



**New Watermain commissioning  
Requirements**

Issued: March 17, 2023

Rev#: 6.0

**Operational Procedure  
(Appendix Q)**

Prepared by: Environmental Services  
Compliance & Training

Approved by: Supervisor of Compliance and Training &  
Manager of Water Services

**City of Vaughan's certified operator must be present to witness all steps within this procedure.**

# **NEW WATERMAIN COMMISSIONING REQUIREMENTS**

## **TABLE OF CONTENTS**

<b>NEW WATERMAIN COMMISSIONING REQUIREMENTS</b>	<b>5</b>
<b>1 Introduction</b>	<b>5</b>
1.1 Obligations	5
1.2 Commissioning Schedule Requests	6
<b>2 Service Pipes</b>	<b>6</b>
<b>3 Relining of Watermains</b>	<b>7</b>
<b>4 New Watermains – Physically Separated from Existing Watermain</b>	<b>7</b>
4.1 Source	7
4.1.1 Live Taps	7
4.1.2 Cut in “T”	8
4.1.3 Hydrant	8
4.2 Backflow Prevention	9
4.2.1 Commissioning BFP Installation and Certification	9
4.2.2 Removal	10
4.3 Loading and Swabbing	10
4.4 Flushing for Turbidity and Turbidity Testing	11
4.5 Hydrostatic Pressure Testing	11
4.6 Chlorination	12
4.7 Dechlorination	12
4.8 Sampling	12
4.9 Installation of Closure Piece/Final Connection for New Watermain Physically Separated from the Distribution System	13
4.10 Constructed, non-Commissioned Watermain	14
4.11 Mandatory Submission	15
<b>5 New Watermain – Connections Greater Than One Pipe Length (Special Conditions)</b>	<b>17</b>
<b>6 Commissioning Backflow Preventers</b>	<b>18</b>
6.1 Private Side Testing	18
6.2 Permanent Backflow Prevention	19
6.3 Permanent City Water Meter	19
<b>7 NEW DEVELOPMENT - WATER QUALITY FLUSHING PROGRAM</b>	<b>19</b>
7.1 Implementing a Flushing Program	19
7.1.1 Program Structure, Reporting & Obligations	20
7.1.2 Regulatory Mandates and Obligations	21
7.2 Phasing out of Flushing Program	21
<b>8 CONTACT INFORMATION</b>	<b>21</b>

## **New Watermain Commissioning Requirements – Framework**

### **Consultant's Checklist**

Ensure all items in the checklist are completed and sent to the City of Vaughan forming a complete commissioning package.

**\*Please note that all documents related to commissioning must go through the Consultant as the primary source of contact\***

#### **Step 1: [Drinking Water Works Permit \(DWWP\)](#)**

Submit Form 1: Record of Watermains Authorized as Future Alteration (**if required**)

Submit Form 2: Record of Minor Modifications or Replacements to the Drinking Water System

Submit Form 3: Record of Addition, Modification or Replacement of Equipment Discharging a Containment of Concern to the Atmosphere

#### **Step 2: Pre-Construction Meeting**

Arrange a mandatory preconstruction meeting to discuss the commissioning proposal ahead of commissioning with all parties including:

- City of Vaughan's Engineering Department (Development Engineering and/or Infrastructure Delivery)
- City of Vaughan's Environmental Services Department (Water Division, Compliance Division, Backflow Prevention and Business and Operational Support)
- Developer (if applicable)
- Contractor(s)
- Consultant(s)

#### **Step 3: Disinfection Proposal Plan Submission**

##### **Engineering Drawings**

Submit one (1) hard copy of 11 x 17 and one (1) hard copy of 24 x 36 of Engineering Drawings delivered to:

**City of Vaughan Environmental Services – Water Division  
2800 Rutherford Road, Vaughan, ON L4K 2N9**

Email an electronic copy (including plan and profile) to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca)

##### **Commissioning/Disinfection Proposal**

Submit a Disinfection Proposal plan and required documents to Environmental Services Department at [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca)

[Watermain Disinfection Checklist for Contractors & Subcontractors](#) from the commissioning contractor

Submit a copy of Appendix Q4 – [Contractor/Subcontractor Site Summary](#)

Submit a copy of Appendix Q5 – [Watermain Disinfection Plan – Disinfection Criteria](#)

Submit a copy of Appendix Q6 – [Watermain Disinfection Plan – Disinfection Site Map/Swabbing Plan/Sketch](#)

Submit a copy of Appendix Q8 – [Disinfection Records](#)

Submit a copy of Appendix Q9 – [Dechlorination/Discharge Log](#)

Submit a copy of Appendix Q11 – [Exception Request Form](#) (if required)

Submit a copy of Appendix Q12 – [New Development Watermain Flushing Program Form](#) (if required)

Submit a copy of the MECP issued water operator licenses from the commissioning contractor for all operators who will be taking part in watermain commissioning activities  
Disinfection Proposal plan

**New Development – Water Quality Flushing Program Proposal (if required for the site)**

The Proponent or authorized agent shall submit a Flushing Proposal plan and required documents to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca) including:

- A copy of the MECP issued water operator licenses from the flushing contractor for all operators who will be performing water quality flushing
- Flushing Proposal plan
- Associated Engineering Drawings
- Appendix Q12 – [New Development Watermain Flushing Program](#)
- For more information please visit the Water Quality Flushing Program section of the [Contractors and New Developments](#) web page

**Requirements for City of Vaughan Operators Coming to Site**

There must be base granular poured on site so that Operators can safely drive and walk the site  
Stubs rodded to the main

The pipe must be installed, and sampling points must be brought to the nearest curb

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### **Proposal Review**

The review and approval process requires five (5) business days from the date of submission. If any of the required documents or information is missing, you may be required to resubmit the proposal at which point it will be treated as a new submission and will require another five (5) business days.

**Note: Changes cannot be made to an approved proposal unless the proponent submits the changes to Environmental Services at [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca) for review and obtains approval.**

### **Scheduling Commissioning Activities**

Scheduling of operators for commissioning activities must be coordinated through the Environmental Services Administration with a minimum of three (3) business days' notice to the City. Upon review by the City and confirmation of commissioning plan, the proponent may proceed to scheduling.

### **Microbiological Sample Results**

It is the responsibility of the proponent to request and obtain laboratory results from Environmental Services.

### **Final Connection(s)**

Closure piece(s)/final connection(s) and Water Quality Flushing program (if required) shall be completed within fifteen (15) calendar days from the (set #2) sampling date of the last successful round of samples. Failure to comply with this requirement may result in additional round(s) of sampling or recommissioning.

### **Final Assumptions/Water Quality**

#### **Water Quality**

Proponent is responsible for maintaining water quality at the new development site.

**Implementation shall occur after completion of the closure piece(s)/final connection(s)** and within fifteen (15) calendar days from the (set #2) sampling date of the last successful round of samples. Failure to comply with this requirement may result in additional round(s) of samplings or recommissioning.

### **Mandatory Submission**

Submit 3<sup>rd</sup> party Chlorine Residuals and Consumption Log sheet(s) every Monday for the previous week to [watertests@vaughan.ca](mailto:watertests@vaughan.ca)

- Follow the City of Vaughan's Water Quality Flushing program criteria
- Ensure payment of your water usage invoice to the City

### **Flushing Program**

For flushing program reduction and cessation, complete the [City's Environmental Services Flushing Program: Consumption Calculation](#) form and submit it to [watertests@vaughan.ca](mailto:watertests@vaughan.ca)

For more information refer to section 7 of this document.

## NEW WATERMAIN COMMISSIONING REQUIREMENTS

### 1 Introduction

#### 1.1 Obligations

The City of Vaughan has adopted the Ontario Ministry of the Environment, Conservation and Parks (MECP) Watermain Procedure for commissioning all new and temporary watermains. The City of Vaughan also has an obligation to adhere to the most current versions of the following:

- Municipal Drinking Water License
- Drinking Water Works Permit (DWWP)
- Ministry's Watermain Disinfection Procedure
- AWWA Standards C651 / C655
- City of Vaughan's most recent By-Laws (or otherwise amended)
  - Backflow Prevention: [177-2020](#)
  - Water: [177-2016](#)
  - Water Rates: [155-2021](#) & Wastewater Rates: [156-2021](#)

These requirements apply to all watermains, of any size, including temporary watermains. Service pipes of 100mm diameter and above shall be considered a watermain for the purposes of this procedure.

**All new watermains will be physically separated from the existing water distribution system during the commissioning process. Requests for isolation (by a valve) of the new watermain from the existing water distribution system will be reviewed on a case-by-case basis and will only be approved if physical separation is not a viable option and complies with watermain disinfection procedure requirements.**

**It will be the responsibility of the Proponent to demonstrate that isolation by a valve is the only available option. The decision of the City of Vaughan will be considered final.**

City of Vaughan's certified operator is required to witness and verify all commissioning activities including:

- Watermain Live Taps
  - By-pass installation on the City's water distribution system
  - Capping the existing service on the distribution system
  - Physical separation
  - Isolation by a valve (special case)
  - Condominium, Commercial, Industrial, Private Townhomes, Institutional
- ONLY City side distribution system (service line from City's distribution system to property line valve).  
The Proponent is responsible for hiring a contractor to commission the private side plumbing.**

**Plan(s) shall be reviewed and approved by the Environmental Services - Water Division prior to any work commencing.**

The review and approval process may require five (5) business days from the date of submission. If any of the required documents or information is missing, you may be required to resubmit the proposal at which point it will be treated as a new submission and will require another five (5) business days.

**Note:** Changes cannot be made to an approved proposal unless the proponent submits the changes to Environmental Services at [newmain@vaughan.ca](mailto:newmain@vaughan.ca) for review and obtains approval.

**Note:** Approval for closure pieces will not be granted prior to submission of Flushing Program Proposal if required.

### **New Development – Water Quality Flushing Program Proposal (if required for the site)**

The Proponent or authorized agent shall submit a Water Quality Flushing Proposal and required documents to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca) including:

- A copy of the MECP issued water operator licenses from the flushing contractor for all operators who will be performing water quality flushing
- Water Quality Flushing Proposal plan
- Associated Engineering Drawings

Plan(s) shall be reviewed and approved by the Environmental Services – Compliance Division prior to any work commencing and will include:

- Flushing program shall include watermain dimensions, watermain length, flushing locations, discharge locations, residual sampling locations and all hydrants.
- Flushing velocity, directional flushing runs and calculation of pipe volume for each flushing run.

For more information, please review section 7.

