SERVICING REPORT

XINYI CANADA GLASS LIMITED

PROPOSED NEW GLASS MANUFACTURING FACILITY,

LOTS 2, 3, AND 4, CONCESSION 5,
TOWNSHIP OF PERTH SOUTH, COUNTY OF PERTH

Project No.: 2018-0833-17

April 10, 2020

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XINYI CANADA GLASS LIMITED

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Proposed New Glass Manufacturing Facility
Lots 2, 3, and 4, Concession 5, Township of Perth South, County of Perth

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1.0 INTRODUCTION

WalterFedy was retained by Xinyi Canada Glass Limited (XYG) to complete a Functional Servicing and Stormwater Management Report in support of an industrial development located on Lots 2, 3, and 4 of Concession 5, currently in the Township of Perth South (the "Site"). The Site does not have a municipal address assigned; however, it is part of lands to be annexed into the City of Stratford's municipal boundary.

The proposed development plan is to construct a float glass manufacturing facility, with its associated buildings (the "Development"); in addition to the warehousing and manufacturing facility, auxiliary buildings for materials storage and handling, water circulation, energy recovery, offices, and an Emergency Preparedness Centre (EPC) are also proposed. The purpose of this report is to identify how the Site will be serviced for water, sanitary, and storm and to also demonstrate compliance with municipal and provincial standards for site servicing and stormwater management in support of annexation of this parcel of land into the boundaries of the City of Stratford.

1.1 Site Location and Background

The 68.6 ha Site is bounded by Highway 7 to the east, existing agricultural lands and Line 29 to the north, CN Rail principal rail line to the west, and existing agricultural lands to the south.

The Site currently has an agricultural land use. A residential dwelling and associated outbuildings were once considered part of the Site but have since been severed/will be severed from the property prior to this Development.

The Site has rolling topography with elevations ranging from 372 m at the top of a hill in the center of the site, to approximately 364 m along Line 29, and approximately 367 m along Highway 7. The site also contains a woodlot with a localized wetland, and is in proximity to two other woodlots, one to the north of the site, also containing a localized wetland, and the other to the south.

The site contains two municipal drains which serve as the outlets for storm runoff: the Hislop Drain and the Waldie Drain. The existing fields are tiled and drain directly to these municipal drains.

1.2 Reference Reports and Drawings

In preparation of this report, the following background information was referenced:

1. *Municipal Drain Report for the Hislop Municipal Drain, City of Stratford (Downie Ward, Township of South Perth),* Johnson Engineering Consultants, prepared for the City of Stratford, April 2002.
2. *Engineer's Report, Waldie Drain 2014 Improvement, Branches A & E, Township of Perth South,* R. J. Burnside & Associates Limited, prepared for the Township of Perth South, May 2014.
3. *DRAFT Perth Line 29 at Dunn Road and Erie Street Hydraulic Analysis,* C3 Water Inc., prepared for the City of Stratford, June 2019
4. *Preliminary Geotechnical Investigation – Proposed Industrial Development, Road 119 and Perth Line 29,* Pinchin Ltd., prepared for Xinyi Canada Glass Limited, January 2019.
5. *DRAFT Geotechnical Investigation – Proposed Industrial Development, Road 119 and Perth Line 29,* Pinchin Ltd., prepared for Xinyi Canada Glass Limited, July 2019
6. *Soil Analytical Results: Road 119 and Perth Line 29, Stratford, Ontario,* Pinchin Ltd., prepared for Xinyi Canada Glass Limited, February 2019.
7. *Xinyi Glass Plant – Stratford, Environmental Impact Study,* Natural Resource Solutions Inc., prepared for Xinyi Canada Glass Limited, November 2019.

The following guidance documents were also referenced in preparation of this report:

1. *Infrastructure Standards and Specifications,* City of Stratford, April 2018.
2. *Environmental Planning Policy Manual for the Upper Thames River Conservation Authority,* Upper Thames River Conservation Authority (UTRCA), June 2006.
3. *Stormwater Management Planning and Design Manual*, Ministry of the Environment, Conservation and Parks (MECP), March 2003.
4. *Erosion and Sediment Control Guideline for Urban Construction*, Greater Golden Horseshoe Area Conservation Authorities, December 2006.
5. *Design Guidelines for Sewage Works*, Ministry of the Environment, Conservation and Parks, March 2019.
6. *Design Guidelines for Drinking Water Systems,* Ministry of the Environment, Conservation and Parks, May 2019.

2.0 EXISTING CONDITIONS

2.1 Topography and Land Use

Existing topographical information for this site was obtained from a survey by WalterFedy dated December 2018, and supplemented with a survey of the adjacent Highway 7 dated February 2019. Legal boundary information was obtained from a plan of survey of the Site completed by NA Geomatics Inc. dated December 2018.

The topography on the Site ranges from an elevation of approximately 372 m at the center of the site, to approximately 364 m along Line 29, and approximately 367 m along Highway 7. The hill on the site splits surface drainage to two municipal drain outlets: the Waldie Drain and the Hislop Drain. These municipal drains flow northward towards the City of Stratford.

A treed area exists on the site, and abuts another, larger treed area located just outside the property limits. The Ministry of Natural Resources and Forestry identifies these features as woodlots. These features abut the Hislop Drain which is under the regulation of the UTRCA. Natural Resources Solutions Inc. (NRSI) completed a site visit and confirmed the presence of localized wetlands within these woodlot features. As a result, NRSI has completed an Environmental Impact Assessment to evaluate the existing features, address the removal of the woodlot and wetland within the site, and to address the potential development adjacent to the remaining woodlot and wetland feature in close proximity to this site. NRSI flagged the limits of the wetlands within the woodlots which have been surveyed by WalterFedy.

2.2 Watermains, Sanitary Sewers, and Other Existing Utilities

A 300-mm-diameter watermain exists on Perth Line 29. This watermain is under the ownership of the City of Stratford and will provide service to the future development. This watermain is looped along the City of Stratford road network and is connected to watermains on Dunn Road, and Durkin Street to Wright Boulevard. No watermain exists on the Highway 7 road right-of-way.

Sanitary servicing does not exist in the rights-of way adjacent to the site. The nearest sanitary sewer to the site is on Dunn Road, connected to a sanitary pumping station approximately 400 m north of the Site.

Existing overhead hydro and communication lines provide service to the few residential dwellings fronting on to Highway 7. It is understood that the Highway 7 right-of-way also contains gas servicing.

Overhead hydro and overhead communications infrastructure also exist along Line 29. Festival Hydro operates and maintains overhead distribution lines on Line 29, while Rogers owns and operates a major fiber optic distribution line connecting the northern part of Southwestern Ontario to the southern part.

Along the CN Rail right-of-way, Rogers owns underground transport fiber optic lines that connect the City of Stratford to the City of St Mary's. A previously-abandoned Rogers pole line also exists along the CN Rail right-of-way, which will be removed as part of the Development.

2.3 Hislop and Waldie Municipal Drains

Storm servicing to the site is provided via two municipal drains namely the Hislop and Waldie Drains. The existing site is tiled and has surface and subsurface outlets to these drains. Further discussions regarding the drains, catchment areas and release rates is provided within the Stormwater Management Report submitted under separate cover.

2.4 Geotechnical Investigation

Pinchin Ltd. was retained by XYG to complete a geotechnical investigation for the proposed Development. Their reports, *Preliminary Geotechnical Investigation – Proposed Industrial Development* (January 24, 2019) and *Geotechnical Investigation – Proposed Industrial Development* (August 2019) are provided under separate cover. The following summarizes the findings of the geotechnical investigation as they relate to proposed grading, servicing, and stormwater management:

- Field investigations were completed on Site between December 14 and December 19, 2018, and May 13 and May 24, 2019 by Pinchin. A total of 28 boreholes were advanced on Site to assess the existing geotechnical conditions.
- The Site predominantly contains topsoil overlying glacial till deposits. The depth of the topsoil layer ranges from 300 mm to 1500 mm.
- The glacial till varies in composition from non-cohesive sandy silt till to cohesive clayey silt till.
- The results of two particle size distribution analyses performed on samples of the glacial till indicated the samples contain 14 to 19% gravel, 21 to 32% sand, 49 to 55% silt, and 5% clay.
- Wet/saturated sand and gravel seams, as well as cobbles, were present throughout the glacial till across the Site.
- The granular deposits have a very dense relative density based on SPT 'N' values of greater than 50 blows per 300 mm penetration of a split spoon sampler. The granular deposits were moist-to-saturated at the time of sampling.
- The results of two particle size distribution analyses performed on samples of the granular deposits indicated the samples contain 0 to 40% gravel, 40 to 81% sand, 19 to 20% silt, and 0% clay.
- Groundwater observations indicated that groundwater occurs in unconfined water table conditions in the granular deposits encountered at the Site, and in sand seams within the glacial till deposits.

2.5 Source Water Protection

According to the Province of Ontario's *Source Protection Information Atlas*, the Site is not part of any water quality source water protection area. The Site appears to be in a water quantity source protection area (WHPA-Q1) but is noted to be a low-stress area. The Site is not part of a water quality or water quantity intake protection zone. Table I provides the source protection details for the Site.

Table I: Source Protection Details

Source Protection Area	Upper Thames River
Water Quality	
Wellhead Protection Area	No
Wellhead Protection Area E (GUDI):	No
Intake Protection Zone:	No
Issue Contributing Area:	No
Significant Groundwater Recharge Area:	No
Highly Vulnerable Aquifer:	No
Event Based Area:	No
Water Quantity	
Wellhead Protection Area Q1:	Yes; Stress: Low
Wellhead Protection Area Q2:	Yes; Stress: Low
Intake Protection Zone Q:	No

According to the MECP's *Source Protection Information Atlas*, 102 different Source Protection Polices are listed for the Site; however, not all the policies are applicable to the Development. 49 of these policies are specific to Oxford County which are duplications of other listed Source Protection Policies. A complete listing of the policies is provided in Appendix A.

As the Site is outside of all water quality source protection areas, none of the listed polices were considered to be applicable to the site, with the exception of requiring a notice from the Risk Management Official noting that the development will does not engage in any activities considered to be a significant drinking water threat.

The Stormwater Management Report for the site (submitted under separate cover) illustrates how water balance will be achieved to promote infiltration and ensure that water quantity within the aquifers are not affected as a result of this development.

3.0 PROPOSED CONDITIONS

The Development is to consist of numerous slab-on-grade buildings with a total area of approximately 185,000 m^2 (2,000,000 ft^2). As part of the construction, a deep underground furnace, extending to approximately 10 m below finished floor elevation, is to be constructed within the building footprint.

Asphalt roadways for truck traffic are to be constructed around the buildings, along with a parking lot for employees. A stormwater management facility is to be constructed in the northwestern portion of the Site. Railway spur lines are to be constructed along the western edge of the Site abutting the existing CN Rail right-of-way. These lines will accommodate storage and movement for the locomotives and rail cars delivering raw material.

The above-noted Development refers to Phase I of the facility's operations. A future Phase II is contemplated within the balance of the site area, north of the proposed warehousing facility. Details and timing of Phase II are not known at this time – this future work could be a development similar to Phase I, or could include manufacturing of auxiliary products to support Phase I. Given the uncertainty of the future phase, this report is limited to discussions of Phase I.

The proposed facility is expected to operate 24 hours a day, 7 days a week for a minimum period of 12 years, at which point a pre-planned shutdown of the operations will occur for the purposes of maintenance of the furnace. The facility will thereafter continue to operate until the next planned shutdown. The proposed servicing strategy for the site incorporates redundancies to ensure that the facility can continue to operate for this prolonged period.

4.0 GRADING AND DRAINAGE DESIGN

A principle building containing the glass manufacturing process and warehouse is to be located along the southern edge of the Site, with additional auxiliary buildings to the west. To accommodate the construction of the buildings, the existing hill located centrally to the Site is proposed to be cut down and the Site levelled to accommodate a finished floor elevation of 368.00 for the main warehouse building.

The grading will accommodate the collection of runoff from minor storms into a storm system directing it to the stormwater management pond. The storm system consists of storm sewers and structures conveying drainage to larger conveyance ditches. Major overland flow will also be directed west and north towards the pond. The storm servicing and conveyance systems are discussed in further detail as part of the Stormwater Management Report submitted under separate cover.

An approximately 6-metre grade differential is expected between the existing agricultural lands to the north of the Site and the proposed conditions for the XYG development. In the first phase of the development, an embankment along the northern limits of the Site is proposed. Should the agricultural lands proceed with development prior to Phase II of the construction, it is expected that grading operations on these lands will largely eliminate the grade differential. If not, alternatives such as grading on the neighboring property or a retaining wall will be explored during detailed design for Phase II of the Development.

The remainder of the Site will be graded to comply with slopes outlined within the Accessibility for Ontarians with Disabilities Act (AODA).

5.0 SANITARY SERVICING

The City of Stratford is currently in the process of designing a municipal sanitary pumping station to provide sanitary servicing for the Site, in addition to other lands which are part of the annexation into the City boundaries. This pumping station is expected to be in service prior to occupancy of the buildings on this Site, subject to appropriate approvals under the Environmental Assessment Act.

5.1 Design Criteria

The City of Stratford *Infrastructure Standards and Specifications* note the following requirements for Industrial developments:

- Average flow: 0.50 l/s/ha
- Use higher-design flows for point sources known to have significantly greater flows than the average design allowance
- Use actual flows for large, known discharges
- Use peaking factor of 2.0 or as per MECP guidelines “Typical Industry Sewage Flow Peaking Factors” if approved by City

The proposed development is expected to discharge process wastewater and domestic sewage to the municipal sanitary system. XYG has similar facilities around the world; their process use and waste water generation is well documented by their process engineer, CTIEC. As such, the proposed sanitary flows from this development are estimated using the documented data from CTIEC, combined with domestic waste estimates using Part 8 of The Ontario Building Code (Tables 8.2.1.3.A and B), as well as the MECP’s *Design Guidelines for Sewage Works* and the City of Stratford’s *Infrastructure Standards and Specifications.*

Additionally, the City of Stratford requires that all commercial and industrial properties shall have an inspection maintenance hole for the private sanitary service installed at the property line. This manhole will be equipped with a flow meter to accurately measure outgoing flows from the development.

5.2 Domestic Wastewater Collection

The majority of domestic sanitary sewage is expected to be generated at the eastern extents of the Site, which is the proposed location of the EPC. The EPC is expected to contain accommodation for an on-site workforce to allow immediate deployment to the glass factory in the event of an emergency, such as a hydro outage to ensure the systems are not disrupted.

Flow from the EPC will be conveyed to a proposed municipally-owned Sanitary Pumping Station along Line 29 as part of the City's consolidated sanitary infrastructure master plan for the new industrial area. Domestic flows generated from other buildings around the site (such as washrooms from the main warehousing and production facilities) will also be conveyed to this single outlet location. The sanitary sewer system is illustrated on servicing drawings C4-0 to C4-7.

5.3 Employment Population and Domestic Sewage Generation Rate

Average sewage generation rates for the Site are based on the number of occupants and employees using each building on Site. Daily per-capita sewage generation rates were obtained from Part 8 of The Ontario Building Code (Tables 8.2.1.3.A and B), as well as City of Stratford's *Infrastructure Standards and Specifications.* The anticipated average daily domestic flow calculations are illustrated in Table II and Table III below.

Table II: EPC Total Daily Domestic Flow

Emergency Prepared Center	50	units
Population Density (Infrastructure Standards and Specifications)	2.4	persons/unit
Total Population	**120**	**persons**
Average Flow (Infrastructure Standards and Specifications)	0.004	L/s/person
Total Daily Average Flow	**0.48**	**L/s**

Table III: Non-EPC Total Daily Domestic Flow

Source	Unit Volume	#Staff	#Staff	Total Volume	Max Average Daily Flow
	(Litres/day)	*(Total)*	*(max./8hr-shift)*	*(Litres/day)*	*(Litres/s)*
Office [B]	75	26	26	1,950	0.07
Gate House & Security [B]	75	8	3	600	0.01
Batch Plant [A]	75	27	21	2,025	0.05
Glass Hot Processing [B]	75	55	27	4,125	0.07
Glass Cutting [A/B]	75	47	27	3,525	0.07
Glass Unloading, Packaging and Moving [A]	75	36	14	2,700	0.04
Glass Warehouse Loading [A]	75	15	8	1,125	0.02
Warehouse Material Control and Spares [A]	75	9	6	675	0.02
Maintenance Workshop [A]	75	36	32	2,700	0.08
Low-E Control Room [B]	75	29	11	2,175	0.03
Auxiliary Buildings [B]	75	39	19	2,925	0.05
Total Daily Domestic (non-EPC) Flow		**327**	**194**	**24,525**	**0.51**

(A) Unit Volume based on OBC Table 8.2.3.B - Factory Worker (No Showers)
(B) Unit Volume based on OBC Table 8.2.3.B - Office Worker
Max Average Daily Flow is based on Maximum #Staff in 8-hour shift

Based on the City of Stratford's engineering criteria, the average daily flows are to be peaked using the Harmon Formula. The expected peak domestic sanitary discharge from this facility is calculated to be as per **Table** IV.

Table IV: Peak Domestic Discharge

EPC Total Daily Domestic Flow	0.48	*L/s*
Non-EPC Total Daily Domestic Flow	0.51	*L/s*
Total Domestic Flow	**0.99**	***L/s***
EPC Temporary Maximum Population	120	*persons*
Non-EPC Maximum Population	194	*persons*
Total Population	**314**	*persons*
Harmon Peaking Factor	4.07	
Peak Domestic Discharge	**4.01**	***L/s***

5.4 Process Wastewater Flows and Quality

XYG operates similar glass manufacturing facilities in China and Malaysia and their process engineer, CTIEC, has a thorough understanding of the expected process wastewater flow rates and quality. The expected maximum inflows, outflows, and discharge quality from each of the processes within the development are noted in Table V. Where discharge quality is noted in the comments, the concentration is relative to outflow from the specific process.

Table V: Peak Process Water Flows and Quality (Phase I)

Source	Building Ref.	Inlet Flow m^3/d	Wastewater Flow Rate m^3/d	Wastewater Composition Comments
Combined Float Glass Workshop	A	5	4.5	Water used for general cleaning. Quality same as domestic discharge.
Circulating Water Pump House	C	994	452	Salt concentration 4-5 times higher than source water. Water is evaporated and therefore concentrations of Na^+, CL^- BOD and COD higher.
Nitrogenization	G	0	3.4	Water from compressed air condensate.
Compressed Air Station	J	0	4.9	Water from compressed air condensate, drained through an oil trap.
Hydrogen and Oxygen Generation Unit	H	6.5	2.9	Concentrated raw water following evaporative losses. Contaminants reflective of raw water, but in higher concentrations (4x).
Waste Heat Power Generation	P	301	78	Drainage of concentrated water. Highest salt concentration is 4x salt concentration in raw water.
Float Joint Workshop Melting	A	25	8	Water is used for HVAC systems. Inflow only in the winter as winter water supplement. Outflow only in the summer as air conditioning condensate water.

Batch Plant	F	65	12.7	10.5 m^3/day is steam condensate; 2.2 m^3/day is water from cleaning operations with similar qualities as domestic discharge.
Low-e Coating Production and Circulation	B	494	341	97m^3/day is water containing fumaric acid. Remainder is concentrated water.
Sub Total		**1890.5**	**907.4**	
10% Allowance for Unknowns/Variations		189.05	90.74	
Total Process Flows		**2079.6**	**998.1**	

Based on information from CTIEC, the processes do not exhibit large variations in inlet or outlet flows throughout the day, but do vary seasonally. The seasonal variation is a result of heating and cooling requirements of the various processes. The largest known inflows and outflows are illustrated in the table above.

5.5 Process Wastewater Collection and Discharge

Wastewater flows are expected to be generated at several different locations on Site, with the majority of the flow generated in buildings located along the southern and southwestern extents of the site. Process water is proposed to be discharged to a City of Stratford owned sewage pumping station by means of gravity systems. A sufficient outlet is to be designed by others and provided to this site as part of the overall master servicing plan for the new industrial area annexed into the City's municipal boundaries.

Table VI below illustrates the total wastewater discharge amounts in accordance with City of Stratford Design Criteria. The total wastewater discharge incorporates domestic sewage, process discharge, and infiltration allowances. Given the long length of private sewer that is expected on site, a 450-mm-diameter sanitary sewer is proposed at the minimum allowable slope to meet self-cleansing velocities of 0.8 m/s according to City of Stratford criteria.

Table VI: Sanitary Service Design

Flow Information		
Peak Domestic Discharge	4.01	*L/s*
Peak Process Water Discharge	11.55[1]	*L/s*
Infiltration Allowances (0.1 L/s/ha)	6.86	*L/s*
Total Sanitary Discharge	**22.42**	***L/s***
Pipe Information		
Diameter of Service	450	*mm*
Slope of Service	0.25	*%*
Full Flow Capacity	142.55	*L/s*
Full Flow Velocity	0.90	*L/s*

The City of Stratford has implemented a Sewer Use By-law (by-law number 65-70) to control the discharge of sewage into systems owned by the City. This by-law specifies specific concentrations which need to be met for discharges to be acceptable into the sanitary sewer. The parameters that are known to be, or could be, applicable to the XYG development are listed in Table VII.

[1] 998.1 m^3/day = 11.55 L/s

Table VII: Sewer Use By-Law Discharge Limits

Discharge	Limit	
Oil, Grease, and Tar (mineral origin)	15	*mg/L*
Temperature	150	*°F*
Flammable or Explosive Matter (e.g. Gasoline, Benzene, Naptha, Fuel Oil, Acetone or other solvents)	0	
pH	5.5-9.5	
Biochemical Oxygen Demand (B.O.D)	300	*mg/L*
Suspended Solids	350	*mg/L*
Nuisance Causing Sewage (e.g. Hydrogen Sulphide, Carbon Disulphide, Ammonia, Trichloroethylene, Sulphur Dioxide, Formaldehyde, Chlorine, Bromine, Orpyridine)	(*)	
Phenolic Compounds	1	*mg/L*
Total Cyanides (HCN)	3	*mg/L*
Total Sulphides (H_2S)	3	*mg/L*
Total Copper (Cu)	5	*mg/L*
Total Chromium (Cr)	5	*mg/L*
Total Nickel (Ni)	5	*mg/L*
Total Lead (Pb)	5	*mg/L*
Total Zinc (Zn)	5	*mg/L*
Total Cadmium (Cd)	5	*mg/L*
Chlorides (Cl)	1500	*mg/L*
Sulphates (SO_4)	1500	*mg/L*

(*) Quantity limited to such than an offensive odour does not emanate from the sewage works

CTIEC has confirmed that the process water discharged does not contain any exceedances of specified parameters in the City of Stratford's bylaw. A sampling port will be provided at the property limits for water quality verification by the City of Stratford.

Additionally, it is known that a portion of the process wastewater discharge contains Fumaric Acid ($C_4H_4O_4$ or COOH-CH=CHCOOH) and Sodium (Na), from the salt contents. These known parameters do not have limits specified in the Sewer Use By-law and the City of Stratford is currently evaluating the impact of these parameters to the sewage treatment plant process. Based on parameters from CTIEC, it is estimated that 97 m^3/day of the approximate 998 m^3/day process discharge will contain Fumaric Acid, for an overall concentration of less than 5 ppm.

The majority of the discharge is water that has been concentrated as a result of evaporative processes. The concentration of minerals and other parameters in the discharge are a 4x concentration based on incoming water quality.

6.0 WATER DISTRIBUTION DESIGN

A 300-mm-diameter municipal watermain exists on Line 29, north of the Site. Given the proposed multi-year, continuous operation requirement of the facility and the need to service additional lands that are also to be annexed into the City of Stratford, a second, fully-redundant watermain is proposed to be extended to the proposed development, within the Highway 7 right-of-way. This watermain will be looped back to the existing main on Line 29.

The proposed development is expected to have multiple watermain connections to municipal systems from Line 29 and Highway 7. These service connections will be looped internally in the site, with at-source testable backflow prevention devices installed at the property limits to the satisfaction of the Chief Building Official.

6.1 Design Criteria

The City of Stratford *Infrastructure Standards and Specifications* defer to MECP requirements for water distribution. In accordance with MECP guidelines, the water distribution system shall be capable of delivering the water demands at a minimum residual pressure of 275 kPa (40 psi) in a non-fire scenario and at a minimum residual pressure of 140 kPa (20 psi) in the event of a fire. Under standard conditions, the MECP guidelines recommend an operating pressure in the range of 350 kPa (50 psi) to 480 kPa (70 psi), with pressure at any point in the system not exceeding 700 kPa (100 psi).

6.2 Domestic Water Demand

The domestic water demand for the development has been determined using the MECP *Design Guidelines for Drinking-Water Systems* (May 2019). Occupant loading of the facility is noted to be the same as for domestic waste water collection presented in Section 5.3, and represents the functional requirements to keep the facility operational.

The MECP guidelines note that domestic water demand has historically ranged from 270 to 450 L/capita/day; however, due to increased metering and increased water conservation measures, the typical use is generally at the lower end of the spectrum. In order to provide consistency with sewage discharge standards of the City of Stratford, an average domestic water demand of 0.004 L/capita/second (345.6 L/capita/day) has been utilized to determine the EPC domestic demands and a flow of 75 L/cap/day for other uses, all in accordance with Part 8 of the OBC (Tables 8.2.1.3.A and B).

The resulting average domestic water demand is the same as the flows noted in Table II and Table III. This average flow was peaked using a Maximum Day factor of 3.0 and Peak Hour factor of 4.5 in accordance with Table 3-3 of the MECP design guidelines. Peak domestic demands are noted in
Table VIII.

Table VIII: Peak Domestic Water Demands

EPC Total Daily Domestic Demand	0.48	L/s
Non-EPC Total Daily Domestic Demand	0.51	L/s
Total Average Domestic Demand	**0.99**	**L/s**
Maximum Day Factor	3.00	
Maximum Daily Demand	**2.97**	**L/s**
Peak Hour Factor	4.50	
Peak Hour Demand	**4.46**	**L/s**

6.3 Industrial Processes Water Demand

Xinyi Canada Glass has advised that the glass manufacturing process is a dry process and does not rely on water for manufacturing purposes. Water is still required, however, for the purposes of cooling in the glass-making process, as well as for scrubbing gases produced through the manufacturing process.

The demand for the industrial process, at its peak, is estimated to be 2,080 m^3/day. Xinyi Canada Glass has also advised that the draw for industrial process water use will be steady, in that the process use does not experience any significant peaks from daily average use.

The demands for each of the processes are also noted in Table V.

6.4 Fire Suppression

Water demand for fire protection was calculated in accordance with *Fire Protection Water Supply Guideline for Part 3 in the OBC* (OFM-TG-03-1999). The required volume of water supply is calculated based on volume of the building, exposure to other buildings, and a water supply coefficient, which is a factor of type of construction and occupancy as defined in the OBC.

$$Q = KVS_{TOT}$$

Where:
Q = Minimum Supply of Water in Litres
K = Water Supply Coefficient
S_{TOT} = Total Spatial Coefficient Based on Exposure

The value of K is provided from Table 1 in OFM-TG-03-1999 and values of S_{TOT} are selected from Figure 1 in the same technical bulletin.

As per the OBC, the maximum flow rate required for fire protection, regardless of building size, is 9000 L/min (150 L/s). Given the size of the development, and previous experience, it is anticipated that the maximum flow rate will be required for this development.

Additionally, the OFM technical guideline stipulates that the required volume of fire protection water be delivered for a minimum of 30 minutes. Since the supply of water to this facility is on a fully-redundant system, it is understood that more than 30 minutes of flow will be available.

The minimum volume of water required for fire suppression is irrelevant in this context as water is supplied from a municipal source and not stored on site.

6.5 System Distribution and Hydraulic Model

The City of Stratford retained C3 Water Inc. to perform water modelling to provide expected hydraulic conditions for the Site when the new Erie Street/Highway 7 watermain system is connected to the existing system on Line 29 and the results are found in the technical memo entitled “Perth Line 29 at Dunn Road and Erie Street - Hydraulic Analysis”, dated April 7, 2020. This new construction will connect an existing well at Dunn Road to the Romeo Street Reservoir. Based on modelling completed by C3 Water Inc., the interconnection of these two systems is expected to improve flows and residual pressures in the proposed development area. The modelling completed for the City of Stratford only took into consideration the interconnection of the two systems and did not take into account development of any future lands (including this Development or future annexed lands).

Given the size of the facility and its location, which is set back from the roadways, a complete steady-state system was modelled with the following parameters:

- 300-mm-diameter service connections to the municipal system are proposed. The municipal distribution system is also 300 mm in diameter. The large-sized mains are proposed to limit hydraulic losses in the system.
- The Site will be provided with multiple separate connections to municipal services with testable, double check valve assembly (DCVA) backflow preventors at source, in accordance with CAN/CSA-B64-10. For the purposes of hydraulic modelling, a WATTS Series 774 DCVA was utilized as a reference backflow preventor for a 300-mm-diameter water service. The DCVA assemblies will provide premise isolation.

- Similar to premise isolation, each incoming service will be connected to a metering assembly. For the purposes of hydraulic modelling, the Neptune High Performance Protectus III Fire Service Meter was utilized as a reference for a 250-mm-diameter water service[2].
- A water distribution loop will be provided around the facility for domestic, process, and fire suppression use. This loop will mimic a municipal-type water distribution system. The loop will provide additional redundancy and allow for a more efficient distribution of flows to minimize losses.
- With a 300 mm distribution system, the minor losses through bends and fittings were not considered to be significant. Losses due to elevation changes, and due to high flow through the meters and backflow preventor assemblies were modelled in addition to major losses through the pipes.

Based on the above, an EPANET model was created with connections to both Highway 7 and Line 29. The connections were modelled to represent the residual pressure curves in the "future 300 mm watermain" scenario for maximum day demand (MDD) conditions for nodes J-XYG and J-1852 as noted in modelling by C3 Water Inc.

The model includes two connections to Line 29 and one connection to Highway 7. This configuration was chosen based on justification provided in the *Functional Servicing and Stormwater Management Report* (September 2019) prepared by WalterFedy in support of the annexation of the lands. To summarize this report:

- Multiple connections to the site are required for redundancy for fire and process flows.
- A single connection to Highway 7 would result in significant major pipe head losses until other lands are developed. A lower total flow is available from this connection and preliminary calculations indicated that the connection would not be sufficient for concurrent domestic and fire flows.
- Based on preliminary calculations, a single connection to Line 29 would be able to provide fire flows and domestic demands but, as a stand-alone connection, cannot provide redundancy.
- Two connections to Line 29 and one connection to Highway 7 achieve sufficient redundancy for domestic and fire protection around the site.

The water distribution model was run with the following scenarios:

- Maximum Day Demand (MDD) – the MDD condition was modelled to illustrate static pressure at each of the buildings around the site. Typically an Average Day Demand (ADD) condition is modelled for such a scenario; however, since the non-fire condition demands are dominated by process flows that do not exhibit any variation between ADD and MDD conditions, and given that the non-process domestic flows are negligible in comparison to total domestic flows, the MDD condition was modelled to determine static pressures around the site for ease of modelling.
- MDD + Fire – the MDD + fire scenario is the governing condition for the sizing of the watermain distribution system. This scenario is critical to understand if all points in the distribution system have a resultant pressure greater than 140 kPa (20 psi). This scenario is also important to understand residual pressures available for the processes, and whether supplementary booster pumps are required. As such, the changes in residual pressure at Building C during fire events has been highlighted.

The scenarios were run with different cases each representing conditions that could occur over the life of the Development. These cases are noted as follows:

[2] In accordance with City of Stratford Infrastructure Standards, the water meter is to be one size smaller than the diameter of the water service.

- Case 1: All three incoming water services operating
- Case 2: Only Highway 7 service operational (very low probability case due to other redundancies)
- Case 3: Only Line 29 services operational
- Case 4: Single Line 29 service operational (very low probability case due to other redundancies)
- Case 5: Single Line 29 service + Highway 7 service

For each of the cases, the fire demand was assigned to a node noted to be furthest away from the incoming service to model the most critical conditions. The following table lists the nodes selected as the critical locations for fire protection for each case.

Table IX: Critical Nodes for Fire Protection

Case ID	Node	Node Description
Case1 and 5	N129	Hydrant located at mid-point of warehouse, south side
Case2	N43	Hydrant located by railway loading pit
Case 3 and 4	N149	Hydrant located by Office building

And lastly, the model was used to create residual pressure and flow curves at Building B and Building H. Based on available information, these buildings are the only sprinklered buildings and the curves would be necessary for the design of the sprinkler systems. These curves will require validation through a hydrant flow test once the watermain distribution system is constructed.

6.6 Modelling Results

The maximum day demand scenario for domestic and process uses was run with favorable results.
Table X provides the evaluated static pressure results at each of the buildings and the maximum and minimum pressure through the entire distribution system for Case 1 (normal operating conditions). The complete modelling results for each of the cases are provided in Appendix B.

Table X: Static Pressure at Buildings in Normal Operating Conditions

Building 1 and 2	38.16	*m*	54.26	*psi*
Building 3	38.43	*m*	54.65	*psi*
Building 4	38.46	*m*	54.69	*psi*
Building A	37.17	*m*	52.85	*psi*
Building B	37.92	*m*	53.92	*psi*
Building C	39.09	*m*	55.58	*psi*
Building D	39.22	*m*	55.77	*psi*
Building F	39.07	*m*	55.56	*psi*
Building G	38.94	*m*	55.37	*psi*
Building H	38.72	*m*	55.06	*psi*
Building I	39.07	*m*	55.56	*psi*
Building N	38.40	*m*	54.60	*psi*
Building P	37.66	*m*	53.55	*psi*
Building U	39.48	*m*	56.14	*psi*
Building V	36.99	*m*	52.60	*psi*
Maximum Pressure	43.48	*m*	61.83	*psi*
Minimum Pressure	36.99	*m*	52.60	*psi*

Based on the modelling results, it is noted that the distribution system allows for operation within the acceptable pressure range of 40-70 psi in a non-fire situation.

The results of the MDD + Fire scenario are presented in Table XI. The results of the modelling validate key conclusions from the functional servicing study. Based on the results of the modelling, it is noted that only two cases provide sufficient fire protection.

Table XI: Maximum Day Demand and Fire Flow Results

	Case 1	Case 2	Case 3	Case 4	Case 5
Fire at Warehouse	PASS	FAIL	PASS	FAIL	PASS
Fire at Railway Pit	PASS	FAIL	PASS	FAIL	PASS
Fire at Office	PASS	FAIL	FAIL	FAIL	PASS
Overall	PASS	FAIL	FAIL	FAIL	PASS

The failure to provide MDD + Fire Flows in Case 3 merits further discussion. The modelling indicates that the failure is a result of a single node in the system with a resultant pressure of 13.68 m (19.5 psi). The node in question is immediately downstream of the backflow preventor chamber at the Highway 7 entrance, with an elevation of 368.94 m in the model. The roadway in this location is elevated compared to the surrounding ground elevation by approximately 1.5 m. Should the watermain be relocated outside of the elevated roadway, and dropped by the 1.5 m in elevation, the resultant pressure at the node would be 15.18 m (21.6 psi). Case 3 is, therefore, considered a pass with a modification in the location of the watermain in the vicinity of the entrance.

As such, based on the modelling, it can be concluded that sufficient flow can be provided above the minimum pressure of 14.1 m (20 psi) to service the maximum day domestic and fire flows around the site under normal operating conditions.

In redundancy scenarios, should a single connection from Line 29 or the connection from Highway 7 be non-operational, adequate flows can still be provided above the minimum pressure of 14.1 m (20 psi). The condition with the service from Highway 7 being non-operational results in pressures only marginally above 14.1 m, but still deemed to be acceptable.

Individually, single connections from Line 29 or a single connection from Highway 7 cannot provide sufficient domestic and fire protection flows concurrently to service this Development.

During a fire scenario, the pressure at Building C which provides the required flows to drive the largest processes in the warehouse, varies widely based on which of the three services are functional to the site. Under regular conditions, Building C is expected to draw all of its process needs at a residual pressure of 39.1 m (55.6 psi). In the event of a fire, the residual pressure drops to between 27 m (38 psi) and 30 m (41psi) should the Highway 7 service continue to remain operations, with a possibility of dropping to approximately 19 m (27 psi) should only the two Line 29 services be live to the site. It is recommended that the process feeds to the warehouse be equipped with booster pumps and capacitor tanks to provide a steady flow to the process equipment in the event of a fire.

Model results, a sample output, and flow curves are provided in Appendix B.

7.0 CONCLUSIONS

Based on the servicing design presented in this report, the following conclusions are presented:

- Sanitary discharge from the site, consisting of process water discharge and domestic water discharge, will be conveyed to a municipal sanitary sewer pumping station.

