

	<b>Ballantrae/Musselman's Lake and Stouffville Water Distribution Systems</b>	Procedure No.: QMS-SYS-07
	<b>Operational Plan Quality Management System Procedure</b>	Page 1 of 4
	Procedure Title: Risk Assessment	Revision No.: 4
	Approved By: Top Management	Approval Date: January 14, 2019

### 1.0 Purpose

To document the procedure used to complete a risk assessment for the drinking water system. The risk assessment process will:

- identify potential hazardous events and associated hazards
- assess and rank the risks associated with the hazards
- identify control measures to address the hazards
- identify critical control points within the drinking water system
- identify a method to verify the risk assessment validity and assumptions at least once per calendar year
- ensure a risk assessment is conducted at least once every three years
- consider the reliability and redundancy of the equipment

### 2.0 Scope

Applies to the operation of the Ballantrae/Musselman's Lake and Stouffville Drinking Water Distribution Systems.

### 3.0 Responsibility

Risk Assessment Team

- Director of Public Works
- Manager of Operations
- Water/Wastewater Supervisor
- Operations Technologist
- Minimum two (2) Certified Operators
- Others deemed necessary

### 4.0 Procedure

#### 4.1 Annual Review Process

At least once per calendar year, or following a major process change, the QMS Representative facilitates 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 is undertaken by the Risk Assessment Team. The QMS Representative shall ensure that all members of the Risk Assessment Team are available and present at the annual review.

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;

- QMS non-conformances related to standard operating procedures.

#### 4.2 Risk Assessment Process

The Risk Assessment Team assembles and conducts a new risk assessment every three (3) years. Scheduling is outlined in the QMS-APP-01-01 - QMS Activity Schedule. The Risk Assessment Team identifies the potential hazards (biological, chemical, physical, radiological) and hazardous events which could adversely affect the Town's ability to provide safe drinking water to its customers. The Risk Assessment Team also considers potential hazardous events and associated hazards as identified in the MOECC document titled Potential Hazardous Events for Municipal Residential Drinking Water Systems, dated February 2017 as it may be amended.

As the first step of the risk assessment, the Risk Assessment Team identifies, reviews and assesses potential hazards and hazardous events associated with each of the water distribution systems as they affect water quality. The following are to be identified for each hazard or hazardous event:

- Monitoring
- Control measures
- Available emergency procedures or contingency plans

The risk assessment team ranks the risk associated with the hazards and hazardous events on the basis of likelihood, severity and detectability.

Table 1: Ranking of Hazards

<b>Rank</b>	<b>Likelihood</b>	<b>Rank</b>	<b>Severity</b>	<b>Rank</b>	<b>Detectability</b>
<b>1</b>	<b>Rare</b> <ul style="list-style-type: none"> <li>• May occur in exceptional circumstances</li> <li>• Has not occurred in the past</li> </ul>	<b>1</b>	<b>Insignificant</b> <ul style="list-style-type: none"> <li>• Insignificant impact</li> <li>• Little public exposure</li> <li>• Little or no health risk</li> </ul>	<b>1</b>	<b>Very Detectable</b> <ul style="list-style-type: none"> <li>• Visual</li> </ul>
<b>2</b>	<b>Unlikely</b> <ul style="list-style-type: none"> <li>• Historically has occurred less than once every 5-10 years</li> </ul>	<b>2</b>	<b>Minor</b> <ul style="list-style-type: none"> <li>• Limited public exposure</li> <li>• Minor health risk</li> </ul>	<b>2</b>	<b>Moderately Detectable</b> <ul style="list-style-type: none"> <li>• Casual observation</li> <li>• Ad-hoc inspection</li> </ul>
<b>3</b>	<b>Possible</b> <ul style="list-style-type: none"> <li>• Has occurred or may occur once or more a year</li> </ul>	<b>3</b>	<b>Moderate</b> <ul style="list-style-type: none"> <li>• Minor public exposure</li> <li>• Minor health risk</li> </ul>	<b>3</b>	<b>Normally Detectable</b> <ul style="list-style-type: none"> <li>• Visually detectable on routine inspection</li> </ul>
<b>4</b>	<b>Likely</b> <ul style="list-style-type: none"> <li>• Has occurred or</li> </ul>	<b>4</b>	<b>Major</b> <ul style="list-style-type: none"> <li>• Large population at</li> </ul>	<b>4</b>	<b>Poorly Detectable</b> <ul style="list-style-type: none"> <li>• Visually detectable</li> </ul>

	may occur on a monthly or more		risk • Difficult to manage		but not inspected on a regular basis
<b>5</b>	<b>Very Likely</b> • One or more occurrences on a monthly or more frequent basis	<b>5</b>	<b>Catastrophic</b> • Major impact for large population • Complete failure of systems	<b>5</b>	<b>Undetectable</b> • Cannot detect

For each potential hazard or hazardous event, the control measures are identified along with a total risk ranking. Critical Control Points (CCPs), the Critical Control Limits and the associated methods of monitoring critical limits and responding to deviations are identified if applicable. CCPs are essential steps or points in the subject system where a control is applied to prevent or eliminate a drinking water health hazard, or to reduce it to an acceptable level.

The total risk rating is determined by adding together the ranking for likelihood, severity and detectability from Table 1. A higher number translates to a greater risk to the water distribution systems. All potential hazards and hazardous events which have an overall risk rating equal to or greater than 7 and can be controlled are considered a CCP. For each potential hazard or hazardous event with a risk ranking equal to or greater than 7 and is not a CCP due to lack of control, an associated contingency procedure or response shall be implemented. The Town's minimum CCP includes regulatory sampling.

The outcomes of the risk assessment for the Town of Whitchurch-Stouffville are outlined in the Risk Assessment Outcomes, located in QMS-APP-08-01. Separate ratings shall be determined for the Ballantrae/Musselman's Lake and Stouffville water distribution systems.

## 5.0 References

- MOECC *Potential Hazardous Events for Municipal Residential Drinking Water Systems*, dated February 2017, as it may be amended.
- QMS-SYS-08 – Risk Assessment Outcomes

## 6.0 Appendices

- QMS-APP-01-01 - QMS Activity Schedule
- QMS-APP-08-01 - Risk Assessment Outcomes

## 7.0 Forms

None

## Document Change History

Revision Number	Date	Change	Revision Made By:
2	February 22, 2018	Updated information for DWQMS 2.0	Peter W
3	April 17, 2018	Added Director of Public Works to Responsibility	Russ C

4	January 14, 2019	2019 NSF OFI 1 Added "per calendar" to sections 1.0 & 4.0	Russ C
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