OPERATIONAL PLAN

Marathon Distribution System

Revision 11, 31-May-2018

Disclaimer Statement

This Operational Plan is designed for the exclusive use of the Corporation of the Town of Marathon.

This Operational Plan has been developed with the Corporation of the Town of Marathon operating practices in mind and utilizes the Corporation of the Town of Marathon personnel to implement it.

Any use which a third party makes of this Operational Plan, or any part thereof, or any reliance on or decisions made based on information within it, is the responsibility of such third parties. The Corporation of the Town of Marathon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Operational Plan or any part thereof.

Any documents developed and owned by the Corporation of the Town of Marathon, which are referred to in this Operational Plan (including, but not limited to, the Corporation of the Town of Marathon's DWQMS Procedures, Standard Operating Procedures, policies, Facility Emergency Plans, and audit protocol) remain the property of the Corporation of the Town of Marathon.

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0 DWQMS Matrix

The DWQMS Matrix provided below indicates how the PLAN requirements of Ontario's Drinking Water Quality Management Standard are addressed by the Town of Marathon. DWQMS Elements are addressed through a combination of documentation which includes this Operational Plan and DWQMS Procedures. DWQMS Procedures may in turn reference certain Town of Marathon guidelines or policies, which are similarly used to address the requirements of the Standard. PLAN requirements not directly addressed within this Operational Plan have been highlighted.

This matrix is intended to facilitate the understanding of the reader with respect to the structure of the Town of Marathon's QMS. Additionally, this matrix will act to facilitate internal and external auditing processes.

DWQMS Element	Document
1 – Quality Management System	Operational Plan
2 – Quality Management System Policy	Operational Plan
3 – Commitment and Endorsement	Operational Plan
4 – QMS Representative	Operational Plan
5 – Document & Records Control	QP-01 (Document & Records Control)
6 – Drinking-Water System	Operational Plan
7 – Risk Assessment	QP-02 (Risk Assessment & Risk Assessment Outcomes)
8 – Risk Assessment Outcomes	QP-02 (Risk Assessment & Risk Assessment Outcomes)
9 – Organizational Structure, Roles, Responsibilities and Authorities	Operational Plan
10 – Competencies	Operational Plan
11 – Personnel Coverage	QP-03 (Personnel Coverage)
12 – Communications	QP-04 (Communications)
13 – Essential Supplies and Services	QP-05 (Essential Supplies and Services)
14 – Review and Provision of Infrastructure	QP-06 (Review and Provision of Infrastructure)
15 – Infrastructure Maintenance, Rehabilitation and Renewal	Operational Plan
16 – Sampling, Testing and Monitoring	QP-07 (Sampling, Testing and Monitoring)
17 – Measurement and Recording Equipment Calibration and Maintenance	QP-08 (Measurement and Recording Equipment Calibration and Maintenance)
18 – Emergency Management	QP-09 (Emergency Management)
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20 – Management Review	QP-11 (Management Review)
21 – Continual Improvement	QP-12 (Continual Improvement)

1 Quality Management System

The Drinking Water Quality Management System (QMS) for the Marathon Distribution System is documented in this Operational Plan as part of the Town of Marathon's efforts to ensure that clean, safe, and reliable drinking water is supplied to all customers served by this system. The development and continual improvement of the Plan will help to ensure that all regulatory requirements are met and that consumers can be confident that their drinking water will be protected through the effective application of the QMS. This Operational Plan was developed to meet the Ministry of the Environment's Drinking Water Quality Management Standard.

2 Quality Management System Policy

The Corporation of the Town of Marathon owns, operates, and maintains the distribution components of the Marathon Drinking Water System. The Town of Marathon, its Mayor, Council, Officers and staff are committed to the following:

(1) Ensuring the consistent supply of safe, high quality drinking water;

(2) Complying with all relevant legislation and regulations;

(3) Continually reviewing and improving the Quality Management System; and

(4) Openly communicating with the public concerning matters of drinking water quality and quantity.

3 Commitment and Endorsement

The Corporation of the Town of Marathon supports the implementation, maintenance, and continual improvement of a drinking water Quality Management System for the Marathon Distribution System, as documented in this Operational Plan. In its role as both owner and operating authority, the Town of Marathon acknowledges the need for and supports the provision of sufficient resources to maintain and continually improve the QMS. All of the undersigned persons hereby endorse this Operational Plan:

Signature & Title:	Date:
Rick Dumas, Mayor Owner Representative	
Daryl Skworchinski, Chief Administrative Officer/Clerk Operating Authority Representative (Top Management)	
Brian Hyshka, Works & Operations Manager Operating Authority Representative (Top Management)	

4 QMS Representative

The Works & Operations Managers acts as the QMS Representative for the Marathon Distribution System. The Works & Operations Manager is ultimately responsible for activities related to the operation of the system.