- Process wastewater discharge will meet City of Stratford sewer use bylaw for all listed parameters.
- A 450-mm-diameter sanitary sewer at 0.25% is proposed to provide gravity service for the Site and provide self-cleansing velocities in the sewer of greater than 0.8 m/s.
- The Site will be connected to a fully-redundant water supply for water servicing. Water servicing will be provided through two 300-mm-diameter service connections from Line 29 and one 300-mm-diameter service connection from Highway 7.
- A minimum of two municipal watermain connections are required to be active to provide sufficient fire protection to the site.
- The fire protection system will be looped internal to the Site. Testable backflow preventors will be provided at source in accordance with CAN/CSA-B64-10. Backflow preventors are proposed for premise isolation of the private system.
- All flow, including fire water flow, will be directed through metering assemblies at the property limits.
- The municipal water supply is expected to deliver a minimum of 275 kPa (40 psi) to the buildings in non-fire conditions and a minimum of 140 kPa (20 psi) in fire conditions. Losses through the metering assemblies and backflow preventors have been taken into account as part of the modelling.

All of which is respectfully submitted,

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APPENDIX A

Source Water Protection

Source Protection Information Atlas

Legend

- Source Protection Areas
- Permits To Take Water: Active
- Intake Protection Zone Q
- Wellhead Protection Area Q1
- Issue Contributing Areas
- WHPA Groundwater Under Direct Influence (WHPA-E)
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Assessment Parcel

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Ontario

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Map Created: 4/3/2020
Map Center: 43.33958 N, -81.01739 W

Policy Database Number	Municipality	Policy Text
1.01		Education and Outreach programs designed to increase awareness and understanding of drinking water threats, and promote best management practices as a means of reducing the risks to drinking water sources, shall be developed and implemented collaboratively by Municipal/Conservation Authority/Provincial partners with the Conservation Authority providing a lead role. The programs shall address low, moderate and significant drinking water threats with the priority placed on significant drinking water threats and activities which may contribute to an issue. The focus should be on incorporating Drinking Water Source Protection messaging into existing education and outreach materials and programs as a first priority. New education and outreach materials and programs may also be developed and implemented, if deemed necessary and/or appropriate, and be subject to available funding. Municipalities and Conservation Authorities, in collaboration with the Province (Ministry of Environment), should consider options for the long-term support of education and outreach programs. The program scope shall be subject to available funding.
1.06		All planning decisions shall be in conformity with those policies that address significant drinking water threats as per Section 39 (1) (a) of the Clean Water Act. All planning decisions shall have regard to those policies that address low and moderate drinking water threats as per Section 39 (1) (b) of the Clean Water Act. At minimum, the Municipalities shall amend the Official Plan and Zoning By-Laws to: a. Identify the vulnerable areas in which a significant drinking water threat could occur; b. Indicate that within the areas identified, any use or activity that is, or would be, a significant drinking water threat is required to conform with all applicable Source Protection Plan policies and, as such, may be prohibited, restricted or otherwise regulated by the policies contained in the Source Protection Plan; c. Identify the significant drinking water threats that are prohibited through Prescribed Instruments, or Section 57 of the Clean Water Act, in accordance with the significant drinking water threat-specific policies contained in this Source Protection Plan; d. Incorporate any other amendments required to conform with the significant drinking water threat specific land use policies or to have regard for the low and/or moderate threat specific land use policies identified in this Source Protection Plan; and,

Policy Database Number	Municipality	Policy Text
1.07		In areas where Sections 57 or 58 of the Clean Water Act applies, all land uses identified within the Official Plan and/or Zoning By-laws, with the exception of residential uses, are hereby designated for the purposes of Section 59 (Restricted Land Uses). Activities identified as significant drinking water threats through event-based modelling are exempted from this policy (as they are covered by policy 1.08). Within these designated land use categories and areas, a notice from the Risk Management Official in accordance with Section 59(2) of the Clean Water Act shall be required prior to approval of any Planning Act or Building Permit application. Despite the above policy, a Risk Management Official may issue written direction specifying the situations under which a planning authority or building official may be permitted to make the determination that a site-specific land use is not designated for the purposes of Section 59. Where such direction has been issued, a site-specific land use that is the subject of an application for approval under the Planning Act or for a permit under the Building Code Act is not designated for the purposes of Section 59, provided that the planning authority or building official, as the case may be, is satisfied that: * The application complies with the written direction from the Risk Management Official; and * The applicant has demonstrated that a significant drinking water threat activity designated for the purposes of Section 57 or 58 will not be engaged in, or will not be affected by the application.
1.08		For any commercial, agricultural and industrial land uses, identified within municipal Official Plans and/or Zoning By-laws, that are located in areas where event-based modelling has identified activities as significant drinking water threats, Sections 57 and 58 of the Clean Water Act apply. These areas are hereby designated for the purposes of Section 59 (Restricted Land Use). Within these designated areas, a notice from the Risk Management Official in accordance with Section 59(2) of the Clean Water Act shall be required prior to approval of any Planning Act or Building Permit application. Despite the above policy, a Risk Management Official may issue written direction specifying the situations under which a planning authority or building official may be permitted to make the determination that a site-specific land use is not designated for the purposes of Section 59. Where such direction has been issued, a site specific-land use that is the subject of an application for approval under the Planning Act or for a permit under the Building Code Act is not designated for the purposes of Section 59, provided that the planning authority or building official, as the case may be, is satisfied that: * The application complies with the situations specified in the written direction from the Risk Management Official; and * The applicant has demonstrated that a significant drinking water threat activity designated for the purposes of Section 57 or 58 will not be engaged in by the application.

Policy Database Number	Municipality	Policy Text
1.09		Except as set out below, within another policy within this Source Protection Plan, or as otherwise prescribed by the Clean Water Act, the policies contained in the Source Protection Plan shall come into effect on the effective date of the Source Protection Plan. 1. Policies written pursuant to Section 22(6) of the Clean Water Act (other contents), shall be implemented within two (2) years of the effective date of the Source Protection Plan. 2. Policies written pursuant to Section 22(7) of the Clean Water Act (incentive programs, education and outreach) programs shall be implemented within two (2) years of the effective date of the Source Protection Plan. 3. Policies written pursuant to Section 40(2) and Section 42 of the Clean Water Act (deadlines for Official Plan and Zoning by-law conformity through policy 1.06), shall establish the following implementation timing: a. Updates to Official Plans shall be initiated as soon as possible after the effective date of the Source Protection Plan with the goal of being adopted within three (3) years of the effective date of the Source Protection Plan; and b. Updates to zoning By-laws shall be initiated as soon as possible after the effective date of the Source Protection Plan and be adopted within three (3) years of the effective date of the Source Protection Plan or, where amendments to the Official Plan are required to implement the SPP policies, within three (3) years of the effective date of those Official Plan amendments. 4. Policies written pursuant to Section 43(2) of the Clean Water Act (CWA) (prescribed instrument), regarding the amendment to the prescribed instruments shall conform to the Source Protection Plan within three (3) years of the effective date of the Plan. 5. If an activity was engaged in at a particular location before this Source Protection Plan takes effect and the Risk Management Official gives notice to a person who is engaged in the activity at that location (as per Sec. 58(4) of the CWA, 2006), the policies written pursuant to Section 58 shall apply on and after a date specified in the notice that is at least 120 days after the date the notice is given.
2.01		Land application of untreated septage shall be prohibited so that it ceases to be or never becomes a significant drinking water threat. Within vulnerable areas where it is or would be a significant threat, the Province (Ministry of Environment) shall prohibit this activity through the Environmental Compliance Approvals (ECA) process. All ECAs issued following the effective date of the Source Protection Plan shall incorporate terms and conditions. These terms and conditions, when implemented, would prohibit this future activity where it is, or would be, a significant drinking water threat.
2.03		The storage, treatment or discharge of tailings from mining operations shall be prohibited so that it ceases to be or never becomes a significant drinking water threat. This policy shall apply in areas where this activity is, or would be, a significant drinking water threat. Where this activity is subject to Environmental Compliance Approvals (ECA), the Province (Ministry of Environment) shall be consistent with this policy by prohibiting this activity through existing and future ECAs. Further, this activity shall be designated for the purposes of Section 57 of the Clean Water Act (prohibition).

Policy Database Number	Municipality	Policy Text
2.04		To reduce the risk to municipal drinking water sources from existing waste disposal sites, where this activity is a significant drinking water threat, it shall be managed so that it ceases to be a significant drinking water threat. In these areas and where the activity is subject to Environmental Compliance Approvals (ECAs), the Province (Ministry of Environment) shall review and, if necessary, amend existing ECAs to comply with this policy. Where any aspect of a waste disposal site is a significant drinking water threat and is not subject to an ECA, this activity is designated for the purposes of Section 58 of the Clean Water Act.
2.05		With the exception of the following waste disposal site threat subcategories: storage of wastes described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste; or storage of hazardous or liquid industrial waste, where this activity would be a significant drinking water threat future waste disposal sites shall be designated for the purposes of Section 57 of the Clean Water Act so that so that the activity ceases to be or never becomes a significant drinking Where this activity is subject to Environmental Compliance Approvals (ECAs), the Province (Ministry of Environment (MOE)) shall prohibit this activity through the ECAs.
2.05.1		Where a future waste disposal site does not require an Environmental Compliance Approval and comprises one of the following waste disposal site threat subcategories: storage of wastes described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste; or storage of hazardous or liquid industrial waste,and where such a waste disposal site would be a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it never becomes a significant drinking water threat. The requirements of the risk management plan may be based on Ministry of the Environment tools and requirements for such
2.07		To reduce the risk to municipal drinking water sources from existing stormwater management facilities in vulnerable areas where the discharge of stormwater is a significant threat, the Province (Ministry of Environment) shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions. These terms and conditions, when implemented, shall manage this activity so that it ceases to be a significant drinking water threat. This review should also consider the impact of snow melt water and road salt on drinking water where the handling and storage of road salt and storage of snow are significant drinking water
2.08		To reduce the risk to municipal drinking water sources from future stormwater management facilities that would be a significant drinking water threat, the Province (Ministry of Environment) shall prohibit this activity through the Environmental Compliance Approvals (ECA) process so that it never becomes a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
2.09		For any existing or new sanitary sewer and related pipes, where this activity is, or would be, a significant drinking water threat, the Ministry of the Environment shall ensure that Environmental Compliance Approvals (ECA) for these activities are prepared, or, where necessary, amended to incorporate terms and conditions. These terms and conditions, when implemented, shall manage the activity so that it ceases to be, or never becomes, a significant drinking water threat. The terms and conditions may include, but not necessarily be limited to, requirements for regular maintenance and inspections by the holder of the ECA.
2.10		To reduce the risk to municipal drinking water sources from existing: sewage treatment effluent discharge; sewage treatment plant by-pass discharge; or combined sewer discharge where the discharge is a significant drinking water threat, the Province (Ministry of Environment) shall review and, where necessary, amend Environmental Compliance Approvals (ECA) to incorporate terms and conditions. These terms and conditions, when implemented, shall manage this activity so that it ceases to be a significant drinking water threat.
2.11		To reduce the risk to municipal drinking water sources from future: sewage treatment effluent discharge; sewage treatment plant by-pass discharge; or combined sewer discharge where the discharge would be a significant drinking water threat, the Province (Ministry of Environment) shall prohibit this activity through the Environmental Compliance Approvals (ECA) process so that the activity never becomes a significant drinking water threat.
2.12		To reduce the risk to municipal drinking water sources from existing sewage storage in vulnerable areas where it is a significant drinking water threat, the Province (Ministry of Environment) shall review and, where necessary, amend Environmental Compliance Approvals (ECA) to incorporate terms and conditions. These terms and conditions, when implemented, shall manage this activity so that it ceases to be a significant drinking water threat.
2.13		To reduce the risk to municipal drinking water sources from future sewage storage where this activity would be a significant drinking water threat, the Province (Ministry of Environment) shall prohibit this activity through the Environmental Compliance Approvals process so that it never becomes a significant drinking water threat.
2.13.1		For a new septic system or septic system holding tank requiring an Environmental Compliance Approval, that is located within a WHPA-A or B with a vulnerability score of 10, where these activities would be significant drinking water threats, the Ministry of the Environment shall prohibit these activities through the Environmental Compliance Approvals process so that they never become

Policy Database Number	Municipality	Policy Text
2.14		For existing septic systems or septic system holding tanks (including expansions, modifications or replacements) subject to an Environmental Compliance Approval (ECA), that are a significant drinking water threat, the Province (Ministry of Environment) shall review and, where necessary, amend the ECA to incorporate terms and conditions. These terms and conditions, when implemented, shall manage this activity so that it ceases to be a significant drinking water threat. The terms and conditions may include, but not necessarily be limited to: mandatory monitoring of groundwater impacts; contingencies in the event that drinking water quality is adversely affected; regular and ongoing compliance monitoring; mandatory system inspections at least every five (5) years; and annual reporting to the Source Protection Authority on any required inspection or monitoring programs;
2.15		For new septic systems or new septic system holding tanks, with the exception of: those required for a municipal water supply well; where these activities would be a significant drinking water threat, Municipalities shall amend their Official Plan and Zoning By-laws to prohibit uses, buildings or structures that would require a new septic system or septic system holding tank to be located within the above noted significant drinking water threat areas so that these activities never become significant drinking water threats.
2.16		To reduce the risk to municipal drinking water sources from septic systems or septic system holding tanks in areas where this activity would be a significant threat, municipalities shall consider enacting and enforcing by-laws to require mandatory hook-up to municipal sanitary sewer services and decommissioning of septic systems or holding tanks, where municipal sanitary sewer services exist and where permitted by the servicing policies in the Official Plan.
2.17		For septic systems or septic system holding tanks regulated under the Ontario Building Code Act, where such systems are: existing (including modifications or replacements); or new and required for a municipal supply well; and where these activities are, or would be, significant drinking water threats, the Municipalities shall implement an on-site sewage system maintenance inspection program, as required by the Ontario Building Code Act so that these activities cease to be or never become significant drinking water threats.
2.19		To reduce the risk to municipal drinking water sources from existing industrial effluent discharges within those areas where this activity is a significant drinking water threat, the Province (Ministry of Environment) shall review and, where necessary, amend Environmental Compliance Approvals (ECA) to incorporate terms and conditions. These terms and conditions, when implemented, will manage the activity so that it ceases to be a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
2.21		To reduce the risk to municipal drinking water sources from the application of agricultural source material (ASM), this activity shall be managed where it is or would be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. Nutrient Management Act principles (including NMA prohibitions) shall form the basis of the Risk Management Plan provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat. Any Prescribed Instrument related to the Application of ASM that is created, amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be or never becomes a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
2.22		To reduce the risk to municipal drinking water sources from the storage of agricultural source material (ASM) where ASM is or would be stored in a nutrient storage facility as defined under the Nutrient Management Act (NMA), this activity shall be managed where it is or would be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. NMA principles (including NMA prohibitions) shall form the basis of the Risk Management Plan provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat. The Risk Management Plan shall not allow at or above grade temporary field nutrient storage sites as defined under the NMA. Any Prescribed Instrument related to the Storage of ASM that is created, amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be or never becomes a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However, nothing in this policy grants the Risk Management Official authority to specify requirements for a prescribed instrument issued under

Policy Database Number	Municipality	Policy Text
2.23		To reduce the risk to municipal drinking water sources from the application of non-agricultural source material (NASM), this activity shall be prohibited where it is or would be a significant drinking water threat. This activity shall be designated for the purposes of Section 57 of the Clean Water Act so that the activity ceases to be or never becomes a significant drinking water threat. Any Prescribed Instruments related to the Application of NASM that is created, or amended shall be consistent with this policy.
2.24		To reduce the risk to municipal drinking water sources from the handling and storage of non-agricultural source material (NASM) where NASM is stored in an existing nutrient storage facility as defined under the Nutrient Management Act (NMA), this activity shall be managed where it is a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. NMA principles (including NMA prohibitions) shall form the basis of the Risk Management Plan, provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be a significant drinking water threat. The Risk Management Plan shall not allow at or above grade temporary field nutrient storage sites as defined under the NMA. Any Prescribed Instrument related to existing NASM Storage amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However, nothing in this policy grants the Risk Management Official authority to specify requirements for a prescribed instrument issued under the Nutrient Management Act, or where a person is seeking an exemption from a risk management plan under section 61 of O.Reg
2.25		To reduce the risk to municipal drinking water sources from the future handling and storage of non-agricultural source material (NASM) where NASM would be stored in a nutrient storage facility as defined under the Nutrient Management Act (NMA), this activity shall be prohibited where it would be a significant drinking water threat. This activity shall be designated for the purposes of Section 57 of the Clean Water Act so that the activity never becomes a significant drinking water threat. Any Prescribed Instrument related to future NASM Storage that is created shall be consistent with this policy.

Policy Database Number	Municipality	Policy Text
2.26		To reduce the risk to municipal drinking water sources from the application of commercial fertilizer, this activity shall be managed where it is or would be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. Nutrient Management Act principles (including NMA prohibitions) shall form the basis of the Risk Management Plan, provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat. Any Prescribed Instrument related to the Application of Commercial fertilizer that is created, amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be or never becomes a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
2.27		The handling and storage of commercial fertilizer stored at existing facilities where it is sold or used for application at other sites, shall be managed so that the activity ceases to be a significant drinking water threat. The activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where this activity is a significant drinking water threat. The Risk Management Plan shall not allow temporary storage of commercial fertilizers.
2.28		The future handling and storage of commercial fertilizer that would be stored at facilities where it would be sold or used shall be prohibited so that it never becomes a significant drinking water threat. This activity is designated for the purposes of Section 57 of the Clean Water Act and shall be prohibited where it would be a significant drinking water threat. This policy shall not be applied to areas
2.29		The handling and storage of nitrogen based commercial fertilizer, in event modeled quantities, shall be managed so that it ceases to be or never becomes a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. The Risk Management Plan shall not allow temporary storage of nitrogen based commercial fertilizers. This policy shall apply in event modelled quantities in intake protection zone areas where event-based modelling has identified the activity as a significant threat.
2.30		The application of pesticides to land shall be managed so that it ceases to be or never becomes a significant drinking water threat. This policy shall apply to pesticides identified within the Provincial Drinking Water Threats Tables, in areas where this activity is, or would be, a significant drinking water threat. Pesticide application shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. Further, all Pesticide Permits issued under the Pesticide Act (existing and new) shall prohibit the use of pesticides which would be a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
2.32		The handling and storage of pesticides, where pesticides are stored at a facility for retail sale or use, shall be managed so that the activity ceases to be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where the activity is or would be a significant drinking water threat. The Risk Management Plan shall not allow temporary storage of pesticides.
2.33		The future handling and storage of pesticides at a facility where they are manufactured, distributed or processed shall be prohibited so that the activity never becomes a significant drinking water threat. This activity shall be designated for the purposes of Section 57 of the Clean Water Act and shall be prohibited where it would be a significant drinking water threat.
2.34		Existing handling and storage of pesticides at a facility where they are manufactured, distributed or processed shall be managed so that the activity ceases to be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where the activity is or would be a significant drinking water threat.
2.35		The handling and storage of road salt in any form (solid, liquid, mixed with sand and including for the use as a dust suppressant) shall be prohibited so that it ceases to be or never becomes a significant drinking water threat. In areas where it is or would be a significant drinking water threat, this activity shall be designated for the purposes of Section 57 of the Clean Water Act and shall also be prohibited through the Aggregate Resources Act (ARA) by prohibiting road salt stored in sites licensed or permitted under the ARA.
2.36		The storage of snow on-site shall be managed so that the activity ceases to be or never becomes a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where the activity is or would be a significant drinking water threat. The Risk Management Plan shall prohibit snow transported to the storage area from off site and may include other such measures or requirements as are deemed necessary by the Risk Management
2.37		To reduce the risk to municipal drinking water sources from the storage of snow in aggregate operations, the Province (Ministry of Natural Resources) shall include conditions on Aggregate Permits and site plan approvals under the Aggregate Resources Act. Where it could be a significant drinking water threat (existing), site plans should be reviewed to ensure that they are consistent with Aggregate Resources Policy A.R.5.00.14; and where it would be a significant drinking water threat (future), that Aggregate Resources Policy A.R.5.00.14 continue to apply for the approval of future sites.
2.38		To reduce the risk to municipal drinking water sources from the existing handling and storage of fuel, this activity shall be managed where it is a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. The Risk Management Official must be satisfied that the Risk Management Plan will adequately manage the activity so that it ceases to be a significant drinking water threat. Where, in the opinion of the Risk Management Official, a future expansion of a facility handling and storing fuel is of such size that it cannot be managed, the Risk Management Plan may restrict the size so that the activity ceases to be a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
2.39		To reduce the risk to municipal drinking water sources from the handling and storage of fuel, in event modelled quantities, this activity shall be managed where it is or would be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. This policy shall apply to event modelled quantities in event based areas where modelling has identified the activity as a significant drinking water threat. The Risk Management Official must be satisfied that the Risk Management Plan will adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat. Where, in the opinion of the Risk Management Official, a future expansion of a facility handling or storing fuel is of such size that it cannot be managed, the Risk Management Plan may restrict the size so that the activity ceases to be or never becomes a significant drinking water threat. The Risk Management Plan may include but is not limited to: details concerning how to contain fuel; the location of fuel; how fuel is stored. This policy shall not apply to the storage of fuel for use in back-up generators for Water Works.
2.40		To reduce the risk to municipal drinking water sources from the future handling and storage of fuel this activity shall be prohibited where it would be a significant drinking water threat. This activity is designated for the purposes of Section 57 of the Clean Water Act so that the activity never becomes a significant drinking water threat.
2.41		To reduce the risk to municipal drinking water sources from the handling and storage of fuel where fuel storage is associated with aggregate operations, this activity shall be managed where it is a significant drinking water threat. The Province (Ministry of Natural Resources) shall create, review and, where necessary, amend any required site plans to adequately manage the activity. These site plans shall incorporate terms and conditions. These terms and conditions, when implemented, shall manage this activity so that it ceases to be or never becomes a significant drinking water threat. The terms and conditions may include, but not necessarily be limited to: - relocation of this activity to an area where the activity is not a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
2.42		To reduce the risk to municipal drinking water sources from the handling and storage of fuel for use in back-up generators for Water Works, this activity shall be managed where it is or would be a significant threat. The Province (Ministry of Environment) shall create, review and, where necessary, amend any required approvals, licenses or permits to adequately manage the activity such that it ceases to be a significant drinking water threat. These approvals, licenses or permits shall incorporate terms and conditions. These terms and conditions, when implemented, shall manage the activity such that it ceases to be or never becomes a significant drinking water threat. The terms and conditions may include, but not necessarily be limited to: require the use of double-walled tanks; secondary containment; regular inspection of fuel tanks and fuel handling equipment.
2.44		Existing handling and storage of dense non-aqueous phase liquids (DNAPLs), through all phases of its life cycle including disposal, shall be managed so that the activity ceases to be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where this activity is a significant drinking water threat and, in the opinion of the Risk Management Official, substantial quantities and concentrations not typical of household use are
2.45		To reduce the risk to municipal drinking water sources from the handling and storage of dense non-aqueous phase liquids in concentrations typical of household use, where this activity is, or would be, a significant drinking water threat, municipalities, in collaboration with the Conservation Authority, the Ministry of Environment, and/or wherever possible other bodies, shall develop and implement an education and outreach program directed at the owners and/or occupants of such properties. The program may include, but not necessarily be limited to, the provision of education material and information about the nature of the threat, how DNAPLs can be identified and handled and disposed of in a manner so that the activity would cease to be or never become a significant drinking water threat. This policy shall be initiated within one (1) year of the effective date of the Source
2.46		Future handling and storage of dense non-aqueous phase liquids (DNAPLs), through all phases of its life cycle including disposal, shall be managed so that the activity ceases to be a significant drinking water threat. This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required where, in the opinion of the Risk Management Official, substantial quantities and concentrations not typical of household use would be handled or stored, and where this activity would be a significant drinking water threat other than in Wellhead Protection Area (WHPA) A or B with a vulnerability score of 10.
2.47		Future handling and storage of dense non-aqueous phase liquids (DNAPLs), through all phases of its life cycle including disposal, shall be prohibited so that the activity never becomes a significant drinking water threat. This activity shall be designated for the purposes of Section 57 of the Clean Water Act and shall be prohibited where, in the opinion of the Risk Management Official, substantial quantities and concentrations not typical of household use would be handled and stored, and where this activity would be a significant drinking water threat in Wellhead Protection Area (WHPA) A and B with a vulnerability score of 10.
2.48		Existing handling and storage of organic solvents, through all phases of its life cycle including disposal, shall be managed so that the activity ceases to be a significant drinking water threat. Under circumstances identified within the Provincial Drinking Water Threats Tables, in areas where this activity is a significant drinking water threat, this activity is designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required.

Policy Database Number	Municipality	Policy Text
2.49		Future handling and storage of organic solvents, through all phases of its life cycle including disposal, shall be prohibited so that the activity never becomes a significant drinking water threat. Under circumstances identified within the Provincial Drinking Water Threats Tables, in areas where this activity is a significant drinking water threat, this activity is designated for the purposes of Section 57 of the
2.50		To reduce the risk to municipal drinking water sources from runoff that contains chemicals used in the de-icing of aircraft, this activity shall be designated for the purposes of Section 58 of the Clean Water Act. Municipalities, through the Risk Management Official, shall work collaboratively with relevant airport authorities or operators to encourage the development of a Risk Management Plan where this activity is or would be a significant drinking water threat. The Risk Management Plan shall ensure glycol management plans are up-to-date, implemented and effective in managing the activity so that it ceases to be or never becomes a significant drinking water
2.51		To reduce the risk to municipal drinking water sources from the existing or future use of land for livestock grazing, pasturing, an outdoor confinement area, or a farm-animal yard, these activities shall be managed where they are a significant drinking water threat. These activities shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. Nutrient Management Act principles (including NMA prohibitions) shall form the basis of the Risk Management Plan provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat. Where, in the opinion of the Risk Management Official, a future livestock grazing land, pasture land, outdoor confinement area, or farm-animal yard is of such size that it cannot be managed, the Risk Management Plan may restrict the size so that the activity ceases to be or never becomes a significant drinking water threat. Any Prescribed Instrument related ASM Generation Through Livestock Grazing or Pasturing Land, an Outdoor Confinement Area or a Farm Animal Yard that is created, amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be or never becomes a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However, nothing in this policy grants the Risk Management Official authority to specify requirements for a prescribed instrument issued under

Policy Database Number	Municipality	Policy Text
2.53		The transportation of fuel and nitrogen based fertilizer along provincial highways, county and local roads, railways, waterways and the transportation of liquid petroleum products through pipelines have been identified as a local threat in the Assessment Reports. Event based modelling has identified these activities as significant drinking water threats within specified parts of IPZ-1, 2 and 3. In these areas, municipalities shall consider: a) rerouting, where possible, highways and arterial roads around more vulnerable areas where opportunities arise; b) placing road signs, consistent with policies 1.02 and 1.03, at the entrance to IPZs so emergency responders and those engaged in transportation of these materials are aware that a spill may pose a significant risk to the drinking water source; c) reviewing their emergency response programs with regards to the ability to contain chemical spills; and d) reviewing their water treatment plant response time, procedures and equipment.
OC-1.01	Oxford County	Where a term is italicized within the policies of this Chapter of the Source Protection Plan, the following corresponding definitions shall apply. Defined terms are intended to capture both the singular and plural forms of these terms. Area Municipality - means one or more of the eight lower tier municipalities located within the County, consisting of the City of Woodstock, Town of Tillsonburg, Town of Ingersoll and Townships of Blandford-Blenheim, East Zorra-Tavistock, Norwich, Southwest-Oxford and Zorra. County - means the County of Oxford. Existing - means undertaken or established as of the date the Source Protection Plan takes effect, or at some point prior to the date the Source Protection Plan takes effect with a demonstrated intent to continue.

Policy Database Number	Municipality	Policy Text
OC-1.02	Oxford County	Except as set out below, or as otherwise prescribed by the Clean Water Act, the policies contained in this Source Protection Plan shall come into effect on the date of the posting of the notice of approval of this Source Protection Plan on the Environmental Registry. For policies written pursuant to Section 43(2) of the Clean Water Act (prescribed instruments), amendments to existing prescribed instruments shall be completed within three (3) years from the effective date of the Source Protection Plan; For policies written pursuant to Section 40(2) of the Clean Water Act (Official Plan conformity), amendments to the Official Plan required to conform with the policies of this SPP shall be initiated by the County as soon as possible after the effective date of the SPP with the goal of being adopted within three (3) years from the effective date of the SPP. For policies written pursuant to Section 42 of the Clean Water Act Zoning By-law conformity), amendments to Zoning By-laws required to conform with the policies of this Source Protection Plan shall be initiated as soon as possible after the effective date of the SPP and adopted by the Area Municipalities within three (3) years of the effective date of the above noted amendments to the Official Plan; Policies written pursuant to Section 22(6) of the Clean Water Act (other contents), shall be implemented within two (2) years of the effective date of the Source Protection Plan; and Policies written pursuant to Section 22(7) of the Clean Water Act (incentive programs and education and outreach) shall be implemented within two (2) years of the effective date of the Source Protection Plan. If an activity was engaged in at a particular location before this Source Protection Plan takes effect and the Risk Management Official gives notice to a person who is engaged in the activity at that location (as per Sec. 58(4) of the CWA, 2006), the policies written pursuant to Section 58 shall apply on and after a date specified in the notice that is at least 120 days after the date notice is given.
OC-1.04	Oxford County	In accordance with Section 59 of the Clean Water Act, all land uses identified within the County Official Plan and/or Area Municipal Zoning By-laws, that are located within an area where Sections 57 or 58 of the Clean Water Act applies (Well Head Protection Areas A, B or C and Issue Contributing Areas), are hereby designated for the purposes of Section 59 (Restricted Land Uses), with the exception of residential uses. Within these designated land use categories and areas, a notice from the Risk Management Official in accordance with Section 59(2) of the Clean Water Act shall be required prior to approval of any Planning Act or Building Permit application. Despite the above policy, a Risk Management Official may issue written direction specifying the situations under which a planning authority or building official may be permitted to make the determination that a site-specific land use is not designated for the purposes of Section 59. Where such direction has been issued, a site-specific land use that is the subject of an application for approval under the Planning Act or for a permit under the Building Code Act is not designated for the purposes of Section 59, provided that the planning authority or building official, as the case may be, is satisfied that: The application complies with the written direction from the Risk Management Official; and The applicant has demonstrated that a significant drinking water threat activity designated for the purposes of Section 57 or 58 will not be engaged in, or will not be affected by the application.

Policy Database Number	Municipality	Policy Text
OC-1.05	Oxford County	The County shall amend the Official Plan and the Area Municipalities shall amend their respective Zoning By-laws to: - Identify the WHPAs and/or ICAs in which a significant drinking water threat could occur; - Indicate that within the areas identified, any use or activity that is, or would be, a significant drinking water threat is required to conform with all applicable Source Protection Plan policies and, as such, may be prohibited, restricted or otherwise regulated by the policies contained in the Source Protection Plan; - Identify the significant drinking water threats that are prohibited through Prescribed Instruments, or Section 57 of the Clean Water Act, in accordance with the significant drinking water threat-specific policies contained in this Source Protection Plan; - Incorporate any other amendments required to conform with the significant drinking water threat-specific land use policies or to have regard to the low and/or moderate threat-specific land use policies identified in this Source Protection Plan; and, - Incorporate a cross-reference indicating an applicant cannot make a planning application unless it includes a notice issued by the risk management official, as set out in Section 59(1) of the CWA and Section 62 of O.Reg. 287/07.
OC-1.06	Oxford County	Education and Outreach programs designed to increase awareness and understanding of drinking water threats, and promote best management practices as a means of reducing the risks to drinking water sources, shall be developed and implemented collaboratively by the County/Conservation Authority/Provincial partners with the Conservation Authority providing a lead role. The programs shall address low, moderate and significant drinking water threats with the priority placed on significant drinking water threats. The focus should be on incorporating Drinking Water Source Protection messaging into existing education and outreach materials and programs as a first priority. New education and outreach materials and programs may also be developed and implemented, if deemed necessary and/or appropriate, and be subject to available funding. The County and Conservation Authorities, in collaboration with the Province (Ministry of Environment), should consider options for the long-term support of education and outreach programs. The program scope shall be subject to available funding.
OC-1.07	Oxford County	The County and Conservation Authorities, in collaboration with the Province (Ministry of Environment) and other bodies where possible, shall consider supporting existing incentive programs and/or where deemed necessary or appropriate, the development and implementation of new incentive programs directed at existing significant drinking water threats. Such incentive programs may include, but not necessarily be limited to assisting with the costs of implementing risk mitigation practices and transport pathway maintenance and decommissioning and shall be subject to available funding. Incentives shall only be considered for existing significant drinking water threats as prescribed in O. Reg. 287/07. However, incentives shall not be considered for the application of untreated septage; the storage of mine tailings; the application of non-agricultural source material (NASM); the handling and storage of NASM; and the management of runoff that contains chemicals used in the de-icing of
OC-1.11	Oxford County	As part of an overall education and outreach program within each Source Protection Area (SPA), Municipalities shall consider placing Source Protection advisory signage, where municipal arterial roads are located within Wellhead Protection Areas (WHPA) with a vulnerability score of 10. Such signage shall be consistent with the design developed by the Province in collaboration with the SPA and municipalities would be responsible for the purchase, installation and maintenance of such signs.

Policy Database Number	Municipality	Policy Text
OC-2.01	Oxford County	For any existing waste disposal site within the meaning of Part V of the Environmental Protection Act or as defined by the Ontario Water Resources Act that is subject to an Environmental Compliance Approval, where this activity is a significant drinking water threat, the Ministry of the Environment shall review and, where necessary, amend Environmental Compliance Approvals to incorporate terms and conditions. These terms and conditions, when implemented, shall manage the activity so that it ceases to be a significant drinking
OC-2.02	Oxford County	For any existing waste disposal site, or aspect thereof, within the meaning of Part V of the Environmental Protection Act or as defined by the Ontario Water Resources Act that is not subject to an Environmental Compliance Approval, where this activity is a significant drinking water threat, it is designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a significant drinking water threat.
OC-2.03	Oxford County	For any new waste disposal site within the meaning of Part V of the Environmental Protection Act or as defined by the Ontario Water Resources Act that requires an Environmental Compliance Approval, where this activity would be a significant drinking water threat, the Ministry of the Environment shall prohibit this activity through the Environmental Compliance Approvals process so that it never becomes a significant drinking water threat.
OC-2.04	Oxford County	With the exception of the following waste disposal site threat subcategories: - storage of wastes described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste; or - storage of hazardous or liquid industrial waste, where any new waste disposal site, or aspect thereof, within the meaning of Part V of the Environmental Protection Act, that does not require an Environmental Compliance Approval, would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that it never becomes a
OC-2.04.1	Oxford County	Where a new waste disposal site, or aspect thereof, within the meaning of Part V of the Environmental Protection Act does not require an Environmental Compliance Approval and comprises one of the following waste disposal site threat subcategories: * storage of wastes described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste; or * storage of hazardous or liquid industrial waste, and where such waste disposal site would be a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity such that it never becomes a significant drinking water threat. The requirements of the risk management plan may be based on Ministry of the Environment tools and requirements for such activities, as set out in the Environmental Protection Act, but may also include any modifications or additional requirements that are

Policy Database Number	Municipality	Policy Text
OC-2.05	Oxford County	For any septic system or septic system holding tanks regulated under the Ontario Building Code Act, where such systems are: existing (including expansions, modifications or replacements); or new and required for a municipal water supply well; or new and located within an ICA, but outside of a WHPA-A or B with a vulnerability score of 10, and where these activities are, or would be significant drinking water threats, the County shall implement an on-site sewage system maintenance inspection program, as required by the Ontario Building Code Act so that these activities cease to be or never become a significant drinking water threat.
OC-2.06	Oxford County	For new septic systems or septic system holding tanks regulated under the Ontario Building Code Act, with the exception of: those required for a municipal water supply well; or those located within an ICA, but outside of a WHPA-A or B with a vulnerability score of 10, where these activities would be a significant drinking water threat, the Area Municipalities shall amend their respective Zoning By-laws to prohibit uses, buildings or structures that would require a new septic system or septic system holding tank to be located within the above noted significant drinking water threat areas so that these activities never become significant drinking water threats.
OC-2.07	Oxford County	For septic systems or septic system holding tanks subject to an Environmental Compliance Approval in accordance with the Ontario Water Resources Act, where such systems are: existing (including expansions, modifications or replacements); or new and located within an ICA, but outside of a WHPA-A or B with a vulnerability score of 10, and where these activities are, or would be, significant drinking water threats, the Ministry of the Environment shall review and, where necessary, amend Environmental Compliance Approvals to incorporate terms and conditions. These terms and conditions, when implemented, shall manage these activities so that they cease to be, or never become, significant drinking water threats. The terms and conditions should include, but not necessarily be limited to: requirements for the proponent/applicant to undertake mandatory monitoring of groundwater impacts; contingencies in the event that drinking water quality is adversely affected; regular and ongoing compliance monitoring; mandatory system inspections at least every five (5) years; annual reporting to the Source Protection Authority and the County on any required inspection or monitoring programs; and upgrading of these septic systems to current standards, where necessary.
OC-2.08	Oxford County	For a new septic system or septic system holding tank requiring an Environmental Compliance Approval, in accordance with the Ontario Water Resources Act that is located within a WHPA-A or B with a vulnerability score of 10, where these activities would be significant drinking water threats, the Ministry of the Environment shall prohibit these activities through the Environmental Compliance Approvals process so that they never become significant drinking water threats.