**The flushing proposal must be received by the City for review before the final connection piece, but can be submitted after the commissioning proposal has been submitted.**

**All bypass assemblies are required to be kept heated following installation and prior to completion of commissioning activities from November 14th to April 14th of each calendar year.**

### **1.2 Commissioning Schedule Requests**

All requests for commissioning activities must be scheduled through the Environmental Services Administration by providing a **minimum of three business days' notification** to the City by making a request to [newmain@vaughan.ca](mailto:newmain@vaughan.ca) providing dates and times for all requested commissioning activities.

## **2 Service Pipes**

- Service pipes 100 mm in diameter and greater shall be considered watermains and shall be disinfected and tested in accordance with the requirements of ANSI/AWWA standard C651 and Watermain Disinfection Procedure.

- City of Vaughan’s certified operator must witness all new watermain commissioning activities.
- For service pipes less than 100 mm in diameter, City of Vaughan’s certified operator shall ensure that sanitary conditions are maintained during the installation/repair and that they are flushed by the contractor prior to being placed into service.

### 3 Relining of Watermains

Consult the City of Vaughan’s Environmental Services - Water Division and Compliance Division for site specific commissioning procedure(s).

### 4 New Watermains – Physically Separated from Existing Watermain

**City of Vaughan’s certified operator must be present to witness all steps within this procedure.**

All requests for commissioning activities must be scheduled through [newmain@vaughan.ca](mailto:newmain@vaughan.ca) by providing a **minimum of three (3) business days’ notification** to the City.

**The Proponent is responsible for having the contractor/subcontractor on site during all scheduled commissioning appointments with the City.**

#### 4.1 Source

To obtain potable source water contractors have the following options:

1. Live Tap with a valve to connect to the existing water distribution system
2. Cut in “T” with a valve to connect to the existing water distribution system
3. Use an existing City fire hydrant – It is the responsibility of the Proponent to demonstrate that options 1 and 2 are not viable. Requests to use City hydrants will be reviewed on a case-by-case basis and used only under special circumstances.

Shall follow the Ministry’s Watermain Disinfection Procedure for cleaning/ disinfection and maintain sanitary conditions during repair/installation. After source is obtained, install the commissioning by-pass with water meter and backflow prevention device.

#### 4.1.1 Live Taps

- City of Vaughan’s certified operator must witness all steps; disinfection, installation, pressure test, live tap and pipe assembly as well as Tap location to backflow preventer installation.
- The pipe surface at the location of the tap shall be cleaned and disinfected using a minimum 1% sodium hypochlorite solution. Where applicable, the drill/cutting/tapping bits and all surface of main stops, service saddles, tapping sleeves, and valves which will come into contact with drinking water shall be cleaned



and disinfected using 1% sodium hypochlorite solution immediately prior to installation. If any of the disinfected surfaces come into contact with soil and/or water in the excavation prior to use, the cleaning and disinfection procedure shall be repeated.

- To ensure there are no leaks between the watermain surface and service saddle prior to live tap, any live tap above 2" (50mm) shall be pressurized at **150 psi (1034 kPa)** for 30 minutes with no leaks.
- Provide the Watermain Tap coupon to the City of Vaughan's certified operator for inspection.

#### 4.1.2 Cut in "T"

- May require watermain shutdown and notification. At the time of scheduling with Environmental Services, a list of the affected addresses (those impacted by the shutdown) along with a water disruption notice shall be submitted to the City of Vaughan for review prior to distribution. It is the responsibility of the Proponent of the shutdown to provide a **minimum of 48 hours' notice** to those who will be affected by the water service disruption after the shutdown request has been reviewed and approved by the Environmental Services - Water Division.

Only City of Vaughan's certified operators are authorized to operate valves. City of Vaughan's certified operators shall witness pipe cutting/installation. The pipe surface shall be cleaned and disinfected using minimum 1% sodium hypochlorite solution. Where applicable, the couplings, fittings, pipe, valve, and all surface which will come into contact with drinking water shall be cleaned and disinfected using minimum 1% sodium hypochlorite solution immediately prior to installation. If any of the disinfected surfaces come into contact with soil and/or water in the excavation prior to use, the cleaning and disinfection procedure shall be repeated. Ensure that sanitary conditions are maintained during cutting and installation.

#### 4.1.3 Hydrant

- Proponent to demonstrate that a Live Tap or cut in "T" are not viable options. Requests will be reviewed on a case-by-case basis with a fire hydrant permitted as a source if it is shown to be the only available option.
- Once approved, the Proponent shall follow site specific hydrant disinfection and microbiological sampling requirements prior to using the hydrant as the source.
- The hydrants shall undergo a three-hour slug with a blind seat installed to plug drain ports and then collect samples.
- Consult the Environmental Services - Water Division for hydrant disinfection and

sampling procedures.

#### 4.2 Backflow Prevention

All potable water obtained from the City of Vaughan's water distribution system and used for the commissioning procedure shall first pass through a by-pass, water meter and a backflow prevention device.

The applicant is responsible for obtaining a CSA B64 certified **Reduced Pressure Principle Assembly (RP)** and to ensure it is installed in accordance with the Backflow Prevention By-law [177-2020](#), CSA B64 (as amended) and manufacturers specifications.

As per the Backflow Prevention By-law, the owner, contractor or person who creates an illegal connection shall be liable for all costs associated with the work undertaken by the City or its agents, to restore the status of the Municipal drinking water system.

The minimum backflow preventer sizes are summarized in the table below.

Size of Watermain	Minimum Bypass Size
<p>&lt;150 mm</p> <p>&lt;250 m of 200 mm diameter</p> <p>&lt;150 m of 300 mm diameter</p>	50 mm
200 mm – 400 mm	100 mm
>450 mm	Size to be approved by the City of Vaughan

##### 4.2.1 Commissioning BFP Installation and Certification

RP backflows are **not** permitted to be installed in a below grade structures (chambers, trenches, etc.). The bottom of the pressure differential relief vent must be between **750 mm (minimum) and 1500 mm (maximum)** above the potential floodplain.

Only City of Vaughan's certified operators are authorized to operate the control valve to complete any flushing or to provide source water to test the backflow preventer. All backflow preventers are to be supplied, installed, and maintained by the Proponent.

The Proponent is responsible for hiring an approved Qualified Company as identified by the City of Vaughan, who is authorized to install and perform a test on the backflow preventer.

The selected company should be scheduled to attend the site at the same time as the City is scheduled to turn the source water supply on, to ensure the City is present to verify the operation of the backflow preventer.

If the backflow preventer is located inside a property lot line valve chamber, the person making this request is responsible for ensuring the Qualified Company is permitted to work within a confined space.

The completed Backflow Preventer Test and Inspection Report must be submitted to [backflow@vaughan.ca](mailto:backflow@vaughan.ca) within 14 days from the date the backflow preventer was tested. An example of this form is included in this document and also found at the [City of Vaughan Backflow website](#)

The Proponent is responsible for recording water meter readings prior to and after commissioning and submitting photos of both to the City via [newmain@vaughan.ca](mailto:newmain@vaughan.ca)

The commissioning backflow preventer is only required to be tested for the first installation of the day. If the backflow needs to be relocated, please see Contractor/Subcontractor Site Summary – Backflow Preventer Device Summary.

As per the MECP Watermain Disinfection Procedure, if a backflow preventer is relocated within the same day, testing is only required for the first installation of the day provided that the backflow preventer is relocated.

**Note: The City of Vaughan reserves the right to request proof of a valid OWWA Cross Connection Control Tester certificate for the individual performing the backflow field test.**

#### 4.2.2 Removal

Backflow and by-pass arrangements must remain installed until completion of the final connection/closure piece. For early removal of the backflow preventer and by-pass, the request must be approved by the Environmental Services - Water Division. **Failure to obtain approval may result in the Proponent having to recommission the site.**

For the purposes of CSA Standard B64.10, a backflow prevention tester's license shall be an Ontario Water Works Association (OWWA) Certified Cross Connection Control Specialist Certificate or a Ministry-approved equivalent. In addition to the list of professionals in Table 1 of Figure E.1. of CSA Standard B64.10, a Certified Operator or a Water Quality Analyst with a backflow prevention tester's license shall also be authorized to test, install, relocate, repair or replace backflow preventers used in the installation and commissioning of new watermains.

#### 4.3 Loading and Swabbing

- All swabs shall be clean and new.
- Swabs shall be **one size** larger than the pipe diameter.
- All swabs shall be marked by the number in the order by which they are launched.
- A minimum of 2 swabs are required for each section of watermain including all hydrants and appurtenances.
- City of Vaughan's certified operator may request the use of additional swabs to achieve

better results.

- All swabs must be collected after launching.
- For sections of watermain that cannot be swabbed due to a butterfly valve installation, size or pipe material, the watermain shall be flushed as per AWWA C651 to ensure a minimum flushing velocity of 3.0 ft/sec (0.91 m/s) in order to achieve 2.5 to 3.0 log removal of particles.

#### 4.4 Flushing for Turbidity and Turbidity Testing

- The watermain shall be flushed to ensure that air and other material(s) have been removed. This includes all hydrant leads, services lines, branch connections and sample points.
- **All hydrants must be flushed with high velocity until turbidity achieved is less than 1.0 NTU, since the hydrant/lead is NOT part of swabbing.**  
The watermain must be flushed until a turbidity of less than 1.0 NTU is achieved. If turbidity of 1.0 NTU cannot be achieved the watermain is required to be re-swabbed.
- A turbidity reading shall be taken at each sample location and hydrant documented on the Disinfection Record.
- The flushing velocity shall not be less than 3.0 ft/sec (0.91 m/s) in order to achieve 2.5 to 3.0 log removal of particles as per AWWA C651. If such flow rate is not possible, then flushing at the maximum expected velocity for the line for 2-3 times the volume of the line may be acceptable.

#### 4.5 Hydrostatic Pressure Testing

- City of Vaughan's certified operator must witness all new watermain commissioning activities.
- A safety restrainer is required on all riser caps.
- Prior to the start of the pressure test, the new watermain must be isolated from the upstream commissioning RP backflow preventer. If the backflow preventer is physically removed from the bypass piping arrangement and relocated within the same day, testing is only required for the first installation of the day provided that the backflow preventer is relocated by a Certified Operator who will guard against damage during transit and re-installation. Documentation required on Contractor/Subcontractor -Site Summary (pages 41-45). Otherwise, the backflow preventer must be recertified prior to being installed at a new location.
- Watermains must hold at **150 psi (1034 kPa)** for two (2) consecutive hours, with **no leaks** and **no additional** water added once pressurized and official pressure test has commenced.  
**Note: Only HDPE (High Density Polyethylene) watermains will have allowable leakage with respect to manufacturer's recommendations.**
- All pressure test failures will result in the rescheduling of your appointment which may include the retesting of turbidity (if a repair is made on the watermain by draining the watermain) and hydrostatic pressure test.

