OPERATIONAL PLAN

Marathon Distribution System

Revision 12, 1-Jun-2021

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)
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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'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:

- Ensuring the consistent supply of safe, high-quality drinking water;
- Complying with all relevant legislation and regulations;
- Continually reviewing and improving the Quality Management System; and,
- 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, Facilities & Parks Manager Operating Authority Representative (Top Management)	

4 QMS Representative

The Works, Operations, Facilities & Parks Manager acts as the QMS Representative for the Marathon Distribution System. The Manager is ultimately responsible for activities related to the operation of the system. The Works, Operations, Facilities & Parks Supervisor acts as the QMS Representative in the Manager's absence. The QMS Representative is responsible for:

- Administering the QMS, including establishing and maintaining processes and procedures required by the QMS.
- Controlling documents and records, including ensuring that current versions of QMS documents are being used at all times.
- Ensuring that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the system.
- Promoting awareness of the QMS throughout the operating authority, including emphasizing that all personnel have roles and responsibilities under the QMS; and,
- 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 System Overview

The Marathon Drinking Water System (DWS) is classified as a large municipal residential system and is composed of five (5) active groundwater wells (wells 2, 3, 4, 5 & 6), the Industrial Park Booster Station (IPBS), the Penn Lake Heights Reservoir & Booster Station (PLBS) and the Marathon water distribution system. As an operational subsystem, the Marathon Distribution System is owned and operated by the Corporation of the Town of Marathon. The active wells, reservoir and booster stations comprise the Marathon Well Supply System (treatment subsystem), which is owned by the Town of Marathon and is operated, maintained and managed by Northern Waterworks Inc. As a groundwater source, aquifer overburden and soil act as an effective filter that removes micro-organisms and other particles by straining and antagonistic effect, to a level where the water supply may already be potable but disinfection is required as an additional health risk barrier. All wells use free chlorine disinfection to achieve primary disinfection.

The active groundwater wells 2, 3, 4, 5 and 6 are located throughout the community of Marathon; wells 1 and 7 were previously abandoned and decommissioned in 2002 and 2003, respectively. A single multi-stage vertical turbine pump at each active well is used to draw water from the aquifer. Each well also contains a disinfectant chemical feed system, where disinfectant is injected as groundwater is pumped from the well and directed to the chlorine contact loop. The contact loops are designed to provide the necessary amount of time required to achieve primary disinfection and they are the last treatment step prior to water entering the water distribution system.

The wells are cycled alternately to supply water to the distribution system and the reservoir. The PLBS includes an in-ground storage reservoir that balances system pressure and provides water for emergency situations. The reservoir has a capacity of 4,950 m^3 and is filled by all the active wells according to programmable set points. Booster pumps at the facility are used to supply water to and maintain system pressure in the Penn Lake Heights subdivision. The IPBS is located on Peninsula Road and is used to supply water to Industrial Park via booster pumps. 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, a digital chart recorder 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, a digital chart recorder 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, a digital chart recorder 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 backup power supply for continuous analyzers, a digital chart recorder 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 generator with a 1500 L fuel storage tank, a digital chart recorder 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, a digital chart recorder 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, a digital chart recorder, an outpost module capable of transmitting operational information and an 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. 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), totaling approximately 32 km in length. There are approximately 213 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 residuals in the distribution system.

6.10 Source Water Characterization

The source water supply for the Marathon Well Supply System includes the groundwater supply for each of the five (5) active wells. Source water for each of the wells is low in turbidity and slightly basic. Routine microbiological analyses indicate an absence of E. coli and total coliforms. As is typical for a groundwater supply, there is an overall lack of seasonal or event-driven fluctuations in source water quality. General characteristics for the source water are provided below:

