



May 24, 2017

Hospice of Waterloo Region
c/o GSP Group Inc.
72 Victoria Street South, Suit 201
Kitchener, ON N2G 4Y9

Attention: Ms. Sarah Code
Planner

Dear Ms. Code,

**Re: Water Distribution Letter
2050 University Avenue East
City of Waterloo**

In support of re-zoning approval we are pleased to provide you with our preliminary watermain distribution analysis results for your review and approval

There are two objectives regarding water servicing: provide domestic water supply as per Provincial, Regional and City requirements, and ensure that an adequate firefighting water supply is available as per Ontario Building Code and other Regional requirements (e.g. FUS).

A 150mm diameter watermain exists on Atlantic Boulevard and is accessible by a Park Block between 904 and 908 Atlantic Boulevard. The Region of Waterloo has provided pressure information for a junction located at the intersection of Atlantic Boulevard and Whitecap Avenue showing that a firefighting flow of up to approx. 165L/s is available to the site. Based on past experience, sprinklered buildings require a significantly smaller flow rate. Thus, it is assumed that the water distribution system and proposed internal water system is able to provide fire protection as per OBC and FUS guidelines. Firefighting flow demands for the proposed building sprinkler system will be established at a future design stage and either Site Plan or Building Permit approval should be made contingent upon confirmation of acceptable flow rates.

Approval agencies should review and approve this letter in support of the re-zoning application.

Yours very truly,

MERITECH ENGINEERING

Michael Mosco, MASC, EIT
Engineering Designer

MJM/
Enclosures (Water Modelling)

Chris Togeretz, P.Eng.
Project Engineer



WWW.MERITECH.CA





Date: March 9, 2017
File #: E18-10/WA

Chris Togeretz, P.Eng.
Meritech Engineering
1315 Bishop Street North, Suite 202
Cambridge, ON N1R 6Z2
t. 519.623.1140 x214
e. christophert@meritech.ca

Dear: Chris

Re: 2050 University Ave E., Waterloo

Please find the results of the modeling simulations for boundary conditions requested on February 16, 2017. The results included a figure showing the locations of the nodes from the Region's model.

Attached are a series of spreadsheets containing results for Average Day, Maximum Day demands and available fire flows for node JCT_71325 located at the intersection of Atlantic Blvd. and Whitecap Ave. The diurnal 24 hour demand distribution accounts for the minimum hour and peak hour peaking factors. The minimum hourly demand on the average day represents the minimum hour, and the maximum hourly demand on the maximum day represents the peak hour.

Demands as applied to nodes:

| Node | Pressure Zone | Elevation | Employment Demand (L/s) | |
|-----------|---------------|-------------|-------------------------|-------------|
| | | | Average Day | Maximum Day |
| JCT_71325 | Wat 4 | 329.00 mASL | 2.0 | 2.86 |

A fire flow analysis shows the maximum flow available at JCT_71325 is 166.9 L/s with a design pressure of 14.0 m during the maximum day scenario while maintaining the minimum design pressure of 14 m (140 kPa) at all nodes within the pressure zone.

If you have any questions, please contact me.

Kevin Dolishny P.Eng.
Senior Project Engineer, Servicing and Development Planning
t. 519.575.4757 x 3862
e-mail: kdolishny@regionofwaterloo.ca

