1053, 1075 and 1145 March Road
Site Servicing and Stormwater Management Report

Prepared for:

CU Developments Inc.

Prepared by:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
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Issued: July 23, 2018

Ref: R-2018-071
Novatech File No. 116132

NOVATECH
Engineers, Planners & Landscape Architects

July 23, 2018

Planning, Infrastructure, and Economic Development Department
City of Ottawa
110 Laurier Ave. West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Louise Sweet

Re: 1053, 1075 and 1145 March Road - CU Developments Inc.
Site Servicing and Stormwater Management Report
Novatech File No.: 116132

Novatech is pleased to submit the following Site Servicing and Stormwater Management Report on behalf of CU Developments Inc. in support of a Draft Plan of Subdivision and Zoning By-law Amendment applications for 1053, 1075 and 1145 March Road in Kanata North.

CU Developments Inc. intends to develop a residential subdivision with a total of 825 units including 295 single detached dwellings, 314 townhouse dwellings, and 216 multi-unit residential dwellings. The subdivision is located in the northwest quadrant of the Kanata North Community Design Plan and incorporates a portion of the north tributary of Shirley's Brook, as well as a number of institutional blocks, a neighbourhood park, and a stormwater management pond. The subdivision will develop in multiple phases.

The attached Site Servicing and Stormwater Management Report will address how the proposed development will be serviced with sanitary sewer, storm sewers, watermain and stormwater management.

If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

NOVATECH

Marc St. Pierre
Senior Project Manager

Copy: Annibale Ferro – Uniform Urban Developments
Jim Burghout – Claridge Homes

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 Introduction

Novatech has been retained by CU Developments Inc. to prepare a Site Servicing and Stormwater Management Report in support of the application for a Draft Plan of Subdivision and Zoning By-Law Amendment (ZBLA) to allow for the development of lands known as 1053, 1075 and 1145 March Road in Kanata North (the "Subject Lands"). This report outlines the onsite and offsite servicing and proposed storm drainage and stormwater management strategy for the site.

1.1 Location and Context

The Subject Lands – legally described as Part of Lot 13 and 14, Concession 3, Township of March – are owned by CU Developments Inc. and encompass approximately 48.05 hectares including several properties under the municipal addresses 1053, 1075 and 1145 March Road. They are located in the northwest quadrant of the Kanata North Urban Expansion Area (KNUEA) (see **Figure 1**) which is subject to the Kanata North Community Design Plan (CDP), approved by Council on July 13, 2016.

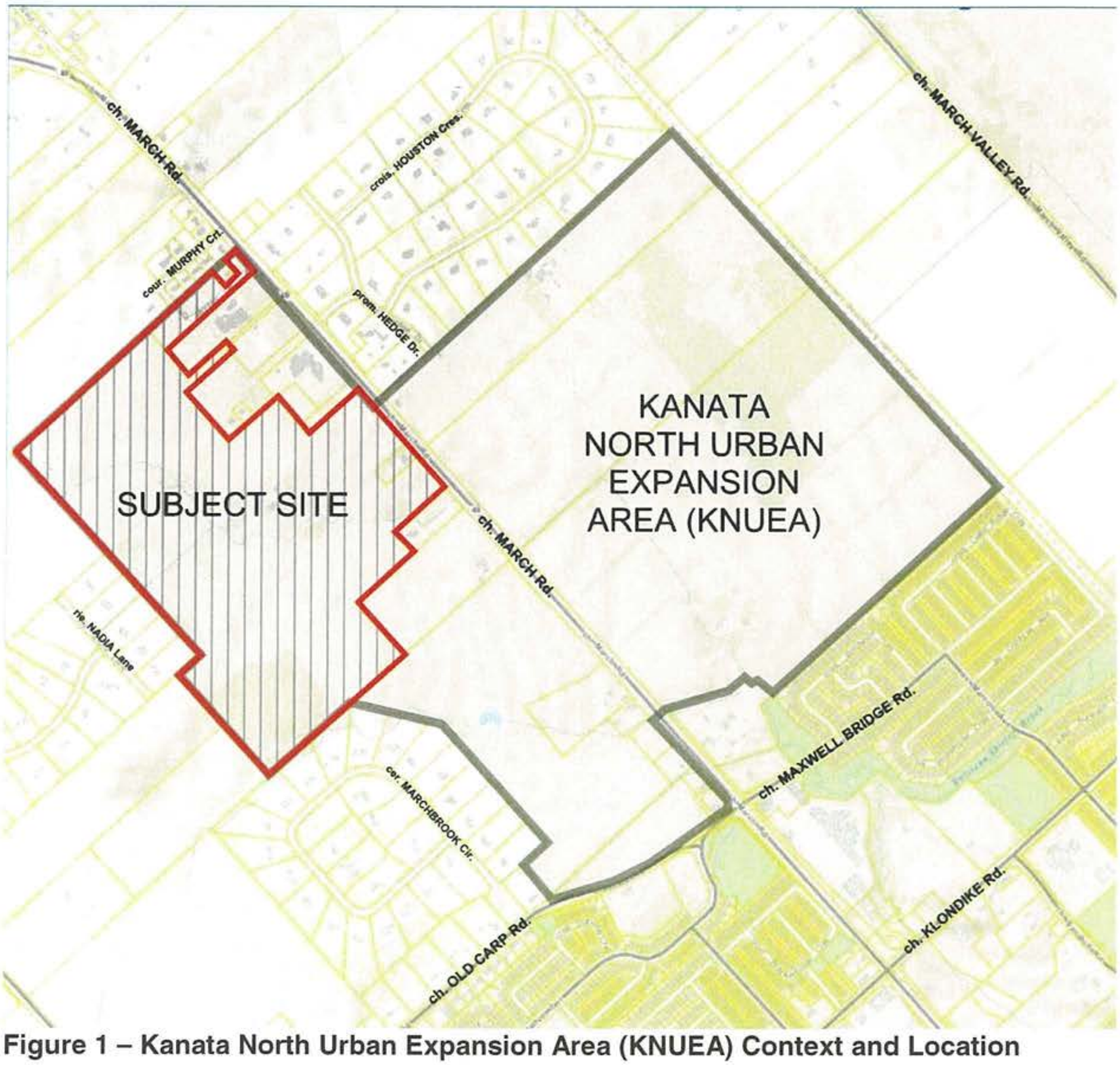

Figure 1 – Kanata North Urban Expansion Area (KNUEA) Context and Location

The Subject Lands are largely undeveloped and consist of open cultivated fields and recently fallow regenerating meadows. A tributary for Shirley's Brook runs through the Subject Lands in the northwest to southeast direction. Another tributary for Shirley's Brook also runs from the northwest to southeast just south of the Subject Lands.

The following describes the existing and planned land uses surrounding the Subject Lands:

North: Lands to the north are comprised of the Murphy's Court rural estate subdivision and rural lands. These lands fall outside the existing urban boundary.

East: Lands to the east contain existing institutional uses (Saint Isidore Roman Catholic Church and cemetery, and St. Isidore Catholic School), the Hillsview rural estate subdivision, and rural lands. March Road forms the eastern boundary of the site. The rural lands to the east of March Road and south of the Hillsview subdivision have been identified for residential development in the Kanata North Community Design Plan (CDP).

South: Lands to the south are comprised of existing rural lands identified for future development in the Kanata North CDP, and the Marchbrook Circle rural estate subdivision.

West: Lands to the west are comprised of the Panandrick Estates subdivision and rural lands.

1.2 Kanata North Urban Expansion Area

As stated above, the Subject Lands make up the majority of the northwest quadrant of the KNUEA. The Kanata North CDP was completed in June of 2016 to establish a community-wide land-use framework for the KNUEA that reflects the principles, objectives and policies for community development as directed by the Official Plan.

The KNUEA is approximately 181 hectares in area. It was established as one of the City's Urban Expansion Areas during the 2009 Official Plan review through Official Plan Amendment 76 (OPA 76) to accommodate the projected population growth to 2031. The major landowners in the area, known collectively as the *Kanata North Land Owners Group* (KNLOG), then initiated a Community Design Plan process to fulfill the requirements of the Official Plan to permit the review of development applications in the KNUEA. The KNLOG represent approximately 87% of the land within the KNUEA.

The Sponsoring Landowners include:

- Metcalfe Realty Company Ltd.
- Brigil (3223701 Canada Inc.)
- Valecraft (8409706 Canada Inc.)/JG Rivard Ltd.
- CU Developments Inc.
    - *Formerly Junic/Multivesco (7089121 Canada Inc.)*

Figure 2 – KNUEA Boundaries and Properties of Sponsoring Landowners, provides a map showing the ownership of lands within the KNUEA.