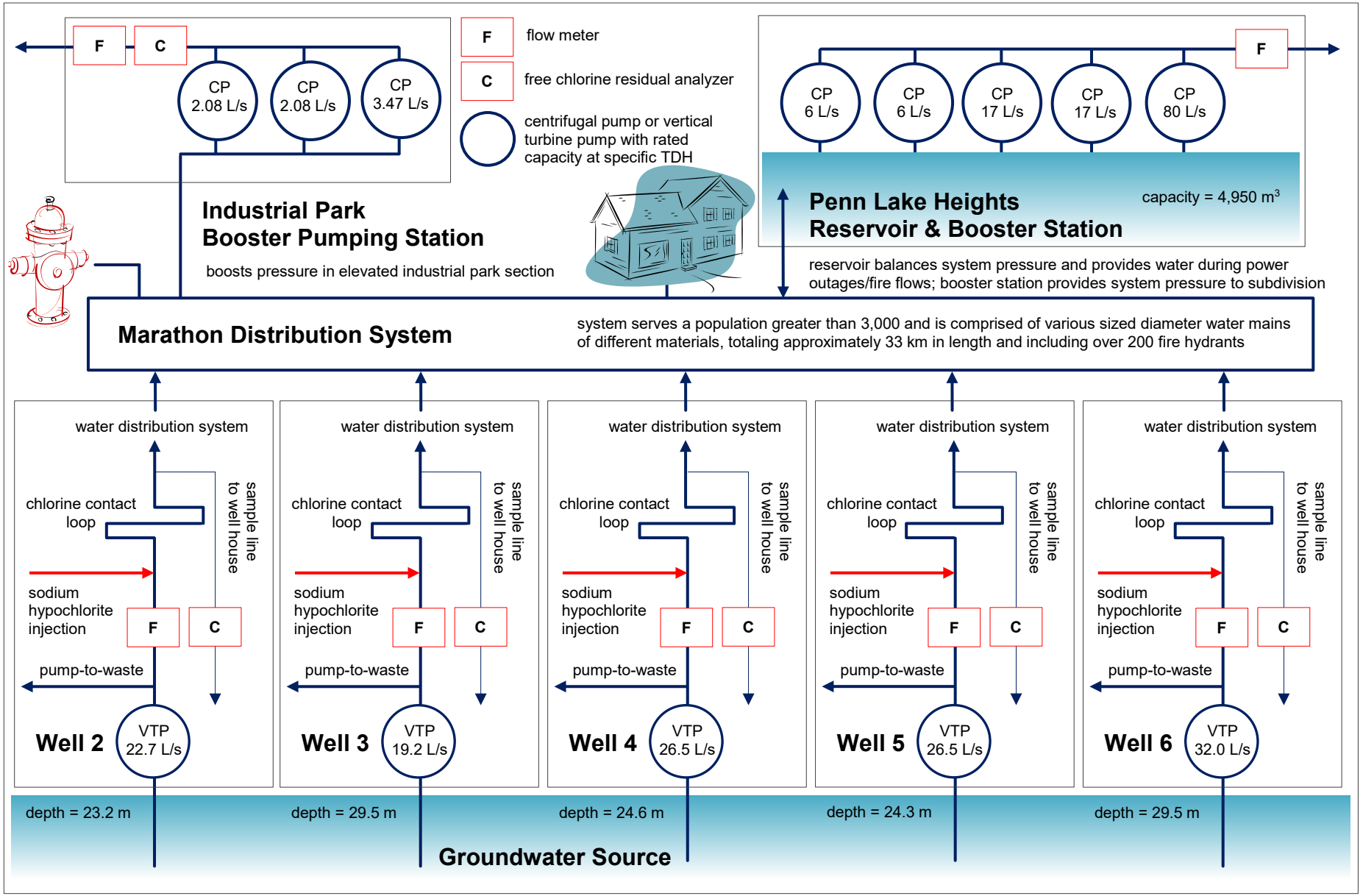
Location	Result Ranges (January 1, 2014 – December 31, 2020)				
	Turbidity[1] (NTU)	pH[1]	Hardness[2] (mg/L as $CaCO_3$)	Total Coliforms (MPN/100mL)	E. coli (MPN/ 100mL)
Well 2	0.05 – 0.09	7.4 – 7.9	160 – 200	absent – 1	absent
Well 3	0.04 – 0.11	7.5 – 7.9		absent – 1	
Well 4	0.03 – 0.10	7.6 – 7.9		absent	
Well 5	0.04 – 0.10	7.4 – 7.8		absent – 1	
Well 6	0.04 – 0.12	7.5 – 7.9		absent	