As the QMS Representative, the Works & Operations Manager is responsible for:

(1) Administering the QMS, including establishing and maintaining processes and procedures required by the QMS;

(2) Controlling documents and records, including ensuring that current versions of QMS documents are being used at all times and initiating and approving various QMS Procedures (QPs);

(3) Ensuring that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the system;

(4) Promoting awareness of the Quality Management System throughout the operating authority, including emphasizing that all personnel have roles and responsibilities under the QMS; and,

(5) Reporting on the performance of the QMS to Top Management and identifying opportunities for improvement.

5 Document & Records Control

Refer to DWQMS Procedure QP-01 (Document & Records Control).

6 Drinking-Water System

6.1 General Process Description

The Marathon Distribution System (Class II) is an operational subsystem owned and operated by the Corporation of the Town of Marathon. The Marathon Well Supply System is an additional operational subsystem that is owned by the Corporation of the Town of Marathon and operated by a contracted operating authority. These treatment and distribution operational subsystems comprise the Marathon Drinking Water System.

The Marathon Drinking Water System provides a potable water supply to the community of Marathon. Water is obtained from five active groundwater wells (Wells 2, 3, 4, 5, and 6) located throughout the community. Well 1 was previously abandoned and decommissioned in 2002, while Well 7 was abandoned and decommissioned in 2003. The active wells are pumped alternately so as to feed both the distribution system and the reservoir. The following descriptions provide overviews of the main components of the Marathon Drinking Water System as a whole, all of which are located within the community. Sections 6.2 through 6.8 pertain to components that are operated by a contracted operating authority.

6.2 Well 2

Well 2 is a drilled well 23.16 m deep, with a 559 mm diameter outer casing and 305 mm screen and inner casing. The corresponding well house is located approximately 37 m south and 20 m west of the intersection of Whitman Court and Stevens Avenue. The well is equipped with a multi-stage vertical turbine pump, complete with manual air release valve, check valve, and magnetic flow meter. The well house also contains backflow preventers, pump-to-waste piping, a back-up power supply for continuous analyzers, spill containment for chemical solution tanks, and an outpost module capable of transmitting operational information.

Disinfectant is injected as raw groundwater is pumped from the well and directed to the chlorine contact loop. This loop consists of 128 m of 450 mm diameter pipe, and has been designed such that a minimum of 15 minutes chlorine contact time is provided at peak flows (22.7 L/s). The loop also includes a 19 mm diameter sample line that extends from the end of the loop to the well house. The disinfection system consists of one (1) 270 L sodium hypochlorite solution tank, one (1) free chlorine residual analyzer, and two (2) chemical metering pumps (duty and standby) each rated at 1.4 L/h, complete with alarm and automatic switchover capability.

6.3 Well 3

Well 3 is a drilled well 29.5 m deep, with a 559 mm diameter outer casing and 305 mm screen and inner casing. The corresponding well house is located approximately 23 m south and 120 m west of the intersection of Hemlo Drive and La Verendrye Crescent. The well is equipped with a multi-stage vertical turbine pump, complete with manual air release valve, check valve, and magnetic flow meter. The well house also contains backflow preventers, pump-to-waste piping, a back-up power supply for continuous analyzers, spill containment for chemical solution tanks, and an outpost module capable of transmitting operational information.

Disinfectant is injected as raw groundwater is pumped from the well and directed to the chlorine contact loop. This loop consists of 94 m of 450 mm diameter pipe, and has been designed such that a minimum of 15 minutes chlorine contact time is provided at peak flows (19.2 L/s). The loop also includes a 19 mm diameter sample line that extends from the end of the loop to the well house. The disinfection system consists of one (1) 270 L sodium hypochlorite solution tank, one (1) free chlorine residual analyzer, and two (2) chemical metering pumps (duty and standby) each rated at 1.4 L/h, complete with alarm and automatic switchover capability.

6.4 Well 4

Well 4 is a drilled well 24.6 m deep, with a 610 mm diameter outer casing and 305 mm screen and inner casing. The corresponding well house is located approximately 140 m south and 65 m east of the intersection of Aspendale Drive and Sund Crescent. The well is equipped with a multi-stage vertical turbine pump with electric and diesel drives, complete with manual air release valve, check valve, and magnetic flow meter. The well house also contains backflow preventers, pump-to-waste piping, a back-up power supply for continuous analyzers, spill containment for chemical solution tanks, a 579 L fuel storage tank in a containment well, and an outpost module capable of transmitting operational information.

Disinfectant is injected as raw groundwater is pumped from the well and directed to the chlorine contact loop. This loop consists of 128 m of 500 mm diameter pipe, and has been designed such that a minimum of 15 minutes chlorine contact time is provided at peak flows (26.5 L/s). The loop also includes a 19 mm diameter sample line that extends from the end of the loop to the well house. The disinfection system consists of one (1) 270 L sodium hypochlorite solution tank, one (1) free chlorine residual analyzer, and two (2) chemical metering pumps (duty and standby) each rated at 1.4 L/h, complete with alarm and automatic switchover capability.