Policy Database Number	Municipality	Policy Text
OC-2.09	Oxford County	For any existing: sewage treatment plant effluent discharges; storage of sewage; industrial effluent discharge; sewage treatment plant by-pass discharges; or combined sewer discharge where these activities are significant drinking water threats, the Ministry of the Environment shall review and, where necessary, amend Environmental Compliance Approvals to incorporate terms and conditions These terms and conditions, when implemented, shall manage these activities so that they cease to be significant drinking water threats.
OC-2.10	Oxford County	For any new: sewage treatment plant effluent discharges; storage of sewage; industrial effluent discharge; sewage treatment plant by-pass discharges; or combined sewer discharge, where these activities would be significant drinking water threats, the Ministry of the Environment shall prohibit these activities through the Environmental Compliance Approvals process so that they never become significant drinking water threats.
OC-2.11	Oxford County	For any existing or new sanitary sewer and related pipes, where this activity is, or would be, a significant drinking water threat, the Ministry of the Environment shall ensure that Environmental Compliance Approvals for these activities are prepared, or, where necessary, amended to incorporate terms and conditions. These terms and conditions, when implemented, will manage the activity so that it ceases to be or never becomes a significant drinking water threat. The terms and conditions may include, but not necessarily be limited to, requirements for regular maintenance and inspections by the holder of the Environmental Compliance Approval.
OC-2.12	Oxford County	For stormwater management facilities that discharge stormwater; where such facilities are: existing; or new and located within an ICA, where the drainage area associated with the stormwater management facility is less than or equal to 100 hectares, and, where this activity is, or would be, a significant drinking water threat, the Ministry of the Environment shall review and, where necessary, amend Environmental Compliance Approvals to incorporate terms and conditions. These terms and conditions, when
OC-2.13	Oxford County	For new stormwater management facilities that would discharge stormwater, with the exception of: new facilities located within an ICA, where the drainage area associated with the stormwater management facility is less than or equal to 100 hectares, where this activity would be a significant drinking water threat, the Ministry of the Environment shall prohibit this activity through the Environmental Compliance Approvals process so that the activity never becomes a significant drinking water threat.
OC-2.14	Oxford County	For any new or existing application of agricultural source material to land within a WHPA-A, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that it ceases to be or never becomes a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
OC-2.15	Oxford County	For any new or existing application of agricultural source material to land outside of a WHPA 'A', where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be or never becomes a significant drinking water threat. The requirements of the Risk Management Plan will generally be based on the requirements of a Nutrient Management Plan and/or Strategy under the Nutrient Management Act, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official. Any Prescribed Instrument issued under the Nutrient Management Act that is created, amended or used for the purposes of obtaining an exemption from a risk management plan under section 61 of O. Reg. 287/07, shall incorporate terms and conditions that, when implemented, manage the activities they regulate such that those activities cease to be, or never become, a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions, including the Prescribed Instruments that are not directly created or is sued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
OC-2.16	Oxford County	For any new storage of agricultural source material, within a WHPA-A or B with a vulnerability score of 10, where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that it never becomes a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
OC-2.17	Oxford County	For storage of agricultural source material, where such storage is: existing; or new and located within an ICA, but outside of a WHPA-A or B with a vulnerability score of 10, and, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be, or never becomes, a significant drinking water threat. The requirements of the Risk Management Plan will generally be based on the requirements of a Nutrient Management Plan and/or Strategy under the Nutrient Management Act, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official, particularly where such activity is located within an ICA. Any Prescribed Instrument issued under the Nutrient Management Act that is created, amended or used for the purposes of obtaining an exemption from a risk management plan under section 61 of O. Reg. 287/07, shall incorporate terms and conditions that, when implemented, manage the activities they regulate such that those activities cease to be, or never become, a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions, including the Prescribed Instruments that are not directly created or is sued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
OC-2.18	Oxford County	For any new or existing application of non-agricultural source material to land where this activity is, or would be, a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs or the Ministry of the Environment, as applicable, shall prohibit this activity through the Non-Agricultural Source Material (NASM) Plan process, in accordance with the Nutrient Management Act, or through the Environmental Compliance Approval process, in accordance with the Environmental Protection Act, so that this activity ceases to be or never becomes a significant drinking water threat.
OC-2.19	Oxford County	For any existing facility for the handling and storage of non-agricultural source material, where this activity is a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs, or Ministry of the Environment, as applicable, shall review and, if necessary, amend the required Non-Agricultural Source Material (NASM) Plan, in accordance with the Nutrient Management Act, or Environmental Compliance Approval, in accordance with the Environmental Protection Act, so that Plans/Compliance Approvals incorporate terms and conditions. These terms and conditions, when implemented, manage this activity so that it ceases to be a
OC-2.20	Oxford County	For any new handling and storage of non-agricultural source material, where this activity would be a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs or Ministry of the Environment, as applicable, shall prohibit this activity through the Non-Agricultural Source Material (NASM) Plan process in accordance with the Nutrient Management Act, or through the Environmental Compliance Approval process in accordance with the Environmental Protection Act, so that this activity never becomes

Policy Database Number	Municipality	Policy Text
OC-2.21	Oxford County	For the existing or future application of commercial fertilizer to land, on properties zoned for any other use than residential, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be, or never becomes, a significant drinking water threat. Any Prescribed Instrument issued under the Nutrient Management Act that is created, amended or used for the purposes of obtaining an exemption from a risk management plan under section 61 of O. Reg. 287/07, shall incorporate terms and conditions that, when implemented, manage the activities they regulate such that those activities cease to be, or never become, a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions, including the Prescribed Instruments that are not directly created or is sued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
OC-2.22	Oxford County	For handling and storage of commercial fertilizer, where such handling and storage is: existing; or new and the total mass of all materials handled or stored that contain the commercial fertilizer, in any form including liquid or solid, is less than or equal to 2,500 kilograms and, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be, or never becomes, a
OC-2.23	Oxford County	For handling and storage of commercial fertilizer, where such handling and storage is: - new and the total mass of all materials handled or stored that contain the commercial fertilizer, in any form including liquid or solid, is greater than 2,500 kilograms; and, where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that the activity never becomes a significant drinking water threat.
OC-2.24	Oxford County	For the existing or future application of pesticides to land, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be or never becomes a significant drinking water threat.
OC-2.25	Oxford County	For any existing facility for the handling and storage of pesticides, where this activity is a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
OC-2.26	Oxford County	For any new handling and storage of pesticides, where the total mass of all materials stored that contain a pesticide prescribed under the Clean Water Act, in any form, including liquid or solid, is more than 2500 kilograms, and where this activity would be a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that it never becomes a significant drinking water threat.
OC-2.27	Oxford County	For any new handling and storage of pesticides not addressed by policy OC-2.26, where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it never becomes a significant drinking water threat.
OC-2.28	Oxford County	For any existing or new handling and storage of road salt, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that the activity ceases to be or never becomes a significant drinking water threat.
OC-2.29	Oxford County	For storage of snow that is: existing; or new and at or above grade where the storage area is less than or equal to 1 hectare and, where this activity is, or would be, a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be, or never becomes, a
OC-2.30	Oxford County	For new storage of snow that is: below grade; or at or above grade, where the storage area exceeds 1 hectare and, where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that the activity never becomes a significant drinking water threat.
OC-2.31	Oxford County	For existing handling and storage of fuel, where this activity is a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a
OC-2.32	Oxford County	For new handling and storage of fuel, where this activity would be a significant drinking water threat, This activity shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that the activity never becomes a significant drinking water threat Notwithstanding OC-2.32a, any handling and storage of fuel required for back-up generators at municipal supply wells shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
OC-2.33	Oxford County	For any existing or new handling and storage of a dense non-aqueous phase liquid, on properties zoned exclusively for residential and/or environmental protection purposes in the Area Municipal Zoning By-laws, where this activity is, or would be, a significant drinking water threat, The County, in collaboration with the Source Protection Authority, Area Municipalities, the Ministry of the Environment, and/or other bodies wherever possible, shall develop and implement an education and outreach program directed at the owners and/or occupants of such properties so that it ceases to be or never becomes a significant drinking water threat. The program may include, but not necessarily be limited to, the provision of education material and information about the nature of the threat, how DNAPLs can be identified handled and disposed of appropriately. Notwithstanding (OC-2.33.1), where the quantity and/or volume of DNAPLs handled or stored on a property exceeds that typical of
OC-2.34	Oxford County	For any existing handling and storage of a dense non-aqueous phase liquid, on properties zoned for any other use than residential and/or environmental protection in the Area Municipal Zoning By-laws, where this activity is a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a significant drinking water threat.
OC-2.35	Oxford County	For any new handling and storage of a dense non-aqueous phase liquid, on properties zoned for any other use than residential and/or environmental protection in the Area Municipal Zoning By-laws and located within a WHPA 'A' or 'B' with a vulnerability score equal to ten (10), where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that it never becomes a significant drinking water threat.
OC-2.36	Oxford County	For any new handling and storage of a dense non-aqueous phase liquid, on properties zoned for any other use than residential and/or environmental protection in the Area Municipal Zoning By-laws and located within a WHPA 'B' with a vulnerability score of less than ten (10), or a WHPA 'C', where such an activity would be a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a
OC-2.37	Oxford County	For existing handling and storage of an organic solvent, where this activity is a significant drinking water threat, it shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be a significant drinking water threat.
OC-2.38	Oxford County	For new handling and storage of an organic solvent, where this activity would be a significant drinking water threat, it shall be designated for the purpose of Section 57 of the Clean Water Act and shall be prohibited so that the activity never becomes a significant
OC-2.39	Oxford County	For a new airport where runoff that contains chemicals used in the de-icing of aircraft would be a significant drinking water threat this activity shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it never becomes a significant drinking water threat.

Policy Database Number	Municipality	Policy Text
OC-2.40	Oxford County	For the existing or future use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm animal yard, where these activities are, or would be, a significant drinking water threat, they shall be designated for the purpose of Section 58 of the Clean Water Act and a Risk Management Plan shall be required to manage the activity so that it ceases to be or never becomes a significant drinking water threat. Any Prescribed Instrument issued under the Nutrient Management Act that is created, amended or used for the purposes of obtaining an exemption from a risk management plan under section 61 of O. Reg. 287/07, shall incorporate terms and conditions that, when implemented, manage the activities they regulate such that those activities cease to be, or never become, a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions, including the Prescribed Instruments that are not directly created or is sued by OMAFRA, such as Nutrient Management Plans. Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However,
OC-2.47	Oxford County	For the existing or future application of commercial fertilizer to land, on properties zoned exclusively for residential purposes in the Area Municipal Zoning By-laws, where this activity is, or would be, a significant drinking water threat, the County, in collaboration with the Source Protection Authority, Area Municipalities, the Ministry of the Environment, and/or other bodies wherever possible, shall develop and implement an education and outreach program directed at the owners and/or occupants of such properties and local lawn care companies. The program may include, but not necessarily be limited to, the provision of education material and information about the nature of the threat and how commercial fertilizer can be handled and applied in a manner that would manage the activity

APPENDIX B - WATER SERVICING

Model Inputs

- Summary of Flow Distribution
- Backflow Preventor Specifications and Head Loss
- Fire Meter Specifications and Head Loss

Water Model

- Model Input – MDD
- Model Demands Allocation

Model Output

- MDD Pressure Summary (Graph)
- MDD Conditions Summary (Nodes)
- MDD + Fire Summary at Warehouse
- MDD + Fire Summary at Rail
- MDD + Fire Summary at Office
- Sample Model Output

Residual Curves

- Building B – Pressure vs. Flow (N185)
- Building B – Pressure vs. Flow
- Building H – Pressure vs. Flow (N185)
- Building H – Pressure vs. Flow

Summary of Flow Distribution

Building ID	Building Name	MDD - Domestic	MDD - Process	Total Domestic Demand	Fire Demand	Total Demand
		(L/s)	*(L/s)*	*(L/s)*	*(L/s)*	*(L/s)*
A	Float Glass (Melting, Forming and Annealing)	0.211	0.382	0.593	150	150.593
B	Float Glass (Cutting, Finished Products and Warehouse)	0.680	6.289	6.969	150	156.969
C	Circulating Water Pump House	0.086	12.655	12.741	150	162.741
D	Substation and Natural Gas Power Generation [(1)]	0.025	0.000	0.025	150	150.025
E	Cullet System and Conveyors	0.000	0.000	0.000	150	150.000
F	Batch Workshop	0.164	0.828	0.992	150	150.992
G	Nitrogen Generation Unit [(1)]	0.025	0.000	0.025	150	150.025
H	Hydrogen & Oxygen Generation Unit [(1)]	0.025	0.083	0.107	150	150.107
I	Utilities Sub-Station [(1)]	0.025	0.000	0.025	150	150.025
J	Compressed Air Unit	0.000	0.000	0.000	150	150.000
K	Natural Gas Pressure Regulating Station	0.000	0.000	0.000	150	150.000
L	Sanitary Pump Station	0.000	0.000	0.000	150	150.000
M	Process Equipment and Chimney	0.000	0.000	0.000	150	150.000
N	Oil Station [(1)]	0.025	0.000	0.025	150	150.025
P	Waste Heat Power Generation [(1)]	0.025	3.832	3.857	150	153.857
Q	Raw Materials Unloading (Rail Pits)	0.000	0.000	0.000	150	150.000
R	Raw Materials Unloading (Trucks)	0.000	0.000	0.000	150	150.000
S	Raw Materials Unloading (Limestone)	0.000	0.000	0.000	150	150.000
T	Train Shelter	0.000	0.000	0.000	150	150.000
U	Security Building at Line 29	0.012	0.000	0.012	150	150.012
V	Security Building at Highway 7	0.012	0.000	0.012	150	150.012
1/2	Office and Cafeteria	0.203	0.000	0.203	150	150.203
3/4	Emergency Preparedness Centre	1.440	0.000	1.440	150	151.440
	Totals	**2.956**	**24.069**	**27.024**		

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

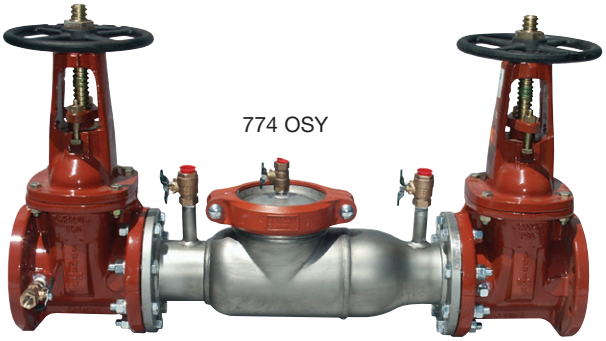
LEAD FREE*

Series 774

Double Check Valve Assemblies

Sizes: 2½" – 12"

Series 774 Double Check Valve Assemblies are designed to prevent the reverse flow of polluted water from entering into the potable water system. This series can be applied, where approved by the local authority having jurisdiction, on non-health hazard installations. Features short end-to-end dimensions, light weight stainless steel body, and the lowest head loss available.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Features

- Torsion spring check valve provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved style coupling for ease of maintenance
- Thermoplastic and stainless steel check valves for trouble-free operation
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- May be installed in horizontal or vertical "flow up" position

Specifications

A Double Check Valve Assembly shall be installed at each noted location to prevent the unwanted reversal of polluted water into the potable water supply. The main valve body shall be manufactured from 300 series stainless steel to provide corrosion resistance. The check valves shall be of thermoplastic construction with stainless steel hinge pins, cam arm, and cam bearing. The check valves shall utilize a single torsion spring design to minimize pressure drop through the assembly. The check valves shall be modular and shall seal to the main valve body by the use of an O-ring. There shall be no brass or bronze parts used within the check valve assembly. The valve cover shall be held in place through the use of a single grooved style two-bolt coupling. The main assembly shall consist of two independently operating torsion spring check assemblies, two resilient seated isolation valves, and four ball valve type test cocks. The assembly shall be a Watts Series 774.

Now Available
WattsBox Insulated Enclosures.
For more information, send for literature ES-WB.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

NOTICE

Inquire with governing authorities for local installation requirements

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

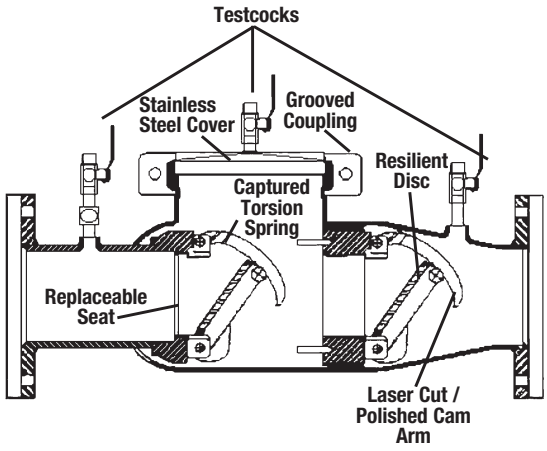
WATTS®

Available Models

Suffix:

NRS	Non-rising stem resilient seated gate valves
OSY	UL/FM resilient seated outside stem & yoke gate valves
LF	Without shutoff valves
S	Cast iron strainer
****OSY FxG**	Flanged inlet gate connection and grooved outlet gate connection
****OSY GxF**	Grooved inlet gate connection and flanged outlet gate connection
****OSY GxG**	Grooved inlet gate connection and grooved outlet gate connection

Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions



Materials

All internal metal parts: 300 Series stainless steel
Main valve body: 300 Series stainless steel
Check assembly: Noryl®
Flange dimension in accordance with AWWA Class D

Standards

AWWA C510-92, CSA B64.5

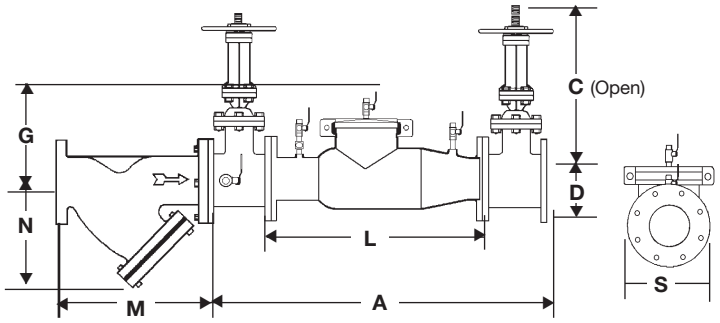
Approvals

ASSE 1015 · FM Approved (4" - 10" OSY only) · CLASSIFIED C UL US (OSY only)

Pressure - Temperature

Temperature Range: 33ºF – 110ºF (0.5ºC – 43ºC) continuous
Maximum Working Pressure: 175psi (12.1 bar)

Dimensions - Weight

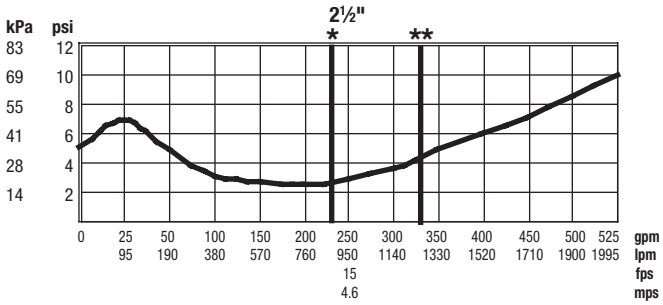


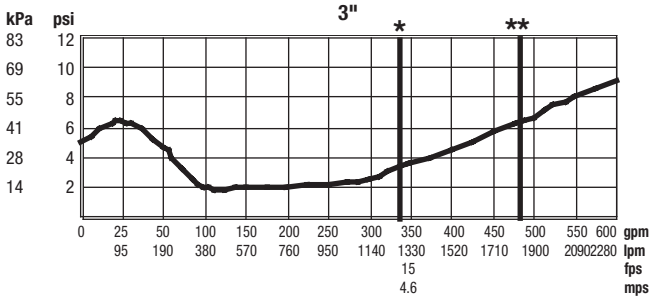
SIZE	DIMENSIONS																		WEIGHT			
	A		C (open)				D		G		L		M		N		S		w/Gates		w/o Gates	
			OSY		NRS										Screen Removal							
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2 1/2	37	940	16 3/8	416	9 3/8	238	3 1/2	89	10	254	22	559	10	254	6 1/2	165	7	178	140	64	53	24
3	38	965	18 7/8	479	10 1/4	260	3 3/4	95	15	381	22	559	10 1/8	257	7	178	7 1/2	191	215	98	55	25
4	40	1016	22 3/4	578	12 9/16	310	4 1/2	114	10	254	22	559	12 1/8	308	8 1/4	210	9	229	225	102	58	26
6	48 1/2	1232	30 1/8	765	16	406	5 1/2	140	15	381	27 1/2	699	18 1/2	470	13 1/2	343	11	279	375	170	105	48
8	52 1/2	1334	37 3/4	959	19 15/16	506	6 3/4	171	15	381	29 1/2	749	21 5/8	549	15 1/2	394	13 1/2	343	561	254	169	77
10	55 1/2	1410	45 3/4	1162	23 13/16	605	8	200	15	381	29 1/2	749	26	660	18 1/2	470	16	406	763	346	179	81
12	57 1/2	1461	53 1/8	1349	26 3/4	679	9 1/2	241	15	381	29 1/2	749	29 7/8	759	21 3/4	552	19	483	1033	469	209	95

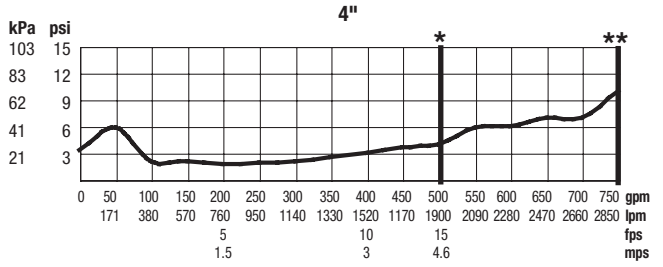
Noryl® is a registered trademark of General Electric Company

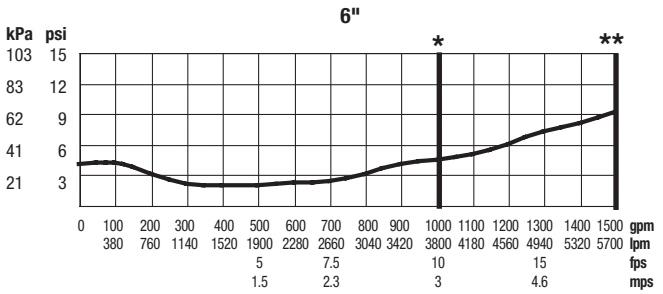
Capacity

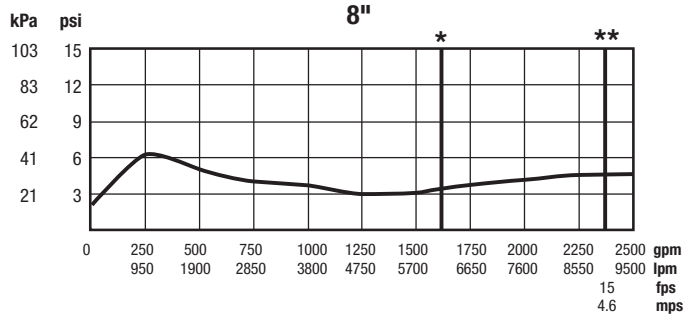
Rated working pressure 175psi (12.1 bar) * Rated flow, ** UL Tested

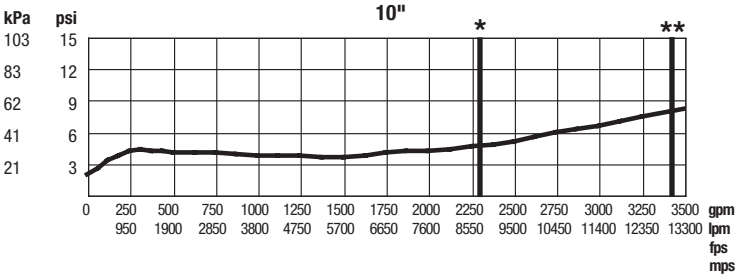


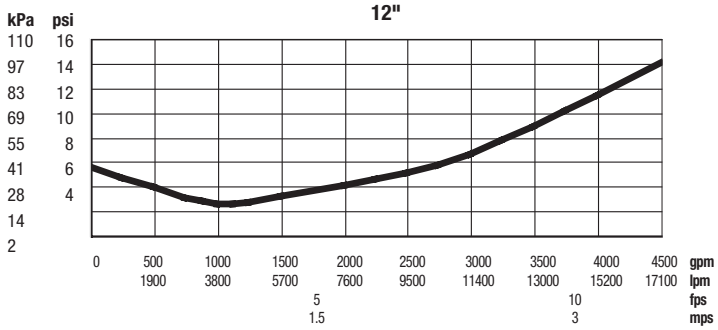












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A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

High Performance PROTECTUS® III Stainless Steel (S) Fire Service Meter

SIZES: 4", 6", 8", and 10"

The Neptune® HP PROTECTUS® III Stainless Steel (S) fire service meter measures extremely wide flow ranges at 100% ± 1.5% accuracy. All HP fire service meters meet or exceed AWWA C703 Standard, are certified to NSF/ANSI 61 and 372 requirements, and are Underwriters Laboratory (UL) Listed and Factory Manual (FM) Approved for fire service use.

Application

The HP PROTECTUS III S fire service meter is designed to measure both domestic and fire service water usage through a single water line. A typical application would be in a warehouse, hotel, or hospital where one water line may supply any number of faucets or bathrooms as well as an automatic sprinkler system.

Operation

At low flow rates, all flow is through the bypass meter. As flow increases, pressure loss through the bypass meter increases and the detector check valve automatically opens. This condition occurs, for example, when a fire sprinkler system goes into operation. This permits flow through the mainline turbine meter. As flow decreases, reduced pressure loss closes the detector check valve and flow is again directed through the bypass meter.

Construction

The combined readings of the mainline turbine and the bypass meter indicate total consumption through the HP PROTECTUS III S meter.

- 300 series stainless steel mainline body
- Integral detector check valve (stainless steel spring-loaded type)
- 300 series stainless steel strainer body with stainless steel basket
- Epoxy-coated steel strainer and valve cover
- HP Turbine measuring element
- Lockable ball valves used on bypass
- Check valve used on bypass
- 1" T-10® meter (on 4" size)
- 1½" T-10 or 1½" HP Turbine meter (on 6" size)
- 2" T-10 or 2" HP Turbine meter (on 8" and 10" sizes)

KEY FEATURES

Compact Size

- Standard laying length fits existing installations
- Lowers new installation and replacement costs

Wide Operating Range

- Measures extremely wide flow ranges at 98.5%–101.5% accuracy
- Combines low-flow sensitivity of disc meter with high-flow capacity of turbine meter
- Registers leaks or unauthorized use of water from fire service lines

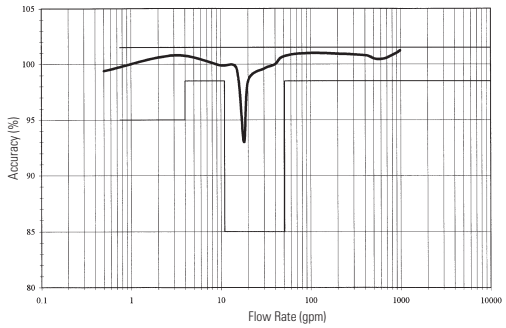
Component Repair and Maintenance

- Owner maintenance easily accomplished by replacement of major components
- Calibration vane allows in-field calibration of unitized measuring element (UME)

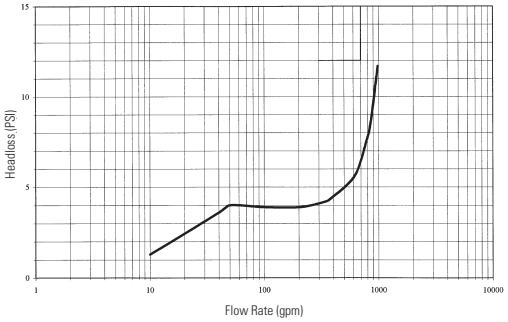
Roll-Sealed Registers

- Eliminates leaking and fogging
- In-line serviceability
- Magnetic driven, low-torque registration
- Tamperproof seal design

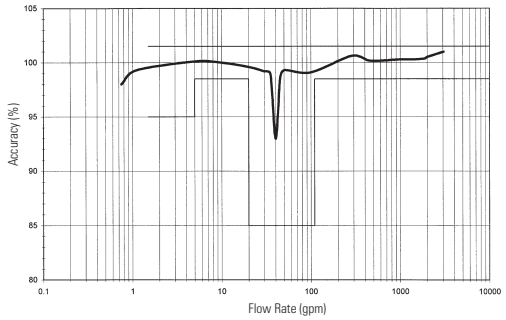
4" Accuracy



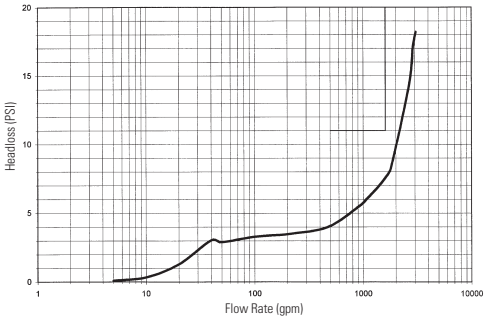
4" Headloss



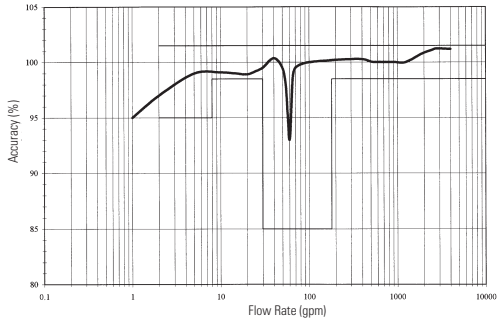
6" Accuracy



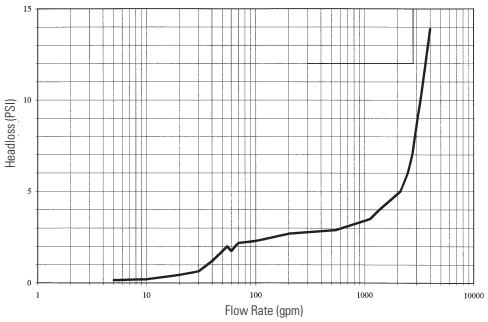
6" Headloss



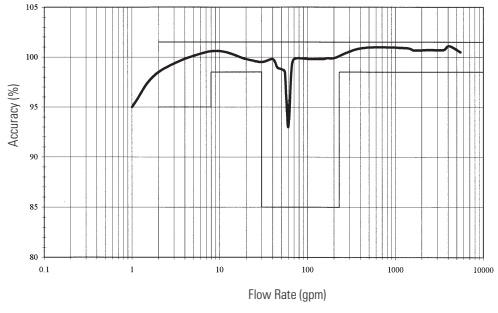
8" Accuracy



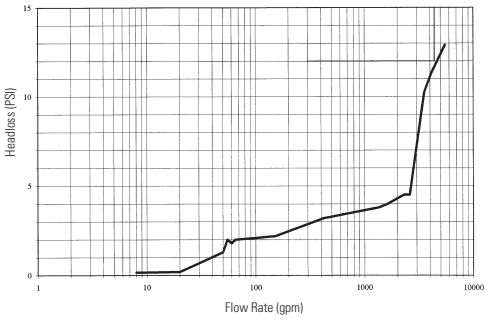
8" Headloss



10" Accuracy



10" Headloss



These charts show typical meter performance. Individual results may vary.

Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	AWWA Standard	Low Flow @ 95% - 101% Accuracy	Maximum Intermittent Flow Rate
4"	¾ to 1200 US gpm 0.171 to 272.55 m³/h	4 to 700 US gpm 0.91 to 159 m³/h	⅜ US gpm 0.09 m³/h	1500 US gpm 340.7 m³/h
6"	1½ to 2500 US gpm 0.34 to 567.81 m³/h	5 to 1600 US gpm 1.14 to 363 m³/h	¾ US gpm 0.17 m³/h	3100 US gpm 704.1 m³/h
8"	2 to 4000 US gpm 0.45 to 908.5 m³/h	8 to 2800 US gpm 1.8 to 636 m³/h	1 US gpm 0.23 m³/h	5000 US gpm 1135.6 m³/h
10"	2 to 6500 US gpm 0.45 to 1476.31 m³/h	8 to 4400 US gpm 1.8 to 999 m³/h	1 US gpm 0.23 m³/h	8000 US gpm 1817 m³/h

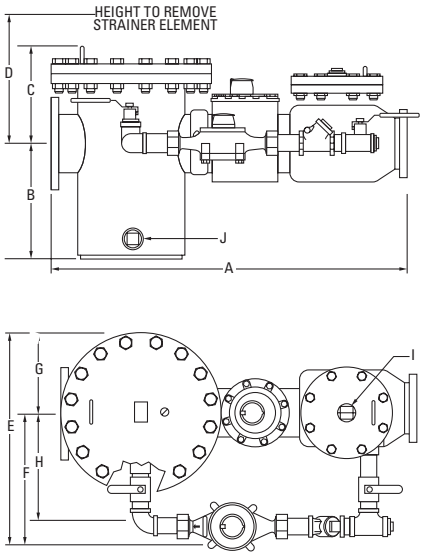
Dimensions

Meter Size	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	F in/mm	G in/mm	H in/mm	I in/mm	J in/mm	Weight lbs/kg
4"	33 838	10 254	10 ¾ 273	17 ½ 445	22 559	15 ¼ 387	6 ¾ 171	12 305	2 51	2 51	215 98
6"	45 1143	11 1/16 281	11 ⅜ 289	21 ¼ 540	29 737	19 ½ 495	9 ½ 241	16 406	2 51	3 76	570 258
8"	53 1346	11 13/16 300	13 29/64 342	25 ⅞ 657	34 ¼ 870	21 ¾ 552	12 ½ 318	17 432	3 76	3 76	765 347
10"	68 1727	14 13/16 376	15 381	30 1/16 764	36 ¼ 921	22 ½ 572	13 ¾ 349	18 457	3 76	3 76	900 408

Registration

Registration (per sweep hand revolution)	Disc Side			Turbine Side		
	1"	1½"	2"	4"	6"	8" & 10"
1,000 US Gallons					✓	✓
100 Gallons		✓	✓	✓		
100 Cubic Feet					✓	✓
10 US Gallons	✓					
10 Cubic Feet		✓	✓	✓		
1 Cubic Foot	✓					
10 Cubic Metres					✓	✓
1 Cubic Metre			✓	✓		
0.1 Cubic Metre	✓	✓				

Register Capacity (6 active wheel odometer)	Disc Side			Turbine Side		
	1"	1½"	2"	4"	6"	8" & 10"
1,000,000,000 Gallons					✓	✓
100,000,000 Gallons		✓	✓	✓		
100,000,000 Cubic Feet					✓	✓
10,000,000 Gallons	✓					
10,000,000 Cubic Feet		✓	✓	✓		
10,000,000 Cubic Metres					✓	✓
1,000,000 Cubic Metres			✓	✓		
1,000,000 Cubic Feet	✓					
100,000 Cubic Metres	✓	✓				



Specifications

Application
- Cold water measurement of flow in one direction

Maximum Operating Pressure
- 175 psi (1206 kPa)

Register
- Direct reading, center sweep, roll-sealed magnetic drive with low-flow indicator

Measuring Element
- AWWA Class II Turbine, hydrodynamically-balanced rotor, nutating disc

Flanges
- Round flanged ends per AWWA C207, Class D

Approvals
- NSF/ANSI 61
- NSF/ANSI 372
- UL Listed
- FM Approved

Options

Sizes
- 4”, 6”, 8”, and 10”

300 Series Stainless Steel Strainer Cover and Valve Cover

300 Series Stainless Steel Bolts

Left Side Bypass

Units Of Measure
- U.S. gallons, Imperial gallons, cubic feet, cubic metres

Register types
- Remote reading systems*: ProRead™, ProCoder™, E-CODER®, E-CODER®)R900*i*™, E-CODER®)R450*i*™, TRICON®/S, TRICON/E®3
- Reclaim

Companion Flanges
- Cast iron
- Bronze (4” only)

Special Meter Flanges**
- 12” (for 10” meter size)

**Consult factory for meter performance specifications when fitted with ARB.*

***Non-UL/FM approved.*

Guaranteed Systems Compatibility

All HP PROTECTUS III S fire service meters are guaranteed adaptable to our ProRead, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, TRICON/S, TRICON/E3, and Neptune meter reading systems without removing the meter from service.

Warranty

Neptune provides a limited warranty with respect to its HP PROTECTUS III S fire service meter for performance, materials, and workmanship.

When desired, owner maintenance is easily accomplished by in-line replacement of the UME.