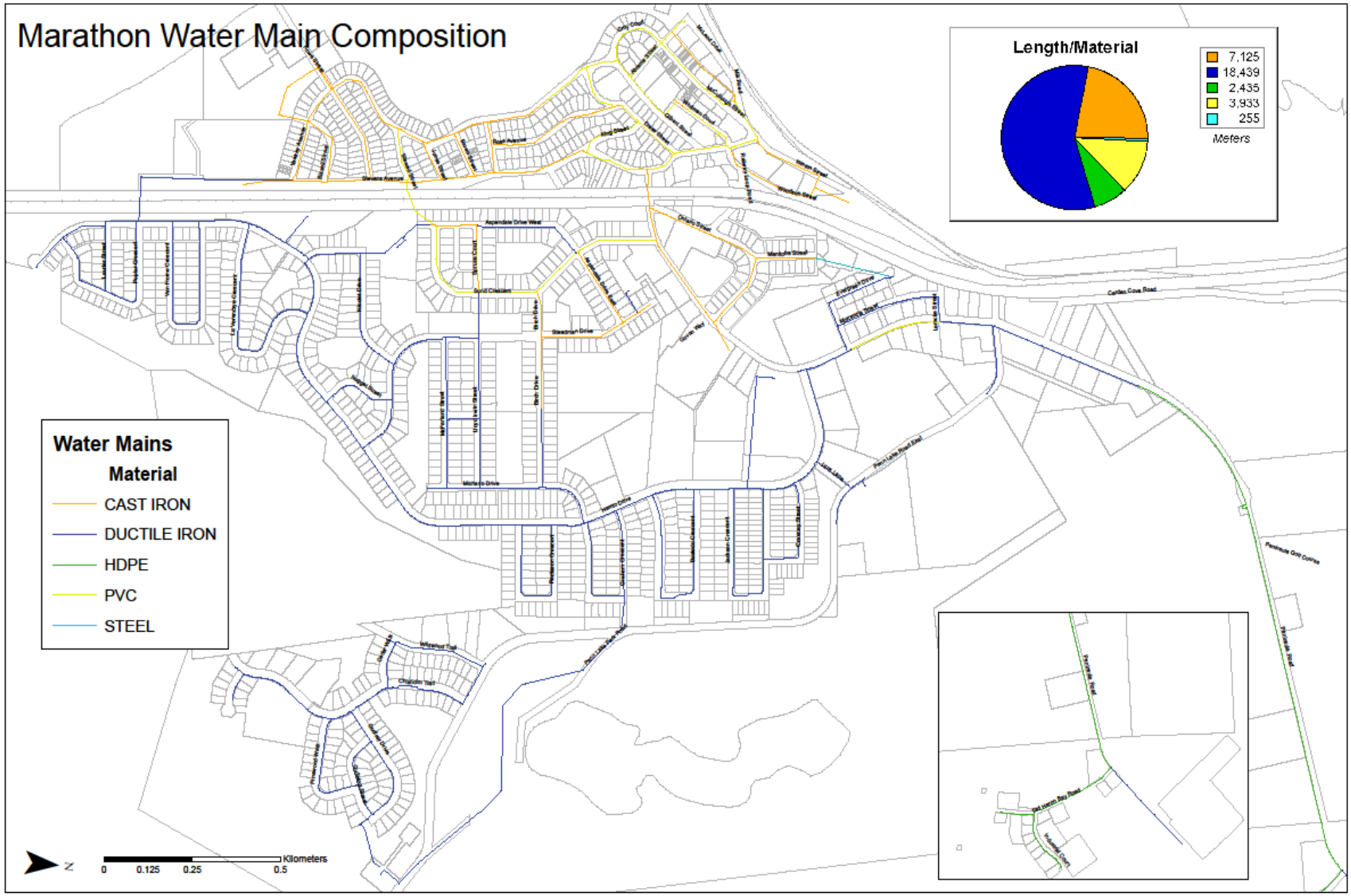
1. The minimum and maximum values for the turbidity and pH result ranges are expressed as minimum and maximum monthly averages.
2. Hardness is provided as a general range based upon infrequent monitoring results. Water with a hardness between 120 and 180 mg/L $CaCO_3$ is classified as 'hard' water, while water with a hardness greater than 180 mg/L $CaCO_3$ is classified as 'very hard' water.

The most significant event-driven fluctuation in the source water includes chemical spills or contamination from various potential pollution sources that could impact groundwater quality. Examples of potential pollution sources include fuel leaks and spills in the community, rail accidents and leachate from the previous landfill site. 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 (including extended 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 provides a layout of the Marathon Distribution System.