#### 4.6 Chlorination

- Continuous feed chlorination will be used and introduced through the by-pass (backflow preventer) using the water from the distribution system.
- Chlorine concentration results should be within the range of **80-120 ppm (mg/L)**.  
**Note: An appropriate chlorine high-count instrument shall be used to verify high chlorine concentrations.**
- The entire watermain including all stubs and hydrants shall be chlorinated.
- All sample point readings must be recorded on the Disinfection Record.

#### 4.7 Dechlorination

- An appropriate chlorine high-count instrument shall be used to verify high chlorine concentrations.  
A minimum 24-hour contact time is required and starts when the last sample from the previous date is taken. Sampling on the subsequent date should not start until the 24 hours has elapsed. **Note: No flushing shall take place between the chlorination and high-count chlorine testing (during contact time). Samples taken for high count represents the standing chlorinated water inside the watermain.**
- Chlorine contact time is a **minimum of 24 hours but no more than 72 hours**. If 72 hours is exceeded, the proponent is responsible for any high counts of chlorine.
- All sample points with high chlorine counts readings must be recorded on the Disinfection Record (page 49).

All sample locations test results shall **remain at least 60% regardless of 24-72 hours from the initial dose of chlorine to a maximum drop of 50 ppm (mg/L)**. If one of the sample locations fails, then the entire site must be re-chlorinated.

- **FAIL:** Entire watermain including stubs, hydrants, etc. All water shall be neutralized before discharging, dechlorinated as per AWWA C655-Field Dechlorination and complete the Dechlorination Log form. The Proponent or contractor shall book another appointment for rechlorination and subsequent appointments with the Environmental Services Administration.
- **PASS:** Entire watermain including stubs, hydrants, etc. All water shall be neutralized before discharging, dechlorinated as per AWWA C655-Field Dechlorination and complete the Dechlorination Log form.
- Flush the watermain, take chlorine residuals at all sample points and discharge points. Ensure that chlorine residuals at all sample points are at least 1.0 ppm (mg/L). Record all readings on the Disinfection Record form. Prepare for sampling (set #1).

#### 4.8 Sampling

- After the final flushing (dechlorination event/flushing event) and before the new watermain is connected to the existing water distribution system, two (2) consecutive sets (set #1 and set #2) of passing microbiological samples must be taken at least 16 hours apart as per AWWA C651, section 5.1.

Record final chlorine residuals on the Disinfection Record form.

- Set #1: Collected by City of Vaughan’s certified operator at one (1) or more sample locations after dechlorination or flushing of the watermain (initial samples).
- Set #2: Collected by City of Vaughan’s certified operator at one (1) or more sample locations, **no less than sixteen (16) hours** following collection of the initial samples (set #1). During the 16 hour waiting time **no flushing shall take place** to ensure samples are a representation of standing water in the watermain.
- At least one (1) set of samples shall be collected from every 360 meters (1181 feet) of the new watermain, plus one set from the end of each branch including: service lines, dead ends, branch connections (page 40).
- Sample points shall be constructed with appropriate fittings.
- Coordination to obtain samples will be arranged by the Proponent.
- All microbiological samples will be collected by City of Vaughan’s certified operator.

**Note: If more than two (2) sets (1 Round) of samples are required to obtain release of the new watermain, the Proponent shall reimburse the City for the additional cost incurred by the City resulting from the additional testing and sampling of the watermain section, consistent with City of Vaughan By-Law: [155-2021](#) & [156-2021](#) (or as otherwise amended). The first round of sampling is free and each additional round is at the cost of the Proponent.**

City of Vaughan’s Criteria for New Watermain Microbiological Tests	
<b>E. coli</b>	<b>0</b>
<b>Total Coliform</b>	<b>0</b>
<b>Background</b>	<b>&lt;= 25</b>
<b>HPC</b>	<b>&lt;= 250</b>

#### 4.9 Installation of Closure Piece/Final Connection for New Watermain Physically Separated from the Distribution System

- It is the responsibility of the Proponent to request and obtain laboratory results from the City of Vaughan’s Environmental Services Department.
- The Proponent shall coordinate with all parties in advance for the closure piece(s)/final connection(s) and book an appointment through [newmain@vaughan.ca](mailto:newmain@vaughan.ca) by providing a **minimum of three (3) business days’** notification.
- Closure piece(s)/final connection(s) shall be completed within fifteen (15) calendar days from the sampling date of the last successful round of samples in set #2. Failure to comply with this requirement may result in additional round(s) of samples or

recommissioning.

- If required, a drawing of the affected area (those impacted by the shutdown) along with a water disruption notice shall be submitted. It is the responsibility of the Proponent of the shutdown to provide a **minimum of 48 hours' notice** to those who will be affected by the water service disruption after the shutdown request has been reviewed and approved by the Environmental Services - Water Division.
- Closure pieces **shall not exceed 6 meters** with minimum connection pieces unless pre-authorized by Environmental Services.
- City of Vaughan's certified water operator **shall** witness the closure piece and final connection. The Proponent shall make arrangements for the City Inspector from the City of Vaughan's Development Engineering / Infrastructure Delivery Department to proceed with the closure piece/final connection.
- As per the MECF's Watermain Disinfection Procedure and AWWA C651, all piping must be thoroughly cleaned and disinfected using a minimum of 1% sodium hypochlorite solution immediately prior to installation (fittings shall be sprayed with a chlorine solution and pipes hand swabbed with a chlorine solution).
- To eliminate the possibility of contamination or the presence of foreign material, trench water must be kept from entering the watermain, by keeping the excavated area dewatered at all times. An air gap must be maintained between the pipe and ground water. **If the watermain becomes contaminated, the entire watermain commissioning procedure shall be repeated.**
- Once the closure piece/final connection has been completed, City of Vaughan's certified operator shall open the valve(s) to place the new watermain into service.
- As a part of placing the watermain into service, **flushing through the connection** shall be performed by City of Vaughan's certified operator until acceptable disinfectant concentration levels (chlorine residuals) are present in the new watermain. Microbiological sampling may be required.

If applicable, commence the approved flushing program for the site. The Proponent shall be responsible for implementing the New Development Flushing program no later than fifteen (15) calendar days from the sampling date of the last successful round of samples in set #2. from the closure piece/final connection date as per City of Vaughan's 3<sup>rd</sup> party flushing program criteria. Refer to section 7 for more information.

Commitment to a flushing program is required prior to approval of the closure piece.

#### 4.10 Constructed, non-Commissioned Watermain

- If the choice has been made to not fulfill the requirements of a flushing program, it will be considered a constructed watermain but "non-commissioned" unless otherwise identified by the City.
- Disconnection will not be completed by the City.
- Physical separation must be established one (1) meter outside of the valve chamber.
- A letter of intent must be supplied to the City identifying the length of time the watermain will be constructed and non-commissioned.

- Recommissioning is required.

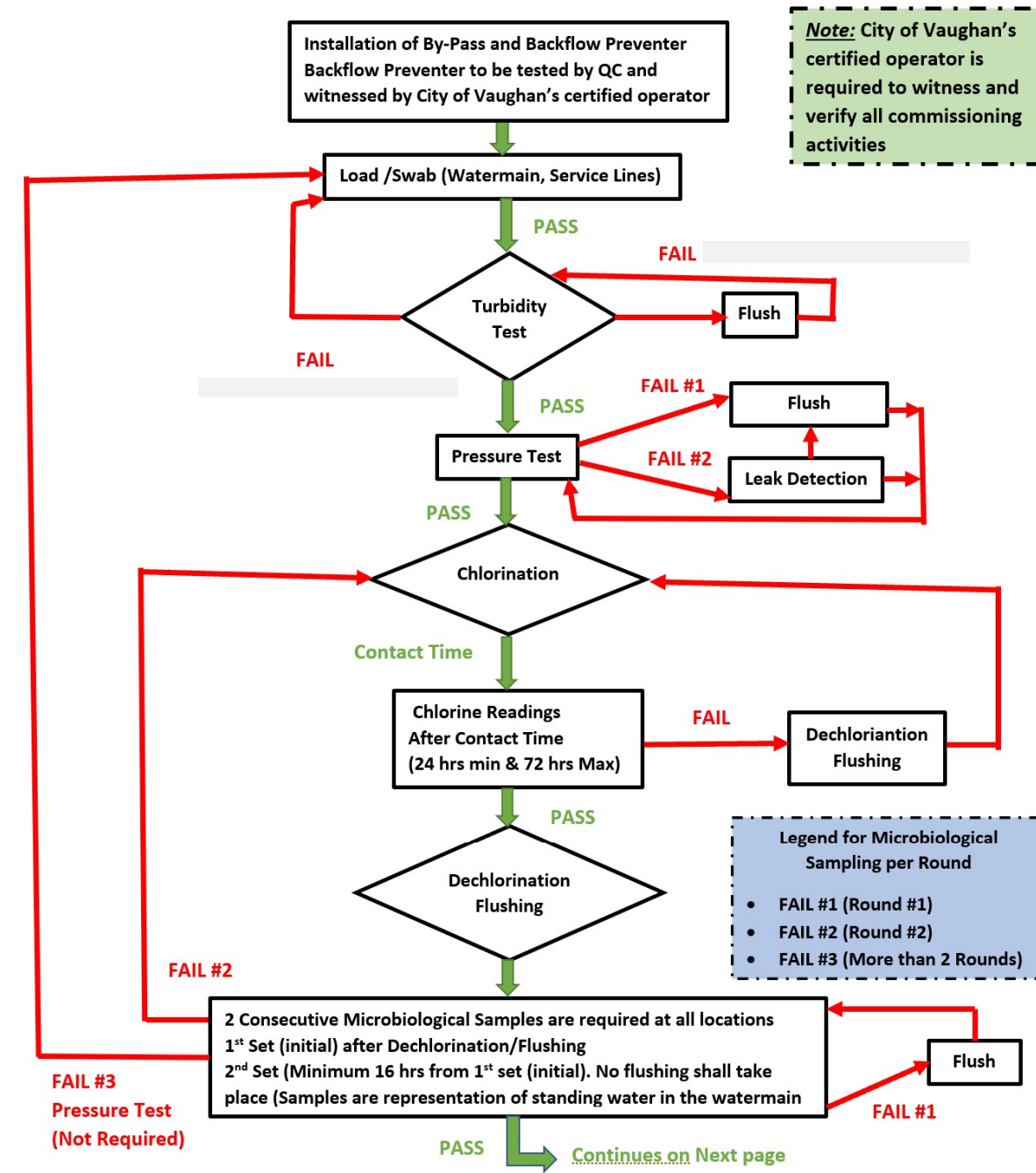
#### 4.11 Mandatory Submission

- Prior to final connections, all proposals and forms specified in this document as part of new watermain commissioning **shall** be submitted to the City of Vaughan's Environmental Services Department by email at [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca)
  - Watermain Disinfection Checklist for Contractors & Subcontractors
  - Backflow (RP), Test inspection Report
  - Contractor/Subcontractor Site Summary
  - Watermain Disinfection Plan – Disinfection Criteria
  - Watermain Disinfection Plan – Disinfection Site Map/Sketch/Swabbing Plan/Sketch
  - Disinfection Records
  - Dechlorination/Discharge LOG
  - Flushing Program Proposal (as required)

