



Operational Plan

For the Township of King
Drinking Water Systems

King City Drinking Water System

Nobleton Drinking Water System

Schomberg Drinking Water System

Ansnorveldt Drinking Water System



Operational Plan for King City Drinking Water System
Operational Plan for Schomberg Drinking Water System
Operational Plan for Nobleton Drinking Water System
Operational Plan for Ansnorveldt Drinking Water System


<i>Operational Plan Section & Title</i>	<i>Revision Number/ Date</i>
1. Overview of Operational Plan	Rev. 3 – February 24, 2015
2. Quality Management System Policy	Rev. 2 – January 29, 2016
3. Commitment and Endorsement	Rev. 4 – September 06, 2022
4. Quality Management System Representative	Rev. 3 – March 2, 2015
5. Document and Records Control	Rev. 5 – August 20, 2021
6. Drinking Water System	Rev. 8 – August 20, 2021
7. Risk Assessment	Rev. 12 – October 25, 2023
8. Risk Assessment Outcomes	Rev. 2 – January 15, 2024
9. Organizational Structure, Roles, Responsibilities and Authorities	Rev. 2 – March 2, 2015
10. Competencies	Rev. 7 – August 20, 2021
11. Personnel Coverage	Rev. 5 – January 20, 2023
12. Communications	Rev. 6 – August 20, 2021
13. Essential Supplies and Services	Rev. 7 – September 23, 2022
14. Review and Provision of Infrastructure	Rev. 8 – July 21, 2020
15. Infrastructure Maintenance, Rehabilitation and Renewal	Rev. 10 – August 20, 2021
16. Sampling Testing and Monitoring	Rev. 3 – July 21, 2020
17. Measurement and Recording Equipment Calibration & Maintenance	Rev. 4 – August 20, 2021
18. Emergency Management	Rev. 6 – August 20, 2021
19. Internal Audits	Rev. 8 – August 20, 2021
20. Management Review	Rev. 9 – August 20, 2021
21. Continual Improvement	Rev. 9 – May 30, 2022

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Samantha Fraser, Director, Public Works

March 11th, 2024

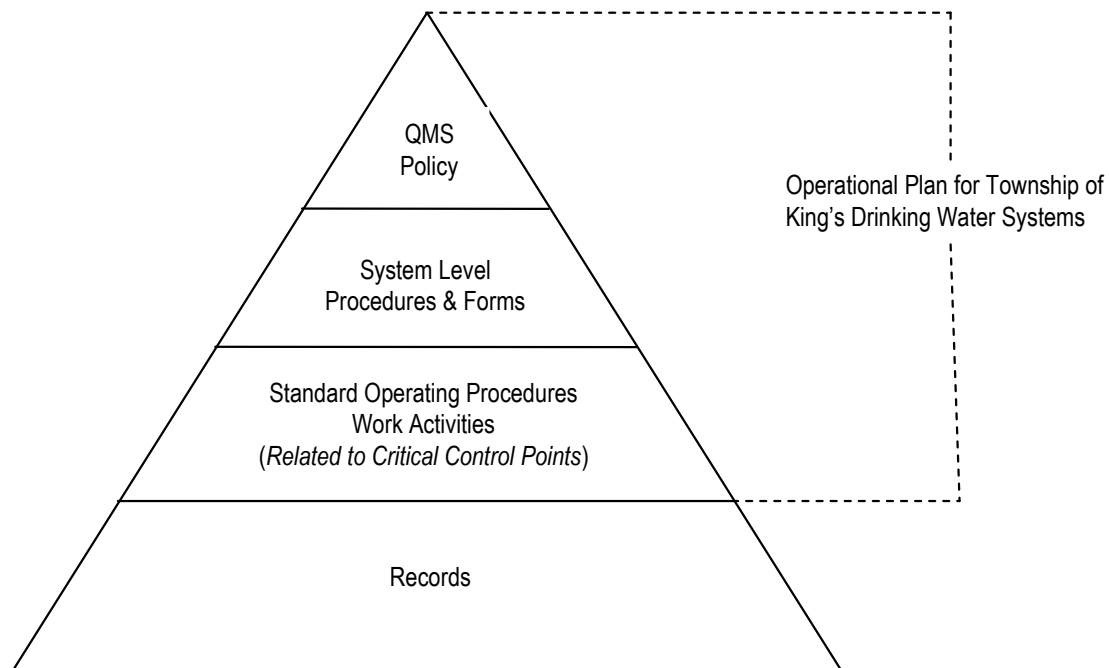
Date


	Public Works Department Water Distribution	Procedure No: QMS-01-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 3 – February 24, 2015
	Procedure Title: Overview of Operational Plan	Page 1 of 2

Overview of Operational Plans

The Operational Plan is one portion of the mandated Drinking Water Quality Management System (DWQMS) that is enforced by the Ministry of Environment for all Drinking Water Systems in the province of Ontario. This Operational Plan is a document created by the Township of King to help ensure that safe, reliable drinking water is provided to all the citizens, businesses, and visitors of the Township. The Operational Plan is a document that provides an understanding of the drinking water system, the responsibilities of the owner and operator (Operating Authority) of the water system, and a commitment to the provision of safe drinking water. This will allow the Township of King to plan, implement, check, and continually improve, helping to build confidence and security in the Drinking Water Systems they operate.

The Quality Management System (QMS) has been developed to meet the requirements of the DWQMS. The QMS is based on Plan, Do, Check and Improve principle. The Operational Plan is the documentation that addresses the 21 elements of the DWQMS. The QMS for the Township of King is comprised of the Operational Plan (documentation) and the records that demonstrate implementation of the Operational Plan. The following is the structure of the QMS (including the implementation records):



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	Procedure Title: Overview of Operational Plan	Page 2 of 2

As described in Element 5 - Document and Records Control of the Operational Plan, the Table of Contents has been signed off to demonstrate that the “approval date” and “revision number” noted are the Operational Plan procedures that have been approved.

Differentiation between King, Schomberg, Nobleton and Ansnorveldt's Operational Plans

The Township of King owns and operates four drinking water systems for the distribution of water. The four drinking water systems and communities they serve are:

- King City,
- Schomberg,
- Nobleton, and
- Ansnorveldt.


As required by the DWQMS, each of the drinking water systems has their own Operational Plan, however for ease of use the Township of King has combined them into one manual.

As identified in the Operational Plan Table of Contents, the Operational Plan for each of the Township's drinking water distribution systems is comprised of all 21 elements. In Element 6 Drinking Water System the descriptions are specific to each of the four drinking water systems and thus subsections have been provided for each system. As well, the risk assessment outcomes (Element 8) were done for each drinking water system separately but again combined together. Any risk assessment outcomes that were specific to a particular system are noted, otherwise the outcomes identified are applicable to all four drinking water systems.

Document Change History

Revision Level	Date	Change	Developed By
1	September 26, 2011	Document Creation	M.N.
2	June 24, 2013	New Township Logo & inclusion of this table	J.V.
3	February 24, 2015	Move to “Paperless” protocol	J.V.

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	Public Works Department Water Distribution	Procedure No: QMS-02-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 2 – January 29, 2016
	Procedure Title: Quality Management System Policy	Page 1 of 1

QUALITY MANAGEMENT SYSTEM POLICY

As the owners and operators of the Township of King's water distribution systems we are committed to:


- providing safe drinking water to our residents and businesses
- complying with applicable legislation and regulations as related to the provision of safe drinking water
- implementing and continually improving the effectiveness of our Quality Management System
- operating the Township's Municipal Drinking Water Systems as effectively and efficiently as possible
- implementing and seeking sustainable and environmentally sound operational practices and technologies

To assist the Township in meeting these commitments the Township will adopt the principles of quality management in the design, construction and operation of the drinking water systems. The Township of King will strive to use the best available, cost-effective technology, materials, management and planning methodologies to ensure that the infrastructure is well operated, maintained and managed in support of the provision of safe drinking water.

Date: January 29, 2016

Document Change History

Revision Level	Date	Change	Developed By
0	July 06, 2009	Document Creation	M.N.
1	June 24, 2013	New Township Logo & inclusion of this table	J.V.
2	January 29, 2016	Added two new commitment bullets	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-03-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 4 – September 06, 2022
	Procedure Title: Commitment and Endorsement	Page 1 of 2

The Owner endorses the Operational Plan through a Council Resolution. The Owner's commitment to an effective QMS is evidenced by the resources provided during implementation and maintenance of the Operational Plan and QMS.

The Corporation of the Township of King (owner) and Top Management of the Operating Authority (as defined in QMS-09-SYS) are committed to the implementation, maintenance and continual improvement of a Quality Management System that meets the requirements of the Drinking Water Quality Management Standard. The QMS for the drinking water systems is documented in the Operational Plan. Endorsement by the owner and top management acknowledges the need for and supports the provision of sufficient resources to maintain and continually improve the QMS. Top Management demonstrates their endorsement of the Operational Plan through the Staff Report to Council on the results of Management Review and by the key signatures on Appendix 03-01.

The Operational Plan will be endorsed by the Owner during each term of Council through a Council Resolution.

The Operational Plan will be endorsed by Top Management when significant changes are made to the Operational Plan or there is a change in Top Management.

Operational Top Management's commitment to an effective QMS is evidenced by:

- a) Ensuring that a QMS is in place that meets the requirements of the DWQMS,
- b) Ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- c) Communicating the QMS according to procedures (QMS-12-SYS), and
- d) Determining, obtaining or providing the resources needed to maintain and continually improve the QMS.

REFERENCES

QMS-09-SYS


QMS-12-SYS

QMS-20-SYS

APPENDICES

Appendix 03-01 Top Management Endorsement

Appendix 03-02 Council (Owner) Endorsement

	Public Works Department Water Distribution	Procedure No: QMS-03-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 4 – September 06, 2022
	Procedure Title: Commitment and Endorsement	Page 2 of 2

Document Change History


Revision Level	Date	Change	Developed By
1	July 14, 2011	Document Creation	M.N.
2	June 24, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	September 06, 2022	Changes to Top Management Endorsement.	D.W.

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Township of King
Drinking Water Quality Management System (DWQMS)
Top Management Endorsement

Top Management of the Operating Authority (as defined in QMS-09-SYS) is committed to the implementation, maintenance and continual improvement of a Quality Management System that meets the requirements of the Drinking Water Quality Management Standard.

Date:	Signature & Title:
November 10, 2022	 Director, Public Works Department – Samantha Fraser
November 4th, 2022	Digitally signed by Kyle Snell DN: cn=Kyle Snell, o=Township ofKing, ou=Public Works, email=ksnell@king.ca, c=CA Date: 2022.11.04 15:15:44 -04'00' Manager, Environmental Services – Kyle Snell



THE CORPORATION OF THE TOWNSHIP OF KING

COMMITTEE OF THE WHOLE REPORT

The following item from the Committee of the Whole Report of January 9, 2023, was adopted by Council at its meeting of January 9, 2023.

COPIES TO: SAMANTHA FRASER – DIRECTOR, PUBLIC WORKS, and
DANIEL WILKINSON, QMS REPRESENTATIVE/PROJECT MANAGER,
ENVIRONMENTAL SERVICES

C.O.W. #1

**Public Works Department – Environmental Division Report Number PW-ENV-2023-001
Re: Council Endorsement of Drinking Water Quality Management System Operational Plan**


Committee considered Public Works Department – Environmental Division Report Number PW-ENV-2023-001 to report on the Township's drinking water systems and seek Council endorsement of the Quality Management System (QMS) Operational Plan.

A motion was made by Committee and carried that the recommendations in Public Works Department – Environmental Division Report Number PW-ENV-2023-001 be received, and therein be approved, as follows:

1. Report Number PW-ENV-2023-001 be received; and
2. Council endorse the Township of King's Quality Management System (QMS) Operational Plan, for drinking water; and
3. The Clerk forward a copy of this endorsement to the Township's QMS Representative for inclusion in the Operational Plan.

Dated this 10th day of January 2023

Denny Timm
Township Clerk

	Public Works Department Water Distribution	Procedure No: QMS-04-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 3 – March 02, 2015
	Procedure Title: QMS Representative	Page 1 of 1

1 PURPOSE

To identify a Quality Management System Representative and outline their specific responsibilities.