6.5 Well 5

Well 5 is a drilled well 24.3 m deep, with a 610 mm diameter outer casing and 305 mm screen and inner casing. The corresponding well house is located approximately 11 m south and 114 m west of the intersection of Nicolet Drive and Hemlo Drive. The well is equipped with a multi-stage vertical turbine pump, complete with manual air release valve, check valve, and magnetic flow meter. The well house also contains backflow preventers, pump-to-waste piping, a back-up power supply for continuous analyzers, and an outpost module capable of transmitting operational information.

Disinfectant is injected as raw groundwater is pumped from the well and directed to the chlorine contact loop. This loop consists of 128 m of 500 mm diameter pipe, and has been designed such that a minimum of 15 minutes chlorine contact time is provided at peak flows (26.5 L/s). The loop also includes a 19 mm diameter sample line that extends from the end of the loop to the well house. The disinfection system consists of one (1) 80 L sodium hypochlorite solution tank, one (1) free chlorine residual analyzer, and two (2) chemical metering pumps (duty and standby) each rated at 1.4 L/h, complete with alarm and automatic switchover capability.

6.6 Well 6

Well 6 is a drilled well 29.5 m deep, with a 600 mm diameter outer casing and 300 mm screen and inner casing. The corresponding well house is located approximately 100 m west of the intersection of Steedman Drive and Aspendale Drive. The well is equipped with a multi-stage vertical turbine pump, complete with manual air release valve, check valve, and magnetic flow meter. The well house also contains backflow preventers, pump-to-waste piping, a 100-kW emergency standby generator with a 1500 L fuel storage tank, and an outpost module capable of transmitting operational information.

Disinfectant is injected as raw groundwater is pumped from the well and directed to the chlorine contact loop. This loop consists of 155 m of 500 mm diameter pipe, and has been designed such that a minimum of 15 minutes chlorine contact time is provided at peak flows (32.0 L/s). The loop also includes a 19 mm diameter sample line that extends from the end of the loop to the well house. The disinfection system consists of one (1) 80 L sodium hypochlorite solution tank, one (1) free chlorine residual analyzer, and two (2) chemical metering pumps (duty and standby) each rated at 3.6 L/h, complete with alarm and automatic switchover capability.

6.7 Industrial Park Booster Station

The Industrial Park Booster Station is located on Peninsula Road (Highway 626), approximately 453 m east and 732 m north of the intersection of Peninsula Road and Penn Lake Road. The station boosts water pressure in the elevated industrial section of Marathon and contains three (3) centrifugal pumps with a station capacity of 179.7 m^3/day, complete with flow meter. The station also includes a standby power system consisting of a 38-kW propane generator, one (1) free chlorine residual analyzer located on the discharge header, and an outpost module that is capable of transmitting operational information.

6.8 Penn Lake Heights Reservoir and Booster Station

The Penn Lake Heights Reservoir balances system pressure and provides water during power outages and fire flows. The reservoir is of concrete construction, with clean stone surrounding the structure for groundwater drainage. It has a storage capacity of 4,950 m^3, and is filled by all of the active wells according to programmable set points.

The associated booster station provides system pressure to the Penn Lake Heights subdivision, which includes the public school. This station is required to maintain distribution system pressure in the elevated subdivision, and includes two (2) centrifugal pumps each rated at 6 L/s, two (2) centrifugal pumps each rated at 17 L/s, and one (1) centrifugal pump rated at 80 L/s. Pump operation is determined by a series of control points based on flow demand and system pressure. The booster station also includes a standby power system consisting of a 325-kW diesel generator, one (1) free chlorine residual analyzer, an outpost module capable of transmitting operational information, and a comprehensive alarm system.

6.9 Marathon Distribution System (Operated by the Town of Marathon)

The Marathon Distribution System represents an operational subsystem that is owned and operated by the Corporation of the Town of Marathon. The system consists of approximately 1,379 residential and 142 commercial/industrial connections, servicing a population of 3,900 persons. From the wells, water is pumped to the distribution system and the reservoir. The system is comprised of various sized diameter water mains consisting of cast iron (~ 7,125 m), ductile iron (~ 18,439 m), high density polyethylene (HDPE) (~ 2,435 m), PVC (~ 3,933 m), and steel (~255 m), totalling approximately 32 km in length. There are approximately 208 fire hydrants located throughout the distribution system.

Extremities and distribution system dead-ends are flushed on an annual basis. No additional procedures are required to maintain disinfection residuals in the distribution system.