F
C
CP 2.08 L/s
CP 2.08 L/s
CP 3.47 L/s
F flow meter
C free chlorine residual analyzer
centrifugal pump or vertical turbine pump with rated capacity at specific TDH
Industrial Park Booster Pumping Station
boosts pressure in elevated industrial park section
F
CP 6 L/s
CP 6 L/s
CP 17 L/s
CP 17 L/s
CP 80 L/s
Penn Lake Heights Reservoir & Booster Station
capacity = 4,950 m3
reservoir balances system pressure and provides water during power outages/fire flows; booster station provides system pressure to subdivision
Marathon Distribution System
system serves a population greater than 3,000 and is comprised of various sized diameter water mains of different materials, totaling approximately 33 km in length and including over 200 fire hydrants
water distribution system
chlorine contact loop
sample line to well house
sodium hypochlorite injection
F
C
pump-to-waste
Well 2
VTP 22.7 L/s
depth = 23.2 m
Well 3
VTP 19.2 L/s
depth = 29.5 m
Well 4
VTP 26.5 L/s
depth = 24.6 m
Well 5
VTP 26.5 L/s
depth = 24.3 m
Well 6
VTP 32.0 L/s
depth = 29.5 m
Groundwater Source


Marathon Water Main Composition
Length/Material
7,125
18,439
2,435
3,933
255
Meters
Water Mains
Material
CAST IRON
DUCTILE IRON
HDPE
PVC
STEEL
N
0
0.125
0.25
0.5
Kilometers

7 Risk Assessment

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

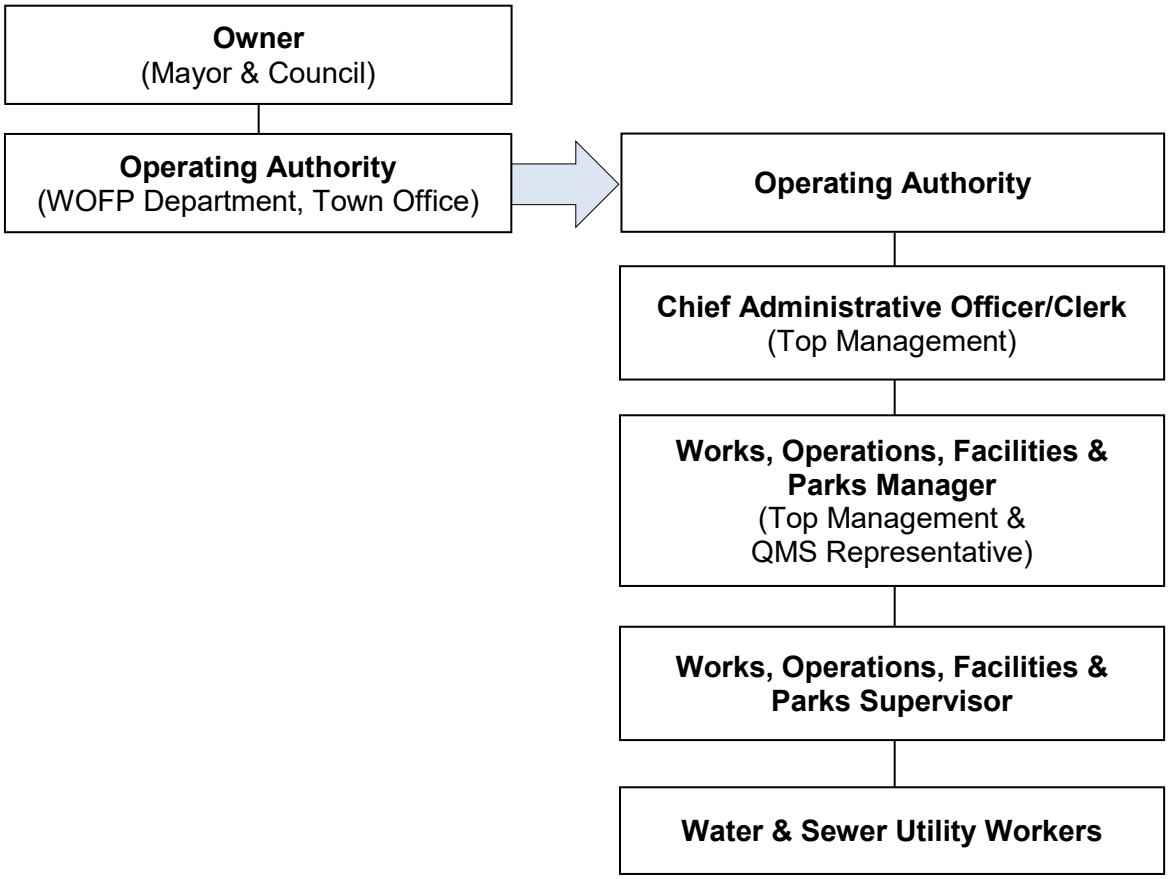
8 Risk Assessment Outcomes

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

9 Organizational Structure, Roles, Responsibilities and Authorities

9.1 Ownership & 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, Facilities & Parks Department retains responsibilities at the level of the facility.