NEPTUNE TECHNOLOGY GROUP

#winyourday
neptunetg.com

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Tallassee, AL 36078
800-633-8754 f 334-283-7293

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[TITLE]
XINYI Canada Glass Watermain Distribution Network

[JUNCTIONS]
;ID Elev Demand Pattern

n1	366.041	0	;
n2	366.071	0	;
n3	366.103	0	;
n4	365.243	0	;
n5	364.780	0	;
n6	365.793	0	;
BLDG-U	366.574	0.012	;
n8	366.290	0	;
n9	366.240	0	;
n10	366.218	0	;
n11	366.247	0	;
n12	366.255	0	;
n13	366.253	0	;
n14	366.253	0	;
n15	365.505	0	;
n16	365.573	0	;
n17	366.032	0	;
n18	366.106	0	;
n19	365.142	0	;
n20	365.198	0	;
n21	365.295	0	;
n22	364.992	0	;
n23	366.005	0	;
n24	366.557	0	;
n25	366.337	0	;
n26	366.279	0	;
n27	366.260	0	;
n28	366.286	0	;
n29	366.293	0	;
n30	366.292	0	;
n31	366.292	0	;
n32	365.529	0	;
n33	365.618	0	;
n34	366.046	0	;
n35	366.120	0	;
n36	366.074	0	;
n37	366.112	0	;
n38	366.018	0	;
n39	365.317	0	;
n40	365.296	0	;
n41	365.280	0	;
n42	365.364	0	;
n43	366.026	0	;

Model Input - MDD.inp

n44	365.249	0	;
n45	365.234	0	;
n46	366.049	0	;
n47	366.290	0	;
n48	366.835	0	;
n49	367.155	0	;
n50	366.613	0	;
n51	366.316	0	;
n52	366.897	0	;
n53	366.907	0	;
n54	366.967	0	;
n55	366.960	0	;
n56	366.982	0	;
n57	367.384	0	;
n58	367.486	0	;
n59	368.433	0	;
n60	368.364	0	;
n61	367.784	0	;
n62	366.159	0	;
n63	366.048	0	;
n64	366.044	0	;
n65	366.040	0	;
n66	368.443	0	;
n67	368.440	0	;
n68	368.430	0	;
n69	367.091	0	;
n70	367.045	0	;
n71	366.978	0	;
n72	366.970	0	;
n73	366.837	0	;
n74	366.775	0	;
n75	366.821	0	;
n76	366.818	0	;
n77	366.409	0	;
n78	366.346	0	;
n79	366.335	0	;
n80	366.446	0	;
n81	366.396	0	;
n82	366.850	0	;
n83	366.742	0	;
n84	367.402	0	;
n85	367.071	0	;
n86	368.350	0	;
n87	368.428	0	;
n88	366.882	0	;
n89	367.042	0	;
n90	366.883	0	;
n91	366.862	0	;
n92	366.886	0	;

n93	366.872	0	;
n94	367.134	0	;
n95	367.138	0	;
n96	367.322	0	;
n97	367.326	0	;
n98	367.510	0	;
n99	367.513	0	;
n100	367.574	0	;
n101	367.721	0	;
n102	367.999	0	;
n103	367.999	0	;
n104	367.624	0	;
n105	367.566	0	;
n106	367.594	0	;
n107	367.303	0	;
n108	367.296	0	;
n109	367.080	0	;
n110	367.075	0	;
n111	366.857	0	;
n112	366.851	0	;
n113	366.657	0	;
n114	366.653	0	;
n115	366.757	0	;
n116	366.707	0	;
n117	366.957	0	;
n118	366.907	0	;
n119	367.180	0	;
n120	367.130	0	;
n121	367.403	0	;
n122	367.353	0	;
n123	367.967	0	;
n124	367.578	0	;
n125	367.313	0	;
n126	367.401	0	;
n127	367.126	0	;
n128	367.228	0	;
n129	366.938	0	;
n130	367.019	0	;
n131	367.327	0	;
n132	366.905	0	;
n133	367.177	0	;
n134	366.912	0	;
n135	367.180	0	;
n136	367.962	0	;
BLDG-V	368.940	0.012	;
n138	367.128	0	;
n139	364.046	0	;
n140	367.167	0	;
n141	367.158	0	;

Model Input - MDD.inp

n142	367.158	0	;
n143	367.136	0	;
n144	367.133	0	;
n145	367.242	0	;
n146	367.539	0	;
n147	367.549	0	;
n148	367.757	0	;
n149	367.778	0	;
n150	367.827	0	;
n151	367.784	0	;
n152	367.583	0	;
n153	367.578	0	;
n154	367.572	0	;
n155	367.285	0	;
n156	367.472	0	;
n157	367.036	0	;
n158	367.060	0	;
n159	366.300	0	;
n160	366.215	0	;
n161	366.047	0	;
n162	368.517	0	;
n163	368.590	0	;
n164	368.363	0	;
n165	366.829	0	;
n166	367.330	0	;
n167	367.414	0	;
n168	367.709	0	;
BLDG-F	366.864	0.992	;
n170	368.598	0	;
BLDG-A	368.769	0.593	;
BLDG-N	367.541	0.025	;
BLDG-P	368.276	3.857	;
BLDG-D	366.718	0.025	;
BLDG-I	366.861	0.025	;
BLDG-C	366.838	12.741	;
BLDG-G	366.992	0.025	;
BLDG3	367.473	0.72	;
BLDG4	367.467	0.72	;
BLDG1and2	367.771	0.203	;
BLDG-H	367.207	0.107	;
Jun1	364.992	0	;
Jun2	364.992	0	;
Jun3	364.992	0	;
Jun4	364.780	0	;
Jun5	364.780	0	;
Jun6	364.780	0	;
Jun7	367.962	0	;
Jun8	367.962	0	;
Jun9	367.962	0	;

```
 GibbRoadConnection     365.170         0                                       ;
 BLDG-B                 368             6.969                                   ;

[RESERVOIRS]
;ID                    Head            Pattern
 ResXYG                364.86                                  ;

 ResDunnRoad           369.53                                  ;


[TANKS]
;ID                    Elevation       InitLevel       MinLevel        MaxLevel
Diameter        MinVol          VolCurve

[PIPES]
;ID                    Node1                   Node2                   Length
Diameter        Roughness       MinorLoss       Status
 p1                    n1                      n2                      1.203
300             150             0               Open    ;
 p2                    n2                      n3                      1.295
300             150             0               Open    ;
 p3                    n4                      n5                      17.74
300             150             0               Open    ;
 p4                    n5                      n6                      4.15
300             150             0               Closed  ;
 p5                    n6                      BLDG-U                  46.56
300             150             0               CV      ;
 p6                    BLDG-U                  n8                      18.16
300             150             0               Open    ;
 p7                    n8                      n9                      78.89
300             150             0               Open    ;
 p8                    n9                      n10                     21.69
300             150             0               Open    ;
 p9                    n10                     n11                     23.18
300             150             0               Open    ;
 p10                   n11                     n12                     412.6
300             150             0               Open    ;
 p11                   n12                     n13                     3.121
300             150             0               Open    ;
 p12                   n13                     n14                     36.43
300             150             0               Open    ;
 p13                   n14                     n15                     30.32
300             150             0               Open    ;
 p14                   n16                     n17                     21.25
300             150             0               Open    ;
 p15                   n17                     n18                     2.054
300             150             0               Open    ;
 p16                   n19                     n4                      2
300             150             0               Open    ;
```



```
 p17                   n20                     n21                     2
300             150             0               Open    ;
 p18                   n21                     n22                     17.74
300             150             0               Open    ;
 p19                   n22                     n23                     4.15
300             150             0               Closed  ;
 p20                   n23                     n24                     48.8
300             150             0               CV      ;
 p21                   n24                     n25                     13.23
300             150             0               Open    ;
 p22                   n25                     n26                     78.56
300             150             0               Open    ;
 p23                   n26                     n27                     22.39
300             150             0               Open    ;
 p24                   n27                     n28                     23.88
300             150             0               Open    ;
 p25                   n28                     n29                     412.8
300             150             0               Open    ;
 p26                   n29                     n30                     3.062
300             150             0               Open    ;
 p27                   n30                     n31                     36.91
300             150             0               Open    ;
 p28                   n31                     n32                     30.32
300             150             0               Open    ;
 p29                   n33                     n34                     21.43
300             150             0               Open    ;
 p30                   n34                     n35                     2.067
300             150             0               Open    ;
 p31                   n36                     n18                     4.484
300             150             0               Open    ;
 p32                   n18                     n37                     0.65
300             150             0               Open    ;
 p33                   n37                     n35                     0.65
300             150             0               Open    ;
 p34                   n35                     n38                     5.191
300             150             0               Open    ;
 p35                   n32                     n39                     7.658
300             150             0               Open    ;
 p36                   n39                     n40                     3.257
300             150             0               Open    ;
 p37                   n40                     n41                     7.216
300             150             0               Open    ;
 p38                   n41                     n33                     228.7
300             150             0               Open    ;
 p39                   n41                     n42                     1.806
300             150             0               Open    ;
 p40                   n42                     n43                     14.36
300             150             0               Open    ;
 p41                   n15                     n44                     8.615
```

```
300             150             0               Open    ;
 p42                    n44                     n45                     2.833
300             150             0               Open    ;
 p43                    n45                     n16                     235.8
300             150             0               Open    ;
 p44                    n45                     n40                     1.3
300             150             0               Open    ;
 p45                    n38                     n46                     20.47
300             150             0               Open    ;
 p46                    n46                     n47                     11.86
300             150             0               Open    ;
 p47                    n47                     n48                     74.53
300             150             0               Open    ;
 p48                    n48                     n49                     79.3
300             150             0               Open    ;
 p49                    n49                     n50                     11.93
300             150             0               Open    ;
 p50                    n50                     n51                     8.714
300             150             0               Open    ;
 p51                    n51                     n52                     45
300             150             0               Open    ;
 p52                    n52                     n53                     2
300             150             0               Open    ;
 p53                    n53                     n54                     2
300             150             0               Open    ;
 p54                    n55                     n56                     2
300             150             0               Open    ;
 p55                    n56                     n57                     40.05
300             150             0               Open    ;
 p56                    n57                     n58                     9.941
300             150             0               Open    ;
 p57                    n59                     n60                     2.291
300             150             0               Open    ;
 p58                    n60                     n61                     19.46
300             150             0               Open    ;
 p59                    n62                     n63                     4.352
300             150             0               Open    ;
 p60                    n63                     n64                     2
300             150             0               Open    ;
 p61                    n64                     n1                      3.088
300             150             0               Open    ;
 p62                    n1                      n65                     1
300             150             0               Open    ;
 p63                    n65                     n36                     18.78
300             150             0               Open    ;
 p64                    n59                     n66                     2
300             150             0               Open    ;
 p65                    n67                     n68                     2
300             150             0               Open    ;
```

Model Input - MDD.inp

```
 p66                    n68                     n69                     159.5
300             150             0               Open    ;
 p67                    n69                     n70                     9.941
300             150             0               Open    ;
 p68                    n70                     n71                     7.614
300             150             0               Open    ;
 p69                    n71                     n72                     1.599
300             150             0               Open    ;
 p70                    n72                     n73                     26.51
300             150             0               Open    ;
 p71                    n74                     n75                     4.386
300             150             0               Open    ;
 p72                    n75                     n76                     2
300             150             0               Open    ;
 p73                    n76                     n77                     84.5
300             150             0               Open    ;
 p74                    n78                     n79                     4.157
300             150             0               Open    ;
 p75                    n80                     n81                     1.25
300             150             0               Open    ;
 p76                    n81                     n78                     1.251
300             150             0               Open    ;
 p77                    n82                     n83                     20.37
300             150             0               Open    ;
 p78                    n83                     n75                     5.181
300             150             0               Open    ;
 p79                    n84                     n85                     7.398
300             150             0               Open    ;
 p80                    n85                     n71                     3.102
300             150             0               Open    ;
 p81                    n67                     n86                     3
300             150             0               Open    ;
 p82                    n86                     n87                     2
300             150             0               Open    ;
 p83                    n55                     n88                     2.581
300             150             0               Open    ;
 p84                    n88                     n89                     4.42
300             150             0               Open    ;
 p85                    n53                     n90                     138.4
300             150             0               Open    ;
 p86                    n90                     n91                     4.153
300             150             0               Open    ;
 p87                    n91                     n92                     175.2
300             150             0               Open    ;
 p88                    n92                     n93                     2.784
300             150             0               Open    ;
 p89                    n93                     n94                     176.1
300             150             0               Open    ;
 p90                    n94                     n95                     3.866
```

```
300             150             0               Open    ;
 p91                    n95                     n96                     176.5
300             150             0               Open    ;
 p92                    n96                     n97                     3.47
300             150             0               Open    ;
 p93                    n97                     n98                     176.9
300             150             0               Open    ;
 p94                    n98                     n99                     3.142
300             150             0               Open    ;
 p95                    n99                     n100                    52.69
300             150             0               Open    ;
 p96                    n100                    n101                    7.019
300             150             0               Open    ;
 p97                    n101                    n102                    72.41
300             150             0               Open    ;
 p98                    n102                    n103                    3.372
300             150             0               Open    ;
 p99                    n103                    n104                    82.74
300             150             0               Open    ;
 p100                   n104                    n105                    5.264
300             150             0               Open    ;
 p101                   n105                    n106                    6.75
300             150             0               Open    ;
 p102                   n106                    n107                    50.75
300             150             0               Open    ;
 p103                   n107                    n108                    5.155
300             150             0               Open    ;
 p104                   n108                    n109                    174.8
300             150             0               Open    ;
 p105                   n109                    n110                    3.774
300             150             0               Open    ;
 p106                   n110                    n111                    176.2
300             150             0               Open    ;
 p107                   n111                    n112                    4.55
300             150             0               Open    ;
 p108                   n112                    n113                    156.4
300             150             0               Open    ;
 p109                   n113                    n114                    3.58
300             150             0               Open    ;
 p110                   n114                    n75                     31.92
300             150             0               Open    ;
 p111                   n115                    n116                    1.25
300             150             0               Open    ;
 p112                   n116                    n113                    1.25
300             150             0               Open    ;
 p113                   n117                    n118                    1.25
300             150             0               Open    ;
 p114                   n118                    n111                    1.25
300             150             0               Open    ;
```

Model Input - MDD.inp

```
 p115                   n119                    n120                    1.25
300             150             0               Open    ;
 p116                   n120                    n109                    1.25
300             150             0               Open    ;
 p117                   n121                    n122                    1.25
300             150             0               Open    ;
 p118                   n122                    n107                    1.25
300             150             0               Open    ;
 p119                   n103                    n123                    3.239
300             150             0               Open    ;
 p120                   n123                    n124                    27.78
300             150             0               Open    ;
 p121                   n125                    n126                    2.762
300             150             0               Open    ;
 p122                   n126                    n99                     3.735
300             150             0               Open    ;
 p123                   n127                    n128                    3.25
300             150             0               Open    ;
 p124                   n128                    n97                     3.25
300             150             0               Open    ;
 p125                   n129                    n130                    2.55
300             150             0               Open    ;
 p126                   n130                    n95                     3.945
300             150             0               Open    ;
 p127                   n131                    n132                    2.396
300             150             0               Open    ;
 p128                   n132                    n93                     1.104
300             150             0               Open    ;
 p129                   n133                    n134                    1.815
300             150             0               Open    ;
 p130                   n134                    n91                     1.685
300             150             0               Open    ;
 p131                   n135                    n136                    5
300             150             0               Open    ;
 p132                   n136                    BLDG-V                  4.15
300             150             0               Closed  ;
 p133                   BLDG-V                  n138                    226
300             150             0               Open    ;
 p134                   n139                    n135                    556.5
300             150             0               CV      ;
 p135                   n138                    n140                    2.789
300             150             0               Open    ;
 p136                   n140                    n141                    126.9
300             150             0               Open    ;
 p137                   n141                    n142                    4.053
300             150             0               Open    ;
 p138                   n142                    n143                    109
300             150             0               Open    ;
 p139                   n143                    n144                    2.981
```

```
300             150             0               Open    ;
 p140                   n144                    n105                    39.35
300             150             0               Open    ;
 p141                   n143                    n145                    2.461
300             150             0               Open    ;
 p142                   n145                    n146                    110.2
300             150             0               Open    ;
 p143                   n146                    n147                    3.651
300             150             0               Open    ;
 p144                   n148                    n149                    10.39
300             150             0               Open    ;
 p145                   n149                    n150                    94.98
300             150             0               Open    ;
 p146                   n150                    n151                    15.03
300             150             0               Open    ;
 p147                   n151                    n152                    99.39
300             150             0               Open    ;
 p148                   n152                    n153                    2.328
300             150             0               Open    ;
 p149                   n153                    n154                    2.457
300             150             0               Open    ;
 p150                   n154                    n155                    107.3
300             150             0               Open    ;
 p151                   n155                    n141                    2.667
300             150             0               Open    ;
 p152                   n146                    n156                    4.892
200             150             0               Open    ;
 p153                   n138                    n157                    3.148
300             150             0               Open    ;
 p154                   n157                    n158                    1.852
300             150             0               Open    ;
 p155                   n73                     n74                     34.86
300             150             0               Open    ;
 p156                   n79                     n159                    13.59
300             150             0               Open    ;
 p157                   n159                    n160                    33.1
300             150             0               Open    ;
 p158                   n160                    n161                    64.9
300             150             0               Open    ;
 p159                   n161                    n63                     23.5
300             150             0               Open    ;
 p160                   n61                     n62                     55.9
300             150             0               Open    ;
 p161                   n66                     n162                    14.75
300             150             0               Open    ;
 p162                   n162                    n163                    14.76
300             150             0               Open    ;
 p163                   n163                    n67                     49.94
300             150             0               Open    ;
```

Model Input - MDD.inp

```
 p164                   n58                     n164                    41.93
300             150             0               Open    ;
 p165                   n164                    n59                     5.042
300             150             0               Open    ;
 p166                   n54                     n165                    13.75
300             150             0               Open    ;
 p167                   n165                    n55                     22.15
300             150             0               Open    ;
 p168                   n156                    n166                    12.43
200             150             0               Open    ;
 p169                   n166                    n167                    53.92
200             150             0               Open    ;
 p170                   n167                    n153                    41.75
200             150             0               Open    ;
 p171                   n147                    n168                    61.88
300             150             0               Open    ;
 p172                   n168                    n148                    38.96
300             150             0               Open    ;
 p173                   BLDG-F                  n165                    10.95
300             150             0               Open    ;
 p174                   n170                    n164                    10.59
300             150             0               Open    ;
 p175                   BLDG-A                  n162                    8
300             150             0               Open    ;
 p176                   BLDG-N                  n61                     23
300             150             0               Open    ;
 p177                   BLDG-P                  n163                    13
300             150             0               Open    ;
 p178                   BLDG-D                  n161                    17
300             150             0               Open    ;
 p179                   BLDG-I                  n160                    16.8
300             150             0               Open    ;
 p180                   BLDG-C                  n159                    17
300             150             0               Open    ;
 p181                   BLDG-G                  n77                     23
300             150             0               Open    ;
 p182                   BLDG3                   n166                    7.177
50              150             0               Open    ;
 p183                   BLDG4                   n167                    7.332
150             150             0               Open    ;
 p184                   BLDG1and2               n168                    10.89
300             150             0               Open    ;
 p185                   BLDG-H                  n73                     27
300             150             0               Open    ;
 p186                   n77                     n78                     24.26
300             150             0               Open    ;
 Pipe2                  n22                     Jun1                    2.5
250             150             0               Open    ;
 Pipe3                  Jun3                    n23                     2.5
```

```
250             150             0               Open    ;
 Pipe4                  Jun4                    n5                      2.5
250             150             0               Open    ;
 Pipe5                  Jun6                    n6                      2.5
250             150             0               Open    ;
 Pipe6                  n136                    Jun7                    2.5
250             150             0               Open    ;
 Pipe7                  Jun9                    BLDG-V                  2.5
250             150             0               CV      ;
 Pipe8                  GibbRoadConnection      n19                     1
1000            1000            0               Open    ;
 Pipe9                  GibbRoadConnection      n20                     1
1000            1000            0               Open    ;
 Pipe1                  n95                     BLDG-B                  5
150             150             0               Open    ;

[PUMPS]
;ID                    Node1                   Node2                   Parameters
 Pump1                  ResDunnRoad             GibbRoadConnection      HEAD ResDunn
;
 Pump2                  ResXYG                  n139                    HEAD ResXYG
;

[VALVES]
;ID                    Node1                   Node2                   Diameter
Type    Setting         MinorLoss
 Meter1                 Jun1                    Jun2                    250
GPV     Meter           0               ;
 BFP1                   Jun2                    Jun3                    250
GPV     BFP             0               ;
 Meter2                 Jun4                    Jun5                    250
GPV     Meter           0               ;
 BFP2                   Jun5                    Jun6                    250
GPV     BFP             0               ;
 Meter3                 Jun7                    Jun8                    250
GPV     Meter           0               ;
 BFP3                   Jun8                    Jun9                    250
GPV     BFP             0               ;

[TAGS]

[DEMANDS]
;Junction              Demand          Pattern                 Category

[STATUS]
;ID                    Status/Setting

[PATTERNS]
;ID                    Multipliers
```



```
[CURVES]
;ID                    X-Value         Y-Value
;PUMP: PUMP: PUMP: PUMP: Flow at HWY7/Gibb

 ResXYG                 0               41.309
 ResXYG                 25              40.022
 ResXYG                 50              38.798
 ResXYG                 75              37.181
 ResXYG                 100             35.057
 ResXYG                 125             32.371
 ResXYG                 150             29.122
 ResXYG                 160             27.645
 ResXYG                 175             25.247
 ResXYG                 180             24.396
 ResXYG                 200             20.725
 ResXYG                 210             18.735
 ResXYG                 225             15.577
 ResXYG                 250             9.831
 ResXYG                 275             3.544
;PUMP: PUMP: PUMP: VOLUME: Flow at Gibb/Dunn

 ResDunn                0               40.022
 ResDunn                25              38.784
 ResDunn                50              37.687
 ResDunn                75              36.288
 ResDunn                100             34.445
 ResDunn                125             32.11
 ResDunn                150             29.269
 ResDunn                160             27.975
 ResDunn                175             25.866
 ResDunn                180             25.12
 ResDunn                200             21.878
 ResDunn                210             20.12
 ResDunn                225             17.328
 ResDunn                250             12.237
 ResDunn                275             6.66
;PUMP: PUMP: HEADLOSS: Loss through BFP

 BFP                    0               0
 BFP                    31.545          1
 BFP                    63.09           1.758
 BFP                    94.635          2.461
 BFP                    126.18          2.813
 BFP                    157.725         3.516
 BFP                    189.27          4.571
 BFP                    220.815         6.329
 BFP                    252.36          8.087
 BFP                    283.905         10.197
```

```
;HEADLOSS:
 Meter                  0               0
 Meter                  6.309           1.406
 Meter                  18.927          2.109
 Meter                  110.408         2.812
 Meter                  157.725         3.164
 Meter                  176.652         3.164

[CONTROLS]

[RULES]

[ENERGY]
 Global Efficiency      75
 Global Price           0
 Demand Charge          0

[EMITTERS]
;Junction               Coefficient

[QUALITY]
;Node                   InitQual

[SOURCES]
;Node                   Type            Quality         Pattern

[REACTIONS]
;Type           Pipe/Tank               Coefficient


[REACTIONS]
 Order Bulk             1
 Order Tank             1
 Order Wall             1
 Global Bulk            0
 Global Wall            0
 Limiting Potential     0
 Roughness Correlation  0

[MIXING]
;Tank                   Model

[TIMES]
 Duration               0
 Hydraulic Timestep     1:00
 Quality Timestep       0:05
 Pattern Timestep       1:00
 Pattern Start          0:00
 Report Timestep        1:00
```

Model Input - MDD.inp

```
 Report Start           0:00
 Start ClockTime        12 am
 Statistic              None

[REPORT]
 Status                 No
 Summary                No
 Page                   0

[OPTIONS]
 Units                  LPS
 Headloss               H-W
 Specific Gravity       1
 Viscosity              1
 Trials                 40
 Accuracy               0.001
 CHECKFREQ              2
 MAXCHECK               10
 DAMPLIMIT              0
 Unbalanced             Continue 10
 Pattern                1
 Demand Multiplier      1.0
 Emitter Exponent       0.5
 Quality                None mg/L
 Diffusivity            1
 Tolerance              0.01

[COORDINATES]
;Node                   X-Coord                 Y-Coord
 n1                     497862.36               4798467.68
 n2                     497861.73               4798466.66
 n3                     497861.05               4798465.56
 n4                     498513.36               4799050.81
 n5                     498504.00               4799035.74
 n6                     498501.82               4799032.21
 BLDG-U                 498477.26               4798992.65
 n8                     498459.62               4798988.31
 n9                     498392.30               4799029.44
 n10                    498371.16               4799034.30
 n11                    498350.76               4799023.29
 n12                    498069.14               4798721.81
 n13                    498067.01               4798719.53
 n14                    498039.82               4798695.27
 n15                    498038.13               4798665.00
 n16                    497853.81               4798500.24
 n17                    497842.74               4798482.10
 n18                    497841.67               4798480.35
 n19                    498514.41               4799052.51
 n20                    498511.02               4799054.62
```

n21	498509.96	4799052.92
n22	498500.61	4799037.85
n23	498498.42	4799034.32
n24	498472.68	4798992.86
n25	498459.83	4798989.70
n26	498392.80	4799030.66
n27	498370.98	4799035.68
n28	498349.96	4799024.34
n29	498068.20	4798722.68
n30	498066.10	4798720.46
n31	498038.56	4798695.88
n32	498036.86	4798665.61
n33	497852.80	4798501.08
n34	497841.63	4798482.79
n35	497840.56	4798481.02
n36	497845.49	4798478.01
n37	497841.11	4798480.69
n38	497836.13	4798483.73
n39	498031.15	4798660.50
n40	498028.72	4798658.33
n41	498023.34	4798653.53
n42	498022.15	4798654.88
n43	498012.64	4798665.64
n44	498031.71	4798659.26
n45	498029.59	4798657.37
n46	497818.66	4798494.40
n47	497806.94	4798496.23
n48	497751.37	4798446.57
n49	497692.24	4798393.72
n50	497690.39	4798381.93
n51	497692.41	4798373.45
n52	497730.81	4798350.00
n53	497732.52	4798348.96
n54	497733.57	4798350.66
n55	497752.28	4798381.31
n56	497753.33	4798383.01
n57	497774.20	4798417.19
n58	497783.86	4798419.54
n59	497823.95	4798395.05
n60	497825.15	4798397.01
n61	497835.29	4798413.61
n62	497864.43	4798461.32
n63	497866.70	4798465.03
n64	497864.99	4798466.08
n65	497861.50	4798468.20
n66	497825.66	4798394.01
n67	497893.46	4798352.59
n68	497895.17	4798351.55
n69	498031.31	4798268.40

Model Input - MDD.inp

n70	498040.97	4798270.74
n71	498044.94	4798277.23
n72	498045.77	4798278.60
n73	498059.59	4798301.22
n74	498077.76	4798330.97
n75	498080.05	4798334.72
n76	498078.34	4798335.76
n77	498006.23	4798379.80
n78	497985.53	4798392.45
n79	497981.98	4798394.61
n80	497984.17	4798390.35
n81	497984.84	4798391.40
n82	498093.36	4798356.52
n83	498082.75	4798339.14
n84	498036.00	4798282.74
n85	498042.30	4798278.86
n86	497895.04	4798355.15
n87	497896.07	4798356.86
n88	497754.46	4798379.92
n89	497758.17	4798377.52
n90	497850.59	4798276.84
n91	497854.13	4798274.67
n92	498003.66	4798183.34
n93	498006.04	4798181.89
n94	498156.35	4798090.08
n95	498159.65	4798088.06
n96	498310.30	4797996.04
n97	498313.26	4797994.24
n98	498464.19	4797902.05
n99	498466.87	4797900.41
n100	498511.89	4797873.05
n101	498518.67	4797874.90
n102	498556.41	4797936.69
n103	498558.17	4797939.57
n104	498601.29	4798010.17
n105	498604.04	4798014.67
n106	498598.27	4798018.17
n107	498554.96	4798044.64
n108	498550.57	4798047.32
n109	498401.35	4798138.46
n110	498398.13	4798140.43
n111	498247.74	4798232.29
n112	498243.86	4798234.66
n113	498110.34	4798316.21
n114	498107.29	4798318.08
n115	498109.04	4798314.08
n116	498109.69	4798315.14
n117	498246.44	4798230.16
n118	498247.09	4798231.22

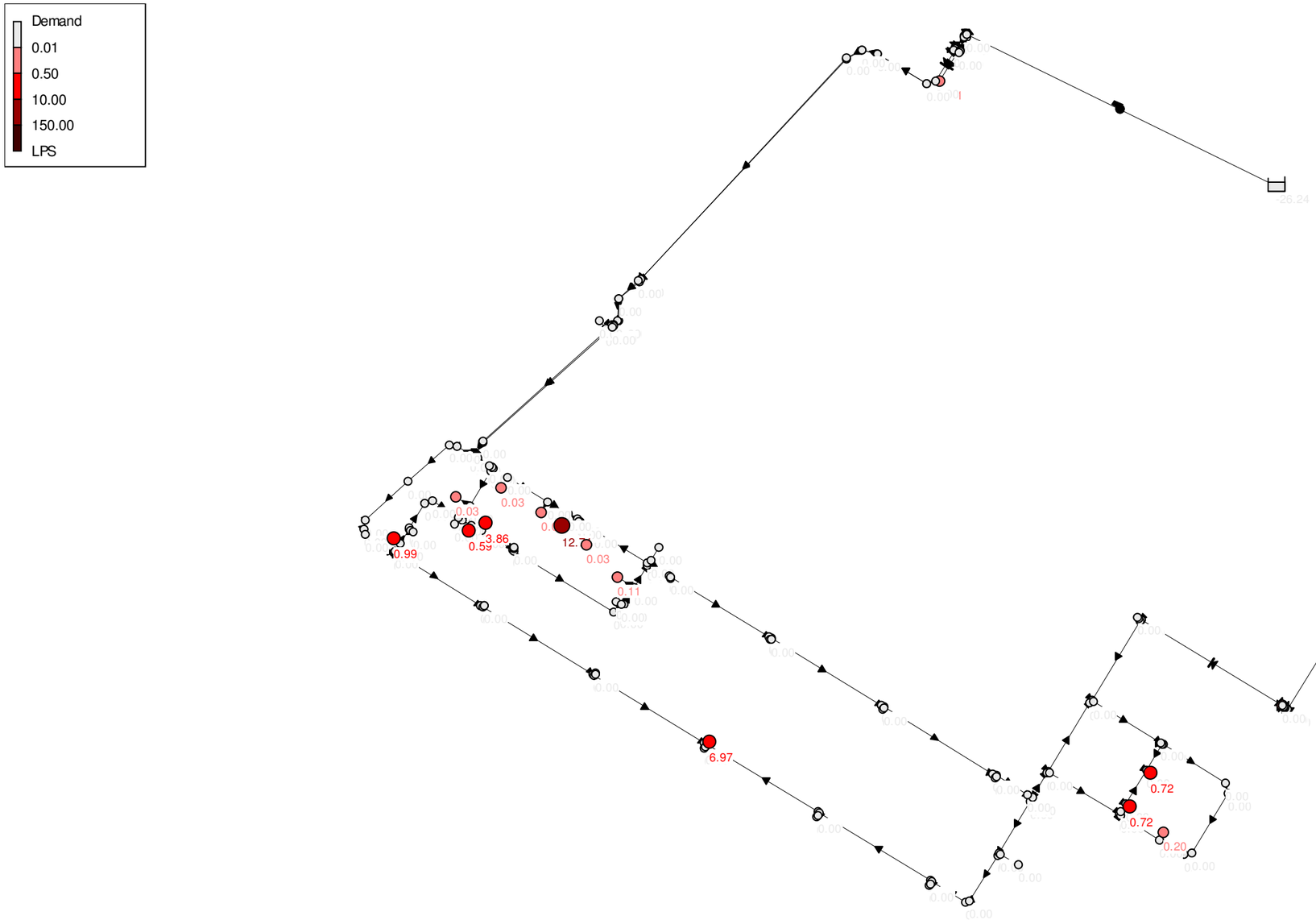
n119	498400.05	4798136.33
n120	498400.70	4798137.40
n121	498553.66	4798042.50
n122	498554.31	4798043.57
n123	498560.94	4797937.90
n124	498584.76	4797923.59
n125	498463.48	4797894.87
n126	498464.92	4797897.22
n127	498309.87	4797988.69
n128	498311.57	4797991.46
n129	498156.26	4798082.52
n130	498157.56	4798084.71
n131	498007.86	4798184.88
n132	498006.61	4798182.83
n133	497855.96	4798277.66
n134	497855.01	4798276.11
n135	498953.25	4798135.32
n136	498948.98	4798137.93
BLDG-V	498945.44	4798140.09
n138	498752.59	4798257.88
n139	499245.91	4798608.61
n140	498751.14	4798255.50
n141	498685.02	4798147.25
n142	498682.90	4798143.79
n143	498626.10	4798050.79
n144	498624.55	4798048.25
n145	498628.20	4798049.51
n146	498722.19	4797991.91
n147	498725.30	4797990.01
n148	498811.28	4797937.32
n149	498821.39	4797939.74
n150	498871.04	4798020.71
n151	498867.54	4798035.32
n152	498782.81	4798087.28
n153	498780.83	4798088.49
n154	498778.74	4798089.78
n155	498687.29	4798145.85
n156	498724.73	4797996.09
n157	498749.91	4798259.53
n158	498748.33	4798260.49
n159	497970.38	4798401.70
n160	497942.14	4798418.95
n161	497886.75	4798452.78
n162	497838.25	4798386.32
n163	497850.85	4798378.63
n164	497819.65	4798397.68
n165	497740.74	4798362.40
n166	498731.18	4798006.72
n167	498759.16	4798052.81

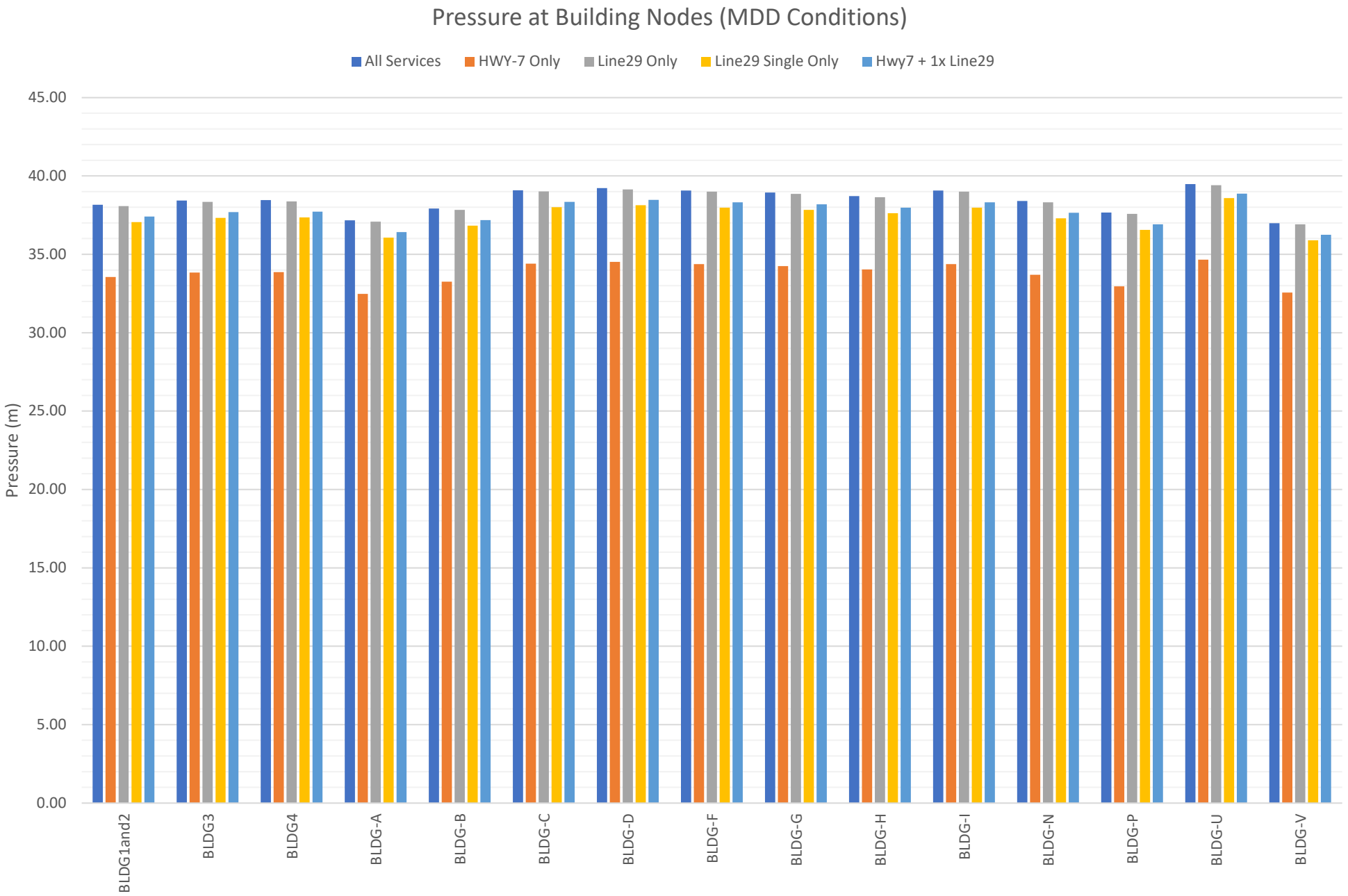
Model Input - MDD.inp

n168	498778.06	4797957.68
BLDG-F	497731.39	4798368.11
n170	497814.13	4798388.64
BLDG-A	497834.08	4798379.49
BLDG-N	497815.66	4798425.60
BLDG-P	497857.62	4798389.73
BLDG-D	497877.89	4798438.27
BLDG-I	497933.38	4798404.61
BLDG-C	497961.52	4798387.19
BLDG-G	497994.24	4798360.18
BLDG3	498737.31	4798002.98
BLDG4	498765.42	4798048.99
BLDG1and2	498783.74	4797966.97
BLDG-H	498036.55	4798315.29
Jun1	498499.03	4799038.55
Jun2	498497.98	4799037.11
Jun3	498497.19	4799035.22
Jun4	498505.88	4799034.73
Jun5	498504.64	4799032.79
Jun6	498503.50	4799030.90
Jun7	498949.36	4798138.36
Jun8	498947.73	4798139.76
Jun9	498945.90	4798140.69
GibbRoadConnection	498514.25	4799055.73
BLDG-B	498162.38	4798091.68
ResXYG	499264.72	4798631.17
ResDunnRoad	498936.39	4798849.38

```
[VERTICES]
;Link                X-Coord              Y-Coord

[LABELS]
;X-Coord           Y-Coord          Label & Anchor Node

[BACKDROP]
 DIMENSIONS          497619.36            4797817.48           499324.50
       4799099.20
 UNITS               None
 FILE
 OFFSET              0.00                 0.00

[END]
```

