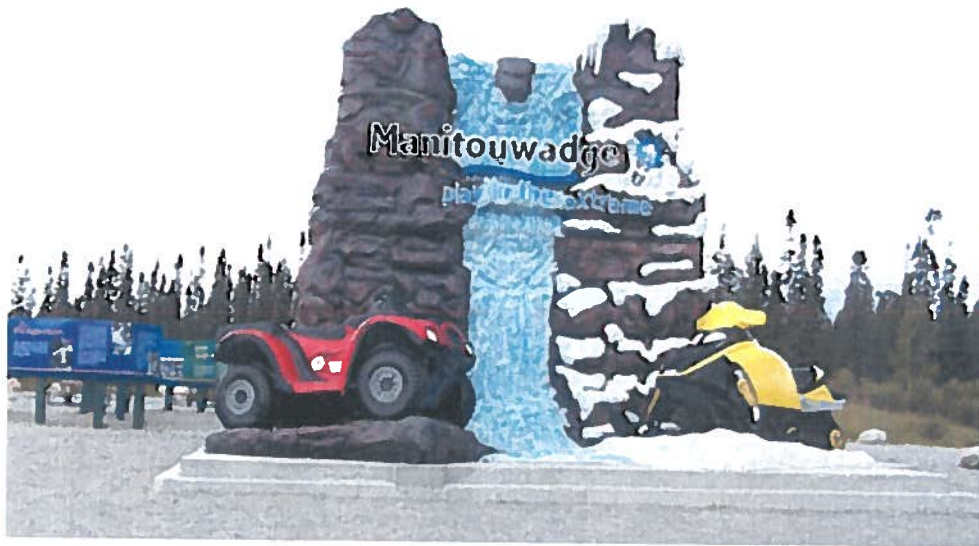


# Drinking Water System Quality Management System Operational Plan



The Corporation of the Township of Manitouwadge  
Owner and Operating Authority

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Manitouwadge

## Introduction

The use of quality management systems has repeatedly proven to be beneficial to businesses in terms of accountability, quality control, efficiency and productivity.

The following recommendations were made by Justice O'Connor in the Part II report of the Walkerton Inquiry,

- Drinking water systems should be operated by authorities that are accredited based on successful third party audits conducted by a certified accrediting body.
- The Ministry of the Environment, in partnership with other relevant stakeholders, should develop a Drinking Water Quality Management Standard against which the third party audits will be conducted.
- All municipalities should prepare Operational Plans describing how the requirements of the Quality Management Standard are achieved.

In conformance with the MOE's prescribed Drinking Water Quality Management Standard, the Township of Manitouwadge has developed and implemented an Operational Plan that outlines the processes and procedures for the overall quality management and operations of the drinking system.



## 1. Quality Management System

This Operational Plan addresses the requirements of the Drinking Water Quality Management Standard for the Township of Manitouwadge water treatment and distribution system. The Township of Manitouwadge is the Owner and Operating Authority for the Waterworks. The Owner is represented by the Council. Top Management of the Operating Authority is represented by the Chief Administrative Office (CAO).

The Quality Management System and its several components are either contained or referred to within the body of the Operational Plan. All System Level Procedures (SLP), those required by the DWQMS, are referenced in this plan and included as appendices (see List of Appendices). When necessary (as required by the DWQMS or determined by the Operating Authority), Standard Operating Procedures (Task Level Documentation) are referenced in this Operational Plan narrative and/or in the over-riding SLP.

## 2. Quality Management System Policy

The Township of Manitouwadge (Township) is committed to providing consumers with safe drinking water. To further enable this commitment, the Public Works Department has developed and is maintaining a Quality Management System in conformance with the Drinking Water Quality Management Standard.

The Department shall regularly review its Quality Management System through the monitoring and measurement of activities, and commits to continually improve the system as it evolves alongside the community it serves.

The Township commits to complying with all applicable legislation and regulations to which the organization subscribes that relate to the production and distribution of drinking water. The Township will keep consumers aware and informed of significant decisions and occurrences through transparent and accountable operation of the drinking water system.

The Quality Management System Policy shall be posted in a public area of the Municipal offices, the Community Centre and the drinking water Treatment Plant. This policy shall be made available to the public upon request.



### **3. Commitment and Endorsement**

The Owner (represented by Council) and Top Management have endorsed this Operational Plan.

Copies of the Endorsements can be found in Appendix, D-7 Endorsement.

Top Management shall further demonstrate its endorsement of this Operational Plan shall by:

- a.) Ensuring that a QMS that meets the requirements of the DWQMS has been developed, communicated and effectively implemented and that necessary resources are provided for the maintenance and improvement of the same, and
- b.) Ensuring that those responsible for the maintenance and improvement of the QMS and the waterworks are aware of all applicable legislation and regulations are they pertain to the production and delivery of safe drinking water.

#### 4. Quality Management System Representative

The Superintendent of Public Works has been appointed to the role of QMS Representative.

The QMS Representative has the responsibility to and the authority to administer the QMS. The responsibilities and authorities include:

- a.) Ensuring that the processes and procedures required for a QMS that are consistent with the type, size and complexity of the subject waterworks, are documented, implemented and maintained.
- b.) Ensuring that processes and procedures are in place for reporting on the performance of the QMS to Top Management, including any need for improvement.
- c.) Ensuring that a robust Document Control procedure has been developed and implemented to ensure documentation remains current and are readily available.
- d.) Supporting Top Management's commitment by taking action to ensure that all applicable legislation and regulations, and relevant aspects of the QMS are effectively communicated, as appropriate to Public Works personnel.
- e.) Promoting the benefits and value of the QMS to all stakeholders.



## 5. Documents and Record Control

A Master List of Documents (D-2) can be found in Appendix A of this Operational Plan. The Master List identifies the Document title and the current revision status of all QMS Documentation.

The QMS Rep ensures that current versions of all documents are in use at all times through the development, implementation and regular audit of the Document Control Procedure. All QMS Procedures, Work Instructions, the Operational Plan, QMS Forms and Templates are subject to Document Control.

The Control of Documents Procedure (P-1) is attached in Appendix B.

A Control of Records (P-2) procedure has been developed and implemented to ensure that the records required by the DWQMS and the Operational Plan are properly maintained for use, protected, available when and where required, retained and properly disposed of.

Records are maintained as objective evidence of conformance to the DWQMS.

The Control of Records Procedure is attached in Appendix B.



## 6. Drinking Water System

The Manitouwadge Water System was first contracted in 1954 and has undergone several upgrades.

Initially, there was one drilled well that pumped water directly into the water main with no treatment. Pressure and flow were controlled by a pressure reducing valve powered by a 50 HP motor. It was coupled to a 4 cylinder engine to provide water during power outages. The system was not automatic. Capacity was 30.2 L/sec. Increase in demand necessitated the commissioning of a second drilled well. Capacity was doubled to 60.4 L/sec. Duty was divided between the two pumps. A prolonged reduction in pressure would signal the second pump to run, meeting flow and pressure demands.

In 1962, numerous water breaks revealed that the water was corroding the water mains. The solution was to construct an induced draught aerator to raise the pH. This necessitated the construction of an in-ground storage tank of 55 cubic meters to receive aerated water. Two high lift pumps pumped the water into the mains controlled by pressure reducing valves. The motors on the existing well pumps were reduced to 25HP. The high lift pumps were 50HP each. One of the high lift pumps was coupled to a six cylinder engine. It was later upgrade to automatic operation during power outages. However, should the reservoir run low on water, the stand by well motor still had to be run manually.

The town continued to grow. The wells and reservoir could no longer maintain normal daily flows. In 1975, a second in-ground reservoir, or 59 cubic meters capacity was added. An additional induced draught aerator was supplied to handle two new drilled wells, located adjacent to Lion's Beach. A ten inch raw water main was constructed to supply the reservoirs located at the Shawinigan Place facility. A 100KW diesel generator was installed to provide emergency power for well pumps #3 and #4. Emergency well capacity was increased from 60.4 L/sec to 120.6 L/sec. A fifth drilled was added in 1989. Emergency well pumping capacity was reduced to 60.4 L/sec.

Two additional high lift pumps were added to bring the firm pumping capacity to 120.8 L/sec. One of the pumps was connected to a motor driven right angle drive, boosting emergency pumping capacity to 60.4 L/sec.

In 1990 a 4,065 cubic meter two-celled reservoir was constructed, two dedicated fire pumps were added and the existing high lift pumps were upgraded to 40.5 L/sec. Firm pumping capacity was increased to 243 L/sec.



A 400 KW generator was installed to provide emergency power for the Shawinigan Place facility.

In the spring of 2004 the well pumps for wells #1, #2, #3 and #4 were replaced with submersible units.

Primary disinfection is proved through the use of UV reactors. Secondary disinfection is achieved through the addition of Sodium Hypochlorite prior to on-site reservoir. Treated water is then pumped into the distribution system.

The system, in its current state can service peak pumping hours and fire flows for a population of 2,300.

### General Characteristics of the Raw Water Supply

Raw Water is presently supplied from five 65 to 85 foot deep supply wells equipped with vertical turbine line shaft pumps. Wells 1 and 2 are located at the distribution pumphouse, at the intersection of Matachewan Road and Shawinigan Place (UTM Zone 16; N5441980.69 E584750.369). Wells 3, 4 & 5 are located adjacent to the west end of Manitouwadge Lake, southeast of Ohsweken Road (UTM Zone 16; N5442253.40 E585105.853). Wells 3 & 4 are located in one building and Well 5 is located in an adjacent building. The wells supply water to the reservoir (at the main distribution pumphouse) through a common 10" transmission main routed along Ohsweken Road and an easement to Shawinigan Place. All well pumps are sized at 30.3 l/s (400 igpm).

The wells draw from a sand and gravel aquifer underlying the southwest portion of the township. The aquifer is underlain by an undulating, relatively impermeable bedrock. The aquifer is flanked with a gravelly till with transmissibility lower than the main part of the aquifer. A precise description or location of the aquifer is impossible because data is limited to a series of test wells in the area of the wells. Existing data does suggest that the deposit is present southwest of Manitouwadge and trends northeasterly to the Manitouwadge supply wells and intercepts the west end of Manitouwadge Lake. A similar deposit encountered to the north of Manitouwadge Lake may be a further extension of this deposit. The aquifer acts as a drain capturing recharge south of the township with flow under natural gradients discharging northeast into Manitouwadge Lake. Since the aquifer appears to be interconnected with the Lake, recharge could be induced from the lake if water production was to depress the groundwater levels.

### Wells No. 1 and No. 2

The Manitouwadge water quality varies greatly between Wells No. 1 and 2 on the esker and Wells 2, 3, and 5 near Lake Manitouwadge. Using January 2002 data for Wells No. 1, 3 and 5 and April 2002 data for Well No. 2 the following observations can be made:

- Wells No. 1 and No. 2 have a high conductivity (935 to 979 uS/cm) with a corresponding high calcium and alkalinity. Historical data from Well No. 1 in 1963 shows that alkalinity (26.0 mg/L) and hardness (220 mg/L) were also elevated then, but at lower concentrations than January 2002 (345 mg/L alkalinity, 377 mg/L hardness).
- Sodium values are elevated (46 to 54 mg/L) as is chloride (116 mg/L and 87 mg/L).
- The water also contains elevated levels of barium (70 and 55 ug/L) and strontium (148 to 151 ug/L).
- Dissolved organic carbon varied from 4 to 7 and Well No. 2.

### Wells No. 3, 4 and 5

- Groundwater quality near Lake Manitouwadge is least mineralized at Well No. 3 and No. 4, where conductivity is 468 and 441 uS/cm. Alkalinity, hardness, sodium, chloride, barium and strontium levels are all much lower than at Well No. 1 and 2.
- Conductivity at Well No. 5 is slightly higher than at Wells No. 3 and 4 (542 uS/cm) with a slightly higher hardness. Values of chloride, alkalinity and sodium are generally comparable to Wells No. 3 and 4 except for an unusual high sodium reading in late 2000. Sulphate, however is elevated above levels at all other wells, with historical values above 50 mg/L.
- Dissolved organic carbon varies from 4 to 6 at Well 4.

The raw water quality is generally consistent. The ODWS are developed for treated water. Parameters in the raw water exceeding the ODWS are:



The raw water quality is generally consistent. The ODWS are developed for treated water. Parameters in the raw water exceeding the ODWS are:

- Hardness ranged from 196 to 368 mg/L at wells No. 2 and 4 in April and May 2000 above the operational guideline of 100 mg/L.
- Colour was above the ODWS of 5 at Wells No. 2 and No. 4 on various dates in 2002 with Well 4 having the greatest values. These dates generally corresponded with increased turbidity.
- Sodium was about 55 mg/L at Well No. 2, below the ODWS of 200 mg/L, but above 20 mg/L, the level at which the Medical Officer of Health should be notified in order to inform doctors who wish to prescribe sodium restricted diets for their patients.
- Manganese exceeded the ODWS once in May 2002 at Well No. 2 and twice (April and May) at Well No. 4.
- Dissolved Organic Carbon was 7 mg/L at well No. 2 and 6 mg/L at Well No. 4 in April 2002, above the ODWS of 5 mg/L.

### Distribution

The Manitouwadge drinking water system can service an approximate population of 6,000 residents. It is comprised of water mains hydrants, valves and service connections.

There are no storage facilities. Treated water is provided directly from the Water Treatment Plant.

### Challenges

Due to extreme cold temperatures in the winter, the system is subject watermain breaks.

### Process Flow Chart

A Process Flowchart (D-8) is attached in Appendix A.





## 7. Risk Assessment

A Risk Assessment was conducted on the Manitouwadge drinking water system. The water was followed from the source to the curb-stop to identify potential and actual hazardous events which may in turn present hazards to the process, the equipment, to the water or any combination thereof.

A Risk Assessment Procedure (P-3) is located in Appendix B.



## 8. Risk Assessment Outcomes

The Risk Assessment Spreadsheet shows the identified hazards and hazardous events, ranked risks, control measures, and reference to monitoring and response procedures. The Risk Analysis Spreadsheet (D-3) is included in Appendix A.

Critical Control Points identified in the Risk Assessment are:

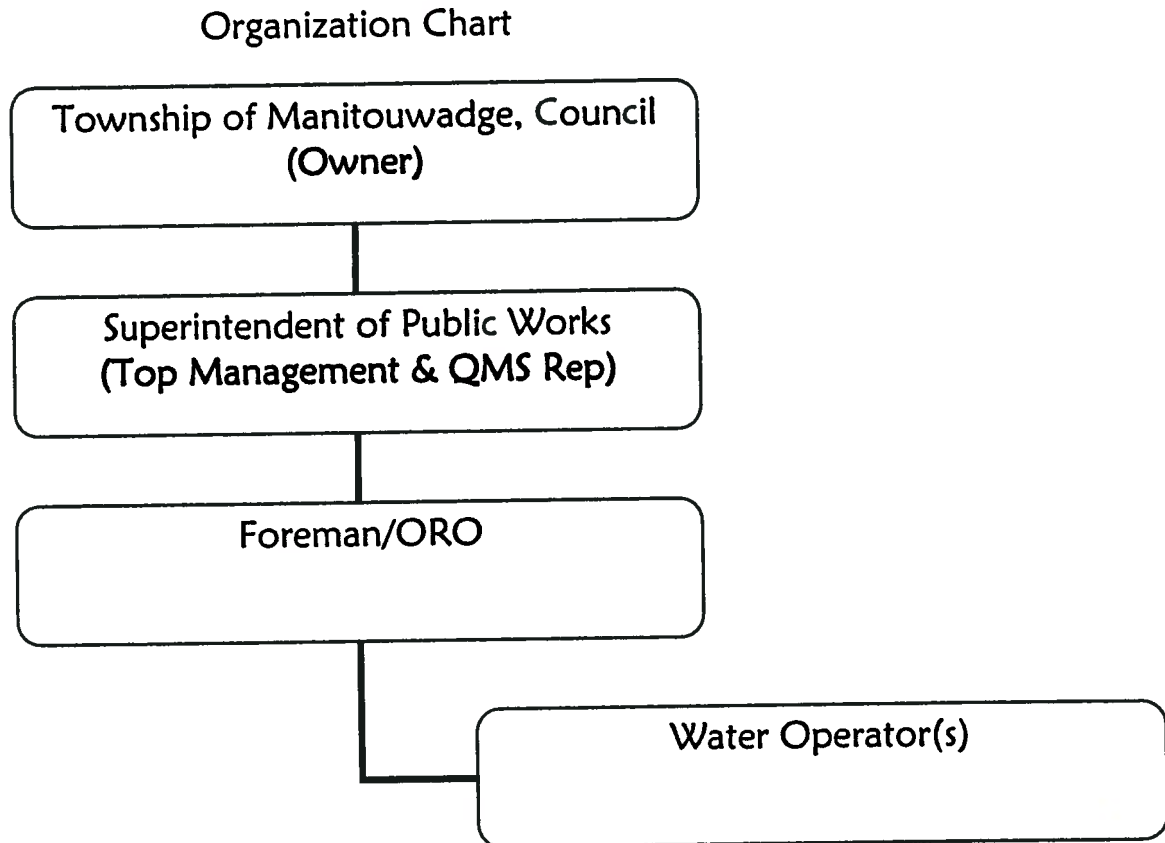
- Primary Disinfection (WI-1)
- Secondary Disinfection (WI-2)
- Chemical Feed (WI-3)
- System Pressure (WI-4)

These Critical Control Points are supported Work Instructions that identify the Critical Control Limits, response requirements for deviations from the Critical Control Point Limits and the reporting and recording of these deviations.

