



January 27, 2026

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Dear Jack:

**RE: 5923 OTTAWA STREET DISTILLERY WATER STORAGE VOLUME ESTIMATE
LRI FILE 2025-04-0654**

PROJECT DESCRIPTION

The project at 5923 Ottawa Street, Ottawa, ON includes two buildings on one site to be used for a mix of industrial and assembly occupancies. Building 1 includes a distillery, mezzanine-level offices, a bar/tasting area, a retail store, and an outdoor patio. Building 2 includes a brewery, some storage space, a bottling line, and associated office space for staff of the site's operations.

The buildings are subject to the 2024 Ontario Building Code (OBC), and as such, are required to be supplied with water for firefighting purposes. The site and surrounding area are not connected to a municipal water supply for firefighting. As a result, water must be stored on site for this purpose. This letter is intended to summarize LRI's analysis of the buildings, the OBC, and OFS documentation regarding the applicable rules and regulations which help assess the required amount of water to be stored on site.

For clarity, the analysis below is based upon the design information available at this time, and is considered an order of magnitude estimate, subject to refinement when the sprinkler and fire pump systems for the buildings are designed. This detailed design is most commonly completed following building permit submission. The objective of the analysis is to explain the fire safety rationale applied to the buildings and to assist the design team and reviewers in aligning on an acceptable water volume to be stored on a general basis.





BUILDING DESCRIPTION

The subject site includes two buildings: Building 1, and Building 2. These buildings have the following characteristics based on the provided architectural drawings:

Building 1:

- One storey in building height, with mezzanine
- 8.5 m in height
- 647 m² in building area
- Sprinklered throughout
- Occupancies include:
 - Distillery
 - Offices
 - Bar/assembly
 - Retail

Building 2:

- One storey in building height, with mezzanine
- 8.5 m in height
- 926 m² in building area
- Sprinklered throughout
- Occupancies include:
 - Mashing/bottling
 - Brewery
 - Storage mezzanine
 - Offices

CODE REQUIREMENTS

In conformance with OBC 3.2.5.7 “every building shall be provided with an adequate water supply for firefighting”. As clarified by OBC Appendix A-3.2.5.7.(2) for sprinklered buildings, “water supply additional to that required by the sprinkler systems should be provided for firefighting using fire hoses in accordance with the hose stream demands and water supply durations for different hazard classifications as specified in NFPA 13, “Installation of Sprinkler Systems”.

Since the buildings are sprinklered, the water storage volume estimate, therefore, needs to provide sufficient water for the sprinklers to operate, plus necessary hose demands from fire crews.

In conformance with Technical Bulletin IWSTB-2024-05, rural fire flow calculation methods are to follow the Appendix J flow chart. Specifically, since both buildings are required to be sprinklered for insurance reasons, the highlighted green path will be followed:

Appendix J

RURAL FIRE FLOW CALCULATION PROCESS

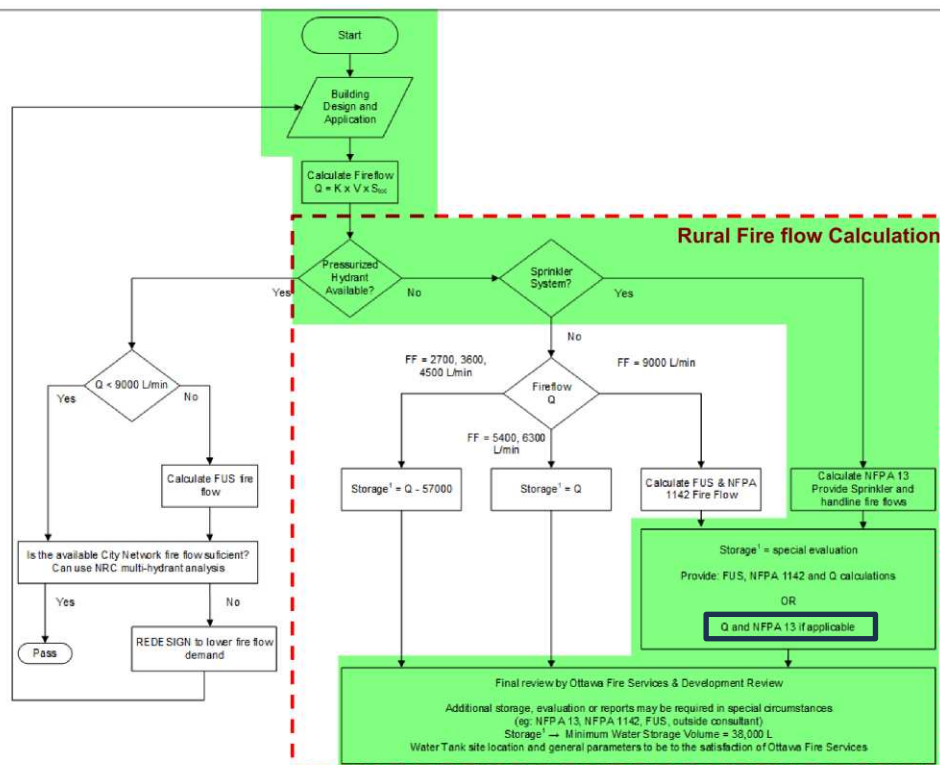


Figure J.1: Rural Fire Flow Calculation Process.

