



DRINKING WATER WORKS PERMIT

Permit Number: 006-201
Issue Number: 5

Pursuant to the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this drinking water works permit under Part V of the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 to:

The Corporation of the City of London

**300 Dufferin Ave
London ON
N6A 4L9**

For the following municipal residential drinking water system:

City of London Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system

Upon the effective date of this drinking water works permit # 006-201, all previously issued versions of permit # 006-201 are revoked and replaced by this permit.

DATED at TORONTO this 18th day of September, 2020

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act, 2002*

Schedule A: Drinking Water System Description

System Owner	The Corporation of the City of London
Permit Number	006-201
Drinking Water System Name	City of London Drinking Water System
Permit Effective Date	September 18, 2020

1.0 System Description

- 1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The City of London Drinking Water System receives treated water from both the Lake Huron Primary Water Supply System (LHPWSS) and the Elgin Area Primary Water Supply System (EAPWSS), and consists of nine (9) pumping stations, four (4) storage reservoirs, four (4) rechlorination facilities, one (1) fluoridation facility, one (1) hydro-pneumatic surge tank and approximately 171 kilometres of trunk watermains and 1,451 kilometres of distribution watermains.

Pumping Stations

- John Gillies (Arva) Pumping Station
- Elgin-Middlesex Pumping Station (London Portion)
- Southeast Pumping Station
- Springbank Pumping Station
- Westmount Pumping Station
- Pond Mills Pumping Station
- Wickerson Pumping Station
- Hyde Park Pumping Station
- Uplands Pumping Station

Reservoirs

- Southeast Reservoir
- Springbank Reservoirs 1, 2 and 3

Surge Tank

- Elgin-Middlesex Pumping Station Hydro-pneumatic surge tank

Rechlorination and Fluoridation

- Springbank Reservoirs 1 and 2 rechlorination system
- Springbank Meterhouse No. 4 rechlorination system
- Springbank Pumping Station rechlorination system
- Southeast Reservoir and Pumping Station rechlorination system
- John Gillies (Arva) Pumping Station fluoridation system

Pumping Stations

John Gillies (Arva) Pumping Station

Location	13,966 Medway Road, R.R. 1, Arva ON
UTM Coordinates	NAD 83, Zone 17, Easting 4744384.92 m and Northing 4766239.87 m
Equipment	Three (3) fixed speed horizontal centrifugal pumps rated at 58,000 m ³ /d, 55 m TDH (Named AP1, AP3, and AP4)
	One (1) fixed speed horizontal centrifugal pump rated at 55,000 m ³ /d, 33 m TDH (Named AP2)
	One (1) fixed speed horizontal centrifugal pump rated at 51,000 m ³ /d, 40 m TDH (Named AP6)
	One (1) fixed speed horizontal centrifugal pump rated at 140,000 m ³ /d, 37 m TDH (Named AP5)
Fluoridation	Two (2) hydrofluorosilicic acid solution storage tanks, each 12.2 m ³ , two (2) day tanks, each 0.7 m ³ , one (1) flow-paced metering pump, one (1) online analyzer
Standby Power	48 kW stationary diesel generator set
Notes	

Elgin-Middlesex Pumping Station (London Portion)

Location	490 South Edgeware Street, St. Thomas ON
UTM Coordinates	NAD 83, Zone 17, Easting 488296.00 m and Northing 4737955.00 m
Equipment	One (1) fixed speed horizontal centrifugal pump rated at 73,000 m ³ /d, 77.5 m TDH
	Two (2) fixed speed horizontal centrifugal pumps rated at 45,000 m ³ /d, 46 m TDH
Surge Protection	One (1) 167 m ³ hydro-pneumatic tank, with two (2) air compressors
Standby Power	None
Notes	A standby generator exists at this facility, but it is owned by the St. Thomas Secondary Water Supply System and the Aylmer Secondary Water Supply System. It is not part of the City of London Drinking Water System.