9.2 Top Management Identification

In accordance with Element 9 of the Standard, the Operational Plan must identify the person, persons or group of people having Top Management responsibilities required by the Standard, along with their responsibilities. The Standard defines Top Management as a person, persons or a group of people at the highest management level within an Operating Authority that makes decisions respecting the QMS and delivers recommendations to the Owner respecting the subject system. Top Management is responsible for supporting the implementation, maintenance and continual improvement of the quality management system.

Top Management shall include the positions of the Chief Administrative Officer/Clerk and the Works, Operations, Facilities & Parks Manager.

9.3 Management Review Participants

In accordance with Element 9 of the Standard, this policy must identify the person, persons or group of people within the management structure of the organization responsible for undertaking the annual Management Review.

The Works, Operations, Facilities & Parks Manager (Top Management) is ultimately responsible for undertaking the Management Review. The Supervisor and as many Water & Sewer Utility Workers as possible are also required to participate. Additionally, best efforts are undertaken to include the Chief Administrative Officer/Clerk (Top Management) in the management review process.

9.4 Communication

In accordance with Element 9 of Ontario's Drinking Water Quality Management Standard (the Standard), the information concerning the organizational structure and all roles, responsibilities and authorities must be communicated throughout the operating authority and to the Owner. The QMS Representative is responsible for communicating the information within this policy to operating authority personnel and to the Owner.

The information in this section is communicated to Mayor and Council and operating authority personnel during the annual management review meeting. The information in this section is also readily available to Mayor and Council and all operating authority personnel.

9.5 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. Specific QMS-related roles, responsibilities and authorities of operations personnel are summarized 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.

9.5.1 Chief Administrative Officer/Clerk

- Ensuring appropriate resources to maintain and continually improve the QMS;
- Participating in/responding to Management and Infrastructure Reviews, as appropriate; and,
- Liaising with Council on relevant components of the QMS including roles, responsibilities and authorities, as appropriate.

9.5.2 Works, Operations, Facilities & Parks Manager

- Delegating responsibilities, deploying resources and supervising the sound operation and maintenance of the subsystem and the QMS;
- Reporting to council on the status of the QMS;
- Ensuring the completion of annual internal audits;
- Responding to external audit and Ministry inspection findings and verifying the completion of action items;
- Facilitating Management Reviews and communicating the results;
- Reporting to the CAO/Clerk on the performance and effectiveness of the QMS implemented at the facility;
- Liaising with the CAO/Clerk on relevant components of the QMS including the roles, responsibilities and authorities for the facility;
- Establishing a training plan (in conjunction with Supervisor) for staff to address regulatory and QMS requirements as part of the employee evaluation process;
- Fulfilling other defined duties of the QMS Representative; and,
- Acting and assuming the responsibilities of Overall-Responsible-Operator and/or Operator-in-Charge where qualified to do so;

9.5.3 Works, Operations, Facilities & Parks Supervisor

- Delegating maintenance responsibilities and providing direction to Water & Sewer Utility Workers, ensuring adequate resources and equipment are available, and supervising the operation and maintenance of the facilities;
- Participating in QMS processes and Ministry inspections;
- Assisting the QMS Representative and fulfilling the responsibilities of the QMS Representative in their absence;
- Working with manager to establish a training plan (in conjunction with supervisor) for staff to address regulatory and QMS requirements as part of the employee evaluation process;
- Assisting in the development of maintenance and operating procedures; and,
- Acting and assuming the responsibilities of Overall-Responsible-Operator and/or Operator-in-Charge where qualified to do so.