The Critical Control Point Response Work Instructions are located in Appendix C.



## 9. Organizational Structure, Roles, Responsibilities and Authorities



The description of the organizational structure shall be kept current and communicated to the Operating Authority Personnel and the Owner by the QMS Representative.

A Roles, Responsibilities, Authorities and Competencies Table (D-6) is included in Appendix A.



## 10. Competencies

The Desired Competencies for the Township of Manitouwadge personnel who perform duties that directly affect drinking water quality are identified in a table (D-6) included in Appendix A.

The Superintendent of Public Works, in collaboration with the Foreman/ORO shall plan training activities to ensure the desired competencies are achieved and maintained. The Superintendent of Public Works shall document and maintain copies of training records.

The Superintendent of Public Works shall ensure that public works personnel, are aware of the relevance of their duties and how they affect safe drinking water. This training activity shall take place during the daily public works meeting on an annual basis. These training sessions shall be documented and the records shall be kept by the Superintendent of Public Works.



Manitouwadge

## 11. Personnel Coverage

The requirement for Personnel Coverage is addressed in the Personnel Coverage Procedure (P-4) included in Appendix B. The Public Works Department's normal hours of operation are Monday to Friday 8:00 am to 4:30 pm. Coverage shall be provided through a combination of on-site and on-call staffing supplemented by SCADA based alarms and notification.

## 12. Communications

The Communications Procedure (P-5) describes the process for ensuring that relevant aspects of the QMS are communicated between Top Management and the Owner, public works personnel, suppliers and the public. The procedure is located in Appendix B.



### **13. Essential Supplies and Services**

The Township of Manitouwadge uses a combination of methods to ensure procurement of essential supplies and services.

The primary method is the application of reorder points (based upon days of use) for chemicals. Spare components for the treatment equipment and distribution appurtenances are kept on the shelf, as appropriate. For some products and service, a second source is available.

The requirements for ensuring the quality of essential supplies and services has also been developed and implemented. The Quality Assurance Procedure (P-16) is included in Appendix B.

## 14. Review and Provision of Infrastructure

A procedure for the Review and Provision of Infrastructure has been developed and implemented. The procedure describes the steps taken by Top Management of the Operating Authority to assess the condition and effectiveness of drinking water system for The Township of Manitouwadge, on an annual basis.

Results of the review are included as input to the development of Maintenance, Rehabilitation and Renewal programs and as such are reported to the Owner for resource planning purposes, typically during the fall of each calendar year. From time-to-time, the Public Works Superintendent and/or Foreman/ORO may report upon the status of the infrastructure during CoW and Council meetings.

The Infrastructure Review Procedure (P-7) is included in Appendix B.

## **15. Infrastructure Maintenance, Rehabilitation and Renewal**

### **Infrastructure Rehabilitation and Renewal**

It is from the Infrastructure review that Top Management, in conjunction with input from the Owner, shall establish priorities for the rehabilitation and renewal, as appropriate, of the drinking water infrastructure. The process for managing infrastructure rehabilitation and renewal is documented in the Infrastructure Review Procedure.

### **Infrastructure Maintenance**

The Public Works, water operations staff shall conduct planned and unplanned maintenance on the drinking water systems under its control. Planned maintenance of treatment equipment, instruments and appurtenances is as per the manufacturer's recommendations and the practical judgment of the operators. Planned maintenance of the Distribution Systems is limited to Valve Exercising, Hydrant and Main Flushing, and Leak Detection.

Unplanned maintenance results from equipment malfunction or distribution system component breakage. The Foreman/ORO shall respond during working hours and delegate the necessary Operator(s) to the task. The On-call operator shall respond during off hours. Unplanned maintenance shall be documented in the logbook.

The effectiveness of the maintenance program shall be reviewed and discussed during the Management Review Process. A summary of the Management Review shall be provided to the Owner.

## 16. Sampling, Testing and Monitoring

### Sampling

A Sampling Procedure (P-8) has been developed for the drinking water system and is included in Appendix B.

The procedure addresses how the sampling results are recorded and shared between the Operating Authority and the Owner (See also Communications Procedure P-5 – Appendix B.)

### Testing

A Testing Procedure (P-9) has been developed for the drinking water systems and is included in Appendix B. The procedure contains a description of what testing is done “in-house” for purposes of maintaining process control and what testing is conducted by accredited laboratories in compliance with Legislation and Regulations.

The procedure addresses how the testing results are recorded and shared between the Operating Authority and the Owner (See also Communications Procedure – Appendix A.)

It is understood by Operating Authority personnel that any adjustments made to the process as a result of the use of measuring and recording equipment must be supported by records of calibration of that measuring and recording equipment.

### Monitoring

A Monitoring Procedure (P-10) has been developed for the drinking water system within and is included in Appendix A.

Monitoring is conducted through the application of SCADA technology and operator oversight.

The condition most challenging to the Water System is addressed in Element 6, System Description.



## 18. Emergency Management

An emergency is considered to be a potential situation or service interruption that may result in the loss of the ability to maintain a supply of safe drinking water to consumers. The Township of Manitouwadge has identified the following as Potential Emergency Situations:

- Weather Related (WI-5)
- Pandemic (WI-6)
- Vandalism (WI-7)
- Major Fire (WI-8)
- Labour Disruption (addressed in the procedure)

The Emergency Management Procedure (P-12) has been developed and implemented and is located in Appendix B. The procedure describes the process of maintaining a state of emergency preparedness, including requirements for Emergency Response Training, Testing, Owner and Operating Authority Responsibilities.

It also refers to applicable emergency response work instructions as per the Public Works Contingency/Emergency Guidelines.

## 19. Internal Audit

### Internal Audits

The Operating Authority of the Township of Manitouwadge has developed and implemented a robust Internal Audit Procedure (P-13) in conformance to the requirements of the DWQMS. The procedure does not address the requirement for Corrective Action, but rather references a “stand-alone” Corrective Action Procedure (P-14). The Internal Audit Procedure is attached in Appendix B. The Internal Audit Checklist is attached in Appendix D.

### Corrective Action

To support the Audit Procedure the Township of Manitouwadge has also developed and implemented a Corrective action Procedure (P-14) that shifts the focus from “corrections” as required by Legislation and Regulations to identification and elimination of the root cause of QMS non-conformances. The Corrective Action Procedure is included in Appendix B and the Corrective Action Request [CAR] (F-1) and CAR Log (F-2) are located in Appendix D.



## 20. Management Review

A Management Review Procedure (P-15) has been developed and implemented and is included in Appendix B. The Management Review process described within the body of the procedure covers all key metrics of the QMS such that its suitability, adequacy and effectiveness can be objectively reviewed. The procedure describes the steps for gathering, summarizing and reviewing QMS performance data and information by the Operating Authority. It also addresses the roles and responsibilities of personnel assigned the any action items resulting from the review, and the reporting of the results of the review to the Owner of the drinking water systems.



## 21. Continual Improvement

The Township of Manitouwadge has recognized the Quality Management System as a priority and is committed to implementing any changes deemed necessary through annual audit and reviews, owner and employee suggestions and recommendations, and consumer input in order to continually make improvements to our drinking water system.

### Document History

Revision	Date	Description	By
0	19/Mar/10	Operational Plan issued	KGS Group
1	24/Apr/11	Initial Release	O. Collin
2	05/Feb/13	Operational Plan revised internal audit	O. Collin
3	31/Oct/13	Operational Plan revised as per Management Review	O. Collin
4	29/05/14	Drinking Water System	O. Collin
4	29/05/14	Risk Assessment	O. Collin
4	29/05/14	Personnel Coverage	O. Collin
4	29/05/14	Measurement and Recording Equipment and Maintenance	O. Collin

## Township of Manitowadge Master List of Documents D-2



### Non-Procedural QMS Documents

Document I.D.	Document Title	Issued By	Rev. #	Date of Rev.	Date Removed From DWQMS	Comments
D-1	Operational Plan Narrative	O. Collin	4	29/May/14		
D-1	Drinking Water System	O. Collin	4	29/May/14		
D-1	Risk Assessment	O. Collin	4	29/May/14		
D-1	Personnel Coverage	O. Collin	4	29/May/14		
D-1	Measurement and Recording Equipment	O. Collin	4	29/May/14		
D-2	Master List of Documents	O. Collin	5	20/May/15		
D-3	Risk Analysis Spreadsheet	O. Collin	4	3/Sept/14		
D-4	Procedure Template	O. Collin	1	24/Apr/11		
D-5	Work Instruction Template	O. Collin	1	24/Apr/11		
D-6	Responsibilitie, Authorities & Competenc	O. Collin	3	31/Oct/13		
D-7	Endorsement	O. Collin	N/A	N/A		
D-8	Process Schematic	O. Collin	3	31/Oct/13		

### Forms

Document I.D.	Document Title	Issued By	Rev. #	Date of Rev.	Date Removed From DWQMS	Comments
F-1	Corrective Action Request	O. Collin	2	08/May/15		
F-2	Corrective Action Log	O. Collin	1	24/Apr/11		
F-3	Internal Audit Checklist	O. Collin	3	28/Apr/15		

**System Level Procedures**

Document I.D.	Document Title	Issued By	Rev. #	Date of Rev.	Date Removed From DWQMS	Comments
P-1	Document Control	O. Collin	3	31/Oct/13		
P-2	Record Control	O. Collin	3	31/Oct/13		
P-3	Risk Assessment	O. Collin	3	31/Oct/13		
P-4	Personnel Coverage	O. Collin	3	15/May/115		
P-5	Communication	O. Collin	1	24/Apr/11		
P-6	Quality Assurance	O. Collin	3	31/Oct/13		
P-7	Infrastructure Review	O. Collin	1	24/Apr/11		
P-8	Sampling	O. Collin	4	29/May/14		
P-9	Testing	O. Collin	1	24/Apr/11		
P-10	Monitoring	O. Collin	1	24/Apr/11		
P-11	Calibration	O. Collin	1	24/Apr/11		
P-12	Emergency Management	O. Collin	1	24/Apr/11		
P-13	Internal Audit	O. Collin	2	05/Feb/13		
P-14	Corrective Action	O. Collin	1	24/Apr/11		
P-15	Management Review	O. Collin	1	24/Apr/11		
P-16	Essential Supplies and Services	O. Collin	3	31/Oct/13		

**Work Instructions**

Document I.D.	Document Title	Issued By	Rev. #	Date of Rev.	Date Removed From DWQMS	Comments
WI-1	CCPR Primary Disinfection	O. Collin	1	24/Apr/11		
WI-2	CCPR Secondary Disinfection	O. Collin	2	05/Feb/13		
WI-3	CCPR Chemical Feed	O. Collin	1	24/Apr/11		
WI-4	CCPR System Pressure	O. Collin	1	04/Apr/11		
WI-5	Weather Related Emergency Respons	O. Collin	1	24/Apr/11		
WI-6	Pandemic Emergency Response	O. Collin	1	24/Apr/11		
WI-7	Vandalism Emergency Reponse	O. Collin	1	24/Apr/11		
WI-8	WTP Fire Emergency Response	O. Collin	1	24/Apr/11		



Manitouwadge  
Oshawa, Canada

### Risk Analysis Spreadsheet D-3

Date: 3/Sept/2014

Conducted By: Kirk Tourout, Paul Richard

Area	Process Step	Hazardous Event	Potential Hazard(s)	Likelihood (A)	Severity (B)	Detectability (C)	A+B+C		Risk Category	CCP	Control Method
							1 to 7	8 to 15			
Raw Water	Well	Sewage Trunk Break	Biological	2	4	4	10	med	no	Physical inspections, flow rates and feedback from Wastewater list station, affects wells 3, 4 & 5. Wells # 1 & 2 to be used.	
	Well Pumps	Pump Failure	Biological (loss of pressure)	2	5	1	8	Med	No		
		Pressure Switch Failure	Physical	1	3	1	5	Low		Alarmed	
Primary Disinfection	UV Reactor	UV System Bulb Failure	Biological	3	2	1	6	Low	Yes	alarmed, system shutdown	
		UV System Power Failure	Biological	4	2	1	7	Low	No	back-up genset	
		UV System Ballast Failure	Biological	3	2	1	6	Low	No	alarmed, extra ballast on hand	
		UV System PLC Failure	Biological	2	2	1	5	Low	No	alarmed	
		UV System - Low Dose	Biological	1	2	1	4	Low	Yes	alarmed	
Aeration	Aerators	Container Rupture	Aesthetic	1	2	3	6	Low	No	Redundant	
		Hatch Gasket Failure		3	2	3	8	Med	No	Maintenance Program	
		Heater Failure		2	2	2	6	Low	No	Redundant (Back up coils)	
Secondary Disinfection	Hypo Delivery	Tank rupture	Biological	1	2	3	6	Low	No	Pump from 45 gal drum	
		Line blockage	Biological	4	3	1	8	Med	No	Alarmed	
		Pump failure	Biological	2	2	1	5	Low	No	Alarmed	
	Reservoir	Structural Failure	Biological	1	4	1	6	Low	No	Effluent Analyzer (Alarmed)	
	High Lift Pump	Pump failure	Loss of pressure, biological	2	5	1	8	Med	Yes	Pressure Alarmed	
		Flowmeter Failure	None	1	1	1	3	Low	No	Note required	
		Cl2 Analyzer (Free)	Biological	2	4	1	7	Low	No	Alarmed	
		Turbidimeter	Biological/Chemical	2	1	1	4	Low	No	Preventive Maintenance, Alarmed	
Distribution	Mains	Major Man Break	Biological/Loss of pressure	3	3	3	9	Med	Yes	Rerouting and disinfection	
		Dead Ends	Biological	3	3	2	8	Med	No	Sampling Program	
		Hydrant Failure	Biological	3	2	3	8	Med	No	Flushing Program	
	Curb Stops	Broken Curb Stop	Biological	2	2	3	7	Low	No	Turning Program	
Misc	Facilities	Power Failure	Biological/Loss of pressure	2	2	1	5	Low	No	Genset	
		Vandalism	Biological/Loss of pressure	1	5	2	8	Med	No	See WI-7	

## Risk Analysis Spreadsheet D-3

Date: 3/Sept/2014

Conducted By: Kirk Tourout, Paul Richard

Area	Process Step	Hazardous Event	Potential Hazard(s)	Likelihood (A)	Severity (B)	Detectability (C)	A+B+C	Risk Category	CCP
							1 to 7	LOW	No
							8 to 12	Med	No
							13 to 15	High	Yes
							A + B + C	Risk	CCP?