**Note: Submit all forms used for the project, including those forms which were submitted earlier.**

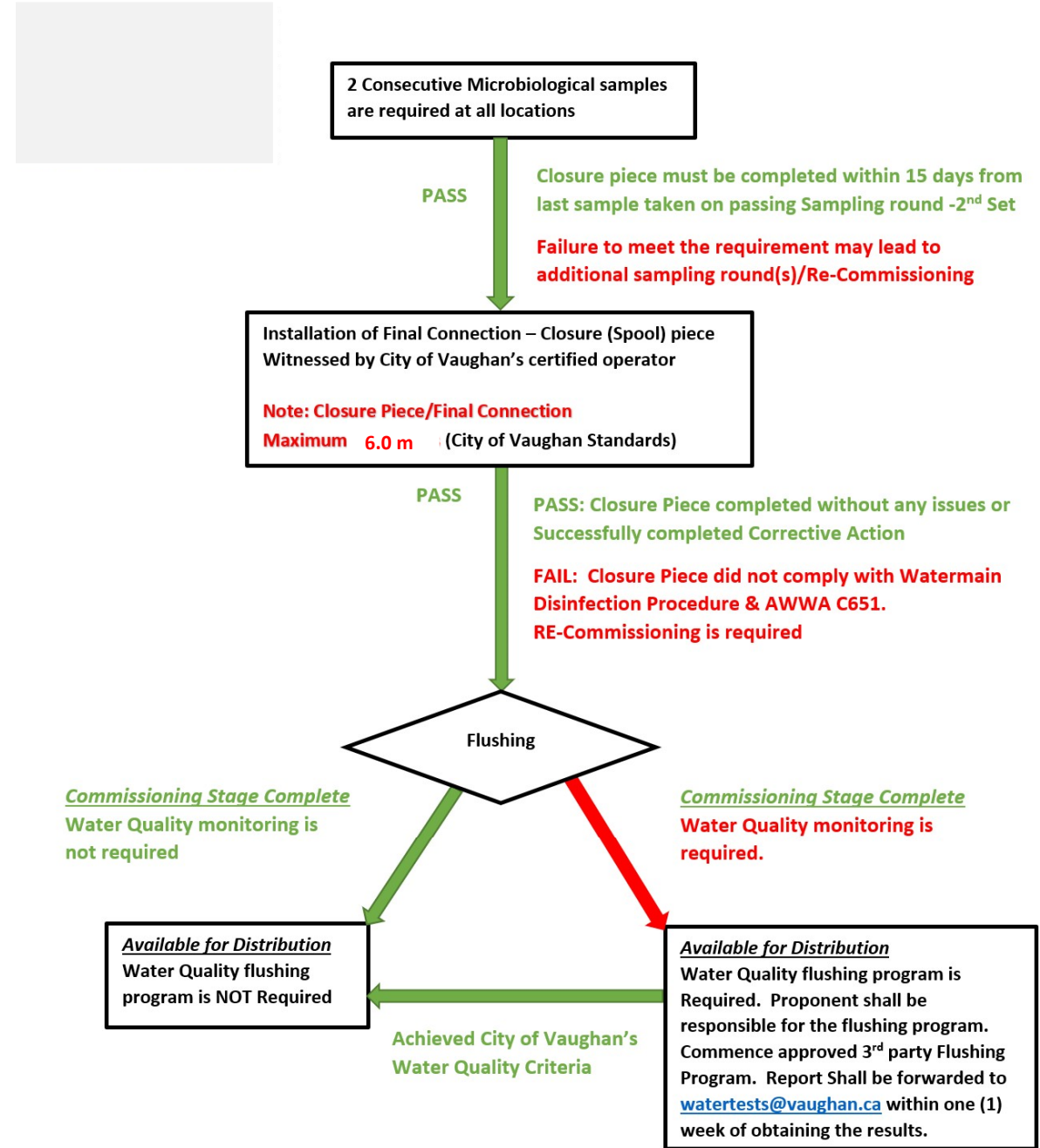


Commissioning Flow Chart: New Watermain Physically Separated from Existing Watermain



**Note:** All disinfection must be completed with most recent version of

- \* Procedure for Disinfection of Drinking Water in Ontario & Watermain Disinfection Procedure
- \* AWWA Standard for Disinfecting Watermain (C651)



## 5 New Watermain – Connections Greater Than One Pipe Length (Special Conditions)

Requests for connections greater than one pipe length and up to 40m (isolation by a valve) of the new watermain from the existing water distribution system will be reviewed on a case-by- case basis **and will only be approved if physical separation is not a viable option and the proposal complies with the MECP’s Watermain Disinfection Procedure requirements.** It will be the responsibility of the Proponent to demonstrate that isolation by a valve is the only available option. The decision of the City of Vaughan will be considered final.

**Exception: Procedure may be used for installation and disinfection of connections greater than one pipe length and up to total length 40m if the connection:**

- A. Crosses a transportation corridor; the extended closure of which could result in significant community impacts for example traffic congestion, loss of emergency access, safety concerns, or
- B. Cannot be constructed to within one pipe length of the existing watermain due to the potential of destabilizing an existing thrust block.

### Procedure:

- City of Vaughan’s certified operator must witness all new watermain commissioning activities.
- It is the responsibility of the Proponent to review and apply by completing the [Exception Request Form](#) in advance of watermain commissioning for connections more than one pipe length and up to 40m. Submit the form to Environmental Services at [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca)
- Plan shall be reviewed by the City of Vaughan’s Environmental Services Water - Division and Compliance Division. Approval will be given only if the site meets MECP criteria under the Watermain Disinfection Procedure.
- Exception request review and approval process requires five (5) business days from the date of submission. If any of the required documents or information is missing, you may be required to resubmit the proposal at which point it will be treated as a new submission and will require another five business days.
- New watermain and appurtenances forming the connection shall be hand swabbed with a minimum 1% sodium hypochlorite solution immediately prior to installation.
- Ensure that sanitary construction practices are followed, and proper disinfection is performed.
- The connection shall remain isolated from the existing drinking water system, except while being flushed or sampled, until satisfactory results are achieved.  
**Note: Only City of Vaughan’s certified operators are authorized to operate the isolation valve.**
- The watermain must be flushed until a turbidity of less than 1.0 NTU is achieved. Two (2) consecutive sets of passing microbiological samples shall be taken at least 16 hours apart. During the 16 hour wait time **no flushing** shall take place as samples are a

representation of standing water in the watermain.

**Note: The last sample taken of set #1 and first sample taken of set #2 must be at least 16 hours apart.**

- Hydrostatic testing (pressure testing) of the connection shall not be undertaken against the isolation valve until satisfactory microbiological samples are received. Hydrostatic testing shall be performed at 150 PSI for two (2) consecutive hours, with no leaks and no additional water added once pressurized. Drinking water shall be used for hydrostatic testing.

**Note: Only HDPE (High Density Polyethylene) watermains will have allowable leakage with respect to manufacturer's recommendations.**

- After the successful pressure test, schedule a City of Vaughan's certified operator within 15 days of the last passing microbiological samples to open the valve fully and place the new watermain into service. Flush the new section and take chlorine residuals.
- If required commence approved Flushing Program to ensure water quality.

#### **For Microbiological Sample Failure**

- City will review case-by-case and provide guidelines to follow.

## **6 Commissioning Backflow Preventers**

### **6.1 Private Side Testing**

As per the City of Vaughan's Water By-Law [177-2016](#) and Backflow Prevention By-Law [177-2020](#), the Proponent is fully responsible for ensuring the building's permanent backflow preventer and City's water meter are in place at the time of water turn on for the building.

Commissioning must be conducted with complete separation at the property line with an approved certified backflow preventer in place. The Proponent shall hire a contractor to commission the private side watermain.

The Proponent shall book a City of Vaughan certified operator for valve operation at the property line and to witness the backflow preventer testing, removal of the backflow preventer, the closure piece installation, the operation of property line valves and water turn off/on.

Analysis of the microbiological samples must be done by an MECP Certified Accredited laboratory. Copies of the passing sample results shall be provided to the City's Environmental Services Department via email to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca) within **15 calendar days** of the last successful round of samples.

Private services with **less than 100 mm** diameters require flushing and chlorine residual testing. Ensure combined chlorine residuals are at least 1.0 mg/L or reflective of the trend of the City's water distribution system. The Proponent/Developer is responsible for arranging a contractor to flush the watermain and take chlorine residuals on the private side after the final connection/closure piece. City of Vaughan's certified operator will confirm the readings and place the watermain into service.

The Proponent/Developer is responsible for arranging a contractor to commission the private services 100 mm in diameter or larger. Closure piece(s)/final connection(s) shall be completed within fifteen (15) calendar days of the last successful round of samples in set #2. Failure to comply with this requirement may result in additional round(s) of samples or recommissioning.

The Proponent shall provide a **minimum of three (3) business days'** notification to the City's Environmental Services Administration to schedule an appointment for the closure piece(s)/final connection(s).

The Proponent/Developer is responsible for arranging a contractor to flush the watermain and take chlorine residuals on the private side after completion of the final connection/closure piece. City of Vaughan's certified operator will confirm the readings and place the watermain into service.

## 6.2 Permanent Backflow Prevention

Permanent domestic and fire backflow prevention are to be installed without delay. The City of Vaughan will not turn on the property line valve for feed until a water meter and backflow preventers are installed and have successfully passed all testing requirements.

Premise backflow preventers are to be tested at the same time as the City is scheduled to turn on the water with completed Backflow Preventer Test & Inspection reports submitted to [backflow@vaughan.ca](mailto:backflow@vaughan.ca). Refer to section 4.2 above for testing requirements for flow preventers.

## 6.3 Permanent City Water Meter

Consult Environmental Services - Business and Operational Support, for more information visit [water meter page](#).