2 PROCEDURE

2.1 Procurement Process

Top Management appoints and provides authority to the Quality Management System Representative, irrespective of their other responsibilities. The authority, roles and responsibilities are provided in QMS-09-SYS.

A notice of appointment of the QMS Representative has been signed by Top Management and is included in Appendix 04-01.

Top Management, through their annual review meeting, may decide to re-endorse or change the appointment of the QMS Representative.

If the staff position held by the QMS Representative becomes vacant, Top Management will appoint a new QMS Representative within a reasonable amount of time.

3 REFERENCES

QMS-09-SYS Organizational Structure, Roles, Responsibilities and Authorities

4 APPENDICES

Appendix 04-01 Notice of Appointment of QMS Representative

Document Change History

Revision Level	Date	Change	Developed By
1	June 19, 2012	Document Creation	M.N.
2	June 24, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.

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NOTICE OF APPOINTMENT

Quality Management System Representative

Top Management for the Operating Authority (Public Works Department) at the Township of King has appointed the Quality Management System Representative to be:

Environmental Infrastructure and Compliance Supervisor

The Quality Management System (QMS) Representative is the liaison between Top Management and the Operating Authority. The QMS Representative, irrespective of other responsibilities shall:

- a) administer the QMS by ensuring that processes and procedures needed for the QMS are established and maintained,
- b) report to Top Management on the performance of the QMS and any need for improvement,
- c) ensure that current versions of documents required by the QMS are being used at all times,
- d) ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the Township of King's drinking water systems, and
- e) promote awareness of the QMS throughout the Operating Authority and the remainder of the Corporation.

Digitally signed by Kyle Snell
DN: cn=Kyle Snell, o=Township of King, ou=Public Works,
email=ksnell@king.ca, c=CA
Date: 2023.09.08 16:02:47 -04'00'

Kyle Snell
Manager of Environmental Services

September 8th, 23


Date



Digitally signed by Samantha
Fraser
Date: 2023.09.11 08:52:25
-04'00'

Samantha Fraser
Director of Public Works Department

Date

	Public Works Department Water Distribution	Procedure No: QMS-05-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 05 – August 20, 2021
	Procedure Title: Document and Records Control	Page 1 of 3

1 PURPOSE

To document a procedure that describes how: a) documents required by the QMS are kept current, legible, readily identifiable, retrievable; as well as stored, protected, retained and disposed of; and b) records are kept legible, readily identifiable, retrievable, as well as stored, protected, retained and disposed of.

2 PROCEDURE

2.1 DOCUMENTS

A controlled document is the Operational Plan and its associated policies, procedures, (including applicable Standard Operating Procedures), forms, exhibits, flowcharts or other documents that are subject to revision and are maintained on the Document Master List (Table 05-01).

Controlled documents (excluding drawings) of both internal (refers to documents created by the Operating Authority) or external origin are listed on the Document Master List. The QMS Representative is responsible for maintaining the electronic list and ensuring an updated hard copy is included in the Operational Plan.

All electronically controlled documents (excluding drawings) for the QMS are available on the network drive (Laserfiche). The network drive is backed up daily by Corporate.

Documents have revision numbers and a date listed on them to identify the current version.

The electronic documents are “read only” on the network drive. If the document is printed from a read only file then the document is considered uncontrolled and not subject to revision.

The Table of Contents includes a signature by the Director which confirms that the system procedures (including the applicable version number and date) have been approved.

The QMS Representative and Director determine the point of use that controlled documents are to be made available. These locations (along with the title and revision number) are recorded on the Document Master List.


All staff are responsible for ensuring that documents remain legible and readily identifiable. If a document has been damaged or made illegible, staff are to request a replacement copy from the QMS Representative.

Documents that are only available in hard copy are kept in a safe, dry location that will ensure no damage or deterioration.

Document Changes

Any employee can make a request for the creation or a change to a QMS related document. Changes to documents can be a result of change in procedure, results of an audit or suggestion for improvement.

The request is recorded in Part A on a Document Change Form (Form 05-01). Suggested changes can also be attached to the Document Change form.

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	Procedure Title: Document and Records Control	Page 2 of 3

The Document Change Form is then sent to the QMS Representative who will forward the Form to the appropriate management staff (responder) who initially approved the document.

Prior to processing document changes, the QMS Representative will be responsible for ensuring that the changes will not affect the integrity of the QMS or the processes.

The responder notes the decision on the Document Change Form and forwards the form to the QMS Representative.

If the request is denied, the responder will send notification to the requester and the QMS Representative advising of the decision and the reason why.

The QMS Representative then updates the Document Master List Table 05-01. The QMS Representative will send an email explaining what has changed in the document to all management affected by the change. Management are responsible for advising any staff affected by the change.

The QMS Representative ensures that Part C of the Document Change Form is completed, dated, and filed.

Obsolete documents must be marked "Obsolete" if retained for legal and/or historical purposes, otherwise they are disposed of once a current version is made available. Only current versions of documents are maintained on the Document Master List by the QMS Representative. The user of the obsolete document is responsible for disposing of the document once they determine there is no further use for the document. The retention time for obsolete documents is not pre-set and is based on the user's requirements.

QMS documents are retained until they are replaced by a more current version (e.g., forms) or the life of the asset (e.g., manufacturing specifications). Documents that have been identified as obsolete or superseded by updated versions or replaced due to being damaged/illegible are disposed of by being thrown out.

The QMS Representative will review the Document Master List, a minimum of once per year, to verify that any documents that have not been revised since the previous review are still adequate.

2.2 RECORDS

The Record Master List Table (Table 05-02) identifies all of the records that this procedure applies to.


The electronic documents and records associated with the QMS are maintained on the network drive which is backed up daily.

The person completing the record must ensure the record is legible, accurate and complete with regard to recording requirements.

The QMS Representative, in consultation with the Director, determines the retention time (active and storage) for records.

Records may be electronic and/or hard copy.

Electronic records associated with the QMS are maintained on the network drive which is backed up daily, weekly and monthly. The monthly copy is stored off-site.

	Public Works Department Water Distribution	Procedure No: QMS-05-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 05 – August 20, 2021
	Procedure Title: Document and Records Control	Page 3 of 3

3 REFERENCES

Not Applicable


4 APPENDICES

Table 05-01 Document Master List
Table 05-02 Record Master List
Form 05-01 Document Change Form

5 CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	May 05, 2013	New Township Logo	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	July 20, 2020	Revise to reflect Laserfiche storage system	M.W.
5	August 20, 2021	Revision to header	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-06-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – August 20, 2021
	Procedure Title: Drinking Water System	Page 1 of 5

1. PURPOSE

The Township of King, as the owner and operating authority of the drinking water systems, is responsible for the distribution of drinking water to the citizens of the Township of King (which includes the communities of King, Schomberg, Nobleton and Ansnorveldt). The Public Works Department is responsible for the operation, management, maintenance and/or alteration of four drinking water systems: King City, Schomberg, Nobleton and Ansnorveldt.

2. PROCEDURE

The Township purchases its drinking water from the Region of York sourced from municipal lake-based water and groundwater wells in the Township of King area. Since the Region of York treats all of the water in the drinking water systems the description of the critical upstream processes used are included in the Region of York's Operational Plan. There are no critical downstream processes relied upon to ensure the provision of safe drinking water. In addition, there are no recurring event-driven fluctuations or any resulting operational challenges and threats to the water source since the Township of King is only provided with treated water by the Region of York. The Township ensures the proper level of disinfection residual within the distribution systems through water sampling and flushing as per the related SOPs. Deviations in the disinfection residual limits are communicated to the Region of York.

The Township's King, Schomberg and Nobleton Water Distribution Systems are each classified as "Large Municipal Residential System". The Township's Ansnorveldt Water Distribution system is classified as a "Small Municipal Residential System". The Township does not treat the water and only distributes water supplied by the Region of York.


Certificates of classification were issued to the Township of King for the water distribution systems under the Ontario Water Resources Act. All four of the water distribution systems classifications are Class I.

1 KING CITY WATER DISTRIBUTION SYSTEM

The Township of King is responsible for maintaining the King City watermain distribution system in the village of King City. Refer to the Water Distribution Map of King City appendix for a schematic of the distribution system and the associated Region of York delineation points. A detailed GIS based water distribution system map is maintained by Public Works in combination with IT.

1.1 Water Supply

Water supply for the village of King City is through the York Water System (YWS) and backed-up by local groundwater wells. The Region of York owns and operates and maintains the York Water System (lake-based water) and the King City Well Supply system. Disinfection of the lake-based water is by chloramination, and for well water, is through chloramination and iron sequestering. The Region of York owns and operates and maintains two elevated tanks as the storage facilities in the system. Secondary disinfection is provided by maintenance of combined

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chlorine residual in the distribution system. The Region collects samples from the points where treated water enters the distribution system.

Water withdrawal from each of the wells is regulated by a “Permit to Take Water”, issued by the Ministry of the Environment to the Region of York. This permit allows for the development of water resources for beneficial purposes, while providing reasonable protection to existing water uses and water users.

1.2 Water Distribution

The King City Distribution System services a population of approximately 7,400 people (as of 2019) with 2,317 service connections. The Township owns approximately 55 km of watermains (cast, ductile iron and PVC), and 381 hydrants within the King City Water Distribution System.

Maintenance and operation of the King City Distribution System is carried out by distribution staff from the Township of King Public Works Department. Township Operators are responsible for regular hydrant and valve inspections, watermain flushing, investigation of water pressure and water quality complaints and repair of water mains, water services valves and hydrants to maintain residual and water quality.

2 SCHOMBERG WATER DISTRIBUTION SYSTEM

The Township of King is responsible for maintaining the Schomberg watermain distribution system in the village of Schomberg. Refer to the Water Distribution Map of Schomberg appendix for a schematic of the distribution system and the associated Region of York delineation points. A detailed GIS based water distribution system map is maintained by Public Works in combination with IT.


2.1 Water Supply

The village of Schomberg receives its drinking water from groundwater wells. The Region of York owns and operates and maintains the Schomberg Well Supply system utilizing chloramine disinfection and iron sequestering processes. The Region of York owns and operates and maintains an elevated tank as the storage facility in the system. The Region of York also provides secondary disinfection for the Schomberg Distribution System. The Region collects samples from the points where treated water enters the distribution system.

Water withdrawal from each of the wells is regulated by a “Permit to Take Water”, issued by the Ministry of the Environment to the Region of York. This permit allows for the development of water resources for beneficial purposes, while providing reasonable protection to existing water uses and water users.

2.2 Water Distribution

The Schomberg Water Distribution System services a population of approximately 2,700 people (as of 2019) with 844 service connections. The Township owns approximately 16 km of

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watermains (ductile iron and PVC) and 114 hydrants within the Schomberg Water Distribution System

Maintenance and operation of the Schomberg Distribution System is carried out by distribution staff from the Township of King Public Works Department. Township Operators are responsible for regular hydrant and valve inspections, watermain flushing, investigation of water pressure and water quality complaints and repair of water mains, water services valves and hydrants to maintain residual and water quality.

The Schomberg DWS has nitrification challenges in the distribution system due to high levels of methane and ammonia in the source water. The Region of York currently strives to remove as much methane as possible by “scrubbing” however elevated levels of ammonia are contained in the final treated water which can cause elevated nitrites in the water. Township staff work in close coordination with the Region to identify potential incidents of nitrification and respond in a timely manner to prevent adverse conditions. There is also an enhanced monitoring program in place with agreed upon trigger points whereby both teams will respond to indicators of rising nitrites/nitrates.

In response to the rising nitrates/nitrates, York Region and the Township were granted a relief from regulatory requirements in respect of the maximum standard for chloramines in the Schomberg Drinking Water System and Schomberg Distribution System.


3 NOBLETON WATER DISTRIBUTION SYSTEM

The Township of King is responsible for maintaining the Nobleton watermain distribution system in the village of Nobleton. Refer to the Water Distribution Map of Nobleton appendix for a schematic of the distribution system and the associated Region of York delineation points. A detailed GIS based water distribution system map is maintained by Public Works in combination with IT.

