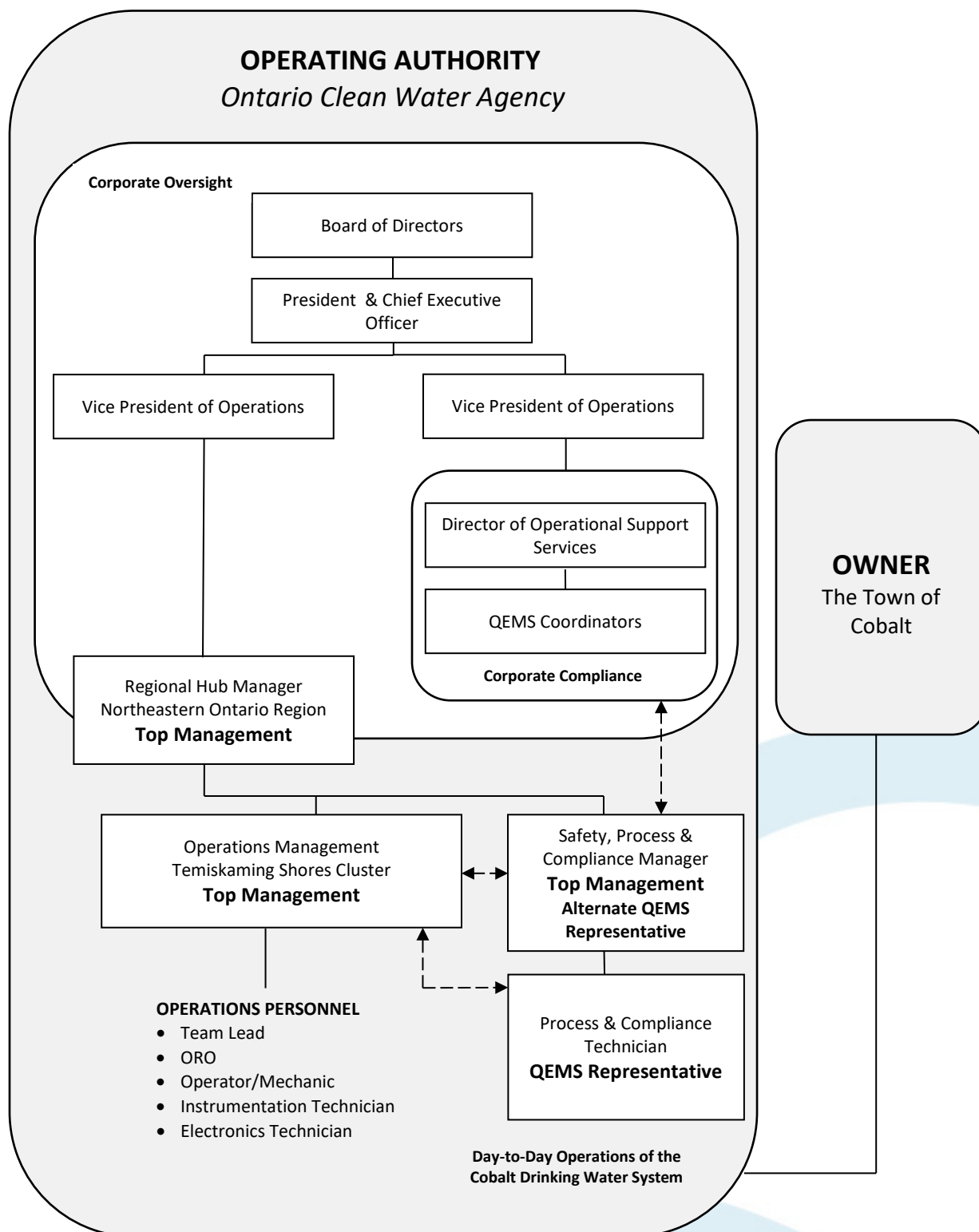
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ORGANIZATIONAL STRUCTURE

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Approved by: SPC Manager



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Reviewed by: QEMS	Approved by: SPC Manager	

Revision History

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COMPETENCIES		
Reviewed by: QEMS Representative		Approved by: SPC Manager

1. Purpose

To document a procedure that describes:

- the competencies required for personnel performing duties directly affecting drinking water quality;
- the activities to develop and/or maintain those competencies; and
- the activities to ensure personnel are aware of the relevance of their duties and how they affect safe drinking water.

2. Definitions

Competence – the combination of observable and measurable knowledge, skills, and abilities which are required for a person to carry out assigned responsibilities

Operations Management – refers to the Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Operations Personnel – employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality

Top Management – 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 or subject systems

3. Procedure

3.1 The following table presents the minimum competencies required by operations personnel.

Position	Required Minimum Competencies
Operations Management	<ul style="list-style-type: none"> • Valid operator certification • Experience and/or training in managing/supervising drinking water system operations, maintenance, financial planning and administration • Training and/or experience related to drinking water system processes, principles and technologies • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems

COMPETENCIES

Reviewed by: QEMS Representative

Approved by: SPC Manager

Position	Required Minimum Competencies
Safety, Process & Compliance (SPC) Manager	<ul style="list-style-type: none"> Valid operator certification Experience in providing technical support and leading/managing programs related to process control and compliant operations Experience and/or training in conducting compliance audits, and management system audits Experience and/or training in preparing and presenting informational and training material Training on OCWA's QEMS and the DWQMS Training on relevant legislation, regulations, codes, policies, guidelines and procedures Experience using computers and operational computerized systems
Team Lead/Senior Operator	<ul style="list-style-type: none"> Valid operator certification Experience leading/directing operations personnel, and providing technical guidance to resolve operational issues Training and experience in inspecting and monitoring drinking water system processes and performing/planning maintenance activities Training on OCWA's QEMS and the DWQMS Training on relevant legislation, regulations, codes, policies, guidelines and procedures Experience using computers and operational computerized systems
Operator/Mechanic	<ul style="list-style-type: none"> Valid operator certification Training and/or experience in inspecting and monitoring drinking water system processes and performing/planning maintenance activities Training on OCWA's QEMS and the DWQMS Training on relevant legislation, regulations, codes, policies, guidelines and procedures Experience using computers and operational computerized systems
Process & Compliance Technician (PCT)	<ul style="list-style-type: none"> Valid operator certification Experience and/or training in resolving/addressing compliance issues for drinking water systems Experience and/or training in monitoring, assessing and reporting on facility performance against legal requirements and corporate goals Experience and/or training in preparing and presenting informational and training material Experience in conducting management system audits or internal auditor education/training Training on OCWA's QEMS and the DWQMS Training on relevant legislation, regulations, codes, policies, guidelines and procedures

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COMPETENCIES		
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Position	Required Minimum Competencies
	<ul style="list-style-type: none"> • Experience using computers and operational computerized systems
Instrumentation Technician	<ul style="list-style-type: none"> • Valid operator certification • Experience and/or training in monitoring, programming, installing and troubleshooting network, hardware, software and instrumentation • Experience and/or training in drinking water system processes, design, instrumentation, process control and automation systems • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems

- 3.2 OCWA's recruiting and hiring practices follow those of the Ontario Public Service (OPS). As part of the OPS, minimum competencies, which include education, skills, knowledge and experience requirements, are established when designing the job description for a particular position. As part of the recruitment process, competencies are then evaluated against the job description. Based on this evaluation, the hiring manager selects and assigns personnel for specific duties.
- 3.3 OCWA's Operational Training Program aims to:
- Develop the skills and increase the knowledge of staff and management;
 - Provide staff with information and access to resources that can assist them in performing their duties; and
 - Assist OCWA certified operators in meeting the legislative and regulatory requirements with respect to training.
- 3.4 The Program consists of Director Approved, continuing education and on-the-job training and is delivered using a combination of methods (e.g., traditional classroom courses, e-learning/webinars and custom/program-based courses/sessions). A formal evaluation process is in place for all sessions under the Operational Training Program and is a critical part of the Program's continual improvement.
- 3.5 Awareness of OCWA's QEMS is promoted during the orientation of new staff, at facility/cluster/regional hub level training sessions and meetings and through OCWA's Environmental Compliance 101 (EC 101) course. All new staff are required to complete the EC 101 course within their first year of joining OCWA. The purpose of the EC 101 course is to ensure staff are aware of applicable legislative and regulatory requirements, to promote awareness of OCWA's QEMS and to reinforce their roles and responsibilities under OCWA's QEMS.

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- 3.6 Staff are also required to complete the mandatory environmental and health and safety compliance training listed in OCWA's Mandatory Compliance Training Requirements document, based on their position and/or the duties they perform. This list is available on OCWA's intranet.
- 3.7 Operations personnel also receive site-specific training/instruction on relevant operational and emergency response procedures to ensure effective operational control of processes and equipment which may impact the safety and quality of drinking water.
- 3.8 As part of OCWA's annual Performance Planning and Review (PPR) process, employee performance is evaluated against their job expectations. Professional development opportunities and training needs (which could include formalized courses as well as site-specific on-the-job training or job shadowing/mentoring) are identified as part of this process (and on an ongoing basis). In addition to this process, OCWA employees may at any time request training from either internal or external providers by obtaining approval from their Manager.
- 3.9 Certified drinking water operators are responsible for completing the required number of training hours in order to renew their certificates based on the highest class of drinking water subsystem they operate. They are also responsible for completing mandatory courses required by *Safe Drinking Water Act* (SDWA) O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts. The Operations Management takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the requirements.
- 3.10 It is the responsibility of operations personnel to ensure Operations Management are aware of any change to the status/classification of their drinking water operator certificate(s), the validity of their driver's licence (required to hold at a minimum a Class G license which is initially verified upon hire) and/or the validity of any other required certificates/qualifications.
- 3.11 Individual OCWA employee training records are maintained and tracked using a computerized system, the Training Summary database, which is administrated by OCWA's Training Department.

4. Related Documents


OCWA's Mandatory Compliance Training list (OCWA intranet)
 OCWA's Training Resources (OCWA Intranet)
 OCWA's Training Summary Database
 Performance Planning and Review (PPR) Database
 OP-5 Document and Records Control

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Reviewed by: QEMS Representative		Approved by: SPC Manager

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued



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PERSONNEL COVERAGE		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for ensuring that sufficient and competent personnel are available for duties that directly affect drinking water quality at the Cobalt Drinking Water System.

2. Definitions

Competency – an integrated set of requisite skills and knowledge that enables an individual to effectively perform the activities of a given occupation *

Essential Services – services that are necessary to enable the employer to prevent,

- (a) danger to life, health or safety,
- (b) the destruction or serious deterioration of machinery, equipment or premises,
- (c) serious environmental damage, or
- (d) disruption of the administration of the courts or of legislative drafting.

(Crown Employees Collective Bargaining Act, 1993)

3. Procedure

3.1 Operations Management ensures that personnel meeting the competencies identified in OP-10 Competencies are available for duties that directly affect drinking water quality.

3.2 The Cobalt Drinking Water System is considered un-manned facilities. OCWA operations personnel routinely visit the system at least twice per week and monitor the facility daily using OCWA's remote monitoring SCADA system.

OCWA operators are available 24 hours a day, 7 days a week by an alarm system and cell phone.


OCWA staff conduct checks of the distribution system. They inform the Town of any problems.

3.3 Operations personnel are assigned to act as and fulfill the duties of Overall Responsible Operator (ORO) and Operator-in-Charge (OIC) in accordance with SDWA O. Reg. 128/04.

Refer to the ORO Letter for current ORO and alternate.

The designated OIC for each shift is recorded in the facility logbook.


* Based on the 2005 National Occupational Guidelines for Canadian Water and Wastewater Operators and International Board of Standards for Training, Performance and Instruction

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PERSONNEL COVERAGE		
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- 3.4 The Senior Operations Manager and/or designate assigns an on-call operator for the time that the facility is un-staffed (i.e.: evenings, weekends and Statutory Holidays). The on-call shift rotates every Monday morning at 07:30, unless Monday is a statutory holiday in which case the change is on Tuesday morning at 07:30. The on-call schedule consists of a weekly rotation, is set on an annual basis and posted in the Haileybury WTP.
- 3.5 The on-call operator is responsible for responding to the alarm monitoring service within a reasonable time frame. Details of the call-ins are maintained electronically in OCWA Workplace Management System (WMS).
- 3.6 The alarm system auto dialer is programmed to contact the operator on-call. The operator on-call is responsible for responding to the alarm within a reasonable timeframe. If the nature of the alarm requires additional staff, the on-call operator can request assistance from any of the other certified operators. The on-call operator records details of the call-in in the facility logbook and on the Call-In Report form.
- 3.7 The Senior Operations Manager and/or designate is responsible for approving vacation time for staff in a manner which ensures sufficient personnel are available for the performance of normal operating duties.
- 3.8 OCWA's Operations staff are represented by the Ontario Public Service Employees Union (OPSEU). In the event of a labour disruption, the Operations Manager, together with the union, identifies "essential services" required to operate the facility so that the quality of drinking water is not compromised in any way.
- 3.9 A contingency plan for Critical Shortage of Staff is included in the Facility Emergency Plan. This plan provides direction to staff in the event that there is a severe shortage of staff due to sickness (e.g., pandemic flu) or other unusual situations where personnel might not be available.

4. Related Documents


Call-In Reports (WMS)
Critical Shortage of Staff Contingency Plan (Facility Emergency Plan)
Facility Logbook
Facility Round Sheets
On-Call Schedule
ORO Letter
Vacation Schedule
OP-10 Competencies

	<p align="center">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-11 Rev Date: 2022-03-17 Rev No: 0 Pages: 3 of 3</p>
PERSONNEL COVERAGE		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

5. Revision History

Date	Revision	Reason for Revision
2022-03-17	0	Procedure issued.