## Township of Manitouwadge DWQMS TEMPLATE

Title: Procedure Template	Control I.D.: D-4
Revision: 1	Effective Date: 24/Apr/11

This template shall be used for the creation of all QMS Procedures.

- 1 **Purpose**  
The purpose of this procedure is to ...
- 2 **Scope**  
This procedure is applicable to ...
- 3 **References**  
DWQMS Element X
- 4 **Definitions and Acronyms**
- 5 **Procedure**

**6 Associated Documents & Records**

**7 History of Changes**

Revision	Date	Description	By



## Township of Manitouwadge DWQMS TEMPLATE

Title: Work Instruction Template	Control I.D.: D-5
Revision: 1	Effective Date: 24/Apr/11

This template shall be used for the creation of all QMS Work Instructions.

- 1 **Purpose**  
The purpose of this procedure is to ...
- 2 **Scope**  
This procedure is applicable to ...
- 3 **References**  
DWQMS Element X
- 4 **Definitions and Acronyms**
- 5 **Procedure**

**6 Associated Documents & Records**

**7 History of Changes**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>By</b>

## Roles, Responsibilities & Authorities

Role	Responsibilities	Authorities	Competencies
Public Works Superintendent	<p>Provide direction and guidance to subordinate drinking-water operations staff</p> <p>Monitor and assess the effectiveness of the day-to-day drinking treatment and distribution operations.</p> <p>Develop or cause to be developed the necessary processes and procedures for the operation of the water treatment and distribution systems within the Municipality.</p> <p>Report upon operational aspects and conditions of the drinking-water systems to the Owner</p> <p>Prepare for and participate in the QMS Management Review process</p> <p>Provide project oversight for the development and implementation of the QMS per the requirements of the DWQMS. Ensure that the QMS is assessed on a regular basis and is continually improved.</p> <p>Make recommendations to the Owner concerning water operations in the areas of: MOE Reporting, Operating Budgets (including Capital Expenditures), maintenance activities, training requirements, internal audits and management review</p>	<p>Authorized to direct operators and on-site contractors in regard to policies, procedures and processes related to the provision of safe drinking-water.</p> <p>Has the authority to develop policies and procedures for the QMS, and to assign portions of all of that responsibility to subordinates</p> <p>Has the authority to develop policies and procedures for the management and the operation of the water systems under the direction of the Director, and to assign that responsibility to subordinates when appropriate</p> <p>Has the authority to make, or cause to be made, decisions affecting the operational parameters of the drinking-water systems</p> <p>Authorized to collect and prepare the information and data that serves as input to the QMS Management Review</p>	<p>Experience in the supervision of employees and management of the activities they undertake</p> <p>Demonstrated knowledge of applicable legislation and regulations</p> <p>Sound knowledge of the DWQMS Standard and the Manitouwadge QMS.</p> <p>Ability to manage waterworks projects at the operational level</p> <p>Experience in report preparation and presentation for municipal officials and Ministry personnel, when required.</p> <p>Preparation and presentation of capital budgets related to the waterworks operations.</p>

Role	Responsibilities	Authorities	Competencies
Foreman/ORO	<p>Follows the directions and guidance of the Public Works Superintendent</p> <p>Performs the duties of an operator</p> <p>Assigns daily duties to operators</p> <p>Ensures that operational policies, procedures and processes are followed and maintained</p> <p>Provide "over-the shoulder" supervision when necessary</p> <p>Provides feedback/information to the Supervisor regarding regulatory compliance requirements and operational control</p> <p>Ensures that required sampling, testing and monitoring is conducted and reported</p> <p>Participate in Internal Audits of the QMS</p> <p>Provide feedback on the effectiveness of relevant QMS processes and procedures</p>	<p>Has the authority to communicate the directions of the Supervisor and to assign operator duties in order to meet those directions</p> <p>Has the authority, as a certified operator, to operate the drinking-water systems.</p> <p>Has the authority to direct and control operator activities</p> <p>Is authorized to implement processes and procedures that are relevant to daily operations of the drinking-water system</p> <p>Make adjustments to drinking-water processes in order to maintain compliance</p> <p>Has the authority to direct that sampling testing and monitoring be undertaken by competent subordinates</p>	<p>Operators Certification at the level necessary to act as the ORO, when designated by the Director</p> <p>Class I certification preferred</p> <p>Knowledge of applicable Legislation and Regulation</p> <p>Mechanical aptitude</p> <p>Problem solving skills</p> <p>Training skills</p> <p>Ability to communicate effectively</p>

Role	Responsibilities	Authorities	Competencies
Operator	Operator in Charge (OIC)	All certified operators are authorized to be Operator in Charge	Post-secondary education preferred
	Carry out the duties prescribed by the Foreman	All certified operators are authorized to make adjustments to processes in order to maintain compliance	Minimum OIT Certification for both treatment and distribution systems
	Ensure compliance with applicable legislation and regulations relevant to the production and distribution of safe drinking-water	All certified operators are authorized to take samples as directed by the Foreman	Knowledge of applicable legislation and regulations
	Reporting of all incidents of non-compliance to the Foreman or designate	All certified operators are authorized to conduct tests as directed by the Foreman	Mechanical aptitude
	Collection of samples per the procedure for Sampling and accepted industry practices	All certified operators have the authority to maintain the drinking-water infrastructure in order to ensure a consistent and adequate supply of safe drinking-water, as directed by the Foreman, Supervisor or Director	Problem-solving skills
	Testing of samples per the procedure for Testing and accepted industry practices		
	Monitoring of the treatment and distribution systems per the procedure for Monitoring	All certified operators are authorized to adjust processes when the results of monitoring indicate the need to do so	
	Maintenance of the drinking-water infrastructure		

### History of Document

Revision	Date	Description	By
1	24-Apr-11	Initial Release	O. Collin
3	31/Oct/13	Operational Plan revised as per Management Review	O. Collin

THE CORPORATION OF THE TOWNSHIP OF MANITOUWADGE

March 24, 2010 Session No. 2010- 94

Moved by: Raymond Lelievre

Seconded by: D. Jaunzarins

**RESOLVED THAT:** Council is in receipt of Administration Report PW2010-03 as submitted by Omer Collin, PW Superintendent, dated March 22, 2010 to approve the Drinking Water Quality Management System Operational Plan;

**AND BE IT FURTHER RESOLVED THAT:** at the conclusion of Council's review and discussion regarding the report, Council hereby approves the Drinking Water Quality Management System Operational Plan.

Recorded Vote	FOR	AGAINST
Mayor John MacEachern		
Councillor George Bodak		
Councillor Donna Jaunzarins		
Councillor Raymond Lelievre		
Councillor Gordon MacDonald		

CARRIED ✓ DEFEATED \_\_\_\_\_

[Signature]  
Mayor John MacEachern





The Corporation of the  
**TOWNSHIP OF MANITOUWADGE**

1 Mississauga Drive  
Manitouwadge, Ontario  
P0T 2C0

Telephone (807) 826-3227 Fax (807) 826-4592

This Operational Plan has been reviewed and approved by the Corporation's Mayor and Council, Municipal Manager Clerk, Public Works Superintendent and Overall Responsible Operator (ORO). This is a blueprint for the planning, operation and maintenance of the Township of Manitouwadge Drinking Water Supply System. An annual review by Mayor and Council, Municipal Manager Clerk, Public Works Superintendent and Overall Responsible Operator (ORO) will keep the document up to date and promote continual improvements. All recommended changes would be approved by Council resolution.

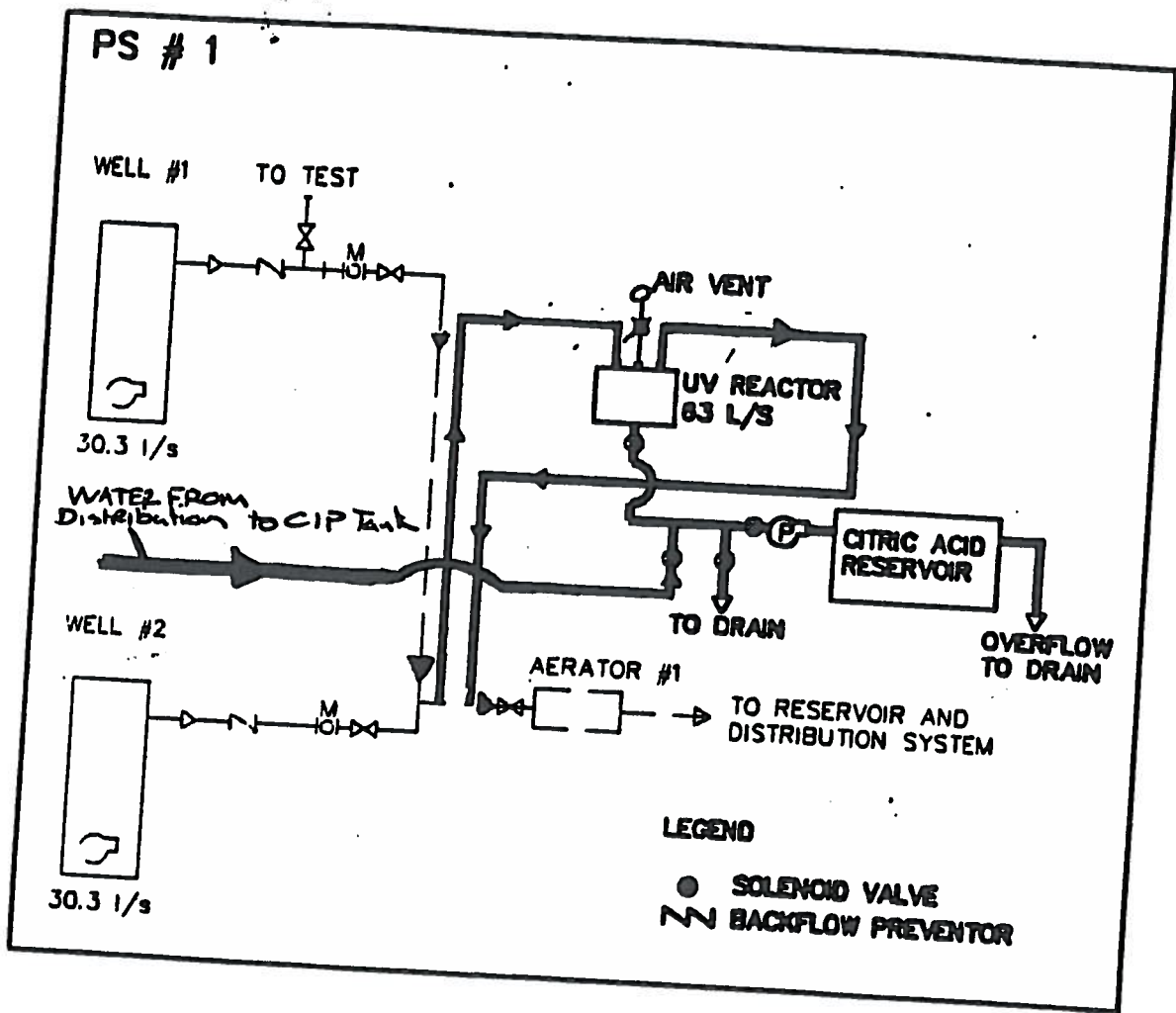
Endorsed by:

Acting Mayor, Gordon MacDonald

Municipal Manager Clerk

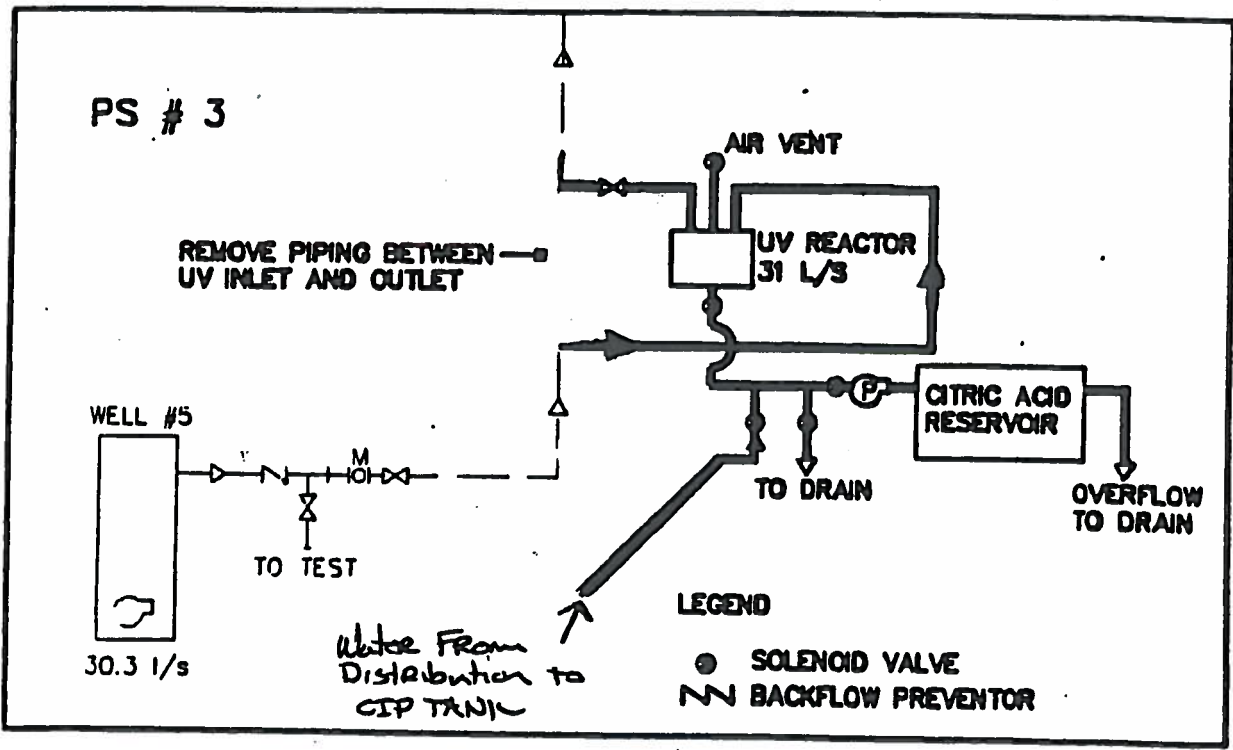
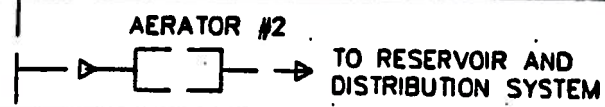
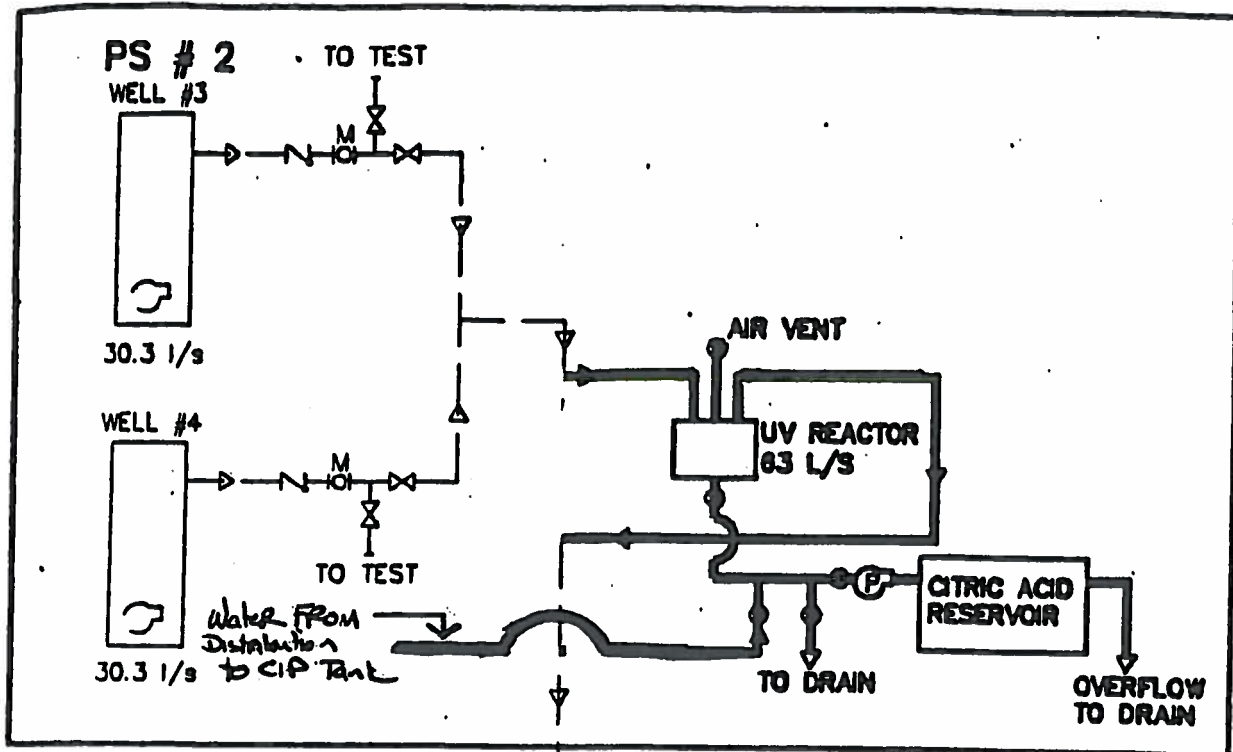
Public Works Superintendent

