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1.0 Purpose/Objective/Plan

This procedure defines the method used for identifying hazardous events and associated hazards, ranking hazardous events, identifying critical points and control limits. The outcome of this task is presented in “NH Element 8: OP-E8-1” and the associated CCP procedures “NH Element 8: OP-E8-2”.

This shall document a risk assessment process that;

- a) Considers potential hazardous events and associated hazards, as identified in the Ministry of the Environment and Climate Change document titled “Potential Hazardous Events For Municipal Residential Drinking Water Systems”. A copy of this document is available at www.ontario.ca/drinkingwater.
- b) identifies additional potential hazardous events and associated hazards,
- c) assesses the risks associated with the occurrence of hazardous events,
- d) ranks the hazardous events according to the associated risk,
- e) identifies control measures to address the potential hazards and hazardous events,
- f) identifies Critical Control Points,
- g) identifies a method to verify, at least once every calendar year, the currency of the information and the validity of the assumptions used in the risk assessment,
- h) ensures that the risks are assessed at least once every thirty-six months, and
- i) Considers the reliability and redundancy of equipment

Risk Assessment Outcomes procedure shall:

- a) Considers potential hazardous events and associated hazards, as identified in the Ministry of the Environment and Climate Change document titled “Potential Hazardous Events For Municipal Residential Drinking Water Systems”. A copy of this document is available at www.ontario.ca/drinkingwater.
- b) identifies additional potential hazardous events and associated hazards,
- c) assesses the risks associated with the occurrence of hazardous events,
- d) ranks the hazardous events according to the associated risk,
- e) identifies control measures to address the potential hazards and hazardous events,
- f) identifies Critical Control Points,
- g) identifies a method to verify, at least once every calendar year, the currency of the information and the validity of the assumptions used in the risk assessment,
- h) ensures that the risks are assessed at least once every thirty-six months, and
- i) considers the reliability and redundancy of equipment.

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2.0 Procedure

2.1 The Operating Authority shall identify; potential hazardous events and associated hazards, as identified in the Ministry of Environment document titled “Potential Hazardous Events For Municipal Residential Drinking Water Systems” found under “associated documents, under element 8”, assess the risk associated with the occurrence of hazardous events, rank them according to the risk and determine CCPs and their respective critical control limits. Outline procedures/processes for monitoring and responding to deviations from the critical control points.

2.2 At least once per year, or following a major process change, the QMS Rep or project Manager will facilitate a review of the currency of the information and validity of the assumptions used in the risk assessment process for the drinking water system. This will be done with the input of the Operators and a member of Top management. After any emergency situation there will be a staffing debrief and reporting to Top management as well as monitoring the effectiveness of the response.

When reviewing the currency of the risk assessment information, the following may be considered:

- Process changes
- Reliability and redundancy of equipment
- Emergency situations
- Critical control point deviations (including adverse)
- QMS non-conformances related to standard operating procedures

2.3 Every 3 years a more comprehensive review will be done of the drinking water system risk assessment. This is an opportunity to review the risk assessment process and outcomes. In the year where the 3 year review process is completed, the annual risk assessment review will be considered complete. During the 3 year Risk Re-Assessment a review of “Best Management Practices” will be conducted with a review of any best management practice identified by the Ministry of Environment and Climate Change

2.4 The completed risk assessment is taken to top management for review and approval. The QMS Rep or project Manager is responsible for maintaining and making any necessary changes or updates to the risk assessment. The QMS rep is also responsible for ensuring that any necessary changes are made to the training requirements, standard operating procedures, system procedures or other parts of the

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QMS resulting from changes to the risk assessment, as well as ensuring all operating staff are aware of the changes.

2.5 The risk assessment is completed by editing “NH Element 8: OP-E8-1 Risk Assessment” and “NH Element 8: OP-E8-2 Critical Control Points table R”. The previous year’s table is used for the annual review with newly identified hazards inserted into the table with columns as described below, The Meeting notes will be recorded on “NH Element 8: OP-E8-3 Risk Assessment Meeting”.

2.6 For each hazard/hazardous event the Likelihood of Occurrence, Consequence on the water supply safety, and Detectability of Occurrence shall be determined and ranked on a scale of 1 to 5 as per Table 5.1. The rankings shall be multiplied to provide a total risk rating for each hazard.

2.7 Determine a threshold value for high risk events which must be considered further. The threshold should be set to capture all events which are sufficiently severe to require that they be “managed”.

2.8 Critical Control Deviations will be recorded as “Error Codes” on daily spreadsheets, they will be reviewed annually during the Management review Process, during that time if a persistent issue is identified corrective actions will be initiated and recorded on the CAR Log/ Root Cause Analysis sheets. Critical control deviations can also be addressed after adverse water observations or emergency scenarios.

2.9 After any Emergency Situation, Operations staff will hold and Emergency Exercise/ Debriefing this event will be recorded on “NH Element 18: OP-E18-8 Emergency Exercise/ Debriefing Form” and any recommended improvements will be followed up on using the Corrective Action Process

Table 5.1 – Hazard Ranking

<u>Likelihood</u>		<u>Consequences</u>		<u>Detectability</u>	
	<u>Rare</u>		<u>Insignificant</u>		<u>High</u>
1	– requires exceptional circumstances to occur	1	– little operational disruption	1	- immediately detectable, SCADA alarms
	<u>Unlikely</u>		<u>Minor</u>		<u>Moderate</u>
2	– could occur at some point	2	– impact on small portion of population,	2	- indicated by alarm or lab results

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	easily managed operationally	
	<u>Moderate</u>	
3 – will occur at some point	3 - minor impact on large population, managed operationally	3 - visually detectable, rounds or maintenance
	<u>Major</u>	
4 – will occur during normal circumstances	4 - significant impact on large population, difficult to manage	4 - would not be detected until problem occurs
	<u>Catastrophic</u>	
5 – expected to occur in most circumstances	5 - major impact on population, complete systems failure	5 - cannot be detected under any circumstances

2.9 Critical Control Point Evaluation

- 2.9.1** For each of the events the existing hazard monitoring and control measures shall be identified.
- 2.9.2** For each of the events, potential recommended Additional Monitoring and Control Measures shall be identified.
- 2.9.3** Based on the threshold calculation and the evaluation of existing control measures available, hazards will be identified as being CCPs or not. If the calculated Total CCP Threshold = 9 or more, or is one of the MECP “recommended minimum CCPs”, then the hazardous event is considered to be a Critical Control Point. If the hazardous event cannot be controlled it is not a CCP.

3.0 Associated Forms, Procedures or Records

QMS Overview and Policy Statement
 OP-E6 Systems Description
 OP-E21 Continual Improvement
 Ministry Identified Best Management Practices

4.0 Associate Documents

MECP- Potential Hazardous Events for Municipal Residential Drinking Water systems
 Element 8: OP-E8-1 Risk Assessment

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Element 8: OP-E8-2 Critical control points Table R

Element 13: G13-2 Corrective Action Report Log

Element 13: G13-3 Corrective Action Report

Element 13: G13-5 Root Cause Analysis

Element 18: OP-E18-7 Emergency Exercise/Debriefing

Element 20: OP-E20-1 Management Review Template

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Revision History

New Revision	Date of Revision	Summary of Changes	Revised by
9	July 30, 2026	Removed date when referencing ministry document; keeps being updated. Changed all "appendix" to reflect new names of documents. Changed "4.0 Appendices" to "4.0 Associated Documents" Added revision history.	Chloë Godfrey