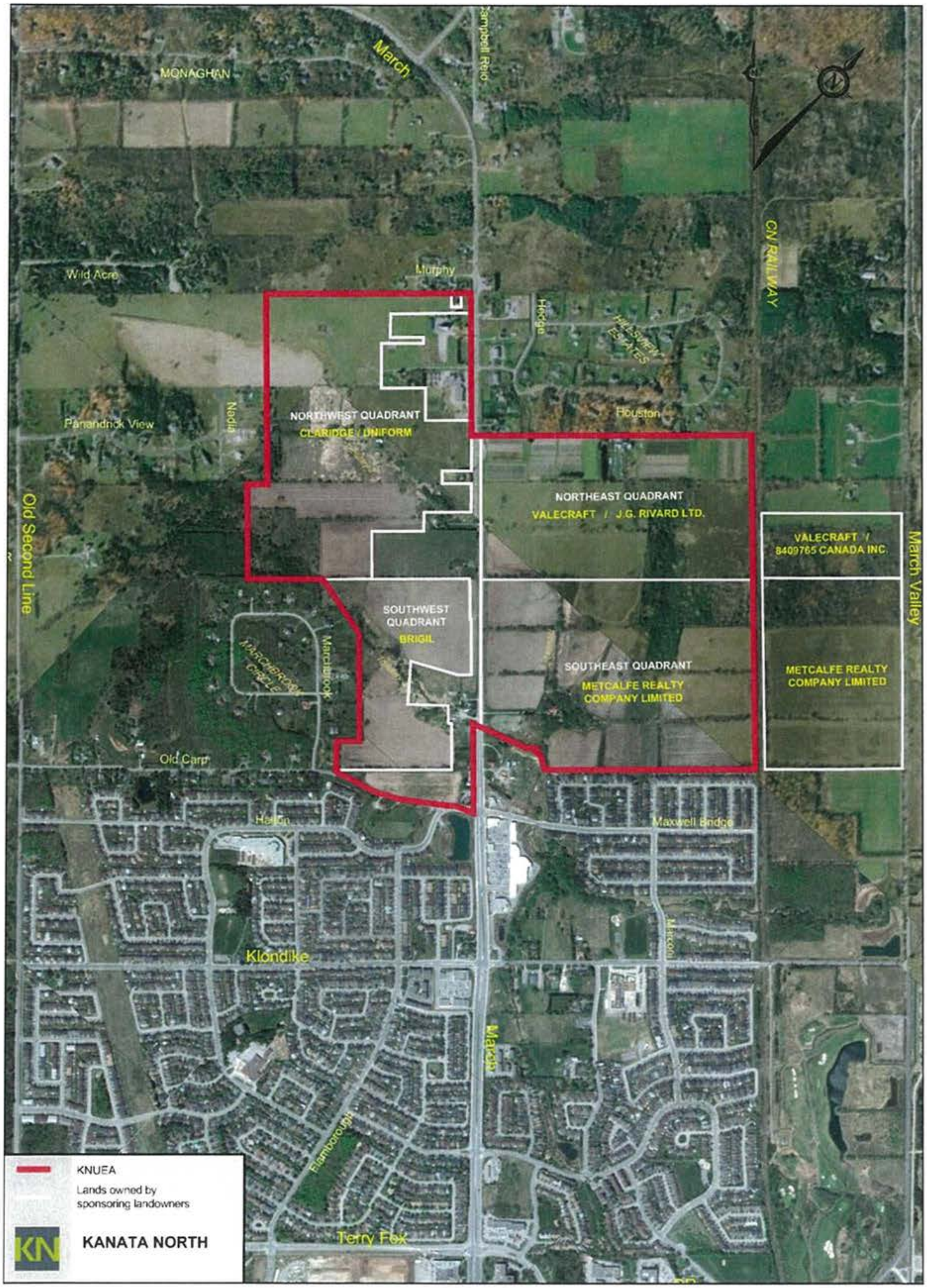

Figure 2 - KNUEA Boundaries and Properties of Sponsoring Landowners

Early in the process formal invitations were sent to other landowners to participate; however, none other than the group listed above chose to join the KNLOG. Non-participating landowners have been involved in the CDP process through consultation and opportunities to comment as the plan evolved.

The CDP process was integrated with the OPA process and the Municipal Class Environmental Assessment (Class EA) processes for associate infrastructure processes. The objective of this integrated process was to create a set of guiding documents that would help shape the development of Kanata North. The guiding documents include:

- *Kanata North Community Design Plan (CDP)*
  Novatech, June 28, 2016; Report No. R-2016-020
- *Kanata North Master Servicing Study (MSS)*
  Novatech, June 28, 2016; Report No. R-2016-041
- *Kanata North Environmental Management Plan (EMP)*
  Novatech, June 28, 2016; Report No. R-2016-017
- *Kanata North Transportation Master Plan (TMP)*
  Novatech, June 28, 2016; Report No. R-2015-161

The proposed subdivision and its supporting studies (i.e. the Site Serviceability and Stormwater Management report, the Noise Feasibility Study, and the Transportation Impact Assessment) are consistent with the Kanata North CDP Demonstration Plan and the above-noted guiding documents. Based on the detailed analysis that was conducted for the development proposal, some recommendations from the guiding documents have been modified and updated. For example, minor modifications have been made to the street layout and to the shape of the stormwater management facility. Each supporting study contains details and rationale regarding the specific modifications. These modifications maintain the plan presented in the CDP while proving its conceptual feasibility for the development which has been identified for the KNUEA.

1.3 Proposed Development

The proposed development consists of 825 units including 295 single detached dwellings, 314 townhouse dwellings, and 216 multi-unit residential dwellings to be developed in multiple phases. This subdivision will be the first stage in building out the community envisioned in the Kanata North CDP. The subdivision lands include blocks set aside for street-oriented single detached and townhouse dwellings, a stormwater management pond, a portion of a school block for the French Public School Board of Eastern Ontario (CEPEO), a future fire hall, and a future park and ride facility to be the terminus of the bus rapid transit planned for March Road. A linear neighbourhood park along the western boundary of the site will contain recreational facilities and continue the pathway network through the community. Refer to **Figure 3** – Concept Plan for proposed layout.

LEGEND

PROPOSED DEVELOPMENT

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CITY OF OTTAWA
CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

CONCEPT PLAN

SCALE 1 : 4000

DATE JUNE 2018 | JOB 116132 | FIGURE FIGURE 3

SHT11X17.DWG - 279mmX432mm

M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 3 - CONCEPT.dwg, FIGURE 3 -CONCEPT, Jul 24, 2018 - 2:07pm, rgrayton

1.4 Additional Reports

This report provides information on the considerations and approach by which Novatech has designed and evaluated the proposed servicing for the CU development. This report should be read in conjunction with the following:

- *Transportation Impact Assessment, 1053, 1075 and 1145 March Road*
  Novatech, July 23, 2018; Report No. R-2018-039
- *Planning Rationale and Integrated Environmental Review, 1053, 1075 and 1145 Match Road, Ottawa, Ontario*
  Novatech, July 23, 2018; Report No. 2018-088
- *Geotechnical and Hydrogeological Investigation, Proposed Storm Water Management Facility, Kanata North Development, March Road - Ottawa, Ontario*
  Paterson Group Inc., June 14, 2018; Report No.: PG4258-1
- *Preliminary Geotechnical Investigation, 1075 March Road, Ottawa, Ontario*
  Paterson Group Inc., April 19, 2013; Report No. PG2878-3
- *Preliminary Geotechnical Investigation, Burke & Maxwell Properties, Ottawa, Ontario*
  Paterson Group Inc., March 18, 2009; Technical Memorandum No. PG1823-LET-01
- *Preliminary Geotechnical Investigation, Foley Lands, Ottawa, Ontario*
  Paterson Group Inc., August 25, 2008; Technical Memorandum No. PG1716-LET-01

2.0 Existing Conditions

2.1 Existing Topography and Drainage

Figure 4 – Existing Topography and Elevation is a colour coded contour map of the study area. Lower elevations to the east are shown in green and orange (77-87m) and higher ground to the west is shown in purple and red (92-94m). The topography of the site generally slopes West to East towards March Road. There is a 14m grade elevation change from the southwest to southeast corner of the property. There is also a ridge (approx. 9m in height) located on the east side of the property that runs in a north south direction.

Under existing conditions, the CU development lands are comprised primarily of agricultural fields. The most prominent drainage features are a tributary of Shirley's Brook Northwest Branch (Tributary 2), and the outlet channel for Nadia Lane. Storm runoff from the majority of the site flows overland towards Tributary 2, which enters the site near the northwest corner and flows southeast to an existing 1800m x 1200mm concrete box culvert crossing March Road. The remaining areas drain towards either Tributary 1 (to the north) or Tributary 3 (to the south). Refer to **Figure 5** – Existing Conditions, Features and Constraints for details.

2.2 Geotechnical Investigation

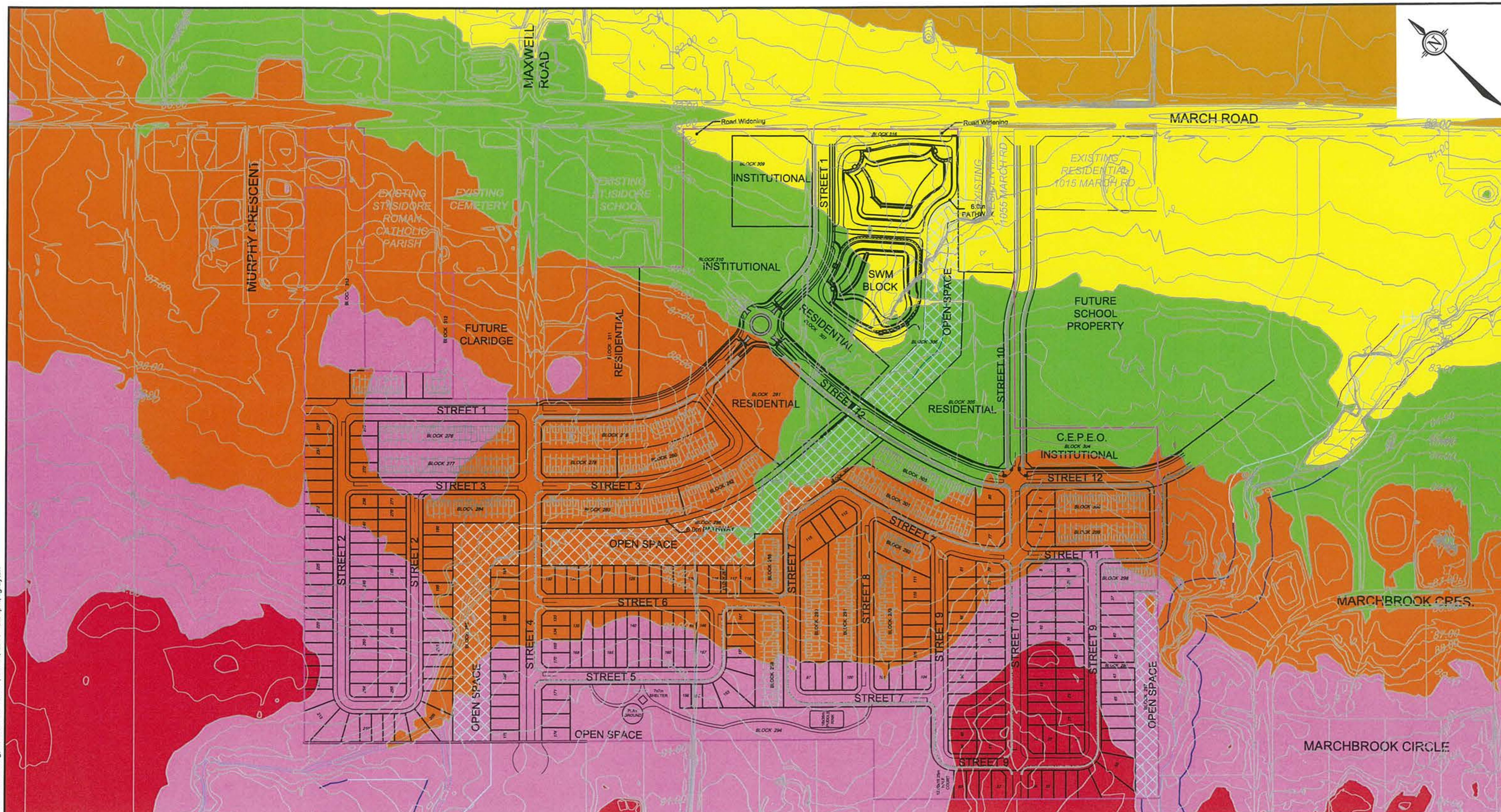
As part of the CDP process, several geotechnical reports were completed across the KNUEA. Four (4) geotechnical and hydrogeological investigation reports (as shown in Section 1.4) have been completed within the lands in the northwest quadrant of the KNUEA that now make up the CU development. The hydrogeological investigation (2018) was prepared to specifically address comments received from the City through the CDP and EMP processes. The remaining three geotechnical investigations (2008, 2009 and 2013) collectively cover the CU Development and were utilized for the purposes of the draft plan of subdivision application and the conceptual design of the site. During detailed design, once the road patterns and residential layout are finalized, a collective geotechnical report addressing the CU Development will be completed with information consistent with the latest geotechnical submission requirements (tree requirements, sensitive marine soil guidelines, park design, etc.). All geotechnical investigations have been completed by Paterson Group Inc.. The following is a summary of the principal findings of all four geotechnical reports.