Southeast Pumping Station

Location	5200 Highbury Avenue South, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 486375.00 m and Northing 4749815.00 m
Pumping Station	Two (2) pumps, each rated at 125 L/s at a TDH of 58 m and equipped with variable speed drives
	Four (4) pumps, each rated at 434 L/s at a TDH of 58 m and equipped with variable speed drives
Standby Power	1,250 kW stationary diesel generator set
Notes	Rechlorination provided on-site

Springbank Pumping Station

Location	848 Commissioners Road W, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 474731.50 m and Northing 4755576.72 m
Equipment	Two (2) fixed speed vertical turbine pumps rated at 11,768 m ³ /d, 35.1 m TDH
	Two (2) variable speed vertical turbine pumps rated at 12,355 m ³ /d, 50.8 m TDH
Standby Power	450 kW stationary diesel generator set
Notes	Rechlorination provided on-site

Westmount Pumping Station

Location	603 Wonderland Road S, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 476275.11 m and Northing 4755700.82 m
Equipment	Four (4) variable speed vertical turbine pumps rated at 15,725 m ³ /d, 30 m TDH
Standby Power	250 kW stationary diesel generator set
Notes	

Pond Mills Pumping Station

Location	1121 Commissioners Rd E, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 483865.44 m and Northing 4756577.00 m
Equipment	One (1) variable speed vertical turbine pump rated at 6,497 m ³ /d, 33.5 m TDH Two (2) variable speed vertical turbine pumps rated at 10,454 m ³ /d, 33.5 m TDH
Standby Power	200 kW stationary diesel generator set
Notes	

Wickerson Pumping Station

Location	2080 Wickerson Rd, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 471443.06 m and Northing 4755230.30 m
Equipment	Two (2) variable speed vertical turbine pumps rated at 11,578 m ³ /d, 38 m TDH One (1) variable speed vertical turbine pump rated at 2,851 m ³ /d, 34 m TDH
Standby Power	130 kW stationary diesel generator set
Notes	

Hyde Park Pumping Station

Location	1617 Hyde Park Rd, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 472944.70 m and Northing 4760841.25 m
Equipment	Two (2) variable speed vertical turbine pumps rated at 17,971 m ³ /d, 18.2 m TDH One (1) variable speed vertical turbine pump rated at 8,208 m ³ /d, 14.0 m TDH
Standby Power	230 kW stationary diesel generator set
Notes	

Uplands Pumping Station

Location	221 Sunningdale Rd E, London, ON
UTM Coordinates	NAD 83, Zone 17, Easting 477102.10 m and Northing 4765327.98 m
Equipment	Three (3) variable speed vertical turbine pumps rated at 9,072 m ³ /d, 18.4 m TDH One (1) variable speed vertical turbine pump rated at 3,197 m ³ /d, 10.7 m TDH
Standby Power	160 kW stationary diesel generator set
Notes	

Reservoirs**Southeast Reservoir**

Location	5200 Highbury Avenue South, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 486375.00 m and Northing 4749815.00 m
Reservoir	In-ground, dual cell reservoir 101 m x 83 m x 8 m depth 113,000 m ³ capacity
Notes	

Springbank Reservoir Number 1

Location	869 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474794.57 m and Northing 4755801.67 m
Description	In-ground reservoir
Dimensions	117 m by 97 m, 11 m depth
Capacity	81,800 m ³ capacity
Notes	Rechlorination provided on-site and at Springbank Meterhouse No. 4

Springbank Reservoir Number 2

Location	869 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474794.57 m and Northing 4755801.67 m
Description	In-ground reservoir
Dimensions	105 m by 75.9 m at the top, 76 m by 44.2 m at the bottom, 9.23 m depth
Capacity	45,400 m ³ capacity
Notes	Reservoir has sloped sides and is equipped with a floating cover. Rechlorination provided on-site and at Springbank Meterhouse No. 4

Springbank Reservoir Number 3

Location	848 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474731.50 m and Northing 4755576.72 m
Description	In-ground reservoir
Dimensions	117 m by 97 m, 11 m depth
Capacity	81,800 m ³ capacity
Notes	Connected to the Springbank Pumping Station, Rechlorination provided at Springbank Pumping Station and at Springbank Meterhouse No. 4

Surge Tanks**Elgin-Middlesex Pumping Station Hydro-pneumatic Surge Tank**

Location	490 South Edgeware St, St. Thomas ON
UTM Coordinates	NAD 83, Zone 17, Easting 488296.00 m and Northing 4737955.00 m
Description	Steel pressure vessel
Dimensions	167 m ³ nominal capacity
Notes	Equipped with two (2) positive displacement air compressors rated at 7.4 m ³ /min at 1,380 kPa

Rechlorination

Springbank Meterhouse No. 4 Rechlorination System

Location	809 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474932.59 m and Northing 4755630.50 m
Equipment	Two (2) booster pumps, one (1) duty and one (1) standby, two (2) sample pumps, one (1) duty and one (1) standby, one (1) gas chlorinator rated at 24 kg/d, two (2) chlorine cylinders on electronic scales, one (1) chlorine leak detector, one (1) portable standby chlorinator connection
Notes	Chlorine gas system. Bi-directional, compound loop control re-chlorination system with an on-line chlorine analyzer