Overall Responsible Operator  
(ORO)



**PROCESS SCHEMATIC WELLS 1 & 2**  
NTS

**FIGURE 1**



PROCESS SCHEMATIC WELLS 3, 4 & 5  
NTS

FIGURE 2



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS PROCEDURE

Title: Document Control	Control I.D.: P-1
Revision: 3	Effective Date: 31/Oct/13

- 1 **Purpose**  
The purpose of this procedure is to define the method for the Control of QMS Documents.
- 2 **Scope**  
This procedure is applicable to all Operating Authority Personnel.
- 3 **References**  
DWQMS Element 5 Document and Records Control
- 4 **Definitions and Acronyms**  
None
- 5 **Procedure**

### Creating New or Updating Existing Documents

- 5.1 The Master List of Documents identifies the documents that are currently controlled under the QMS.
- 5.2 Any member of the Township of Manitouwadge Operating Authority may request the creation of a new QMS document or a change to an existing one. The need for new or updated documents may also be identified through audits, corrective actions or management review.
- 5.3 The QMS Representative shall be responsible for reviewing these requests and making the changes that are approved.
- 5.4 The QMS Representative shall be responsible for ensuring documents are kept current through the implementation of this procedure.
- 5.5 New procedures and work instructions shall be created using the standard templates.



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS PROCEDURE

Title: Record Control	Control I.D.: P-2
Revision: 3	Effective Date: 31/Oct/13

### 1 Purpose

The purpose of this procedure is to define the method for Control of Records that are required by the Quality Management System.

### 2 Scope

This procedure is applicable to all records that are generated from processes and activities that are described within the Operational Plan and/or its referenced WIs, demonstrating conformance to the QMS requirements.

### 3 References

DWQMS Element 5 Document and Records Control

### 4 Definitions and Acronyms

Record – a document that states results achieved or provides proof of activities that have been completed.

### 5 Procedure

5.1 Records are maintained as objective evidence that the requirements of the DWQMS are being effectively addressed.

5.2 The Public Works Superintendent shall be responsible for control of records, related to the supply of safe drinking water.

5.3 Records may be retained in hard copy or in electronic copy.

#### General Requirements

5.4 All records shall have title, which shall be clearly visible and legible.

5.5 Manual records shall be legible. Pencil or any other erasable marker shall not be used to record process or product information or data.

- 5.6 All manual records shall show the name or initials of the recorder and the date (and time if appropriate) the record was generated.
- 5.7 QMS records shall be stored and available at the Public Works office or the Treatment Plant, as appropriate.
- 5.8 QMS records shall be stored in a manner that protects them from damage or deterioration, and in such a manner as to make them accessible.
- 5.9 Records shall be retained in either hard or soft copy per the retention times indicated in the Records Retention section listed below.
- 5.10 All records shall be readily retrievable for the purposes of the auditors and municipal employees. Current documents and records are readily accessible to the Public Works Superintendent and to internal and external auditors/inspectors at document control locations established by the systems representative. The designated document control locations (s) for identified documents and records are defined in Table 1.

**Table 1:**  
Designated locations for documents and records required by The Corporation of the Township of Manitouwadge.

Type of Document/Record	Designated Document Control Location HC=Hardcopy E=Electronic
<b>Internal System Documents</b>	
Operational Plan (included System Procedures)	HC, E - M:Drive – Municipal Office
Procedures and Guidelines (reference in Operational Plan)	HC, E - M:Drive – Municipal Office
Essential Supplies and Services List	HC, E – M:Drive – Municipal Office
<b>External System Documents</b>	
Engineering schematics/plans/drawings	HC – Municipal Office
Drinking Water Works Permit	HC – Water Works and Municipal Office
Permit to Take Water	HC – Water Works and Municipal Office
Operator Certificates	HC – Water Works and Municipal Office E: Computer

Applicable federal and provincial legislation and municipal by-laws	Online at <a href="http://www.e-laws.gov.on.ca">www.e-laws.gov.on.ca</a>
Original Equipment Manuals	HC - Water Works and Municipal Office
System Records	HC - Water Works – Municipal Office
Operator Training Records	HC - Municipal Office
Maintenance Records	HC - Municipal Office
Internal System Audit Report	HC - Municipal Office
External Audit and Inspection Reports	HC - Municipal Office
Management Review Documentation	E – M:Drive, email
Internal System Communications	E – M:Drive, email
External System Communications	E – M:Drive, email
Annual Reports	E - M:Drive
Infrastructure Review/(Capital/maintenance works recommendations)	HC - Municipal Office
Community complaint records	HC – Municipal Office

5.11 The SCADA data shall be downloaded to the Public Works Computer and a hard copy shall be printed out.

#### Records Retention

5.12 Records that have exceeded the minimum retention times, and are not required to be retained for knowledge, legal or other purposes, shall be archived or disposed of.

All records required to demonstrate conformance to the requirements of the DWQMS shall be retained for the following minimum time periods:

#### *10 Years*

- DWQMS Corrective Action Requests
- Internal QMS Audit Results
- External QMS Audit Results
- Management Review Minutes
- Calibration Results
- Consumer Enquiries (Relating to Drinking Water Quality), as applicable
- Maintenance/Service Requests
- Emergency Plan Summaries
- QMS Competencies Records

**15 Years**

- Water Sampling Laboratory Requirements

**6 Associated Documents & Records**  
Operational Plan

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin
3	31/Oct/13	Revised as per Management	O. Collin





## Municipality of Manitouwadge DWQMS PROCEDURE

Title: Risk Assessment	Control I.D.: P-3
Revision: 2	Effective Date: 31/Oct/2013

### 1 Purpose

The procedure describes the process for identifying potential hazardous events and their associated hazards to the Manitouwadge drinking water system.

### 2 Scope

This procedure is applicable to all production and delivery processes for the supply of safe drinking water.

### 3 References

DWQMS Elements 7 & 8 Risk Assessment

### 4 Definitions and Acronyms

CCL – Critical Control Limit

CCP – Critical Control Point

DWQMS – Drinking Water Quality Management Standard

### 5 Procedure

#### Hazardous Event and Hazard Identification

5.1 The QMS Representative shall create a Risk Assessment Spreadsheet for the results of the initial risk assessment activity to be recorded.

5.1.1 The Risk Assessment Spreadsheet shall allow for the recording of:

- Process Area
- Process Step
- Hazardous Event
- Potential Hazard(s)
- Likelihood, Severity and Detectability
- RPN (Risk Priority Number)
- CCP Status (Yes/No)
- Control Method

5.2 By following the process flow, the QMS Representative and operational staff shall identify all potential hazardous events and hazards to the to the drinking water system.

5.2.1 At a minimum, the process areas to be considered are:

- Raw Water Source and Intake
- High Lift
- Chemical Feed
- Filtration
- Disinfection, and
- Distribution

5.3 At a minimum, the items listed in 5.1.1 shall be recorded in the Risk Assessment Spreadsheet.

### Ranking Risk

5.4 Each hazard identified shall be “ranked” by the team according to:

- **Likelihood** is the probability/likelihood of a hazard or hazardous event occurring (see below)
- **Severity** is the potential impact to health or impact on operations if the hazard or hazardous event occurs (see below)
- **Detectability** is a measure of the ability to detect the presence of the hazard or hazardous event (see below)

#### Criterion 1 - Likelihood

Level	Descriptor	Example Description
5	Almost Certain	Expected to occur in most circumstances
4	Likely	Probably occur in most circumstances
3	Possible	Will occur at some time
2	Unlikely	May occur at some time
1	Rare	May occur only in exceptional circumstances

#### Criterion 2 - Severity

Level	Descriptor	Example Description
5	Catastrophic	Major impact for population, system failure
4	Major	Major impact for population, system compromised, abnormal operations, high level of monitoring
3	Moderate	Minor impact for population, modification to normal; operation, increased monitoring
2	Minor	Minor impact for population, manageable disruption
1	Insignificant	No impact, minor disruption

### Criterion 3 - Detectability

Level	Descriptor	Example Description
5	Undetectable	Cannot detect (i.e Chemicals not on Schedules)
4	Poor Detectability	Problem is evident
3	Detectable	Visually detectable, rounds or maintenance
2	Moderate Detectability	Performance indicators, testing
1	High Detectability	Alarmed, fully visual

- 5.5 The reliability and redundancy of equipment shall be considered in this ranking.
- 5.6 The control measures, monitoring and response procedures shall be identified and considered when assigning ratings to hazard and hazardous events.
- 5.7 The total risk shall be determined by adding the individual scores for likelihood, severity, and detectability.

### Critical Control Points

- 5.8 All hazards or hazardous events which have an overall risk rating of greater than 12 shall be identified as Critical Control Points.
- 5.8.1 The following shall also be identified as Critical Control Points (in support of the Multiple Barrier approach to drinking water safety) regardless of ranking:
- Chemical feed
  - Primary and Secondary Disinfection
  - Post-Filtration Turbidity
  - Distribution System Pressure
- 5.9 A CCP Response Work Instruction shall be implemented and maintained for each identified critical control point.
- 5.9.1 These are the critical point limits:
- Chlorine Residual – 0.22 mg/l Low Level Alarm
  - Chlorine Delivery System – Pulse Flow – Detect or Non-Detect
  - Turbidity – 0.9 NTU High Alarm (Standard is 1 NTU for 15 min)
  - % UVT – UVT Transmittance – 70% low level alarm for all 3 reactors
  - UV Dosage – 42 mJ/ cm<sup>2</sup> low dosage alarm for all 3 reactors
  - Reservoir Alarm Set Points – Low Level – 4.65 m., High Level – 4.95 m.
  - Distribution Pressure Set Point is 78 PSI
  - Pressure Alarm Set Points – Low Alarm – 60 PSI, High Pressure Alarm – 85 PSI
  - UV Intensity Sensor – Low Level Alarm – 70 uW/cm<sup>2</sup>

- UV Ballast/Lamp Failure – Alarm – Shut Down Reactor – On/Off Same at all three reactors

**General**

5.10 The QMS Representative shall ensure that a review is conducted the Risk Assessment Spreadsheet to ensure that the information and assumptions are current and valid.

5.10.1 The Risk Assessment review shall be conducted prior to the QMS Management Review.

5.10.1 A Risk Assessment shall also be conducted wherever there is a significant process change or upgrade to the drinking water system infrastructure.

5.11 Every 3 years, the QMS Representative shall ensure a complete risk assessment is conducted.

**6 Associated Documents**

D-1 Operational Plan

D-2 Master List of Documents

D-3 Risk Analysis Spreadsheet

WI-1 to WI-4 CCP Response Work Instructions

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin
2	31/Oct/13	Revised as per Management Review	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Personnel Coverage	Control I.D.: P-4
Revision: 3	Effective Date: 15/May/15

### 1 Purpose

The purpose of this procedure is to define the method for Personnel Coverage for distribution system.

### 2 Scope

This procedure is applicable to all drinking water activities for which the Township of Manitouwadge is responsible as the Owner and the Public Works Department is the Operating Authority.

### 3 References

DWQMS Element 11 Personnel Coverage

### 4 Definitions and Acronyms

None

### 5 Procedure

- 5.1 Normal Hours of Operation for the Township of Manitouwadge of Public Works staff shall be Monday to Friday 8:00 am – 4:30 pm.
- 5.2 For after hours Public Works staff shall be called as per the on call schedule, established by the Foreman/ORO.
- 5.3 The Foreman shall designate a Water Operator to act as ORO on days when the Foreman is absent or unable to act.
- 5.4 The Forman shall designate an Operator as the Operator-in-Charge.

## Emergencies

- 5.5 For Emergencies that occur during normal operating hours staff may be contacted through the Township of Manitouwadge municipal office.
- 5.6 All alarms developed in the water system shall be automatically sent by phone via auto dialer directly to the operator. The operator then responds to the Alarm.
- 5.6.1 The Alarm condition may be sent during normal working hours or after-hours.
- 5.7 If the operator needs assistance, they may contact the ORO or the Public Works Superintendent, as appropriate, for direction.
- 5.8 In the event that not enough staff is available to cover a water emergency a contractor may be contacted. The contractor contact information shall be located on the Essential Services and Supplies List.

## Strikes and/or Lockouts

- 5.9 Strikes and lock-outs shall be handled as per requirements in the appropriate Collective Agreement.

## 6 Associated Documents & Records

D-1 Operational Plan

## 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin
2	29/May/14	Revised as per Management Review	O. Collin
3	15/May/15	As per Internal Audit	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Communications	Control I.D.: P-5
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure describes how relevant aspects of the Quality Management System are communicated the owner, operating authority personnel, suppliers and the public.

### 2 Scope

This procedure is applicable to Top Management of the Manitouwadge Waterworks Operating Authority.

### 3 References

DWQMS Element 12 Communications

### 4 Definitions and Acronyms

None

### 5 Procedure

#### The Owner

5.1 The Public Works Superintendent shall communicate relevant aspects of the Quality Management System to the Owner during Committee and Council meetings.

5.2.1 The QMS Representative may be called upon to provide additional QMS information.

5.2.2 A summary of the QMS Management Review shall be communicated to the owner during Committee or Council meetings.

5.2 Communication between the Public Works Superintendent and the Owner shall be recorded in the Committee or Council meeting minutes.

## **Operating Authority Personnel**

**5.3** Top Management shall communicate the importance of compliance with applicable legislation and regulations as well as relevant aspects of the QMS to Public Works staff directly, or through the Foreman/ORO during meetings.

**5.3.1** Relevant aspects may include but are not limited to:

- those activities as documented in the Operational Plan that are necessary to ensure a supply of safe drinking water.
- additions or revisions to QMS documentation
- process changes
- legislative and regulatory requirements

**5.4** Public Works staff may use the daily meetings to communicate any questions or concerns to Top Management through the QMS Rep.

## **Suppliers**

**5.5** Top Management has directed Public Works staff to communicate the relevant aspects of the Quality Management System to suppliers. Relevant aspects include the requirements for quality and supply of essential products and services.

**5.5.1** The requirements for Quality and procurement may be provided verbally or documented at the time of order of the product or service

**5.6** Other aspects of the QMS may be communicated to suppliers via the QMS Representative as directed by the Public Works Superintendent

## **The Public**

**5.7** Top Management shall ensure that the Quality Management System, as documented in the Operational Plan is made available for public viewing at the Municipal Office, and at the Public Library.

## **6 Associated Documents & Records** D-1 Operational Plan



## 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Quality Assurance	Control I.D.: P-6
Revision: 3	Effective Date: 31/Oct/13

### 1 Purpose

The purpose of this procedure is to describe the activities for ensuring the quality of essential supplies and services that may affect drinking water quality.