<u>Test Pits and Boreholes</u>

- A total of thirty-five (35) test pits were completed across the CU development to a maximum depth of 4.3m as part of the CDP process for the KNUEA.
- Three (3) additional test pits were completed as part of the CU development located within the creek corridor.
- Three (3) boreholes were completed as part of the CU development within the SWMF with monitoring wells.

<u>Soil Conditions</u>

- The principal findings of the investigations determined that the soil profile consists of topsoil underlain by a stiff to very hard silty clay over a glacial till which is overlying bedrock.



LEGEND

PROPOSED DEVELOPMENT

Number	Minimum Elevation	Maximum Elevation	Colour
1	76.00	80.00	
2	80.00	83.00	
3	83.00	86.00	
4	86.00	89.00	
5	89.00	92.00	
6	92.00	96.00	

Elevations Table

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1053, 1075 and 1145 MARCH ROAD

EXISTING TOPOGRAPHY

SCALE 1 : 4000

DATE JUNE 2018

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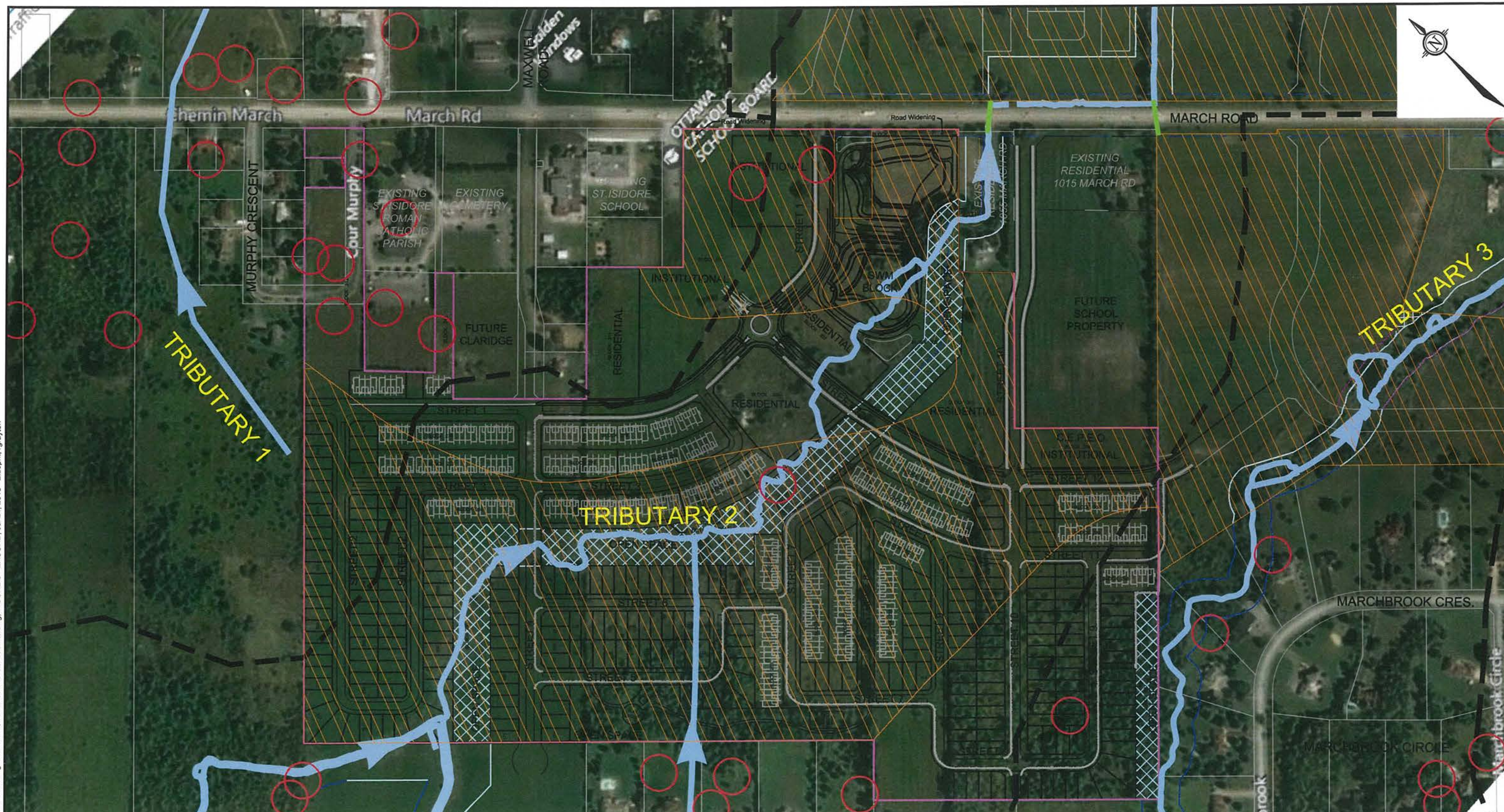
FIGURE FIGURE 4



M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 5 - Existing Conditions, Features and Constraints.dwg, FIGURE 5 - EXCOND, Jul 24, 2018 - 2:20pm, rgraylon

LEGEND

- PROPOSED DEVELOPMENT
- SUBWATERSHED BOUNDARY
- EXISTING DRAINAGE CHANNEL AND DIRECTION OF FLOW
- REALIGNED CREEK CORRIDOR
- 2.0m GRADE RAISE RESTRICTIONS
- WATER SUPPLY WELL LOCATION (FROM MOE WELL RECORDS)
- EXISTING CULVERTS

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EXISTING CONDITIONS, FEATURES AND CONSTRAINTS

SCALE 1 : 4000 (0, 40, 80, 120, 160)

DATE JUNE 2018 | JOB 116132 | FIGURE FIGURE 5

- Practical refusal to excavation was encountered between 0.61 to 4.3m below the surface on bedrock. It was noted that generally the upper 0.5m to 1.0m of bedrock is fair to good quality and good to excellent quality at depth.

Groundwater

- Groundwater measured in a range of 1.0m-2.7m at 11 test pits throughout the site. The remainder of the test pits were dry at the time of sampling.
- Subsequent groundwater measurements in the vicinity of the SWM pond showed water levels ranging from -0.04m to 0.5m below ground.

SWM Facility

- Significant bedrock removal will be required for the SWMF.
  - Bedrock removal can be completed by hoe-ramming (small quantities), blasting, or rock grinding.
  - It is recommended that the final 150-300mm of the base and sidewalls of the SWMF be completed using a rock grinder mounted to a hydraulic excavator. This will provide a smoother surface to finalize the shape of the sidewall and will also lessen the potential for overbreaks typically associated with hoe-ramming.
- Groundwater infiltration rate from the overburden soils were considered moderate to low, while the infiltration rate from the exposed bedrock during the SWMF excavation are anticipated to be high.
  - Pumping is recommended prior to excavation and a temporary PTTW will be required.
  - A 500mm thick clay liner will be required to be placed over the grinded/exposed bedrock on the base and sidewalls within the SWMF. It should consist of brown, workable clay that can be placed and compacted using a sheep's foot roller.
  - The clay liner will improve the imperviousness of the excavation side slope during fluctuations in the pond water level.
  - The clay liner will also resist the uplift pressure at the bottom and sidewalls where bedrock is exposed.
  - It is expected that the perched groundwater will be significantly reduced post-construction, therefore no significant groundwater hydrostatic pressure is expected to affect the SWMF.

Grade Raise Restriction

- There is a maximum permissible grade raise of 2.0m where building foundations are founded over a silty clay deposit. Refer to **Figure 5** – Existing Conditions, Features and Constraints for details and location of the grade raise restriction.

From a geotechnical perspective, it was noted that the site was suitable for the proposed development. For further details, refer to the geotechnical investigations listed in **Section 1.4**.

3.0 STORMWATER MANAGEMENT

The CU development lands are located in the northwest quadrant of the Kanata North Urban Expansion Area (KNUEA). The proposed stormwater management strategy for the CU development Lands has been designed to accommodate storm drainage from the site, as well as external drainage from both existing and planned future development in the Northwest Quadrant.

3.1 Existing Drainage Infrastructure

3.1.1 St. Isidore Roman Catholic Church

The St. Isidore Parish Church is located at 1135 March Road, in the northeast corner of the KNUEA northwest quadrant. The site was re-constructed and expanded as per a 2010 stormwater management and servicing report prepared by David McManus Engineering (DME). The re-construction project included the creation of three (3) dry stormwater ponds which provide quantity and quality control of site runoff, and discharge flows to the roadside ditch along March Road.

3.1.2 St. Isidore Catholic School

St. Isidore School is located directly south of St. Isidore Roman Catholic Church. Under existing conditions, storm runoff from the school is directed to the roadside ditch on the west side of March Road roadside ditch.

3.1.3 Nadia Lane

An existing drainage ditch runs from western boundary of the site to Tributary 2, which serves as the drainage outlet for a 25.8 ha area encompassing Nadia Lane and Panandrick View Drive. Storm runoff from this area will need to be accommodated in the stormwater management design of the CU development lands.

3.2 Stormwater Management Criteria

The stormwater management criteria for the CU development lands are based on the criteria presented in the EMP and the MSS, and have been developed through consultation with the MVCA and the City of Ottawa.

3.2.1 Minor System (Storm Sewers)

- Inlet control devices (ICDs) are to be installed in road and rearyard catchbasins to control inflows to the storm sewers based on the following levels of service:
  - Local Roads: 1:2 year
  - Collector Roads: 1:5 year
  - Arterial Roads: 1:10 year
- Ensure that the 100-year hydraulic grade line in the storm sewer is at least 0.3 m below the underside of footing (USF) elevations for the proposed development.

3.2.2 Major System (Overland Flow)

- Overland flows are to be confined within the right-of-way and/or defined drainage easements for all storms up to and including the 1:100-year event.