# 7 WATER QUALITY FLUSHING PROGRAM

## 7.1 Implementing a Flushing Program

- **Any new watermain may be required to be put on a flushing program and have a flushing program proposal submitted for review and approval at the discretion of the City of Vaughan.**
- It is the sole responsibility of the Proponent to ensure that the newly constructed watermain maintains the regulated secondary disinfection (chlorine residuals) as required as per Ontario Regulation 170/03. If a flushing program is required for the site, the Proponent shall submit a flushing proposal with copies of the 3<sup>rd</sup> party flushing contractor's MECP water operator's licenses for all staff during the proposal review and approval stage prior to commissioning the watermain, and send the documents to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca). **The City's Environmental Services – Compliance Division is responsible for the proposal review and approval of the water quality flushing program prior to the start.**

- The flushing proposal from the proponent must include a description of flushing points, discharge locations, and the size of output along with a letter of intent identifying details of AWWA C651, Table 3, and a proposed diagram to include flushing runs, calculation of proposed flushing volumes for each run and chlorine residual sampling/flushing locations.
- City of Vaughan staff reserve the right to request proof of a valid MECP water operator license from any individual performing flushing activities on its water system.
- During the winter season, road salt must be applied to those areas affected by flushing to ensure public safety.
- Uni-directional flushing shall be completed at a minimum velocity of 0.91 meters per second or 3.0 ft/sec as per AWWA Standard C651 Section 4.4.2. or as otherwise amended. If such flow rate is not possible, then flushing at the maximum expected velocity for the line for 2-3 times the volume of the line may be acceptable.
- Chlorine residuals shall be taken and recorded on the 3<sup>rd</sup> party Chlorine Residuals and Consumption form (see page 53) for residuals and flushing events. Ensure combined chlorine residuals are at least 1.0 mg/L or reflective of the trend of the City's water distribution system.
- All valves are to be returned to the open position when flushing is not taking place and all flushing and residual points are to be closed when flushing has been completed.
- The flushing program will commence no later than 15 calendar days from the date of the last successful round of samples in set #2. **Failure to comply with this requirement may result in additional round(s) of samples or recommissioning.**
- It is the responsibility of the Proponent to request and obtain laboratory results from the City's Environmental Services department.

**The City of Vaughan is the sole authority regarding approvals, change requests and the termination of all commissioning and flushing programs.**

#### **7.1.1 Program Structure, Reporting & Obligations**

- All flushing programs must start with a mandatory chlorine residual(s) sampling event with one (1) taken per week and the watermain flushed every two (2) weeks.
- The City's Environmental Services - Compliance Division shall be notified of a schedule identifying the days of the week these events will occur.
- All flushed water must pass through a water meter at all flushing and residual points.
- Every flushing and residual event shall be logged on a City issued Chain of Custody [New Development 3rd Party Chlorine Residual and Consumption form](#).
  - For Residual events log in all residual points
  - For Flushing events log in all flushing runs and all residual points
  - Submit all 3<sup>rd</sup> party Chlorine Residual and Consumption sheets to [watertests@vaughan.ca](mailto:watertests@vaughan.ca) within one (1) week of obtaining the results.
- Water consumption will be invoiced to the Proponent/Developer on a quarterly basis and will reflect the water and wastewater rates as per the current water and wastewater by-laws (or as amended).
- Invoices will include charges for both water and wastewater and a 15% administration

fee.

### 7.1.2 Regulatory Mandates and Obligations

- Operational standard for the Vaughan Distribution System – Chloraminated System
  - Minimum combined chlorine residuals must be higher than 0.30 mg/L and shall not drop below the regulated 0.25 mg/L.
  - Maximum combined chlorine residuals must be below 2.75 mg/L and shall not go above the regulated limit of 3.0 mg/L.

**Note: Ensure that instrumentation is set to the correct range as required.**

- Where combined chlorine residuals are outside of operational standards, the City of Vaughan's Environmental Services Department must immediately be notified by calling **905-832-2281 x 6208** during the business hours of 8 am to 4 pm. For results received outside of these hours including weekends and holidays please call Service Vaughan at **905-832-2281 and press 0**. A follow up email must also be sent to [watertests@vaughan.ca](mailto:watertests@vaughan.ca) confirming the results.

### 7.2 Phasing out of Flushing Program

- Reduction and phasing out of flushing programs will be determined on a case-by-case basis. Consideration will be made based on occupancy, presence of dead-end watermains, and the watermain turnover rate.
- A [Flushing Program consumption calculations form](#) must be filled out to determine the watermain turnover rate (page 55) and must be submitted with the request for program reduction or elimination by email to [watertests@vaughan.ca](mailto:watertests@vaughan.ca).

## 8 CONTACT INFORMATION

If further information is required, please contact the City of Vaughan

- **Environmental Services Administration**  
During business hours from 8:00 am to 4:00 pm by phone 905-832-2281 x 6208
- **Service Vaughan**  
After hours from 4:00 pm to 8:00 am and on weekends and holidays by phone 905-832-2281 and press 0 or by email at [servicevaughan@vaughan.ca](mailto:servicevaughan@vaughan.ca)

## Definitions

**ANSI:** American National Standards Institute

**AWWA:** American Water Works Association

**AWWA C651:** American Water Works Association Standard for Disinfecting Water Mains

**AWWA C655:** American Water Works Association Standard for Field Dechlorination

**CFU/1ml:** Colony forming unit per milliliter (lab results)

**Backflow Preventer Test & Inspection Report:** a form prescribed by the City, that documents backflow preventer information such as the make, model, serial number, size, type, installation date, installation address, the Cross-Connection Control Specialist who performed the test, and the test results.

**Certified Operator:** means, with respect to a subsystem, an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) that is applicable under that regulation to that subsystem or that type of subsystem, but does not include an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation.

**Commissioned:** Watermain deemed as "in service" by City of Vaughan staff for the distribution of potable/safe drinking water.

**Cross-Connection Control Specialist:** means an individual who has completed and passed an Ontario Water Works Association (OWWA) endorsed Cross-Connection Control course, or approved equivalent.

**CSA B64.10/B64.10.1 (B64):** means a series published by the Canadian Standards Association, as amended, which covers backflow performance, construction, selection, installation, maintenance and field-testing requirements for backflow preventers.

**Disinfection chlorine contact time:** The sample representation of standing chlorinated water from chlorination taken a minimum of 24 hours apart with no flushing shall take place during contact time.

**DWWP:** Drinking Water Works Permit provide a description of the overall system, an authority to alter the system in a specified way.

**Flushing:** The sudden rush of water for the purpose of cleaning, scouring or the turnover of a watermain.

**Form 1:** Record of Watermains Authorized as Future Alteration

**Form 2:** Record of Minor Modification or Replacements to the Drinking Water System

**Form 3:** Record of Addition, Modification or Replacement of Equipment Discharging a contaminant of concern to the Atmosphere

**MDWL:** Municipal Drinking Water Licence, information and rules for owners/operators of the systems supplying drinking water to municipalities.

**MECP:** Ministry of the Environment, Conservation and Parks

**mg/L:** Milligrams per Liter (ppm)

**Microbiological test:** water samples taken and analyzed for E. coli, Total Coliform, background microorganisms and HPC (Heterotrophic Plate Count).

**MOH:** Medical Officer of Health (York Region Public Health)

**Non-commissioned:** Watermain that is not in service and unavailable for distribution of potable/safe drinking water.

**NTU:** Nephelometric Turbidity Unit

**O.Reg.170/03:** Ontario Regulation for Drinking Water Systems under Safe Drinking Water Act, 2002

**Potable water (AWWA):** Does not contain objectionable pollutants or contaminants, and is considered satisfactory for drinking or culinary purposes.

**Operator in Charge (OIC):** MECP certified drinking water operator with a **minimum of Level 1** operator certificate.

**PPM:** Parts per million (mg/L)

**Proponent:** Person or entity conducting work. For the purposes of this procedure, a Proponent can be either the "Consulting Engineer" for new developments and/or the "Contractor" for capital projects.

**Reduced Pressure Principle Assembly (RP):** means a backflow preventer that consists of a mechanically independently acting, hydraulically dependent relief valve located in a chamber between two independent operating, force-loaded check valves.



**SAC:** Spills Action Centre (Ministry of Environment)

**Safe Drinking Water Act, 2002:** The Act recognizes that the people of Ontario are entitled to expect their drinking water to be safe and provides for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water system and drinking water testing.

**Sampling round:** Consists of two (2) sets of samples taken at least 16 hours apart (set #1 and set #2).

**Sample set #1:** Collected at one (1) or more sample locations after dechlorination or flushing of the watermain (initial samples).

**Sample set #2:** Collected at one (1) or more sample locations no less than sixteen (16) hours following collection of the initial samples (set #1). No flushing shall take place during the sixteen (16) hour time period between samples as the sample should be a representation of standing water in the watermain.

**Note: The sixteen (16) hour wait time starts when the last sample is taken in set #1, with the first sample of set #2 taken after the full sixteen (16) hours has elapsed.**

**Service connection:** A point where a drinking water system connects to plumbing.

**Service pipe:** The pipe portion of a drinking water system that extends from a watermain to the property line of a property serviced by the watermain.

**Swab:** A polyurethane foam plug used to clean the watermain.

**Turbidity:** Measured in NTU for suspended particles within the watermain.

**Live Taps/Wet Taps:** Operational task where a tapping device is used to cut (circular cut) and connect to an existing watermain under pressure. Used to connect a new watermain or service connection.

**Watermain:** means any system of pipes and appurtenances used for the distribution of drinking water, but does not include plumbing or a pumping facility.

**Watermain Disinfection Procedure:** Document created by the Ministry of the Environment, Conservation and Parks (MECP) for municipalities to follow under Ontario legislation and regulations related to drinking water.