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COMMUNICATIONS		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for facility level internal and external QEMS-related communications between Top Management and:

- OCWA staff;
- the Owner;
- essential suppliers and service providers (as identified in OP-13); and
- the public.

2. Definitions

Operations Management – refers to the Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Operations Personnel – employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality.

3. Procedure

- 3.1 Operations Management and the QEMS Representative are responsible for identifying and coordinating any site-specific communications in relation to the status/development of the facility's QEMS.
- 3.2 Internal and external communication responsibilities and reporting requirements for emergency situations are set out under OCWA's Emergency Management Program (i.e., Facility Emergency Plan and OCWA's Emergency Response Plan). Refer to OP-18 Emergency Management for more information.
- 3.3 Communication with OCWA staff:
 - 3.3.1 Within the first year of hire, all staff are required to complete the Environmental Compliance 101 (EC101) course. The objective of the EC 101 course is to ensure that staff are aware of applicable legislative and regulatory requirements and of OCWA's QEMS and to reinforce their roles and responsibilities under OCWA's QEMS.
 - 3.3.2 Operations Management are responsible for ensuring operations personnel receive site-specific training on the Operational Plan, the organizational structure for the facility including the roles and responsibilities and authorities (outlined in OP-09 Organizational Structure, Roles, Responsibilities and Authorities), QEMS Procedures and other related operating instructions and procedures as part of the orientation process and on an on-going basis as required.

	<p align="center">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-12 Rev Date: 2022-09-14 Rev No: 0 Pages: 2 of 3</p>
COMMUNICATIONS		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

3.3.3 The Safety, Process and Compliance (SPC) Manager is responsible for ensuring training is provided for the Regional Hub (in consultation with Operations Management as required) on applicable legislative and regulatory requirements and the QEMS.

3.3.4 The QEMS Representative assists Operations Management and/or the SPC Manager in the coordination/delivery of training as required.

3.3.5 Revisions to the QEMS and associated documentation are communicated as per OP-05 Document and Records Control.

3.3.6 The QEMS Policy is available to all OCWA personnel through OCWA's intranet and as outlined in 3.6.2 of this procedure.

3.3.7 Operations personnel are responsible for identifying potential hazards at the facility that could affect the environmental and/or public health, and communicating these to Operations Management. They may also recommend changes be made to improve the facility's QEMS by making a request to the QEMS Representative (as per OP-05).

3.3.8 The QEMS Representative is responsible for ensuring that the Operations Management and the SPC Manager are informed regarding the compliance/quality status of the facility and QEMS implementation and any need for improved processes/procedures at the cluster/facility level.

3.3.9 The SPC Manager reports to the Regional Hub Manager on the compliance status, the QEMS performance and effectiveness, any need for improvement and on issues that may have Agency-wide significance. Operations Management reports to the Regional Hub Manager on facility operational performance.

3.4 Communication with the Owner:

3.4.1 The Regional Hub Manager, Operations Management and SPC Manager ensures that the Owner is provided with QEMS updates and that they are kept informed of the status of the facility's operational and compliance performance through electronic and/or verbal communications. The QEMS Representative/PCT assists in the coordination of these meetings and with communicating the updates as directed.

3.4.2 The continuing suitability, adequacy and effectiveness of OCWA's QEMS are communicated to the Owner as part of the Management Review process (refer to OP-20 Management Review).

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COMMUNICATIONS		
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3.5 Communications with Essential Suppliers and Service Providers:

3.5.1 Communication requirements to ensure essential suppliers and service providers understand the relevant OCWA QEMS policies, procedures and expectations are described in OP-13 Essential Supplies and Services.

3.6 Communication with the Public:

3.6.1 Media enquiries must be directed to the facility's designated media spokesperson as identified in the Facility Emergency Plan. The media spokesperson coordinates with local and corporate personnel (as appropriate) and the Owner in responding to media enquiries.

3.6.2 OCWA's QEMS and QEMS Policy are communicated to the public through OCWA's public website. The QEMS Policy is also posted at the Matheson Cluster Office and the Kirkland Lake Process and Compliance Office.

3.6.3 Facility tours of interested parties must be approved in advance by the Owner. A record of any tour is made in the facility logbook.


3.6.4 All complaints, whether received from the consumer, the community or other interested parties, are documented on a Community Complaint form. As appropriate, the Operations Management or the Team Lead ensures that the Owner is informed of the complaint and/or an action is developed to address the issue in a timely manner. The QEMS Representative ensures that consumer feedback is included for discussion at the Management Review.

4. Related Documents

Community Complaint Form
 Emergency Response Plan
 Facility Emergency Plan
 OP-05 Document and Records Control
 OP-09 Organizational Structure, Roles, Responsibilities and Authorities
 OP-13 Essential Supplies and Services
 OP-18 Emergency Management
 OP-20 Management Review

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-13 Rev Date: 2022-03-17 Rev No: 0 Pages: 1 of 2</p>
ESSENTIAL SUPPLIES AND SERVICES		
Reviewed by: QEMS Representative		Approved by: SPC Manager

1. Purpose

To describe OCWA's procedures for procurement and for ensuring the quality of essential supplies and services.

2. Definitions

Essential Supplies and Services – supplies and services deemed to be critical to the delivery of safe drinking water

3. Procedure

3.1 Essential supplies and services for the Cobalt Drinking Water System are contained in the Facility Emergency Plan on the Essential Supplies and Services List. The list is reviewed at least once every calendar year by the QEMS Representative and updated as required.

3.2 Purchasing is conducted in accordance with OCWA's Corporate Procurement and Administration policies, procedures and guidelines, which are adopted from those of the Ontario Public Service.

Purchases of capital equipment are subject to formal approval by the facility's owner.


3.3 As part of the corporate procurement process, potential suppliers/service providers are informed of relevant aspects of OCWA's QEMS through the tendering process and through specific terms and conditions set out in our agreements and purchase orders. Essential suppliers and service providers (including those contracted locally) are sent a letter that provides an overview of the relevant aspects of the QEMS.

3.4 Contractors are selected based on their qualifications and ability to meet the facility's needs without compromising operational performance and compliance with applicable legislation and regulations.

Contracted personnel including suppliers may be requested or required to participate in additional relevant training/orientation activities to ensure conformance with facility procedures and to become familiar with OCWA workplaces.

If necessary, appropriate control measures are implemented while contracted work is being carried out and communicated to all relevant parties to minimize the risk to the integrity of the drinking water system and the environment.

3.5 All third-party drinking water testing services are provided by accredited and licensed laboratories. The Ministry of the Environment, Conservation & Parks (MECP) has an agreement with The Canadian Association for Laboratory Accreditation (CALA) for accreditation of laboratories testing drinking water. The QEMS Representative is

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ESSENTIAL SUPPLIES AND SERVICES		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

responsible for notifying the MECP of any change to the drinking water testing services being utilized.