3.1 Water Supply

The village of Nobleton receives its drinking water from groundwater wells. The Region of York owns and operates and maintains the Nobleton Well Supply system utilizing chlorine disinfection and iron sequestering processes. The Region of York owns and operates and maintains elevated tanks as the storage facility in the system. The Region of York also provides secondary disinfection for the Nobleton Distribution System. The Region collects samples from the points where treated water enters the distribution system.

Water withdrawal from each of the wells is regulated by a “Permit to Take Water”, issued by the Ministry of the Environment to the Region of York. This permit allows for the development of water resources for beneficial purposes, while providing reasonable protection to existing water uses and water users.

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	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – August 20, 2021
	Procedure Title: Drinking Water System	Page 4 of 5

3.2 Water Distribution

The Nobleton Water Distribution System services a population of approximately 6,300 people (as of 2019) with 1,960 service connections. The Township owns approximately 41 km of watermains (cast, ductile iron and PVC), and 344 hydrants within the Nobleton Water Distribution System.

Maintenance and operation of the Nobleton Distribution System is carried out by distribution staff from the Township of King Public Works Department. Township Operators are responsible for regular hydrant and valve inspections, watermain flushing, investigation of water pressure and water quality complaints and repair of water mains, water services valves and hydrants to maintain residual and water quality.

4 ANSNORVELDT WATER DISTRIBUTION SYSTEM

The Township of King is responsible for maintaining the Ansnorveldt watermain distribution system in the hamlet of Ansnorveldt. Refer to the Water Distribution Map of Ansnorveldt appendix for a schematic of the distribution system and the associated Region of York delineation points. A detailed GIS based water distribution system map is maintained by Public Works in combination with IT.

4.1 Water Supply


The hamlet of Ansnorveldt receives its drinking water from groundwater wells. The Region of York owns and operates and maintains the Ansnorveldt Well Supply system utilizing a chlorine disinfection process. The Region of York also provides secondary disinfection for the Ansnorveldt Distribution System. The Region collects samples from the points where treated water enters the distribution system.

Water withdrawal from the wells is regulated by a “Permit to Take Water”, issued by the Ministry of the Environment to the Region of York. This permit allows for the development of water resources for beneficial purposes, while providing reasonable protection to existing water uses and water users.

4.2 Water Distribution

The Ansnorveldt Water Distribution System services a population of approximately 170 people (as of 2019) with 53 service connections. The Township owns approximately 1 km of watermains (cast, ductile iron and PVC), and 2 hydrants within the Ansnorveldt Water Distribution System.

Maintenance and operation of the Ansnorveldt Distribution System is carried out by distribution staff from the Township of King Public Works Department. Township Operators are responsible for regular hydrant and valve inspections, watermain flushing, investigation of water pressure

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and water quality complaints and repair of water mains, water services valves and hydrants to maintain residual and water quality.


3. APPENDICES

Water Distribution Map of King City
 Water Distribution Map of Schomberg
 Water Distribution Map of Nobleton
 Water Distribution Map of Ansnorveldt

4. Document Change History

Revision Level	Date	Change	Developed By
3	May 05, 2013	New Township Logo & inclusion of this table	J.V.
4	March 02, 2015	Moved to “paperless” protocol	J.V.
5	November 10, 2015	Added clause identifying nitrification challenges in the Schomberg DWS	J.V.
6	November 7, 2018	Update to DWQMS version 2.0	J.V.
7	September 23, 2019	Referenced GIS based maps; Addressed maintenance of residual	M.W.
8	August 20, 2021	Update to reflect regulatory relief	M.W.

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	Public Works Department Water Distribution	Procedure No.: QMS-07-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Revision No.: 12 Date: October 25, 2023
	Procedure Title: Risk Assessment	Page 1 of 5

1 PURPOSE

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

- identify potential hazardous events and associated hazards as identified in the MECP document Potential Hazardous Events for Municipal Residential Drinking Water Systems,
- identify additional potential hazardous events and associated hazards,
- assess and rank the risks associated with the hazards,
- identify control measures to address the hazards,
- identify critical control points within the drinking water system,
- identify a method to verify the risk assessment validity and assumptions at least once a year,
- ensure a risk assessment is conducted at least once every 36 months, and
- consider the reliability and redundancy of the equipment.

2 DEFINITIONS

Critical Control Limit (CCL): the point at which a control measure would be implemented.

Control Point (CP): a part of the system where a control may be in place.

Critical Control Point (CCP): an essential part of the system where control is in place to prevent or eliminate a drinking water health hazard or to reduce it to an acceptable level.

Control Measure: Processes and procedures to monitor, also response to, for reporting and recording deviation from CCL.


Risk Assessment: The orderly methodology of identifying hazards or hazardous events that may affect the safety of drinking water and evaluating the significance.

3 PROCEDURE

3.1 Annual Review Process

1. At least once every calendar year, or following a major process change, the QMS Representative facilitates a review (referred to as the annual review) of the currency of the information and validity of the assumptions used in the risk assessment process for the drinking water system. This is undertaken by the Risk Assessment Team comprised of the Environmental Services Manager, Team Lead and Environmental Infrastructure and Compliance Supervisor and/or their designates as required.

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	Public Works Department Water Distribution	Procedure No.: QMS-07-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Revision No.: 12 Date: October 25, 2023
	Procedure Title: Risk Assessment	Page 2 of 5


2. When reviewing the currency of the risk assessment information, the following may be considered:
- process changes
 - reliability and redundancy of equipment
 - emergency situations
 - critical control point deviations
 - QMS non-conformances related to standard operating procedures

3.2 Risk Assessment Methodology

3. The Risk Assessment team reviews Table 08-01 DWQMS Risk Assessment Outcomes for currency and accuracy. The risk assessment outcomes are documented in accordance with QMS-08-SYS Risk Assessment Outcomes procedure. When new hazards are identified during the annual review, or 36-month review they will be incorporated into Table 08-01.

Table 1. Column description for Table 08-01 DWQMS Risk Assessment Outcomes


Column	Description of Column
B – Event C – Event Description	<p>Column B is the documented event.</p> <p>At least annually the information in these columns is reviewed to ensure the drinking water system steps have been captured, and associated hazards are identified and described.</p> <p>Column C details the event through applicable physical, biological and/or chemical parameters.</p>
D – Control Measures, Best Practices, and SOPs	<p>The “Control Measures, Best Practices, and SOPs” section is used to provide additional information such as:</p> <ul style="list-style-type: none"> • Brief description of the applicable best management practice • Description of applicable control measures • Standard Operating Procedures / practices that address the hazard
E – Likelihood F – Consequence	<p>Column E represents the Likelihood (L) of the hazardous event occurring.</p> <p>Column F represents the Consequence (C) of the hazardous event occurring.</p> <p>Vulnerability and/or critical customers may also be considered when assigning the likelihood and/or consequence rating. Using this methodology, the higher a number the more significant the impact. Rating definitions of Likelihood and Consequence are included in the document Table 08-01 DWQMS Risk Assessment Outcomes.</p>

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G – Risk	<p>The risk (R) is assigned for each hazard based on the calculation of the Likelihood (L) of the event occurring multiplied by the Consequence (C) of the event occurring.</p> <ul style="list-style-type: none"> • The assigned priority risk rating is 8. This rating will be reviewed during the 36-month review process. • If a hazard has a risk rating below 8 the hazard is not considered a CCP or CP. • If a hazardous event has a risk rating equal to or above 8, columns H to J are to be answered to determine if the hazard is a CCP or CP.
H, I and J – Screening Questions to Identify Critical Control Point (CCP) and Control Point (CP)	<p>The three questions in these columns are then answered:</p> <ol style="list-style-type: none"> 1) If the hazard is controlled by a best management practice (summarized in Table 08-01, then the practice is noted in Column H under a Yes answer. 2) If there is a control measure in place for the hazard then Yes must be answered under Column I. 3) If control was lost and someone could get hurt for the hazard then Yes must be answered under Column J. <p>If the hazard has a risk rating equal to or above 8, as noted above and Yes has been answered for Columns H, I and J, the hazard is identified as a CCP.</p> <p>If the hazard has a risk rating equal to or above 8, and No has been answered at least once for Columns H, I and J, the hazard is identified as a CP.</p> <p>Chart 07-01 Hazard Identification as a Critical Control Point provides a flow-chart to assist with CP and CPP designation.</p>
K – CP# or CCP#	The identified CPs and CCPs are numbered sequentially and highlighted.

4. The outcome of the Risk Assessment is documented in the Risk Assessment meeting minutes and the completed Risk Assessment Table 08-01 which is an output generated for the Risk Assessment Outcomes (QMS-08-SYS). Additionally, the identified CCPs are summarized in Table 08-02 (Summary of Critical Control Points) found as an appendix to this procedure.

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3.3 36-month Review Process

5. At least once every 36 months, a comprehensive review of the drinking water system risk assessment process is conducted. This is an opportunity to review the risk assessment process and outcomes and to assess the risks. For example, the reviewers could consider changes in microbial risks based on new research, or changes to the risk assessment process as a continual improvement feature. To undertake this more comprehensive review, the QMS Representative facilitates a team comprised of Manager of Environmental Services, Team Lead and Environmental Infrastructure and Compliance Supervisor. Other personnel may be included at the discretion of the (e.g., other Township Departments, consultants, other utilities) QMS Representative as required.
6. In the years where the 36-month comprehensive review process is completed, the annual risk assessment review will be completed at the same time.

3.4 Document and Records Management


7. The QMS Representative is responsible for ensuring that minutes are taken during the annual and 36-month review meetings and that these are maintained as per Document and Records Control QMS-05-SYS Procedure.
8. The QMS Representative is responsible for maintaining and making any necessary changes/updates to the Risk Assessment Form as per Document and Records Control QMS-05-SYS Procedure.
9. The QMS Representative is responsible for ensuring that any necessary changes are made to the training requirements, standard operating procedures, system procedures or other parts of the QMS resulting from changes to the Risk Assessment.

4 REFERENCES

QMS-05-SYS Document and Records Control QMS System Procedure
QMS-08-SYS Risk Assessment Outcomes


5 APPENDICES

Chart 07-01 Hazard Identification as a Critical Control Point

	Public Works Department Water Distribution	Procedure No.: QMS-07-SYS
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6 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
8	Sept 20, 2019	Updated Section 2.1 to include MOECP document	M.W.
9	Oct 26, 2020	Remove detectability based on 3 year review	M.W.
10	Aug 20, 2021	Clarifications regarding CCP identification	M.W.
11	Jul 07, 2022	Change comprehensive review meeting from 3 year to 36 months	D.W.
12	Oct 25, 2023	<p>Revised positions included within the risk assessment team – removed Director of Public Works, added Team Lead and Environmental Infrastructure and Compliance Supervisor.</p> <p>Removed “Step 7. Risk Assessment Outcomes Table 08-01 Director review and approval.”</p> <p>Consolidated revision table.</p> <p>Grammatical and formatting revisions. Remove column A and description, renamed column in response to removing column A.</p>	B.H.

	Public Works Department Water Distribution	Procedure No: QMS-09-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 2 – March 02, 2015
	Procedure Title: Organizational Structure, Roles, Responsibilities & Authorities	Page 1 of 2

1 PURPOSE

To document a procedure ensuring that the Owner, Operating Authority and Top Management are defined, the organizational structure of the Operating Authority is described and the roles, responsibilities and authorities of Top Management and key positions within the Operating Authority are identified.

2 PROCEDURE

2.1 Organizational Structure

The organizational structure of the Operating Authority and the Owner is outlined in Appendix 9-A: DWQMS Organizational Chart.

The Owner is the Corporation of the Township of King and is represented by Council.

Identifying Key QMS Roles

The members of Top Management, the QMS Representative and the Operating Authority of the drinking water systems are defined in Appendix 9-A.

Top Management is responsible for conducting management review as outlined in procedure QMS-20-SYS Management Review.

The QMS Representative is appointed by Top Management and irrespective of other responsibilities shall have specific QMS related responsibilities as outlined in Chart 09-01.

The appointment letter for the QMS Representative is included in procedure QMS-04-SYS.

2.2 Organizational Roles, Responsibilities and Authorities

Specific responsibilities and authorities for positions with key roles in the Drinking Water Quality Management System are detailed in the various system procedures and standard operating procedures that form the Operational Plan.