Springbank Reservoirs No 1 & 2 Rechlorination System

Location	869 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474794.57 m and Northing 4755801.67 m
Equipment	Two (2) booster pumps, one (1) for the injector and one (1) for the analyser, gas chlorinator rated at 24 kg/d, two (2) chlorine cylinders on electronic scales, one (1) chlorine leak detector, one (1) portable standby chlorinator connection
Notes	Chlorine gas system. Compound loop control re-chlorination system with an on-line chlorine analyzer

Springbank Pumping Station Rechlorination System

Location	848 Commissioners Rd W, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 474731.50 m and Northing 4755576.72 m
Equipment	Two (2) Sodium Hypochlorite metering pumps, one (1) duty, one (1) standby, rated at 3.6 L/h, one (1) Sodium Hypochlorite plastic storage tank having 118.6 L capacity
Notes	12% Sodium Hypochlorite system. PID control re-chlorination system with an on-line chlorine analyzer

Southeast Reservoir and Pumping Station Rechlorination System

Location	5200 Highbury Avenue South, London ON
UTM Coordinates	NAD 83, Zone 17, Easting 486375.00 m and Northing 4749815.00 m
Rechlorination	Gas chlorination system for the purpose of re-chlorinating water as it enters the reservoir system and/or on the pumping station discharge, on an as-needed basis
	Two (2) 70 kg gas chlorine cylinders stored within two (2) containment vessels in a separate chlorination room
	Three (3) wall mounted gas chlorinators, each rated at 45 kg/d, one (1) for re-chlorination of the common reservoir inlet pipe, one (1) for each of the two (2) pumping station discharge pipes
Notes	

Emergency Power

As noted in the works above

Fuel Oil Systems**Arva Pumping Station**

Location	NAD 83, Zone 17, Easting 4744384.92 m and Northing 4766239.87 m
Description	One (1) 1,100 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Southeast Pumping Station

Location	NAD 83, Zone 17, Easting 486375.00 m and Northing 4749815.00 m
Description	One (1) 15,000 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Ponds Mills Pumping Station

Location	NAD 83, Zone 17, Easting 483865.44 m and Northing 4756577.00 m
Description	One (1) 1,100 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Westmount Pumping Station

Location	NAD 83, Zone 17, Easting 476275.11 m and Northing 4755700.82 m
Description	One (1) 910 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Springbank Pumping Station

Location	NAD 83, Zone 17, Easting 474731.50 m and Northing 4755576.72 m
Description	One (1) 4,140 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Wickerson Pumping Station

Location	NAD 83, Zone 17, Easting 471443.06 m and Northing 4755230.30 m
Description	One (1) 1,180 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Hyde Park Pumping Station

Location	NAD 83, Zone 17, Easting 472944.70 m and Northing 4760841.25 m
Description	One (1) 1,930 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Uplands Pumping Station

Location	NAD 83, Zone 17, Easting 477102.10 m and Northing 4765327.98 m
Description	One (1) 1,180 litre fuel storage tank
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

Instrumentation and Control

SCADA System

Description	Facility wide integrated process control system
Notes	Combines system control with data acquisition

Watermains

1.2 Watermains within the distribution system comprise:

- 1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains	
Column 1 Document or File Name	Column 2 Date
City of London Water System Flowchart - 2018-01-19	January 19, 2018

- 1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.
- 1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	The Corporation of the City of London
Permit Number	006-201
Drinking Water System Name	City of London Drinking Water System
Permit Effective Date	September 18, 2020

1.0 Applicability

- 1.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence #006-101.
- 1.2 The definitions and conditions of licence #006-101 are incorporated into this permit and also apply to this drinking water system.

2.0 Alterations to the Drinking Water System

- 2.1 Any document issued by the Director to be incorporated into Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance with the applicable conditions of this drinking water works permit and licence #006-101.
- 2.2 All documents issued by the Director as described in condition 2.1 shall form part of this drinking water works permit.
- 2.3 All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
 - a) Until March 18, 2021, the ministry's Watermain Disinfection Procedure, dated November 2015 and as of March 19, 2021, the ministry's Watermain Disinfection Procedure, dated August 1, 2020;
 - b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure;
 - c) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
 - d) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
 - e) AWWA C654 – Standard for Disinfection of Wells.
- 2.3.1 For greater clarity, where an activity has occurred that could introduce contamination, including but not limited to repair, maintenance, or physical / video inspection, all equipment that may come in contact with the drinking water system shall be disinfected in accordance with the requirements of condition 2.3. above.
- 2.3.2 Updated requirements described in condition 2.3 b) are effective six months from the date of publication of the updated Watermain Disinfection Procedure.