- 3.6 Internal verification and calibration activities (e.g. chlorine analyzer, turbidimeter, flowmeters, etc.) are conducted by operations personnel in accordance with equipment manuals and/or procedures (Refer to OP-17 Measurement Recording Equipment Calibration and Maintenance).
- 3.7 External calibration activities, if required are conducted by qualified third-party providers. Qualifications of the service provider are verified during the procurement process. The service provider is responsible for providing a record/certificate of all calibrations conducted.
- 3.8 Chemicals purchased for use in the drinking water treatment process must meet AWWA Standards and be ANSI/NSF certified as per the Municipal Drinking Water Licence (MDWL).
- 3.9 The facility orders and receives ongoing deliveries of chemicals to satisfy current short-term needs based on processing volumes and storage capacities. Incoming chemical orders are verified by reviewing the manifest or invoice in order to confirm that the product received is the product ordered.
- 3.10 Process components/equipment provided by the supplier must meet applicable regulatory requirements and industry standards for use in drinking water systems prior to their installation.

4. Related Documents

ANSI/NSF Documentation
AWWA Standards
Calibration Certificates/Records
Essential Supplies and Services List
Municipal Drinking Water Licence (MDWL)
OP-17 Measurement Recording Equipment Calibration and Maintenance

5. Revision History

Date	Revision	Reason for Revision
2022-03-17	0	Procedure issued

 Ontario Clean Water Agency	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	QEMS Proc.: OP-14 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 2
REVIEW AND PROVISION OF INFRASTRUCTURE		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe OCWA's procedure for reviewing the adequacy of infrastructure necessary to operate and maintain the Cobalt Drinking Water System.

2. Definitions

Infrastructure – the set of interconnected structural elements that provide the framework for supporting the operation of the drinking water system, including buildings, workspace, process equipment, hardware, software and supporting services, such as transport or communication

3. Procedure

3.1 At least once every calendar year, Operations Management in conjunction with operations personnel (Team Lead, PCT, operators, mechanics and instrumentation technicians) conducts a review of the drinking water system's infrastructure to assess its adequacy for the operation and maintenance of the system. Operations personnel assist with identifying the need for infrastructure repairs, replacements or alterations and with prioritizing each identified item. Documents and records that are reviewed may include:


- Maintenance records
- Call-in reports
- Adverse Water Quality Incidents (AWQIs) or other incidents
- Health & Safety Inspections
- MECP Inspection Reports
- QEMS Audit Reports

3.2 The outcomes of the risk assessment documented as per OP-08 are considered as part of this review.

3.3 The output of the review is a 5 year rolling Recommended Capital and Major Maintenance Report to assist the Owner and OCWA with planning infrastructure needs for the short and long-term. Each year a letter and/or list summarizing capital works recommendations and estimated expenditures for the upcoming year is submitted to the Owner for review and approval.

3.4 The final approved capital items form the long term forecast for any major infrastructure maintenance, rehabilitation and renewal activities as per OP-15.

3.5 Operations Management ensures that results of this review are considered during the Management Review process (OP-20).


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REVIEW AND PROVISION OF INFRASTRUCTURE		
Reviewed by: QEMS Representative		Approved by: SPC Manager

4. Related Documents

Capital and Major Maintenance Recommendations Report
 Capital Letter & Acknowledgement/Approval from the Owner
 Management Review Minutes
 OP-08 Risk Assessment Outcomes
 OP-15 Infrastructure Maintenance, Rehabilitation and Renewal
 OP-20 Management Review

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-15 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 3</p>
INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe OCWA's infrastructure maintenance, rehabilitation and renewal program for the Cobalt Drinking Water System.

2. Definitions

Infrastructure – the set of interconnected structural elements that provide the framework for supporting the operation of the drinking water system, including buildings, workspace, process equipment, hardware, software and supporting services, such as transport or communication

Rehabilitation – the process of repairing or refurbishing an infrastructure element.

Renewal – the process of replacing the infrastructure elements with new elements.

3. Procedure

3.1 OCWA, under contract with the Owner, maintains a computerized Work Management System (WMS) to manage maintenance, rehabilitation and renewal of infrastructure for which it is operationally responsible. The major components of the WMS consist of planned maintenance, unplanned maintenance, rehabilitation, renewal and program monitoring and reporting.


3.1.1 Planned Maintenance

Routine planned maintenance activities include:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of water systems, pumps, chemical feeders, and all other equipment installed at the facilities.
- Inspect tower
- Perform routine maintenance duties to equipment including checking machinery and electrical equipment when required.
- Maintain an inventory of all equipment
- Maintain accurate records of work conducted, activities, and achievements.

Planned maintenance activities are scheduled in the WMS that allows the user to:

- Enter detailed asset information;
- Generate and process work orders;
- Access maintenance and inspection procedures;
- Plan preventive maintenance and inspection work;
- Plan, schedule and document all asset related tasks and activities; and
- Access maintenance records and asset histories.

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INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a daily, weekly, monthly, quarterly and annual schedule as determined based on manufacturer's recommendations and site specific operational and maintenance needs and are assigned directly to the appropriate operations personnel. This schedule is set up by the Team Lead/Senior Operator. Work orders are completed and electronically entered into WMS by the person responsible for completing the task. Records of these activities are maintained as per OP-05 Document and Records Control.

The Team Lead, or designate, maintains the inventory of equipment in WMS and ensures that appropriate maintenance plans are in place. Maintenance plans are developed according to the manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements. Equipment Operation and Maintenance (O&M) manuals are accessible to operations personnel at the locations specified in OP-05 Document and Records Control.

3.1.2 Unplanned Maintenance


Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Operations Management. Unplanned maintenance activities are recorded in the facility's logbook and as corrective/emergency work order and are entered into WMS by the person responsible for completing the unplanned maintenance activity.

3.1.3 Rehabilitation and Renewal

Rehabilitation and renewal activities including capital upgrades (major infrastructure maintenance) are determined at least once every calendar year in consultation with Operations Management and the Owner. A list of required replacement equipment or desired new equipment is compiled and prioritized by Operations Management in conjunction with operations personnel and is presented to the Owner for review and comment. All major expenditures require the approval of the Owner. In addition to the short-term facility needs (i.e. current year), the Capital and Major Maintenance Recommendations Report also provides a long-term (i.e. rolling 5-year) list of major maintenance recommendations. (Refer to OP-14 Review and Provision of Infrastructure).

3.1.4 Program Monitoring and Reporting

Maintenance needs for the facility are determined through review of manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements and are communicated by means of work orders. Additionally, Operations Management and operations personnel (Team Lead/Senior Operator, PCT, operators and instrumentation technicians) conduct a review of the drinking water system's infrastructure to assess its adequacy for

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INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL		
Reviewed by: QEMS Representative		Approved by: SPC Manager

the operation and maintenance of the system. (Refer to OP-14 Review and Provision of Infrastructure).

To assist in monitoring the effectiveness of the program Operations Management (or designate) are provided monthly summary reports which are automatically generated and emailed from WMS.