Table 09-01 provides a summary of the overall roles, responsibilities and authorities related to the provision of safe drinking water in the drinking water system. The specific responsibilities and authorities for the various roles are provided in the Job Descriptions.

3 REFERENCES

Job Descriptions
QMS-04-SYS QMS Representative
QMS-20-SYS Management Review

4 APPENDICES

Chart 09-01 DWQMS Organizational Chart
Table 09-01 QMS Roles, Responsibilities and Authorities

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	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 2 – March 02, 2015
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Document Change History

Revision Level	Date	Change	Developed By
1	June 19, 2013	New Township Logo & inclusion of this table	J.V.
2	March 02, 2015	Moved to “paperless” protocol	J.V.

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**Public Works Department
Water Distribution**

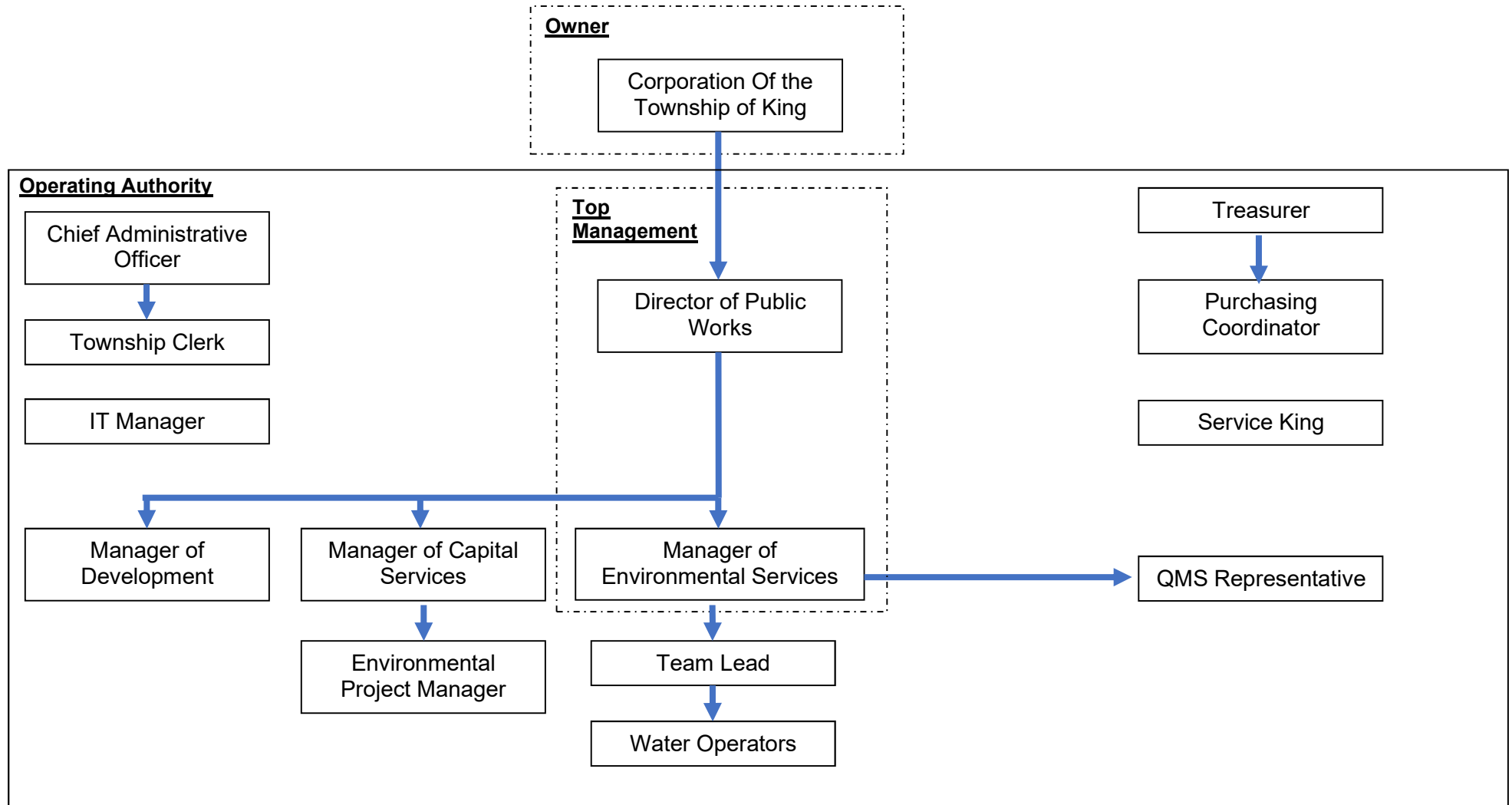
Chart No: 09-01


OPERATIONAL PLAN - SYSTEM CHART

Rev.8 – Sept. 15, 2022

Procedure Title: DWQMS Organization Structure


Page 1 of 2



	Public Works Department Water Distribution	Chart No: 09-01
	OPERATIONAL PLAN - SYSTEM CHART	Rev.8 – Sept. 15, 2022
	Procedure Title: DWQMS Organization Structure	Page 2 of 2

Revision Level	Date	Change	Developed By
1	December 20, 2010	Document Creation	R.F.
2	February 24, 2015	Move to "Paperless" protocol	J.V.
3	May 13, 2016	Revise to reflect new Director title	J.V.
4	May 14, 2016	Revise to reflect new Environmental Project Manager title	J.V.
5	August 28, 2019	Revise to reflect the new Top Management Structure	M.W.
6	July 17, 2020	Revisions to department structure	M.W.
7	August 20, 2021	Rename "Environmental Services Manager" and new header	M.W.
8	September 15, 2022	Remove Treasurer from "Top Management"	D.W.

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	Public Works Department Water Distribution	Procedure No: QMS-10-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 7 – August 20, 2021
	Procedure Title: Competencies	Page 1 of 4

1 PURPOSE

To document a procedure that identifies:

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

2 PROCEDURE

2.1 Competencies

The Manager is responsible for identifying required competencies for employees performing duties directly affecting drinking water quality. The minimum levels of competencies required for personnel with duties affecting drinking water quality are identified in Table 10-01 Competencies.

Table 10-01 indicates the skill level required for each position whose actions may have a direct impact on water quality. The following is a general description of the various competency levels:


- Competency Level 1 indicates a basic, theoretical level of understanding. Level 1 understanding is normally acquired through a combination of theoretical instruction, on-the-job training, review of journal articles, and specialty seminar attendance.
- Level 2 indicates an intermediate, theoretical and working knowledge of a skill, typically acquired through post-secondary theoretical and practical instruction, on-the-job experience, and participation in specialty workshops and courses.
- Level 3 indicates advanced theoretical and working understanding of a particular subject area, particularly as it pertains to the person's responsibilities in the water distribution process. Level 3 is achieved through a combination of successful completion of a post-secondary degree or diploma in engineering, science, or technology, at least 10 years of directly related experience and training, as well as regular participation at specialty seminars and courses.

Job descriptions are developed by the Manager and are reviewed periodically for currency. The job descriptions include identification of responsibilities and education and experience requirements.

Competency is demonstrated by having appropriate education, training, skills and experience required for each relevant position.

There is a probationary period for new or transferred employees and at the end of the probationary period the Manager evaluates the employee's competency.

Competency for management positions is reviewed at least annually during performance reviews conducted by the manager one level up.

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	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 7 – August 20, 2021
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2.2 Training Needs Identification

Manager identifies training needs for employees performing duties directly affecting drinking water quality based on the identified competencies.

The need for training (to ensure competency is maintained) may also be determined based on the following:

- Comparison of the person's skills and abilities with the requirements of the job description and qualifications, in particular for new, temporary and transferred employees;
- Corrective action (e.g., resulting from internal audits or non-conformances) if the need for training is found to be a root cause (Element 21);
- Changes due to updates to the risk assessment outcomes (Element 8); and
- Changes in legislative/regulatory requirements.

2.3 Training Plan

The Manager and Director meet each year to plan out the training for various positions affecting drinking water quality for the next year. They refer to the required competencies, the completed training from previous years, and other currently available courses to develop the training plan for that year. Table 10-01 is a guide for the level of competency that staff should obtain and provides the Manager with some guidance on the type of courses that staff may need to take courses related to in order to achieve and/or maintain the level of competency.

For Water Operators the Training Plan addresses the completion of mandatory courses, number of CEU's and on the job training hours.

The Manager reviews the training schedule twice per year to determine additional requirements (e.g., CEUs, on-the-job training) and to assist in monitoring the required training hours for positions with duties directly affecting the drinking water quality.


The Water Operator maintains a record of On-the-Job Practical and ECU Training using Form 10-01. The QMS Representative records completion of all trainings in the Operator Training database. Original and Copy of operators' current licences and certificates are maintained and filed by Environmental Services Manager. Training Records are maintained as per QMS-05-SYS Document and Records Control.

2.4 Employee DWQMS Orientation

The QMS Representative ensures a Drinking Water Quality Management Standard (DWQMS) awareness session is provided to new or transferred employees. The following types of information are included in the DWQMS awareness session:

- introduction to management systems and QMS Representative;
- review of pertinent procedures and Standard Operating Procedures; and
- review of QMS policy and ensuring that personnel are aware of the relevance of their duties and how they affect safe drinking water.

The Administrative Assistant records completion of the DWQMS awareness session and

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	Procedure Title: Competencies	Page 3 of 4

other applicable training. Copies of current licences or certificates issued from training are maintained and filed by the Administrative Assistant.

2.5 Training Methods

Competency requirements can be satisfied through the use of in-house, off-site, or on-line training, attendance at seminars/conferences, presentations by subject matter experts or on-the-job training.

On-the-job training may include using a “job shadowing system” to demonstrate and monitor how to perform various job duties using the appropriate documented procedures.

2.6 Effectiveness of Training

When external trainers conduct courses, the trainer may review and verify training effectiveness through various means (e.g., mini quiz or mini workshops are undertaken for CEU courses). If the employee is knowledgeable and able to demonstrate the skills, then the external trainer often issues a certificate to indicate the training was effective.

When internal training courses are conducted, the Manager talks to staff following completion of the course to determine the effectiveness of the training. In addition, the person setting up the training will ask the instructor to provide feedback on the trainee’s understanding of the information.

Training needs may be identified through the Continual Improvement process (Element 21), and documented in a Corrective Preventative Action Report (CPAR - Form 21-01). For these training needs, the employee’s Manager is responsible for ensuring the training is completed and competency is achieved and reporting it to the QMS Representative.

On-the-job training is provided to employees through courses and job shadowing and is determined to be effective when the Manager allows the employee to work alone.


Training session(s) to cover off any legislation and regulatory requirement for Operation Staff shall be provided once every two years or at the time of any regulatory changes.

3 REFERENCES

QMS-05-SYS Procedure Document and Records Control
QMS-08-SYS Risk Assessment Outcomes
QMS-21-SYS Continual Improvement
Training Plan (Training Records Database)
Form 21-01 Corrective Preventative Action Report

4 APPENDICES


Table 10-01 Drinking Water Related Competencies
Form 10-01 Training Log

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5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
3	June 19, 2013	New Township Logo & inclusion of this table	J.V.
4	March 02, 2015	Moved to “paperless” protocol	J.V.
5	November 7, 2018	Update to DWQMS version 2.0	J.V.
6	July 21, 2020	Update to reflect changes to form 21-01	M.W.
7	August 20, 2021	Minor role changes	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-11-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 5 – Jan. 20, 2023
	Procedure Title: Personnel Coverage	Page 1 of 2

1 PURPOSE

To document a procedure for ensuring that sufficient personnel (meeting competency requirements) are available for duties directly affecting drinking water quality.

2 PROCEDURE

2.1 OVERALL RESPONSIBLE OPERATOR (ORO)

The team lead is the designated Overall Responsible Operator (ORO). In the absence of the Team Lead the ORO designation is transferred to an individual that meets the requisite certification requirements. The ORO is captured and recorded in the water log book.

2.2 OPERATOR IN CHARGE (OIC)

The Operator in Charge (OIC) designation applies to all operators performing work that have the requisite certification requirements. Operators in Charge are captured and recorded in the water log book.