- 2.4 The owner shall notify the Director in writing within thirty (30) days of the placing into service or the completion of any addition, modification, replacement, removal or extension of the drinking water system which had been authorized through:
- 2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;
 - 2.4.2 Any document to be incorporated in Schedule C to this drinking water works permit respecting works other than watermains; or
 - 2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.
- 2.5 The notification required in condition 2.4 shall be submitted using the “Director Notification Form” published by the Ministry.
- 2.6 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement, removal or extension in respect of the drinking water system which:
- 2.6.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;
 - 2.6.2 Constitutes maintenance or repair of the drinking water system; or
 - 2.6.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.
- 2.7 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.
- 2.8 For greater certainty, the owner may only carry out alterations to the drinking water system in accordance with this drinking water works permit after having satisfied other applicable legal obligations, including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

- 3.1 The owner may alter the drinking water system, or permit it to be altered by a person acting on the owner’s behalf, by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:
- 3.1.1 The design of the watermain addition, modification, replacement or extension:
 - a) Has been prepared by a licensed engineering practitioner;
 - b) Has been designed only to transmit water and has not been designed to treat water;

- c) Satisfies the design criteria set out in the Ministry publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time (note: with respect to intersecting watermains where intersections are located less than 150 m apart, the minimum number of valves specified in Section 12.1 may be reduced on the recommendation of the design engineer); and
 - d) Is consistent with or otherwise addresses the design objectives contained within the Ministry publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- 3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.
 - 3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system’s ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.
 - 3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.
 - 3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.
 - 3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.
 - 3.1.7 A licensed engineering practitioner has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.
 - 3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.
- 3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:
 - 3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;
 - 3.2.2 Has a nominal diameter greater than 1,150 mm;
 - 3.2.3 Results in the fragmentation of the drinking water system; or
 - 3.2.4 Connects to another drinking water system, unless:

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- a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and
 - b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.
- 3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:
- 3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry, prior to the watermain addition, modification, replacement or extension being placed into service; and
 - 3.3.2 Retained for a period of ten (10) years by the owner.
- 3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 3.4.2 Constitutes maintenance or repair of the drinking water system.
- 3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.
- 3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.
- 3.7 Despite clause (a) of condition 3.1.1 and condition 3.1.7, with respect to the replacement of an existing watermain or section of watermain that is 6.1 meters in length or less, if a licensed engineering practitioner has:
- 3.7.1 inspected the replacement prior to it being put into service;
 - 3.7.2 prepared a reporting confirming that the replacement satisfies clauses (b), (c) and (d) of condition 3.1.1 (i.e. "Form 1 – Record of Watermains Authorized by a Future Alteration" (Form 1), Part 3, items No. 2, 3 and 4); and
 - 3.7.3 appended the report referred to in condition 3.7.2 to the completed Form 1,
- the replacement is exempt from the requirements that the design of the replacement be prepared by a licensed engineering practitioner and that a licensed engineering practitioner verify on Form 1, Part 3, item No. 1 that a licensed engineering practitioner prepared the design of the replacement.
- 3.8 For greater certainty, the exemption in condition 3.7 does not apply to the replacement of an existing watermain or section of watermain if two or more sections of pipe, each of

which is 6.1 meters in length or less, are joined together, if the total length of replacement pipes joined together is greater than 6.1 meters.

4.0 Minor Modifications to the Drinking Water System

- 4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:
- 4.1.1 Coagulant feed systems in the treatment system, including the location and number of dosing points:
 - a) Prior to making any alteration to the drinking water system under condition 4.1.1, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and
 - b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.1.1 and shall provide the Director with a copy of the review.
 - c) The notification required in condition 4.1.1 b) shall be submitted using the "Director Notification Form" published by the Ministry
 - 4.1.2 Instrumentation and controls, including new SCADA systems and upgrades to SCADA system hardware;
 - 4.1.3 SCADA system software or programming that:
 - a) Measures, monitors or reports on a regulated parameter;
 - b) Measures, monitor or reports on a parameter that is used to calculate CT; or,
 - c) Calculates CT for the system or is part of the process algorithm that calculates log removal, where the impacts of addition, modification or replacement have been reviewed by a licensed engineering practitioner;
 - 4.1.4 Filter media, backwashing equipment, filter troughs, and under-drains and associated equipment in the treatment system;
 - 4.1.5 Spill containment works; or,
 - 4.1.6 Coarse screens and fine screens
- 4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:
- 4.2.1 Treated water pumps, pressure tanks, and associated equipment;
 - 4.2.2 Raw water pumps and process pumps in the treatment system;