3.2 OCWA's infrastructure maintenance, rehabilitation and renewal program is initially communicated to the Owner through the operating agreement. OCWA's program is communicated to the Owner at a minimum once every calendar year through submission of the capital list/letter and the results of the Management Review.

4. Related Documents

Capital and Major Maintenance Recommendations Report
Capital Letter & Acknowledgement/Approval from the Owner
Minutes of Management Review
OP-05 Document and Records Control
OP-14 Review and Provision of Infrastructure

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-16 Rev Date: 2022-03-17 Rev No: 0 Pages: 1 of 3</p>
SAMPLING, TESTING AND MONITORING		
Reviewed by: QEMS Representative		Approved by: SPC Manager

1. Purpose

To describe the procedure for sampling, testing and monitoring for process control and finished drinking water quality.

2. Definitions

Challenging Conditions – any existing characteristic of the water source or event-driven fluctuations that impact the operational process as identified and listed under OP-06A and OP-06B Drinking Water System


3. Procedure

- 3.1 All sampling, monitoring and testing is conducted at a minimum in accordance with SDWA O. Reg. 170/03 and the facility's Municipal Drinking Water License (MDWL).
- 3.2 Sampling requirements for the facility are defined in the facility's sampling schedule which is available to operations personnel, at the location(s) noted in OP-05 Document and Records Control. The sampling schedule is maintained by the PCT and is updated as required.
- 3.3 Samples that are required to be tested by an accredited and licensed laboratory, are collected, handled and submitted according to the directions provided by the licensed laboratory(ies) that conducts the analysis. The laboratory(ies) used for this facility are listed in the Essential Supplies and Services List (within the Facility Emergency Plan (FEP)).

Electronic and/or hardcopy reports received from the laboratory are maintained as per OP-05 Document and Records Control. Analytical results from laboratory reports are uploaded into OCWA's Process Data Management system (PDM).

- 3.4 Continuous monitoring equipment is used to sample and test for the following parameters related to process control and finished drinking water quality:
Cobalt DWS
 - Turbidity – raw water, filters 1-4 effluent
 - Free chlorine residual – treated water
 - UV dosage – treated water
 - pH – raw water and treated water
 - Flow rates – raw water and treated water

Test results from continuous monitoring equipment are captured by OCWA's SCADA system and are reviewed by a certified operator in accordance with the requirements of SDWA O. Reg. 170/03.

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SAMPLING, TESTING AND MONITORING		
Reviewed by: QEMS Representative		Approved by: SPC Manager

- 3.5 Adverse water quality incidents are responded to and reported as per Environmental Emergency Procedures (EEPs) found in the Facility Emergency Plan Binder.
- 3.6 In-house process control activities are conducted on a regular basis by the certified operator(s) on duty and are as follows:


Operational Parameter	Location	Frequency
Alkalinity	Raw water Process water	Grab weekly
Aluminum Residual	Treated water	Grab weekly
Colour	Treated water	Grab weekly
Temperature	Treated water	
Free Chlorine Residual	Treated water Distribution water (various locations)	Grab weekly
Polyaluminum chloride Usage	WTP	Bi-weekly reading
Chlorine Gas Usage	Chlorine room	Bi-weekly reading
Sodium Hydroxide Usage	WTP	Bi-weekly reading
Turbidity	Process water	Grab monthly

In-house samples are analyzed following approved laboratory procedures. The sampling results are recorded on a facility round sheet and are entered into the PDM system. Any required operational process adjustments are recorded in the facility log book.

- 3.7 Additional sampling, testing and monitoring activities related to the facility's most challenging conditions are captured in the existing in-house program as described above.
- 3.8 There are no relevant upstream sampling, testing and monitoring activities that take place for this facility/system.
- 3.9 Sampling, testing and monitoring results are readily accessible to the Owner at the Kirkland Lake Process and Compliance office and/or the Municipal Office.

The owner is provided a Quarterly Operations Reports which discusses regulatory results and operational issues. Owners are also provided with an annual summary of sampling, testing and monitoring results through the SDWA O. Reg. 170/03 Section 11 - Annual Report, Schedule 22 - Municipal Summary Report and through the Management Review process outlined in OP-20 Management Review.

In addition, updates regarding sampling, testing and monitoring activities are provided as per the operating agreement and during regular client meetings.

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SAMPLING, TESTING AND MONITORING		
Reviewed by: QEMS Representative		Approved by: SPC Manager


4. Related Documents

Annual Report (O. Reg. 170 Section 11)
 Facility Emergency Plan (FEP) Binder
 Facility Logbook
 Facility Round Sheets
 Laboratory Analysis Reports
 Laboratory Chain of Custody Forms
 Municipal Summary Report (O. Reg. 170 Schedule 22)
 Process Data Management System (PDM)
 Quarterly Operations Reports
 Reporting and Responding to Adverse Results (EEPs)
 Sampling Schedule
 OP-05 Document and Records Control
 OP-06 Drinking Water System
 OP-20 Management Review

5. Revision History

Date	Revision	Reason for Revision
2022-03-17	0	Procedure issued



	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-17 Rev Date: 2022-03-18 Rev No: 0 Pages: 1 of 2</p>
MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose


To describe the procedure for the calibration and/or verification and maintenance of measurement and recording equipment at the Cobalt Drinking Water System.

2. Definitions

None

3. Procedure

- 3.1 All measurement and recording equipment calibration and maintenance activities must be performed by appropriately trained and qualified personnel or by a qualified third-party calibration service provider (refer to OP-13 Essential Supplies and Services).
- 3.2 The Instrumentation Technician establishes and maintains a list of measurement and recording devices and associated calibration and/or verification schedules using the automated Work Management System (WMS). When a new device is installed, it is added to the WMS system by a SuperUser. The new device is tagged with a unique identification number and the maintenance schedule is set up. Work orders are then automatically generated as per the schedule (refer to OP-15 Infrastructure Maintenance, Rehabilitation and Renewal).
- 3.3 Details regarding the results of the calibration and/or verification are recorded within each individual work order generated by the WMS, and in the facility logbook.
- 3.4 Calibration and maintenance activities are carried out in accordance with procedures specified in the manufacturer's manual, instructions specified in WMS or OCWA's calibration procedures.
- 3.5 Standards, reagents and/or chemicals that may be utilized during calibration and/or verification and/or maintenance activities are verified before use to ensure they are not expired. Any expired standards, reagents and/or chemicals are appropriately disposed of and are replaced with new standards, reagents and/or chemicals as applicable.
- 3.6 Any measurement device which does not meet its specified performance requirements during calibration and/or verification must be removed from service (if practical) until repaired, replaced or successfully calibrated. The failure must be reported to Operations Management and the ORO, as soon as possible so that immediate measures can be taken to ensure that drinking water quality has not been compromised by the malfunctioning device. Any actions taken as a result of the failure are recorded in the facility logbook and Instrumentation Calibration/Maintenance form. Operations Management or the PCT ensures that any notifications required by applicable legislation are completed and documented within the specified time period.