- Maximum depth of flow (static + dynamic) on local and collector streets shall not exceed 0.35 m during the 100-year event. The depth of flow may extend adjacent to the right-of-way provided that the water level must not touch any part of the building envelope and must remain below the lowest building opening during the stress test event.
- Maximum depth of flow on arterial roads shall not overtop the barrier curb, shall leave one lane free of water in each direction, and shall not flow overland across arterial roads.
- Runoff that exceeds the available storage in the right-of-way will be conveyed overland along defined major system flow routes towards the proposed major system outlet to the SWM Facility. There must be at least 15cm of vertical clearance between the spill elevation on the street and the ground elevation at the building envelope that is in the proximity of the flow route or ponding area.
- Although rear yard storage cannot be accounted for in computer modeling, the effect of flow attenuation can be accounted for by assuming a constant slope ditch/swale draining to the street with the following geometry:
  - A minimum slope of 1.5%
  - A depth ranging between 150mm (min) and 600mm (max)
  - Maximum side slopes of 3H:1V
- The product of the 100-year flow depth (m) on street and flow velocity (m/s) shall not exceed 0.60.

3.2.3 Water Quality & Quantity Control

- Provide an *Enhanced* (80% TSS removal) level of quality control.
- Post-development peak flows to Tributary 2 of Shirley's Brook are not to exceed pre-development peak flows for all storms up to and including the 100-year event.
- Ensure no adverse impacts on erosion in the watercourses resulting from future development within the KNUEA.

3.2.4 Low Impact Development / Green Stormwater Infrastructure

- Adhere to guidance from the EMP on opportunities to promote installation of LID techniques on the project site.
- Implement lot level and conveyance Best Management Practices to promote infiltration and treatment of storm runoff.

3.2.5 Watercourse Crossings (Culverts)

- Watercourse crossings are to be sized to convey the 100-year peak flow without overtopping the roadways.
- Watercourse crossings should be designed in accordance with geomorphology principles.
- Watercourse crossings should be designed to ensure they meet any additional requirements for terrestrial and aquatic habitat.

3.3 Storm Servicing Design

The site serviceability and stormwater management report builds on the preliminary storm servicing design provided in the MSS, and conforms to the recommendations from the EMP, the *Ottawa Sewer Design Guidelines* (October 2012) and technical bulletins *PIEDTB-2016-01* (September 2016) and *ISTB-2018-01* (March 2018). It also addresses the correspondence received from the City of Ottawa regarding amendments to the MSS.

Storm servicing will be provided using a dual drainage system. Runoff from frequent events will be conveyed by storm sewers (minor system), while flows from large storm events which exceed the capacity of the minor system will be conveyed overland along defined overland flow routes (major system).

The proposed SWM facility (Pond 1) will serve as the outlet for both the major and minor systems and will provide water quality and quantity control for the contributing drainage areas. Controlled outflows from Pond 1 will outlet into Shirley's Brook Northwest Branch Tributary 2 at March Road. The storm sewer network for the proposed development is shown on **Figure 6** – Proposed Stormwater Layout.

3.3.1 Storm Drainage Areas

The 57.5 ha site has been divided into subcatchments based on the proposed land uses and road patterns as shown on the Storm Drainage Area Plan (Drawing **116132-STM**).

Nadia Lane

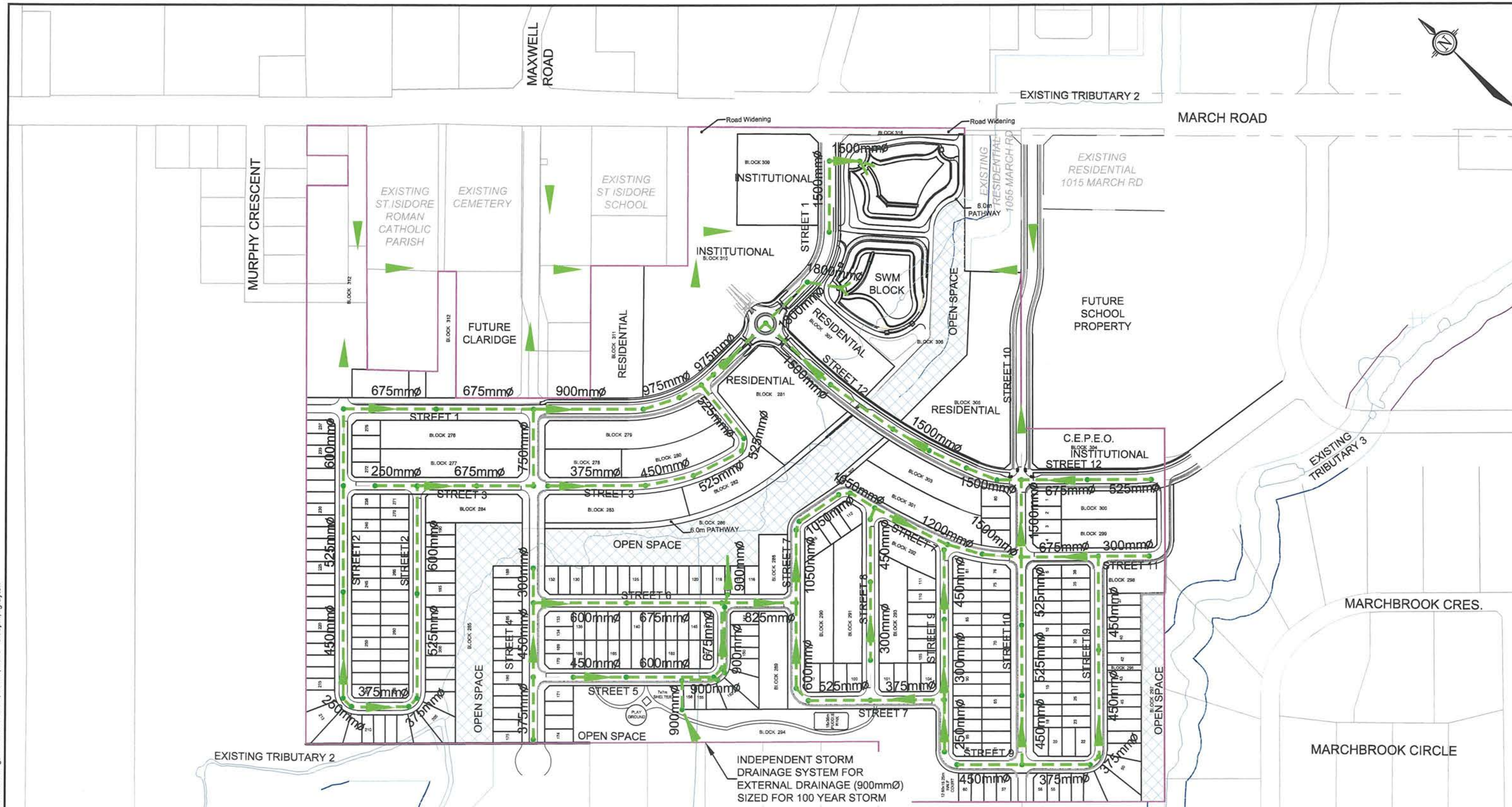
The external flows from Nadia Lane and Panandrick View Drive will be directed to a separate storm sewer system sized for the 100-year storm event. The system will outlet directly to Tributary 2 as in existing conditions. The drainage area can be viewed on the Storm Drainage Area Plan (Drawing **116132-STM**), referenced under the ID 'NADIA'.

3.3.3 Minor System Design

The criteria used to design the minor system are summarized in **Table 3.3.1** and **Table 3.3.2**. The Storm Sewer Design Sheets are provided in **Appendix B**.

Table 3.3.1: Storm Sewer Design Parameters

Parameter	Design Criteria
Local Roads	2-Year Return Period
Collector Roads	5-Year Return Period
Arterial Road	10-Year Return Period
Storm Sewer Design	Rational Method / PCSWMM
IDF Rainfall Data	Ottawa Sewer Design Guidelines
Initial Time of Concentration (Tc)	10 min
Minimum Velocity	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	300 mm



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PROPOSED DEVELOPMENT

PROPOSED STORM SEWER C/W FLOW DIRECTION

PROPOSED FUTURE STORM SEWER FLOW DIRECTION

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1053, 1075 and 1145 MARCH ROAD

PROPOSED STORM LAYOUT

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DATE JUNE 2018 | JOB 116132 | FIGURE FIGURE 6

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Table 3.3.2: Runoff Coefficients

Parameter	Design Criteria
Cemetery	0.20
Open Space	0.20
Church (DME SWM Report, 2010)	0.38
Parks	0.40
Schools	0.65
Street Oriented Residential	0.65
Multi / Unit Residential	0.70
Roads	0.70
Mixed Use / Commercial	0.85
Park and Ride	0.85

Inlet Control Devices

Inlet control devices (ICDs) will be installed in all catchbasins to limit inflows to the minor system capacity. Road catchbasins will not be interconnected and each catchbasin will be fitted with an individual ICD. Rearyard catchbasins will be connected in series with an ICD installed at the outlet of the most downstream structure.

3.3.4 Major System Design

The conceptual Grading Plans (Drawings **116132-GR1-DRAFT** through **116132-GR4-DRAFT**) have been used to define the major system overland flow network for the northwest quadrant. Flows exceeding the minor system inlet capacity (controlled using ICDs) will be stored in the rights-of-way at low points, or conveyed overland to the proposed SWM facility.

- Major system flows from approximately 35.3 ha of the site will be conveyed to the upper cell of the proposed SWM facility along Street '12' and Street '1'.
- Major system flows from the remaining 16.6 ha of the subdivision will be conveyed to the lower cell of the proposed SWM facility along Street '1' and Street '10'.
- Minor and major system flows from the St. Isidore Roman Catholic Church (3.01 ha) and St. Isidore Catholic School (2.58 ha) are assumed to be routed to Pond 1 via the roadside ditch on the west side of March Road.

Cross-Street Flow

There will be no cross-street flow during the minor (2-year) storm event. During larger storm events, major system flows from local streets can be routed onto other local or collector roads, or to the stormwater management facility.

Major System Flow Depths

For events exceeding the minor system design storm and up to the 100-year design storm, flow depths in the right of way will be limited to the maximum water depths outlined in **Table 3.3.3**.

Table 3.3.3: Major System Flow Depths

Road Classification	Maximum Water Depth
Local	350mm at edge of pavement
Collector	350mm at edge of pavement
Arterial	No barrier curb overtopping / flow spread must leave at least one lane free of water in each direction.

3.3.5 Groundwater Infiltration and Water Balance

Hydrologic conditions within KNUEA will be altered by the proposed development. Runoff volumes and peak flows will increase, and annual infiltration will decrease. However, the findings of the EMP state that no areas of significant groundwater recharge or discharge or sensitive species have been identified with the KNUEA. As such, there are no specific targets for infiltration and baseflow from the site.

The land use plan for the northwest quadrant is generally consistent with the Demonstration Plan presented in the Kanata North CDP, and there is no change to the post-development water balance presented in the EMP.