- 4.2.3 In-line booster pumping stations that are not associated with distribution system storage facilities and are on a watermain with a nominal diameter not exceeding 200 mm;
 - 4.2.4 Re-circulation devices within distribution system storage facilities;
 - 4.2.5 In-line mixing equipment;
 - 4.2.6 Chemical metering pumps and chemical handling pumps;
 - 4.2.7 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,
 - 4.2.8 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry.
 - 4.2.9 Chemical injection points.
 - 4.2.10 Valves;
- 4.3 The drinking water system may be altered by replacing the following:
- 4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;
 - 4.3.2 Measuring and monitoring devices that are required by regulation, by a condition in the Drinking Water Works Permit or by a condition otherwise imposed by the Ministry.
 - 4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;
 - a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and
 - b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.
 - c) The notification required in condition 4.3.3 b) shall be submitted using the "Director Notification Form" published by the Ministry
- 4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:
- 4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;
 - 4.4.2 The bypassing or removal of any unit process within a treatment subsystem;

- 4.4.3 The addition of any new unit process other than coagulation within a treatment subsystem;
 - 4.4.4 A deterioration in the quality of drinking water provided to consumers;
 - 4.4.5 A reduction in the reliability or redundancy of any component of the drinking water system;
 - 4.4.6 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or
 - 4.4.7 An adverse effect on the environment.
- 4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.
- 4.6 The verifications and documentation required in condition 4.5 shall be:
- 4.6.1 Recorded on “Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System” published by the Ministry, prior to the modified or replaced components being placed into service; and
 - 4.6.2 Retained for a period of ten (10) years by the owner.
- 4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:
- 4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 4.7.2 Constitutes maintenance or repair of the drinking water system, including software changes to a SCADA system that are not listed in condition 4.1.3
- 4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

- 5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the air:
- 5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;
 - 5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

- 5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;
 - 5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;
 - 5.1.5 Maintenance welding stations;
 - 5.1.6 Minor painting operations used for maintenance purposes;
 - 5.1.7 Parts washers for maintenance shops;
 - 5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;
 - 5.1.9 Venting for activated carbon units for drinking water taste and odour control;
 - 5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;
 - 5.1.11 Venting for an ozone treatment unit;
 - 5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or
 - 5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.
- 5.2 The owner shall not make an addition, modification, or replacement described in condition 5.1 in relation to an activity that is not related to the treatment and/or distribution of drinking water.
- 5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.
- 5.4 The owner shall prepare an emission summary table for nitrogen oxides emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

- 5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:
- 5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;
 - 5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive receptors shall not exceed the applicable point of impingement limit,

and at non-sensitive receptors shall not exceed the Ministry half-hourly screening level of 1880 ug/m³ as amended; and

- 5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.
- 5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.
- 5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.
- 5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:
 - 5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry, prior to the additional, modified or replacement equipment being placed into service; and
 - 5.8.2 Retained for a period of ten (10) years by the owner.
- 5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:
 - 5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 5.9.2 Constitutes maintenance or repair of the drinking water system.
- 5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

- 6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:
 - 6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;
 - 6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and
 - 6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

- 7.1 Not applicable.

8.0 Source Protection

8.1 Not applicable.

Schedule C: Authorization to Alter the Drinking Water System

System Owner	The Corporation of the City of London
Permit Number	006-201
Drinking Water System Name	City of London Drinking Water System
Permit Effective Date	September 18, 2020

1.0 General

1.1 Table 2 provides a reference list of all documents to be incorporated into Schedule C that have been issued as of the date that this permit was issued.

1.1.1 Table 2 is not intended to be a comprehensive list of all documents that are part of Schedule C. For clarity, any document issued by the Director to be incorporated into Schedule C after this permit has been issued is considered part of this drinking water works permit.

Table 2: Schedule C Documents				
Column 1 Issue #	Column 2 Issued Date	Column 3 Description	Column 4 Status	Column 5 DN#
1	2010/12/17	South East Pumping Station	Archived	5
2	2012/02/02	Amendment to correct information in MDWL, DWWP, and Sched. C.	Archived	6

1.2 For each document described in columns 1, 2 and 3 of Table 2, the status of the document is indicated in column 4. Where this status is listed as 'Archived', the approved alterations have been completed and relevant portions of this permit have been updated to reflect the altered works. These 'Archived' Schedule C documents remain as a record of the alterations.