The following section outlines the methodology used for the storage volume estimates to permit OFS review.

METHODOLOGY

OBC-based Q volume analysis:

The following analysis uses the OBC-prescribed method to assess volumes based on the following inputs:

$Q = K \times V \times Stot$, where

Q = minimum supply of water in litres

K = water supply coefficient from the OBC

V = total building volume in cubic metres (m^3)

$Stot$ = total of spatial coefficient values from property line exposures on all sides.



Building 1:

Variable	Value	Notes
Q	177,100 L, with 5,400 LPM minimum flow rate	
K	23	Conservatively assumes Group F, Division 1 occupancy despite pending alternative solution. Also assumes compliant 3.2.2. noncombustible construction.
V	5,500	Based on area and building height
Stot	1.4	0.4 penalty assigned to southwest face with limiting distance of 9 m

Building 2:

Variable	Value	Notes
Q	173,949 L, with 5,400 LPM minimum flow rate	
K	17	Assumes Group F, Division 2 occupancy. Also assumes compliant 3.2.2. noncombustible construction.
V	7,871	Based on area and building height
Stot	1.3	0.3 penalty assigned to southeast face with limiting distance of 7 m

Based on the OBC volume Q analysis presented above, the calculated minimum supply of water required storage volumes of up to approximately 177,100 L for Building 1, or 173,949 L for Building 2. This translates to a minimum required flowrate of 5,400 LPM for both buildings at 30 minutes of supply duration.

As outlined in IWST-2024-05, for a proposed building equipped with a sprinkler system designed in accordance with NFPA 13, the OBC calculations noted above should be completed, and an additional NFPA 13 special evaluation may be carried out to determine the sprinkler water storage requirements.

NFPA 13-based volume analysis:

As the buildings will both be protected by automatic sprinkler systems, Appendix A demonstrates water volume calculations for the sprinkler systems anticipated to be designed for each building. It should be noted that these volumes are estimates, and final hydraulic designs will dictate the final volume requirements. At this time, the expected volume is to include sufficient water to supply the most demanding hydraulic area assuming one fire in one building at a time, includes for a 20% factor calculated based on water volumes discharged by the sprinklers, and considers NFPA 13-mandated hose demand calculations.



The calculations assume a sprinkler design on a “room area” method wherein different rooms must be individual enclosed fire compartments to permit the hydraulic area to be shrunk to the size of the room. This assumes that a fire separation will contain the fire during the time required for sprinkler operation.

The following tables summarize the assumed hazard classifications for the rooms. These assumptions are based off a combination of NFPA 13 compliance requirements, requirements described by the Distilled Spirits Council of the United States (DISCUS), and based on LRI’s expectation that the distillery/bar occupancy approach will require an alternative solution and correspondingly increases sprinkler density to improve suppression potential in support of that effort.

Room	Area (ft ²)	Expected Occupancy Classification
Building 1		
Grain Handling	238	Ordinary Hazard Group 2
Brewing/bottling	2,383	Ordinary Hazard Group 2 (aligns with DISCUS recommendations)
Boiler Room	277	Ordinary Hazard Group 1
Still house/still room	965	Extra Hazard Group 1 to support alternative solution approach
Office Mezzanine	1,182	Light Hazard
Kitchen	190	Ordinary Hazard Group 1*
Bar	1,632 (hydraulic area assumed limited to 1500 ft ²)	Light Hazard*
Retail	885	Ordinary Hazard Group 2
Building 2		
Mashing/brewing	6,050 (hydraulic area assumed limited to 2000 ft ² per DISCUS)	Ordinary Hazard Group 2
Bottling	2,370 (hydraulic area assumed limited to 3000 ft ² or room area DISCUS)	Ordinary Hazard Group 2
Office and admin area	1,095	Light Hazard
Storage mezzanine	1,185	Ordinary Hazard Group 2

* Note that depending on the hydraulic design, the kitchen and portions of the bar may end up being calculated together as a remote area. Their cumulative effect has been considered in Appendix A

As depicted in Appendix A, based on the NFPA 13 analysis presented above, expected storage volumes for both sprinkler and hose demand would result in required storage volumes of up to approximately 288,000 L for Building 1, or 243,000 L for Building 2. Both of these values are very high, and represent the provision of at least 100% of the NFPA 13-mandated volumes for both sprinkler operation and hose demands, for durations ranging between 30 minutes and 90 minutes (depending on NFPA 13 criteria). In order to provide a more reasonable estimate, in light of the IWSTRB documentation and OFS firefighting capacity, the following section evaluates the impact that water shuttling can have on the required storage volume.



Influence of OFS Superior Tanker Shuttle level on the required storage volume:

IWSTB 2024-05 does not explicitly clarify if or how OFS Superior Tanker Shuttle service contributes to NFPA 13-derived water storage volume analysis. As a result, engineering judgement and alignment with the AHJ is necessary.