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MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE		
Reviewed by: QEMS Representative	Approved by: SPC Manager	


3.7 Calibration and maintenance records and maintenance/equipment manuals are maintained as per OP-05 Document and Records Control.

4. Related Documents

Calibration/Maintenance Records
Facility Logbook
Maintenance/Equipment Manuals
WMS Records
OP-05 Document and Records Control
OP-13 Essential Supplies and Services
OP-15 Infrastructure Maintenance, Rehabilitation and Renewal

5. Revision History

Date	Revision	Reason for Revision
2022-03-18	0	Procedure issued

 Ontario Clean Water Agency	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-18 Rev Date: 2022-03-18 Rev No: 0 Pages: 1 of 4
EMERGENCY MANAGEMENT		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for maintaining a state of emergency preparedness at the Cobalt WTP

2. Definitions

Emergency Response Plan (ERP) – a corporate-level emergency preparedness plan for responding to and supporting serious (Level 3) operations emergencies

Facility Emergency Plan (FEP) – a facility-level emergency preparedness plan for responding to and recovering from operations emergencies

Operations Management – refers to the Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

3. Procedure


3.1 The Facility Emergency Plan (FEP) is the corporate standard for emergency management at OCWA-operated facilities. The FEP supports the facility-level response to and recovery from Level 1, 2 and 3 events related to water and wastewater operations and directly links to the corporate-level Emergency Response Plan (ERP) for management of Level 3 events that require corporate support. Operations Management is responsible for establishing a site-specific FEP that meets the corporate standard for these drinking water systems.

3.2 OCWA recognizes three levels of events:

Level 1 is an event that can be handled entirely by plant staff and regular contractors. The event and the actions taken to resolve it (and to prevent a reoccurrence, if possible) are then included in regular reporting (both internally and externally). Examples may include response to an operational alarm, first aid incident, small on-site spill, or a process upset that can be easily brought under control.

Level 2 is an event that is more serious and requires immediate notification of others (regulator, owner). Examples may include minor basement flooding, injury to staff that requires medical attention, or a spill that causes or is likely to cause localized, off-site adverse effects. If the event reaches this level, the instructions indicate the need to contact the Safety, Process and Compliance Manager and/or Regional Hub Manager.

Level 3 is an actual or potential situation that will likely require significant additional resources and/or threatens continued operations. It may require corporate-level support including activation of the OCWA Action Group and opening of an Emergency Operations Centre (EOC) as described in the corporate ERP. Level 3 events usually

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EMERGENCY MANAGEMENT		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

involve intervention from outside organizations (client, emergency responders, Ministry of the Environment and Climate Change, media, etc.). Examples may include:

- Disruption of service/inability to meet demand;
- Critical injury including loss of life;
- Breach of security that is a threat to public health;
- Intense media attention;
- Community emergency affecting water supply/treatment;
- Declared pandemic; or
- Catastrophic failure that could impact public health or the environment or cause significant property damage.

3.3 Potential emergency situations or service interruptions identified for the Cobalt Drinking Water System include:

- Unsafe Water
- Spill Response
- Critical Injury
- Critical Shortage of Staff
- Loss of Service
- Security Breach


3.4 The processes for responding to and recovering from each potential emergency situation/service disruption are documented within a site-specific contingency plan (CP). The CPs and related standard operating procedures (SOPs) are contained within the FEP.

3.5 OCWA's training requirements related to the FEP are as follows:

Training Topic	Training Provider	Type of Training	Frequency	Required For
Establishing and maintaining a FEP that meets the corporate standard	Safety, Process and Compliance Manager and/or Corporate Compliance (as required)	On-the-Job Practical	Upon hire and when changes are made to the corporate standard*	PCTs (or others identified by the Operations Management)
Contents of the site-specific FEP	Facility Level (coordinated by QEMS Representative)	On-the-Job Practical	Upon hire and when changes to the FEP are made*	All operations personnel with responsibilities for responding to an emergency

*Note: Changes to the corporate standard or site-specific FEP may only require the change to be communicated to Operations for implementation. Therefore, not all changes will require training.

3.6 At least one CP must be tested each calendar year and each CP must be reviewed at least once in a five-calendar year period. The reviews and tests are recorded on the FEP-01 Contingency Plan Review/Test Summary Form. This record includes the outcomes of the review/test, and identifies any opportunities for improvement and


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EMERGENCY MANAGEMENT		
Reviewed by: QEMS Representative		Approved by: SPC Manager

actions taken. A scheduled test of a CP may be regarded as a review of that particular CP as long as the outcomes are evaluated using the FEP-01 form. A CP-related response to an actual event may also be considered a review or a test. A review of the incident including lessons learned should be recorded on FEP-01 following the resolution of the actual event, along with any opportunities for improvement/actions identified.

- 3.7 Revisions to the CPs, SOPs and other FEP documents are made (as necessary) following a review, test, actual event or other significant change (e.g., changes in regulatory requirements, corporate policy or operational processes and/or equipment, etc.). Results of the emergency response testing and any opportunities for improvement/actions identified are considered during the Management Review (OP-20).
- 3.8 Roles and responsibilities for emergency management at OCWA-operated facilities are set out in the FEP. Specific roles and responsibilities related to a particular emergency situation or service interruption (including those of the Owner where applicable) are set out in the relevant site-specific CP. A general description of the respective responsibilities of the Owner and the operating authority in the event an emergency occurs is included in the service agreement with the Owner (as required by the *Safe Drinking Water Act*).
- 3.9 Where they exist, any relevant sections of the Municipal Emergency Response Plan (MERP) are included or referenced in the appendices section of the FEP. Measures specified in the MERP are incorporated into CPs where appropriate.
- 3.10 An emergency contact list in conjunction with the essential supplies and services list is contained within the FEP and is reviewed/updated at least once per calendar year. An emergency communications protocol is contained within the FEP. Specific notification requirements during emergency situations or service interruptions are set out in the individual CPs and in the ERP.

4. Related Documents


Corporate Emergency Response Plan
 Emergency Contact List/Essential Supplies & Services List (Contacts section of FEP)
 Facility Emergency Plan
 FEP-01 Contingency Plan Review/Test Summary Form
 Municipal Emergency Response Plan (as applicable)
 OP-20 Management Review

 Ontario Clean Water Agency	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-18 Rev Date: 2022-03-18 Rev No: 0 Pages: 4 of 4
EMERGENCY MANAGEMENT		
Reviewed by: QEMS Representative		Approved by: SPC Manager

5. Revision History

Date	Revision	Reason for Revision
2022-03-18	0	Initial Release



 Ontario Clean Water Agency	OPERATIONAL PLAN Cobalt Drinking Water System	QEMS Proc.: OP-19 Rev Date: 2022-09-14 Rev No: 0 Pages: 1 of 4
INTERNAL QEMS AUDITS		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for conducting internal audits at the facility level that evaluate the conformance of OCWA's Quality & Environmental Management System (QEMS) to the requirements of the Drinking Water Quality Management Standard (DWQMS).