3.3.6 Low Impact Development

The EMP recommends that infiltration best management practices and/or low impact development (LID) design should be considered where suitable. Low impact development is a stormwater management strategy that seeks to mitigate the impacts of increased storm runoff and pollution resulting from development by managing runoff as close to its source as possible. LID best management practices (BMPs) use a variety of small scale facilities to promote maintenance of the pre-development hydrologic cycle using natural materials such as soil, gravel, vegetation and mulch.

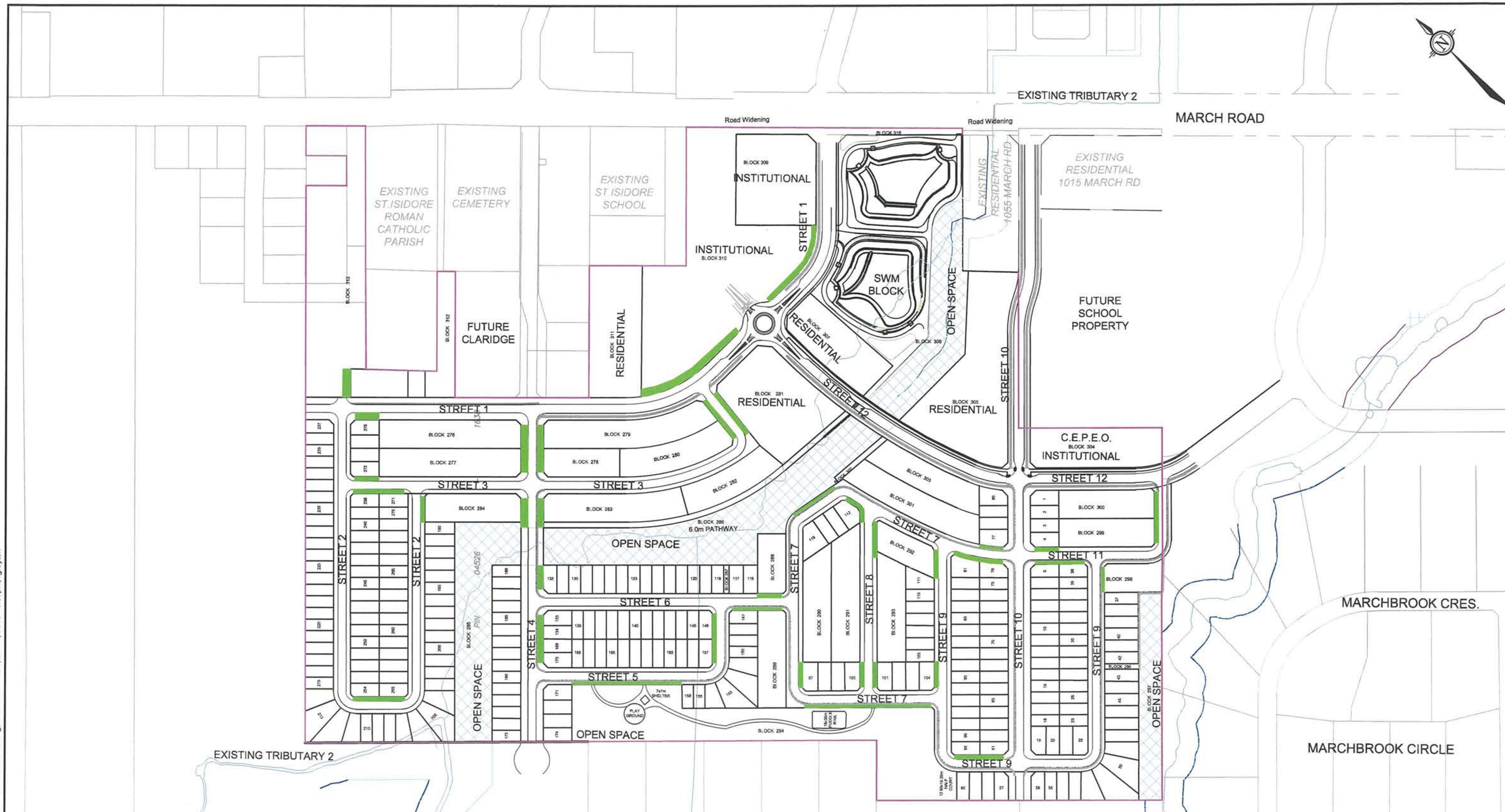
Roadways

Figure 7 provides a conceptual overview of potentially suitable locations for the implementation of LID features within the rights-of-way. At the detailed design stage, suitable LID locations will be selected based on a variety of factors including: soil type and groundwater elevation, road grading and CB locations, driveway locations, utilities locations, design ratio (LID area vs. drainage area), etc.

The LID locations shown on Figure 7 would consist of bioretention areas within the boulevards. Bioretention cells are stormwater management and treatment facilities that use vegetation and amended soils to filter, treat and attenuate storm runoff. Typical components of bioretention facilities include an underlying gravel drainage and a perforated pipe connection to the storm sewer to prevent standing water and saturated soils.

Sites

The CU development lands include blocks set aside for street-oriented single detached and townhouse dwellings, a school block, a fire hall, and a future park and ride facility. LID design opportunities for these locations should be considered as part of the Site Plan stormwater management designs. Suitable LID features for these areas can include (but are not limited to): bioretention cells; rain gardens; infiltration systems; permeable pavement; green roofs; amended topsoil; and enhanced tree canopy.



LEGEND

POTENTIAL LOCATIONS FOR LIDS

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1053, 1075 and 1145 MARCH ROAD

POTENTIAL LOCATIONS FOR LIDS

SCALE	DATE	JOB	FIGURE
1 : 4000	JUNE 2018	116132	FIGURE 7

M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 7 - LID Locations.dwg, FIGURE 7 - LIDs, Jul 24, 2018 - 3:09pm, rgraylon

For preliminary design purposes, peak flow and runoff volume reduction benefits from LIDs have not been accounted for in the sizing of the storm sewers and SWM facility. At the detailed design stage, candidate locations for LIDs will be reviewed and selected in consultation with the City of Ottawa.

3.4 Model Development (PCSWMM)

The *City of Ottawa Sewer Design Guidelines* require hydrologic modeling for all dual drainage systems. The performance of the proposed storm drainage and stormwater management system for the northwest quadrant of the KNUEA was evaluated using PCSWMM. Modeling schematics, 100-year HGL profiles and model output are provided in **Appendix B**.

3.4.1 Design Storms

The PCSWMM model uses synthetic design storms created using the IDF parameters provided in the *Ottawa Sewer Design Guidelines.* A 3-hour Chicago storm distribution and 24-hour SCS Type II storm distribution were chosen for analysis, and the return periods are listed below.

3-hour Chicago Distribution:	*24-hour SCS Type II Distribution*:
25mm Event (Water Quality)	
2-year Event	2-year Event
5-year Event	5-year Event
100-year Event	100-year Event
100-year + 20% Event	100-year + 20% Event

The 3-hour Chicago distribution generated the highest peak flows from the individual subcatchments and will govern the design of the storm sewers and ICDs. The 24-hour SCS Type II storm generated higher total runoff volumes and will govern the storage requirements for the proposed SWM facility.

3.4.2 Subcatchment Parameters

The hydrologic parameters for each subcatchment were developed based on the Grading Plans (**116132-GR1-DRAFT** through **116132-GR4-DRAFT**) and the Storm Drainage Area Plan (**116132-STM**).

Runoff Coefficient / Impervious Values

Impervious values (%IMP) for each subcatchment area were calculated based on the runoff coefficients (see Table 3.3.2Table 3.) noted on the Storm Drainage Area Plan (**116132-STM**) using the following equation:

$$\%IMP = \frac{(C - 0.2)}{0.7}$$

Depression Storage

The default values for depression storage in the *City of Ottawa Sewer Design Guidelines* (October 2012) were used for all catchments.

- Depression Storage (pervious areas): 4.67 mm
- Depression Storage (impervious areas): 1.57 mm

Residential rooftops are assumed to provide no depression storage and all rainfall is converted to runoff. The percentage of rooftop area to total impervious area is represented as the 'no depression storage' parameter.

Equivalent Width

The 'Equivalent Width' parameter was calculated using the procedure described in the *Ottawa Sewer Design Guidelines* (October 2012), based on a user-defined overland flow path for each subcatchment.

Average Slope

The 'Average Slope' parameter was represents the average slope of the primary flow path within each subcatchment.

3.4.2 Drainage Network (Major and Minor Systems)

Storm Sewers

The storm sewer network (pipes and maintenance holes) was created using Autodesk Civil3D and imported into the PCSWMM model. Losses at each maintenance hole are defined based on the geometry and orientation of the inlet and outlet pipes.

Catchbasins & Inlet Control Devices (ICDs)

Catchbasins are represented in the PCSWMM model as nodes:

- ICDs for road catchbasins on-grade are represented using inlet rating curves (approach flow vs. captured flow).
- ICDs for road catchbasins at low points are represented as orifices.
- For rearyard catchbasins in series, the PCSWMM model represents only the most downstream catchbasin, which is connected to the storm sewer using an ICD.

ICD sizes have been defined using the PCSWMM model based on the minor system peak flow at each inlet.

Major System (Overland Flow)

Storm runoff conveyed on the road surface is represented in the PCSWM model as open channel flow. The elevations used to define the road network in the model are based on the Grading Plans. Model input includes:

- Roadway cross-sections.
- The location, elevation, and type of all storm inlets.
- Length, slope and cross-fall of road sections connecting each inlet.

3.5 PCSWMM Model Results

The PCSWMM model developed in support of Draft Plan has been used to evaluate the performance of the conceptual drainage design for the Claridge-Uniform development, as well as the remaining areas within the northwest quadrant of the KNUEA.

The results of the hydrologic and hydraulic analysis demonstrate that the overall stormwater management strategy for the northwest quadrant is feasible and will conform to the stormwater management criteria outlined in this report.

3.5.1 Peak Flows

The proposed SWM facility (Pond 1) will control post-development peak flows from the northwest quadrant to pre-development levels before outletting to Tributary 2. The 24-hour SCS storm distribution generates the highest peak flows in Shirley's Brook and has been identified in previous studies as the critical storm distribution for the watershed.

A comparison of pre-development vs. post-development peak flows from the proposed development is provided in **Table 3.4.1**.

Table 3.4.1: Pre vs. Post-Development Peak Flows to Shirley's Brook Tributary 2

Storm Distribution->	Peak Flows (L/s) 24-hour SCS Type II Distribution		
Return Period->	2-year	5-year	100-year
Pre-Development (1)	130	200	370
Post-Development (2)	158	224	368

(1) Pre-development peak flows from Shirley's Brook SWMHYMO model (MVCA, 2017)
(2) Post-development peak flows from PCSWMM model (Novatech, 2018)

3.5.2 Hydraulic Grade Line (HGL)

The PCSWMM model has been used to perform a preliminary HGL analysis of the proposed storm sewer network. The results of the HGL analysis demonstrate that the proposed storm sewers will have sufficient capacity to convey the controlled minor system flows during the 100-year design event. Some sewers will operate under surcharged conditions due to a combination of higher inflows during the 100-year event, and backwater from the active storage provided by the SWM facility. The 100-year HGL profiles for the proposed trunk storm sewers are provided in **Appendix B**.