6.10 Source Water Characterization

The source water supply for the Marathon DWS includes the groundwater supply for each of the five (5) active wells. Source water quality is characterized as follows:

Location	Turbidity (NTU) Results Range[1]	pH Results Range[1]	Hardness Range[2] (mg/L as $CaCO_3$)
Well 2	0.06 – 0.09	7.4 – 7.9	160 - 200
Well 3	0.06 – 0.09	7.5 – 7.8	
Well 4	0.05 – 0.10	7.6 – 7.9	
Well 5	0.05 – 0.10	7.5 – 7.8	
Well 6	0.06 – 0.09	7.5 – 7.9	

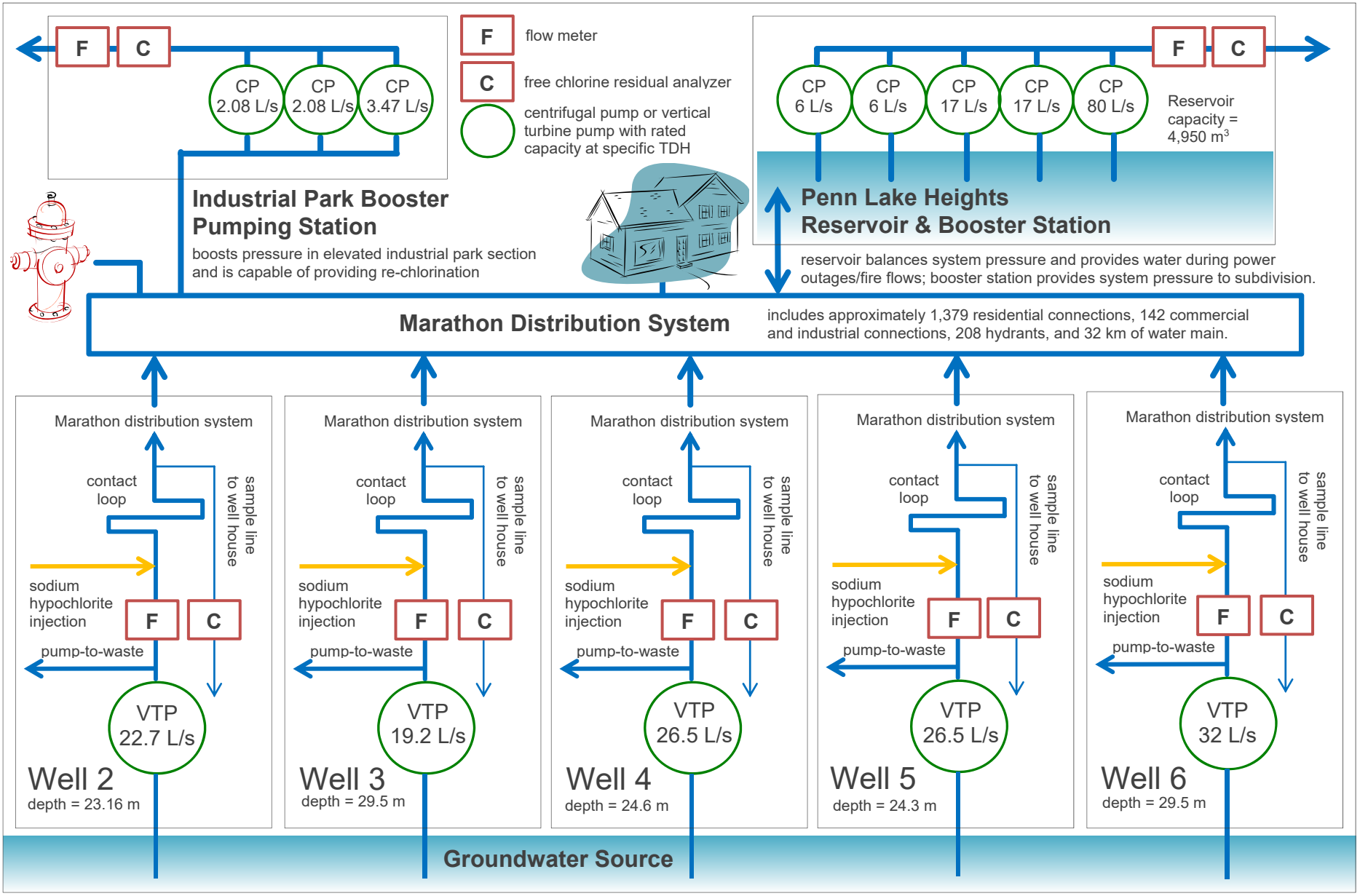
1. The minimum and maximum values for the turbidity and pH result ranges are expressed as minimum and maximum monthly averages. Results in the table were compiled from water quality data collected between January 1, 2014 and December 31, 2017.
2. Hardness is provided as a general range based upon infrequent monitoring results. Note that water with a hardness between 120 and 180 mg/L $CaCO_3$ is classified as ‘hard’ water, while water with a hardness greater than 180 mg/L $CaCO_3$ is classified as ‘very hard’ water.