This procedure applies to Internal QEMS Audits conducted at the Cobalt Drinking Water System for the purpose of meeting the DWQMS requirements for internal audits.

Note: This procedure does not apply to internal compliance audits conducted in accordance with OCWA's Internal Audit Program.

2. Definitions

Audit Team – one or more Internal Auditors conducting an audit

Internal Auditor – an individual selected to conduct an Internal QEMS Audit

Internal QEMS Audit – a systematic and documented internal verification process that involves objectively obtaining and evaluating documents and processes to determine whether a quality management system conforms to the requirements of the DWQMS

Lead Auditor – Internal Auditor responsible for leading an Audit Team

Non-conformance – non-fulfillment of a DWQMS requirement

Objective Evidence – verifiable information, records or statements of facts. Audit evidence is typically based on interviews, examination of documents, observations of activities and conditions, reviewing results of measurements and tests or other means. Information gathered through interviews should be verified by acquiring supporting information from independent sources


Opportunity for Improvement (OFI) – an observation about the QEMS that may, in the opinion of the Internal Auditor, offer an opportunity to improve the effectiveness of the system or prevent future problems; implementation of an OFI is optional

3. Procedure

3.1 Audit Objectives, Scope and Criteria

3.1.1 In general, the objectives of an internal QEMS audit are:

- To evaluate conformance of the implemented QEMS to the requirements of the DWQMS;
- To identify non-conformances with the documented QEMS; and
- To assess the effectiveness of the QEMS and assist in its continual improvement.

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3.1.2 The scope of an internal QEMS audit includes activities and processes related to the QEMS as documented in the Operational Plan.

3.1.3 The criteria covered by an internal QEMS audit include:

- Drinking Water Quality Management Standard (DWQMS)
- Current Operational Plan
- QEMS-related documents and records

3.1.4 The audit scope and criteria may be customized as necessary to focus on a particular process/critical control point and/or any elements of the DWQMS which may warrant specific attention. The results of previous internal and external audits should also be considered.

3.2 Audit Frequency

3.2.1 Internal QEMS audits may be scheduled and conducted once every calendar year or may be separated into smaller audit sessions scheduled at various intervals throughout the calendar year. However, all elements of the DWQMS must be audited at least once every calendar year.

3.2.2 The QEMS Representative is responsible for maintaining the internal QEMS audit schedule. The audit schedule may be modified based on previous audit results.

3.3 Internal Auditor Qualifications

3.3.1 Internal QEMS audits shall only be conducted by persons approved by the QEMS Representative and having the following minimum qualifications:

- Internal auditor training or experience in conducting management system audits; and
- Familiarity with the DWQMS requirements.


3.3.2 Internal Auditors that do not meet the qualifications in s.3.3.1 may form part of the Audit Team for training purposes, but cannot act as Lead Auditor.

3.3.3 Internal Auditors must remain objective and, where practical, be independent of the areas/activities being audited.

3.4 Audit Preparation

3.4.1 Together, the QEMS Representative and the Lead Auditor:

- Establish the audit objectives, scope and criteria;
- Confirm the audit logistics (locations, dates, expected time and duration of audit activities, any health and safety considerations, availability of key

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personnel, audit team assignments, etc.).

3.4.2 Each Internal Auditor is responsible for:


- Reviewing documentation to prepare for their audit assignments including:
 - the Operational Plan and related procedures;
 - results of previous internal and external QEMS audits;
 - the status and effectiveness of corrective and preventive actions implemented;
 - the results of the management review;
 - the status/consideration of OFIs identified in previous audits; and
 - other relevant documentation.
- Preparing work documents (e.g., checklists, forms, etc.) for reference purposes and for recording objective evidence collected during the audit

3.5 Conducting the Audit

- 3.5.1 Opening and closing meetings are not required, but may be conducted at the discretion of the QEMS Representative and the Lead Auditor taking into account expectations of Top Management.
- 3.5.2 The Audit Team gathers and records objective evidence by engaging in activities that may include conducting interviews with Operations Management and staff (in person, over the phone and/or through e-mail), observing operational activities and reviewing documents and records.
- 3.5.3 The Audit Team generates the audit findings by evaluating the objective evidence against the audit criteria (s. 3.1.3). In addition to indicating conformance or non-conformance, the audit findings may also lead to the identification of opportunities for improvement (OFIs). The Lead Auditor is responsible for resolving any differences of opinion among Audit Team members with respect to the audit findings and conclusions.

3.6 Reporting the Results

- 3.6.1 The Lead Auditor reviews the audit findings and conclusions with the QEMS Representative and Top Management. Other audit participants may also take part in this review as appropriate. This review may take place in person (e.g., during a closing meeting) or through other means (phone call, email, etc.). Any diverging opinions regarding the audit findings and conclusions should be discussed and, if possible, resolved. If not resolved, this should be noted by the Lead Auditor.
- 3.6.2 The Lead Auditor submits a written report and/or completed work documents to the QEMS Representative. The submitted documentation must identify (at a minimum):

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- Audit objectives, scope and criteria;
- Audit Team member(s) and audit participants;
- Date(s) and location(s) where audit activities were conducted;
- Audit findings including:
 - Related objective evidence for each element;
 - Any non-conformance identified referencing the requirement that was not met; and
 - OFIs or other observations.
- Audit conclusions.

3.6.3 The QEMS Representative distributes the audit results to Top Management and others as appropriate.

3.6.4 The QEMS Representative ensures that results of internal QEMS audits are included as inputs to the Management Review as per OP-20 Management Review.

3.7 Corrective Actions and Opportunities for Improvement (OFIs)

3.7.1 Corrective actions are initiated when non-conformances are identified through internal QEMS audits and are documented and monitored as per OP-21 Continual Improvement.

3.7.2 OFIs are considered, and preventive actions initiated, documented and monitored as per OP-21 Continual Improvement.

3.8 Record-Keeping


3.8.1 Internal QEMS audit records are filed by the QEMS Representative and retained as per OP-05 Document and Records Control.

4. Related Documents

Internal Audit Records (checklists, forms, reports, etc.)
 QEMS – Summary of Findings spreadsheet
 OP-05 Document and Records Control
 OP-20 Management Review
 OP-21 Continual Improvement

5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued

	<p style="text-align: center;">OPERATIONAL PLAN Cobalt Drinking Water System</p>	<p>QEMS Proc.: OP-20 Rev Date: 2022-09-14 Rev No: 3 Pages: 1 of 3</p>
MANAGEMENT REVIEW		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for conducting a Management Review of the Quality & Environmental Management System (QEMS) at the facility level.

2. Definitions

Management Review – a formal (documented) meeting conducted at least once every calendar year by Top Management to evaluate the continuing suitability, adequacy and effectiveness of OCWA's Quality & Environmental Management System (QEMS)

Operations Management – refers to the Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Top Management – a person, persons or 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 or subject systems.