At the detailed design stage, the PCSWMM model will be used to refine the storm sewer design and establish minimum USF elevations. The storm sewer sizes will be adjusted as required to maintain a minimum 0.30 m of freeboard above the USF elevations.

While the 3-hour Chicago distribution generates higher minor system peak flows, the 24-hour SCS Type II distribution generates larger runoff volumes and storage depths in the SWM pond. Therefore, the detailed design HGL analysis will use both storm distributions to evaluate the maximum 100-year HGL elevations.

4.0 STORMWATER MANAGEMENT FACILITY (KNUEA POND 1)

The proposed SWM facility (Pond 1) has been sized to provide water quality and quantity control for a total tributary drainage area of 57.5 ha from the KNUEA northwest quadrant. Refer to the following drawings:

116132-SWM1	Stormwater Management Pond Plan and Profile
116132-SWM2	Stormwater Management Pond Cross Sections
116132-SWML1	Stormwater Management Pond Landscape Plan

4.1 SWM Facility Location and Configuration

4.1.1 Kanata North CDP

The Kanata North CDP included a conceptual design for a proposed SWM Facility (Pond 1) to service the northwest quadrant of the KNUEA. The proposed SWM facility was presented in the EMP as a single-cell wet pond with a single storm inlet at the northwest corner of the SWM block, and an outlet to Shirley's Brook Tributary 2 at March Road.

The proposed SWM block is in an area with a moderate amount of topographic relief, with approximately 4m of fall between the east and west ends of the block. The EMP indicated that the proposed SWM facility would require significant rock excavation to provide the required storage for water quality and quantity control.

4.1.2 Proposed Layout (2-Cell Pond)

Due to geotechnical and grading considerations, the proposed SWM facility has been redesigned as a 2-cell wet pond. The elevation of the west (upper) cell will be 2.5m higher than the east (lower) cell. The two cells will be interconnected, with flows from the upper cell being released into the lower cell, and the lower cell will outlet to Shirley's Brook Tributary 2 at March Road.

The proposed SWM facility will have three (3) storm inlets from the northwest quadrant. Storm sewers servicing the western (upper) portion of the northwest quadrant (areas west of Street 1 / Street 12) will outlet to the upper cell. Storm sewers servicing the eastern (lower) lower portion of the northwest quadrant will outlet to the lower cell.

The 2-cell pond layout requires a larger SWM block to provide the required storage, but has several advantages over the single cell layout presented in the EMP:

- Raising the upper cell by 2.5m significantly reduces the extent of rock excavation and blasting required to construct the SWM facility.
- Providing multiple storm inlets to the upper and lower cells significantly reduces the maximum depth required for the storm sewers.

4.1.3 EMP Interpretation and Amendments

The Kanata North EMP was prepared through an extensive process involving technical input and public consultation to satisfy the requirements of the EA process. The proposed 2-cell pond layout represents a minor change to the Demonstration Plan and will not require an amendment to the Official Plan or an addendum to the EA. There are no changes to the number or location of SWM facilities servicing the northwest quadrant; the outlet location has not changed, and no significant change to the overall contributing drainage area.

4.2 SWM Facility Design Criteria

The proposed SWM facility has been designed to meet the following criteria:

- Designed in accordance with the following guidelines and manuals:
  - City of Ottawa Stormwater Management Facility Design Guidelines
  - MOE SWM Planning and Design Manual
- Provide an Enhanced level of water quality control (80% long-term TSS removal);
- Provide sufficient storage to limit post-development flows into Tributary 2 of Shirley to pre-development levels for all storms up to and including the 100-year event;
- The active storage depth in the 100-year storm event must be less than 2.50 m;
- The normal water level (permanent pool) in wet ponds should be above the 2-year water level in Tributary 2 of Shirley's Brook at the outlet location;
- The SWM facility will have side slopes of 3:1 (H:V) or shallower;
- Forebays are to provide sufficient storage for 10-years of sediment accumulation;
- Provide sediment storage area(s) within the SWM block to allow for storage and drying of material removed during maintenance/ cleanout;
- Guardrails conforming to City standards are to be installed at the inlet structures, outlet structures, and retaining walls of the SWM facility; and
- The facility should be integrated into the community through the use of pathways or other linkages.

4.3 Pathways / SWM Facility Access

Access to the inlet and outlet structures and the sediment storage area will be provided by the proposed service road / pathway that runs around the perimeter of the pond. Two access points to the SWM block will be provided, as shown on Drawing **116132-SWM1**.

4.4 Geotechnical Considerations

The depth to bedrock is relatively shallow in some areas of the SWM block, and bedrock excavation will be required. Based on the test hole program carried out as part of the geotechnical investigation, water infiltration rates within the overburden soil were moderate to low. Infiltration rates through the bedrock was high, and managing the infiltration rate during bedrock removal operations will be critical during the construction program.

Based on the recommendations of the geotechnical investigation, the proposed SWM facility will include a minimum 500mm thick clay liner to provide an impermeable layer over the bedrock. It is expected that the perched groundwater in the vicinity of the SWM facility will be significantly reduced during the site redevelopment, and no significant groundwater hydrostatic pressure is expected to affect the SWM facility.

The extent of the bedrock excavation and elevation difference between the cells can be seen on the SWM facility profile provided on Drawing **116132-SWM1**.

4.5 Inlet Structures

The proposed SWM facility has a total of three storm inlets – one (1) inlet to the upper cell and two (2) inlets to the lower cell.

The two primary inlets have been designed with flow splitters consisting of a low-flow pipe to direct runoff from smaller storm events into the forebays, and a high flow pipe to direct peak flows from larger storm events directly into the main cell of the pond. The design of the flow splitters will be confirmed at the detailed design stage.

The south inlet to the lower cell has a relatively small drainage area (4.6 ha) and does not include a flow splitter.

4.6 Sediment Forebays

A forebay is provided at each inlet to the SWM facility to promote the settling and retention of sediment. The banks of the forebays will be lined with riprap. Riprap berms set 0.3m below the normal water level will separate the forebays from the main cell of the pond.

Forebay Sizing

The sediment forebays have been designed in accordance with the *MOE SWM Planning and Design Manual* (March 2003). Supporting calculations are provided in **Appendix B**.

- The upper cell forebay receives runoff from a contributing drainage area of 35.3 ha, and will have a length of approximately 45 m.
- The lower cell has a single forebay for the two inlets to the pond. The north inlet has a contributing drainage area of 17.6 ha, which the south inlet has a contributing drainage area of 4.6 ha. The forebay has an overall length of approximately 80m. The riprap outlet berm will be located at the approximate mid-point of the forebay, providing an effective forebay length of approximately 40m for each inlet.

Sediment management areas have been provided for both the upper and lower cells of Pond 1, and will provide adequate space to remove sediment from the pond during regular maintenance procedures. The annual sediment loading to the SWM facility from the upstream drainage areas will be assessed at the detailed design stage.

4.7 Permanent Pool

The contributing drainage area to the upper cell (approximately 35.3 ha) has an average imperviousness of 59%. For an *Enhanced* level of water quality protection (80% long-term TSS removal), the required permanent pool volume is approximately 5,510 m^3. The upper cell provides a permanent pool volume of 5,970 m^3.

The contributing drainage area to the lower cell (approximately 22.2 ha) has an average imperviousness of 67%. The required permanent pool volume for the lower cell is approximately 2,750 m^3. The lower cell provides a permanent pool volume of 6,410 m^3.

4.8 Outlet Structure (Upper Cell)

The outlet structure for the upper cell consists of a 600mm reverse slope pipe connected to a maintenance hole fitted with a 330mm orifice plate. Controlled outflows from the upper cell will be conveyed by a 600mm storm sewer to the south inlet of the lower cell. Refer to

Appendix B for the supporting outlet sizing calculations. The conceptual design of the outlet is shown on Drawings **116132-SWM1** and **116132-SWM2**.

Extended Detention / Quantity Control

The required extended detention volume in the upper cell was calculated based on a contributing drainage area of 35.3 hectares and a storage requirement of 40 m^3/ha. The first 0.28m of active storage depth will provide the required extended detention storage volume of 1,410 m^3.

The 330mm orifice will release the extended detention storage over a period exceeding 24 hours, and will also provide quantity control up to the 100-year storm event at a maximum active storage depth of 2.5m.

Overflow Spillway

An overflow spillway from the upper cell has been provided in case the outlet becomes obstructed or in case of an extreme event (greater than the 100-year event) generating runoff that exceeds the maximum available storage in the SWM facility. The overflow spillway will have a width of 10m, a crest elevation of 84.50m, and will direct overflows into Tributary 2.

4.9 Outlet Structure (Lower Cell)

The outlet structure for the lower cell consists of a 675mm reverse slope pipe to convey flows to a maintenance hole containing a flow control structure comprised of two orifice plates designed to provide the required extended detention and quantity control storage for storms up to and including the 100-year event:

Extended Detention Outlet:	130mm orifice plate (INV=79.50m, Normal Water Level)
Quantity Control Outlet:	360mm orifice plate (INV=80.50m)

Controlled outflows from the lower cell be conveyed by a 675mm storm sewer connecting to the existing 1200mm x 1800mm concrete box culvert crossing March Road at Tributary 2. Refer to **Appendix B** for the supporting outlet sizing calculations. The conceptual design of the outlet is shown on Drawings **116132-SWM1** and **116132-SWM2**.

Extended Detention

The required extended detention volume in the lower cell was calculated based on a contributing drainage area of 22.2 hectares. To account for the controlled outflows from the upper cell, the extended detention storage requirement was doubled to 80 m^3 per hectare as per MOECC recommendations. The first 0.32m of active storage depth will provide the required extended detention storage volume of 1,775 m^3, and will be released over a period exceeding 24 hours in duration.

Quantity Control

The two orifices in the outlet structure will post-development peak flows from the development to the allowable release rates for all storms up to and including the 100-year design event at a maximum active storage depth of 2.5m.

Overflow Spillway

An overflow spillway from the lower cell has been provided in case the outlet becomes obstructed or in case of an extreme event (greater than the 100-year event) generating runoff that exceeds the maximum available storage in the SWM facility. The overflow spillway will have a width of 10m, a crest elevation of 82.00m, and will direct overflows into Tributary 2.

4.10 Stage-Storage Discharge Table

The stage-storage-discharge tables for Pond 1 (upper and lower cells) are provided below.

