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June 22, 2015

**DEVELOPMENT & INFRASTRUCTURE SERVICES COMMISSION
PUBLIC WORKS SERVICES
INFORMATION REPORT – PWS 2015-37**

TO: Mayor
Members of Council

COPY: Bob Shelton, P.Eng., CAO
Peter Noehammer, P.Eng, Commissioner, Development & Infrastructure

SUBJECT: Risk Assessment - DWQMS

ORIGIN: Director, Public Works Services

In accordance with the Procedure By-law, any Member of Council may request this Information Report be placed on an upcoming Committee of Whole Agenda for discussion through the Clerk.


PURPOSE

The purpose of this report is to provide the Owner (Mayor, Council, CAO) and Top Management a summary of the Town's Risk Assessment Procedure as part of the Water Quality Management Standard. The notion to bring this forward to members of Council was suggested during the Standard of Care Training by Brian Jobb Manager, Walkerton Clean Water Centre Training Institute

COMMENTS

Elements 7 and 8 of the Drinking Water Quality Management Standard (DWQMS) require that municipalities complete Risk Assessments for their drinking water systems, then implement and document the means by which they manage those risks. Potential hazards and hazardous events are identified, and for each, the level of risk is assessed. A structured approach is established to ensure that the areas of highest risk are identified.

This task includes the following steps:

- Identify potential hazardous events and hazards and that could affect drinking water safety;
 - Assess the risk associated with the occurrence of a hazardous event;
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- Rank the hazardous events according to the associated risk;
- Identify control measures that we have in place to address the hazards and hazardous events;
- Identify critical control points;
- Establish critical control limits for each critical control point;
- Ensure that the risk assessment is kept current; and,
- Document the risk assessment process and outcomes.

For the complete procedure, please see attached Appendix 7a of the DWQMS Operational Plan.

The Risk Assessment is facilitated by developing a Risk Assessment Table which documents each of the above steps, recommended action, and Emergency Procedures.

The Risk Assessment process is an ongoing activity. Every twelve months, the information is checked so that it is up-to-date and valid when used in the Risk Assessment for the following year. The Risk Assessment must be completely redone every 36 months at a minimum, unless changing conditions indicate that it should be done more frequently.

As required by the DWQMS, a Communication Procedure has been developed to ensure that the Owner, Top Management, Operating Authority, Service Suppliers and the Public are educated through suitable means on the Quality Management System and are also informed of any changes that affect the nature or effectiveness of the Operational Plan. The reporting of any changes to the Risk Assessment will now be communicated to each party as part of the annual Management Review submitted to Council every March.

BUSINESS PLAN AND STRATEGIC PLAN LINKAGES

Living Well: Through the Management of Proactive Maintenance Programs, compliance of legislative and regulatory requirements, the identification and prevention of hazardous events ensure the delivery of safe drinking water to our community.

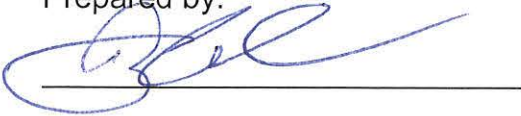
BUDGET IMPACT

The water rate portion of the operating and capital budget provides the funding allocated for the regulatory requirements under the Safe Drinking Act.

CONTACT

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Prepared by:



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Attached: Risk Assessment Procedure Appendix 7a of the DWQMS Operational Plan



APPENDIX 7a: RISK ASSESSMENT PROCEDURE

PURPOSE:

The purpose of the Risk Assessment Procedure is to define the method used to assess and rank risks to the WDS, and to identify Critical Control Points.

The procedure will describe how to:

- ✓ Identify and rank potential hazards within the WDS
- ✓ Identify control measures to address hazards
- ✓ Identify Critical Control Points and associated methods of monitoring and controlling them

DEFINITIONS

Consequence - the potential impact to public health and/or operation of the drinking water system if a hazard or 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 or hazardous event before it occurs.

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

Detectability - the ability to identify or detect a hazard or hazardous event.

Hazard - is a source of danger or a property that may cause drinking water to be unsafe for human consumption. The hazard may be biological, chemical, physical or radiological in nature.

Hazardous Event - is an incident or situation that can lead to the presence of a hazard.

Likelihood - the probability of a hazard or hazardous event occurring

SCOPE:

This Risk Assessment Procedure is applicable to all processes and activities within the control of the Operating Authority of the Newmarket WDS.