2.3 REGULAR HOURS

Certified Operators are available during regular business hours (Monday to Thursday from 7:00 am to 4:30 pm and Friday from 7:00 am to 3:30 pm). ServiceKing contacts the Team Lead or designate if they receive emergency calls during Operator's regular business hours. In the event a call is received between 3:30 and 4:30 on a Friday, ServiceKing contacts the on-call Operator.

2.4 ON-CALL HOURS

A contracted answering service receives calls from the public from 4:30 pm to 8:30 am during weekdays; and 24-hours per day on weekends or holidays.


The contracted answering service contacts the on-call Operator. If there is no response, the service will work through the contact list a response is received.

The Environmental Services Manager develops and maintains the on-call schedule. The On-call Schedule is created and maintained as an outlook calendar.

If required the OIC contacts the ORO, for guidance or assistance.

2.5 CONTRACTED SERVICES

A list of suppliers and service providers is maintained for operation's use to facilitate repairs. Operators provide Contractor supervision as required. The list of Contractors is available in the Township of King Emergency Plan for Water Distribution.

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	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 5 – Jan. 20, 2023
	Procedure Title: Personnel Coverage	Page 2 of 2

3 REFERENCES

QMS-10-SYS Competencies
QMS-18-SYS Emergency Management
Water Log Book
On-Call Outlook Calendar


4 APPENDICES

Not applicable

5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	July 20, 2020	Update structure and title changes	M.W.
5	Jan. 20, 2023	Updates to OIC/ORO	D.W.

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	Public Works Department Water Distribution	Procedure No: QMS-12-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 6 – August 20, 2021
	Procedure Title: Communications	Page 1 of 3

1 PURPOSE

To document a procedure for communications that describes how relevant aspects of the Quality Management System are communicated between Top Management and:

- a) the Owner;
- b) the Operating Authority personnel;
- c) Suppliers that have been identified as essential under QMS-13-SYS; and
- d) the Public.

This procedure does not include communication procedures used in Emergency situations. These are described in QMS-18-SYS Emergency Management.

2 PROCEDURE

2.1 COMMUNICATION OF QMS POLICY

The QMS Policy is made available to Operating Authority personnel, the public and the Owner:

- on the Township of King's website,
- posted in the Township Main Office and Works Yard,
- is available to the public upon request, and
- to all suppliers of Essential Supplies and Services

2.2 COMMUNICATION METHODOLOGIES


2.2.1 *Communication to and from Owner (Council)*

Communication to Council from Top Management is through the use of staff reports, information memos or presentations to Council following established Corporate communication protocols. As well, contact during emergency situations may be made directly between Top Management and the Mayor. When significant changes are made to the Operational Plan, the Owner will be made notified and provided with a brief summary of the changes.

Council can communicate directly to Top Management during "Committee of the Whole", Working Sessions of Council and/or Council meetings. The CAO, Treasurer and Director of Public Works (or their designate) are present at all Committee of the Whole meetings (which form part of the Council meetings). The CAO may receive direction from the Mayor and Council separately from the Committee meeting.

2.2.2 *Communication to and from Operating Authority Personnel*

1. Top Management communicates to and from the Operating Authority personnel (which includes the QMS Representative) through various regularly held meetings. Where applicable, meeting minutes are retained as per QMS-05-SYS Document and Records Control. Generally, the process for relaying information related to drinking water issues from Top Management to personnel is achieved through the following tiered approach:

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- a) Top Management to the Manager through various management meetings
 - b) Manager is then responsible for relaying applicable information to staff, often in regularly held staff meetings, or other means.
2. Other forms of communication between Top Management and Operating Authority personnel include:
 - written documentation,
 - emails,
 - verbal discussions,
 - training sessions,
 - circulation of applicable procedures and other QMS documentation, and
 - posting of material on bulletin board.


It should be noted that the Operating Authority management staff have an open door policy that encourages direct communication between management and personnel.

2.2.3 Communication to and from Essential Suppliers

1. Communication to **Essential** Suppliers is done through the Manager, Supervisors and Purchasing through the issuance of tenders, contracts and/or purchase orders to suppliers. Operating Authority personnel may deal directly with suppliers through the use of purchase orders. The QMS Policy and copies of specific standard operating procedures are provided to Suppliers of Essential Supplies and Services along with the purchase orders, contracts or tender documents.
2. Communication from Suppliers to Top Management (via Township staff) can be through written correspondence, email, phone calls, and the purchasing process.
3. Operating Authority personnel contact suppliers directly if problems occur with the supplier. For ongoing issues Purchasing and/or Budget Coordinator (assigned to Public Works) will also be contacted to deal with ongoing supplier related problems.

2.2.4 Communications to and from the Public

1. All non-emergency communication (related to water issues) to the public is achieved through:
 - newspaper notification and/or media advisories;
 - hand delivered letters;
 - posting on the Township of King's website (e.g., annual reports, Policy),
 - coordination with York Region and/or Fire Department (i.e., water bans)
 - Reports to Committee/Council
 - public meetings
2. The public can communicate water related issues/queries through:

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- calling the Township's main telephone line and/or the contracted Answering Service (after business hours);
- water related calls are received by Service King and relayed to Public Works for issuance of a service request (CRM);
- e-mails and/or phone calls directly to Township staff;
- letters; and
- faxes.

The contracted after-hours Answering Service contacts on-call staff to address issues and the after-hours Answering Service maintains a log of callers, which is reviewed by Service King staff daily.

Service King manages the complaints/concerns received through any of the above noted communication forms and records them in the Customer Service Relationship Management (CRM) program for further action(s), as indicated on Section 2.2 of QMS-15-SYS.

3 REFERENCES

QMS-05-SYS Document and Records Control
 QMS-13-SYS Essential Supplies and Services
 QMS-15-SYS Infrastructure Maintenance, Renewal and Rehabilitation
 QMS-18-SYS Emergency Management


4 APPENDICES

Not Applicable

5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to "paperless" protocol	J.V.
4	November 7, 2018	Update to DWQMS version 2.0	J.V.
5	July 20, 2020	Revise corporate structure and titles	M.W.
6	August 20, 2021	Communication to Owner	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-13-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 7 – September 23, 2022
	Procedure Title: Essential Supplies and Services	Page 1 of 3

1 PURPOSE

To document a procedure ensuring the quality of essential supplies and services, in as much as they may affect drinking water quality. The procedure shall include identification of these supplies and services and a means to ensure their procurement

2 PROCEDURE

2.1 Procurement Process

The Public Works Department forwards specifications and/or certification of product requirements for supplies and services to the Purchasing Coordinator prior to issuance of new and/or renewal of tenders, RFPs, contracts, etc. The Engineering Design Criteria and Standard Details includes a listing of the approved products and specifications.

If required, the Director ensures that Standard Operating Procedures are developed and provided to establish procedures/specifications for suppliers and contractors.

Prior to issuance, the Purchasing Coordinator forwards the bid documents to the Manager of Environmental Services for review.

The By-Law to “*Define the Procurement Policies and Procedures for the Township of King*” (referred to **Purchasing By-Law**) has price thresholds, and thus some supplies (below the threshold) may be purchased directly by the Manager from local sources.

Some supplies are kept in stock (e.g., repair clamps, chlorine residual kits, etc.) and are available at the Works Yard.


A copy of the relevant procedures/specifications, a copy of the Quality Policy and general information regarding the presence of a QMS are included in the appropriate contractual agreement.

A contact list for Essential Supplies and Services identifying approved suppliers and contractors is maintained (including a yearly update review) by the Manager and/ or QMS Representative. The yearly review will assess but not be limited to the following:

1. Performance of any agencies on the Contact List used throughout the review period;
2. The completeness of the Contact List as it relates to agencies used and their inclusion on the Contact List

For the provision of supplies and/or services during emergency situations the OIC and/or ORO can contact appropriate suppliers and/or contractors from the approved list.

During emergency situations when a contractor is used, the Manager contacts the Director to inform them about what was done and the approximate costs.

	Public Works Department Water Distribution	Procedure No: QMS-13-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 7 – September 23, 2022
	Procedure Title: Essential Supplies and Services	Page 2 of 3

2.2 Identification of Supplies & Services and Requirements

Table 13-01 Essential Supplies and Services for drinking water identifies the essential supplies and services critical to the provision of safe drinking water.

The table provides a description of the Procurement of Supplies or Services including:

- how do you ensure it is available, when required
- how do you ensure it is made available, when required (daily operations & emergencies)

The table also includes identification of the Quality Requirements:

- what requirements are needed related to quality of supply or service (e.g., product/service quality; performance of supplier/service provider; method of delivery; on-site activities)
- definition of how they make sure they are met

2.3 Monitoring Supplies and Services

Public Works ensures that the supplies and services meet the requirements and/or specifications identified in the documentation.


Any problems that are encountered are documented regarding the supplies and/or services and forwarded to Purchasing Coordinator (generally by e-mail).

3 REFERENCES

Form F-13 Essential Services and Suppliers Update Form
Emergency Contacts and Essential Supplies and Services List (Public Works Emergency Plan for Water Distribution (QMS-18))

4 APPENDICES


Table 13-01 Essential Supplies and Services Procurement Table

	Public Works Department Water Distribution	Procedure No: QMS-13-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 7 – September 23, 2022
	Procedure Title: Essential Supplies and Services	Page 3 of 3

5 CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	May 05, 2013	New Township Logo	J.V.
3	June 11, 2013	Response to 2013 Accreditation Audit Minor Non-Conformance	J.V.
4	March 02, 2015	Moved to “paperless” protocol	J.V.
5	July 21, 2020	Update department titles	M.W.
6	August 20, 2021	Update References	M.W.
7	September 23, 2022	RFP process	D.W.

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	Public Works Department Water Distribution	Procedure No: QMS-14-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – July 21, 2020
	Procedure Title: Review and Provision of Infrastructure	Page 1 of 4

1 PURPOSE

To describe the annual review process that results in the provision of drinking water infrastructure. The objective is to review at least once every calendar year the adequacy of the infrastructure or what infrastructure is necessary to operate and maintain the drinking water system and to determine if that infrastructure is in place as needed. The procedure also describes how the findings of the review are communicated to Council.

2 PROCEDURE

Review and provision of the Township of King's drinking water infrastructure needs is achieved through two different means depending on whether the infrastructure is existing, or intended to address growth needs.

2.1 REVIEW OF INFRASTRUCTURE NEEDS

Planning for watermain construction is captured through the 10 year capital plan for both new and replacement of existing infrastructure. The 10 year capital plan is reviewed by Public Works annually during the budget process to identify the list of projects for the next year as they fit in the 10 year capital plan.

In addition, Public Works identifies concurrent projects that will be undertaken each year (e.g., wastewater, roads), including projects to be undertaken by the Region of York.

On an annual basis Public Works conducts a condition assessment based on the outputs of the Asset Management Program. Public Works staff will coordinate with the Program leads to provide asset condition summaries for consideration during this process.

Public Works also reviews the Water System models to identify problem areas, including the areas with water quality and/or quantity/flow issues (eg. Fire Flows).

Public Works conducts an assessment of the operational issues by looking at the number of breaks and repairs that have occurred during the previous year.

Public Works will review the Risk Assessment Outcomes (QMS-08-SYS) to assess applicability to the on-going provision of infrastructure.


Based on the information provided by Public Works on the condition of the infrastructure, concurrent projects and the 10 year capital plan, a list of priority projects is developed for Water Distribution. This may include projects for new and/or replacement of infrastructure.

A summary of the Public Works review output will be recorded on Form 14-01 Review and Provision of Infrastructure Output.

2.2 NEW INFRASTRUCTURE

The review process for new infrastructure is primarily driven by the Planning Department and Public Works.

The results of the growth related drinking water infrastructure needs review is documented in the following:

	Public Works Department Water Distribution	Procedure No: QMS-14-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – July 21, 2020
	Procedure Title: Review and Provision of Infrastructure	Page 2 of 4

- Township of King Official Plan
- Region of York Transportation, Water and Wastewater Master Plans
- Township of King Water and Wastewater Master Plan
- Functional Servicing/Development Area Studies

Long term planning for growth related infrastructure starts with the development and updating of the **Official Plan (OP)**, which provides the policy framework to guide the provision of infrastructure within the Township of King. The OP focuses on population projections, land use and infrastructure development policies.