9.5.4 Water & Sewer Utility Worker

- Working 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;
- Participating in QMS training and processes and taking all other appropriate training to ensure competence in their job;
- Assisting with correcting deficiencies identified in audits/inspections;
- Identifying and reporting to the manager/supervisor opportunities for improving the facility's QMS; and,
- Acting and assuming the responsibilities of Overall-Responsible-Operator and/or Operations Managers where qualified to do so;

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.

Works, Operations, Facilities & Parks Manager
• Knowledge of water/wastewater operations and maintenance • Management/supervisory experience • Management training • Operator certification in good standing • WHMIS training
Works, Operations, Facilities & Parks Supervisor
• Knowledge of water/wastewater operations and maintenance • Supervisory experience • Supervisor training • Operator certification in good standing • WHMIS training
Water & Sewer Utility Worker
• Operator certification in good standing (new hires may not be certified, with the expectation that certification will be obtained within a reasonable amount of time) • 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, Facilities & Parks 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 Manager takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the annual training requirements. Specifically, the 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:

- 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.

- An operational training budget maintained by the 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.

- Town employees may, at any time, request training by either internal or external providers by submitting a request for training to the Manager.

- The 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, and maintenance plans are developed according to historical experience, manufacturer's instructions, regulatory requirements, and/or industry standards. Equipment and parts are available to facilitate both planned and unplanned maintenance, and equipment operation and maintenance manuals are accessible to operations staff. The planned maintenance program employed by the Town includes the following specific components:

- Valve exercising and inspection;
- Distribution system flushing and hydrant inspection;
- Targeted flushing of distribution system dead-ends; and,
- Leak detection.

A Computerized Maintenance Management System (CMMS) is used by the Town of Marathon to manage assets, inventories, and maintenance work orders. Records of completed planned maintenance work orders are managed electronically using the CMMS. Detailed records pertaining to each component of the planned maintenance program are maintained in hardcopy. All records are maintained as per DWQMS Procedure QP-01 (Document and Records Control).

15.2 Unplanned Maintenance

Unplanned maintenance tasks related to the distribution component of the Marathon Drinking Water System typically result from equipment or infrastructure failures. Work orders for unplanned maintenance tasks are managed using the CMMS.

All unplanned maintenance activities are recorded in hardcopy in the subsystem logbook. Detailed records of some unplanned maintenance tasks may also be recorded in hardcopy or electronically within standalone forms, such as may be the case for a watermain break repair. Records of completed unplanned maintenance work orders are managed electronically using the CMMS. All records are maintained as per DWQMS Procedure QP-01 (Document and Records Control).

15.3 Rehabilitation and Renewal

Rehabilitation or renewal activities pertaining to the water distribution system generally refer to the repair or replacement of valves and other appurtenances, service connections, hydrants, and watermains. Priorities for rehabilitation and renewal are based upon the results of planned and unplanned maintenance and are considered during the annual infrastructure review meeting. Rehabilitation and renewal activities are also managed using the Computerized Maintenance Management System (CMMS). Recordkeeping methods for rehabilitation and renewal activities are the same as those described for planned and unplanned maintenance activities.

15.4 Long Term Forecast

The long-term forecast of major infrastructure maintenance, rehabilitation and renewal activities is maintained as a list of prospective capital projects affecting the water distribution subsystem. 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 during the annual management review meeting. 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
1-Jun-2021	12	Updated all sections

Ontario

Ministry of the Environment and Climate Change

Schedule C – Director's Directions for Operational Plans (Subject System Description Form)

Municipal Residential Drinking Water System

Fields marked with an asterisk (*) are mandatory.

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

☐ Check here if the Municipal Residential Drinking Water System is operated by one operating authority. Enter the name of the operating authority in the below table.

	Name of Operational Subsystems(if Applicable)	Name of Operating Authority *	DWS Number(s) *
1	Marathon Distribution System	The Corporation of the Town of Marathon	220000255
2	Marathon Well Supply System	Northern Waterworks Inc.	220000255

Provide the information outlined in the 'Contact Information' section for **each** Operational Subsystem.

Contact Information 1

Last Name *	First Name *	Middle Initial
Hyshka	Brian	

Title *	Phone Number *
Works, Operations, Facilities & Parks Manager	807 229-1340

Email Address *
worksmanager@marathon.ca

Contact Information 2

Last Name *	First Name *	Middle Initial
Kyle	Nicholas	

Title *	Phone Number *
Compliance Manager (Northern Waterworks Inc.)	807 728-1824

Email Address *
compliance@nwi.ca