### 2 Scope

This Procedure is applicable to all Public Works employees who purchase and/or receive supplies and services that may directly affect drinking water quality.

### 3 References

DWQMS Control I.D.: P-16 Essential Supplies and Services

### 4 Definitions and Acronyms

Essential - can directly affect the delivery of safe drinking water if not in place when required

### 5 Procedure

#### General

5.1 All products and services that may directly affect drinking water quality shall be subject to one or more of the following in order to assure quality before use:

- NSF, ANSI, ASME, NAS or other Standard
- AWWA(OWWA) Recommendation
- Previous acceptance and use by the Township of Manitouwadge Public Works Department
- Use by other Municipal Waterworks (Evidence such as references must be provided)
- Incoming inspection
- Certification of the service provider when specified by regulation (i.e., Laboratory and Calibration Services)

- A review and approval of the product specifications or service provider capabilities by the Foreman/ORO

5.1.1 Product that does not require certification shall meet the requirements of form, fit and function as determined by the end user. See 5.3.

5.2 Quality requirements shall be specified at the time of order or purchase.

#### Product

5.3 All product received shall be inspected prior to use. The inspection process may be visual.

5.3.1 Product shall be inspected for conformance to order requirements, including quantity, prior to use. The visual inspection shall ensure that product is in useable condition.

5.3.2 Manifests, certificates of analysis, packing slips and other documentation accompanying the product shall be reviewed for conformance to order requirements prior to acceptance.

5.3.3 Non-conforming product shall be clearly identified and segregated to avoid unintended use.

#### Services

5.4 Certifications of organisations that provide laboratory and calibration services shall be required and maintained on file by the Foreman/ORO.

5.5 The Public Works Superintendent shall request references from all other services relied upon for the maintenance of the infrastructure of the drinking water.

## 6 Associated Documents & Records

### D-1 Operational Plan

## 7 History of Changes

Revision	Date	Description	By
3	31/Oct/13	Change References #3 from Element 13b to Control I.D.: P-16	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Infrastructure Review	Control I.D.: P-7
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

The purpose of this procedure is to define the method for reviewing the adequacy of the infrastructure necessary to operate and maintain the Water Treatment and Distribution Systems.

### 2 Scope

This procedure is applicable to all drinking water activities related to the review and provision of the Infrastructure for which the Township of Manitouwadge is the Owner and the Public Works Department is the Operating Authority.

### 3 References

DWQMS Element 14	Review and Provision of Infrastructure
DWQMS Element 15	Infrastructure Maintenance, Rehabilitation and Renewal

### 4 Definitions and Acronyms

**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 and software, and supporting services such as transport or communication.

### 5 Procedure

5.1 The Public Works Superintendent shall, on an annual frequency, schedule a meeting to review the condition of the infrastructure and make repair/replace recommendations. Attendees shall include, at a minimum:

- Foreman/ORO
- Water Operators, as needed

5.1.1 All attendees shall be given 5 days notice of the meeting.

- 5.2 The review shall forecast, prioritize and make infrastructure rehabilitation and renewal recommendations based upon:
- Past maintenance
  - Historical system performance data
  - Planned maintenance on roads and sewer systems
  - MOE Compliance Inspection Reports
  - Water works staff suggestions,
  - Water quality trends
  - Consumer complaints
  - Planned growth
- 5.3 The Public Works Superintendent shall adjust any existing rehabilitation and renewal forecast as an output of the review meeting.
- 5.4 The Public Works Superintendent shall provide the rehabilitation and renewal to Council in sufficient time for the creation of the annual budget.
- 5.5 The 25 year replacement forecast and annual budget recommendation shall be revised by the Public Works Superintendent based upon the outcome of Council deliberations.

#### **Infrastructure Rehabilitation and Renewal**

- 5.6 Based upon the outcome of Council deliberations, the Public Works Superintendent shall create and maintain list of priorities for infrastructure Rehabilitation and renewal.
- 5.7 With input from the Foreman/ORO, the Public Works Superintendent shall be responsible for the preparation of the proposed budgets for any renewal and rehabilitation activities of the drinking water system.
- 5.8 The Public Works Superintendent and the Foreman/ORO shall review the status of all maintenance, renewal and rehabilitation programs at least annually to ensure that program objectives are being met. Typically this is done during the Management Review of the QMS.

## Maintenance

5.9 The Public Works Superintendent shall schedule the planned maintenance of the drinking water system.

5.9.1 Planned maintenance for the Manitowadge drinking water system shall include but not be limited to the following activities:

- Hydrant flushing
- Valve exercising
- Gen Set Start-up
- Maintenance of equipment as per manufacturer's recommendations
- Leak detection

5.9.2 Records of planned maintenance are maintained by the Foreman/ORO.

5.10 Unplanned maintenance activities shall be overseen by the Public Works Superintendent or the Foreman/ORO as appropriate.

5.10.1 Unplanned maintenance activities may be associated with the water treatment equipment, mains or other distribution appurtenances.

5.10.2 Records of all unplanned maintenance shall be maintained by the Foreman/ORO.

6 Associated Documents & Records  
D-1 Operational Plan

7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS PROCEDURE

Title: Sampling	Control I.D.: P-8
Revision: 2	Effective Date: 29/May/14

### 1 Purpose

The purpose of this procedure is to define the sampling process for the Township of Manitouwadge water treatment and distribution system.

### 2 Scope

This procedure is applicable to the Township of Manitouwadge licensed water operators.

### 3 References

DWQMS Element 16 - Sampling, Testing and Monitoring

### 4 Definitions and Acronyms

None

### 5 Procedure

5.1 All Sampling shall be performed by a licensed operator.

5.2 At a minimum, sampling shall be performed in compliance with all applicable legislation and regulations.

5.3 Operators shall follow the sample collection protocol as documented in "Practices for the Safe Collection and Handling of Drinking-Water Samples" or other accepted protocol.

#### Sampling for upstream activities

5.4 A licensed Operator shall obtain samples from the raw water source for testing on a weekly basis.

5.5 Continuous Sampling of turbidity, pH and raw flow shall occur for the raw water within the SCADA system. No samples shall be retained.



### **Sampling in Water Treatment**

- 5.6 Continuous sampling of chlorine residual, turbidity, pH, flow and UV dosage shall occur for the treated water within the SCADA system. No samples shall be retained.
- 5.7 The sampling data shall be retained in the electronic SCADA file and shall be printed out on a daily basis.
- 5.8 In addition to continuous sampling a licensed operator shall take grab samples of treated water for testing.

### **Sampling in Water Distribution**

- 5.9 A licensed operator shall take chlorine residual samples at specified locations within the distribution system, four samples are taken on Monday and 3 additional samples are taken at least 48 hours later.
- 5.10 The locations for sampling are identified on the location map for the water distribution system. On an annual basis the location map shall be updated based upon a review of the current population, legislative requirements and the number of samples being taken.
- 5.11 Samples shall be taken by a licensed operator for new construction of water mains prior to connection.
- 5.12 Samples shall be taken by a licensed operator after a water main break to ensure that the water main has been disinfected and the appropriate chlorine residual is achieved.

### **Sampling during challenging conditions**

- 5.13 In the spring and fall seasons the water source turns over due to alkalinity. Slight changes may be noticed in turbidity. However, no additional sampling is required due to this condition.

### **Communication with the Owner**

- 5.14 A summary of the sampling information shall be shared with the owner through the Annual Report.

## **6 Associated Documents & Records**

### **D-1 Operational Plan**

**7 History of Changes**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>By</b>
1	24/Apr/11	Initial Release	O. Collin
2	29/May/14	Associated Documents & Records	O. Collin

### **Sampling Schedule**

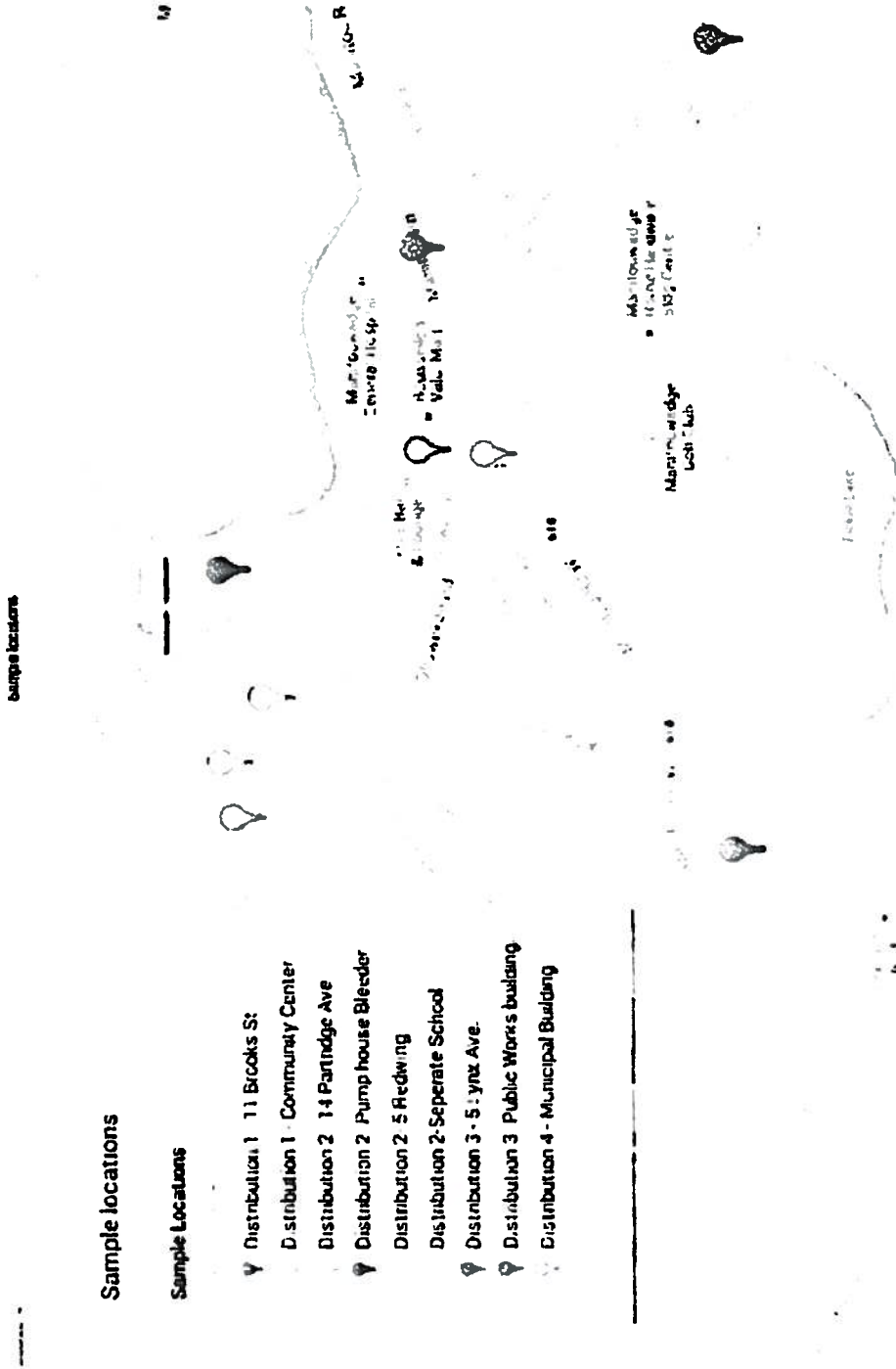
Sampling must be completed by a fully licensed operator who is familiar with the appropriate sampling techniques and procedures. The township of Manitowadge is supplied all sampling bottles from a certified Laboratory (ALS) located in Thunder Bay Ontario. The township of Manitowadge has a specific sampling regiment which is as follows:

- Annual Sampling for Schedule 23 parameters takes place every January at the beginning of the year which also acts as the first quarterly sample for Nitrates and Nitrites as well as THM's.
- Quarterly Samples are collected every three months for Nitrates and Nitrites as well as THM's. The first quarter: Jan, Feb, and Mar, the second quarter: Apr, May, And Jun, the third quarter: Jul, Aug, and Sept, and the fourth quarter: Oct, Nov and Dec.
- Weekly Bacteriological Samples are collected (usually every Monday with the exception of the Statutory holidays), which include 4 distribution samples, 5 raw well samples and a treated sample at the closest point of entry to the distributions system.
- Daily Distribution samples are collected and analyzed in house to insure adequate treatment is being achieved in the distribution system. (Sample locations are shown on map.)
- Drinking water surveillance program samples (DWSP) are collected twice a year once in the spring and once in the fall.
- The owner of a drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 60 months and tested for sodium. Next sampling year is 2015.
- The owner of the system and the operating authority for the system shall ensure that at least one water sample is taken at least once every 60 months and tested for fluoride. The next sampling year is 2015.
- Lead Sampling is collected every three years now as the township of Manitowadge is on a reduced sampling schedule for this parameter. During the over that time period hydrants are to be sampled annually for alkalinity.

### **Sampling Schedule**

Sampling must be completed by a fully licensed operator who is familiar with the appropriate sampling techniques and procedures. The township of Manitowadge is supplied all sampling bottles from a certified Laboratory (ALS) located in Thunder Bay Ontario. The township of Manitowadge has a specific sampling regiment which is as follows:

- Annual Sampling for Schedule 23 parameters takes place every January at the beginning of the year which also acts as the first quarterly sample for Nitrates and Nitrites as well as THM's.
- Quarterly Samples are collected every three months for Nitrates and Nitrites as well as THM's. The first quarter: Jan, Feb, and Mar, the second quarter: Apr, May, And Jun, the third quarter: Jul, Aug, and Sept, and the fourth quarter: Oct, Nov and Dec.
- Weekly Bacteriological Samples are collected (usually every Monday with the exception of the Statutory holidays), which include 4 distribution samples, 5 raw well samples and a treated sample at the closest point of entry to the distributions system.
- Daily Distribution samples are collected and analyzed in house to insure adequate treatment is being achieved in the distribution system. (Sample locations are shown on map.)
- Drinking water surveillance program samples (DWSP) are collected twice a year once in the spring and once in the fall.
- The owner of a drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 60 months and tested for sodium. Next sampling year is 2015.
- The owner of the system and the operating authority for the system shall ensure that at least one water sample is taken at least once every 60 months and tested for fluoride. The next sampling year is 2015.
- Lead Sampling is collected every three years now as the township of Manitowadge is on a reduced sampling schedule for this parameter. During the over that time period hydrants are to be sampled annually for alkalinity.



Map generated by AutoCAD 2014



## Township of Manitouwadge DWQMS PROCEDURE

Title: Testing	Control I.D.: P-9
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure defines the testing for the Township of Manitouwadge water treatment and distribution system.

### 2 Scope

This procedure is applicable to the Township of Manitouwadge Public Works licensed drinking water operators.

### 3 References

DWQMS Element 16 - Sampling, Testing and Monitoring

### 4 Definitions and Acronyms

Testing – the analysis of a collected sample to assist in the determination of water quality.

### 5 Procedure

#### Internal Testing

- 5.1 Internal testing is performed within the Water treatment and distribution systems, and shall be conducted by a certified Operator.
- 5.2 Internal testing shall be conducted to verify analyzers, monitor water quality, assist with process control and ensure compliance with applicable regulations.
- 5.3 The Operator shall perform all testing in accordance with standard practices and the equipment manufacturer's instructions.
- 5.4 The Operator shall record internal testing results in the WTP Log Sheet.

## External Testing

- 5.5 All testing that is performed externally shall be performed at an external MOE approved and licensed laboratory.
- 5.6 External testing shall be performed to meet regulatory requirements.
- 5.7 The Public Works Foreman/ORO shall review the external test results. New water mains shall be put into service when acceptable test results are received.
- 5.8 The certified operator shall complete the Chain of Custody Form and file a copy in the Public Works office.
- 5.9 If adverse test results are obtained, the Public Works Superintendent shall respond as per the legislated requirements.