In conformance with IWSTB 2024-05, OFS is capable of delivering 1,900 LPM within 5 minutes of arrival. As such, some credit should be permissible to account for the fire department's ability to replenish stored water volumes during a fire. As a result, the proposed storage volumes consider a reduction of 1,900 LPM for the NFPA 13 mandated duration of the fire as a reasonable value. This effectively replenishes the hose demand required for higher hazard occupancies and exceeds that required for lower hazard occupancies. The resultant conclusions presented below and in Appendix A represent an amount of water stored that exceeds the minimum required by IWSTB 2024-05, is comparable to OBC-required amounts for unsprinklered buildings, and represents the ability of the system to automatically supply the sprinklers for the NFPA 13-derived duration of the fire without extra volumes. In other words, sufficient water is expected to be stored to supply the sprinklers automatically, allow initial fire crews to have access to water for hose lines, and provide time for shuttling water to start supplementing the available stored water.

	Building 1	Building 2
OBC based Q Evaluation	177,100 L	173,949 L
NFPA 13 Evaluation	288,442 L	242,574 L
NFPA 13 Evaluation w/Superior Tanker Shuttle Service Reduction	118,117 L	129,024 L

CONCLUSION

This letter summarizes LRI's review of the proposed building project at 5923 Ottawa Street, and the required firefighting water volumes to be stored on site.

As the buildings are sprinklered, and in conformance with IWSTB 2024-05, a special assessment aligning with NFPA 13 has been provided. This is summarized in Appendix A.

The resultant water volume to be stored is expected to be designed to accommodate the highest required volume of either building, is to be shared between both buildings, and assumes one fire in one building at a time. This assumption is reasonable, especially given the large separation distance between both buildings on the same property.

At this time, for the purpose of development permitting and planning purposes and until the design develops such that proper fire protection design can be completed, it is recommended that the water storage volume match the OBC-mandated Q-values for a Group F, Division 1 occupancy for the distillery, and a Group F, Division 2 occupancy for the brewery and storage area. No reduction for OFS water shuttling has been accounted for in the recommended Q-value, and represents a conservative assumption. Based on this analysis, stored water volumes of 180,000 L are recommended at this time, with final volumes being determined based on detailed sprinkler and fire pump design criteria.



Sincerely,
LRI ENGINEERING

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Branch Manager - Alberta

Reviewed by,
LRI ENGINEERING



Jin Chen, P.Eng.
Associate

NFPA 13 Water Volume Estimate Analysis

LRI Engineering

Date

21-Aug-25

Site

5923 Ottawa Street

Prepared By

Matthew Hopley

Reviewed By

Jin Chen

Building 1											
Safety Margin on Sprinkler only 20%											
	Area (ft2)	Density (gpm/ft2)	Volume (gpm)	Duration (minutes)	Capacity (L)	Hose Demand (gpm)	Duration (minutes)	Capacity (L)	Combined (L)	Shuttling Allowance (lpm)	Total Storage Volume (L)
Grain Handling (OH2)	238	0.2	47.6	60	10,810	250	60	56,700	69,672	-1,893	-43,878
Brewing and Bottling/Process (DISCUS)	3000	0.2	600	60	136,260	250	60	56,700	220,212	-1,893	106,662
Boiler Room (OH1)	277	0.15	41.55	60	9,436	250	60	56,700	68,023	-1,893	-45,527
Distillery (DISCUS)	965	0.2	193	90	65,745	500	90	170,100	248,995	-1,893	78,670
Distillery (as EH1 for AS)	965	0.3	289.5	90	98,618	500	90	170,100	288,442	-1,893	118,117
Office Mezzanine (LH)	1182	0.1	118.2	30	13,422	100	30	11,340	27,446	-1,893	-29,329
Kitchen (OH1)	190	0.15	28.5	60	6,472	250	60	56,700	64,467	-1,893	60
Bar (LH) (limited to 1500 ft2)	1632	0.1	150	30	17,033	100	30	11,340	31,779	-1,893	30
Kitchen + Bar					23,505	250	60	56,700	84,906	-1,893	-28,644
Retail (OH2)	885	0.15	132.75	60	30,148	250	60	56,700	92,877	-1,893	-20,673

Building 2											
Safety Margin on Sprinkler only 20%											
	Area (ft2)	Density (gpm/ft2)	Volume (gpm)	Duration (minutes)	Capacity (L)	Hose Demand (gpm)	Duration (minutes)	Capacity (L)	Combined (L)	Shuttling Allowance (lpm)	Total Storage Volume (L)
Mashing (DISCUS), 2000 sqft max area	6050	0.2	400	60	90,840	250	60	56,700	165,708	-1,893	52,158
Bottling, 3000 sqft max area	2370	0.2	474	60	107,645	500	60	113,400	242,574	-1,893	129,024
Office and admin (light hazard)	1095	0.1	109.5	30	12,434	100	30	11,340	26,260	-1,893	-30,515
Storage mezzanine (OH2)	1185	0.2	237	60	53,823	250	60	56,700	121,287	-1,893	7,737