XINYI Canada Glass Watermain Distribution Network - Domestic and Process Demands




Pressure at Building Nodes (MDD Conditions)
All Services
HWY-7 Only
Line29 Only
Line29 Single Only
Hwy7 + 1x Line29
Pressure (m)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
BLDG1and2
BLDG3
BLDG4
BLDG-A
BLDG-B
BLDG-C
BLDG-D
BLDG-F
BLDG-G
BLDG-H
BLDG-I
BLDG-N
BLDG-P
BLDG-U
BLDG-V

XINYI Canada Glass Watermain Distribution Network - Maximum Day Demand (MDD) Scenario

Node ID	Elevation	Demand	All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
			Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
BLDG1and2	367.77	0.20	405.93	38.16	401.33	33.56	405.85	38.08	404.83	37.06	405.18	37.41
BLDG3	367.47	0.72	405.90	38.43	401.31	33.84	405.83	38.35	404.81	37.33	405.16	37.69
BLDG4	367.47	0.72	405.93	38.46	401.34	33.87	405.85	38.38	404.83	37.36	405.18	37.72
BLDG-A	368.77	0.59	405.94	37.17	401.24	32.47	405.86	37.09	404.84	36.07	405.19	36.42
BLDG-B	368.00	6.97	405.92	37.92	401.25	33.25	405.84	37.84	404.83	36.83	405.18	37.18
BLDG-C	366.84	12.74	405.93	39.09	401.23	34.40	405.85	39.01	404.83	38.00	405.18	38.34
BLDG-D	366.72	0.03	405.94	39.22	401.24	34.52	405.86	39.14	404.84	38.13	405.19	38.47
BLDG-F	366.86	0.99	405.94	39.07	401.24	34.37	405.86	39.00	404.84	37.98	405.19	38.32
BLDG-G	366.99	0.03	405.93	38.94	401.24	34.25	405.85	38.86	404.84	37.84	405.18	38.19
BLDG-H	367.21	0.11	405.93	38.72	401.24	34.03	405.85	38.65	404.84	37.63	405.18	37.98
BLDG-I	366.86	0.03	405.93	39.07	401.24	34.38	405.86	39.00	404.84	37.98	405.19	38.32
BLDG-N	367.54	0.03	405.94	38.40	401.24	33.70	405.86	38.32	404.84	37.30	405.19	37.65
BLDG-P	368.28	3.86	405.93	37.66	401.24	32.96	405.86	37.58	404.84	36.56	405.19	36.91
BLDG-U	366.57	0.01	406.05	39.48	401.24	34.66	405.98	39.41	405.16	38.59	405.44	38.87
BLDG-V	368.94	0.01	405.93	36.99	401.50	32.56	405.85	36.91	404.83	35.89	405.19	36.25
Junc GibbRoadConnection	365.17	0.00	408.26	43.09	401.24	36.07	408.23	43.06	408.23	43.06	408.37	43.20
Junc Jun1	364.99	0.00	408.26	43.26	401.24	36.25	408.22	43.23	404.88	39.89	405.22	40.23
Junc Jun2	364.99	0.00	406.47	41.48	401.24	36.25	406.41	41.42	404.88	39.89	405.22	40.23
Junc Jun3	364.99	0.00	406.06	41.06	401.24	36.25	405.99	40.99	404.88	39.89	405.22	40.23
Junc Jun4	364.78	0.00	408.26	43.48	401.24	36.46	408.22	43.44	408.21	43.43	408.36	43.58
Junc Jun5	364.78	0.00	406.47	41.69	401.24	36.46	406.41	41.63	406.04	41.26	406.22	41.44
Junc Jun6	364.78	0.00	406.06	41.28	401.24	36.46	405.99	41.21	405.19	40.41	405.46	40.68
Junc Jun7	367.96	0.00	406.13	38.17	404.53	36.57	405.85	37.89	404.83	36.87	406.00	38.04
Junc Jun8	367.96	0.00	405.95	37.99	402.36	34.40	405.85	37.89	404.83	36.87	405.29	37.33
Junc Jun9	367.96	0.00	405.93	37.97	401.51	33.54	405.85	37.89	404.83	36.87	405.19	37.23
Junc n1	366.04	0.00	405.94	39.90	401.24	35.20	405.87	39.82	404.85	38.81	405.19	39.15
Junc n10	366.22	0.00	406.04	39.82	401.24	35.02	405.97	39.75	405.11	38.89	405.40	39.18
Junc n100	367.57	0.00	405.93	38.35	401.29	33.72	405.85	38.28	404.83	37.26	405.18	37.61
Junc n101	367.72	0.00	405.93	38.21	401.29	33.57	405.85	38.13	404.83	37.11	405.18	37.46
Junc n102	368.00	0.00	405.93	37.93	401.30	33.30	405.85	37.85	404.83	36.83	405.18	37.18
Junc n103	368.00	0.00	405.93	37.93	401.30	33.30	405.85	37.85	404.83	36.83	405.18	37.18
Junc n104	367.62	0.00	405.93	38.30	401.31	33.69	405.85	38.23	404.83	37.21	405.18	37.56
Junc n105	367.57	0.00	405.93	38.36	401.31	33.74	405.85	38.28	404.83	37.27	405.18	37.62
Junc n106	367.59	0.00	405.93	38.33	401.31	33.72	405.85	38.26	404.83	37.24	405.18	37.59
Junc n107	367.30	0.00	405.93	38.62	401.30	34.00	405.85	38.55	404.83	37.53	405.18	37.88
Junc n108	367.30	0.00	405.93	38.63	401.30	34.01	405.85	38.55	404.83	37.54	405.18	37.89
Junc n109	367.08	0.00	405.93	38.85	401.28	34.20	405.85	38.77	404.83	37.75	405.18	38.10
Junc n11	366.25	0.00	406.03	39.79	401.24	34.99	405.96	39.72	405.10	38.85	405.39	39.15
Junc n110	367.08	0.00	405.93	38.85	401.28	34.21	405.85	38.78	404.83	37.76	405.18	38.11
Junc n111	366.86	0.00	405.93	39.07	401.26	34.41	405.85	39.00	404.83	37.98	405.18	38.33
Junc n112	366.85	0.00	405.93	39.08	401.26	34.41	405.85	39.00	404.83	37.98	405.18	38.33
Junc n113	366.66	0.00	405.93	39.27	401.25	34.59	405.85	39.20	404.84	38.18	405.18	38.53
Junc n114	366.65	0.00	405.93	39.28	401.25	34.59	405.85	39.20	404.84	38.18	405.18	38.53
Junc n115	366.76	0.00	405.93	39.17	401.25	34.49	405.85	39.10	404.84	38.08	405.18	38.43
Junc n116	366.71	0.00	405.93	39.22	401.25	34.54	405.85	39.15	404.84	38.13	405.18	38.48
Junc n117	366.96	0.00	405.93	38.97	401.26	34.31	405.85	38.90	404.83	37.88	405.18	38.23
Junc n118	366.91	0.00	405.93	39.02	401.26	34.36	405.85	38.95	404.83	37.93	405.18	38.28
Junc n119	367.18	0.00	405.93	38.75	401.28	34.10	405.85	38.67	404.83	37.65	405.18	38.00
Junc n12	366.26	0.00	405.99	39.73	401.24	34.98	405.91	39.66	404.92	38.67	405.25	39.00
Junc n120	367.13	0.00	405.93	38.80	401.28	34.15	405.85	38.72	404.83	37.70	405.18	38.05
Junc n121	367.40	0.00	405.93	38.52	401.30	33.90	405.85	38.45	404.83	37.43	405.18	37.78
Junc n122	367.35	0.00	405.93	38.57	401.30	33.95	405.85	38.50	404.83	37.48	405.18	37.83
Junc n123	367.97	0.00	405.93	37.96	401.30	33.33	405.85	37.88	404.83	36.86	405.18	37.22
Junc n124	367.58	0.00	405.93	38.35	401.30	33.72	405.85	38.27	404.83	37.25	405.18	37.61
Junc n125	367.31	0.00	405.93	38.61	401.29	33.97	405.85	38.54	404.83	37.52	405.18	37.87
Junc n126	367.40	0.00	405.93	38.53	401.29	33.89	405.85	38.45	404.83	37.43	405.18	37.78
Junc n127	367.13	0.00	405.93	38.80	401.27	34.14	405.85	38.72	404.83	37.71	405.18	38.06
Junc n128	367.23	0.00	405.93	38.70	401.27	34.04	405.85	38.62	404.83	37.60	405.18	37.95
Junc n129	366.94	0.00	405.93	38.99	401.25	34.31	405.85	38.91	404.83	37.89	405.18	38.24
Junc n13	366.25	0.00	405.99	39.73	401.24	34.98	405.91	39.66	404.92	38.67	405.25	39.00
Junc n130	367.02	0.00	405.93	38.91	401.25	34.23	405.85	38.83	404.83	37.81	405.18	38.16
Junc n131	367.33	0.00	405.93	38.60	401.25	33.92	405.85	38.53	404.84	37.51	405.18	37.86
Junc n132	366.91	0.00	405.93	39.02	401.25	34.34	405.85	38.95	404.84	37.93	405.18	38.28
Junc n133	367.18	0.00	405.93	38.76	401.24	34.07	405.86	38.68	404.84	37.66	405.19	38.01
Junc n134	366.91	0.00	405.93	39.02	401.24	34.33	405.86	38.95	404.84	37.93	405.19	38.27
Junc n135	367.18	0.00	406.13	38.95	404.54	37.36	405.85	38.67	404.83	37.65	406.00	38.82
Junc n136	367.96	0.00	406.13	38.17	404.54	36.58	405.85	37.89	404.83	36.87	406.00	38.04
Junc n138	367.13	0.00	405.93	38.80	401.41	34.28	405.85	38.72	404.83	37.70	405.19	38.06

XINYI Canada Glass Watermain Distribution Network - Maximum Day Demand (MDD) Scenario

Node ID	Elevation	Demand	All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
			Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
Junc n139	364.05	0.00	406.13	42.08	404.78	40.74	405.85	41.80	404.83	40.79	406.00	41.96
Junc n14	366.25	0.00	405.98	39.73	401.24	34.98	405.91	39.65	404.90	38.65	405.24	38.98
Junc n140	367.17	0.00	405.93	38.76	401.40	34.24	405.85	38.68	404.83	37.66	405.19	38.02
Junc n141	367.16	0.00	405.93	38.77	401.35	34.19	405.85	38.69	404.83	37.67	405.18	38.03
Junc n142	367.16	0.00	405.93	38.77	401.35	34.19	405.85	38.69	404.83	37.67	405.18	38.03
Junc n143	367.14	0.00	405.93	38.79	401.33	34.19	405.85	38.71	404.83	37.70	405.18	38.05
Junc n144	367.13	0.00	405.93	38.79	401.33	34.19	405.85	38.72	404.83	37.70	405.18	38.05
Junc n145	367.24	0.00	405.93	38.69	401.33	34.09	405.85	38.61	404.83	37.59	405.18	37.94
Junc n146	367.54	0.00	405.93	38.39	401.33	33.79	405.85	38.31	404.83	37.29	405.18	37.64
Junc n147	367.55	0.00	405.93	38.38	401.33	33.78	405.85	38.30	404.83	37.28	405.18	37.63
Junc n148	367.76	0.00	405.93	38.17	401.34	33.58	405.85	38.09	404.83	37.07	405.18	37.43
Junc n149	367.78	0.00	405.93	38.15	401.34	33.56	405.85	38.07	404.83	37.05	405.18	37.41
Junc n15	365.51	0.00	405.98	40.47	401.24	35.73	405.90	40.40	404.89	39.39	405.23	39.72
Junc n150	367.83	0.00	405.93	38.10	401.34	33.51	405.85	38.02	404.83	37.00	405.18	37.36
Junc n151	367.78	0.00	405.93	38.14	401.34	33.55	405.85	38.07	404.83	37.05	405.18	37.40
Junc n152	367.58	0.00	405.93	38.34	401.34	33.76	405.85	38.27	404.83	37.25	405.18	37.60
Junc n153	367.58	0.00	405.93	38.35	401.34	33.76	405.85	38.27	404.83	37.25	405.18	37.61
Junc n154	367.57	0.00	405.93	38.36	401.34	33.77	405.85	38.28	404.83	37.26	405.18	37.61
Junc n155	367.29	0.00	405.93	38.64	401.35	34.06	405.85	38.56	404.83	37.55	405.18	37.90
Junc n156	367.47	0.00	405.93	38.46	401.33	33.86	405.85	38.38	404.83	37.36	405.18	37.71
Junc n157	367.04	0.00	405.93	38.89	401.41	34.37	405.85	38.81	404.83	37.80	405.19	38.15
Junc n158	367.06	0.00	405.93	38.87	401.41	34.35	405.85	38.79	404.83	37.77	405.19	38.13
Junc n159	366.30	0.00	405.93	39.63	401.24	34.94	405.85	39.55	404.84	38.54	405.18	38.88
Junc n16	365.57	0.00	405.95	40.38	401.24	35.66	405.87	40.30	404.86	39.28	405.20	39.63
Junc n160	366.22	0.00	405.93	39.72	401.24	35.02	405.86	39.64	404.84	38.62	405.19	38.97
Junc n161	366.05	0.00	405.94	39.89	401.24	35.19	405.86	39.82	404.84	38.80	405.19	39.14
Junc n162	368.52	0.00	405.94	37.42	401.24	32.72	405.86	37.34	404.84	36.32	405.19	36.67
Junc n163	368.59	0.00	405.93	37.34	401.24	32.65	405.86	37.27	404.84	36.25	405.19	36.60
Junc n164	368.36	0.00	405.94	37.57	401.24	32.88	405.86	37.50	404.84	36.48	405.19	36.83
Junc n165	366.83	0.00	405.94	39.11	401.24	34.41	405.86	39.03	404.84	38.01	405.19	38.36
Junc n166	367.33	0.00	405.93	38.60	401.33	34.00	405.85	38.52	404.83	37.50	405.18	37.85
Junc n167	367.41	0.00	405.93	38.51	401.34	33.92	405.85	38.44	404.83	37.42	405.18	37.77
Junc n168	367.71	0.00	405.93	38.22	401.33	33.63	405.85	38.14	404.83	37.12	405.18	37.47
Junc n17	366.03	0.00	405.95	39.92	401.24	35.21	405.87	39.84	404.85	38.82	405.20	39.17
Junc n170	368.60	0.00	405.94	37.34	401.24	32.64	405.86	37.26	404.84	36.24	405.19	36.59
Junc n18	366.11	0.00	405.95	39.84	401.24	35.13	405.87	39.77	404.85	38.75	405.20	39.09
Junc n19	365.14	0.00	408.26	43.12	401.24	36.10	408.23	43.08	408.23	43.08	408.37	43.23
Junc n2	366.07	0.00	405.94	39.87	401.24	35.17	405.87	39.79	404.85	38.78	405.19	39.12
Junc n20	365.20	0.00	408.26	43.06	401.24	36.04	408.23	43.03	404.88	39.69	405.22	40.02
Junc n21	365.30	0.00	408.26	42.96	401.24	35.94	408.22	42.93	404.88	39.59	405.22	39.93
Junc n22	364.99	0.00	408.26	43.27	401.24	36.25	408.22	43.23	404.88	39.89	405.22	40.23
Junc n23	366.01	0.00	406.05	40.05	401.24	35.23	405.99	39.98	404.88	38.88	405.22	39.22
Junc n24	366.56	0.00	406.05	39.49	401.24	34.68	405.98	39.42	404.88	38.33	405.22	38.67
Junc n25	366.34	0.00	406.05	39.71	401.24	34.90	405.98	39.64	404.88	38.55	405.22	38.89
Junc n26	366.28	0.00	406.04	39.76	401.24	34.96	405.97	39.69	404.88	38.61	405.22	38.94
Junc n27	366.26	0.00	406.04	39.78	401.24	34.98	405.97	39.71	404.88	38.62	405.22	38.96
Junc n28	366.29	0.00	406.03	39.75	401.24	34.95	405.96	39.68	404.88	38.60	405.22	38.94
Junc n29	366.29	0.00	405.99	39.69	401.24	34.94	405.91	39.62	404.88	38.59	405.22	38.93
Junc n3	366.10	0.00	405.94	39.84	401.24	35.13	405.87	39.76	404.85	38.74	405.19	39.09
Junc n30	366.29	0.00	405.99	39.69	401.24	34.95	405.91	39.62	404.88	38.59	405.22	38.93
Junc n31	366.29	0.00	405.98	39.69	401.24	34.95	405.91	39.62	404.88	38.59	405.22	38.93
Junc n32	365.53	0.00	405.98	40.45	401.24	35.71	405.90	40.38	404.88	39.36	405.22	39.69
Junc n33	365.62	0.00	405.95	40.33	401.24	35.62	405.87	40.26	404.86	39.24	405.20	39.58
Junc n34	366.05	0.00	405.95	39.90	401.24	35.19	405.87	39.83	404.85	38.81	405.20	39.15
Junc n35	366.12	0.00	405.95	39.83	401.24	35.12	405.87	39.75	404.85	38.73	405.20	39.08
Junc n36	366.07	0.00	405.95	39.87	401.24	35.16	405.87	39.80	404.85	38.78	405.20	39.12
Junc n37	366.11	0.00	405.95	39.83	401.24	35.13	405.87	39.76	404.85	38.74	405.20	39.09
Junc n38	366.02	0.00	405.95	39.93	401.24	35.22	405.87	39.85	404.85	38.84	405.20	39.18
Junc n39	365.32	0.00	405.98	40.66	401.24	35.92	405.90	40.59	404.88	39.57	405.22	39.91
Junc n4	365.24	0.00	408.26	43.02	401.24	35.99	408.22	42.98	408.22	42.98	408.37	43.13
Junc n40	365.30	0.00	405.98	40.68	401.24	35.94	405.90	40.61	404.88	39.59	405.22	39.93
Junc n41	365.28	0.00	405.98	40.70	401.24	35.96	405.90	40.62	404.88	39.60	405.22	39.94
Junc n42	365.36	0.00	405.98	40.61	401.24	35.87	405.90	40.54	404.88	39.52	405.22	39.86
Junc n43	366.03	0.00	405.98	39.95	401.24	35.21	405.90	39.88	404.88	38.86	405.22	39.20
Junc n44	365.25	0.00	405.98	40.73	401.24	35.99	405.90	40.65	404.89	39.64	405.22	39.97
Junc n45	365.23	0.00	405.98	40.74	401.24	36.00	405.90	40.67	404.89	39.65	405.22	39.99
Junc n46	366.05	0.00	405.95	39.90	401.24	35.19	405.87	39.82	404.85	38.80	405.20	39.15

XINYI Canada Glass Watermain Distribution Network - Maximum Day Demand (MDD) Scenario

			All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
Node ID	**Elevation**	**Demand**	**Head**	**Pressure**	**Head**	**Pressure**	**Head**	**Pressure**	**Head**	**Pressure**	**Head**	**Pressure**
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
Junc n47	366.29	0.00	405.95	39.66	401.24	34.95	405.87	39.58	404.85	38.56	405.20	38.91
Junc n48	366.84	0.00	405.94	39.11	401.24	34.40	405.87	39.03	404.85	38.01	405.19	38.36
Junc n49	367.16	0.00	405.94	38.78	401.24	34.08	405.86	38.71	404.85	37.69	405.19	38.04
Junc n5	364.78	0.00	408.26	43.48	401.24	36.46	408.22	43.44	408.22	43.44	408.36	43.58
Junc n50	366.61	0.00	405.94	39.33	401.24	34.63	405.86	39.25	404.85	38.23	405.19	38.58
Junc n51	366.32	0.00	405.94	39.62	401.24	34.92	405.86	39.55	404.84	38.53	405.19	38.87
Junc n52	366.90	0.00	405.94	39.04	401.24	34.34	405.86	38.96	404.84	37.95	405.19	38.29
Junc n53	366.91	0.00	405.94	39.03	401.24	34.33	405.86	38.95	404.84	37.94	405.19	38.28
Junc n54	366.97	0.00	405.94	38.97	401.24	34.27	405.86	38.89	404.84	37.88	405.19	38.22
Junc n55	366.96	0.00	405.94	38.98	401.24	34.28	405.86	38.90	404.84	37.88	405.19	38.23
Junc n56	366.98	0.00	405.94	38.95	401.24	34.26	405.86	38.88	404.84	37.86	405.19	38.21
Junc n57	367.38	0.00	405.94	38.55	401.24	33.85	405.86	38.48	404.84	37.46	405.19	37.80
Junc n58	367.49	0.00	405.94	38.45	401.24	33.75	405.86	38.37	404.84	37.36	405.19	37.70
Junc n59	368.43	0.00	405.94	37.50	401.24	32.81	405.86	37.43	404.84	36.41	405.19	36.76
Junc n6	365.79	0.00	406.05	40.26	401.24	35.44	405.99	40.19	405.18	39.39	405.46	39.67
Junc n60	368.36	0.00	405.94	37.57	401.24	32.87	405.86	37.50	404.84	36.48	405.19	36.82
Junc n61	367.78	0.00	405.94	38.15	401.24	33.45	405.86	38.08	404.84	37.06	405.19	37.41
Junc n62	366.16	0.00	405.94	39.78	401.24	35.08	405.86	39.71	404.85	38.69	405.19	39.03
Junc n63	366.05	0.00	405.94	39.89	401.24	35.19	405.86	39.82	404.85	38.80	405.19	39.14
Junc n64	366.04	0.00	405.94	39.90	401.24	35.19	405.87	39.82	404.85	38.80	405.19	39.15
Junc n65	366.04	0.00	405.94	39.90	401.24	35.20	405.87	39.83	404.85	38.81	405.19	39.15
Junc n66	368.44	0.00	405.94	37.49	401.24	32.80	405.86	37.42	404.84	36.40	405.19	36.75
Junc n67	368.44	0.00	405.93	37.49	401.24	32.80	405.86	37.42	404.84	36.40	405.19	36.75
Junc n68	368.43	0.00	405.93	37.50	401.24	32.81	405.86	37.43	404.84	36.41	405.19	36.76
Junc n69	367.09	0.00	405.93	38.84	401.24	34.15	405.86	38.76	404.84	37.75	405.19	38.09
Junc n70	367.05	0.00	405.93	38.89	401.24	34.20	405.86	38.81	404.84	37.79	405.18	38.14
Junc n71	366.98	0.00	405.93	38.95	401.24	34.26	405.86	38.88	404.84	37.86	405.18	38.21
Junc n72	366.97	0.00	405.93	38.96	401.24	34.27	405.86	38.89	404.84	37.87	405.18	38.21
Junc n73	366.84	0.00	405.93	39.09	401.24	34.40	405.85	39.02	404.84	38.00	405.18	38.35
Junc n74	366.78	0.00	405.93	39.16	401.24	34.47	405.85	39.08	404.84	38.06	405.18	38.41
Junc n75	366.82	0.00	405.93	39.11	401.24	34.42	405.85	39.03	404.84	38.02	405.18	38.36
Junc n76	366.82	0.00	405.93	39.11	401.24	34.42	405.85	39.04	404.84	38.02	405.18	38.37
Junc n77	366.41	0.00	405.93	39.52	401.24	34.83	405.85	39.45	404.84	38.43	405.18	38.77
Junc n78	366.35	0.00	405.93	39.58	401.24	34.89	405.85	39.51	404.84	38.49	405.18	38.84
Junc n79	366.34	0.00	405.93	39.60	401.24	34.90	405.85	39.52	404.84	38.50	405.18	38.85
Junc n8	366.29	0.00	406.05	39.76	401.24	34.95	405.98	39.69	405.15	38.86	405.44	39.15
Junc n80	366.45	0.00	405.93	39.48	401.24	34.79	405.85	39.41	404.84	38.39	405.18	38.74
Junc n81	366.40	0.00	405.93	39.53	401.24	34.84	405.85	39.46	404.84	38.44	405.18	38.79
Junc n82	366.85	0.00	405.93	39.08	401.24	34.39	405.85	39.00	404.84	37.99	405.18	38.33
Junc n83	366.74	0.00	405.93	39.19	401.24	34.50	405.85	39.11	404.84	38.09	405.18	38.44
Junc n84	367.40	0.00	405.93	38.53	401.24	33.84	405.86	38.45	404.84	37.44	405.18	37.78
Junc n85	367.07	0.00	405.93	38.86	401.24	34.17	405.86	38.78	404.84	37.77	405.18	38.11
Junc n86	368.35	0.00	405.93	37.58	401.24	32.89	405.86	37.51	404.84	36.49	405.19	36.84
Junc n87	368.43	0.00	405.93	37.51	401.24	32.81	405.86	37.43	404.84	36.41	405.19	36.76
Junc n88	366.88	0.00	405.94	39.05	401.24	34.36	405.86	38.98	404.84	37.96	405.19	38.31
Junc n89	367.04	0.00	405.94	38.89	401.24	34.20	405.86	38.82	404.84	37.80	405.19	38.15
Junc n9	366.24	0.00	406.04	39.80	401.24	35.00	405.97	39.73	405.12	38.88	405.41	39.17
Junc n90	366.88	0.00	405.93	39.05	401.24	34.36	405.86	38.97	404.84	37.96	405.19	38.30
Junc n91	366.86	0.00	405.93	39.07	401.24	34.38	405.86	39.00	404.84	37.98	405.19	38.32
Junc n92	366.89	0.00	405.93	39.04	401.25	34.36	405.85	38.97	404.84	37.95	405.18	38.30
Junc n93	366.87	0.00	405.93	39.06	401.25	34.37	405.85	38.98	404.84	37.96	405.18	38.31
Junc n94	367.13	0.00	405.93	38.79	401.25	34.12	405.85	38.71	404.83	37.70	405.18	38.05
Junc n95	367.14	0.00	405.93	38.79	401.25	34.11	405.85	38.71	404.83	37.69	405.18	38.04
Junc n96	367.32	0.00	405.93	38.60	401.27	33.95	405.85	38.53	404.83	37.51	405.18	37.86
Junc n97	367.33	0.00	405.93	38.60	401.27	33.94	405.85	38.52	404.83	37.51	405.18	37.86
Junc n98	367.51	0.00	405.93	38.42	401.29	33.78	405.85	38.34	404.83	37.32	405.18	37.67
Junc n99	367.51	0.00	405.93	38.41	401.29	33.77	405.85	38.34	404.83	37.32	405.18	37.67
Maximum Pressure				43.48		40.74		43.44		43.44		43.58
Minimum Pressure				36.99		32.47		36.91		35.89		36.25

XINYI Canada Glass Watermain Distribution Network - MDD + Fire at Warehouse

Node ID	Elevation	Demand	All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
			Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
BLDG1and2	367.77	0.20	396.72	28.95	368.80	1.02	384.58	16.81	374.89	7.12	394.61	26.84
BLDG3	367.47	0.72	396.69	29.22	368.76	1.28	384.56	17.09	374.87	7.39	394.59	27.11
BLDG4	367.47	0.72	396.74	29.27	368.91	1.44	384.58	17.12	374.89	7.42	394.64	27.17
BLDG-A	368.77	0.59	396.69	27.92	365.98	-2.79	385.91	17.15	376.22	7.45	394.43	25.66
BLDG-B	368.00	6.97	394.88	26.88	365.02	-2.98	383.47	15.47	373.77	5.77	392.67	24.67
BLDG-C	366.84	12.74	396.71	29.87	366.03	-0.80	385.93	19.09	376.23	9.39	394.45	27.62
BLDG-D	366.72	0.03	396.76	30.04	365.98	-0.73	386.07	19.35	376.38	9.66	394.49	27.77
BLDG-F	366.86	0.99	396.59	29.72	365.89	-0.98	385.82	18.96	376.13	9.26	394.32	27.46
BLDG-G	366.99	0.03	396.71	29.71	366.08	-0.91	385.89	18.90	376.20	9.20	394.45	27.46
BLDG-H	367.21	0.11	396.69	29.48	366.14	-1.07	385.83	18.62	376.13	8.93	394.44	27.24
BLDG-I	366.86	0.03	396.73	29.87	366.02	-0.84	385.98	19.11	376.28	9.42	394.47	27.61
BLDG-N	367.54	0.03	396.71	29.17	365.97	-1.57	385.97	18.43	376.28	8.74	394.45	26.91
BLDG-P	368.28	3.86	396.69	28.42	365.98	-2.29	385.91	17.63	376.21	7.94	394.43	26.16
BLDG-U	366.57	0.01	398.43	31.85	365.96	-0.61	389.82	23.24	386.65	20.08	398.15	31.57
BLDG-V	368.94	0.01	397.51	28.57	374.29	5.35	384.58	15.64	374.89	5.95	395.75	26.81
Junc GibbRoadConnection	365.17	0.00	402.59	37.42	365.96	0.79	395.09	29.92	395.09	29.92	403.83	38.66
Junc Jun1	364.99	0.00	402.55	37.55	365.96	0.97	394.99	30.00	377.62	12.63	394.92	29.93
Junc Jun2	364.99	0.00	400.14	35.15	365.96	0.97	392.35	27.36	377.62	12.63	394.92	29.93
Junc Jun3	364.99	0.00	398.52	33.53	365.96	0.97	390.02	25.03	377.62	12.63	394.92	29.93
Junc Jun4	364.78	0.00	402.55	37.77	365.96	1.18	394.99	30.21	394.73	29.95	403.70	38.92
Junc Jun5	364.78	0.00	400.14	35.36	365.96	1.18	392.35	27.57	391.56	26.78	400.95	36.17
Junc Jun6	364.78	0.00	398.52	33.74	365.96	1.18	390.02	25.24	387.40	22.62	398.41	33.63
Junc Jun7	367.96	0.00	401.71	33.74	381.70	13.74	384.58	16.62	374.89	6.93	400.34	32.38
Junc Jun8	367.96	0.00	399.26	31.30	378.54	10.58	384.58	16.62	374.89	6.93	397.80	29.84
Junc Jun9	367.96	0.00	397.53	29.56	374.38	6.42	384.58	16.62	374.89	6.93	395.77	27.80
Junc n1	366.04	0.00	396.79	30.75	365.97	-0.07	386.14	20.10	376.44	10.40	394.51	28.47
Junc n10	366.22	0.00	398.22	32.00	365.96	-0.26	389.35	23.13	384.97	18.75	397.54	31.33
Junc n100	367.57	0.00	396.10	28.53	367.08	-0.49	384.26	16.68	374.56	6.99	393.92	26.35
Junc n101	367.72	0.00	396.12	28.40	367.12	-0.61	384.27	16.55	374.58	6.86	393.95	26.22
Junc n102	368.00	0.00	396.33	28.33	367.48	-0.52	384.41	16.41	374.72	6.72	394.16	26.17
Junc n103	368.00	0.00	396.34	28.34	367.49	-0.51	384.42	16.42	374.72	6.72	394.18	26.18
Junc n104	367.62	0.00	396.59	28.96	367.91	0.28	384.57	16.95	374.88	7.26	394.43	26.80
Junc n105	367.57	0.00	396.60	29.04	367.93	0.37	384.58	17.02	374.89	7.32	394.44	26.88
Junc n106	367.59	0.00	396.60	29.01	367.91	0.32	384.60	17.00	374.90	7.31	394.44	26.85
Junc n107	367.30	0.00	396.61	29.31	367.77	0.46	384.70	17.40	375.01	7.70	394.44	27.14
Junc n108	367.30	0.00	396.61	29.31	367.75	0.46	384.71	17.41	375.02	7.72	394.44	27.15
Junc n109	367.08	0.00	396.64	29.56	367.25	0.17	385.06	17.98	375.37	8.29	394.44	27.36
Junc n11	366.25	0.00	398.18	31.93	365.96	-0.28	389.26	23.01	384.64	18.39	397.43	31.18
Junc n110	367.08	0.00	396.64	29.56	367.24	0.16	385.07	17.99	375.37	8.30	394.44	27.37
Junc n111	366.86	0.00	396.66	29.81	366.73	-0.13	385.42	18.56	375.73	8.87	394.44	27.59
Junc n112	366.85	0.00	396.66	29.81	366.72	-0.13	385.43	18.58	375.74	8.89	394.44	27.59
Junc n113	366.66	0.00	396.69	30.03	366.27	-0.39	385.74	19.09	376.05	9.39	394.45	27.79
Junc n114	366.65	0.00	396.69	30.03	366.26	-0.40	385.75	19.10	376.06	9.40	394.45	27.79
Junc n115	366.76	0.00	396.69	29.93	366.27	-0.49	385.74	18.99	376.05	9.29	394.45	27.69
Junc n116	366.71	0.00	396.69	29.98	366.27	-0.44	385.74	19.04	376.05	9.34	394.45	27.74
Junc n117	366.96	0.00	396.66	29.71	366.73	-0.23	385.42	18.46	375.73	8.77	394.44	27.49
Junc n118	366.91	0.00	396.66	29.76	366.73	-0.18	385.42	18.51	375.73	8.82	394.44	27.54
Junc n119	367.18	0.00	396.64	29.46	367.25	0.07	385.06	17.88	375.37	8.19	394.44	27.26
Junc n12	366.26	0.00	397.45	31.20	365.96	-0.29	387.64	21.38	378.78	12.53	395.33	29.08
Junc n120	367.13	0.00	396.64	29.51	367.25	0.12	385.06	17.93	375.37	8.24	394.44	27.31
Junc n121	367.40	0.00	396.61	29.21	367.77	0.36	384.70	17.30	375.01	7.60	394.44	27.04
Junc n122	367.35	0.00	396.61	29.26	367.77	0.41	384.70	17.35	375.01	7.65	394.44	27.09
Junc n123	367.97	0.00	396.34	28.38	367.49	-0.47	384.42	16.45	374.72	6.76	394.18	26.21
Junc n124	367.58	0.00	396.34	28.77	367.49	-0.08	384.42	16.84	374.72	7.14	394.18	26.60
Junc n125	367.31	0.00	395.95	28.63	366.82	-0.50	384.16	16.85	374.46	7.15	393.76	26.45
Junc n126	367.40	0.00	395.95	28.54	366.82	-0.58	384.16	16.76	374.46	7.06	393.76	26.36
Junc n127	367.13	0.00	395.42	28.29	365.92	-1.21	383.81	16.69	374.12	6.99	393.22	26.09
Junc n128	367.23	0.00	395.42	28.19	365.92	-1.31	383.81	16.59	374.12	6.89	393.22	25.99
Junc n129	366.94	150.00	394.82	27.88	364.96	-1.98	383.40	16.47	373.71	6.77	392.61	25.67
Junc n13	366.25	0.00	397.45	31.19	365.96	-0.29	387.63	21.37	378.74	12.48	395.32	29.06
Junc n130	367.02	0.00	394.85	27.83	364.98	-2.04	383.43	16.41	373.74	6.72	392.63	25.61
Junc n131	367.33	0.00	395.50	28.17	365.33	-2.00	384.31	16.98	374.62	7.29	393.26	25.94
Junc n132	366.91	0.00	395.50	28.59	365.33	-1.57	384.31	17.41	374.62	7.71	393.26	26.36
Junc n133	367.18	0.00	396.10	28.92	365.63	-1.54	385.14	17.97	375.45	8.27	393.84	26.67
Junc n134	366.91	0.00	396.10	29.18	365.63	-1.28	385.14	18.23	375.45	8.54	393.84	26.93
Junc n135	367.18	0.00	401.73	34.55	381.86	14.68	384.58	17.40	374.89	7.71	400.37	33.19
Junc n136	367.96	0.00	401.72	33.76	381.79	13.83	384.58	16.62	374.89	6.93	400.36	32.40
Junc n138	367.13	0.00	397.05	29.92	371.08	3.96	384.58	17.46	374.89	7.76	395.09	27.96