## Testing during challenging conditions

- 5.10 In the spring and fall seasons the Lake turns over due to alkalinity. Slight changes are noticed in turbidity. However, no additional testing is required due to these challenging conditions.

## Communication with the Owner

- 5.11 Test results shall be shared with the owner through the Annual Report.

## 6 Associated Documents & Records D-1 Operational Plan

## 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Monitoring	Control I.D.: P-10
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure defines the monitoring processes for the Township of Manitouwadge water treatment and distribution system.

### 2 Scope

This procedure is applicable to the Township of Manitouwadge Public Works licensed drinking water operators.

### 3 References

DWQMS Element 16 - Sampling, Testing and Monitoring

### 4 Definitions and Acronyms

Monitoring – any checks or systems employed to detect hazards or the potential for hazards. For the purpose of this procedure, monitoring includes continuous SCADA trending and alarmed response.

### 5 Procedure

- 5.1 On-line analyzers at the water treatment plant continually monitor the quality of the water. The analyzers are connected to an alarm system which shall notify operators in the event of problems.
- 5.2 Chlorine residual, turbidity, pH, flow and UV are monitored at the WTP.
- 5.3 The electronic SCADA file shall be printed out on a daily basis. The Operator and/or the Foreman/ORO shall review the previous day's file looking for abnormal readings.
- 5.4 The Operator and/or the Foreman/ORO shall investigate any abnormal readings and make adjustments to the system as required.



5.5 The Foreman/ORO shall review the external test results looking for trends that may indicate a potential change to the water quality.

5.6 The Foremen/ORO shall monitor overall quality of the water treatment and distribution system and communicate the results through the Annual Report.

5.7 The effectiveness of the Quality Management System shall be monitored through the Internal Audit and Management Review processes.

**6 Associated Documents & Records**

D-1 Operational Plan

P-15 Management Review Procedure

P-13 Internal Audit Procedure

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS PROCEDURE

Title: Calibration and Maintenance	Control I.D.: P-11
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure defines the process for the calibration and maintenance of measurement and recording equipment.

### 2 Scope

This procedure is applicable to Operating Authority staff.

### 3 References

DWQMS Element 17- Measurement and Recording Equipment Calibration and Maintenance

### 4 Definitions and Acronyms

None

### 5 Procedure

5.1 Calibration and maintenance of the Chlorine residual analyzer, Turbidity analyzer, flow meter, and pH meter shall be performed by Public Works staff.

5.2 The instruments shall be calibrated and maintained according to manufacturer's specifications, using the manufacturer's manual. Manuals shall be kept with the equipment or where the equipment is stored when not in use.

5.3 Equipment that cannot be properly calibrated by the operator shall be sent back to the manufacturer or to a qualified contractor for servicing.

5.4 Calibration and Maintenance records shall be kept in the location where the equipment is stored, or as required by legislation.

5.5 Public Works staff shall ensure that equipment is verified and if necessary calibrated before use.

5.6 All calibration certificates that come from the manufacturer or qualified service contractor shall be retained with the calibration records.

5.7 The frequency of calibration shall be that recommended by the manufacturer, at a minimum.

5.8 pH meters shall be calibrated prior to use.

5.9 If monitoring equipment is dropped or damaged, the equipment shall be repaired and calibrated prior to being put back into service.

**6 Associated Documents & Records**  
D-1 Operational Plan

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Calibration and Maintenance	Control I.D.: P-11
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure defines the process for the calibration and maintenance of measurement and recording equipment.

### 2 Scope

This procedure is applicable to Operating Authority staff.

### 3 References

DWQMS Element 17- Measurement and Recording Equipment Calibration and Maintenance

### 4 Definitions and Acronyms

None

### 5 Procedure

5.1 Calibration and maintenance of the Chlorine residual analyzer, Turbidity analyzer, flow meter, and pH meter shall be performed by Public Works staff.

5.2 The instruments shall be calibrated and maintained according to manufacturer's specifications, using the manufacturer's manual. Manuals shall be kept with the equipment or where the equipment is stored when not in use.

5.3 Equipment that cannot be properly calibrated by the operator shall be sent back to the manufacturer or to a qualified contractor for servicing.

5.4 Calibration and Maintenance records shall be kept in the location where the equipment is stored, or as required by legislation.

- 5.5 Public Works staff shall ensure that equipment is verified and if necessary calibrated before use.
- 5.6 All calibration certificates that come from the manufacturer or qualified service contractor shall be retained with the calibration records.
- 5.7 The frequency of calibration shall be that recommended by the manufacturer, at a minimum.
- 5.8 pH meters shall be calibrated prior to use.
- 5.9 If monitoring equipment is dropped or damaged, the equipment shall be repaired and calibrated prior to being put back into service.

**6 Associated Documents & Records**  
D-1 Operational Plan

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS PROCEDURE

Title: Emergency Management	Control I.D.: P-12
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure identifies potential emergencies that can occur within the Township of Manitouwadge drinking water system, including the steps for response and recovery and the testing and training requirements for emergency management.

### 2 Scope

This procedure is applicable to the all employees of the Operating Authority.

### 3 References

DWQMS Element 18 - Emergency Management

### 4 Definitions and Acronyms

None

### 5 Procedure

#### Identified Potential Emergencies

5.1. The Operating Authority has identified five potential emergency situations for which Emergency Response Work Instructions have been developed. Please see Table 1.

5.2. Sources of information for identifying potential emergencies include:

- Corporate Audits
- Insurance company reviews
- Records of past emergencies
- New reports about emergencies in other systems
- Ministry of Environment Inspections

## Emergency Response and Recovery

5.3. First response to an emergency in is provided by the Foreman/ORO and Public Works staff.

5.3.1. In all cases of injury or fire, the first responder shall contact 911.

5.4. Communications with the public is directed through the Public Works Superintendent.

5.5. The Manager-Clerk will inform the mayor and council members at the appropriate time depending on the scope and magnitude of the emergency.

5.6. Emergency Response Work Instructions shall be in place for each identified potential emergency.

Table 1

POTENTIAL EMERGENCIES		EFFECTS	CONTINGENCY
<u>WEATHER RELATED</u> Tornadoes Blizzards / Ice storms Lightning Strikes High Winds	Infrastructure Damage	Structural damage Flooding of treatment facilities Equipment failure Loss of Power Operational Staff unable to respond	SCADA Alarm – remote operation Back-up diesel Genset Equipment Redundancy On-call and back up operational personnel See WI-5
<u>VANDALISM</u>	Contamination Fires / explosions Infrastructure Damage System / Equipment Failure	Loss of Water Quality Loss of Water Supply	Security Monitoring Personnel Coverage See WI-7
<u>PANDEMIC</u>	Loss of licensed operational staff	Unable to meet regulatory staffing and operational requirements. Possible shutdown of one or more systems.	Mutual aid Use of Contract OA See WI-6
<u>MAJOR FIRE</u>	Loss of water treatment capability	Contamination of treated water	Monitoring Advise Fire Services to use direct source (surface water) and transport WI-8
<u>LABOUR DISRUPTION</u>	Loss of licensed operational staff	Unable to meet regulatory staffing and operational requirements. Possible shutdown of system.	Mutual aid Use of Contract OA See Collective Agreement (No WI)

## **Emergency Contacts**

5.7. The Emergency Contacts list shall be maintained by the Public Works Superintendent at the Public Works Office and be distributed to all Public Works staff.

5.7.1. A copy of the Emergency Contacts List shall be posted at the Water Treatment Plant

## **Emergency Response Training**

5.8. All Public Works staff shall receive training in emergency response.

5.8.1 Training may be provided by in-house staff or by qualified contractors/trainers.

5.8.1.1 Emergency Response training may be formal classroom training, a review of the procedure and demonstration of comprehension, or other activity as approved by the Public Works Superintendent.

5.8.2 Records of Emergency Response training shall be maintained.

## **Emergency Response Testing**

5.9. All potential Emergency Response procedures shall be tested over a three year period.

5.10. Different testing methods may be used, depending on the complexity of the emergency, the ease of simulation and the likelihood of occurrence.

## **Distribution of Procedures**

5.11. Hard copies of Emergency Procedures are kept in the Public Works Office and the Water Treatment Plant.

## **6 Associated Documents & Records**

D-1 Operational Plan

WI-5 to WI-8 Emergency Response Work Instructions



## 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin

## Township of Manitouwadge DWQMS PROCEDURE

Title: Internal Audits	Control I.D.: P-13
Revision: 2	Effective Date: 02/Feb/13

### 1 Purpose

This procedure describes the Internal Audit process.

### 2 Scope

This procedure is applicable to all Internal Auditors for the Quality Management System.

### 3 References

DWQMS Element 19 – Internal Audits

### 4 Definitions and Acronyms

CAR – Corrective Action Report

### 5 Procedure

#### Preparation

- 5.1 Internal audits shall only be conducted by persons approved by the QMS Representative and having the following qualifications:
  - Township of Manitouwadge employees who have completed internal audit training, or
  - Employees of other operating authorities who have completed internal audit training.
  - Qualified auditing contractors.
- 5.2 Internal Audits shall be conducted for each element of the DWQMS at least once every twelve months. Results of previous internal and external audits shall be considered when planning for each audit.
- 5.3 Internal audits shall be scheduled. The schedule shall be maintained by the Public Works Superintendent, and shall include the element to be audited, the month, and the assigned Auditor.
- 5.4 An audit checklist(s) template shall be maintained by the Public Works Supervisor for use by the Auditor(s). The checklist(s) shall be

used by the internal Auditor as a guide, for record-keeping purposes, and for conducting the interviews and document review during the audit.

### **Conducting the Audit**

- 5.5 The Auditor shall observe activities, review records, review previous internal and external audit results, and interview personnel as necessary to ensure that the status of the audited element of the QMS has been effectively assessed.

### **Reporting the Results**

- 5.6 The Auditor shall submit a completed report, including the checklist, to the Public Works Superintendent within 30 days of the internal audit.
- 5.7 The report shall include any corrective actions requests (CARs) required to address discrepancies between the QMS and the DWQMS, or between the QMS and how it is actually implemented, including a reference to the applicable section of the Standard.
- 5.8 Responses to CARs shall be designated to the responsible individual by the Public Works Superintendent.
- 5.9 It shall be the responsibility of the Public Works Superintendent to ensure that all CARs are followed up and responses to the CARs are provided to the internal Auditor by the date documented on the CAR.
- 5.10 CARs shall be completed, addressed and filed as per the Corrective Action Procedure.
- 5.11 The QMS Representative shall maintain a summary of Internal Audit results that are to be presented for Management Review.

- 6 Associated Documents & Records  
P-14 Corrective Action Procedure  
D-1 Operational plan  
F-1 CAR  
F-2 CAR Log  
F-3 Internal Audit Checklist

## 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin
2	05/Feb/13	Updated Step 5.2	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Corrective Action	Control I.D.: P-14
Revision: 1	Effective Date: 24/April/11

### 1 Purpose

The purpose of this procedure is to describe how Corrective Actions are initiated, assigned, documented, implemented, and validated as being effective.

### 2 Scope

This procedure is applicable to all detected non-conformities of the QMS with respect to the requirements of the DWQMS, or any other undesirable situation.

### 3 References

DWQMS Element 19 - Internal Audit  
DWQMS Element 21 - Continual Improvement

### 4 Definitions and Acronyms

CAR – Corrective Action Request

### 5 Procedure

#### Initiating a Corrective Action

5.1 The QMS Representative shall issue a Corrective Action Request (CAR) for non-conformances resulting from Internal audits.

Note: The Operating Authority shall respond to CARs issued by 3<sup>rd</sup> party assessment organizations on the forms provided by those organizations.

#### Investigating and Completing a Corrective Action Request

5.2 The QMS Representative shall assign the CAR to appropriate staff for action. Each non-conformance shall require a separate CAR.

5.3 The CAR shall be completed with the following information:

- The date the Corrective Action was initiated.
- A description of the non-conformance.
- Responsibilities and timelines for corrective actions.

- A description of the root cause of the non-conformance (completed by assignee)
- A description of the corrective actions being taken. (completed by assignee)
- A signoff by the responsible employee once the corrective action(s) is complete. (completed by the assignee)

5.4 The Corrective Action Assignee shall report progress to the QMS Representative based on established timelines.

5.5 CARs shall be closed out once validated by the QMS Representative or his designate. The purpose of validation is to ensure that the root cause of the nonconformity was identified and that the solution was effective in eliminating the root cause.

#### Tracking of Corrective Actions

5.6 The QMS Representative shall maintain a listing of all CARs (which will include a date for validating that the implemented solution was effective.

5.7 The QMS Representative shall maintain originals of all completed CARs.

#### 6 Associated Documents & Records

P-13 Internal Audit Procedure

P-15 Management Review

D-1 Operational Plan

F-1 Corrective Action Request

F-2 Corrective Action Log

#### 7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Management Review	Control I.D.: P-15
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure describes the Management Review process used to evaluate the continuing suitability, adequacy and effectiveness of the QMS.

### 2 Scope

This procedure is applicable to the Top Management of the Manitouwadge drinking-water system operating authority.

### 3 References

DWQMS Element 20 - Management Review

### 4 Definitions and Acronyms

None

### 5 Procedure

#### Preparation

- 5.1 Management Reviews shall be conducted on an annual basis
- 5.2 Top Management, as identified in the Operational Plan, shall perform the Management Review.
- 5.3 The Public Works Superintendent shall schedule the Management Review meeting, and arrange for attendees.
- 5.4 The Public Works Superintendent shall prepare an agenda for the meeting.
- 5.5 The Operator/ORO shall prepare summaries of the following information, as it pertains to the waterworks, prior to the meeting:
  - Incidents of regulatory non-compliance
  - Incidents of adverse drinking water tests
  - Deviations from critical control point limits and response actions
  - The effectiveness of the risk assessment process

- Results of internal and 3rd party audits
- Results of relevant emergency response testing
- operational performance
- water quality trends
- Follow-up on actions items from previous management reviews
- Status of management action items (if any) identified between reviews
- Changes in resource requirements, infrastructure, process, personnel, the Drinking Water Quality Management Standard or regulations that could affect the QMS
- Consumer feedback
- The resources needed to maintain the QMS
- The results of the infrastructure review
- Operational Plan currency, content and updates, and
- Staff suggestions

#### Review Process

- 5.6 Each input item shall be reviewed in order to identify if, where and when improvements to the QMS and its procedures are required.
- 5.7 The Public Works Superintendent shall make note of any changes or action items required during the course of the review.

#### Review output

- 5.8 The output from the Management Review shall include meeting minutes prepared by the Public Works Superintendent. These minutes shall include:
- The date and time of the Management Review and the names of participants and attendees.
  - Any identified deficiencies.
  - A list of "action" items. All action items shall identify an individual responsible and the proposed timelines for implementation.
  - Recommendation(s) for any resources needed for maintenance or improvement of the QMS.
- 5.9 The Public Works Superintendent shall summarize the meeting minutes and provide them to the Manager-Clerk, who shall provide the results to Council.



5.10 The Public Works Superintendent shall be responsible for the communication and implementation of the management review action items.