PROCEDURE:

1. Hazard/Hazardous Event Identification

- a. The Water/Wastewater Supervisor (O.R.O) shall assemble a Risk Assessment Team to discuss and identify all potential hazards to the Newmarket WDS. The Risk Assessment Team for 2013/2014 consists of the Water/Wastewater Supervisor/O.R.O, one (1) Water/Wastewater Administrative support staff, and 3 certified Water/Wastewater operators.
- b. A review of each process within the WDS must be completed to identify initiating events and subsequent hazards that could be a potential threat to the security of the WDS.
- c. To identify initiating events, hazardous events, and threats, consideration should be given to:
 - All aspects of the work
 - Both routine and non-routine activities
 - Any foreseeable unusual conditions
- d. For each hazard, the consequences that could occur as a result of the hazard must be identified.
- e. For each hazard, the control measures that are in place to prevent the hazard or hazardous event from occurring shall be identified.
- f. Information regarding the Risk Assessment process shall be recorded in the DWQMS Risk Assessment Outcomes Table (*Appendix 8a*)

2. Ranking Risk

- a. Each hazard identified shall be ranked by the Risk Assessment Team according to the following criteria and are further outlined in the tables.
 - **“Likelihood”** is the probability/likelihood of a hazard or hazardous event occurring (Table 1)
 - **“Severity”** is the potential impact to public health or impact on operations if the hazard or hazardous event occurs (Table 2)
 - **“Detectability”** is the ability to identify or detect a hazard or hazardous event



Table 1: Likelihood of a Hazardous Event Occurring

Description	Likelihood of a Hazardous Event Occurring	Rating
Rare	May occur in exceptional circumstances.	1
Unlikely	Could occur at some time – historically less than once every 5-10 years.	2
Possible	Might occur at some time or the event should occur at some time – more than once per year.	3
Likely	Will probably occur in most circumstances – occurs monthly to quarterly	4
Very likely	Is expected to occur in most circumstances – occurs more frequently than monthly	5

Table 2: Severity of a Hazardous Event Occurring

Description	Severity of a Hazardous Event Occurring	Rating
Insignificant	Insignificant impact, little disruption to normal operations, low increase in normal operations costs	1
Minor	Minor impact for small portion of the population, some manageable operational disruption, some increase in operational costs	2
Moderate	Minor impact for larger population, significant modification to normal operation (manageable), operational costs increased, increased monitoring	3
Major	Major impact for small population, systems significantly compromised, high level of monitoring required	4
Catastrophic	Major impact for large population. Complete failure of essential systems/services.	5

Table 3: Detectability of Hazardous Event Occurring

Description	Detectability of a Hazardous Event Occurring	Rating
Very detectable	Easy to detect through routine monitoring, YR SCADA, feedback from others	1
Moderately detectable	Problem can be detected promptly through routine field testing, feedback from others	2
Normally detectable	Part of annual sampling program (i.e. weekly samples, quarterly samples)	3
Poorly detectable	Not normally detected before problem becomes evident.	4
Undetectable	Cannot detect.	5

Risk = Likelihood + Consequence + Detectability

Highest Risk = 15 (5 + 5 + 5)

Critical Control Points (CCPs) may be initiated if rating value is ≥ 10



3. Critical Control Points (CCP)

- a. All hazards or hazardous events which have an overall risk rating of 10 or greater shall be identified as critical on the Risk Assessment Outcomes Table (*Appendix 8a*).
- b. The process step associated with high risk with control shall be designated as a CCP.
- c. All hazards or hazardous events which have no controls shall not be identified as CCPs.
- d. The Risk Assessment Team may add or remove CCPs upon discussion, depending on the level of control and internal decisions. These changes shall be noted in the "Comments" column and added to the table of revisions for the Operational Plan.
- e. For each CCP, the following information shall be recorded into the Risk Assessment Table:
 - Reference to monitoring measures, a description as to what is being monitored and to indicate that the process step is within specified CCLs
 - Reference to response procedures to describe the response to deviation from CCLs, including reporting and recording of information, and the reliability and redundancy of equipment.
- f. If required, the Risk Assessment Team, with support from Operations staff shall draft response procedures to address deviations from CCLs

4. General

- a. Supporting notes and comments, as required, shall be recorded in the Risk Assessment Outcomes Table
- b. The QMR shall ensure that relevant information is circulated to all members of the Risk Assessment Team
- c. The QMR shall ensure that an annual review of the Risk Assessment is completed, and ensure information and assumptions remain current and valid.
- d. Every thirty six (36) months from 1 August 2009, the QMR shall ensure a new Risk assessment is conducted.
- e. The completed Risk Assessment shall be made accessible to Top Management.

REFERENCES:

n/a