**Appendix Q1 – Watermain Disinfection Checklist for Contractors & Subcontractors**  
 Form available at [Contractors and New Developments \(vaughan.ca\)](http://Contractors and New Developments (vaughan.ca))



**Watermain Disinfection Checklist for Contractors & Subcontractors**

Check & Verify whether you meet the minimum requirements to proceed with the project

**General Requirements**

Contractor: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

Projected Start Date: \_\_\_\_\_

- MECP Certified Operators with minimum Class 1  
 Drinking Water Operator Certificate

**Working knowledge on**

- Safe Drinking Water Act  
 Ontario Watermain Disinfection Procedure  
 AWWA C651-14 or most current version  
 AWWA C655-18 or most current version  
 City of Vaughan's Appendix Q  
 (New Watermain Commissioning Requirements)  
 City of Vaughan's Water By-Law (177-2016)  
 City of Vaughan's BFP By-Law (177-2020)  
 (Backflow Prevention)

**Disinfection Plan / Sketch**

**Site Information**

- Project Name & Number, Phase #  
 Engineering Drawings

**Equipment & Documentations**

- Record Keeping (Accurate & legible)  
 Calibrated testing kits/equipment  
 (Calibration records must be available upon request)

**Site Information / Commissioning**

- Watermain information  
 (Pipe material, size, type, length)  
 Appurtenances information  
 Identify Feed (Source Water)  
 Proper size of By-Pass &  
 Discharge installation  
 Anticipated Flushing rate  
 Scouring Velocity will be achieved  
 for flushing watermain  
 Required Volume  
 Discharge locations  
 (Identify any nearby watercourse,  
 pond, river, creek, etc.)  
 Details on Disinfection products  
 Details on De-Chlorination agents  
 Sample Locations (City Standards)  
 Procedure to prevent  
 contamination & ensure efficacy  
 of disinfection  
 Procedure to protect environment

**Pre-Disinfection/Disinfection Process**

- (BFP Certification, Flushing,  
 swabbing, cleaning, hydrostatic  
 pressure test, chlorination,  
 dechlorination, sampling)  
 Documentation / Record Keeping  
 (All Stages)

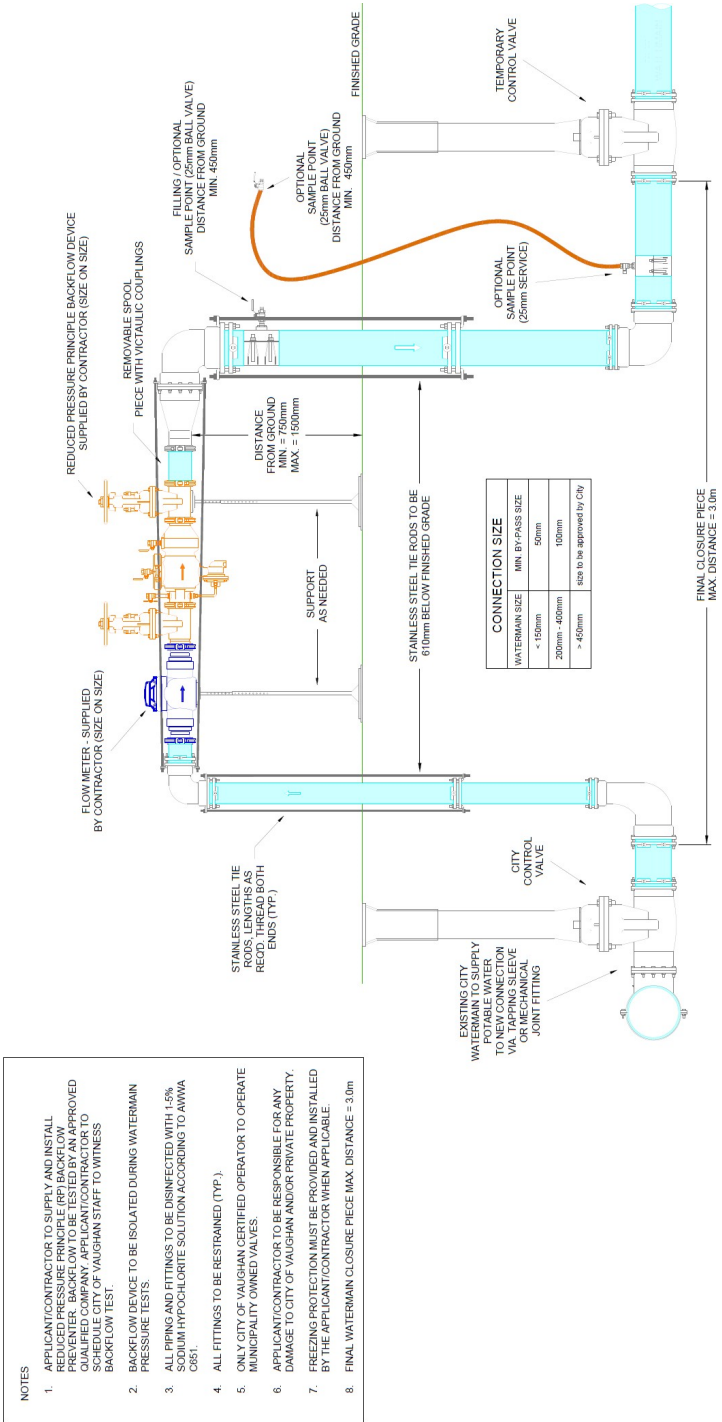
Revision (2.0): February 2022

Date: \_\_\_\_\_

Representative Name: \_\_\_\_\_ Signature: \_\_\_\_\_

**Appendix Q2 – Bypass setup with Backflow Preventer and Water Meter**

**NEW WATERMAIN BY-PASS INSTALLATION**

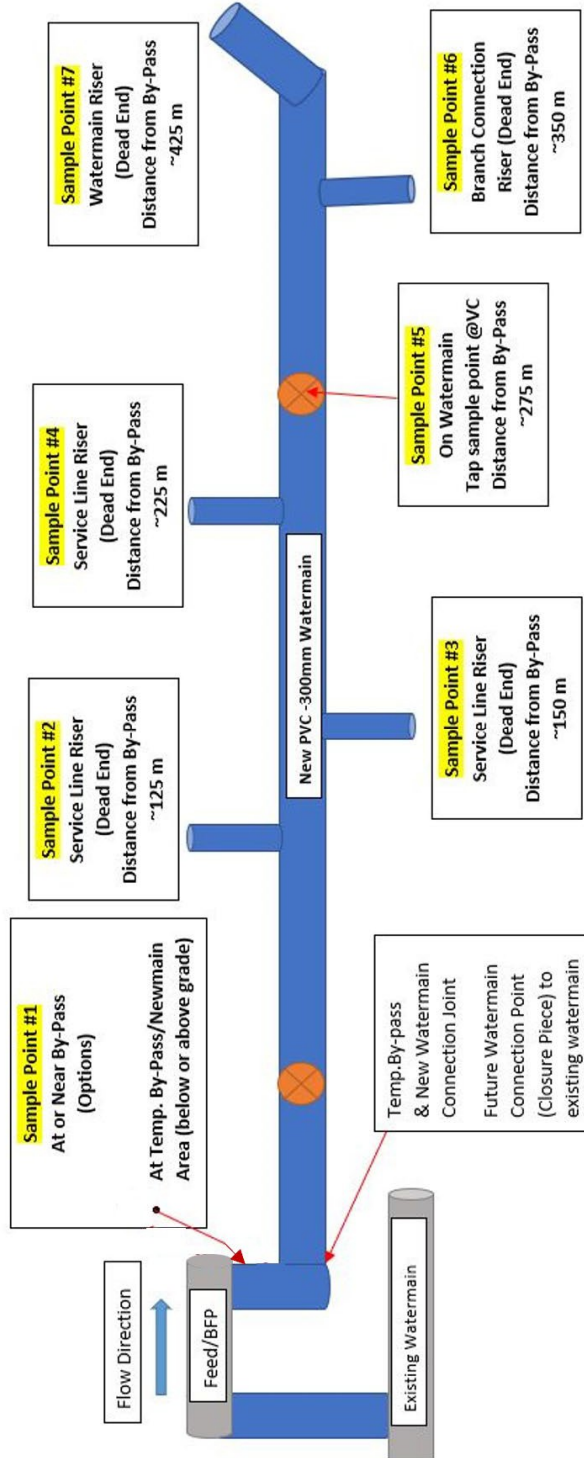


- NOTES**
1. APPLICANT/CONTRACTOR TO SUPPLY AND INSTALL BACKFLOW PREVENTER. BACKFLOW TO BE TESTED BY AN APPROVED QUALIFIED COMPANY. APPLICANT/CONTRACTOR TO SCHEDULE CITY OF VAUGHAN STAFF TO WITNESS BACKFLOW TEST.
  2. BACKFLOW DEVICE TO BE ISOLATED DURING WATERMAIN PRESSURE TESTS.
  3. ALL PIPING AND FITTINGS TO BE DISINFECTED WITH 1.5% SODIUM HYPOCHLORITE SOLUTION ACCORDING TO AMWA C851.
  4. ALL FITTINGS TO BE RESTRAINED (TYP.).
  5. ONLY CITY OF VAUGHAN CERTIFIED OPERATOR TO OPERATE MUNICIPALITY OWNED VALVES.
  6. APPLICANT/CONTRACTOR TO BE RESPONSIBLE FOR ANY DAMAGE TO CITY OF VAUGHAN AND/OR PRIVATE PROPERTY.
  7. FREEZING PROTECTION MUST BE PROVIDED AND INSTALLED BY THE APPLICANT/CONTRACTOR WHEN APPLICABLE.
  8. FINAL WATERMAIN CLOSURE PIECE MAX. DISTANCE = 3.0m

**Appendix Q3 – New Watermain Commissioning Schematic (Sample Points Allocations)**

**Scenario: New Watermain Commissioning schematic (Sample Points Allocation)**

- New 300 PVC Watermain for Commissioning (Total length ~ 425m) – 3 Sample Points at Watermain (Start & Every 360m or less depending on the site)
- Sample Points at all Dead Ends, Service Lines & Branch connections





## Contractor/Subcontractor Site Summary

Site Name & ID: \_\_\_\_\_ Phase #: \_\_\_\_\_ City Block #: \_\_\_\_\_

Name of the Proponent: \_\_\_\_\_

Developer: \_\_\_\_\_

Consulting Firm: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Number: \_\_\_\_\_

Contact Number: \_\_\_\_\_

Contractor (General): \_\_\_\_\_

Contractor (Commissioning): \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Number: \_\_\_\_\_

Contact Number: \_\_\_\_\_

**Commissioning - Operator information**

	Full Name	Operator ID (OWWCO)	Signature	Initials
Operator In Charge for the Project				
Operator #1				
Operator #2				
Operator #3				
Operator #4				
Operator #5				

**Live Taps**

Number of Live Tap(s): 1  2  3  4  5  N/A  or Specify: \_\_\_\_\_

Performed by (Contractor): \_\_\_\_\_

Date(s): \_\_\_\_\_

**Water Meter**

Water Meter Serial #: \_\_\_\_\_ Model #: \_\_\_\_\_ size: \_\_\_\_\_

Meter Reading @ Start: \_\_\_\_\_ (m<sup>3</sup>)

Final Readings @ Completion: \_\_\_\_\_ (m<sup>3</sup>)

Total Usage: \_\_\_\_\_ (m<sup>3</sup>)



## Contractor/Subcontractor Site Summary

### Backflow Prevention Device Summary

**\*\* ONLY CSA-CERTIFIED REDUCED PRESSURE (RP) BACKFLOW PREVENTERS SHALL BE USED \*\***  
**\*\* INSTALLATION AND TESTING REQUIREMENTS SHALL BE IN ACCORDANCE WITH CSA STANDARDS B64.10 and B64.10.1 \*\***