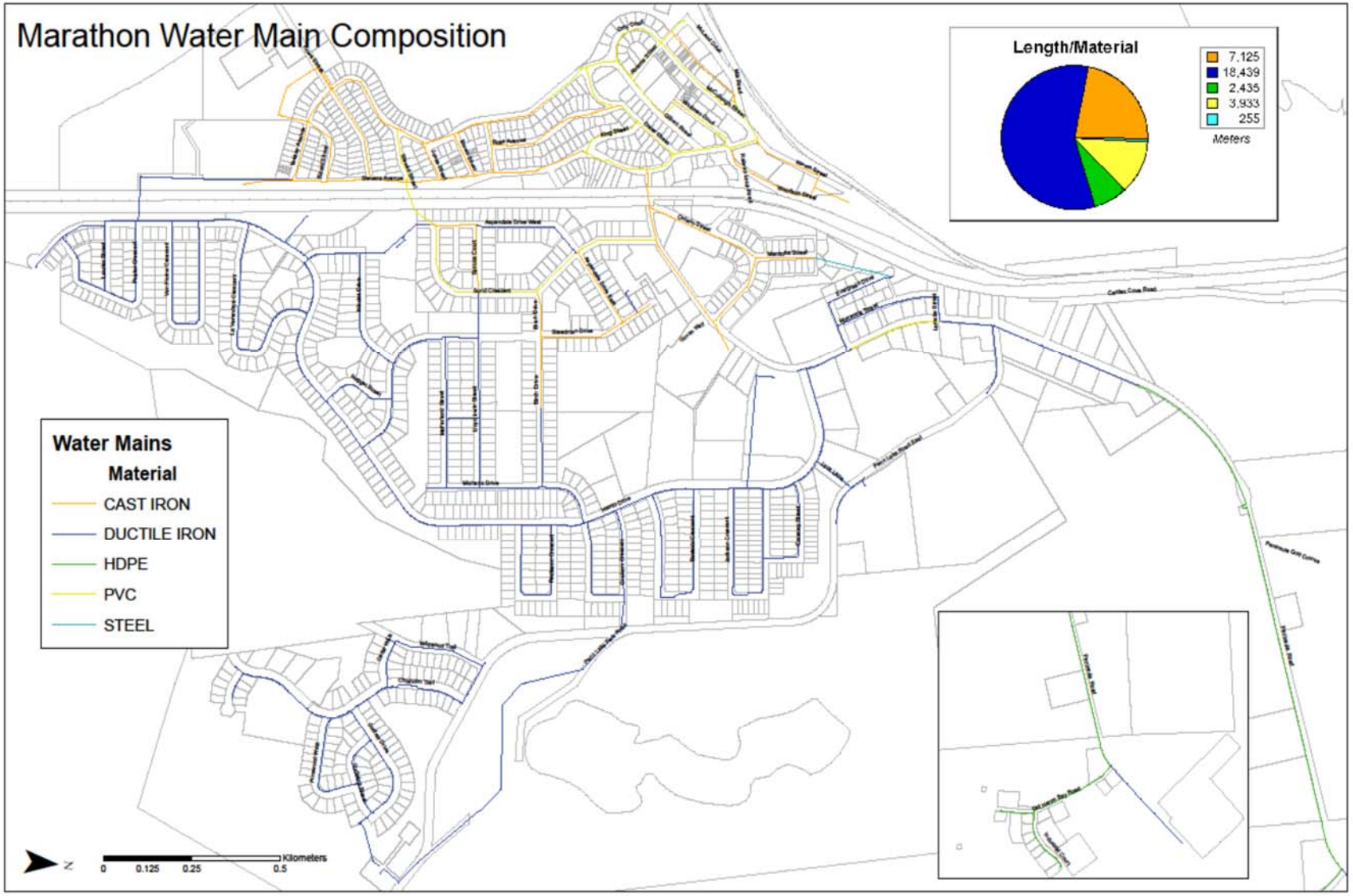
Source water for each of the wells is low in turbidity and slightly basic, with temperature generally remaining constant throughout the year. Routine microbiological analyses indicate an absence of *E. coli* and total coliforms. As is typical for a groundwater supply, there is a general lack of seasonal or event-driven fluctuations in source water quality.

One potential event-driven fluctuation includes fuel leaks and spills within the community. Operational challenges may include identifying the source of contamination, determining its potential impact on source water (which may include special monitoring), and taking remedial action as required (such as well shutdown).

6.11 Process Flow Diagrams

Two process flow diagrams are provided on the following pages. The first diagram provides an overview of the entire Marathon Drinking Water System. The second diagram shows the location and composition of water mains associated with the Marathon Distribution System.