Region of York Transportation and Water & Wastewater Master Plans guide the Region's infrastructure needs for water, sewers, roads and transit. They typically have a planning horizon of 25 years or greater and are updated on a 5 year basis. The Master Plans incorporate the provincial population projections and employment forecasts, changes in land use planning and environmental policies.

Prior to any new development and draft plan of subdivision approval, the Township requires a **Functional Servicing/Development Area Study (FS/DAS)** be completed. The purpose of the FS/DAS is to coordinate the major components (e.g., roads, servicing, open space, etc.) of the future new development to ensure that future plans of subdivisions are properly integrated between themselves and the existing community.

The Township has a Water and Wastewater Master Plan that outlines infrastructure requirements. This Master Plan also indicates if the proposed works are subject to Development Charges or will be addressed through Capital Works budget.

The Region of York is also consulted if regional roads are to be used for a project. Any road reconstruction projects being completed by the Region are also reviewed to help identify priority projects.

The Region develops and maintains a capital 10 year plan. This plan is posted on the website and reviewed during development of the priority list of projects.


2.3 PROVISION OF INFRASTRUCTURE

Public Works develops a list of priority projects that are needed to maintain the water services. This is based on a review of the 10 year capital plan, concurrent projects (e.g., roads (Township and Region) and wastewater) and a review of the current infrastructure.

Public Works forwards the list of priority projects to Finance for review as part of the annual budget process.

Finance determines the projects that will be carried forward (based on the projection of availability of funds) through the budget process. Public Works are notified of the priority projects that were not carried forward in the annual budget process.

Public Works will identify projects that were on the priority list but did not receive budget approval or received approval but were not constructed during a specific year. These are put back onto the list when developing the priority list of projects for the following year and when updating the 10 year capital plan.

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Annual operating budgets are also used to provide infrastructure needs and maintenance. Budgets can be increased through Council if new initiatives (e.g., lead testing) occur. Changes in regulations are the main category to consider for an increase in operating budget from the previous year.

Annually there is also a review of the water rates and these can be re-set to support renewal and/or rehabilitation projects.

2.4 OTHER REQUIREMENTS

Public Works develops a list of other requirements and forwards it to the Finance Department for their review and budget allocation.

Other requirements include but are not limited to: buildings; work space; process equipment; hardware and software; and supporting services such as transport (i.e. fleet) or communication tools.

Once a year, Public Works reviews the work constraints and requirements that may have direct impact on work efficiency. These items will be considered in the 10 year capital program or annual operating budget.

3 REFERENCES


QMS-05-SYS Document and Records Control
QMS-08-SYS Risk Assessment Outcomes
Regional Water and Wastewater Master Plan
Township of King Water and Wastewater Master Plan
Applicable Functional Servicing Reports and Development Area Studies

4 APPENDICES

Form 14-01 Review and Provision of Infrastructure Output


5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	December 01, 2014	Administrative revisions to accurately reflect Township department names, grammatical corrections, deletions to reflect current operational processes,	J.V.
4	March 02, 2015	Moved to "paperless"	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-14-SYS
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		protocol	
5	September 12, 2016	Revisions from 2016 Review and Provision of Infrastructure meeting. Revisions include the following: <ul style="list-style-type: none"> • Removal of reference to TCA in lieu of Asset Management Program; • Expansion of “References”; 	J.V.
6	April 12, 2018	Revised to reflect minor changes in the Standard	J.V.
7	November 7, 2018	Update to DWQMS version 2.0	J.V.
8	July 21, 2020	Update department titles	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-15-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 10 – August 20, 2021
	Procedure Title: Infrastructure Maintenance, Renewal and Rehabilitation	Page 1 of 4

1 PURPOSE

To document a procedure for infrastructure maintenance, rehabilitation and renewal programs for the drinking water systems. This is a continuation from the review and provision of infrastructure and is a summary of the infrastructure rehabilitation, renewal and maintenance programs and activities that are undertaken. This includes a long-term forecast of major infrastructure rehabilitation, renewal and maintenance activities.

2 PROCEDURE

2.1 INFRASTRUCTURE - PREVENTATIVE MAINTENANCE

All preventative maintenance activities are recorded in a logbook or electronically.

Hydrant Inspection and Preventative Maintenance

The Environmental Services Manager or their designate sets up overall programs for hydrant maintenance. Hydrant maintenance is completed twice per year (spring and fall).

Hydrant maintenance is completed by the Operators. During the maintenance/flushing cycle the Operator starts at the water supply point and works out into the distribution system. The Operator tracks these activities in the log books for each distribution system.

As part of the hydrant maintenance program, a static pressure test is undertaken and recorded in the log book and GIS for tracking and analysis.

System Dead End Flushing

The entire distribution system is flushed twice per year as part of the hydrant inspection and maintenance program.

Dead ends within the system are flushed at least three times per year or more frequently depending on system performance.

Watermain Swabbing


All or some of the watermains within each distribution system may be swabbed based on the quality of water, history of Adverse Water Quality Incidents, and the number and nature of water quality complaints. The Environmental Services Manager sets up the swabbing program for each year.

Valve Exercising

The Township undertakes a Valve Exercising Program within each distribution system at least once every three years. Any deficiencies identified through the annual valving program are prioritized and responded to accordingly. As well, valves are exercised as part of watermain repairs or during the process for locates.

Backflow Preventers

All of the Township owned backflow preventers are certified annually as a minimum, or after each field use if the manager suspects that the device has been damaged or misused.

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All O&M activities are outlined within the O&M Schedule which is revised on an annual basis.

2.2 INFRASTRUCTURE - UNSCHEDULED MAINTENANCE

Unscheduled maintenance is tracked and records are saved in LaserFiche.. Customer complaints related to the drinking water systems are recorded in the Customer Relationship Management (CRM) Program as a means of tracking operational issues within the system. The Operator records the action taken on the printed CRM request and forwards it to the Administrative Assistant for filing as per QMS-05-SYS Document and Records Control. The action is recorded in the CRM system and the case is closed.

All maintenance activities are completed according to the Township's Standard Operating Procedures.

Hydrant Repairs and Leaking Valves

The Township operates a Customer Relationship Management System (CRM) to receive and record reports of system failures. The CRM also manages issuance of works requisitions which are distributed to the Environmental Services Manager.

Staff "close" the works requisition upon completion within the CRM and this information is retained in a data base. Staff can then access this historical data to evaluate systems performance and establish both maintenance and Capital priorities.

Watermain Repairs

Watermain breaks are typically repaired by contracted services with oversight and compliance assurance provided by Township staff. As with hydrant and valve repairs these works are recorded within the CRM as well as applicable log books and GIS.

The Environmental Services Manager or their designate reports watermain breaks to the Director immediately if significant impacts to residents or risks to the integrity of the distribution system and the provision of compliant, safe and potable are or may be encountered.


2.3 EFFECTIVENESS OF MAINTENANCE

The effectiveness of the maintenance is reviewed at least once every calendar year by the Environmental Services Manager and Director by various means:

- The number of watermain breaks is reviewed on an annual basis to evaluate opportunities and requirements for system rehabilitation. Operationally all breaks are evaluated as they occur to establish priorities.
- The annual valving program identifies necessary valve works.
- Review the number of CRM requests that are received for water quality complaints.

3 RENEWAL AND REHABILITATION

Renewal and/or rehabilitation projects that are done as capital works are described in QMS-14-SYS Review and Provision of Infrastructure (in Section 2.1 Review of Infrastructure Needs and Section 2.3 Provision of Infrastructure) as part of the replacement of

	Public Works Department Water Distribution	Procedure No: QMS-15-SYS
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infrastructure component of the annual budget process.

Public Works staff review operational performance through the Review and Provision of Infrastructure process, the Infrastructure Renewal and Rehabilitation process, the Top Management Review process as well as on an on-going basis through monthly DWQMS meetings and operational interactions.

The renewal and rehabilitation infrastructure needs are driven by Public Works based upon the outcomes and determinations of these processes.

The Public Works Department coordinates internally through these processes, monthly Departmental meetings and on-going operational communications to identify and capitalize upon opportunities to address infrastructure needs concurrently. These processes also support the development of long-term infrastructure maintenance programs through operational and/or capital budgets. The long-term forecast of infrastructure rehabilitation, renewal and maintenance activities is reviewed at least once every calendar year.

4 REFERENCES


QMS-05-SYS Document and Records Control
QMS-14-SYS Review and Provision of Infrastructure
Standard Operating Procedures / Work Activity
ENG-PRO-101 - Customer Relationship Management (CRM) System
Log Books (water distribution system)
O&M Schedule

5 APPENDICES

Not Applicable


6 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
3	June 19, 2013	New Township Logo & inclusion of this table	J.V.
4	December 01, 2014	Overall administrative and grammatical corrections as well as greater alignment with operational processes	J.V.
5	March 04, 2015	Moved to "paperless" protocol	J.V.
6	April 18, 2018	Minor revisions to reflect updated Standard	J.V.
7	November 7, 2018	Further revisions to update to DWQMS version 2.0	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-15-SYS
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8	September 20, 2019	Updated Section 2.4 to add applicable section references to QMS-14-SYS	M.W.
9	July 21, 2020	Updates to department title	M.W.
10	August 20, 2021	Rename "Environmental Services Manager"	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-16-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 3 – July 21, 2020
	Procedure Title: Sampling, Testing and Monitoring	Page 1 of 3

1 PURPOSE

To document a procedure for sampling, testing and monitoring activities scheduled and completed for drinking water quality. The procedure describes how the sampling, testing and monitoring results are recorded and shared with the Owner, where applicable.

2 PROCEDURE

2.1 Sampling & Testing

Sampling, testing and monitoring is completed on distributed water to:

- provide operators with knowledge required to proactively operate the drinking water system, especially at Critical Control Points
- ensure water quality is maintained as water travels through the distribution system, and
- ensure compliance with applicable Ontario Drinking Water Regulations

For the purposes of this procedure, “sampling” is defined as the process of collecting water samples for laboratory analysis, and “testing” is considered to be the laboratory analysis. “Monitoring” consists of on-site data collection and analysis.

To further ensure disinfection throughout the distribution network, operators collect water samples at various points for microbiological analyses and chlorine residuals. Handheld colorimeters are used to test chlorine residual in the distribution systems.

These samples are taken at various locations throughout the system to ensure the water meets applicable regulations. A Sampling Schedule is updated and maintained by the Manager that shows the sample locations, parameters and sampling frequency.


The sampling points and corresponding analyses are listed on the chain of custody sheets (which track the sample from the point of collection to the lab for analysis). The person responsible for completing the sampling is also noted on the sheets.

The number of samples taken per week/month is determined by the Manager in accordance with the Ministry of the Environment’s Drinking Water Systems Regulation (O. Reg. 170/03). The number of samples will continue to increase as the population grows, in accordance with the requirements of the Safe Drinking Water Act (SDWA).

Maintenance of the database for all sampling and testing results is duty of the Manager and/or the QMS R.

The protocols for collecting and handling water samples are provided in the standard operating procedures (SOP 1.1 to 1.4).

On a yearly basis the Manager is responsible for reviewing and updating the water quality sampling program for changes required to the water quality parameters, sampling frequency and sampling locations.

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2.2 Sampling & Testing Results

Analytical results are compared to the Ministry of Environment's Ontario Drinking Water Standards (ODWS, O. Reg. 169/03) and Ontario Drinking Water Systems (O.Reg. 170/03). The analytical results are compiled annually and listed along with the Maximum Acceptable Concentration (MAC), (based on the ODWS). In addition, the statistics are compiled and reviewed for all analytical results for all min, max and average for each parameter that is tested.

All the lab results and chlorine residual results (provided by Manager) are downloaded (entered) into an internal database by the QMS Representative. The QMS Representative also analyzes those results against the standards and runs reports through this database.

Adverse conditions are identified through alerts from lab notification. Should the analytical results indicate adverse conditions, the Standardized Water Operating Procedures and Work Procedures that indicate how these adverse conditions are reported and addressed, are followed.

Sampling and testing records are managed in accordance with QMS-05-SYS Document and Record Control System Procedure.

2.3 Monitoring

Monitoring consists of Chlorine Residual Testing in compliance with the requirements of O.Reg. 170/03 and during regular maintenance of the systems (i.e. during dead-end flushing).