Table 4.8.1: Pond 1 Stage-Storage-Discharge Table (Upper Cell)

Stage	Elevation (m)	Volume (m^3)			Release Rate (L/s)
		Stage	Total	Active	330mm Orifice INV=82.00
Bottom	80.50	-	-		0.0
	81.00	1,771	1,771		0.0
	81.50	1,978	3,749		0.0
Perm. Pool	82.00	2,221	5,970	-	0.0
Ext. Det.	82.28	1,355	7,324	1,355	78.4
	82.50	1,114	8,439	2,469	133.8
2-Year	82.89	2,082	10,521	4,551	196.8
	83.00	676	11,197	5,227	211.2
5-Year	83.30	1,900	13,097	7,127	246.2
	83.50	1,196	14,293	8,323	267.0
	84.00	3,150	17,442	11,473	313.1
100-Year	84.50	3,625	21,068	15,098	353.1
	84.70	1,505	22,574	16,603	367.9
Top	85.00	2,280	24,853	18,883	389.1

Table 4.8.2: Pond 2 Stage-Storage-Discharge Table (Lower Cell)

Stage	Elevation (m)	Volume (m^3)			Release Rate (L/s)		
		Stage	Total	Active	130mm Orifice INV=79.50	360mm Orifice INV=80.50	Total
Bottom	78.00	-	-		0.0	0.0	0.0
	78.50	1,817	1,817		0.0	0.0	0.0
	79.00	2,121	3,939		0.0	0.0	0.0
Perm. Pool	79.50	2,470	6,409	-	0.0	0.0	0.0
Ext. Det.	79.82	1,762	8,171	1,762	18.1	0.0	18.1
	80.00	1,041	9,212	2,803	23.7	0.0	23.7
	80.50	3,067	12,278	5,870	34.7	0.0	34.7
2-Year	80.87	2,437	14,716	8,307	41.0	119.9	160.9
	81.00	891	15,606	9,198	43.0	155.6	198.5
5-Year	81.11	768	16,374	9,966	44.6	180.3	224.9
	81.50	2,825	19,199	12,791	49.9	249.0	298.9
100-Year	81.98	3,702	22,902	16,493	55.7	313.6	369.3
	82.00	160	23,061	16,653	56.0	316.0	371.9

5.0 SHIRLEY'S BROOK NORTHWEST BRANCH TRIBUTARY 2

Shirley's Brook Northwest Branch Tributary 2 runs through the northwest quadrant of the KNUEA, and will be impacted by the development of the site. The following subsections outline the proposed changes and approvals requirements.

5.1 Channel Re-Alignment & Enhancement

The Draft Plan incorporates the planned re-alignment and enhancement of Tributary 2 through the site following geomorphic principles for naturalised channels. The concept and feasibility of the proposed re-alignment have already been demonstrated as part of the Kanata North EMP. Based on the EMP recommendations, a protected 40m wide corridor will be provided for Tributary 2 through the KNUEA. The proposed alignment is shown on the Engineering Drawings. Further details will be provided at the detailed design stage.

5.2 Aquatic Habitat Features

The Kanata North EMP identified new habitat enhancement and compensation features to be created within the protected stream corridors to compensate for the potential impacts on Blanding's Turtle habitat resulting from development of the KNUEA. To simplify the detailed design process, the EMP specifies the number and type of habitat features recommended for each quadrant of the KNUEA in order to achieve an overall benefit.

Based on the recommendations of the EMP and subject to final approval from MNR, the following aquatic habitat features will be incorporated into the design of the realigned Tributary 2 through the northwest quadrant:

- Deep Pools (x2)
- Artificial Nesting Areas (x2)
- Shallow Pans (x3)
- Deep Channel Pockets (x5)

5.3 Floodplain Mapping

Shirley's Brook Northwest Branch Tributary 2 is currently outside the limits of the City of Ottawa Floodplain mapping overlay. The Kanata North EMP included a hydrologic and hydraulic analysis of Tributary 2, which was used to evaluate the 100-year flood plain limits through the KNUEA under both existing and post-development conditions.

The post-development floodplain mapping included in the EMP is based on the proposed channel re-alignment and demonstrates that the 100-year floodplain will be confined within the protected 40m corridor, assuming that flows from the KNUEA are controlled to pre-development levels by the proposed SWM facilities.

MVCA Floodplain Mapping Update (December 2017)

MVCA has recently completed an updated flood plain mapping study of Shirley's Brook with funding and in cooperation with the City of Ottawa to reflect planned future development in the watershed. The MVCA study was completed in December 2017 and has been approved by the Board of Directors. The City's flood plain plan overlay has not yet been updated to reflect the updated MVCA mapping.

The MVCA study was completed in accordance with the *Technical Guide for River and Stream Systems: Flooding Hazard Limit* (MNR, 2002), which includes the following statements regarding stormwater management ponds and flood plain studies:

> *"Section 3 – Land Use: Where stormwater management facilities, existing or future, can affect the magnitude and/or timing of the flows, the cumulative effects of these structures should be incorporated in the flood plain studies."*
>
> *"Section 4.6 – Stormwater Management Ponds: Stormwater management facilities may not be used to provide any reduction in flood flows"*

With regard to the planned development of the KNUEA, the MVCA have interpreted the above statements from the MNR technical guide as follows:

> *"To include the attenuation impacts of existing or potential future SWM facilities in the delineation of the Regulatory (1:100 year) flood line, the MVCA must be confident that any changes to the configuration of the outlet will require a prior approval of the Conservation Authority (i.e. the facility outlet is within the Regulation Limit) or if the facility is breached and/or overtopped there will still be attenuation of flow in the context of the main Shirley's Brook channel".*

The design flows used in the MVCA flood plain mapping represent future development conditions in the water (including full build-out of the KNUEA lands) but do not account for the flow attenuation provided by the planned KNUEA stormwater management facilities. Consequently, the future flows are significantly higher than existing conditions, resulting in a much more extensive flood plain for Tributary 2, particularly upstream of March Road where the existing culvert does not have the capacity to convey the uncontrolled post-development flows, resulting in a spill across March Road.

The MVCA flood plain mapping will be updated to reflect the proposed re-alignment of Shirley's Brook Tributary 2 and the proposed SWM facility once the MVCA are satisfied with the designs and have confirmation that any changes to the configuration of the pond and/or the outlet will require approval from MVCA.

Once the SWM facilities have been added to the MVCA model, it is anticipated that the flood plain mapping for Tributary 2 will closely match the mapping provided in the EMP. The timing and approvals requirements will be confirmed as part of the detailed design.

5.4 Watercourse Crossings

<u>Culverts</u>

There are two road crossings of Tributary 2 within the northwest quadrant of the KNUEA. The proposed culvert sizes were determined as part of the EMP. The culverts will be designed to provide conveyance of the design flows, as well as passage for fish and turtles. The culvert designs will be confirmed at the detailed design stage:

- The crossing at Street '4' will consist of an 1800mm x 1200m concrete box culvert and will include a watermain crossing underneath the culvert. Refer to Drawing **116132-CRK2-DRAFT** in **Appendix F**.
- The crossing at Street '12' will consist of an 1800mm x 1200mm concrete box culvert and will include storm, sanitary and watermain crossings underneath the culvert. Refer to Drawing **116132-CRK3-DRAFT** in **Appendix F**.

Storm Sewer Crossing

In addition to the two road crossings, a separate storm sewer crossing of Tributary 2 is required to convey storm runoff from Street '10' to the lower cell of Pond 1. The proposed alignment and sizing of this crossing can be seen on Drawing **116132-SWM2**.

The proposed sewer and watermain crossings will require excavation into the bedrock. At the detailed design stage, the geotechnical consultant will review the crossing details and provide recommendations for clay seals and/or other measures to ensure that the crossing trenches are hydraulically isolated from the watercourse.

5.5 SWM Facility

Controlled outflows from the proposed SWM facility will outlet into Tributary 2 via at March Road. The conceptual design includes an outlet storm sewer connecting to the existing 1800mm x 1200mm box culvert underneath March Road. Cross-sections showing the proposed alignment and elevation of Tributary 2 adjacent to the proposed SWM facility are provided on Drawing **116132-SWM2**.

5.6 Additional Approvals

The proposed realignment and enhancement of Tributary 2 is an integral part of the proposed Draft Plan and will require approval from the City of Ottawa. The proposed works within the watercourse will also require the following permits and approvals:

Endangered Species Act (MNR)

The proposed habitat enhancement features in Tributary 2 will provide compensation for the potential impacts on Blanding's Turtle habitat resulting from development. An application for an *Overall Benefit Permit* (OBP) under clause 17(2)(c) of the Endangered Species Act will be submitted to MNR. The MNR approval process will run concurrently with the Draft Plan approval and final approval will be required prior to registration.

Conservation Authorities Act (MVCA)

The proposed channel realignment works are within the regulation limits of the MVCA and will require a permit under Ontario Regulation 153/06 *"Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses".* A permit application will be filed with MVCA at the detailed design stage.

Fisheries Act (DFO)

The realignment of Tributary 2 will require alteration to fish habitat. As outlined in the EIS (McKinley Environmental, June 2018), the watercourse does not appear to provide significant habitat for recreational or commercial fisheries, and the proposed realignment and enhancement is anticipated to result in a net improvement in the quality of fish habitat.

It is anticipated that an authorization under the Fisheries Act is unlikely to be required. However, Department of Fisheries and Oceans (DFO) guidelines are such that the proposed works on Tributary 2 will require submission of a review request to DFO.

6.0 SANITARY SERVICING

6.1 Introduction

As indicated previously, the subject development is within the City of Ottawa West Urban Community (former City of Kanata). This area is serviced by local gravity sewers and pump stations that discharge to a regional trunk system that carries flows to the Robert O. Pickard Environmental Centre for treatment of wastewater.

There are several trunk sanitary sewers and pump stations servicing the West Urban Community including the East March Trunk, Marchwood Trunk, Kanata Lakes Trunk, North Kanata Trunk, March Pump Station, and the Briar Ridge Pump Station. These all drain into the Watt's Creek Relief Sewer that provides service to the entire West Urban Community and flows into the Acres Road Pump Station. An Existing Wastewater Collection System Schematic (Figure 2) from the 2013 Infrastructure Master Plan and Figure 6.2 from the MSS and supplementary information is included in **Appendix C** for reference.

The ultimate outlet for the Kanata North Urban Expansion Area is the existing March Pump Station. As requested by the City during the CDP process, the MSS provided sanitary flow analysis up to the March Pump Station and has established sufficient capacity including the entire KNUEA.

For the purposes of this report, sanitary flow analysis will focus on the CU development and the contributing flows to the March Road Trunk sewer to be completed as part of preferred Servicing Option 2 as indicated in the MSS, detailed in **Section 6.2.1.**

The CU development will be serviced internally by a combination of 200mm and 250mm gravity sanitary sewers that will outlet to March Road.