Wat 4 Infowater

JCT_71325 Average Day 24 Hour Simulation

| Time | Demand (L/s) | Head (m) | Pressure (m) |
|-----------|--------------|----------|--------------|
| 00:00 hrs | 1.86 | 379.27 | 50.27 |
| 01:00 hrs | 1.76 | 379.81 | 50.81 |
| 02:00 hrs | 1.40 | 382.08 | 53.08 |
| 03:00 hrs | 1.24 | 382.18 | 53.18 |
| 04:00 hrs | 1.20 | 382.76 | 53.76 |
| 05:00 hrs | 1.34 | 382.96 | 53.96 |
| 06:00 hrs | 1.48 | 381.96 | 52.96 |
| 07:00 hrs | 1.20 | 380.00 | 51.00 |
| 08:00 hrs | 1.52 | 378.22 | 49.22 |
| 09:00 hrs | 2.52 | 377.95 | 48.95 |
| 10:00 hrs | 2.62 | 377.67 | 48.67 |
| 11:00 hrs | 2.92 | 377.31 | 48.31 |
| 12:00 hrs | 3.00 | 377.18 | 48.18 |
| 13:00 hrs | 2.92 | 377.09 | 48.09 |
| 14:00 hrs | 2.90 | 377.07 | 48.07 |
| 15:00 hrs | 2.78 | 377.07 | 48.07 |
| 16:00 hrs | 2.62 | 377.05 | 48.05 |
| 17:00 hrs | 2.48 | 377.94 | 48.94 |
| 18:00 hrs | 2.16 | 378.05 | 49.05 |
| 19:00 hrs | 1.88 | 378.95 | 49.95 |
| 20:00 hrs | 1.60 | 378.26 | 49.26 |
| 21:00 hrs | 1.50 | 378.49 | 49.49 |
| 22:00 hrs | 1.56 | 378.71 | 49.71 |
| 23:00 hrs | 1.60 | 379.09 | 50.09 |

Average Day HGL:

| |
|--------|
| 379.05 |
|--------|

Minimum Hour:

| |
|--------|
| 382.96 |
|--------|

JCT_71325 Maximum Day 24 Hour Simulation

| Time | Demand (L/s) | Head (m) | Pressure (m) |
|-----------|--------------|----------|--------------|
| 00:00 hrs | 2.75 | 377.72 | 48.72 |
| 01:00 hrs | 2.63 | 378.52 | 49.52 |
| 02:00 hrs | 1.86 | 379.26 | 50.26 |
| 03:00 hrs | 1.80 | 379.73 | 50.73 |
| 04:00 hrs | 2.00 | 379.50 | 50.50 |
| 05:00 hrs | 2.14 | 379.55 | 50.55 |
| 06:00 hrs | 3.37 | 378.89 | 49.89 |
| 07:00 hrs | 3.46 | 377.32 | 48.32 |
| 08:00 hrs | 3.43 | 376.39 | 47.39 |
| 09:00 hrs | 5.00 | 377.73 | 48.73 |
| 10:00 hrs | 5.18 | 377.82 | 48.82 |
| 11:00 hrs | 5.23 | 377.67 | 48.67 |
| 12:00 hrs | 5.55 | 376.69 | 47.69 |
| 13:00 hrs | 4.15 | 376.03 | 47.03 |
| 14:00 hrs | 2.00 | 376.07 | 47.07 |
| 15:00 hrs | 3.03 | 375.98 | 46.98 |
| 16:00 hrs | 1.72 | 376.23 | 47.23 |
| 17:00 hrs | 1.32 | 376.25 | 47.25 |
| 18:00 hrs | 1.14 | 375.26 | 46.26 |
| 19:00 hrs | 1.40 | 376.44 | 47.44 |
| 20:00 hrs | 1.69 | 374.61 | 45.61 |
| 21:00 hrs | 1.89 | 376.41 | 47.41 |
| 22:00 hrs | 2.83 | 377.65 | 48.65 |
| 23:00 hrs | 3.06 | 377.42 | 48.42 |

Maximum Day HGL:

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|--------|
| 377.30 |
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Peak Hour:

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|--------|
| 374.61 |
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Hydrant Curve