F
C
CP 2.08 L/s
CP 2.08 L/s
CP 3.47 L/s
Industrial Park Booster Pumping Station
boosts pressure in elevated industrial park section and is capable of providing re-chlorination
F flow meter
C free chlorine residual analyzer
centrifugal pump or vertical turbine pump with rated capacity at specific TDH
CP 6 L/s
CP 6 L/s
CP 17 L/s
CP 17 L/s
CP 80 L/s
Reservoir capacity = 4,950 m3
Penn Lake Heights Reservoir & Booster Station
reservoir balances system pressure and provides water during power outages/fire flows; booster station provides system pressure to subdivision.
Marathon Distribution System
includes approximately 1,379 residential connections, 142 commercial and industrial connections, 208 hydrants, and 32 km of water main.
Marathon distribution system
contact loop
sample line to well house
sodium hypochlorite injection
pump-to-waste
VTP 22.7 L/s
Well 2
depth = 23.16 m
VTP 19.2 L/s
Well 3
depth = 29.5 m
VTP 26.5 L/s
Well 4
depth = 24.6 m
VTP 26.5 L/s
Well 5
depth = 24.3 m
VTP 32 L/s
Well 6
depth = 29.5 m
Groundwater Source



Note: Original size diagram is available as a separate document.

7 Risk Assessment

Refer to DWQMS Procedure QP-02 (Risk Assessment & Risk Assessment Outcomes).

8 Risk Assessment Outcomes

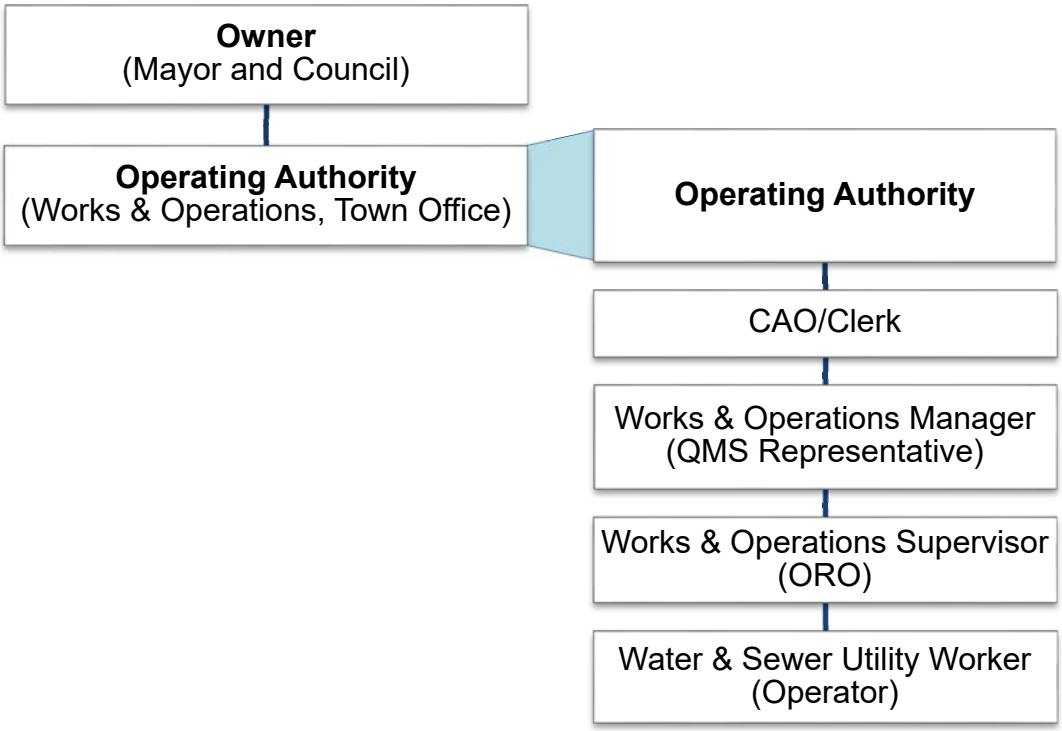
Refer to DWQMS Procedure QP-02 (Risk Assessment & Risk Assessment Outcomes).

9 Organizational Structure, Roles, Responsibilities and Authorities

9.1 Organizational Structure

The Corporation of the Town of Marathon owns and operates the Marathon Distribution System. The Town of Marathon has defined two levels of management within its structure (Owner and Operating Authority), and these two levels ultimately share responsibility for the maintenance and continual improvement of the QMS. An organizational chart outlining the two levels of management is provided below.

Mayor and Council provide oversight at the corporate level, while the Works & Operations Department retain responsibilities at the level of the facility. The CAO/Clerk plays a critical role within the QMS as a key link between the Works & Operations Manager and Council.



9.2 Roles, Responsibilities and Authorities

The Town's management defines the roles, responsibilities and authorities under its QMS for all employees whose work could have an impact on drinking water quality and supply. These are communicated to all personnel to ensure that individual roles and responsibilities are understood. The CAO/Clerk and the Works & Operations Manager assume Top Management responsibilities with respect to the Drinking Water Quality Management Standard.