OCWA has defined Top Management for the Cobalt Drinking Water System as:


- Operations Management – Temiskaming Shores Cluster
- Regional Hub Manager – Northeastern Ontario Regional Hub
- Safety, Process & Compliance (SPC) Manager – Northeastern Ontario Regional Hub

3. Procedure

- 3.1 Top Management ensures that a Management Review is conducted at least once every calendar year.

Management Reviews for more than one drinking water system may be conducted at the same meeting provided the systems belong to the same owner and the considerations listed in section 3.4 below are taken into account for each individual system and documented in the Management Review meeting minutes.

- 3.2 At a minimum, the QEMS Representative, at least one member of Top Management and at least one facility operator must attend the Management Review meeting. Other members of Top Management may participate though their attendance is optional.
- 3.3 Other staff may be invited to attend the Management Review meeting or to assist with presenting information or in reviewing the information presented, where they offer additional expertise regarding the subject matter.
- 3.4 The standing agenda for Management Review meetings is as follows:
- a) Incidents of regulatory non-compliance;
 - b) Incidents of adverse drinking water tests;
 - c) Deviations from critical control limits and response actions;


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- d) The effectiveness of the risk assessment process;
- e) Internal and third-party audit results (including any preventive actions implemented to address Opportunities for Improvement (OFI) or rationale as to why OFIs were not implemented);
- f) Results of emergency response testing (including any OFIs identified);
- g) Operational performance;
- h) Raw water supply and drinking water quality trends;
- i) Follow-up on action items from previous Management Reviews;
- j) The status of management action items identified between reviews;
- k) Changes that could affect the QEMS;
- l) Consumer feedback;
- m) The resources needed to maintain the QEMS;
- n) The results of the infrastructure review;
- o) Operational Plan currency, content and updates;
- p) Staff suggestions; and
- q) Consideration of applicable Best Management Practices (BMPs).

- 3.5 In relation to standing agenda item q), applicable BMPs, if any, to address drinking water system risks discussed during other agenda items, are identified and documented in the Management Review minutes. Review and possible adoption of applicable BMPs are revisited during subsequent Management Reviews and are incorporated into preventive and/or corrective actions as per OP-21 as appropriate.
- 3.6 The SPC Manager coordinates the Management Review and distributes the agenda with identified responsibilities to participants in advance of the Management Review meeting along with any related reference materials.
- 3.7 The Management Review participants review the data presented and make recommendations and/or initiate action to address identified deficiencies as appropriate as per OP-21.
- 3.8 The QEMS Representative ensures that minutes of and actions resulting from the Management Review meeting are prepared and distributed to the appropriate OCWA Top Management, personnel and the Owner.
- 3.9 The QEMS Representative monitors the progress and documents the completion of actions resulting from the Management Review.

4. Related Documents


Management Review Reference Materials
Minutes and actions resulting from the Management Review
OP-21 Continual Improvement

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MANAGEMENT REVIEW		
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5. Revision History

Date	Revision #	Reason for Revision
2022-09-14	0	Procedure issued



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CONTINUAL IMPROVEMENT		
Reviewed by: QEMS Representative	Approved by: SPC Manager	

1. Purpose

To describe the procedure for tracking and measuring continual improvement of the Quality & Environmental Management System (QEMS) for the Cobalt Drinking Water System.

2. Definitions

Continual Improvement - recurring activity to enhance performance (ISO 14001:2014)

Corrective Action – action to eliminate the cause of detected nonconformity of the QMS with the requirements of the DWQMS or other undesirable situation

Non-conformance – the non-fulfilment of a DWQMS requirement

Preventive Action – action to prevent the occurrence of nonconformity of the QMS with the requirements of the DWQMS or other undesirable situation

3. Procedure

3.1 OCWA strives to continually improve the effectiveness of its QEMS for this drinking water system(s) through the identification and implementation of corrective/preventive actions and, as appropriate, through review and consideration of applicable Best Management Practices (BMPs).


3.2 Corrective Actions

3.2.1 Non-conformances may be identified through an internal or external QEMS audit(s) conducted for this drinking water system. They may also be identified as a result of other events such as:

- an incident/emergency;
- community/Owner complaint;
- other reviews; and
- operational checks, inspections or audits.

3.2.2 The QEMS Representative (in consultation with Operations Management and/or the SPC Manager) investigates the need for a corrective action to eliminate the root cause(s) so as to prevent the non-conformance from recurring. The investigation may also include input from the operators and other stakeholders and the consideration of BMPs as appropriate. A root cause analysis is performed for any non-conformance and is documented in the Summary of Findings" spreadsheet.

3.2.3 The QEMS Representative determines the corrective action needed based on this consultation. The Operations Management (or designate) assigns

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responsibility and a target date for resolution.

3.2.4 The QEMS Representative ensures corrective actions are documented using the QEMS - Summary of Findings spreadsheet. The QEMS Representative monitors the progress of corrective action(s) and provides status updates to Top Management.

3.2.5 The implementation and effectiveness of corrective actions are verified during subsequent internal QEMS audits and are considered during the Management Review. If there is evidence that the action taken was not effective, the Operations Management (or designate) initiates further corrective action and assigns resources as appropriate until the non-conformance is fully resolved.

3.3 Preventive Actions

3.3.1 Potential preventive actions may be identified through an internal or external QEMS audit as Opportunities For Improvement (OFIs), during the Management Review or through other means such as:

- staff/Owner suggestions;
- regulator observations;
- evaluation of incidents/emergency response/tests;
- the analysis of facility/Regional Hub or OCWA-wide data/trends;
- non-conformances identified at other drinking water systems; or
- a result of considering a BMP.

3.3.2 The QEMS Representative (in consultation with Operations Management and/or the SPC Manager) considers whether a preventive action is necessary. The review may also include input from the operators and other stakeholders and the consideration of BMPs as appropriate.

3.3.3 If it is decided that a preventive action is necessary, the QEMS Representative determines the action to be taken based on this consultation and the Operations Management (or designate) assigns responsibility and a target date for implementation.

3.3.4 The implementation of preventive actions are tracked by the QEMS Representative using the QEMS - Summary of Findings spreadsheet.

3.3.5 The implementation and effectiveness of preventive actions are verified during subsequent internal QEMS audits and are considered during the Management Review. If there is evidence that the action taken was not effective, the Operations Management (or designate) may consider further preventive actions and assigns resources as appropriate.

3.4 The QEMS Rep. and Operations Management monitor corrective/preventive actions on an ongoing basis and review the status and effectiveness of the actions during

Schedule C – Director's Directions for Operational Plans (Subject System Description Form) Municipal Residential Drinking Water System

Fields marked with an asterisk (*) are mandatory.

Owner of Municipal Residential Drinking Water System *
The Corporation of the Town of Cobalt

Subject Systems

Name of Drinking Water System (DWS) *	Licence Number *	Name of Operating Subsystems (if applicable)	Name of Operating Authority *	DWS Number(s) *
1. Cobalt Drinking Water System	206-101		Ontario Clean Water Agency	220000362

Contact Information for Questions Regarding the Operational Plan

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