<b>DAY 1 - INSTALLATION INFORMATION</b>	
SN: _____	Model: _____ Size: _____
Location of Installation: _____	
Date Installed/Tested: _____	
Tester Name: _____	CCCS #: _____
<b>Day 1 - Relocation #1 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____	CCCS #: _____
<b>Day 1 - Relocation #2 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____	CCCS #: _____
<b>DAY 2 - INSTALLATION INFORMATION</b>	
N/A <input type="checkbox"/>	
SN: _____	Model: _____ Size: _____
Location of Installation: _____	
Date Installed/Tested: _____	
Tester Name: _____	CCCS #: _____
<b>Day 2 - Relocation #1 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____	CCCS #: _____
<b>Day 2 - Relocation #2 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____	CCCS #: _____



## Contractor/Subcontractor Site Summary

<b>DAY 3 - INSTALLATION INFORMATION</b>	N/A <input type="checkbox"/>
SN: _____ Model: _____ Size: _____	
Location of Installation: _____	
Date Installed/Tested: _____	
Tester Name: _____ CCCS #: _____	
<b>Day 3 - Relocation #1 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____ CCCS #: _____	
<b>Day 3 - Relocation #2 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____ CCCS #: _____	
<b>DAY 4 - INSTALLATION INFORMATION</b>	N/A <input type="checkbox"/>
SN: _____ Model: _____ Size: _____	
Location of Installation: _____	
Date Installed/Tested: _____	
Tester Name: _____ CCCS #: _____	
<b>Day 4 - Relocation #1 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____ CCCS #: _____	
<b>Day 4 - Relocation #2 Summary</b>	
Located to: _____	
Certified Operator in Charge of Relocation: _____ CCCS #: _____	
<b>DAY 5 - INSTALLATION INFORMATION</b>	N/A <input type="checkbox"/>
SN: _____ Model: _____ Size: _____	
Location of Installation: _____	
Date Installed/Tested: _____	
Tester Name: _____ CCCS #: _____	
<b>Day 5 - Relocation #1 Summary</b>	
Located to: _____	



## Contractor/Subcontractor Site Summary

Certified Operator in Charge of Relocation: _____ CCCS #: _____
<b>Day 5 - Relocation #2 Summary</b>
Located to: _____
Certified Operator in Charge of Relocation: _____ CCCS #: _____

### **Swabbing**

Number of Watermain Swabbing Round(s):    1    2    3    4    5    N/A

Date(s): \_\_\_\_\_

### **Turbidity**

Number of Turbidity Round(s):    1    2    3    4    5    6    7    8    or Specify: \_\_\_\_\_

Date(s): \_\_\_\_\_

### **Hydrostatic Testing (Pressure Test)**

Number of Hydrostatic Pressure Test Round(s):    1    2    3    4    5    or Specify: \_\_\_\_\_

Date(s): \_\_\_\_\_

City of Vaughan Pressure Test #: \_\_\_\_\_

### **Chlorination**

Number of Chlorination Round(s):    1    2    3    4    5    or Specify: \_\_\_\_\_

Date(s): \_\_\_\_\_





## Contractor/Subcontractor Site Summary

### **Chlorine High Count Results – Contact Time (Minimum 24 hrs. to Maximum 72 hrs.)**

Number of Successful Round(s): 1  2  3  4  5  or Specify: \_\_\_\_\_

Date(s) \_\_\_\_\_

Number of Unsuccessful Round(s): 1  2  3  4  5  N/A

Date(s) \_\_\_\_\_

### **Dechlorination/Flushing History**

Number of Flushing/Dechlorination Round(s): 1  2  3  4  5  6  7  8   
or Specify: \_\_\_\_\_

Date(s): \_\_\_\_\_

### **Microbiological Sampling**

Tracking #: \_\_\_\_\_

Number of Sampling Round(s): 1  2  3  4  5  6  7  8  or Specify: \_\_\_\_\_

(Note: Each Round contains 2 sets of samples)

### **Final Connection/Closure Piece**

Total Number of Final Connection(s)/Closure Piece(s): 1  2  3  4  5  or Specify: \_\_\_\_\_

### **Comments:**

Representative Name: \_\_\_\_\_ Signature: \_\_\_\_\_



**Appendix Q5 Form available at [Contractors and New Developments \(vaughan.ca\)](http://Contractors and New Developments (vaughan.ca))**

***Watermain Disinfection Plan – Disinfection Criteria***

Project Name & ID: \_\_\_\_\_ Phase #: \_\_\_\_\_ City Block #: \_\_\_\_\_

Type of Project: New  Subdivision  Replacement Watermain  By-Pass/Temporary By-Pass

We acknowledge that every precaution shall be taken during the inspection and any remedial work, to keep the watermain clean and free of contaminants which may affect the disinfection. If an area of watermain is found to contain dirt or debris that is thought to be foreign to the pipe it should be removed, and the area cleaned. We acknowledge that a City of Vaughan operator will be present to witness every step of this procedure.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Pipe Information:  PVC  HDPE  Copper  D.I.  C.I.  Other: \_\_\_\_\_

Total Number of Hydrants: \_\_\_\_\_ Total Number of Stubs/Dead Ends: \_\_\_\_\_

Butterfly Valves:  Yes\*  No \*If the line is equipped with butterfly valves and is unable to be swabbed, the line must be flushed with three times the pipe volume

**Pipe Sizes & Total Length:**

100 mm, Total Length: \_\_\_\_\_ m  150 mm, Total Length: \_\_\_\_\_ m  200 mm, Total Length: \_\_\_\_\_ m

250 mm, Total Length: \_\_\_\_\_ m  300 mm, Total Length: \_\_\_\_\_ m  350 mm, Total Length \_\_\_\_\_ m

400 mm, Total Length: \_\_\_\_\_ m  Other Size: \_\_\_\_\_ mm Total Length: \_\_\_\_\_ m

Total Volume: \_\_\_\_\_ m<sup>3</sup> Anticipated Disinfection Concentration: 80-120 mg/L

Disinfection Product Name: \_\_\_\_\_  Meet NSF/ANSI/CAN 60 Requirements

Expiry Date: \_\_\_\_\_ Required Dosage for Disinfection: \_\_\_\_\_

**Backflow Prevention**

Backflow Preventer (BFP):  50 mm (2")  100 mm (4")  150 mm (6")  200 mm (8")

**(ONLY Reduced Pressure Backflow)**

Scouring Velocity: 3 ft/s

Location of BFP/By-Pass: \_\_\_\_\_

Disinfection Method: **Continuous Feed**  Contact Time: 24 hrs. (Preferable) to 72 hrs.

Discharge Location:  Storm Sanitary  Overland  Other  \_\_\_\_\_

Any Watercourse Nearby:  No  Yes, Specify: \_\_\_\_\_ (Pond, River, Creek, etc.)

Initial Water Meter Reading: \_\_\_\_\_ Final Water Meter Reading: \_\_\_\_\_

Discharge Concentration Monitored and Logged: 0.00 mg/L  Dechlorination Product Name: \_\_\_\_\_

Expiry Date: \_\_\_\_\_

Name of the Contractor/Company: \_\_\_\_\_ Date: \_\_\_\_\_

Representative Name: \_\_\_\_\_ Signature: \_\_\_\_\_



### Watermain Disinfection Plan - Disinfection Site Map/Swabbing Plan/Sketch

Project Name & ID: \_\_\_\_\_ Phase #: \_\_\_\_\_ City Block #: \_\_\_\_\_

**Swabbing Required:**

- No, Specify: \_\_\_\_\_
- Yes, Identify the following

- Watermain Sizes • Swabs sizes • Number of swabs being used • Identify the Path of Swabbing, Open/Close Valves (Path-1, Path-2, Path-3, etc.)

**Identify:**

- Watermain • Source/Backflow (BFP) • Water Meter(M) • Chlorine injection point(IP)
- Identify the Path of Chlorination, Open/Close Valves (Path-1, Path-2, Path-3, etc.)
- Dead Ends/Stubs (E1, E2, E3, etc.) • Valve Chambers (VC1, VC2, VC3, etc.)
- Valve Boxes (VB1, VB2, VB3, etc.) • Hydrants (HYD1, HYD2, HYD3, etc.) • Flushing Points (F1, F2, F3, etc.)
- Discharge Points (D1, D2, D3, etc.) • Sample Locations (S1, S2, S3, etc.) • Pressure Testing Points (P1, P2, etc.)

Name of Contractor/Company: \_\_\_\_\_ Date: \_\_\_\_\_

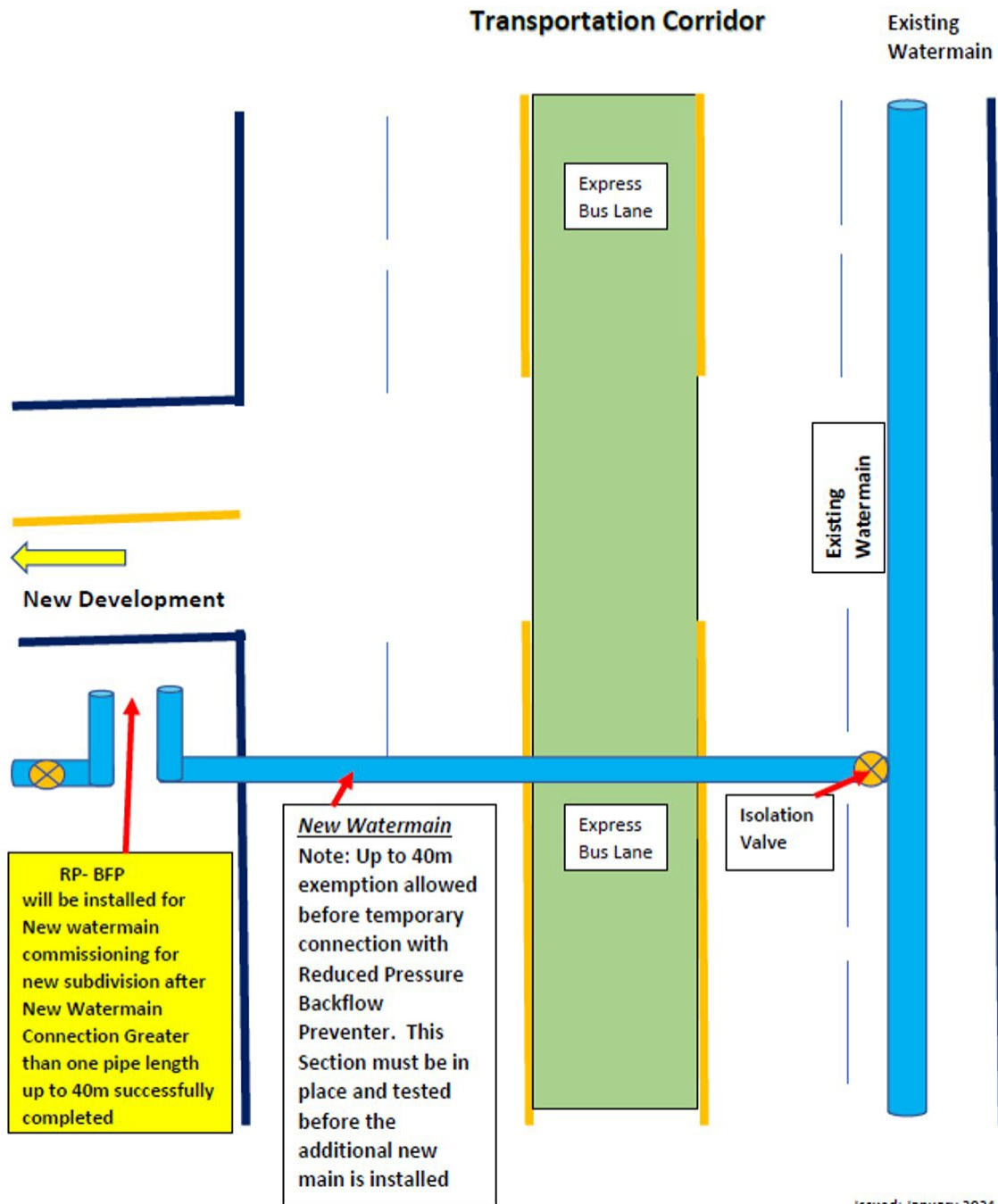
Representative Name: \_\_\_\_\_ Signature: \_\_\_\_\_