Specific QMS-related roles, responsibilities and authorities of operations personnel are summarized in the table below. Additional responsibilities and authorities of employees are described in their corresponding job descriptions. Responsibilities and authorities with respect to individual elements of the QMS are outlined in the DWQMS Procedures referenced throughout this Plan.

DWQMS Roles, Responsibilities and Authorities
Chief Administrative Officer/Clerk: (1) Ensure appropriate resources to maintain and continually improve the QMS; (2) Participate in/respond to Management and Infrastructure Reviews, as appropriate; and, (3) Liaise with Council on relevant components of the QMS including roles, responsibilities and authorities, as appropriate.
Works & Operations Manager (QMS Representative): (1) Delegate responsibilities, deploy resources and supervise sound operation and maintenance of the facility and of the QMS; (2) Report to council on the status of the QMS; (3) Ensure the completion of annual internal audits; (4) Respond to external audit and MOECC inspection findings and verify the completion of action items; (5) Facilitate Management Reviews and communicate the results; (6) Report to the CAO/Clerk on the performance and effectiveness of the QMS implemented at the facility; (7) Liaise with the CAO/Clerk on relevant components of the QMS including the roles, responsibilities and authorities for the facility; (8) Establish a training plan for staff to address regulatory requirements and QMS requirements as part of the employee evaluation process; and, (9) Fulfill other defined duties of the QMS Representative.

QMS Roles, Responsibilities and Authorities (continued)
Works & Operations Supervisor (Overall-Responsible-Operator): (1) Delegate maintenance responsibilities and provide direction to operators, ensure adequate resources and equipment are available, and supervise the operation and maintenance of the facilities; (2) Participate in internal audits, external audits, and MOE inspections; (3) Assist the QMS Representative in responding to the findings of audits and inspections; (4) Participate in Management and Infrastructure Reviews; and, (5) Assist in the development of maintenance and operating procedures.
Water & Sewer Utility Worker (Operator): (1) Work in accordance with Town policies, guidelines, procedures and plans, including documenting all activities, considering the risks and ramifications of all actions, being aware of all environmental and public health risks, and performing duties in compliance with applicable legislation and regulations; (2) Participate in QMS training and processes and take all other appropriate training to ensure competence in their job; (3) Assisting with correcting deficiencies identified in audits/inspections; and, (4) Identify and report to the manager opportunities for improving the facility's QMS.

10 Competencies

10.1 Required Competencies

The following table outlines the competencies required by Town of Marathon personnel whose duties directly affect drinking water quality or supply.

Required Competencies
Works & Operations Manager: • Knowledge of water/wastewater operations and maintenance • Management/supervisory experience • Management training • WHMIS training

Required Competencies (continued)
Works & Operations Supervisor (Overall-Responsible-Operator): • Operator certification in good standing • Knowledge of water/wastewater operations and maintenance • Supervisory experience • Supervisor training • WHMIS training
Water & Sewer Utility Worker: • Operator certification in good standing • WHMIS training

10.2 Developing and Maintaining Competencies

Recruitment practices utilized by the Corporation of the Town of Marathon determine personnel competencies upon employment. The Works & Operations Manager selects and assigns personnel based on their qualifications, training, and experience for the required duties.

Certified operators are responsible for a) completing the annual number of required training hours for the class of the subsystem where the operator works and b) completing the mandatory renewal course as required. The Works & Operations Manager takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the annual training requirements. Specifically, the Works & Operations Manager maintains an operational training budget which helps to develop the skills and increase the knowledge of operations staff and management, in addition to providing staff with information and access to resources.

The following tasks undertaken by the Town of Marathon are related to developing and maintaining competencies:

(1) Facility personnel receive site-specific training on relevant operational and emergency response procedures to ensure the effective operational control of processes and equipment which may impact the safety and quality of drinking water. Orientation training for new employees also includes information related to QMS awareness.

(2) An operational training budget maintained by the Works & Operations Manager addresses continuing education and on-the-job training requirements. Training needs are identified by the Manager on an ongoing basis with consideration being given to regulatory requirements, professional development, and other circumstances.

(3) Town employees may, at any time, request training by either internal or external providers by submitting a request for training to the Works & Operations Manager.

(4) The Works & Operations Manager, as QMS Representative and with assistance from Human Resources, shall ensure that personnel are kept informed about significant changes to legislative and regulatory requirements, in addition to ensuring that personnel are aware of the relevance of their duties and how they affect safe drinking water.

10.3 Records

Individual employee training records are maintained by Town of Marathon human resources personnel, in accordance with DWQMS Procedure QP-01 (Document & Records Control).

11 Personnel Coverage

Refer to DWQMS Procedure QP-03 (Personnel Coverage).

12 Communications

Refer to DWQMS Procedure QP-04 (Communications).

13 Essential Supplies and Services

Refer to DWQMS Procedure QP-05 (Essential Supplies and Services).

14 Review and Provision of Infrastructure

Refer to DWQMS Procedure QP-06 (Review and Provision of Infrastructure).