Junc n139	364.05	0.00	402.87	38.82	389.76	25.72	384.58	20.54	374.89	10.84	402.00	37.96
Junc n14	366.25	0.00	397.38	31.13	365.96	-0.29	387.48	21.23	378.22	11.97	395.13	28.88
Junc n140	367.17	0.00	397.05	29.88	371.04	3.88	384.58	17.42	374.89	7.72	395.08	27.91
Junc n141	367.16	0.00	396.79	29.63	369.24	2.08	384.58	17.43	374.89	7.73	394.71	27.55
Junc n142	367.16	0.00	396.78	29.62	369.22	2.06	384.58	17.43	374.89	7.73	394.70	27.54
Junc n143	367.14	0.00	396.68	29.55	368.52	1.39	384.58	17.45	374.89	7.75	394.56	27.42
Junc n144	367.13	0.00	396.68	29.55	368.48	1.35	384.58	17.45	374.89	7.76	394.55	27.42
Junc n145	367.24	0.00	396.68	29.44	368.53	1.29	384.58	17.34	374.89	7.65	394.56	27.32
Junc n146	367.54	0.00	396.71	29.17	368.74	1.20	384.58	17.05	374.89	7.35	394.60	27.06
Junc n147	367.55	0.00	396.71	29.16	368.74	1.20	384.58	17.04	374.89	7.34	394.60	27.06
Junc n148	367.76	0.00	396.73	28.97	368.83	1.07	384.58	16.83	374.89	7.13	394.62	26.86
Junc n149	367.78	0.00	396.73	28.95	368.84	1.06	384.58	16.81	374.89	7.11	394.62	26.84
Junc n15	365.51	0.00	397.33	31.82	365.96	0.46	387.36	21.86	377.79	12.29	394.98	29.47
Junc n150	367.83	0.00	396.74	28.91	368.92	1.09	384.58	16.76	374.89	7.06	394.64	26.81
Junc n151	367.78	0.00	396.74	28.96	368.93	1.14	384.58	16.80	374.89	7.11	394.64	26.86
Junc n152	367.58	0.00	396.75	29.17	369.01	1.43	384.58	17.00	374.89	7.31	394.66	27.08
Junc n153	367.58	0.00	396.75	29.17	369.01	1.43	384.58	17.01	374.89	7.31	394.66	27.08
Junc n154	367.57	0.00	396.75	29.18	369.02	1.45	384.58	17.01	374.89	7.32	394.66	27.09
Junc n155	367.29	0.00	396.79	29.50	369.24	1.95	384.58	17.30	374.89	7.61	394.71	27.42
Junc n156	367.47	0.00	396.71	29.24	368.75	1.28	384.58	17.11	374.89	7.42	394.61	27.13
Junc n157	367.04	0.00	397.05	30.02	371.08	4.05	384.58	17.55	374.89	7.85	395.09	28.05
Junc n158	367.06	0.00	397.05	29.99	371.08	4.02	384.58	17.52	374.89	7.83	395.09	28.03
Junc n159	366.30	0.00	396.71	30.41	366.04	-0.26	385.93	19.63	376.23	9.93	394.46	28.16
Junc n16	365.57	0.00	396.89	31.32	365.96	0.39	386.39	20.82	376.70	11.12	394.59	29.01
Junc n160	366.22	0.00	396.73	30.51	366.02	-0.20	385.98	19.76	376.28	10.07	394.47	28.25
Junc n161	366.05	0.00	396.76	30.71	365.98	-0.06	386.07	20.02	376.38	10.33	394.49	28.44
Junc n162	368.52	0.00	396.69	28.17	365.98	-2.54	385.91	17.40	376.22	7.70	394.43	25.92
Junc n163	368.59	0.00	396.69	28.10	365.98	-2.61	385.91	17.32	376.21	7.62	394.43	25.84
Junc n164	368.36	0.00	396.69	28.32	365.97	-2.40	385.92	17.55	376.22	7.86	394.43	26.07
Junc n165	366.83	0.00	396.59	29.76	365.89	-0.94	385.82	18.99	376.13	9.30	394.32	27.49
Junc n166	367.33	0.00	396.72	29.39	368.78	1.45	384.58	17.25	374.89	7.56	394.61	27.28
Junc n167	367.41	0.00	396.74	29.32	368.91	1.49	384.58	17.17	374.89	7.48	394.64	27.22
Junc n168	367.71	0.00	396.72	29.01	368.80	1.09	384.58	16.88	374.89	7.18	394.61	26.91
Junc n17	366.03	0.00	396.85	30.82	365.96	-0.07	386.31	20.28	376.61	10.58	394.56	28.53
Junc n170	368.60	0.00	396.69	28.09	365.97	-2.63	385.92	17.32	376.22	7.63	394.43	25.83
Junc n18	366.11	0.00	396.85	30.74	365.96	-0.14	386.30	20.19	376.61	10.50	394.55	28.45
Junc n19	365.14	0.00	402.59	37.45	365.96	0.82	395.09	29.95	395.09	29.95	403.83	38.69
Junc n2	366.07	0.00	396.79	30.72	365.97	-0.10	386.14	20.07	376.44	10.37	394.51	28.44
Junc n20	365.20	0.00	402.59	37.39	365.96	0.76	395.09	29.90	377.62	12.42	394.92	29.72
Junc n21	365.30	0.00	402.59	37.29	365.96	0.67	395.09	29.79	377.62	12.33	394.92	29.62
Junc n22	364.99	0.00	402.56	37.57	365.96	0.97	395.02	30.02	377.62	12.63	394.92	29.93
Junc n23	366.01	0.00	398.51	32.50	365.96	-0.04	390.00	23.99	377.62	11.62	394.92	28.91
Junc n24	366.56	0.00	398.42	31.87	365.96	-0.59	389.81	23.25	377.62	11.07	394.92	28.36
Junc n25	366.34	0.00	398.40	32.06	365.96	-0.37	389.75	23.42	377.62	11.29	394.92	28.58
Junc n26	366.28	0.00	398.26	31.98	365.96	-0.32	389.45	23.17	377.62	11.34	394.92	28.64
Junc n27	366.26	0.00	398.22	31.96	365.96	-0.30	389.36	23.10	377.62	11.36	394.92	28.66
Junc n28	366.29	0.00	398.18	31.89	365.96	-0.32	389.26	22.98	377.62	11.34	394.92	28.63
Junc n29	366.29	0.00	397.45	31.16	365.96	-0.33	387.64	21.35	377.62	11.33	394.92	28.63
Junc n3	366.10	0.00	396.79	30.68	365.97	-0.13	386.14	20.04	376.44	10.34	394.51	28.40
Junc n30	366.29	0.00	397.45	31.15	365.96	-0.33	387.63	21.33	377.62	11.33	394.92	28.63
Junc n31	366.29	0.00	397.38	31.09	365.96	-0.33	387.48	21.19	377.62	11.33	394.92	28.63
Junc n32	365.53	0.00	397.33	31.80	365.96	0.43	387.36	21.83	377.62	12.09	394.92	29.39
Junc n33	365.62	0.00	396.89	31.27	365.96	0.34	386.39	20.77	376.70	11.08	394.59	28.97
Junc n34	366.05	0.00	396.85	30.81	365.96	-0.08	386.31	20.26	376.61	10.57	394.56	28.51
Junc n35	366.12	0.00	396.85	30.73	365.96	-0.16	386.30	20.18	376.61	10.49	394.56	28.44
Junc n36	366.07	0.00	396.84	30.76	365.96	-0.11	386.27	20.20	376.58	10.50	394.55	28.47
Junc n37	366.11	0.00	396.85	30.74	365.96	-0.15	386.30	20.19	376.61	10.49	394.56	28.44
Junc n38	366.02	0.00	396.85	30.83	365.96	-0.06	386.29	20.27	376.60	10.58	394.55	28.53
Junc n39	365.32	0.00	397.31	32.00	365.96	0.65	387.33	22.02	377.62	12.31	394.92	29.60
Junc n4	365.24	0.00	402.59	37.35	365.96	0.72	395.09	29.84	395.07	29.82	403.82	38.57
Junc n40	365.30	0.00	397.31	32.01	365.96	0.67	387.32	22.02	377.62	12.33	394.92	29.62
Junc n41	365.28	0.00	397.30	32.02	365.96	0.68	387.29	22.01	377.59	12.31	394.91	29.63
Junc n42	365.36	0.00	397.30	31.93	365.96	0.60	387.29	21.93	377.59	12.23	394.91	29.54
Junc n43	366.03	0.00	397.30	31.27	365.96	-0.06	387.29	21.26	377.59	11.57	394.91	28.88
Junc n44	365.25	0.00	397.31	32.06	365.96	0.71	387.33	22.08	377.67	12.42	394.93	29.69
Junc n45	365.23	0.00	397.31	32.07	365.96	0.73	387.32	22.09	377.63	12.39	394.92	29.69
Junc n46	366.05	0.00	396.82	30.77	365.95	-0.10	386.25	20.20	376.56	10.51	394.53	28.48
Junc n47	366.29	0.00	396.81	30.52	365.95	-0.34	386.23	19.94	376.53	10.24	394.52	28.23
Junc n48	366.84	0.00	396.73	29.90	365.93	-0.91	386.09	19.25	376.39	9.56	394.45	27.61
Junc n49	367.16	0.00	396.65	29.49	365.90	-1.26	385.94	18.78	376.24	9.09	394.37	27.22
Junc n5	364.78	0.00	402.56	37.78	365.96	1.18	395.02	30.24	394.81	30.03	403.73	38.95
Junc n50	366.61	0.00	396.63	30.02	365.90	-0.72	385.91	19.30	376.22	9.61	394.36	27.75

Junc n51	366.32	0.00	396.63	30.31	365.89	-0.42	385.90	19.58	376.20	9.89	394.35	28.04
Junc n52	366.90	0.00	396.58	29.68	365.88	-1.02	385.81	18.91	376.12	9.22	394.31	27.42
Junc n53	366.91	0.00	396.58	29.67	365.88	-1.03	385.81	18.90	376.11	9.21	394.31	27.40
Junc n54	366.97	0.00	396.58	29.61	365.88	-1.09	385.81	18.84	376.12	9.15	394.31	27.34
Junc n55	366.96	0.00	396.61	29.65	365.90	-1.06	385.84	18.88	376.14	9.18	394.34	27.38
Junc n56	366.98	0.00	396.61	29.63	365.90	-1.08	385.84	18.86	376.15	9.16	394.35	27.36
Junc n57	367.38	0.00	396.64	29.26	365.93	-1.45	385.87	18.49	376.18	8.80	394.38	27.00
Junc n58	367.49	0.00	396.65	29.17	365.94	-1.55	385.88	18.40	376.19	8.70	394.39	26.91
Junc n59	368.43	0.00	396.69	28.26	365.97	-2.46	385.92	17.49	376.23	7.79	394.43	26.00
Junc n6	365.79	0.00	398.51	32.72	365.96	0.17	390.00	24.21	387.32	21.52	398.38	32.59
Junc n60	368.36	0.00	396.69	28.33	365.97	-2.39	385.93	17.56	376.23	7.87	394.44	26.07
Junc n61	367.78	0.00	396.71	28.93	365.97	-1.81	385.97	18.19	376.28	8.49	394.45	26.67
Junc n62	366.16	0.00	396.77	30.61	365.97	-0.19	386.10	19.94	376.40	10.24	394.49	28.34
Junc n63	366.05	0.00	396.77	30.73	365.97	-0.08	386.11	20.06	376.41	10.36	394.50	28.45
Junc n64	366.04	0.00	396.78	30.73	365.97	-0.07	386.12	20.07	376.42	10.38	394.50	28.46
Junc n65	366.04	0.00	396.79	30.75	365.97	-0.07	386.15	20.11	376.45	10.41	394.51	28.47
Junc n66	368.44	0.00	396.69	28.25	365.97	-2.47	385.92	17.48	376.23	7.78	394.43	25.99
Junc n67	368.44	0.00	396.69	28.25	366.01	-2.43	385.89	17.45	376.20	7.76	394.44	26.00
Junc n68	368.43	0.00	396.69	28.26	366.02	-2.41	385.89	17.46	376.20	7.77	394.44	26.01
Junc n69	367.09	0.00	396.69	29.60	366.11	-0.98	385.84	18.75	376.15	9.06	394.44	27.35
Junc n70	367.05	0.00	396.69	29.65	366.12	-0.93	385.84	18.79	376.14	9.10	394.44	27.40
Junc n71	366.98	0.00	396.69	29.71	366.12	-0.85	385.84	18.86	376.14	9.16	394.44	27.47
Junc n72	366.97	0.00	396.69	29.72	366.12	-0.85	385.84	18.87	376.14	9.17	394.44	27.47
Junc n73	366.84	0.00	396.69	29.85	366.14	-0.70	385.83	18.99	376.13	9.30	394.44	27.61
Junc n74	366.78	0.00	396.69	29.92	366.16	-0.61	385.82	19.04	376.12	9.35	394.45	27.67
Junc n75	366.82	0.00	396.69	29.87	366.16	-0.66	385.82	18.99	376.12	9.30	394.45	27.63
Junc n76	366.82	0.00	396.69	29.87	366.16	-0.66	385.82	19.00	376.12	9.31	394.45	27.63
Junc n77	366.41	0.00	396.71	30.30	366.08	-0.33	385.89	19.48	376.20	9.79	394.45	28.04
Junc n78	366.35	0.00	396.71	30.36	366.05	-0.29	385.91	19.57	376.22	9.87	394.46	28.11
Junc n79	366.34	0.00	396.71	30.38	366.05	-0.29	385.92	19.58	376.22	9.89	394.46	28.12
Junc n8	366.29	0.00	398.40	32.11	365.96	-0.33	389.75	23.46	386.40	20.11	398.05	31.76
Junc n80	366.45	0.00	396.71	30.26	366.05	-0.39	385.91	19.47	376.22	9.77	394.46	28.01
Junc n81	366.40	0.00	396.71	30.31	366.05	-0.34	385.91	19.52	376.22	9.82	394.46	28.06
Junc n82	366.85	0.00	396.69	29.84	366.16	-0.69	385.82	18.97	376.12	9.27	394.45	27.60
Junc n83	366.74	0.00	396.69	29.95	366.16	-0.58	385.82	19.07	376.12	9.38	394.45	27.70
Junc n84	367.40	0.00	396.69	29.29	366.12	-1.28	385.84	18.43	376.14	8.74	394.44	27.04
Junc n85	367.07	0.00	396.69	29.62	366.12	-0.95	385.84	18.77	376.14	9.07	394.44	27.37
Junc n86	368.35	0.00	396.69	28.34	366.01	-2.34	385.89	17.54	376.20	7.85	394.44	26.09
Junc n87	368.43	0.00	396.69	28.26	366.01	-2.41	385.89	17.46	376.20	7.77	394.44	26.01
Junc n88	366.88	0.00	396.61	29.73	365.90	-0.98	385.84	18.96	376.14	9.26	394.34	27.46
Junc n89	367.04	0.00	396.61	29.57	365.90	-1.14	385.84	18.80	376.14	9.10	394.34	27.30
Junc n9	366.24	0.00	398.26	32.02	365.96	-0.28	389.44	23.20	385.28	19.04	397.65	31.41
Junc n90	366.88	0.00	396.11	29.23	365.64	-1.24	385.16	18.28	375.47	8.58	393.86	26.97
Junc n91	366.86	0.00	396.10	29.23	365.63	-1.23	385.14	18.28	375.45	8.59	393.84	26.98
Junc n92	366.89	0.00	395.51	28.62	365.34	-1.55	384.32	17.44	374.63	7.74	393.27	26.39
Junc n93	366.87	0.00	395.50	28.62	365.33	-1.54	384.31	17.44	374.62	7.75	393.26	26.39
Junc n94	367.13	0.00	394.90	27.77	365.03	-2.10	383.49	16.36	373.80	6.66	392.69	25.55
Junc n95	367.14	0.00	394.89	27.75	365.02	-2.11	383.47	16.33	373.78	6.64	392.67	25.54
Junc n96	367.32	0.00	395.41	28.09	365.90	-1.42	383.81	16.49	374.11	6.79	393.21	25.89
Junc n97	367.33	0.00	395.42	28.09	365.92	-1.41	383.81	16.49	374.12	6.79	393.22	25.89
Junc n98	367.51	0.00	395.94	28.43	366.80	-0.71	384.15	16.64	374.46	6.95	393.76	26.25
Junc n99	367.51	0.00	395.95	28.43	366.82	-0.70	384.16	16.65	374.46	6.95	393.76	26.25
Minimum Pressure				26.88		-2.98		15.47		5.77		24.67
Maximum Pressure				38.82		25.72		30.24		30.03		38.95
Acceptable				Y		N		Y		N		Y

XINYI Canada Glass Watermain Distribution Network - MDD + Fire at Railway Pit

Node ID	Elevation	Demand	All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
			Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
BLDG1and2	367.77	0.20	397.31	29.54	368.80	1.02	387.21	19.44	377.51	9.74	395.14	27.37
BLDG3	367.47	0.72	397.28	29.81	368.76	1.28	387.19	19.72	377.49	10.02	395.12	27.64
BLDG4	367.47	0.72	397.32	29.86	368.91	1.44	387.21	19.75	377.51	10.05	395.16	27.70
BLDG-A	368.77	0.59	396.84	28.07	364.79	-3.98	387.22	18.45	377.52	8.75	394.43	25.66
BLDG-B	368.00	6.97	396.96	28.96	366.12	-1.88	387.21	19.21	377.51	9.51	394.63	26.63
BLDG-C	366.84	12.74	396.84	30.00	364.79	-2.05	387.22	20.38	377.51	10.68	394.42	27.58
BLDG-D	366.72	0.03	396.83	30.12	364.68	-2.04	387.23	20.51	377.53	10.81	394.42	27.70
BLDG-F	366.86	0.99	396.85	29.98	364.82	-2.05	387.23	20.36	377.52	10.66	394.44	27.57
BLDG-G	366.99	0.03	396.85	29.86	364.87	-2.12	387.22	20.23	377.52	10.52	394.44	27.45
BLDG-H	367.21	0.11	396.87	29.66	365.01	-2.20	387.22	20.01	377.52	10.31	394.47	27.26
BLDG-I	366.86	0.03	396.84	29.98	364.75	-2.11	387.22	20.36	377.52	10.66	394.42	27.56
BLDG-N	367.54	0.03	396.84	29.30	364.74	-2.80	387.23	19.68	377.52	9.98	394.43	26.89
BLDG-P	368.28	3.86	396.84	28.57	364.80	-3.48	387.22	18.95	377.52	9.25	394.43	26.16
BLDG-U	366.57	0.01	398.00	31.43	363.77	-2.81	389.82	23.24	386.65	20.08	397.76	31.19
BLDG-V	368.94	0.01	398.02	29.08	374.29	5.35	387.21	18.27	377.51	8.57	396.19	27.25
Junc GibbRoadConnection	365.17	0.00	402.23	37.06	363.76	-1.41	395.09	29.92	395.09	29.92	403.53	38.36
Junc Jun1	364.99	0.00	402.18	37.19	363.76	-1.23	394.99	30.00	377.61	12.62	394.34	29.34
Junc Jun2	364.99	0.00	399.76	34.77	363.76	-1.23	392.35	27.36	377.61	12.62	394.34	29.34
Junc Jun3	364.99	0.00	398.10	33.10	363.76	-1.23	390.02	25.03	377.61	12.62	394.34	29.34
Junc Jun4	364.78	0.00	402.18	37.40	363.76	-1.02	394.99	30.21	394.73	29.95	403.39	38.61
Junc Jun5	364.78	0.00	399.77	34.99	363.76	-1.02	392.35	27.57	391.56	26.78	400.62	35.84
Junc Jun6	364.78	0.00	398.10	33.32	363.76	-1.02	390.03	25.25	387.40	22.62	398.05	33.27
Junc Jun7	367.96	0.00	402.08	34.12	381.70	13.74	387.21	19.25	377.51	9.55	400.69	32.72
Junc Jun8	367.96	0.00	399.67	31.71	378.54	10.58	387.21	19.25	377.51	9.55	398.17	30.21
Junc Jun9	367.96	0.00	398.03	30.06	374.38	6.42	387.21	19.25	377.51	9.55	396.21	28.24
Junc n1	366.04	0.00	396.83	30.79	364.62	-1.42	387.23	21.19	377.53	11.49	394.41	28.37
Junc n10	366.22	0.00	397.78	31.56	363.77	-2.45	389.35	23.13	384.97	18.75	397.13	30.91
Junc n100	367.57	0.00	397.13	29.56	367.40	-0.17	387.21	19.64	377.51	9.94	394.88	27.31
Junc n101	367.72	0.00	397.14	29.42	367.42	-0.30	387.21	19.49	377.51	9.79	394.89	27.16
Junc n102	368.00	0.00	397.17	29.17	367.65	-0.35	387.21	19.21	377.51	9.51	394.93	26.93
Junc n103	368.00	0.00	397.17	29.17	367.66	-0.34	387.21	19.21	377.51	9.51	394.93	26.93
Junc n104	367.62	0.00	397.20	29.58	367.92	0.29	387.21	19.59	377.51	9.89	394.98	27.36
Junc n105	367.57	0.00	397.20	29.64	367.93	0.37	387.21	19.65	377.51	9.95	394.98	27.42
Junc n106	367.59	0.00	397.20	29.61	367.90	0.31	387.21	19.62	377.51	9.92	394.98	27.38
Junc n107	367.30	0.00	397.17	29.87	367.66	0.36	387.21	19.91	377.51	10.21	394.94	27.63
Junc n108	367.30	0.00	397.17	29.87	367.64	0.34	387.21	19.92	377.51	10.22	394.93	27.64
Junc n109	367.08	0.00	397.07	29.99	366.81	-0.27	387.22	20.14	377.51	10.43	394.79	27.71
Junc n11	366.25	0.00	397.73	31.49	363.77	-2.48	389.26	23.01	384.64	18.39	397.00	30.75
Junc n110	367.08	0.00	397.07	30.00	366.80	-0.28	387.22	20.14	377.51	10.44	394.78	27.71
Junc n111	366.86	0.00	396.98	30.12	365.97	-0.89	387.22	20.36	377.52	10.66	394.64	27.78
Junc n112	366.85	0.00	396.97	30.12	365.94	-0.91	387.22	20.37	377.52	10.66	394.63	27.78
Junc n113	366.66	0.00	396.89	30.23	365.21	-1.45	387.22	20.56	377.52	10.86	394.50	27.84
Junc n114	366.65	0.00	396.89	30.23	365.19	-1.46	387.22	20.57	377.52	10.86	394.50	27.84
Junc n115	366.76	0.00	396.89	30.13	365.21	-1.55	387.22	20.46	377.52	10.76	394.50	27.74
Junc n116	366.71	0.00	396.89	30.18	365.21	-1.50	387.22	20.51	377.52	10.81	394.50	27.79
Junc n117	366.96	0.00	396.98	30.02	365.97	-0.99	387.22	20.26	377.52	10.56	394.64	27.68
Junc n118	366.91	0.00	396.98	30.07	365.97	-0.94	387.22	20.31	377.52	10.61	394.64	27.73
Junc n119	367.18	0.00	397.07	29.89	366.81	-0.37	387.22	20.04	377.51	10.33	394.79	27.61
Junc n12	366.26	0.00	396.96	30.71	363.77	-2.49	387.64	21.39	378.78	12.53	394.78	28.53
Junc n120	367.13	0.00	397.07	29.94	366.81	-0.32	387.22	20.09	377.51	10.38	394.79	27.66
Junc n121	367.40	0.00	397.17	29.77	367.66	0.26	387.21	19.81	377.51	10.11	394.94	27.53
Junc n122	367.35	0.00	397.17	29.82	367.66	0.31	387.21	19.86	377.51	10.16	394.94	27.58
Junc n123	367.97	0.00	397.17	29.20	367.66	-0.31	387.21	19.25	377.51	9.55	394.93	26.96
Junc n124	367.58	0.00	397.17	29.59	367.66	0.08	387.21	19.64	377.51	9.93	394.93	27.35
Junc n125	367.31	0.00	397.11	29.80	367.24	-0.07	387.21	19.90	377.51	10.20	394.85	27.54
Junc n126	367.40	0.00	397.11	29.71	367.24	-0.16	387.21	19.81	377.51	10.11	394.85	27.45
Junc n127	367.13	0.00	397.04	29.91	366.68	-0.44	387.21	20.09	377.51	10.39	394.74	27.61
Junc n128	367.23	0.00	397.04	29.81	366.68	-0.55	387.21	19.99	377.51	10.28	394.74	27.51
Junc n129	366.94	0.00	396.96	30.03	366.12	-0.81	387.21	20.28	377.51	10.57	394.63	27.69
Junc n13	366.25	0.00	396.96	30.70	363.77	-2.49	387.63	21.37	378.74	12.48	394.77	28.51
Junc n130	367.02	0.00	396.96	29.95	366.12	-0.89	387.21	20.19	377.51	10.49	394.63	27.61
Junc n131	367.33	0.00	396.92	29.60	365.66	-1.67	387.22	19.89	377.52	10.19	394.56	27.24
Junc n132	366.91	0.00	396.92	30.02	365.66	-1.25	387.22	20.31	377.52	10.61	394.56	27.66
Junc n133	367.18	0.00	396.88	29.70	365.19	-1.98	387.22	20.04	377.52	10.34	394.49	27.32
Junc n134	366.91	0.00	396.88	29.97	365.19	-1.72	387.22	20.31	377.52	10.61	394.49	27.58
Junc n135	367.18	0.00	402.10	34.92	381.86	14.68	387.21	20.03	377.51	10.33	400.72	33.54
Junc n136	367.96	0.00	402.09	34.13	381.79	13.83	387.21	19.25	377.51	9.55	400.70	32.74
Junc n138	367.13	0.00	397.60	30.48	371.08	3.96	387.21	20.09	377.51	10.38	395.58	28.45

Junc n139	364.05	0.00	403.12	39.07	389.76	25.72	387.21	23.17	377.51	13.47	402.22	38.17
Junc n14	366.25	0.00	396.89	30.64	363.77	-2.49	387.48	21.23	378.22	11.97	394.57	28.32
Junc n140	367.17	0.00	397.60	30.43	371.04	3.88	387.21	20.05	377.51	10.35	395.57	28.41
Junc n141	367.16	0.00	397.37	30.21	369.24	2.08	387.21	20.06	377.51	10.35	395.23	28.07
Junc n142	367.16	0.00	397.37	30.21	369.22	2.06	387.21	20.06	377.51	10.35	395.22	28.07
Junc n143	367.14	0.00	397.28	30.14	368.52	1.39	387.21	20.08	377.51	10.38	395.09	27.96
Junc n144	367.13	0.00	397.27	30.14	368.48	1.35	387.21	20.08	377.51	10.38	395.09	27.95
Junc n145	367.24	0.00	397.28	30.04	368.53	1.28	387.21	19.97	377.51	10.27	395.10	27.85
Junc n146	367.54	0.00	397.30	29.77	368.74	1.20	387.21	19.67	377.51	9.97	395.13	27.59
Junc n147	367.55	0.00	397.30	29.76	368.74	1.20	387.21	19.66	377.51	9.96	395.13	27.59
Junc n148	367.76	0.00	397.31	29.56	368.83	1.07	387.21	19.46	377.51	9.76	395.15	27.39
Junc n149	367.78	0.00	397.32	29.54	368.84	1.06	387.21	19.44	377.51	9.73	395.15	27.37
Junc n15	365.51	0.00	396.83	31.33	363.77	-1.74	387.37	21.86	377.79	12.29	394.41	28.90
Junc n150	367.83	0.00	397.33	29.50	368.92	1.09	387.21	19.39	377.51	9.69	395.17	27.34
Junc n151	367.78	0.00	397.33	29.54	368.93	1.14	387.21	19.43	377.51	9.73	395.17	27.38
Junc n152	367.58	0.00	397.34	29.76	369.01	1.43	387.21	19.63	377.51	9.93	395.18	27.60
Junc n153	367.58	0.00	397.34	29.76	369.01	1.43	387.21	19.64	377.51	9.93	395.18	27.61
Junc n154	367.57	0.00	397.34	29.77	369.02	1.45	387.21	19.64	377.51	9.94	395.19	27.61
Junc n155	367.29	0.00	397.37	30.08	369.24	1.95	387.21	19.93	377.51	10.23	395.23	27.94
Junc n156	367.47	0.00	397.31	29.83	368.75	1.28	387.21	19.74	377.51	10.04	395.14	27.66
Junc n157	367.04	0.00	397.60	30.57	371.08	4.05	387.21	20.18	377.51	10.48	395.58	28.54
Junc n158	367.06	0.00	397.60	30.54	371.08	4.02	387.21	20.15	377.51	10.45	395.58	28.52
Junc n159	366.30	0.00	396.84	30.54	364.79	-1.51	387.22	20.92	377.52	11.22	394.42	28.12
Junc n16	365.57	0.00	396.82	31.25	364.43	-1.14	387.24	21.67	377.54	11.97	394.39	28.82
Junc n160	366.22	0.00	396.84	30.62	364.75	-1.46	387.22	21.01	377.52	11.30	394.42	28.21
Junc n161	366.05	0.00	396.83	30.79	364.68	-1.37	387.23	21.18	377.53	11.48	394.42	28.37
Junc n162	368.52	0.00	396.84	28.33	364.79	-3.73	387.22	18.71	377.52	9.01	394.43	25.92
Junc n163	368.59	0.00	396.84	28.25	364.80	-3.79	387.22	18.63	377.52	8.93	394.43	25.84
Junc n164	368.36	0.00	396.84	28.48	364.78	-3.58	387.22	18.86	377.52	9.16	394.43	26.07
Junc n165	366.83	0.00	396.85	30.02	364.82	-2.01	387.23	20.40	377.52	10.69	394.44	27.61
Junc n166	367.33	0.00	397.31	29.98	368.78	1.45	387.21	19.88	377.51	10.18	395.14	27.81
Junc n167	367.41	0.00	397.32	29.91	368.91	1.49	387.21	19.80	377.51	10.10	395.16	27.75
Junc n168	367.71	0.00	397.31	29.60	368.80	1.09	387.21	19.50	377.51	9.80	395.14	27.43
Junc n17	366.03	0.00	396.83	30.79	364.49	-1.54	387.24	21.20	377.54	11.50	394.40	28.37
Junc n170	368.60	0.00	396.84	28.25	364.78	-3.82	387.22	18.63	377.52	8.93	394.43	25.83
Junc n18	366.11	0.00	396.83	30.72	364.50	-1.61	387.24	21.13	377.53	11.43	394.40	28.29
Junc n19	365.14	0.00	402.23	37.09	363.76	-1.38	395.09	29.95	395.09	29.95	403.53	38.39
Junc n2	366.07	0.00	396.83	30.76	364.62	-1.45	387.23	21.16	377.53	11.46	394.41	28.34
Junc n20	365.20	0.00	402.23	37.03	363.76	-1.43	395.09	29.90	377.61	12.42	394.34	29.14
Junc n21	365.30	0.00	402.23	36.93	363.76	-1.53	395.09	29.79	377.61	12.32	394.34	29.04
Junc n22	364.99	0.00	402.20	37.20	363.76	-1.23	395.02	30.02	377.61	12.62	394.34	29.34
Junc n23	366.01	0.00	398.08	32.08	363.76	-2.24	390.00	23.99	377.61	11.61	394.34	28.33
Junc n24	366.56	0.00	397.99	31.44	363.76	-2.79	389.81	23.25	377.61	11.06	394.34	27.78
Junc n25	366.34	0.00	397.97	31.63	363.76	-2.57	389.75	23.42	377.61	11.28	394.34	28.00
Junc n26	366.28	0.00	397.82	31.54	363.76	-2.51	389.44	23.17	377.61	11.33	394.34	28.06
Junc n27	366.26	0.00	397.78	31.52	363.76	-2.50	389.36	23.10	377.61	11.35	394.34	28.08
Junc n28	366.29	0.00	397.73	31.45	363.76	-2.52	389.26	22.98	377.61	11.33	394.34	28.05
Junc n29	366.29	0.00	396.96	30.67	363.76	-2.53	387.64	21.34	377.61	11.32	394.34	28.04
Junc n3	366.10	0.00	396.83	30.73	364.62	-1.48	387.23	21.13	377.53	11.43	394.41	28.31
Junc n30	366.29	0.00	396.95	30.66	363.76	-2.53	387.63	21.33	377.61	11.32	394.34	28.04
Junc n31	366.29	0.00	396.88	30.59	363.76	-2.53	387.48	21.19	377.61	11.32	394.34	28.04
Junc n32	365.53	0.00	396.83	31.30	363.76	-1.76	387.36	21.83	377.61	12.08	394.34	28.81
Junc n33	365.62	0.00	396.82	31.20	364.43	-1.19	387.24	21.62	377.53	11.92	394.39	28.77
Junc n34	366.05	0.00	396.83	30.78	364.49	-1.56	387.24	21.19	377.53	11.49	394.40	28.35
Junc n35	366.12	0.00	396.83	30.71	364.50	-1.62	387.24	21.12	377.53	11.41	394.40	28.28
Junc n36	366.07	0.00	396.83	30.75	364.52	-1.56	387.23	21.16	377.53	11.46	394.40	28.33
Junc n37	366.11	0.00	396.83	30.71	364.50	-1.62	387.24	21.12	377.53	11.42	394.40	28.29
Junc n38	366.02	0.00	396.83	30.81	364.50	-1.52	387.24	21.22	377.53	11.52	394.40	28.38
Junc n39	365.32	0.00	396.81	31.50	363.76	-1.55	387.33	22.01	377.61	12.30	394.34	29.02
Junc n4	365.24	0.00	402.23	36.99	363.76	-1.48	395.09	29.84	395.07	29.82	403.52	38.27
Junc n40	365.30	0.00	396.81	31.51	363.76	-1.53	387.32	22.02	377.61	12.32	394.34	29.04
Junc n41	365.28	0.00	396.75	31.47	363.74	-1.54	387.24	21.96	377.54	12.26	394.29	29.01
Junc n42	365.36	0.00	396.73	31.37	363.73	-1.64	387.22	21.86	377.52	12.15	394.27	28.90
Junc n43	366.03	150.00	396.58	30.56	363.58	-2.45	387.07	21.04	377.37	11.34	394.12	28.09
Junc n44	365.25	0.00	396.82	31.57	363.77	-1.48	387.33	22.08	377.67	12.42	394.36	29.11
Junc n45	365.23	0.00	396.81	31.58	363.77	-1.47	387.32	22.09	377.63	12.39	394.35	29.11
Junc n46	366.05	0.00	396.83	30.78	364.53	-1.52	387.23	21.19	377.53	11.48	394.40	28.35
Junc n47	366.29	0.00	396.83	30.54	364.54	-1.75	387.23	20.94	377.53	11.24	394.40	28.11
Junc n48	366.84	0.00	396.84	30.00	364.64	-2.20	387.23	20.40	377.53	10.69	394.42	27.58
Junc n49	367.16	0.00	396.84	29.69	364.74	-2.42	387.23	20.07	377.53	10.37	394.43	27.27
Junc n5	364.78	0.00	402.20	37.42	363.76	-1.02	395.02	30.24	394.81	30.03	403.42	38.64
Junc n50	366.61	0.00	396.84	30.23	364.75	-1.86	387.23	20.61	377.53	10.91	394.43	27.82