Fire Flow Analysis

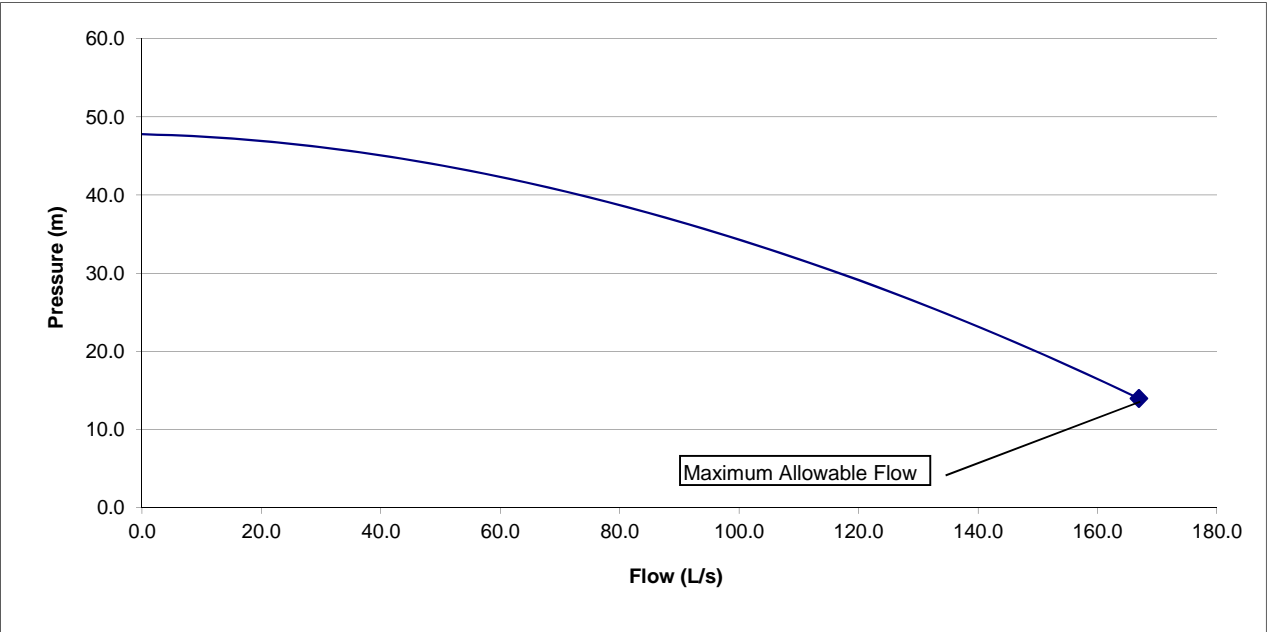
| | |
|-----------------------------|-----------|
| Fire Flow Node: | JCT_71325 |
| Design Flow (L/s): | 166.9 |
| Design Pressure (m): | 14.0 |