- 6 Associated Documents & Records
  - D-1 Operational Plan
  - D-2 Master List of Documents
  - Management Review Minutes

7 History of Changes

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS PROCEDURE

Title: Essential Supplies and Services	Control I.D.: P-16
Revision: 3	Effective Date: 31/Oct/13

Contact	Telephone, Fax #'s and Email	Information and Supplies
Local Medical Officer of Health	P 888-294-6630	
	A.H 807-623-7451	Authority Notification
	F 807-623-2369	
Ministry of Environment	P 807-875-7772	
	F 807-473-3160	Authority Notification
	P 800-268-6060	
Spill Action Center	P 800-268-6060	Authority Notification Spills
Sherry Hakala, Senior Environmental Officer	P 807-475-1226	
	F 807-475-1754	Sewage Collection Treatment Issues
	E <a href="mailto:sherry.hakaka@ontario.ca">sherry.hakaka@ontario.ca</a>	
Stephen Hunsberger, MOE Water Inspector	P 807-475-1513	
	F 807-475-1754	Water Treatment Distribution Issues
	E <a href="mailto:stephen.hunsberger@ontario.ca">stephen.hunsberger@ontario.ca</a>	
ALS Laboratory Group	P 800-668-9878	Laboratory Analytical for Manitouwadge
	F 807-623-7598	
Fire	P 911	Emergency Services
OPP	P 911	Emergency Services
Ambulance	P 911	Emergency Services
Alliance Chemical	P 807-472-2080	
	F 866-204-4685	Roberto Bucci: 12% Sodium Hypochlorite
	E <a href="mailto:rb.allchem@tbaytel.net">rb.allchem@tbaytel.net</a>	
Clear Tech	P 800-387-7503	Water Equipment Supplier, chemicals
	F 905-612-0575	
Courtesy Courier	P 807-826-4660	Deliveries
Manitoulin Transport	P 807-229-0551	Deliveries
Purolator (Bob's Taxi)	807-229-6181	Deliveries
Transprovincial Freight Carriers Ltd.	P 705-759-4412	Deliveries
Dallaire Welding	P 807-826-4495	Welding
Endress & Hauser	p 905-681-9292	Computer System, Flow Meter Verification
Greyhound Bus	P 807-229-3433	Deliveries
Hospital	P 807-826-3251	

J & J Rentals	P	807-826-1444	Equipment Rentals
KGS Group	P	204-896-1209	Consulting Engineers
	F	204-896-0754	
Home Hardware	P	807-826-3233	Equipment Rentals, plumbing, supplies, etc.
McKnight Plumbing	P	807-229-1693	Plumber
Nelson Environmental	P	204-949-7500	Consulting Engineers
	F	204-237-0660	
OCWA	P	800-667-6292	
Phils Pumping	P	807-229-2606	Sewage Pumping
Potters Pumping	P	888-213-2220	Sewage Pumping
	F	807-939-2558	
GAL Power Northern	P	807-346-6888	Generator Mechanic
	F	807-346-0696	
Synergy Controls Corp	P	705-674-2875	
	F	807-683-3870	Electronic Meters and Computers
	C	807-627-5569	
Trans West	P	807-623-0909	Sewage Meter calibration, Hach Supplier
David Bell Mine	P	807-238-1041	
Williams Mine	P	807-238-1100	
Bell Locates	P	611	
Cal Gas	P	888-269-4380	Propane Supplier
Hydro Locate	P	888-664-9376	Hydro Lines
Western Supplies	P	807-345-6543	Supplies
	F	807-345-0090	
	C	807-628-6291	
Shaw Locate	P	807-826-3921	Shaw Cable Lines
P=phone		A.H.=after hours	
F=fax		E=Email	
C = cell			

Provost?

## 1 History of Changes

Revision	Date	Description	By
3	31/Oct/13	New	O. Collin



## Township of Manitouwadge DWQMS Work Instruction

Title: Primary Disinfection CCP Response	Control I.D.: WI-1
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure describes the CCP limits for primary disinfection and the steps to be taken to respond to and report deviations of those limits.

### 2 Scope

This Work Instruction is applicable to the Township of Manitouwadge treatment plant operators.

### 3 References

DWQMS Element 8 – Risk Assessment Outcomes

### 4 Definitions and Acronyms

CCP Critical Control Points

### 5 Procedure

5.1 The Township of Manitouwadge water treatment plant uses UV as the source for primary disinfection. The system includes one duty UV filter and one standby UV filter (back-up).

5.1.1 The normal operating UV range is 50 – 100 mJ/cm<sup>2</sup>. The disinfection low limit set-point is 42 mJ/cm<sup>2</sup>.

5.1.2 There is no high limit set point.

5.2 When a primary disinfection critical low limit alarm is activated, the operator shall shut down the on-line UV system.

5.2.1 The operator shall determine the cause of the alarm and take action as necessary to bring the UV system back on-line.

5.2.1.1 The operator shall refer to the Manufacturer's manual for troubleshooting and maintenance information and recommendations.

5.2.1.2 All UV system maintenance and/or repairs shall be documented by the operator.

5.3 The operator shall review the on-line results upon start-up to ensure the desired disinfection level is achieved.

5.4 All primary disinfection deviations to the Critical Limit Set Point shall be reported to the superintendent of Public Works.

5.4.1 The Superintendent in collaboration with the Foreman/ORO shall review all deviations to determine what, if any, permanent action may be required to prevent similar deviations in the future.

5.4.2 The Superintendent shall record all incidences of deviation and include a summary of the same for Management Review.

**NOTE:** If the primary disinfection set point exceeds the limit of 40/mJ/cm<sup>2</sup> for a minimum of 15 consecutive minutes, then the results are deemed adverse and shall be reported as per O. Reg 170/03

- 6 Associated Documents  
P-3 Risk Assessment Procedure  
D-3 Risk Analysis Spreadsheet

7 Document History

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS Work Instruction

Title: Secondary Disinfection CCP Response	Control I.D.: WI-2
Revision: 2	Effective Date: 05/Feb/13

### 1.0 Purpose

The purpose of this procedure is to define the steps to be taken in response to a secondary disinfection critical limit alarm.

### 2.0 Scope

This procedure is applicable to all treatment plant personnel.

### 3.0 References

DWQMS                      Element 8 – DWQMS Outcomes

### 4.0 Definitions

None

### 5.0 Procedure

5.1 Secondary disinfection is achieved through the process of Chlorination (injection of Sodium Hypochlorite).

5.2 The critical limit for secondary disinfection is 0.20 mg/L free chlorine

#### Below Critical Limit

5.3 In the event of a low critical limit alarm the Operator shall attempt to determine the cause of the alarm and take corrective action as follows:

5.3.1 Supply: ensure that a sufficient supply of Sodium Hypochlorite is available. If necessary, switch to alternate tank.

5.3.2 Pumps: ensure that the metering pumps are on and pumping effectively. If necessary, rotate pumps and repair, service or replace problem pump.

5.3.3 Analyzers: collect a grab sample from the analyzer and test the chlorine content. If necessary calibrate, repair or replace the analyzer.

**NOTE:** It will be necessary to continue taking grab samples until the analyzer is repaired or replaced to ensure chlorine content remains within the proper operating range.

5.3.4 Feed Rate: increase the feed rate on the pump until residual begins to rise. The operator shall continue to monitor the

chlorine residual until satisfied it will remain within the operating limits.

5.4 The Superintendent shall record all incidences of deviation and include a summary of the same for Management Review.

**6.0 Associated Documents & Records**

P-3 Risk Assessment Procedure

D-3 Risk Analysis Spreadsheet

**6.0 History of Changes**

Revision	Date	Description	By
1	28/Apr/11	Initial release	O. Collin
2	05/Feb/13	Added 5.4	O. Collin



## Township of Manitouwadge DWQMS Work Instruction

Title: Chemical Feed CCP Response	Control I.D.: WI-3
Revision: 1	Effective Date: 24/Apr/11

- 1 **Purpose**  
This Work Instruction describes the steps for responding to Chemical Feed alarms.
- 2 **Scope**  
This Work Instruction is applicable to all licensed Township of Manitouwadge Treatment Plant operators.
- 3 **References**  
DWQMS Element 8 – Risk Assessment Outcomes
- 4 **Definitions and Acronyms**  
None
- 5 **Procedure**
  - 5.1 The Township of Manitouwadge Treatment Plant uses sodium hypochlorite for secondary disinfection in order to produce safe drinking water.
    - 5.1.1 The Critical Control Limits for introduction of these chemicals to the overall treatment process are defined as an “on/off” condition of the pumps and analyzers as monitored by SCADA.
    - 5.1.2 See the appropriate CCP Response Work Instruction for Secondary Disinfection Critical Control Limits.
  - 5.2 The following chemical feed activity is monitored and reported through SCADA:
    - 5.2.1 Addition of Sodium Hypochlorite. There is no standard set-point or Critical Control Limit.
    - 5.2.2 Each chemical pump is monitored and alarmed as normally “on”. A loss of signal indicating that the pump is on will trigger an alarm.



5.2.2.1 All chemical feed systems are also visually inspected during the operator's rounds.

5.2.2.2 Feed system components that fail may be replaced or repaired. Whenever practical, a back-up pump will be used until the duty pump can be returned to service.

5.3 5.4 All Chemical Feed System failures shall be reported to the Superintendent of Public Works.

5.3.1 The Superintendent of Public works, in collaboration with the Foreman/ORO, shall review all failures to determine what, if any, permanent action may be required to prevent similar failures in the future.

5.3.2 The Superintendent of Public Works, as the QMS Representative, shall record all incidences of chemical feed system failure and include a summary of the same for Management Review.

- 6 Associated Documents  
P-3 Risk Assessment Procedure  
D-3 Risk Analysis Spreadsheet

7 Document History

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS Work Instruction

Title: System Pressure CCP Response	Control I.D.: WI-4
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

This procedure describes the CCP limit for system pressure and the steps to be taken to respond to and report deviations of those limits.

### 2 Scope

This Work Instruction is applicable to the distribution system operations of the Manitouwadge drinking water system.

### 3 References

DWQMS Element 8 – Risk Assessment Outcomes

### 4 Definitions and Acronyms

CCP Critical Control Points

### 5 Procedure

- 5.1 System pressure is controlled directly from the high lift pumps.
  - 5.1.1 The Critical Control Limit for low system pressure shall be set at 30psi. There is no Critical Control Limit for high pressure.
  - 5.1.2 Loss of pressure in the system may be indicated by a SCADA alarm or be reported by consumers.
  - 5.1.3 Any alarms or reports of a drop in pressure shall be investigated to determine the source.
- 5.2 The operator shall determine the source of the pressure drop and take such action as necessary to either eliminate the source or to mitigate the impact on the distribution system. The operators action may include but not be limited to one or more of the following:
  - 5.2.1 Isolation of a portion of the distribution system
  - 5.2.2 Undertaking repairs to pumps or other equipment and appurtenances, as appropriate.

5.2.3 Conducting repairs to a portion or portions of the distribution system.

5.3 All deviations to the Critical Control Limit system pressure set point shall be reported to the Superintendent of Public Works.

5.3.1 The Superintendent shall review all deviations to determine what, if any, permanent action may be required to prevent similar deviations in the future.

5.3.2 The Superintendent, as the QMS Representative, shall record all incidences of deviation and include a summary of the same for Management Review.

**NOTE:** If the system pressure set point drops below 20psi for a minimum of 15 consecutive minutes, then the results are deemed adverse and shall be reported as per O. Reg 170/03

- 6 Associated Documents**  
P-3 Risk Assessment Procedure  
D-3 Risk Analysis Spreadsheet

**7 Document History**

Revision	Date	Description	By
1	24/April/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS WORK INSTRUCTION

Title: Weather Related Emergencies	Control I.D.: WI-5
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

The purpose of this Emergency Work Instruction is to describe the steps to be considered or taken for weather related waterworks emergencies.

### 2 Scope

This procedure is applicable to the Township of Manitouwadge Public Works Department, water operations.

### 3 References

DWQMS Element 18 – Emergency Management

### 4 Definitions and Acronyms

None

### 5 Procedure

- 5.1 In the case of a weather related emergency, the Publics Works staff shall take whatever precautions are necessary to ensure the safe supply of drinking water to the public.
- 5.2 The Superintendent of Public Works shall monitor weather conditions in order to be aware of potential storm warnings or storm watches.
- 5.3 When Storm watches or warnings are issued, the Superintendent of Public Works shall inform the Public Works staff, who will ensure that all chemical levels are topped up, and the fuel level for the Generator is topped up.
- 5.4 The Foreman/ORO shall ensure that the required maintenance is performed on the emergency generator so that it is functioning when required.

- 5.5 During the Storm the Public Works staff shall continue to monitor the SCADA data and ensure that the system is still functioning. If an alarm goes off the On-call operator shall respond to the situation as per their operator training.
- 5.6 If the Storm results in a failure of the SCADA system, and an alarm is sent out, the operator shall go to the Water Treatment Plant and operate the system manually. The operator shall contact the Superintendent of Public Works of the SCADA failure.
- 5.7 The operator shall determine the cause of the failure and contact the appropriate contractor in order to repair the system.
- 5.8 After the Storm has passed the Superintendent of Public Works shall ensure that the water-works has not been affected by the storm and if it has, he shall ensure that the system has been repaired as necessary.
- 5.9 The Operator shall record any incident that occurred during the weather related situation in the log book.

**6 Associated Documents**  
P-12 Emergency Response Procedure

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
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## Township of Manitouwadge DWQMS WORK INSTRUCTION

<b>Title: Pandemic Emergency Response</b>	<b>Control I.D.: WI-6</b>
<b>Revision: 1</b>	<b>Effective Date: 24/Apr/11</b>

- 1 Purpose**  
The purpose of this Emergency Work Instruction is to describe instructions for waterworks-related pandemic related emergencies.
- 2 Scope**  
This procedure is applicable to the Town of Manitouwadge Public Works Department, water operations.
- 3 References**  
DWQMS Element 18 – Emergency Management
- 4 Definitions and Acronyms**  
None
- 5 Procedure**
  - 5.1** In the case of a pandemic related emergency, the Publics Works staff shall take whatever precautions are necessary to ensure the safe supply of drinking water to the public.
  - 5.2** The Superintendent of Public Works shall monitor absenteeism due to illness in order to be aware of potential missing coverage.
  - 5.3** In the event that there are insufficient operators to cover the safe and legal operation of the Waterworks, the Township of Manitouwadge may arrange coverage through a contract Operating Authority or through a Mutual Agreement with a neighbouring Municipality.
- 6 Associated Documents**  
P-12 Emergency Management Procedure

**7 History of Changes**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>By</b>
1	24/Apr/11	Initial Release	O. Collin



## Township of Manitouwadge DWQMS WORK INSTRUCTION

Title: Emergency Response - Vandalism	Control I.D.: WI-7
Revision: 1	Effective Date: 24/Apr/11

### 1 Purpose

The purpose of this Emergency Work Instruction is to describe instructions for waterworks-related vandalism emergencies.

### 2 Scope

This work instruction is applicable to the Town of Manitouwadge Public Works Department, water operations.

### 3 Reference

DWQMS Element 18 – Emergency Management

### 4 Definitions and Acronyms

None

### 5 Response Instruction

5.1 The operator shall perform an inspection of the following items to ensure the Water Treatment Plant are secure from unauthorized entry or vandalism.

- Security Fences
- Building Lighting
- Windows and doors in good condition and secure

5.2 The exterior doors shall be secured with proper locks and illegal entry alarms must be engaged.

5.3 Building entry alarms are included in SCADA and shall be noted by the operator if an alarm is indicated.

5.4 If the building entry alarm is tripped, the on call operator shall approach the facility carefully and if any damage or suspicious conditions exist, they shall be reported immediately to the Superintendent of Public Works who will then call the police and have them meet the Operator at the facility.



5.5 Once the facility has been thoroughly checked and any damage noted, the Foreman/ORO shall arrange to have the damage repaired and the facility made secure.

5.6 If there is any evidence that the WTP processes have been tampered with, samples shall be taken of the system for rush testing. The operator shall contact the Superintendent who will contact Public Health Office for additional direction.

5.7 Once the test results are received, the Foreman/ORO shall take the necessary steps to return the facilities to normal operation.

#### **Vandalism within the Distribution System**

5.8 If the Operator is notified by SCADA of a low pressure alarm they need to determine the source of the pressure loss.

5.9 If the low pressure is the result of vandalism to one or more hydrants the Operator shall contact the Superintendent who will arrange for additional resources, as required.

5.10 If the system pressure drops too low, the operator shall follow the System Pressure Work Instruction.

5.11 The Operator shall shut off of the valves to the damaged hydrants and replace the hydrants, and return the distribution system to normal operation.