2.4 Reporting to the Owner

The Manager collects the information and develops an annual report showing any adverse, chemical analyses, etc.

In accordance with relevant legislation, summary reports are provided to Council and posted on the Township of King's website on an annual basis, with an emphasis on outlining problems/issues (abnormal conditions) that have occurred during the past year. The summary report includes a spreadsheet showing a summary of the results.

3 REFERENCES


QMS-05-SYS Document and Records Control
Standard Operating Procedures (SOP 1.1 to 1.4)
Standardized Water Operating Procedures (Area Municipalities and York Region)

4 APPENDICES

Not Applicable


5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
1	June 19, 2013	New Township Logo	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-16-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 3 – July 21, 2020
	Procedure Title: Sampling, Testing and Monitoring	Page 3 of 3

		& inclusion of this table	
2	March 02, 2015	Moved to “paperless” protocol	J.V.
3	July 21, 2020	Updates to staff titles	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-17-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 4 – August 20, 2021
	Procedure Title: Measurement and Recording Equipment Calibration and Maintenance	Page 1 of 2

1 PURPOSE

To document the calibration and maintenance of measurement and recording equipment used for safe drinking water quality.

2 PROCEDURE

2.1 CALIBRATION AND MAINTENANCE FREQUENCY AND SCHEDULE

Measurement and recording equipment are maintained and calibrated as per equipment manufacturer's specifications.

The frequency and responsibility for calibration and maintenance of each equipment type is summarized on Table 17-01.

The Manager is responsible for ensuring that the calibration is undertaken and the information is recorded (for in-house calibration and maintenance) and certificates are obtained from the designated outside calibrations service.

Standard Operating Procedures (SOP 1.1) are used to inform an operator what to do if the equipment is out of calibration.

2.2 ANNUAL REVIEW

The equipment calibrated in-house is identified by the Manager on Table 17-01 (e.g., pH Tester, Chlorine Residual).

On an annual basis the Manager files a copy of the yearly log of the maintenance and calibration as per QMS-05-SYS Document and Records Control Procedure.

At least once per year the QMS Representative reviews the calibration and maintenance schedules to ensure the information is kept updated.

3 REFERENCES


QMS-05-SYS Document and Records Control
SOP 1.1 Water Quality Sampling
Form F-08 Calibration Log

4 APPENDICES

Table 17-01 Measurement & Recording Equipment Maintenance & Calibration Schedule


5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-17-SYS
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		& inclusion of this table	
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	August 20, 2021	Change in Roles	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-18-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 6 – August 20, 2021
	Procedure Title: Emergency Management	Page 1 of 4

1 PURPOSE

The purpose of this procedure is to document how we maintain a state of emergency preparedness, including:

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

2 PROCEDURE

2.1 Identification of Emergency Situations or Service Interruptions

On an annual basis the Director and Manager of Environmental Services meet to review the list of emergency situations or service interruptions that have been identified and to examine current operations to determine if additional emergency situations or service interruptions exist. This review occurs during the annual Top Management Review.


Sources of information for identifying potential emergencies may include but are not limited to:

- Ministry of the Environment, Conservation and Parks inspections
- DWQMS Internal/external Audits
- Records of past emergencies
- Operational staff observations

In addition, during the risk assessment process (including the annual and three year reviews) the outcomes (QMS-08-SYS) were identified which include some emergency situations or service interruptions. This is another opportunity where the review process may identify emergency situations or service interruptions that can be added to the list from the above meeting.

The types of emergencies that are addressed in the Public Works Department Water Distribution Emergency Plan are:

- Minor/Major service disruption – localized watermain break, large scale watermain breaks affecting water supply, disruptions due to vandalism/terrorism, long term impacts of climate change
- Adverse water quality – microbial or chemical contamination (improper disinfection, Boil Water Advisories, human error)
- Loss of licensed Operational staff

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The QMS Representative is responsible for maintaining and updating the potential emergency situations or service interruptions.

2.2 Process for Emergency Response and Recovery

Based on the emergencies identified the QMS Representative is responsible for ensuring that Standard Operating Procedures (SOP) are developed.


The SOPs outline the roles and responsibilities for various staff and the activities related to the response and recovery from the emergency situation or service interruption.

The Township of King has a corporate emergency plan that outlines communication procedures during emergency situations and the roles and responsibilities of the Owner and appropriate Public Works Department Water Distribution staff depending on the level of emergency. The corporate emergency plan takes effect when the emergency is defined as situations or the threat of impending situations abnormally affecting property and the health, safety and welfare of a community, which by their nature or magnitude require a controlled and coordinate response by a number of agencies under the direction of the Community Control Group. These are distinct from the normal, day-to-day operations carried out by Operational staff (including under the Public Works Department Water Distribution Emergency Plan).

For escalation of emergencies, the Emergency Communications Protocol should be referred to as it provides the emergency communication protocol for situations that have the potential to escalate to Corporate level impacts. The emergency list of contacts is included in this protocol.

The Director is responsible for initiating corporate communications for emergencies that have escalated to a corporate level of response. The following is a summary of responsibilities. The Water Distribution and Township of King (Corporate) Emergency Plans and applicable SOPs should be referred to for specific responsibilities.

Title	Responsibility during Emergency
Chief Administrative Officer	<ul style="list-style-type: none"> - Owner representative during emergency situations. - Chief liaison between operating authority and the Owner (Council). - The lead for providing information to the public and media if required.
Director of Public Works	<ul style="list-style-type: none"> - Communicate emergencies to the Community Control Group as required. - Lead for managing the water related emergencies.
Manager of Environmental Services	<ul style="list-style-type: none"> - Overall safety of staff. - ORO of the drinking water systems. - Ensure water quality and quantity to consumers. - Communicate emergencies to Top Management when required.

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Title	Responsibility during Emergency
Leadhand	<ul style="list-style-type: none"> - Alternate ORO. - Performs acting Manager duties when Manager of Environmental Services is unavailable.
Water Operators	<ul style="list-style-type: none"> - To perform response and recovery activities as directed.

2.3 Emergency Response Training and Testing Requirements

The Manager of Environmental Services is responsible for ensuring that emergency response training is undertaken by appropriate staff. Operational staff receive general emergency training at least once a year which includes a review and discussion of emergencies that occurred since the previous training and a review of emergency related SOPs. The training is tracked for staff as per QMS-10-SYS Competencies.

In addition a debriefing after larger scale emergencies will be undertaken by the Manager of Environmental Services and may include the Director, Leadhand and QMS Representative and other applicable staff.

At least once a year, the emergency procedures (response and recovery) will be evaluated and modifications made to the procedures where required based on the review and/or debriefing following emergency situations.

All SOPs are electronically available to Operational staff related to emergency and non-emergency situations. To ensure prompt response to any event, including emergencies, the SOPs have been consolidated into one document which is electronically available to Operational staff.

3 REFERENCES


QMS-08-SYS Risk Assessment Outcomes
 QMS-10-SYS Competencies
 Standard Operating Procedures
 Public Works Emergency Plan for Water Distribution Township of King Emergency Plan (Corporate)

4 APPENDICES

Not Applicable


5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	January 14, 2015	Remove Deputy	J.V.

	Public Works Department Water Distribution	Procedure No: QMS-18-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 6 – August 20, 2021
	Procedure Title: Emergency Management	Page 4 of 4

		Director reference	
4	March 02, 2015	Moved to “paperless” protocol	J.V.
5	July 20, 2020	Update emergency types and responsibilities	M.W.
6	August 20, 2021	Rename “Environmental” Services Manager	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-19-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – Aug. 20, 2021
	Procedure Title: Internal Audits	Page 1 of 4

1 PURPOSE

This System Procedure documents the procedure for internal audits that:

- Evaluates conformity of the QMS with the requirements of the DWQMS,
- Identifies internal audit criteria, frequency, scope, methodology and record keeping requirements,
- Considers previous internal and external audit results,
- Describes how the QMS corrective actions are identified and initiated, and
- Shall ensure an audit is undertaken at least once every calendar year.

2 PROCEDURE

2.1 AUDIT TEAM STRUCTURE AND ROLES

The audit team roles are as follows.

- The **QMS Representative** acts as a liaison between the audit team (through the Lead Auditor) and the auditees.
- The **Lead Auditor(s)** is responsible for overseeing the internal audit process and ensuring qualified auditors conduct internal audits.
- **Auditors** work with the Lead Auditor to prepare for and conduct internal audits.

2.2 AUDITOR QUALIFICATIONS AND SELECTION

The Lead Auditor(s) and Auditors must meet the following criteria:

- knowledge of the DWQMS and Township of King's drinking water QMS;
- independent of the work that is going to be audited;
- ability to make objective observations and record the results;
- successfully complete an auditing course.


The Lead Auditor(s) along with the QMS Representative will select internal auditors for each audit.

2.3 AUDIT PROCESS

2.3.1 Schedule

Each element of the QMS for the drinking water system must be audited a minimum of once per year. Additional audits can be scheduled based on the importance of the process or area, or in response to previous audits results (internal and external). Typically, the internal audit focuses on the previous calendar year.

The Lead Auditor(s) creates an Annual Internal Audit Schedule using Form 19-01 or similar document, with assistance from the QMS Representative. The Lead Auditor(s) appoints an Auditor(s) for each element or process and ensures that Auditors do not audit their own work. The Lead Auditor or QMS Representative forwards the Audit Schedule to the Director of Public Works for approval.

	Public Works Department Water Distribution	Procedure No: QMS-19-SYS
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The Audit Schedule is posted on the information boards in the Public Works office, and an email notification is sent out by the QMS Representative to applicable Department Heads and Section Managers at least one week in advance of the audits.

2.3.2 Checklist

The Lead Auditor works with the QMS Representative and other Auditor(s) to prepare an Internal Audit Checklist Form 19-02 or other similar document that records questions asked and points verified. The checklist defines the scope (i.e., applicable area of the QMS, time period to be audited, organizational unit and/or facility) and audit criteria (i.e., applicable manuals and standards).

The checklist reflects the current policies and procedures of the area that are being audited. A copy of the procedures with the points highlighted that are going to be checked can be attached to the checklist and referenced for the audit.

2.3.3 Opening Meeting

An opening meeting may be held before the audit is conducted. The people present would be the Audit Team, the Auditor(s), and the personnel responsible for the area to be audited. Other employees to be interviewed during the audit can be included in the meeting.

The opening meeting includes the following agenda:

- Audit team introductions
- Review the objective and scope of the audit
- Discuss method of conducting and communicating the audit
- Clarify schedule and availability of staff for the audit.

2.3.4 Audit

The audit is performed by the auditing team using the Internal Audit Checklist Form 19-02 or applicable document. Observations that provide evidence of conformance or nonconformance are noted on the Internal Audit Checklist.


2.3.5 Audit Findings

The results of the audit are reviewed by the Audit Team. Agreement is reached under the leadership of the Lead Auditor. The Auditors complete the summary of findings on the Audit Report Form 19-03 or similar document and includes all opportunities for improvement (OFI).

The Lead Auditor(s) records nonconformances from the internal audits on Nonconformance Report (NCR) Form 19-04 which records:

- Audit report number
- Report date
- Brief description of nonconformance

The QMS Representative tracks the internal audit nonconformances and OFIs by recording the NCR/OFI number in Form 21-02 CPAR, OFI & NCR Log.

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2.3.6 Closing Meeting

The results of the audit are presented at the closing meeting, if one is held. At a minimum the Supervisor responsible for the area audited and the Audit Team would attend.

The closing meeting will include the following:

- Thank the staff for their cooperation
- Review the commendable features
- Review documented observations – what is effective, what needs improvement and what is unsatisfactory
- Ensure the issue is understood and get agreement on a response date for the Corrective Action for each finding or NCR with the person responsible for the area audited
- Record the NCR number on the Audit Report to ensure audit results are understood

2.4 AUDIT REPORT

The Auditors draw up an Internal Audit Report Form 19-03 and fill out any Nonconformances and/or Corrective Actions that may be required from the audit. The report has to be signed by the Lead Auditor.

A copy of the report is given to the applicable Department Heads and Section Managers and the QMS Representative; the original is kept by the Lead Auditor(s) and used for follow up. The report is filed according to QMS-05-SYS Document and Records Control.