Junc n51	366.32	0.00	396.84	30.53	364.76	-1.55	387.23	20.91	377.53	11.21	394.43	28.12
Junc n52	366.90	0.00	396.85	29.95	364.82	-2.08	387.23	20.33	377.52	10.63	394.44	27.54
Junc n53	366.91	0.00	396.85	29.94	364.82	-2.09	387.23	20.32	377.52	10.62	394.44	27.53
Junc n54	366.97	0.00	396.85	29.88	364.82	-2.15	387.23	20.26	377.52	10.56	394.44	27.47
Junc n55	366.96	0.00	396.85	29.89	364.81	-2.15	387.23	20.26	377.52	10.56	394.44	27.48
Junc n56	366.98	0.00	396.85	29.86	364.81	-2.17	387.23	20.24	377.52	10.54	394.44	27.45
Junc n57	367.38	0.00	396.85	29.46	364.80	-2.59	387.23	19.84	377.52	10.14	394.43	27.05
Junc n58	367.49	0.00	396.85	29.36	364.79	-2.69	387.22	19.74	377.52	10.04	394.43	26.95
Junc n59	368.43	0.00	396.84	28.41	364.78	-3.65	387.22	18.79	377.52	9.09	394.43	26.00
Junc n6	365.79	0.00	398.09	32.29	363.76	-2.03	390.00	24.21	387.32	21.52	398.01	32.22
Junc n60	368.36	0.00	396.84	28.48	364.78	-3.59	387.23	18.86	377.52	9.16	394.43	26.07
Junc n61	367.78	0.00	396.84	29.06	364.74	-3.04	387.23	19.44	377.52	9.74	394.43	26.64
Junc n62	366.16	0.00	396.83	30.68	364.65	-1.51	387.23	21.07	377.53	11.37	394.41	28.26
Junc n63	366.05	0.00	396.83	30.79	364.65	-1.40	387.23	21.18	377.53	11.48	394.41	28.37
Junc n64	366.04	0.00	396.83	30.79	364.64	-1.41	387.23	21.19	377.53	11.48	394.41	28.37
Junc n65	366.04	0.00	396.83	30.79	364.62	-1.42	387.23	21.19	377.53	11.49	394.41	28.37
Junc n66	368.44	0.00	396.84	28.40	364.78	-3.66	387.22	18.78	377.52	9.08	394.43	25.99
Junc n67	368.44	0.00	396.85	28.41	364.84	-3.60	387.22	18.78	377.52	9.08	394.44	26.00
Junc n68	368.43	0.00	396.85	28.42	364.84	-3.59	387.22	18.79	377.52	9.09	394.44	26.01
Junc n69	367.09	0.00	396.86	29.77	364.97	-2.12	387.22	20.13	377.52	10.43	394.46	27.37
Junc n70	367.05	0.00	396.86	29.82	364.98	-2.07	387.22	20.17	377.52	10.47	394.46	27.42
Junc n71	366.98	0.00	396.86	29.88	364.99	-1.99	387.22	20.24	377.52	10.54	394.46	27.48
Junc n72	366.97	0.00	396.86	29.89	364.99	-1.98	387.22	20.25	377.52	10.55	394.46	27.49
Junc n73	366.84	0.00	396.87	30.03	365.01	-1.83	387.22	20.38	377.52	10.68	394.47	27.63
Junc n74	366.78	0.00	396.87	30.09	365.04	-1.74	387.22	20.44	377.52	10.74	394.47	27.70
Junc n75	366.82	0.00	396.87	30.05	365.04	-1.78	387.22	20.40	377.52	10.70	394.47	27.65
Junc n76	366.82	0.00	396.87	30.05	365.04	-1.78	387.22	20.40	377.52	10.70	394.47	27.65
Junc n77	366.41	0.00	396.85	30.44	364.87	-1.53	387.22	20.81	377.52	11.11	394.44	28.03
Junc n78	366.35	0.00	396.84	30.50	364.83	-1.52	387.22	20.87	377.52	11.17	394.43	28.09
Junc n79	366.34	0.00	396.84	30.51	364.82	-1.51	387.22	20.88	377.52	11.18	394.43	28.09
Junc n8	366.29	0.00	397.97	31.68	363.77	-2.52	389.75	23.46	386.40	20.11	397.67	31.38
Junc n80	366.45	0.00	396.84	30.40	364.83	-1.62	387.22	20.77	377.52	11.07	394.43	27.99
Junc n81	366.40	0.00	396.84	30.45	364.83	-1.57	387.22	20.82	377.52	11.12	394.43	28.04
Junc n82	366.85	0.00	396.87	30.02	365.04	-1.81	387.22	20.37	377.52	10.67	394.47	27.62
Junc n83	366.74	0.00	396.87	30.13	365.04	-1.70	387.22	20.48	377.52	10.78	394.47	27.73
Junc n84	367.40	0.00	396.86	29.46	364.99	-2.42	387.22	19.82	377.52	10.12	394.46	27.06
Junc n85	367.07	0.00	396.86	29.79	364.99	-2.09	387.22	20.15	377.52	10.45	394.46	27.39
Junc n86	368.35	0.00	396.85	28.50	364.84	-3.51	387.22	18.87	377.52	9.17	394.44	26.09
Junc n87	368.43	0.00	396.85	28.42	364.84	-3.59	387.22	18.79	377.52	9.09	394.44	26.01
Junc n88	366.88	0.00	396.85	29.96	364.81	-2.07	387.23	20.34	377.52	10.64	394.44	27.55
Junc n89	367.04	0.00	396.85	29.80	364.81	-2.23	387.23	20.18	377.52	10.48	394.44	27.39
Junc n9	366.24	0.00	397.82	31.58	363.77	-2.47	389.44	23.20	385.28	19.04	397.24	31.00
Junc n90	366.88	0.00	396.88	30.00	365.18	-1.70	387.22	20.34	377.52	10.64	394.49	27.61
Junc n91	366.86	0.00	396.88	30.02	365.19	-1.67	387.22	20.36	377.52	10.66	394.49	27.63
Junc n92	366.89	0.00	396.92	30.04	365.65	-1.24	387.22	20.33	377.52	10.63	394.56	27.68
Junc n93	366.87	0.00	396.92	30.05	365.66	-1.22	387.22	20.35	377.52	10.64	394.56	27.69
Junc n94	367.13	0.00	396.96	29.83	366.11	-1.02	387.21	20.08	377.51	10.38	394.63	27.50
Junc n95	367.14	0.00	396.96	29.83	366.12	-1.01	387.21	20.08	377.51	10.37	394.63	27.49
Junc n96	367.32	0.00	397.04	29.72	366.67	-0.65	387.21	19.89	377.51	10.19	394.74	27.42
Junc n97	367.33	0.00	397.04	29.71	366.68	-0.64	387.21	19.89	377.51	10.19	394.74	27.41
Junc n98	367.51	0.00	397.11	29.60	367.23	-0.28	387.21	19.70	377.51	10.00	394.85	27.34
Junc n99	367.51	0.00	397.11	29.60	367.24	-0.27	387.21	19.70	377.51	10.00	394.85	27.34
Minimum Pressure				28.07		-3.98		18.27		8.57		25.66
Maximum Pressure				39.07		25.72		30.24		30.03		38.64
Acceptable				Y		N		Y		N		Y

XINYI Canada Glass Watermain Distribution Network - MDD + Fire at Office

Node ID	Elevation	Demand	All Services		HWY-7 Only		Line29 Only		Line29 Single Only		Hwy7 + 1x Line29	
			Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure	Head	Pressure
	m	*LPS*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*	*m*
BLDG1and2	367.77	0.20	395.57	27.79	368.38	0.61	382.15	14.38	372.45	4.68	393.54	25.77
BLDG3	367.47	0.72	395.79	28.32	368.60	1.12	382.37	14.90	372.68	5.21	393.77	26.30
BLDG4	367.47	0.72	395.83	28.36	368.71	1.24	382.40	14.93	372.70	5.24	393.81	26.34
BLDG-A	368.77	0.59	397.25	28.48	368.73	-0.04	385.91	17.14	376.22	7.45	394.96	26.20
BLDG-B	368.00	6.97	396.73	28.73	368.73	0.73	384.57	16.57	374.88	6.88	394.56	26.56
BLDG-C	366.84	12.74	397.21	30.37	368.72	1.89	385.83	18.99	376.14	9.30	394.93	28.09
BLDG-D	366.72	0.03	397.30	30.58	368.73	2.01	386.04	19.32	376.34	9.63	395.00	28.29
BLDG-F	366.86	0.99	397.25	30.38	368.73	1.86	385.90	19.04	376.21	9.34	394.96	28.10
BLDG-G	366.99	0.03	397.19	30.20	368.73	1.74	385.78	18.78	376.08	9.09	394.92	27.92
BLDG-H	367.21	0.11	397.16	29.96	368.73	1.52	385.69	18.48	376.00	8.79	394.90	27.69
BLDG-I	366.86	0.03	397.24	30.38	368.73	1.87	385.90	19.04	376.21	9.35	394.96	28.09
BLDG-N	367.54	0.03	397.27	29.73	368.73	1.19	385.97	18.43	376.27	8.73	394.98	27.44
BLDG-P	368.28	3.86	397.24	28.97	368.73	0.45	385.90	17.62	376.20	7.93	394.96	26.68
BLDG-U	366.57	0.01	398.89	32.31	368.73	2.15	389.82	23.24	386.65	20.08	398.49	31.91
BLDG-V	368.94	0.01	396.98	28.04	374.29	5.35	382.62	13.68	372.93	3.99	395.26	26.32
Junc GibbRoadConnection	365.17	0.00	402.98	37.81	368.73	3.56	395.09	29.92	395.09	29.92	404.09	38.92
Junc Jun1	364.99	0.00	402.93	37.94	368.73	3.74	394.99	30.00	377.62	12.63	395.44	30.45
Junc Jun2	364.99	0.00	400.54	35.55	368.73	3.74	392.35	27.36	377.62	12.63	395.44	30.45
Junc Jun3	364.99	0.00	398.97	33.98	368.73	3.74	390.02	25.03	377.62	12.63	395.44	30.45
Junc Jun4	364.78	0.00	402.93	38.15	368.73	3.95	394.99	30.21	394.73	29.95	403.96	39.18
Junc Jun5	364.78	0.00	400.54	35.76	368.73	3.95	392.35	27.57	391.56	26.78	401.24	36.46
Junc Jun6	364.78	0.00	398.97	34.19	368.73	3.95	390.02	25.24	387.40	22.62	398.74	33.96
Junc Jun7	367.96	0.00	401.29	33.33	381.70	13.74	382.62	14.66	372.93	4.97	399.95	31.99
Junc Jun8	367.96	0.00	398.82	30.86	378.54	10.58	382.62	14.66	372.93	4.97	397.38	29.42
Junc Jun9	367.96	0.00	396.99	29.03	374.38	6.42	382.62	14.66	372.93	4.97	395.28	27.32
Junc n1	366.04	0.00	397.34	31.29	368.73	2.69	386.12	20.08	376.43	10.39	395.03	28.99
Junc n10	366.22	0.00	398.69	32.47	368.73	2.51	389.35	23.13	384.97	18.75	397.92	31.70
Junc n100	367.57	0.00	396.44	28.87	368.78	1.21	383.68	16.10	373.98	6.41	394.35	26.77
Junc n101	367.72	0.00	396.44	28.72	368.78	1.06	383.66	15.94	373.97	6.25	394.34	26.62
Junc n102	368.00	0.00	396.38	28.38	368.79	0.79	383.50	15.51	373.81	5.81	394.30	26.31
Junc n103	368.00	0.00	396.38	28.38	368.79	0.79	383.50	15.50	373.80	5.80	394.30	26.30
Junc n104	367.62	0.00	396.32	28.70	368.80	1.18	383.32	15.69	373.62	6.00	394.26	26.63
Junc n105	367.57	0.00	396.32	28.75	368.80	1.23	383.31	15.74	373.61	6.05	394.26	26.69
Junc n106	367.59	0.00	396.33	28.73	368.80	1.21	383.33	15.74	373.64	6.04	394.26	26.67
Junc n107	367.30	0.00	396.40	29.09	368.79	1.49	383.53	16.22	373.83	6.53	394.32	27.01
Junc n108	367.30	0.00	396.40	29.11	368.79	1.50	383.55	16.25	373.85	6.56	394.32	27.02
Junc n109	367.08	0.00	396.64	29.56	368.77	1.69	384.22	17.14	374.52	7.44	394.50	27.42
Junc n11	366.25	0.00	398.65	32.40	368.73	2.48	389.26	23.01	384.64	18.39	397.81	31.56
Junc n110	367.08	0.00	396.64	29.57	368.77	1.70	384.23	17.15	374.54	7.46	394.50	27.43
Junc n111	366.86	0.00	396.88	30.03	368.75	1.90	384.91	18.05	375.21	8.35	394.69	27.83
Junc n112	366.85	0.00	396.89	30.04	368.75	1.90	384.92	18.07	375.23	8.38	394.69	27.84
Junc n113	366.66	0.00	397.10	30.45	368.74	2.08	385.52	18.87	375.83	9.17	394.85	28.19
Junc n114	366.65	0.00	397.11	30.45	368.74	2.08	385.54	18.88	375.84	9.19	394.86	28.20
Junc n115	366.76	0.00	397.10	30.35	368.74	1.98	385.52	18.77	375.83	9.07	394.85	28.09
Junc n116	366.71	0.00	397.10	30.40	368.74	2.03	385.52	18.82	375.83	9.12	394.85	28.14
Junc n117	366.96	0.00	396.88	29.93	368.75	1.80	384.91	17.95	375.21	8.25	394.69	27.73
Junc n118	366.91	0.00	396.88	29.98	368.75	1.85	384.91	18.00	375.21	8.30	394.69	27.78
Junc n119	367.18	0.00	396.64	29.46	368.77	1.59	384.22	17.04	374.52	7.34	394.50	27.32
Junc n12	366.26	0.00	397.97	31.72	368.73	2.47	387.64	21.38	378.78	12.53	395.83	29.57
Junc n120	367.13	0.00	396.64	29.51	368.77	1.64	384.22	17.09	374.52	7.39	394.50	27.37
Junc n121	367.40	0.00	396.40	28.99	368.79	1.39	383.53	16.12	373.83	6.43	394.32	26.91
Junc n122	367.35	0.00	396.40	29.04	368.79	1.44	383.53	16.17	373.83	6.48	394.32	26.96
Junc n123	367.97	0.00	396.38	28.41	368.79	0.82	383.50	15.53	373.80	5.84	394.30	26.34
Junc n124	367.58	0.00	396.38	28.80	368.79	1.21	383.50	15.92	373.80	6.22	394.30	26.73
Junc n125	367.31	0.00	396.48	29.17	368.78	1.46	383.79	16.48	374.10	6.79	394.38	27.06
Junc n126	367.40	0.00	396.48	29.08	368.78	1.38	383.79	16.39	374.10	6.70	394.38	26.97
Junc n127	367.13	0.00	396.61	29.48	368.76	1.63	384.18	17.06	374.49	7.36	394.47	27.35
Junc n128	367.23	0.00	396.61	29.38	368.76	1.53	384.18	16.96	374.49	7.26	394.47	27.24
Junc n129	366.94	0.00	396.74	29.80	368.74	1.80	384.58	17.64	374.88	7.94	394.57	27.63
Junc n13	366.25	0.00	397.97	31.71	368.73	2.47	387.63	21.37	378.74	12.48	395.81	29.56
Junc n130	367.02	0.00	396.74	29.72	368.74	1.72	384.58	17.56	374.88	7.86	394.57	27.55
Junc n131	367.33	0.00	396.92	29.59	368.74	1.41	385.05	17.72	375.36	8.03	394.71	27.38
Junc n132	366.91	0.00	396.92	30.02	368.74	1.83	385.05	18.15	375.36	8.45	394.71	27.81
Junc n133	367.18	0.00	397.10	29.92	368.73	1.55	385.52	18.34	375.83	8.65	394.85	27.67
Junc n134	366.91	0.00	397.10	30.19	368.73	1.82	385.52	18.61	375.83	8.91	394.85	27.94
Junc n135	367.18	0.00	401.32	34.14	381.86	14.68	382.62	15.44	372.93	5.75	399.99	32.81
Junc n136	367.96	0.00	401.31	33.35	381.79	13.83	382.62	14.66	372.93	4.97	399.97	32.01
Junc n138	367.13	0.00	396.46	29.33	371.08	3.96	382.62	15.50	372.93	5.80	394.55	27.42

Junc n139	364.05	0.00	402.60	38.56	389.76	25.72	382.62	18.58	372.93	8.88	401.74	37.69
Junc n14	366.25	0.00	397.91	31.65	368.73	2.47	387.48	21.23	378.22	11.97	395.64	29.39
Junc n140	367.17	0.00	396.45	29.28	371.04	3.88	382.62	15.46	372.93	5.76	394.54	27.37
Junc n141	367.16	0.00	396.16	29.00	369.24	2.08	382.62	15.47	372.93	5.77	394.14	26.98
Junc n142	367.16	0.00	396.16	29.00	369.23	2.07	382.63	15.47	372.94	5.78	394.14	26.98
Junc n143	367.14	0.00	396.16	29.03	368.82	1.68	382.85	15.72	373.16	6.02	394.14	27.00
Junc n144	367.13	0.00	396.17	29.04	368.82	1.68	382.89	15.75	373.19	6.06	394.15	27.01
Junc n145	367.24	0.00	396.15	28.91	368.81	1.57	382.84	15.60	373.15	5.91	394.13	26.89
Junc n146	367.54	0.00	395.81	28.27	368.59	1.06	382.40	14.86	372.70	5.17	393.79	26.25
Junc n147	367.55	0.00	395.79	28.25	368.58	1.03	382.38	14.84	372.69	5.14	393.77	26.22
Junc n148	367.76	0.00	395.42	27.66	368.26	0.50	382.00	14.24	372.30	4.55	393.40	25.64
Junc n149	367.78	150.00	395.38	27.61	368.23	0.45	381.96	14.18	372.26	4.49	393.36	25.59
Junc n15	365.51	0.00	397.86	32.35	368.73	3.22	387.36	21.86	377.79	12.29	395.49	29.99
Junc n150	367.83	0.00	395.59	27.76	368.48	0.65	382.15	14.33	372.46	4.63	393.57	25.74
Junc n151	367.78	0.00	395.62	27.84	368.51	0.73	382.19	14.40	372.49	4.71	393.60	25.82
Junc n152	367.58	0.00	395.84	28.26	368.77	1.19	382.39	14.81	372.70	5.12	393.82	26.24
Junc n153	367.58	0.00	395.85	28.27	368.78	1.20	382.40	14.82	372.70	5.13	393.83	26.25
Junc n154	367.57	0.00	395.85	28.28	368.79	1.22	382.40	14.83	372.71	5.14	393.83	26.26
Junc n155	367.29	0.00	396.15	28.87	369.23	1.95	382.62	15.33	372.93	5.64	394.13	26.85
Junc n156	367.47	0.00	395.81	28.34	368.60	1.13	382.40	14.93	372.70	5.23	393.79	26.32
Junc n157	367.04	0.00	396.46	29.42	371.08	4.05	382.62	15.59	372.93	5.89	394.55	27.51
Junc n158	367.06	0.00	396.46	29.40	371.08	4.02	382.62	15.56	372.93	5.87	394.55	27.49
Junc n159	366.30	0.00	397.21	30.91	368.73	2.43	385.83	19.53	376.14	9.84	394.93	28.63
Junc n16	365.57	0.00	397.45	31.88	368.73	3.15	386.39	20.82	376.70	11.12	395.13	29.55
Junc n160	366.22	0.00	397.24	31.02	368.73	2.51	385.90	19.69	376.21	9.99	394.96	28.74
Junc n161	366.05	0.00	397.30	31.25	368.73	2.68	386.04	19.99	376.34	10.30	395.00	28.96
Junc n162	368.52	0.00	397.25	28.73	368.73	0.21	385.91	17.39	376.22	7.70	394.96	26.45
Junc n163	368.59	0.00	397.24	28.65	368.73	0.14	385.90	17.31	376.20	7.61	394.96	26.37
Junc n164	368.36	0.00	397.25	28.89	368.73	0.36	385.93	17.56	376.23	7.87	394.97	26.61
Junc n165	366.83	0.00	397.25	30.42	368.73	1.90	385.90	19.07	376.21	9.38	394.96	28.13
Junc n166	367.33	0.00	395.81	28.48	368.62	1.29	382.40	15.07	372.70	5.37	393.79	26.46
Junc n167	367.41	0.00	395.83	28.42	368.71	1.29	382.40	14.98	372.70	5.29	393.81	26.40
Junc n168	367.71	0.00	395.57	27.86	368.38	0.68	382.15	14.44	372.45	4.74	393.54	25.84
Junc n17	366.03	0.00	397.41	31.38	368.73	2.70	386.31	20.28	376.61	10.58	395.10	29.07
Junc n170	368.60	0.00	397.25	28.66	368.73	0.13	385.93	17.33	376.23	7.63	394.97	26.37
Junc n18	366.11	0.00	397.41	31.30	368.73	2.62	386.30	20.19	376.61	10.50	395.09	28.99
Junc n19	365.14	0.00	402.98	37.83	368.73	3.59	395.09	29.95	395.09	29.95	404.09	38.94
Junc n2	366.07	0.00	397.34	31.26	368.73	2.66	386.12	20.05	376.43	10.36	395.03	28.96
Junc n20	365.20	0.00	402.98	37.78	368.73	3.53	395.09	29.90	377.62	12.42	395.44	30.24
Junc n21	365.30	0.00	402.97	37.68	368.73	3.43	395.09	29.79	377.62	12.33	395.44	30.14
Junc n22	364.99	0.00	402.94	37.95	368.73	3.74	395.02	30.02	377.62	12.63	395.44	30.45
Junc n23	366.01	0.00	398.96	32.96	368.73	2.72	390.00	23.99	377.62	11.62	395.44	29.43
Junc n24	366.56	0.00	398.88	32.32	368.73	2.17	389.81	23.25	377.62	11.07	395.44	28.88
Junc n25	366.34	0.00	398.86	32.52	368.73	2.39	389.75	23.42	377.62	11.29	395.44	29.10
Junc n26	366.28	0.00	398.73	32.45	368.73	2.45	389.45	23.17	377.62	11.34	395.44	29.16
Junc n27	366.26	0.00	398.69	32.43	368.73	2.47	389.36	23.10	377.62	11.36	395.44	29.18
Junc n28	366.29	0.00	398.65	32.37	368.73	2.44	389.26	22.98	377.62	11.34	395.44	29.15
Junc n29	366.29	0.00	397.97	31.68	368.73	2.43	387.64	21.35	377.62	11.33	395.44	29.15
Junc n3	366.10	0.00	397.34	31.23	368.73	2.62	386.12	20.02	376.43	10.33	395.03	28.93
Junc n30	366.29	0.00	397.97	31.67	368.73	2.44	387.63	21.33	377.62	11.33	395.44	29.15
Junc n31	366.29	0.00	397.91	31.61	368.73	2.44	387.48	21.19	377.62	11.33	395.44	29.15
Junc n32	365.53	0.00	397.86	32.33	368.73	3.20	387.36	21.83	377.62	12.09	395.44	29.91
Junc n33	365.62	0.00	397.45	31.83	368.73	3.11	386.39	20.77	376.70	11.08	395.13	29.51
Junc n34	366.05	0.00	397.41	31.37	368.73	2.68	386.31	20.26	376.61	10.57	395.10	29.05
Junc n35	366.12	0.00	397.41	31.29	368.73	2.61	386.30	20.18	376.61	10.49	395.10	28.98
Junc n36	366.07	0.00	397.40	31.32	368.73	2.65	386.27	20.19	376.57	10.50	395.08	29.01
Junc n37	366.11	0.00	397.41	31.30	368.73	2.62	386.30	20.19	376.61	10.49	395.10	28.98
Junc n38	366.02	0.00	397.41	31.39	368.73	2.71	386.29	20.27	376.60	10.58	395.09	29.07
Junc n39	365.32	0.00	397.84	32.53	368.73	3.41	387.33	22.02	377.62	12.31	395.44	30.12
Junc n4	365.24	0.00	402.97	37.73	368.73	3.48	395.09	29.84	395.07	29.82	404.08	38.83
Junc n40	365.30	0.00	397.84	32.54	368.73	3.43	387.32	22.02	377.62	12.33	395.44	30.14
Junc n41	365.28	0.00	397.83	32.55	368.73	3.45	387.29	22.01	377.59	12.31	395.43	30.15
Junc n42	365.36	0.00	397.83	32.46	368.73	3.36	387.29	21.93	377.59	12.23	395.43	30.06
Junc n43	366.03	0.00	397.83	31.80	368.73	2.70	387.29	21.26	377.59	11.57	395.43	29.40
Junc n44	365.25	0.00	397.84	32.59	368.73	3.48	387.33	22.08	377.67	12.42	395.45	30.20
Junc n45	365.23	0.00	397.84	32.60	368.73	3.49	387.32	22.09	377.63	12.39	395.44	30.21
Junc n46	366.05	0.00	397.39	31.35	368.73	2.68	386.26	20.21	376.57	10.52	395.08	29.03
Junc n47	366.29	0.00	397.39	31.10	368.73	2.44	386.24	19.95	376.55	10.26	395.08	28.79
Junc n48	366.84	0.00	397.34	30.50	368.73	1.89	386.13	19.29	376.43	9.60	395.04	28.20
Junc n49	367.16	0.00	397.29	30.13	368.73	1.57	386.00	18.85	376.31	9.15	395.00	27.84
Junc n5	364.78	0.00	402.94	38.16	368.73	3.95	395.02	30.24	394.81	30.03	403.99	39.21
Junc n50	366.61	0.00	397.28	30.67	368.73	2.12	385.98	19.37	376.29	9.68	394.99	28.38

Junc n51	366.32	0.00	397.28	30.96	368.73	2.41	385.97	19.65	376.28	9.96	394.99	28.67
Junc n52	366.90	0.00	397.25	30.35	368.73	1.83	385.90	19.00	376.21	9.31	394.96	28.07
Junc n53	366.91	0.00	397.25	30.34	368.73	1.82	385.90	18.99	376.20	9.30	394.96	28.06
Junc n54	366.97	0.00	397.25	30.28	368.73	1.76	385.90	18.93	376.20	9.24	394.96	28.00
Junc n55	366.96	0.00	397.25	30.29	368.73	1.77	385.90	18.94	376.21	9.25	394.97	28.01
Junc n56	366.98	0.00	397.25	30.27	368.73	1.75	385.90	18.92	376.21	9.23	394.97	27.98
Junc n57	367.38	0.00	397.25	29.87	368.73	1.34	385.91	18.53	376.22	8.84	394.97	27.58
Junc n58	367.49	0.00	397.25	29.77	368.73	1.24	385.92	18.43	376.22	8.74	394.97	27.48
Junc n59	368.43	0.00	397.26	28.82	368.73	0.29	385.93	17.49	376.23	7.80	394.97	26.54
Junc n6	365.79	0.00	398.96	33.17	368.73	2.93	390.00	24.21	387.32	21.52	398.71	32.92
Junc n60	368.36	0.00	397.26	28.89	368.73	0.36	385.93	17.57	376.24	7.87	394.97	26.61
Junc n61	367.78	0.00	397.27	29.49	368.73	0.94	385.97	18.18	376.27	8.49	394.98	27.20
Junc n62	366.16	0.00	397.32	31.16	368.73	2.57	386.08	19.92	376.38	10.22	395.02	28.86
Junc n63	366.05	0.00	397.32	31.27	368.73	2.68	386.09	20.04	376.39	10.34	395.02	28.97
Junc n64	366.04	0.00	397.33	31.28	368.73	2.68	386.10	20.06	376.41	10.36	395.03	28.98
Junc n65	366.04	0.00	397.34	31.30	368.73	2.69	386.13	20.09	376.44	10.40	395.04	29.00
Junc n66	368.44	0.00	397.25	28.81	368.73	0.28	385.92	17.48	376.23	7.79	394.97	26.53
Junc n67	368.44	0.00	397.23	28.79	368.73	0.29	385.86	17.42	376.16	7.72	394.95	26.51
Junc n68	368.43	0.00	397.23	28.80	368.73	0.30	385.85	17.42	376.16	7.73	394.95	26.52
Junc n69	367.09	0.00	397.18	30.09	368.73	1.64	385.73	18.64	376.03	8.94	394.91	27.82
Junc n70	367.05	0.00	397.17	30.13	368.73	1.69	385.72	18.67	376.02	8.98	394.91	27.86
Junc n71	366.98	0.00	397.17	30.19	368.73	1.75	385.71	18.73	376.02	9.04	394.90	27.93
Junc n72	366.97	0.00	397.17	30.20	368.73	1.76	385.71	18.74	376.02	9.05	394.90	27.93
Junc n73	366.84	0.00	397.16	30.33	368.73	1.89	385.69	18.85	376.00	9.16	394.90	28.06
Junc n74	366.78	0.00	397.15	30.38	368.73	1.96	385.66	18.89	375.97	9.19	394.89	28.11
Junc n75	366.82	0.00	397.15	30.33	368.73	1.91	385.66	18.84	375.96	9.14	394.89	28.07
Junc n76	366.82	0.00	397.15	30.33	368.73	1.91	385.66	18.84	375.97	9.15	394.89	28.07
Junc n77	366.41	0.00	397.19	30.78	368.73	2.32	385.78	19.37	376.08	9.67	394.92	28.51
Junc n78	366.35	0.00	397.20	30.85	368.73	2.38	385.81	19.46	376.12	9.77	394.92	28.58
Junc n79	366.34	0.00	397.20	30.87	368.73	2.39	385.81	19.48	376.12	9.79	394.93	28.59
Junc n8	366.29	0.00	398.86	32.57	368.73	2.44	389.75	23.46	386.40	20.11	398.40	32.11
Junc n80	366.45	0.00	397.20	30.75	368.73	2.28	385.81	19.36	376.12	9.67	394.92	28.48
Junc n81	366.40	0.00	397.20	30.80	368.73	2.33	385.81	19.41	376.12	9.72	394.92	28.53
Junc n82	366.85	0.00	397.15	30.30	368.73	1.88	385.66	18.81	375.96	9.11	394.89	28.04
Junc n83	366.74	0.00	397.15	30.41	368.73	1.99	385.66	18.92	375.96	9.22	394.89	28.15
Junc n84	367.40	0.00	397.17	29.77	368.73	1.33	385.71	18.31	376.02	8.62	394.90	27.50
Junc n85	367.07	0.00	397.17	30.10	368.73	1.66	385.71	18.64	376.02	8.95	394.90	27.83
Junc n86	368.35	0.00	397.23	28.88	368.73	0.38	385.86	17.51	376.16	7.81	394.95	26.60
Junc n87	368.43	0.00	397.23	28.80	368.73	0.30	385.86	17.43	376.16	7.73	394.95	26.52
Junc n88	366.88	0.00	397.25	30.37	368.73	1.85	385.90	19.02	376.21	9.33	394.97	28.08
Junc n89	367.04	0.00	397.25	30.21	368.73	1.69	385.90	18.86	376.21	9.17	394.97	27.92
Junc n9	366.24	0.00	398.73	32.49	368.73	2.49	389.44	23.20	385.28	19.04	398.02	31.78
Junc n90	366.88	0.00	397.11	30.22	368.73	1.85	385.53	18.65	375.84	8.95	394.85	27.97
Junc n91	366.86	0.00	397.10	30.24	368.73	1.87	385.52	18.66	375.83	8.96	394.85	27.99
Junc n92	366.89	0.00	396.92	30.04	368.74	1.85	385.06	18.17	375.36	8.48	394.71	27.83
Junc n93	366.87	0.00	396.92	30.05	368.74	1.86	385.05	18.18	375.36	8.49	394.71	27.84
Junc n94	367.13	0.00	396.74	29.61	368.74	1.61	384.59	17.45	374.89	7.76	394.57	27.44
Junc n95	367.14	0.00	396.74	29.60	368.74	1.60	384.58	17.44	374.88	7.74	394.57	27.43
Junc n96	367.32	0.00	396.61	29.29	368.76	1.44	384.19	16.87	374.50	7.18	394.47	27.15
Junc n97	367.33	0.00	396.61	29.28	368.76	1.43	384.18	16.86	374.49	7.16	394.47	27.15
Junc n98	367.51	0.00	396.48	28.97	368.78	1.27	383.80	16.29	374.11	6.60	394.38	26.87
Junc n99	367.51	0.00	396.48	28.97	368.78	1.26	383.79	16.28	374.10	6.59	394.38	26.86
Minimum Pressure				27.61		-0.04		13.68		3.99		25.59
Maximum Pressure				38.56		25.72		30.24		30.03		39.21
Acceptable				Y		N		N		N		Y

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**************************************************************************
*                          E P A N E T                                   *
*                    Hydraulic and Water Quality                         *
*                    Analysis for Pipe Networks                          *
*                          Version 2.0                                   *
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Input File: Model Input - Modified.net

XINYI Canada Glass Watermain Distribution Network

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
p1	n1	n2	1.203	300
p2	n2	n3	1.295	300
p3	n4	n5	17.74	300
p4	n5	n6	4.15	300
p5	n6	BLDG-U	46.56	300
p6	BLDG-U	n8	18.16	300
p7	n8	n9	78.89	300
p8	n9	n10	21.69	300
p9	n10	n11	23.18	300
p10	n11	n12	412.6	300
p11	n12	n13	3.121	300
p12	n13	n14	36.43	300
p13	n14	n15	30.32	300
p14	n16	n17	21.25	300
p15	n17	n18	2.054	300
p16	n19	n4	2	300
p17	n20	n21	2	300
p18	n21	n22	17.74	300
p19	n22	n23	4.15	300
p20	n23	n24	48.8	300
p21	n24	n25	13.23	300
p22	n25	n26	78.56	300
p23	n26	n27	22.39	300
p24	n27	n28	23.88	300
p25	n28	n29	412.8	300
p26	n29	n30	3.062	300
p27	n30	n31	36.91	300
p28	n31	n32	30.32	300
p29	n33	n34	21.43	300
p30	n34	n35	2.067	300
p31	n36	n18	4.484	300
p32	n18	n37	0.65	300
p33	n37	n35	0.65	300
p34	n35	n38	5.191	300
p35	n32	n39	7.658	300
p36	n39	n40	3.257	300
p37	n40	n41	7.216	300

Link - Node Table: (continued)

Link ID	Start Node	End Node	Length m	Diameter mm
p38	n41	n33	228.7	300
p39	n41	n42	1.806	300
p40	n42	n43	14.36	300
p41	n15	n44	8.615	300
p42	n44	n45	2.833	300
p43	n45	n16	235.8	300
p44	n45	n40	1.3	300
p45	n38	n46	20.47	300
p46	n46	n47	11.86	300
p47	n47	n48	74.53	300
p48	n48	n49	79.3	300
p49	n49	n50	11.93	300
p50	n50	n51	8.714	300
p51	n51	n52	45	300
p52	n52	n53	2	300
p53	n53	n54	2	300
p54	n55	n56	2	300
p55	n56	n57	40.05	300
p56	n57	n58	9.941	300
p57	n59	n60	2.291	300
p58	n60	n61	19.46	300
p59	n62	n63	4.352	300
p60	n63	n64	2	300
p61	n64	n1	3.088	300
p62	n1	n65	1	300
p63	n65	n36	18.78	300
p64	n59	n66	2	300
p65	n67	n68	2	300
p66	n68	n69	159.5	300
p67	n69	n70	9.941	300
p68	n70	n71	7.614	300
p69	n71	n72	1.599	300
p70	n72	n73	26.51	300
p71	n74	n75	4.386	300
p72	n75	n76	2	300
p73	n76	n77	84.5	300

p74	n78	n79	4.157	300
p75	n80	n81	1.25	300
p76	n81	n78	1.251	300
p77	n82	n83	20.37	300
p78	n83	n75	5.181	300
p79	n84	n85	7.398	300
p80	n85	n71	3.102	300
p81	n67	n86	3	300
p82	n86	n87	2	300
p83	n55	n88	2.581	300
p84	n88	n89	4.42	300

Link - Node Table: (continued)

Link ID	Start Node	End Node	Length m	Diameter mm
p85	n53	n90	138.4	300
p86	n90	n91	4.153	300
p87	n91	n92	175.2	300
p88	n92	n93	2.784	300
p89	n93	n94	176.1	300
p90	n94	n95	3.87	300
p91	n95	n96	176.53	300
p92	n96	n97	3.47	300
p93	n97	n98	176.9	300
p94	n98	n99	3.142	300
p95	n99	n100	52.69	300
p96	n100	n101	7.019	300
p97	n101	n102	72.41	300
p98	n102	n103	3.372	300
p99	n103	n104	82.74	300
p100	n104	n105	5.264	300
p101	n105	n106	6.75	300
p102	n106	n107	50.75	300
p103	n107	n108	5.155	300
p104	n108	n109	174.8	300
p105	n109	n110	3.774	300
p106	n110	n111	176.2	300
p107	n111	n112	4.55	300
p108	n112	n113	156.4	300
p109	n113	n114	3.58	300
p110	n114	n75	31.92	300
p111	n115	n116	1.25	300
p112	n116	n113	1.25	300
p113	n117	n118	1.25	300
p114	n118	n111	1.25	300
p115	n119	n120	1.25	300
p116	n120	n109	1.25	300
p117	n121	n122	1.25	300
p118	n122	n107	1.25	300
p119	n103	n123	3.239	300
p120	n123	n124	27.78	300
p121	n125	n126	2.762	300
p122	n126	n99	3.735	300
p123	n127	n128	3.25	300
p124	n128	n97	3.25	300
p125	n129	n130	2.55	300
p126	n130	n95	3.95	300
p127	n131	n132	2.396	300
p128	n132	n93	1.104	300
p129	n133	n134	1.815	300
p130	n134	n91	1.685	300
p131	n135	n136	5	300

Link - Node Table: (continued)

Link ID	Start Node	End Node	Length m	Diameter mm
p132	n136	BLDG-V	4.15	300
p133	BLDG-V	n138	225.98	200
p134	n139	n135	556.5	300
p135	n138	n140	2.789	300
p136	n140	n141	126.9	300
p137	n141	n142	4.053	300
p138	n142	n143	109	300
p139	n143	n144	2.981	300
p140	n144	n105	39.35	300
p141	n143	n145	2.461	300
p142	n145	n146	110.2	300
p143	n146	n147	3.651	300
p144	n148	n149	10.39	300
p145	n149	n150	94.98	300
p146	n150	n151	15.03	300
p147	n151	n152	99.39	300
p148	n152	n153	2.328	300
p149	n153	n154	2.457	300
p150	n154	n155	107.3	300
p151	n155	n141	2.667	300
p152	n146	n156	4.892	200
p153	n138	n157	3.148	300
p154	n157	n158	1.852	300
p155	n73	n74	34.86	300

p156	n79	n159	13.59	300
p157	n159	n160	33.1	300
p158	n160	n161	64.9	300
p159	n161	n63	23.5	300
p160	n61	n62	55.9	300
p161	n66	n162	14.75	300
p162	n162	n163	14.76	300
p163	n163	n67	49.94	300
p164	n58	n164	41.93	300
p165	n164	n59	5.042	300
p166	n54	n165	13.75	300
p167	n165	n55	22.15	300
p168	n156	n166	12.43	200
p169	n166	n167	53.92	200
p170	n167	n153	41.75	200
p171	n147	n168	61.88	300
p172	n168	n148	38.96	300
p173	BLDG-F	n165	10.95	300
p174	n170	n164	10.59	300
p175	BLDG-A	n162	8	300
p176	BLDG-N	n61	23	300
p177	BLDG-P	n163	13	300
p178	BLDG-D	n161	17	300