#### **Reporting**

5.12 The Operator shall document the incident in the logbook.

#### **6 Associated Documents**

P-12 Emergency Response Procedure

#### **7 History of Changes**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>By</b>
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
Ontario, Canada

## Township of Manitouwadge DWQMS WORK INSTRUCTION

Title: Emergency Response – Treatment Plant Fire	Control I.D.: WI-8
Revision: 1	Effective Date: 24/Apr/11

- 1 **Purpose**  
The purpose of this Emergency Work Instruction is to describe the process to respond and recover from a Major Fire.
- 2 **Scope**  
This procedure is applicable to the Township of Manitouwadge Public Works Department, water Operations.
- 3 **References**  
DWQMS Element 18 – Emergency Management
- 4 **Definitions and Acronyms**  
None
- 5 **Procedure**
  - 5.1 When fire is detected at the Water Treatment Plant the Operator shall quickly assess the severity of the fire.
  - 5.2 In all cases of fire, the operator shall first call 911.
  - 5.3 If the fire is small the Operator may attempt to extinguish it with a fire extinguisher, only if trained to do so.
  - 5.4 If the fire cannot be extinguished the operator shall visually check to ensure everyone has evacuated the WTP.
  - 5.5 The operator shall then contact the Superintendent and inform him of the emergency. The Superintendent shall determine who else is to be contacted, and then contact them to explain the emergency.

- 5.6 The Superintendent and Foreman/ORO shall determine the extent of damage once the fire is extinguished.
- 5.7 If the SCADA is damaged as a result of the fire the operators may have to continue to operate the WTP manually until the SCADA can be repaired.
- 5.8 If the WTP cannot be brought back into service the Superintendent shall take actions as prescribed by regulation and as described in the Municipal Emergency Plan.

**6 Associated Documents**  
P-12 Emergency Management Procedure

**7 History of Changes**

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin



**Manitouwadge**  
Ontario, Canada

**Township of Manitouwadge**

DWQMS Form  
F-1

<b>CAR #:</b>	<b>Date Issued:</b>
<b>Originator:</b>	<b>Issued To:</b>

## Corrective Action Request

### Section #1: Internal Auditor

**Requirement:**

Complete when applicable:

**Finding (N/C):**

Complete when applicable:

**Objective Evidence:**

**Issued by:**

**Additional Comments:**

# Corrective Action Request (cont'd)

## Section #2: Recipient

**Root Cause and Permanent Action Shall Be Completed For All Major Non-Conformances**

Immediate Action (When Applicable):

Interim Action (When Applicable):

Root Cause:

Permanent Action: (Please include date action taken)

## Section #3: Originator or QMS Representative

Method of Verification (if required)

Date Approved:

Approved By:



**Manitowadge**  
Ontario, Canada

# Corrective Action Request Log F-2

CAR #	Issue Date	Issued To	Brief Description	Closed Date



**Township of Manitouwadge  
DWQMS FORM**

Title: Internal Audit Checklist	Control I.D.: F-3
Revision: 3	Effective Date: 28/Apr/15

**DWQMS Requirement**

**Finding(s)**

<p><b>1. Quality Management System</b>  <b>PLAN</b> – the Operating Authority shall document a Quality Management System that meets the requirements of this Standard</p> <p><b>DO</b> – The Operating Authority shall establish and maintain the Quality Management System in accordance with the requirements of this Standard and the policies and procedures documented in the Operational Plan.</p>	
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Township of Manitouwadge  
DWQMS FORM

Title: Internal Audit Checklist	Control I.D.: F-3
Revision: 3	Effective Date: 28/Apr/15

**2. Quality Management System Policy**

PLAN – The Operational Plan shall document a Quality Management System Policy that provides the foundation for the Quality Management System, and:

- a.) is appropriate for the size and type of the subject system,
- b.) includes a commitment to the maintenance and continual improvement of the Quality Management System,
- c.) includes a commitment to the consumer to provide safe drinking water,
- d.) includes a commitment to comply with all legislation and regulations, and
- e.) is in a form that provides for ready communication to all Operating Authority personnel, the Owner and the public.

DO – The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Policy.



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**3. Commitment and Endorsement**

PLAN – The Operational Plan shall contain a written endorsement of its contents by top Management and the Owner

DO – Top Management shall provide evidence of its commitment to an effective Quality Management System by:

- a.) ensuring that a Quality Management System is in place that meets the requirements of this Standard,
- b.) ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- c.) communicating the Quality Management System according to the procedure for communications, and
- d.) determining, obtaining or providing the resources needed to maintain and continually improve the Quality management System



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<p><b>4. Quality Management System Representative</b></p> <p>PLAN – The Operational Plan shall identify a Quality Management System representative.</p> <p>DO – Top Management shall appoint and authorise a Quality Management System representative who, irrespective of other responsibilities, shall:</p> <ul style="list-style-type: none"> <li>a.) administer the Quality Management System by ensuring that processes needed for the Quality Management System are established and maintained,</li> <li>b.) report to Top Management on the performance of the Quality Management System and any need for improvement,</li> <li>c.) ensure that the current version of documents required by the Quality Management System are being used at all times,</li> <li>d.) ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system, and</li> <li>e.) promote awareness of the Quality Management System throughout the Operating Authority</li> </ul>	
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Title: Internal Audit Checklist	Control I.D.: F-3
Revision: 3	Effective Date: 28/Apr/15

**5. Document Control**

PLAN – The Operational Plan shall document a procedure for document control that describes how:

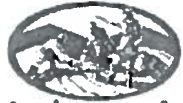
- a.) documents required by the Quality Management System are:
  - i. kept current, legible and readily identifiable
  - ii. retrievable
  - iii. stored, protected, retained and disposed of.

DO – The Operating Authority shall implement and conform to the procedure for Document Control and shall ensure that the Quality Management System documentation for the subject system includes:

- a.) the operational plan and its associated policies and procedures
- b.) documents determined by the operating authority as being needed to ensure the effective planning, operation and control of its operations,

<b>Title: Internal Audit Checklist</b>	<b>Control I.D.: F-3</b>
<b>Revision: 3</b>	<b>Effective Date: 28/Apr/15</b>

<p><b>5. Record Control</b></p> <p>PLAN – The Operational Plan shall document a procedure for records control that describes how:</p> <ul style="list-style-type: none"> <li>b.) Records required by the Quality Management System are: <ul style="list-style-type: none"> <li>ii. kept legible and readily identifiable</li> <li>iii. retrievable</li> <li>iv. stored, protected, retained and disposed of.</li> </ul> </li> </ul> <p>DO – The Operating Authority shall implement and conform to the procedure for Records Control and shall ensure that the Quality Management System documentation for the subject system includes:</p> <ul style="list-style-type: none"> <li>a.) records determined by the operating authority as being needed to ensure the effective planning, operation and control of its operations,</li> <li>b.) the results of internal and external audits and management reviews</li> </ul>	
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**Manitouwadge**  
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Title: Internal Audit Checklist	Control I.D.: F-3
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<p><b>6. Drinking –Water System</b></p> <p>PLAN – The Operational Plan shall document, as applicable:</p> <ul style="list-style-type: none"> <li>a.) for the subject system: <ul style="list-style-type: none"> <li>i. a description of the system including all treatment processes and distribution system components</li> <li>ii. the name of the Owner and the Operating Authority</li> <li>iii. a process flow chart</li> <li>iv. a description of the raw water source including: <ul style="list-style-type: none"> <li>i. general characteristics of the raw water supply</li> <li>ii. common event-driven fluctuations and</li> <li>iii. any resulting operational challenges and threats</li> </ul> </li> <li>v. a description of any critical upstream or downstream processes relied upon to ensure the provision of safe drinking water</li> </ul> </li> <li>b.) if the subject system is an operational subsystem, a summary description of the municipal residential drinking-water system it is a part of.</li> <li>c.) If the subject system is connected to one or more other drinking-water systems owned by different owners, a summary of those systems which: <ul style="list-style-type: none"> <li>i. indicates whether the subject system obtains water from or supplies water to those systems, and</li> <li>ii. names the Owner and Operating Authority of those systems.</li> </ul> </li> </ul> <p>DO – The Operating Authority shall ensure that the description of the drinking-water system is kept current.</p>	
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Title: Internal Audit Checklist	Control I.D.: F-3
Revision: 3	Effective Date: 28/Apr/15

**7. Risk Assessment**

PLAN – The Operational Plan shall document a risk assessment process that:

- a.) identifies potential hazardous events and associated hazards
- b.) assesses the risks associated with the occurrence of hazardous events,
- c.) ranks the hazardous events according to the associated risk,
- d.) identifies control measures to address potential hazards and hazardous events,
- e.) identifies critical control points, identifies a method to verify at least once a year, the currency of the information and the validity of the assumptions used in the risk assessment,
- f.) ensures that a risk assessment is conducted at least once every thirty-six months, and
- g.) considers the reliability and redundancy of equipment.

DO – The Operating authority shall perform a risk assessment consistent with the documented process.



Township of Manitouwadge  
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**8. Risk Assessment Outcomes**

PLAN – The Operational Plan shall document:

- a.) the identified potential hazardous events and associated hazards
- b.) the assessed risks associated with the occurrence of hazardous events,
- c.) the ranked hazardous events,
- d.) the identified control measures to address the potential hazards and hazardous events,
- e.) the identified critical control points and their respective critical control limits,
- f.) procedures and/or processes to monitor the critical control limits,
- g.) procedures to respond to deviations from the critical control limits, and
- h.) procedures for reporting and recording deviations from the critical control limits.

DO – The Operating Authority shall implement and conform to the procedures.



<b>Title:</b> Internal Audit Checklist	<b>Control I.D.:</b> F-3
<b>Revision:</b> 3	<b>Effective Date:</b> 28/Apr/15

<p><b>9. Organisational Structure, Roles, Responsibilities and Authorities</b></p> <p>PLAN – the Operational Plan shall:</p> <ul style="list-style-type: none"> <li>a.) describe the organisational structure of the Operating Authority including respective roles, responsibilities and authorities,</li> <li>b.) delineate corporate oversight roles, responsibilities and authorities in the case where the Operating Authority operates multiple subject systems,</li> <li>c.) identify person, persons or group of people within the management structure of the organisation responsible for undertaking Management Review,</li> <li>d.) identify the person, persons or group of people having Top Management Responsibilities required by this Standard, along with their responsibilities, and</li> <li>e.) identify the Owner of the subject system.</li> </ul> <p>DO – The Operating Authority shall keep current the description of the organisational structure including respective roles responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.</p>	
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<b>Revision:</b> 3	<b>Effective Date:</b> 28/Apr/15

<p><b>10. Competencies</b></p> <p><b>PLAN</b> – The Operational Plan shall document:</p> <ul style="list-style-type: none"> <li>a.) competencies required for personnel performing duties affecting drinking water quality.</li> <li>b.) activities to develop and maintain competencies for personnel performing duties directly affecting drinking water quality, and</li> <li>c.) activities to ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water.</li> </ul> <p><b>DO</b> – the Operating Authority shall undertake activities to:</p> <ul style="list-style-type: none"> <li>a.) meet and maintain competencies for personnel directly affecting drinking-water quality and shall maintain records of these activities, and</li> <li>b.) ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water, and shall maintain records of these activities.</li> </ul>	
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**11. Personnel Coverage**

PLAN – The Operational Plan shall document a procedure to ensure that sufficient personnel meeting the identified competencies are available for duties that directly affect drinking water quality,

DO – The Operating Authority shall implement and conform to the procedure.



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**13. Essential Supplies and Services**

PLAN – The Operational Plan shall:

- a.) identify all supplies and services essential for the delivery of safe drinking water and shall state, for each supply or service, the means to ensure its procurement, and
- b.) include a procedure by which the Operating Authority ensures the quality of the essential supplies and services, in as much as they may affect the drinking water quality.

DO – The Operating Authority shall implement and conform to the procedure.



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## 14. Review and Provision of Infrastructure

**PLAN** – The Operational Plan shall document a procedure for the annual review of the adequacy of the infrastructure necessary to operate and maintain the subject system.

**DO** – The Operating Authority shall implement and conform to the procedure and communicate the findings of the review to the owner.

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**15. Infrastructure Maintenance, Rehabilitation and Renewal**

PLAN – The Operational Plan shall document a summary of the Operating Authority's infrastructure maintenance, rehabilitation and renewal programs for the subject system.

DO –The Operating Authority shall:

- a.) keep the summary current,
- b.) communicate the programs to the Owner, and
- c.) monitor the effectiveness of the maintenance program

Title: Internal Audit Checklist	Control I.D.: F-3
Revision: 3	Effective Date: 28/Apr/15

**16. Sampling, Testing and Monitoring**

PLAN – The Operational Plan shall document:

- a.) a sampling, testing and monitoring procedure for process control and finished drinking water quality including the requirements for sampling, testing and monitoring at the conditions most challenging to the subject system
- b.) a description of any relevant sampling, testing or monitoring activities that take place upstream of the subject system, and
- c.) a procedure that describes how sampling, testing and monitoring results are recorded and shared between the Operating Authority and the Owner, where applicable.

DO – The Operating Authority shall implement and conform to the procedures.

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Revision: 3	Effective Date: 28/Apr/15

<p><b>17. Measurement and recording Equipment Calibration and Maintenance</b></p> <p>PLAN – The Operational Plan shall document a procedure for the calibration and maintenance of measurement and recording equipment.</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	
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**18. Emergency Management**

PLAN – The Operational Plan shall document a procedure to maintain a state of emergency preparedness that includes:

- a.) a list of potential emergency situations or service interruptions,
- b.) processes for emergency response and recovery,
- c.) emergency response training and testing requirements,
- d.) Owner and Operating Authority responsibilities during emergency situations,
- e.) References to municipal emergency planning measures as appropriate, and
- f.) An emergency communication protocol and an up-to-date list of emergency contacts.

DO – The Operating Authority shall implement and conform to the procedure.

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**19. Internal Audits**

PLAN – The Operational Plan shall document a procedure for internal audits that:

- a.) evaluates the conformity of the QMS with the requirements of this Standard,
- b.) identifies internal audit criteria, frequency, scope, methodology and record-keeping requirements,
- c.) considers previous internal and external audit results, and
- d.) describes how the Quality Management System corrective actions are identified and initiated.

DO – The Operating Authority shall implement and conform to the procedure and shall ensure that internal audits are conducted at least once every twelve months.

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**20. Management Review**

PLAN – The Operational Plan shall document a procedure for management review that evaluates the continuing suitability, adequacy and effectiveness of the Quality Management System and that includes consideration of:

- a.) incidents of regulatory non-compliance,
- b.) incidents of adverse drinking-water tests,
- c.) deviations from critical control point limits and response actions,
- d.) the efficacy of the risk assessment process,
- e.) internal and third party audit results,
- f.) results of emergency response testing,
- g.) operational performance,
- h.) raw water supply and drinking water quality trends,
- i.) follow-up action items from previous management reviews,
- j.) the status of management action items identified between reviews,
- k.) changes that could affect the Quality Management System,
- l.) consumer feedback,
- m.) the resources needed to maintain the Quality Management System,
- n.) the results of infrastructure review,
- o.) Operational Plan currency, content and updates, and
- p.) Staff suggestions

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<p><b>Do - Top Management shall implement and conform to the procedure and shall:</b></p> <ul style="list-style-type: none"> <li>a.) ensure that a management review is conducted at least once every twelve months,</li> <li>b.) consider the results of the management review and identify deficiencies and action items to address the deficiencies,</li> <li>c.) provide a record of any decisions and action items related to the management review including personnel responsible for delivering the action actions and the proposed timelines for their implementation, and</li> <li>d.) report the results of management review, the identified deficiencies, decisions and action items to the Owner.</li> </ul>	
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<p><b>21. Continual Improvement</b></p> <p><b>DO – The Operating Authority shall continual strive to improve the effectiveness of its Quality Management System through the use of corrective actions.</b></p>	
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Township of Manitouwadge  
DWQMS FORM

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Document History

Revision	Date	Description	By
1	24/Apr/11	Initial Release	O. Collin
2	29/May/14	Internal Audit	O. Collin
3	28/Apr/15	Internal Audit	O. Collin