15 Infrastructure Maintenance, Rehabilitation, & Renewal

15.1 Planned Maintenance

The Town of Marathon maintains a program of scheduled inspections and maintenance of infrastructure for which it is operationally responsible. Such routine planned maintenance activities include a) valve inspections, b) fire hydrant inspections, c) a general distribution system flushing program, and d) a targeted dead-end distribution system flushing program.

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of verbal directions. Maintenance records are generated by the Works & Operations Supervisor or the Works & Operations Manager, typically on an as needed basis, and are distributed accordingly. Completed maintenance tasks are submitted to the Works & Operations Supervisor for entry into records. Records of these activities are maintained as per DWQMS Procedure QP-01 (Document and Records Control).

The Works & Operations Supervisor ensures that equipment and parts are available for planned and unplanned maintenance. Maintenance plans are developed according to historical experience, manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements. Equipment operation and maintenance manuals are accessible to staff at the locations specified in DWQMS Procedure QP-01.

15.2 Unplanned Maintenance

Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Works & Operations Supervisor or the Works & Operations Manager. Unplanned maintenance activities are recorded in the log book or on wall maps and are filed as per DWQMS Procedure QP-01.

15.3 Rehabilitation and Renewal

Rehabilitation and renewal activities including capital upgrades are determined on an annual basis (refer to DWQMS Procedure QP-06). A list of required replacement or desired new equipment is compiled and prioritized by the Works & Operations Manager, Works & Operations Supervisor, and operational staff. All major expenditures require the approval of the Owner.

15.4 Long Term Forecast

A long term forecast of major infrastructure maintenance, rehabilitation and renewal activities is maintained by the Works & Operations Manager. The forecast is reviewed and updated (as required) on an annual basis during the infrastructure review process (refer to DWQMS Procedure QP-06).

15.5 Program Monitoring and Communication

Planned infrastructure maintenance, rehabilitation and renewal programs are monitored for effectiveness on an annual basis during the infrastructure review meeting (refer to DWQMS Procedure QP-06). This review is documented in the meeting minutes and any identified program deficiencies are assigned action items.

Programs are communicated to Mayor and Council through the submission of the infrastructure review meeting minutes. Mayor and Council also have access to the current version of the program summary in the Operational Plan. Other program communication from the QMS Representative occurs during meetings of Council.

16 Sampling, Testing, & Monitoring

Refer to DWQMS Procedure QP-07 (Sampling, Testing and Monitoring).

17 Measurement and Recording Equipment Calibration and Maintenance

Refer to DWQMS Procedure QP-08 (Measurement and Recording Equipment Calibration and Maintenance).

18 Emergency Management

Refer to DWQMS Procedure QP-09 (Emergency Management).

19 Internal Audits

Refer to DWQMS Procedure QP-10 (Internal DWQMS Audits).

20 Management Review

Refer to DWQMS Procedure QP-11 (Management Review).

21 Continual Improvement

Refer to DWQMS Procedure QP-12 (Continual Improvement).

22 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Operational Plan issued
8-Nov-2010	1	Operational Plan Revision
4-Mar-2011	2	Operational Plan Revision
24-Oct-2011	3	Operational Plan Revision
20-Mar-2013	4	Operational Plan Revision
21-Aug-2013	5	Operational Plan Revision
10-Sep-2013	6	Remove Confine Space Competency Requirement
6-Jun-2014	7	Operational Plan Revision to enhance readability
3-Jun-2015	8	Revisions to commitment and endorsement section, system description, Schedule C, and other sections
20-Aug-2015	9	Revision to include source water characterization
2-May-2016	10	Updated source water characterization and competencies
31-May-2018	11	Revisions to conform to Version 2.0 of the Standard; updated source water characterization.

Schedule "C"

Director's Directions for Operational Plans – July 2007

Subject System Description Form			
Municipal Residential Drinking-Water System			
Owner of Municipal Residential Drinking-Water System:	The Corporation of the Town of Marathon		
Name of Municipal Residential Drinking-Water System:	Marathon Drinking Water System		
Subject Systems			
	Name of Operational Subsystems (if applicable)	**Name of Operating Authority**	**DWS Number(s)**
☐ Check here if the Municipal Residential Drinking-Water System is operated by one operating authority. Enter the name of the operating authority in adjacent column			
Operational Subsystem 1:	Marathon Well Supply System	Northern Waterworks Incorporated	220000255
Operational Subsystem 2:	Marathon Distribution System	Corporation of the Town of Marathon	220000255
Add attachments if there are additional 'Operational Subsystems'			
Contact Information			
Name	**Title**	**Phone No(s).**	**Email Address**
Brian Hyshka (Primary)	Works & Operations Manager	Office: 807-229-1340 ext 2229	worksmanager@marathon.ca
Daryl Skworchinski (Alternate)	CAO/Clerk	Office: 807 229-1340 ext 2222	cao@marathon.ca