Link - Node Table: (continued)

Link ID	Start Node	End Node	Length m	Diameter mm
p179	BLDG-I	n160	16.8	300
p180	BLDG-C	n159	17	300
p181	BLDG-G	n77	23	300
p182	BLDG3	n166	7.177	50
p183	BLDG4	n167	7.332	150
p184	BLDG1and2	n168	10.89	300
p185	BLDG-H	n73	27	300
p186	n77	n78	24.26	300
Pipe2	n22	Jun1	2.5	250
Pipe3	Jun3	n23	2.5	250
Pipe4	Jun4	n5	2.5	250
Pipe5	Jun6	n6	2.5	250
Pipe6	n136	Jun7	2.5	250
Pipe7	Jun9	BLDG-V	0.75	250
Pipe8	GibbRoadConnectionn19		1	1000
Pipe9	GibbRoadConnectionn20		1	1000
Pipe1	n95	BLDG-B	4.54	150
Pump1	ResDunnRoad	GibbRoadConnection	#N/A	#N/A Pump
Pump2	ResXYG	n139	#N/A	#N/A Pump
Meter1	Jun1	Jun2	#N/A	250 Valve
BFP1	Jun2	Jun3	#N/A	250 Valve
Meter2	Jun4	Jun5	#N/A	250 Valve
BFP2	Jun5	Jun6	#N/A	250 Valve
Meter3	Jun7	Jun8	#N/A	250 Valve
BFP3	Jun8	Jun9	#N/A	250 Valve

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
Pump1	100.00	75.00	0.14	13.28	13.28	0.00
Pump2	100.00	75.00	0.15	0.42	0.42	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality hours
n1	0.00	405.94	39.90	0.00
n2	0.00	405.94	39.87	0.00
n3	0.00	405.94	39.84	0.00
n4	0.00	408.26	43.02	0.00
n5	0.00	408.26	43.48	0.00
n6	0.00	406.05	40.26	0.00
BLDG-U	0.01	406.05	39.48	0.00
n8	0.00	406.05	39.76	0.00
n9	0.00	406.04	39.80	0.00
n10	0.00	406.04	39.82	0.00
n11	0.00	406.03	39.79	0.00
n12	0.00	405.99	39.73	0.00
n13	0.00	405.99	39.73	0.00
n14	0.00	405.98	39.73	0.00
n15	0.00	405.98	40.47	0.00
n16	0.00	405.95	40.38	0.00
n17	0.00	405.95	39.91	0.00
n18	0.00	405.95	39.84	0.00
n19	0.00	408.26	43.12	0.00
n20	0.00	408.26	43.06	0.00
n21	0.00	408.26	42.96	0.00
n22	0.00	408.26	43.27	0.00

n23	0.00	406.05	40.05	0.00
n24	0.00	406.05	39.49	0.00
n25	0.00	406.05	39.71	0.00
n26	0.00	406.04	39.76	0.00
n27	0.00	406.04	39.78	0.00
n28	0.00	406.03	39.75	0.00
n29	0.00	405.99	39.69	0.00
n30	0.00	405.99	39.69	0.00
n31	0.00	405.98	39.69	0.00
n32	0.00	405.98	40.45	0.00
n33	0.00	405.95	40.33	0.00
n34	0.00	405.95	39.90	0.00
n35	0.00	405.95	39.83	0.00
n36	0.00	405.95	39.87	0.00
n37	0.00	405.95	39.83	0.00
n38	0.00	405.95	39.93	0.00
n39	0.00	405.98	40.66	0.00
n40	0.00	405.98	40.68	0.00
n41	0.00	405.98	40.70	0.00
n42	0.00	405.98	40.61	0.00
n43	0.00	405.98	39.95	0.00
n44	0.00	405.98	40.73	0.00
n45	0.00	405.98	40.74	0.00
n46	0.00	405.95	39.90	0.00
n47	0.00	405.95	39.66	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
n48	0.00	405.94	39.11	0.00
n49	0.00	405.94	38.78	0.00
n50	0.00	405.94	39.33	0.00
n51	0.00	405.94	39.62	0.00
n52	0.00	405.94	39.04	0.00
n53	0.00	405.94	39.03	0.00
n54	0.00	405.94	38.97	0.00
n55	0.00	405.94	38.98	0.00
n56	0.00	405.94	38.95	0.00
n57	0.00	405.94	38.55	0.00
n58	0.00	405.94	38.45	0.00
n59	0.00	405.94	37.50	0.00
n60	0.00	405.94	37.57	0.00
n61	0.00	405.94	38.15	0.00
n62	0.00	405.94	39.78	0.00
n63	0.00	405.94	39.89	0.00
n64	0.00	405.94	39.90	0.00
n65	0.00	405.94	39.90	0.00
n66	0.00	405.94	37.49	0.00
n67	0.00	405.93	37.49	0.00
n68	0.00	405.93	37.50	0.00
n69	0.00	405.93	38.84	0.00
n70	0.00	405.93	38.89	0.00
n71	0.00	405.93	38.95	0.00
n72	0.00	405.93	38.96	0.00
n73	0.00	405.93	39.09	0.00
n74	0.00	405.93	39.16	0.00
n75	0.00	405.93	39.11	0.00
n76	0.00	405.93	39.11	0.00
n77	0.00	405.93	39.52	0.00
n78	0.00	405.93	39.58	0.00
n79	0.00	405.93	39.60	0.00
n80	0.00	405.93	39.48	0.00
n81	0.00	405.93	39.53	0.00
n82	0.00	405.93	39.08	0.00
n83	0.00	405.93	39.19	0.00
n84	0.00	405.93	38.53	0.00
n85	0.00	405.93	38.86	0.00
n86	0.00	405.93	37.58	0.00
n87	0.00	405.93	37.51	0.00
n88	0.00	405.94	39.05	0.00
n89	0.00	405.94	38.89	0.00
n90	0.00	405.93	39.05	0.00
n91	0.00	405.93	39.07	0.00
n92	0.00	405.93	39.04	0.00
n93	0.00	405.93	39.06	0.00
n94	0.00	405.93	38.79	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
n95	0.00	405.93	38.79	0.00
n96	0.00	405.93	38.60	0.00
n97	0.00	405.93	38.60	0.00
n98	0.00	405.93	38.42	0.00
n99	0.00	405.93	38.41	0.00
n100	0.00	405.93	38.35	0.00
n101	0.00	405.93	38.21	0.00
n102	0.00	405.93	37.93	0.00
n103	0.00	405.93	37.93	0.00
n104	0.00	405.93	38.30	0.00

n105	0.00	405.93	38.36	0.00
n106	0.00	405.93	38.33	0.00
n107	0.00	405.93	38.62	0.00
n108	0.00	405.93	38.63	0.00
n109	0.00	405.93	38.85	0.00
n110	0.00	405.93	38.85	0.00
n111	0.00	405.93	39.07	0.00
n112	0.00	405.93	39.08	0.00
n113	0.00	405.93	39.27	0.00
n114	0.00	405.93	39.28	0.00
n115	0.00	405.93	39.17	0.00
n116	0.00	405.93	39.22	0.00
n117	0.00	405.93	38.97	0.00
n118	0.00	405.93	39.02	0.00
n119	0.00	405.93	38.75	0.00
n120	0.00	405.93	38.80	0.00
n121	0.00	405.93	38.52	0.00
n122	0.00	405.93	38.57	0.00
n123	0.00	405.93	37.96	0.00
n124	0.00	405.93	38.35	0.00
n125	0.00	405.93	38.61	0.00
n126	0.00	405.93	38.53	0.00
n127	0.00	405.93	38.80	0.00
n128	0.00	405.93	38.70	0.00
n129	0.00	405.93	38.99	0.00
n130	0.00	405.93	38.91	0.00
n131	0.00	405.93	38.60	0.00
n132	0.00	405.93	39.02	0.00
n133	0.00	405.93	38.76	0.00
n134	0.00	405.93	39.02	0.00
n135	0.00	406.13	38.95	0.00
n136	0.00	406.13	38.17	0.00
BLDG-V	0.01	405.93	36.99	0.00
n138	0.00	405.93	38.80	0.00
n139	0.00	406.13	42.08	0.00
n140	0.00	405.93	38.76	0.00
n141	0.00	405.93	38.77	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
n142	0.00	405.93	38.77	0.00
n143	0.00	405.93	38.79	0.00
n144	0.00	405.93	38.79	0.00
n145	0.00	405.93	38.69	0.00
n146	0.00	405.93	38.39	0.00
n147	0.00	405.93	38.38	0.00
n148	0.00	405.93	38.17	0.00
n149	0.00	405.93	38.15	0.00
n150	0.00	405.93	38.10	0.00
n151	0.00	405.93	38.14	0.00
n152	0.00	405.93	38.34	0.00
n153	0.00	405.93	38.35	0.00
n154	0.00	405.93	38.35	0.00
n155	0.00	405.93	38.64	0.00
n156	0.00	405.93	38.45	0.00
n157	0.00	405.93	38.89	0.00
n158	0.00	405.93	38.87	0.00
n159	0.00	405.93	39.63	0.00
n160	0.00	405.93	39.72	0.00
n161	0.00	405.94	39.89	0.00
n162	0.00	405.94	37.42	0.00
n163	0.00	405.93	37.34	0.00
n164	0.00	405.94	37.57	0.00
n165	0.00	405.94	39.11	0.00
n166	0.00	405.93	38.60	0.00
n167	0.00	405.93	38.51	0.00
n168	0.00	405.93	38.22	0.00
BLDG-F	0.99	405.94	39.07	0.00
n170	0.00	405.94	37.34	0.00
BLDG-A	0.59	405.94	37.17	0.00
BLDG-N	0.03	405.94	38.40	0.00
BLDG-P	3.86	405.93	37.66	0.00
BLDG-D	0.03	405.94	39.22	0.00
BLDG-I	0.03	405.93	39.07	0.00
BLDG-C	12.74	405.93	39.09	0.00
BLDG-G	0.03	405.93	38.94	0.00
BLDG3	0.72	405.90	38.43	0.00
BLDG4	0.72	405.93	38.46	0.00
BLDG1and2	0.20	405.93	38.16	0.00
BLDG-H	0.11	405.93	38.72	0.00
Jun1	0.00	408.26	43.26	0.00
Jun2	0.00	406.47	41.48	0.00
Jun3	0.00	406.06	41.06	0.00
Jun4	0.00	408.26	43.48	0.00
Jun5	0.00	406.47	41.69	0.00
Jun6	0.00	406.06	41.28	0.00
Jun7	0.00	406.13	38.17	0.00

Node Results: (continued)

Node	Demand	Head	Pressure	Quality

ID	LPS	m	m	hours	
Jun8	0.00	405.95	37.99	0.00	
Jun9	0.00	405.93	37.97	0.00	
GibbRoadConnection	0.00	408.26	43.09	0.00	
BLDG-B	6.97	405.92	37.92	0.00	
ResXYG	-0.79	364.86	0.00	0.00	Reservoir
ResDunnRoad	-26.24	369.53	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
p1	0.00	0.00	0.00	Open
p2	0.00	0.00	0.00	Open
p3	13.12	0.19	0.11	Open
p4	0.00	0.00	0.00	Closed
p5	13.12	0.19	0.12	Open
p6	13.11	0.19	0.11	Open
p7	13.11	0.19	0.11	Open
p8	13.11	0.19	0.11	Open
p9	13.11	0.19	0.11	Open
p10	13.11	0.19	0.11	Open
p11	13.11	0.19	0.12	Open
p12	13.11	0.19	0.11	Open
p13	13.11	0.19	0.11	Open
p14	13.12	0.19	0.12	Open
p15	13.12	0.19	0.11	Open
p16	13.12	0.19	0.13	Open
p17	13.12	0.19	0.13	Open
p18	13.12	0.19	0.11	Open
p19	0.00	0.00	0.00	Closed
p20	13.12	0.19	0.11	Open
p21	13.12	0.19	0.12	Open
p22	13.12	0.19	0.11	Open
p23	13.12	0.19	0.11	Open
p24	13.12	0.19	0.11	Open
p25	13.12	0.19	0.11	Open
p26	13.12	0.19	0.12	Open
p27	13.12	0.19	0.11	Open
p28	13.12	0.19	0.12	Open
p29	13.11	0.19	0.11	Open
p30	13.11	0.19	0.11	Open
p31	-18.90	0.27	0.22	Open
p32	-5.77	0.08	0.00	Open
p33	-5.77	0.08	0.06	Open
p34	7.33	0.10	0.04	Open
p35	13.12	0.19	0.11	Open

Link Results: (continued)

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
p36	13.12	0.19	0.11	Open
p37	13.11	0.19	0.12	Open
p38	13.11	0.19	0.11	Open
p39	0.00	0.00	0.00	Open
p40	0.00	0.00	0.00	Open
p41	13.11	0.19	0.12	Open
p42	13.11	0.19	0.11	Open
p43	13.12	0.19	0.11	Open
p44	-0.01	0.00	0.00	Open
p45	7.33	0.10	0.04	Open
p46	7.33	0.10	0.04	Open
p47	7.33	0.10	0.04	Open
p48	7.33	0.10	0.04	Open
p49	7.33	0.10	0.04	Open
p50	7.33	0.10	0.04	Open
p51	7.33	0.10	0.04	Open
p52	7.33	0.10	0.04	Open
p53	1.99	0.03	0.00	Open
p54	0.99	0.01	0.00	Open
p55	0.99	0.01	0.00	Open
p56	0.99	0.01	0.00	Open
p57	-7.84	0.11	0.03	Open
p58	-7.84	0.11	0.04	Open
p59	-7.86	0.11	0.04	Open
p60	-18.90	0.27	0.22	Open
p61	-18.90	0.27	0.23	Open
p62	-18.90	0.27	0.22	Open
p63	-18.90	0.27	0.23	Open
p64	8.83	0.12	0.06	Open
p65	4.38	0.06	0.00	Open
p66	4.38	0.06	0.02	Open
p67	4.38	0.06	0.01	Open
p68	4.38	0.06	0.01	Open
p69	4.38	0.06	0.02	Open
p70	4.38	0.06	0.01	Open
p71	4.27	0.06	0.01	Open
p72	1.78	0.03	0.02	Open
p73	1.78	0.03	0.00	Open
p74	1.76	0.02	0.00	Open
p75	0.00	0.00	0.00	Open
p76	0.00	0.00	0.00	Open
p77	0.00	0.00	0.00	Open

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
p78	0.00	0.00	0.00	Open
p79	0.00	0.00	0.00	Open
p80	0.00	0.00	0.00	Open
p81	0.00	0.00	0.00	Open
p82	0.00	0.00	0.00	Open

Link Results: (continued)

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
p83	0.00	0.00	0.00	Open
p84	0.00	0.00	0.00	Open
p85	5.35	0.08	0.02	Open
p86	5.35	0.08	0.02	Open
p87	5.35	0.08	0.02	Open
p88	5.35	0.08	0.03	Open
p89	5.35	0.08	0.02	Open
p90	5.35	0.08	0.02	Open
p91	-1.62	0.02	0.00	Open
p92	-1.62	0.02	0.00	Open
p93	-1.62	0.02	0.00	Open
p94	-1.62	0.02	0.00	Open
p95	-1.62	0.02	0.00	Open
p96	-1.62	0.02	0.01	Open
p97	-1.62	0.02	0.00	Open
p98	-1.62	0.02	0.01	Open
p99	-1.62	0.02	0.00	Open
p100	-1.62	0.02	0.00	Open
p101	-2.49	0.04	0.01	Open
p102	-2.49	0.04	0.01	Open
p103	-2.49	0.04	0.01	Open
p104	-2.49	0.04	0.01	Open
p105	-2.49	0.04	0.01	Open
p106	-2.49	0.04	0.01	Open
p107	-2.49	0.04	0.00	Open
p108	-2.49	0.04	0.01	Open
p109	-2.49	0.04	0.00	Open
p110	-2.49	0.04	0.01	Open
p111	0.00	0.00	0.00	Open
p112	0.00	0.00	0.00	Open
p113	0.00	0.00	0.00	Open
p114	0.00	0.00	0.00	Open
p115	0.00	0.00	0.00	Open
p116	0.00	0.00	0.00	Open
p117	0.00	0.00	0.00	Open
p118	0.00	0.00	0.00	Open
p119	0.00	0.00	0.00	Open
p120	0.00	0.00	0.00	Open
p121	0.00	0.00	0.00	Open
p122	0.00	0.00	0.00	Open
p123	0.00	0.00	0.00	Open
p124	0.00	0.00	0.00	Open
p125	0.00	0.00	0.00	Open
p126	0.00	0.00	0.00	Open
p127	0.00	0.00	0.00	Open
p128	0.00	0.00	0.00	Open
p129	0.00	0.00	0.00	Open

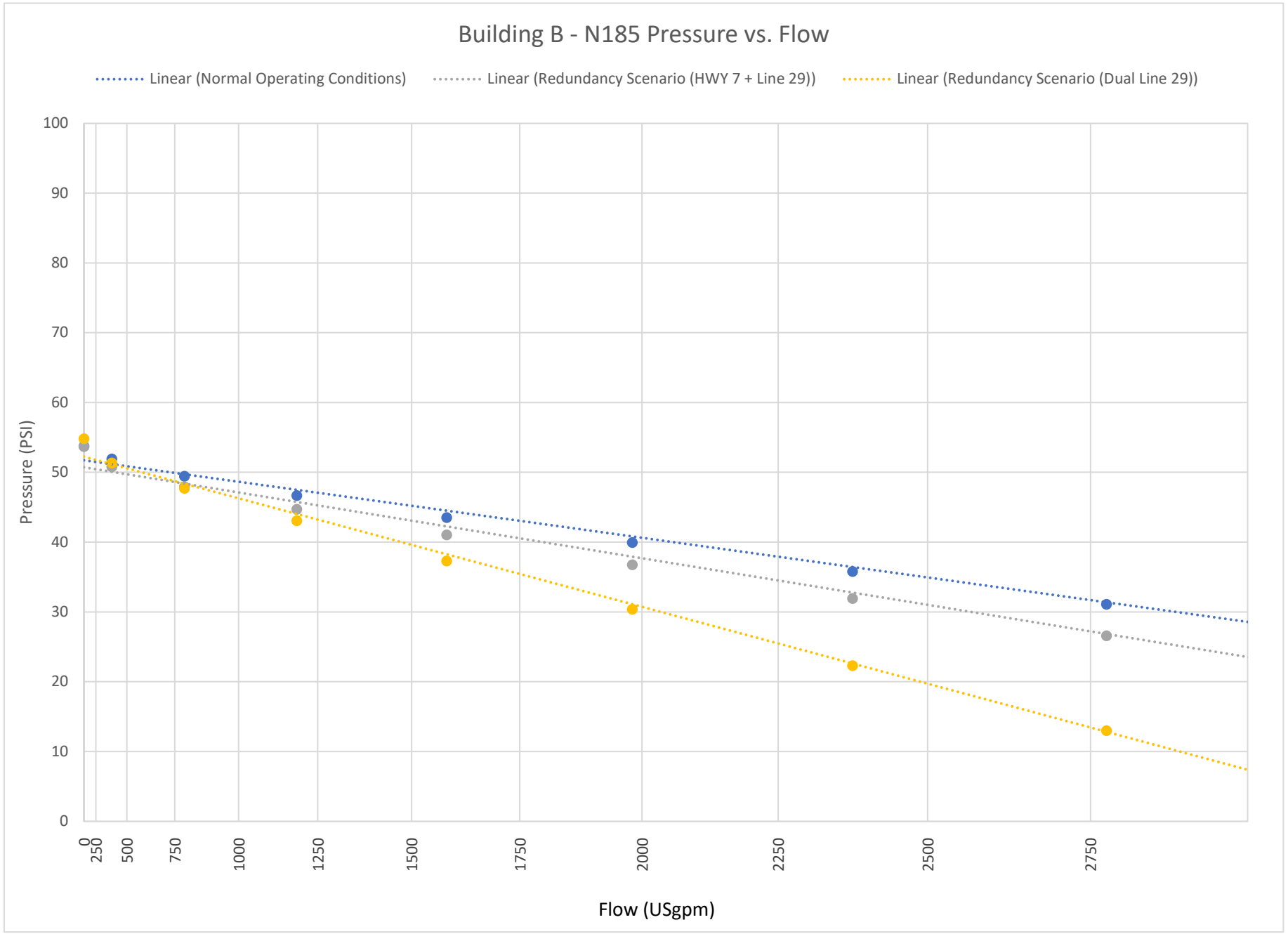
Link Results: (continued)

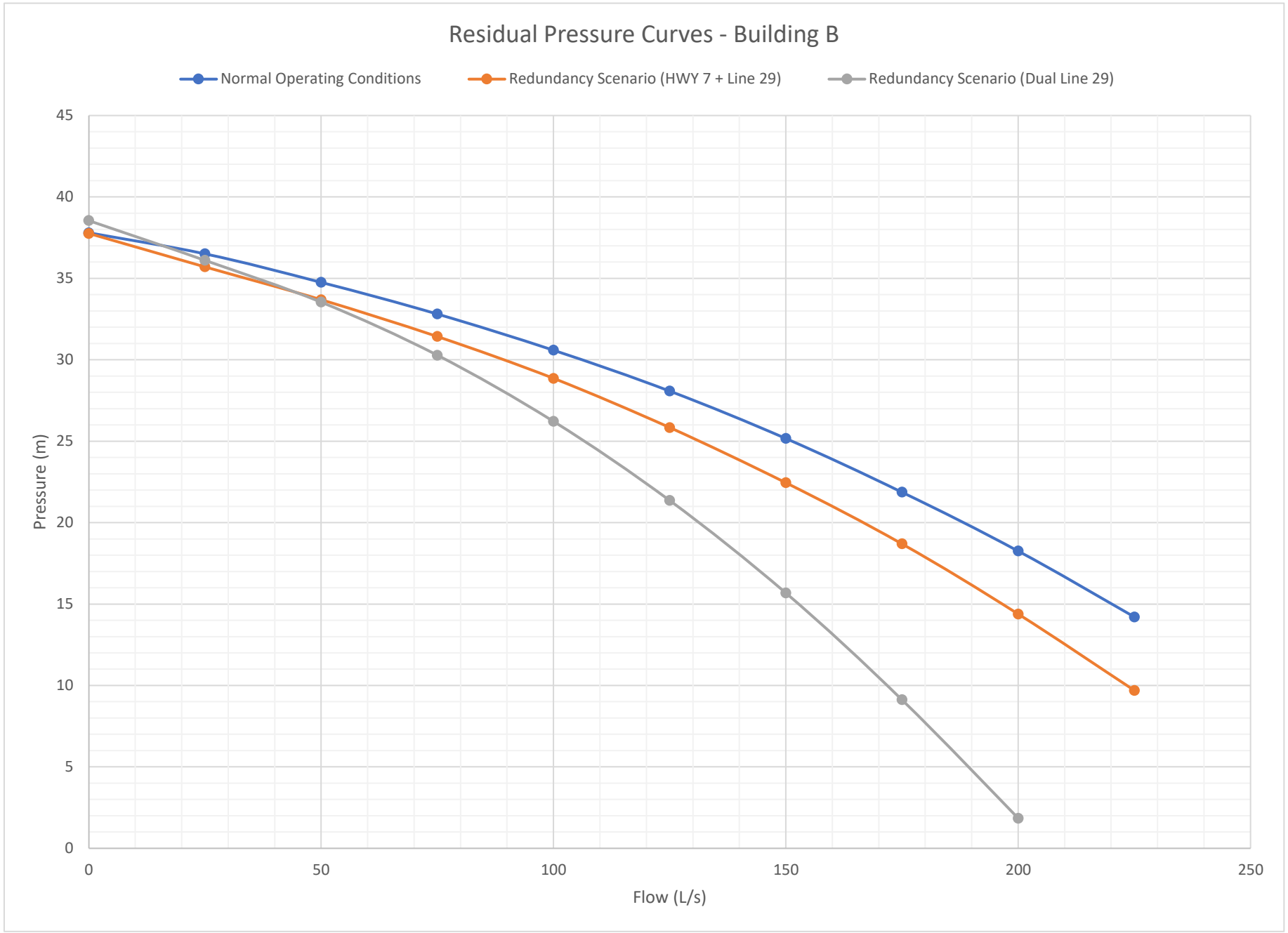
Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
p130	0.00	0.00	0.00	Open
p131	0.79	0.01	0.00	Open
p132	0.00	0.00	0.00	Closed
p133	0.77	0.02	0.00	Open
p134	0.79	0.01	0.00	Open
p135	0.77	0.01	0.00	Open
p136	0.77	0.01	0.00	Open
p137	-0.01	0.00	0.00	Open
p138	-0.01	0.00	0.00	Open
p139	-0.87	0.01	0.01	Open
p140	-0.87	0.01	0.00	Open
p141	0.86	0.01	0.00	Open
p142	0.86	0.01	0.00	Open
p143	0.01	0.00	0.00	Open
p144	-0.20	0.00	0.00	Open
p145	-0.20	0.00	0.00	Open
p146	-0.20	0.00	0.00	Open
p147	-0.20	0.00	0.00	Open
p148	-0.20	0.00	0.00	Open
p149	-0.79	0.01	0.00	Open
p150	-0.79	0.01	0.00	Open
p151	-0.79	0.01	0.00	Open
p152	0.85	0.03	0.00	Open
p153	0.00	0.00	0.00	Open
p154	0.00	0.00	0.00	Open
p155	4.27	0.06	0.01	Open
p156	1.76	0.02	0.00	Open
p157	-10.98	0.16	0.08	Open
p158	-11.01	0.16	0.08	Open
p159	-11.03	0.16	0.08	Open

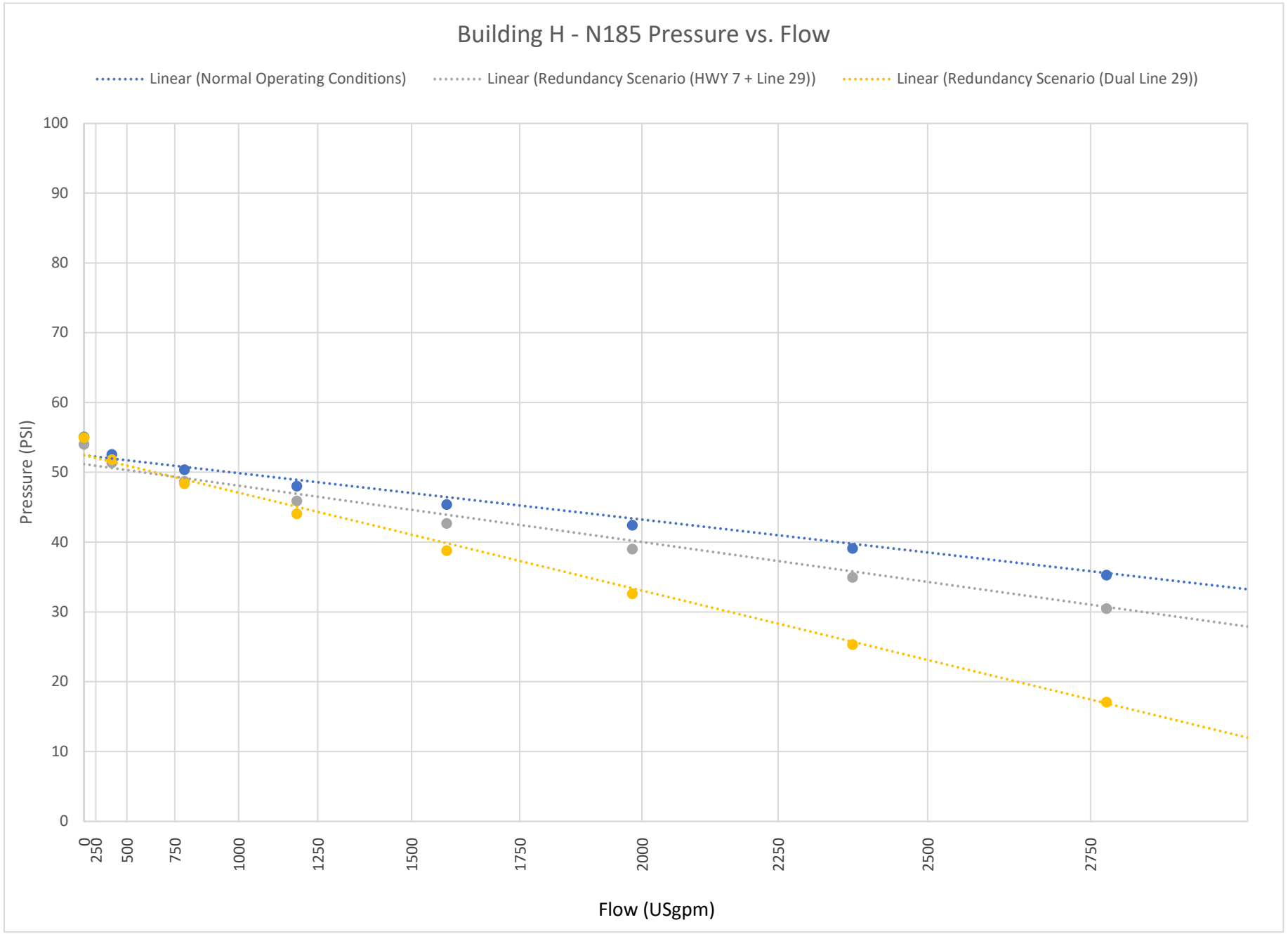
p160	-7.86	0.11	0.04	Open
p161	8.83	0.12	0.06	Open
p162	8.24	0.12	0.05	Open
p163	4.38	0.06	0.02	Open
p164	0.99	0.01	0.00	Open
p165	0.99	0.01	0.00	Open
p166	1.99	0.03	0.00	Open
p167	0.99	0.01	0.00	Open
p168	0.85	0.03	0.01	Open
p169	0.13	0.00	0.00	Open
p170	-0.59	0.02	0.00	Open
p171	0.01	0.00	0.00	Open
p172	-0.20	0.00	0.00	Open
p173	-0.99	0.01	0.00	Open
p174	0.00	0.00	0.00	Open
p175	-0.59	0.01	0.00	Open
p176	-0.03	0.00	0.00	Open

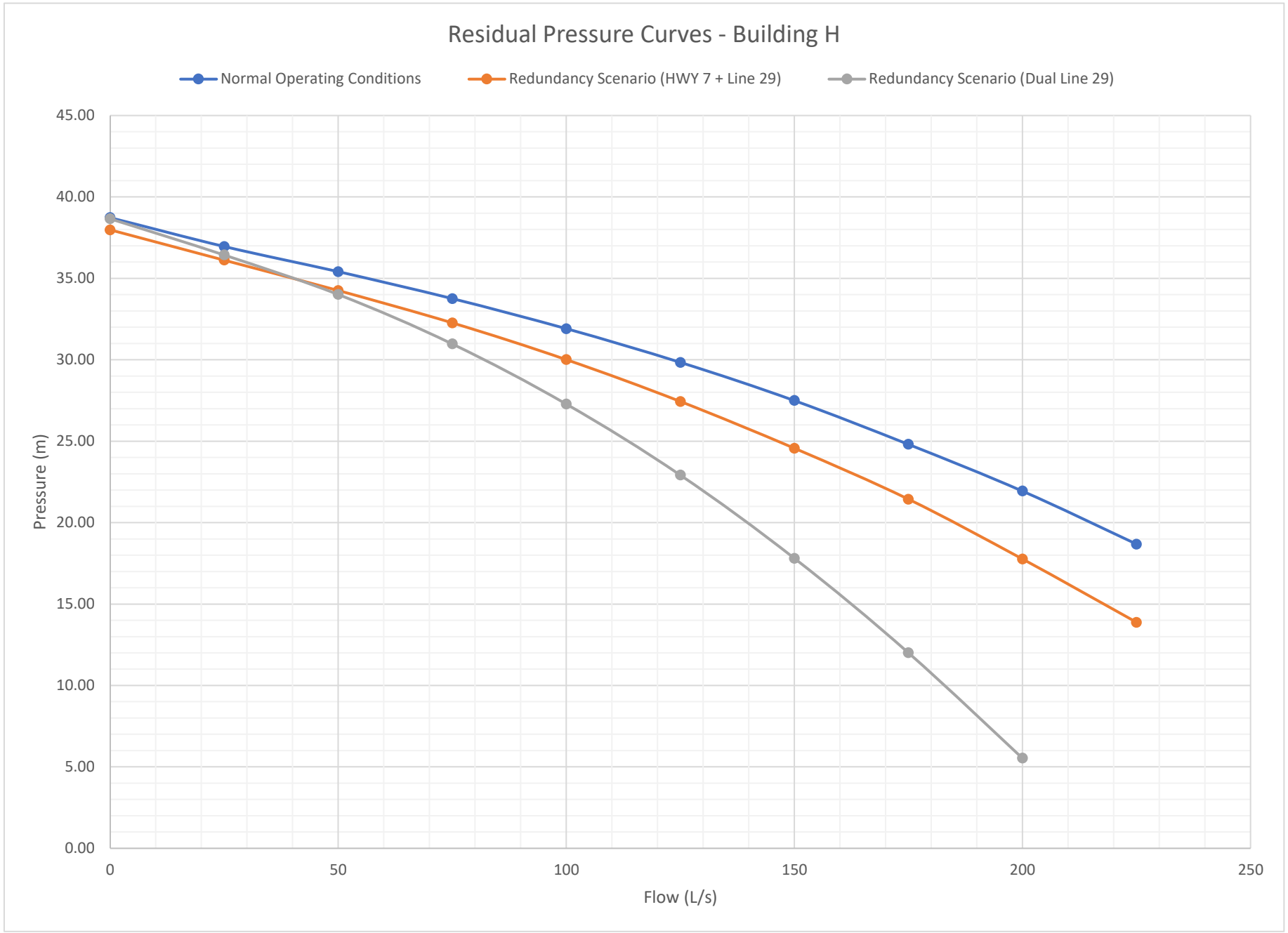
Link Results: (continued)

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
p177	-3.86	0.05	0.01	Open
p178	-0.03	0.00	0.00	Open
p179	-0.02	0.00	0.00	Open
p180	-12.74	0.18	0.11	Open
p181	-0.03	0.00	0.00	Open
p182	-0.72	0.37	3.28	Open
p183	-0.72	0.04	0.02	Open
p184	-0.20	0.00	0.00	Open
p185	-0.11	0.00	0.00	Open
p186	1.76	0.02	0.00	Open
Pipe2	13.12	0.27	0.28	Open
Pipe3	13.12	0.27	0.28	Open
Pipe4	-13.12	0.27	0.28	Open
Pipe5	13.12	0.27	0.27	Open
Pipe6	0.79	0.02	0.00	Open
Pipe7	0.79	0.02	0.00	Open
Pipe8	13.12	0.02	0.00	Open
Pipe9	13.12	0.02	0.00	Open
Pipe1	6.97	0.39	1.04	Open
Pump1	26.24	0.00	-38.73	Open Pump
Pump2	0.79	0.00	-41.27	Open Pump
Meter1	13.12	0.27	1.79	Open Valve
BFP1	13.12	0.27	0.42	Open Valve
Meter2	13.12	0.27	1.79	Open Valve
BFP2	13.12	0.27	0.42	Open Valve
Meter3	0.79	0.02	0.18	Open Valve
BFP3	0.79	0.02	0.02	Open Valve


Building B - N185 Pressure vs. Flow
Linear (Normal Operating Conditions)
Linear (Redundancy Scenario (HWY 7 + Line 29))
Linear (Redundancy Scenario (Dual Line 29))
Pressure (PSI)
100
90
80
70
60
50
40
30
20
10
0
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
Flow (USgpm)


Residual Pressure Curves - Building B
Normal Operating Conditions
Redundancy Scenario (HWY 7 + Line 29)
Redundancy Scenario (Dual Line 29)
Pressure (m)
45
40
35
30
25
20
15
10
5
0
0
50
100
150
200
250
Flow (L/s)


Building H - N185 Pressure vs. Flow
Linear (Normal Operating Conditions)
Linear (Redundancy Scenario (HWY 7 + Line 29))
Linear (Redundancy Scenario (Dual Line 29))
Pressure (PSI)
100
90
80
70
60
50
40
30
20
10
0
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
Flow (USgpm)


Residual Pressure Curves - Building H
Normal Operating Conditions
Redundancy Scenario (HWY 7 + Line 29)
Redundancy Scenario (Dual Line 29)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Pressure (m)
0
50
100
150
200
250
Flow (L/s)