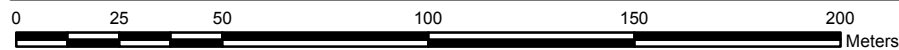
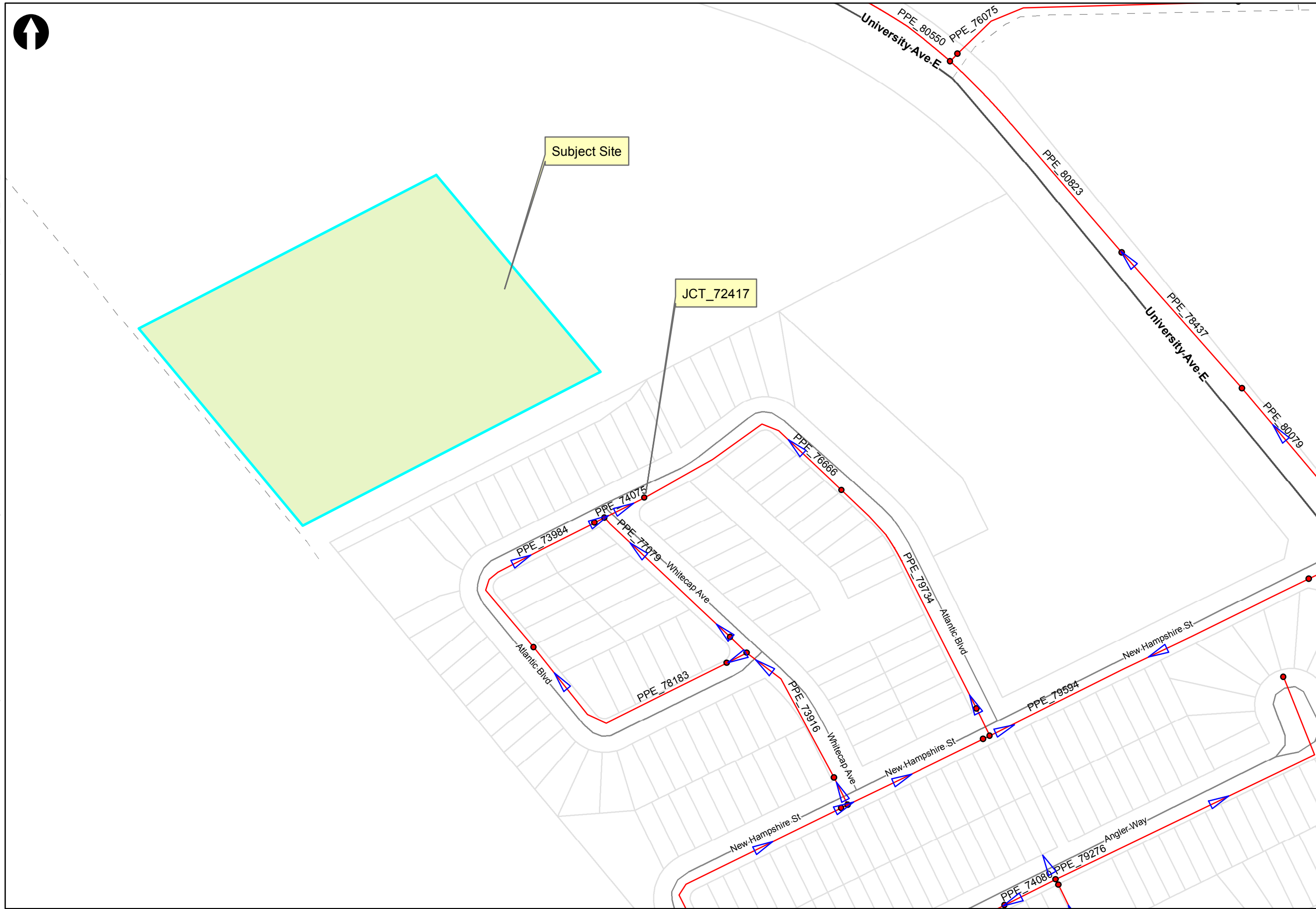
Design Flow: The final adjusted flow at the node to maintain the minimum design pressure (14m (140 kPa)) at ALL locations within the pressure zone.

Design Pressure: The lowest allowable pressure at the node to maintain the minimum design pressure (14m (140 kPa)) at ALL locations within the pressure zone.

Critical Node ID: The constraining node within the pressure zone that drops to the minimum design pressure of (14m (140 kPa)) during the design flow.

| Available Flow (L/s) | Residual Pressure (m) |
|----------------------|-----------------------|
| 0.0 | 47.8 |
| 10.0 | 47.5 |
| 20.0 | 47.0 |
| 30.0 | 46.1 |
| 40.0 | 45.1 |
| 50.0 | 43.8 |
| 60.0 | 42.3 |
| 70.0 | 40.6 |
| 80.0 | 38.7 |
| 90.0 | 36.6 |
| 100.0 | 34.3 |
| 110.0 | 31.8 |
| 120.0 | 29.1 |
| 130.0 | 26.3 |
| 140.0 | 23.2 |
| 150.0 | 19.9 |
| 160.0 | 16.5 |
| 166.9 | 14.0 |
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Region of Waterloo
TRANSPORTATION AND ENVIRONMENTAL SERVICES

Water Services
150 Frederick Street
Kitchener ON Canada N2G 4J3
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Legend

Subject Site

Junction

- Active
- Domain

Tank

- Active
- Domain

Reservoir

- Active
- Domain

Pump

- Active
- Domain

Valve

- Active
- Domain

Pipe

- Active
- Domain
- Highway
- Regional
- Local
- Private
- Proposed
- Subject Site

2050 University Ave E Waterloo