**Appendix Q9 – Exception for Connection Greater than one Pipe Length (Scenario)**

Exception for Connection Greater than one Pipe Length  
(Scenario)





## **Exception Request Form**

**Connection greater than one pipe length (6m) up to 40m  
To be completed prior to project start date**

To be completed by Proponent	
<b>Project Details</b>	
Site Name & Phase # (if Available)	
Project #	
Engineering Drawing #:	
Site Location	
Pipe Material	
Pipe Size	
Appurtenances Information	
Total Length of Connection (up to 40m)	
Provide Highlighted site plan for the connection	
<b>Reason for Exception Request (under section 1.1.4.2 of the Ontario Watermain Disinfection Procedure)</b>	
Connection Cross a Transportation Corridor	
Traffic Congestion	
Loss of emergency vehicle access	
Safety Concerns	
Destabilizing an existing thrust block	
Other	
<b>Verification</b>	
Name of the Project Engineer	
Date	
Signature	

To be completed by City of Vaughan ORO	
<b>Review</b>	
Date request received	
Exception Request Approved (Yes or No)	
Date decision made	
Name of ORO	
Signature of ORO	



**New Development Watermain Flushing Program  
3rd Party Chlorine Residuals/Consumption**

Flushing Contractor: Consulting Engineering Firm (if known): Developer (if known): Site / Location: Reporting Year:	Submit completed form within 1 week of sample date to <a href="mailto:watertests@vaughan.ca">watertests@vaughan.ca</a> *
---	--

Date	Time	Sample location	Flushing Point (FP)? Residual Point (RP)?	Consumption (m3)			Chlorine Residuals			Operator Name and Initials
				Meter Read Start	Meter Read End	Total Volume	Total (mg/L)	Free (mg/L)	Combined (mg/L)*	
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							
			FP RP							

**\*Operational standards for the City of Vaughan are as follows: Minimum combined chlorine residual = 0.30mg/L, Maximum combined chlorine residual = 2.75mg/L. Where Combined chlorine residuals are out of operational standards, you must immediately contact ACCESS VAUGHAN IMMEDIATELY at 905-832-2281**

**6-10.** (1) The owner of a drinking water system and the operating authority for the system shall ensure that, for every sample required by this Regulation or by an approval, municipal drinking water licence or order, including an OWRA order, a record is made of the following information:

1. The date and time the sample was taken, the location where the sample was taken and the name of the person who took the sample

\* Once printed or data has been electronically populated, this form is no longer controllable.



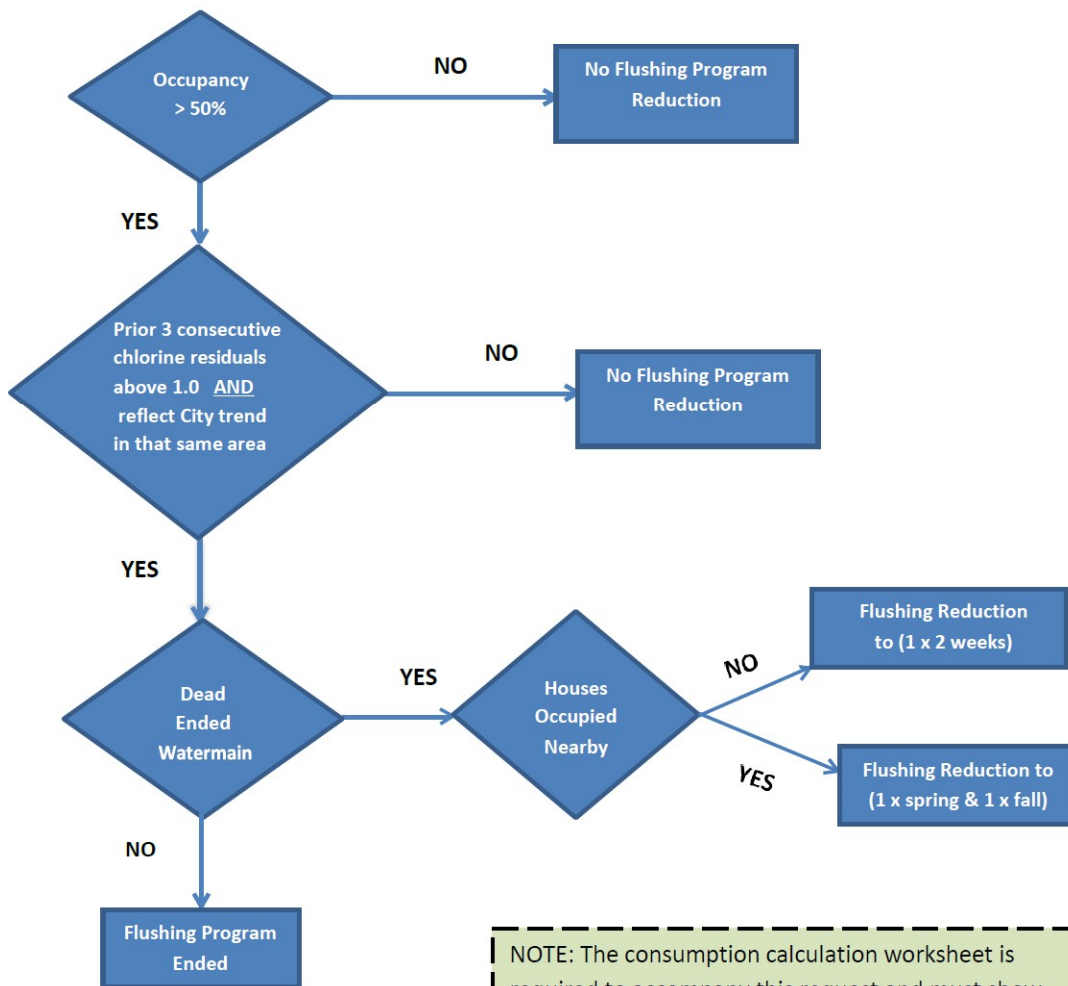
**Appendix Q12 – Flushing Program Request for Reduction or Cessation**  
**Form available at [Contractors and New Developments \(vaughan.ca\)](http://Contractors and New Developments (vaughan.ca))**

**Flushing Program – Request for Reduction or Cessation**

All flushing programs must begin with a minimum of chlorine residual(s) sampling event one (1) per week and one (1) watermain flushing every two (2) weeks.

Any changes must be approved by the Environmental Services - Compliance & Training before being implemented.

The following flow chart will assist in the determination of flushing program changes. Requests for consideration can be made by email to [Newmain@vaughan.ca](mailto:Newmain@vaughan.ca)



NOTE: The consumption calculation worksheet is required to accompany this request and must show that the watermain can be turned over **within 3 days** for any flushing program reduction or cessation to be approved.



# APPENDIX X1

## REDUCED PRESSURE PRINCIPLE ASSEMBLY (RP) TEST AND INSPECTION REPORT

PLEASE EMAIL COMPLETED TEST REPORTS TO [BACKFLOW@VAUGHAN.CA](mailto:BACKFLOW@VAUGHAN.CA)  
REPORT WILL BE RETURNED IF ANY INFORMATION IS MISSING

PROJECT NAME: \_\_\_\_\_ PHASE # \_\_\_\_\_  
MUNICIPAL ADDRESS: \_\_\_\_\_ WORK ORDER # \_\_\_\_\_

SECTION 1 – CROSS CONNECTION CONTROL SPECIALIST INFORMATION	
CERTIFIED TESTER NAME (PLEASE PRINT)	
TESTER BUSINESS NAME & TELEPHONE #	CCC CERTIFICATION #
TESTER ADDRESS (STREET # AND NAME, SUITE/UNIT #, CITY/TOWN)	
TEST KIT MODEL	TEST KIT MANUFACTURER
TEST KIT SERIAL #	CALIBRATION EXPIRY DATE (mm/dd/yyyy)

SECTION 2 – SYSTEM & BACKFLOW INFORMATION	
LOCATION OF BACKFLOW	
IS BACKFLOW DEVICE LOCATED IN A CHAMBER? <input type="checkbox"/> YES <input type="checkbox"/> NO	
AIR GAP MAINTAINED? (BACKFLOW TO BE INSTALLED MINIMUM 300 mm ABOVE FLOOD PLAIN) <input type="checkbox"/> YES <input type="checkbox"/> NO	
SERIAL #	SIZE
MANUFACTURER	MODEL #
IS WATER METER INSTALLED? <input type="checkbox"/> YES <input type="checkbox"/> NO                      WATER METER SERIAL #	
IF YES: PLEASE ENTER METER INFORMATION $\longrightarrow$ INITIAL READING (m <sup>3</sup> )	
TYPE OF TEST <input type="checkbox"/> INITIAL <input type="checkbox"/> REPLACES SERIAL # <input type="checkbox"/> RELOCATION	
IS THERE AN UNPROTECTED BRANCH, HOSE CONNECTION OR A SPLIT BETWEEN THE WATER SOURCE AND BACKFLOW? <input type="checkbox"/> YES <input type="checkbox"/> NO	
IF <b>YES</b> , PLEASE SPECIFY:	