2.5 AUDIT FOLLOW UP AND REVIEW

The Lead Auditor makes sure that the follow up audit is carried out. The follow up audit has to be carried out to verify that the action has been taken and that it is effective. The results of the follow up are recorded in the original Internal Audit Report Form 19-03 and by the QMS Representative on the NCR Log (including the date closed). The QMS Representative may also issue a CAR for any of the NCRs to address continual improvement as per QMS-21-SYS.


The results of the internal audits and the follow up audits are reviewed by management at the annual Management Review meeting as per QMS-20-SYS (Management Review) or more frequently, if required.

2.6 AUDIT FREQUENCY

The Internal Audit is conducted at least once every calendar year and in accordance with the requirements of the Drinking Water Quality Management Standard. The Township is compliant with this requirement.

3 REFERENCES

QMS-05-SYS Document and Records Control
QMS-20-SYS Management Review
QMS-21-SYS Continual Improvement
Form 21-02 CPAR, OFI & NCR Log

	Public Works Department Water Distribution	Procedure No: QMS-19-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 8 – Aug. 20, 2021
	Procedure Title: Internal Audits	Page 4 of 4


4 APPENDICES

Form 19-01 Annual Internal Audit Schedule
Form 19-02 Internal Audit Checklist
Form 19-03 Internal Audit Report
Form 19-04 Nonconformance Report

5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	December 11, 2015	Addition of 2.6 in response to 2015 SAI Surveillance Audit	J.V.
5	March 15, 2018	Minor revisions to reflect updated Standard	J.V.
6	November 7, 2018	Further revision to update to DWQMS version 2.0	J.V.
7	July 22, 2020	Update department title	M.W.
8	August 20, 2021	Changes to log reference	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-20-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev. 9 – August 20, 2021
	Procedure Title: Management Review	Page 1 of 3

1 PURPOSE

To document the procedure for describing how the QMS will ensure its continuing suitability, adequacy and effectiveness. In this respect, the necessary information is collected for Top Management to review and to provide review output on any decisions and actions related to the QMS. Records of the reviews are maintained / filed.

A Top Management Review shall be undertaken once every calendar year at a minimum.

2 PROCEDURE

2.1 Management Review

QMS-09-SYS (Organizational Structure, Roles, Responsibilities and Authorities) identifies the management team for Top Management.

An Annual Management Review will be held at least once every calendar year by Top Management to review the overall suitability, adequacy and effectiveness of the QMS. All members of Top Management (as per the Appendix 9-A) must be present at the Management Review meeting. In addition, the Manager of Development, Manager of Capital, and Environmental Services Manager will participate in the Top Management Review meeting and process whenever possible.


The QMS Representative is responsible for:

- establishing the date for the Annual Management Review meeting
- forwarding notification of the meeting to participants, and
- forwarding the agenda for the meeting to the participants

2.2 Management Review Input

Top Management will review information in the agenda, where applicable on:

- a) Incidents of regulatory non-compliance
- b) Incidents of adverse drinking water tests
- c) Deviations from critical control point limits and response actions
- d) Efficacy of the risk assessment process
- e) Results of audits (internal and external)
- f) Review of Corrective Preventative Action Report log (CPARs)
- g) Results of relevant emergency response testing
- h) Operational performance
- i) Raw water supply and drinking water quality trends
- j) Follow-up action items from previous management reviews
- k) Status of management action items identified between reviews
- l) Changes that could affect the QMS
- m) Summary of consumer feedback
- n) Resources needed to maintain the QMS
- o) Results of the infrastructure review
- p) Operational Plan currency, content and updates

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	Procedure Title: Management Review	Page 2 of 3

q) Summary of staff suggestions

Regional water testing data will be collated and reviewed at the annual Top Management Review Meeting.

2.3 Management Review Output

Management review outputs will include identification of specific actions items to address deficiencies, personnel responsible for delivering those action items and proposed implementation timelines. During Management Review, Top Management will provide a record of any decisions and actions related to:

- Improvement of the QMS and related procedures
- Improvement of the Operating Authority's ability to implement consistently the QMS
- Human and financial resource needs

The QMS Representative will track the status of the action items identified during Management Review on Form 20-02. A summary of the output will be recorded on Form 20-01 as a means of reporting to the Owner (Committee / Council).

2.4 Recording of Management Review

Minutes of the meeting will be recorded on Form 20-01 and maintained as per QMS-05-SYS Document and Records Control. These minutes will reflect the review inputs/outputs, identified deficiencies, decisions, and action items for the meetings. Copies of the minutes are distributed to the Top Management by the QMS Representative.

2.5 Top Management Review Frequency

The Top Management Review is conducted at least once every calendar year and in accordance with the Drinking Water Quality Management Standard. The Township is in conformance with the review frequencies.

3 REFERENCES

QMS-05-SYS Document and Records Control

QMS-09-SYS Organizational Roles, Responsibilities and Authorities


4 APPENDICES

Form 20-01 Management Review Action Items & Meeting Minutes

Form 20-02 Management Review Action Items Log


5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	June 20, 2014	Minor revisions from 2014 Top	J.V.

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		Management Review Meeting	
4	March 02, 2015	Moved to “paperless” protocol	J.V.
5	December 11, 2015	Insertion of 2.5 in response to 2015 SAI Surveillance Audit findings	J.V.
6	March 15, 2018	Minor revisions to reflect updated Standard	J.V.
7	September 13, 2019	Removed Form 20-02	M.W.
8	July 22, 2020	Update department title changes	M.W.
9	August 20, 2021	Simplification of forms	M.W.

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	Public Works Department Water Distribution	Procedure No: QMS-21-SYS
	OPERATIONAL PLAN - SYSTEM PROCEDURE	Rev.9 – May 30, 2022
	Procedure Title: Continual Improvement	Page 1 of 4

1 PURPOSE

To document the procedure established for the Operating Authority to strive to continually improve the effectiveness of its Quality Management System through commitment to the policy and use of tools such as audit results, preventive and corrective actions and management review. The tracking and measuring of continual improvement of the QMS will also include reviewing and considering applicable best management practices at least once every 36 months.

2 PROCEDURE

Corrective Action

Corrective action involves investigating causes and taking measures to eliminate causes of identified quality problems (e.g., related product, process or service) to ensure the problems or non-conformities do not recur.

Corrective action may be initiated if it is found that procedures or processes are not being followed per the Quality Management System. Corrective action may be identified as a result of the following:

- Internal audits
- Management Review
- External audits
- After emergency debriefing
- Customer complaints
- Trends identified in management reports

QMS Representative shall initiate corrective action by issuing a Corrective Action Report (CAR) using Form 21-01 to address the requirements of the above noted indicators.


Any employee can also initiate corrective action by issuing a Corrective Action Report (CAR) using Form 21-01.

The Issuer checks off “corrective action” as the type of issue. The issuer then completes Part A of the Corrective Preventive Action Report (CPAR) Form 21-01 and forwards the CPAR to the QMS Representative. The QMS Representative will issue the Corrective Action Report number and determine who is assigned as Team Leader to address the issue. The QMS Representative records the CAR in the CPAR, OFI & NCR Log Form 21-02 and notes the CAR number on the report.

The Team Leader creates a cross-functional team which includes the Manager and/or Director (minimum of 2 people) and completes Part B of the CPAR Form.

The Team Leader will determine and implement the corrective action and change all applicable documentation as per QMS-05-SYS Document and Records Control. The Team Leader is responsible for investigating:

- who is involved,

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	Procedure Title: Continual Improvement	Page 2 of 4

- what is the root cause of the problem,
- what action is required,
- what are the steps to be taken, for ensuring that the necessary actions are taken in an appropriate timeframe and for responding back on the Corrective Preventive Action Report (Form 21-01), and
- a plan that will review and verify implementation of the corrective action and its effectiveness at correcting and preventing the re-occurrence of the non-conformity.

The Team Leader forwards the CPAR Form 21-01 to the QMS Representative. The QMS Representative is responsible for determining that the corrective action has been taken and is effective. The QMS Representative completes Part C of the CPAR. The QMS Representative records that the CPAR Form is complete on the CPAR, OFI & NCR Log.

The QMS Representative reviews the CPAR, OFI & NCR Log during Management Review and records if any further action is required.

CPAR Forms and CPAR, OFI & NCR Log are maintained as per QMS-05-SYS Document and Records Control.

Preventive Action

Preventive action involves taking measures to prevent the occurrence of potential non-conformities in the Quality Management System.


Preventive action may be initiated if it is found that procedures or processes are not being followed per the Quality Management System. Preventive action may be identified as a result of the following:

- Internal audits
- Management Review
- External audits
- After emergency debriefing
- Customer complaints
- Staff suggestions
- Trends identified in management reports

The QMS Representative shall review potential non-conformities that are identified to determine if any preventive actions are associated with them. The outcome of this review will be documented and any preventive actions will be recorded on a Preventive Action Report (PAR) using Form 21-01.

The QMS Representative completes Part A of the CPAR Form 21-01 and checks off “preventive action” as the type of issue. The QMS Representative issues the PAR number and determines who is assigned as Team Leader to address the preventive action. The QMS Representative records the PAR in the CPAR, OFI & NCR Log Form 21-02 and notes the PAR number on the report.

The Team Leader creates a cross-functional team which includes the Manager and/or Director (minimum of 2 people) and completes Part B of the CPAR Form. Part B for a Preventive Action is used to review the actions needed to prevent the non-conformity from occurring.

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The Team Leader will determine and implement the preventive action and change all applicable documentation as per QMS-05-SYS Document and Records Control. The Team Leader is responsible for investigating:

- who is involved,
- what is the cause of the potential problem,
- what action is required to prevent the potential problem,
- what are the steps to be taken, for ensuring that the necessary actions are taken in an appropriate timeframe and for responding back on the Corrective Preventive Action Report (Form 21-01), and
- a plan that will review and verify implementation of the preventive action and its effectiveness at preventing the occurrence of the non-conformity.

The Team Leader forwards the CPAR Form 21-01 to the QMS Representative. The QMS Representative is responsible for determining that the preventive action has been implemented and is effective. The QMS Representative completes Part C of the CPAR. The QMS Representative records that the CPAR is complete on the Corrective Preventive Action Report Log.

The QMS Representative reviews the CPAR Log during Management Review and records if any further action is required.

CPAR Form and CPAR, OFI & NCR Log are maintained as per QMS-05-SYS Document and Records Control.

QMS Representative shall ensure that a review of opportunities to implement Preventive Actions is an Agenda Item at the following annual DWQMS Activities:


- Regular DWQMS Meetings
- Review and Provision of Infrastructure Meetings
- Infrastructure Maintenance, Rehabilitation and Renewal Meetings

2.1 Best Management Practices (BMP)

The QMS Representative shall co-ordinate a review of available BMP's. The QMS Representative shall regularly review (at least every 36 months) the MECP website for published BMP's. The DWQMS Meetings shall have a standing Item discussing/reviewing BMP's and applicable industry standards. Outcomes and implementations from these meetings shall be documented in the Meeting Summary and managed according to QMS 5- Documents and Records Control.

2.2 Customer Complaints

The log of all customer complaints is reviewed by the Team Lead and discussed at staff meetings of the Operating Authority, where necessary. Service King staff record drinking water system and QMS related complaints in the Customer Relationship Management (CRM) system and create the Request for Service.

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3 REFERENCES

QMS-05-SYS Procedure Document and Records Control

4 APPENDICES

Form 21-01 Corrective Preventive Action Report
Form 21-02 CPAR, OFI & NCR Log

5 DOCUMENT CHANGE HISTORY

Revision Level	Date	Change	Developed By
2	June 19, 2013	New Township Logo & inclusion of this table	J.V.
3	March 02, 2015	Moved to “paperless” protocol	J.V.
4	March 21, 2018	Revised to reflect updated MOECC Standard	J.V.
5	November 7, 2018	Further revision to update to DWQMS version 2.0 and add preventive action	J.V.
6	September 23, 2019	Minor revision to corrective action	M.W.
7	July 17, 2020	Revised to remove AAR and change to CPAR, CAR and PAR	M.W.
8	August 20, 2021	Form 21-02 to include OFI & NCR	M.W.
9	May 30, 2022	Adjust language	D.W.

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