Future and existing lands adjacent to March Road have been accounted for in the onsite servicing. A sanitary system will service lands north of Street 1 and a separate sanitary system will service future and existing lands along Street 10.

6.1.1 Future Block 312 and Future Claridge Lands

These lands have been conceptually serviced with 200mm diameter sanitary sewer. An allowance has been accounted for in the onsite sanitary system to accommodate sanitary flows and infiltration flows from these lands, however, they are not part of the CU Development Inc. application. Conceptually the sanitary flows from these lands will ultimately be conveyed through the Park and Ride and connect to the 250mm sanitary sewer along Street 1.

6.1.2 Existing St. Isidore Church, St. Isidore School and Cemetery

St. Isidore school and St. Isidore church are currently serviced by individual septic systems. An allowance has been accounted for in the onsite sanitary system to accommodate sanitary flows and infiltration flows (including cemetery) from these lands, however, they are not part of the CU Development Inc. application. Conceptually the sanitary flows from these lands will ultimately be conveyed through the Park and Ride and connect to the 250mm sanitary sewer along Street 1.

6.1.3 Existing Residential Lands, 1035 and 1015 March Road

Existing residential dwellings are located on 1035 and 1015 March Road. A portion of 1015 March Road is planned to become part of the future school site. An allowance has been accounted for in the onsite sanitary system to accommodate sanitary flows and infiltration flows from these lands, however, they are not part of the CU Development Inc. application.

6.1.4 Future Block 305, School Site

These lands have been conceptually serviced with 200mm diameter sanitary sewer that runs down Street 10. A significant drop in grade occurs from Street 12 to March Road. To limit the depth of sanitary sewers on site, these lands have been conceptually serviced with separate sanitary system consisting of a 200mm sanitary sewer from Street 12 to March Road following the road grade. However, the connection to March Road is dependant on land acquisition from the 1015 March Road property. If the land is not acquired, an alternative layout will connect the 200mm sanitary sewer to Street 12 to service future Block 305. The future school site is currently part of 1015 March Road. An allowance has been accounted for in the onsite sanitary system to accommodate sanitary flows and infiltration flows from these lands, however, they are not part of the CU Development Inc. application.

Refer to **Figure 8** – Proposed Sanitary Layout for details.

6.2 Proposed Offsite Sanitary Infrastructure

6.2.1 Preferred Servicing Option for CU Development Lands (KNUEA)

The MSS for the KNUEA explored six off-site sanitary servicing alternatives to determine the most feasible/viable option to service the development. The preferred option from the KNUEA MSS was Option 2. This servicing option is shown on Figure 6.6.1.1 provided in **Appendix C**.

Option 2 in the KNUEA MSS indicated that the most viable option to provide a sanitary sewer outlet for the CU development is the existing 750mm East March Trunk Sewer (EMT). The connection point to the East March Trunk Sewer is proposed at the intersection of Shirley's Brook Drive and Sandhill Road just east of March Road. The East March Trunk Sewer and its catchment areas are shown on Figure 6.4.1 from the KNUEA MSS, provided in **Appendix C**.

As part of Option 2 the area west of March Road and west of the ridge, which includes the CU development, will be serviced by a new gravity sanitary sewer along March Road to Shirley's Brook Drive. This servicing option will require upgrading an existing 375mm diameter sanitary sewer along Shirley's Brook Drive to a 600mm diameter to be able to accommodate the increased flows and provide a lower outlet elevation.

Option 2 also includes upgrades to the Briar Ridge Pump Station (BRPS) and the Rail Corridor trunk sewer, but are only relevant to the northeast and southeast quadrants of the KNUEA. **Table 6.2.1** is a summary of the works required for Option 2 that are relevant for the CU development.

Table 6.2.1: Summary of Works Required for Option 2 – CU Development

Criteria	Option 2
New March Road Sewer	Gravity 600mmø
Upgrades to Shirley's Brook Trunk Sewer (from 375mmø)	201m to 600mmø

The upgrade to the Shirley's Brook Drive trunk sewer and the construction of the March Road sanitary trunk sewer is currently being designed and will be constructed as part of a Front Ending Agreement with the City of Ottawa. The majority of the site will outlet to the March Road trunk sewer at the Street 1 / March Road intersection with a small portion of Street 10 (north of Street 12) outletting to a future connection at the Street 10 / March Road intersection as per the KNUEA MSS.

6.3 Proposed Onsite Sanitary Servicing

The site serviceability and stormwater management report builds on the preliminary storm servicing design provided in the MSS, and conforms to the recommendations from the EMP, the *Ottawa Sewer Design Guidelines* (October 2012) and technical bulletin *ISTB-2018-01* (March 2018). It also addresses the correspondence received from the City of Ottawa regarding amendments to the MSS.

6.3.1 Onsite Servicing

<u>*Design Criteria*</u>

Sanitary sewers, for the proposed development, are designed based on criteria established by the City of Ottawa in the following documents:

- Section 4.0 of the *City of Ottawa Sewer Design Guidelines* (October 2012).
- Technical Bulletin ISTB-2018-01 from the City of Ottawa regarding new sanitary design parameters. Design parameters from this technical bulletin will supersede values within the Sewer Design Guidelines (2012).

The resulting design parameters are summarized as follows:

- Commercial/Institutional flows = 28,000 L/ha/day
- Industrial flows = 35,000 L/ha/day
- Population Flow = 280 L/capita/day
- Infiltration = 0.33 L/s/ha
- Single Family Home = 3.4 persons per unit
- Townhouse = 2.7 persons per unit
- Apartment = 1.8 persons per unit
- Maximum Residential Peak Factor = 4.0
- Harmon Correction Factor = 0.8
- Commercial/Institutional Peak Factor:
    - 1.0, if area is <20% of total contributing area

  - 1.5, if area is >20% of total contributing area
- Industrial Peak Factor = per MOE/City of Ottawa graph (included in **Appendix C**)
- Minimum velocity = 0.6m/s
- Manning's n = 0.013

Sanitary Alignment

The sanitary sewer network was designed to minimize crossings of the sanitary sewer under Tributary 2. Where a crossing is proposed, there will be rock excavation and will require a clay cap to prevent surface water in the tributary from migrating into the underlying trenches. Conceptual cross sections have been provided in **Appendix F (116132-CRK2-DRAFT and CRK3-DRAFT)** and will be further refined at the detailed design stage.

As illustrated in the geotechnical report, there is significant bedrock throughout the site. Where possible, the trunk sanitary sewer network was designed to reduce rock removal. A review was also conducted of the proposed sanitary trunk sewer network with respect to other proposed trunk networks such as storm sewer and watermain to avoid sewer conflicts. The trunk sewer network for the proposed development is shown on **Figure 8** – Proposed Sanitary Layout and the off-site sewers are shown on Figure 6.6.1.1 from the KNUEA MSS, provided in **Appendix C**.

Sanitary Flows

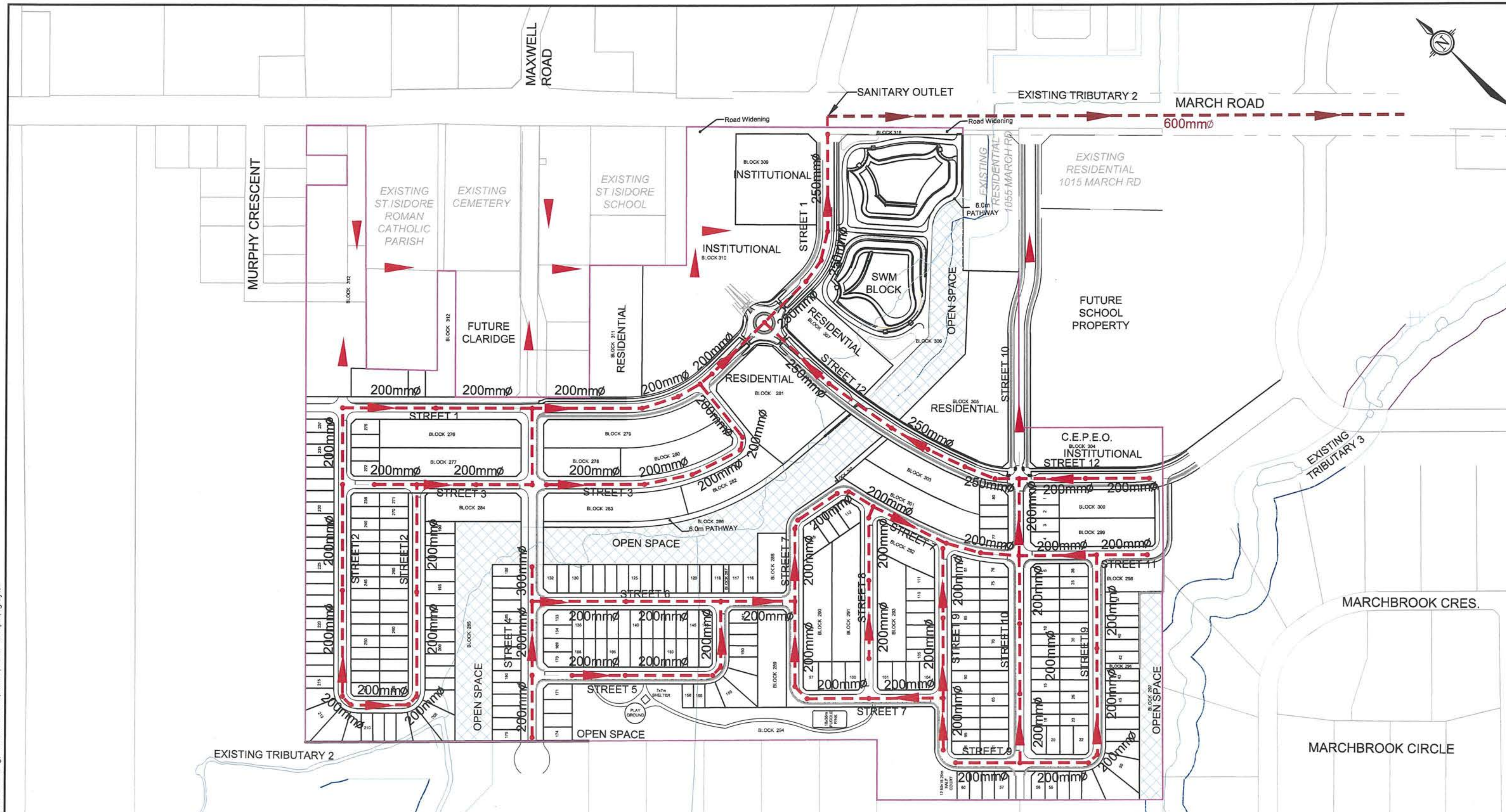
The peak sanitary flows for the CU development quadrant within the KNUEA are 45.44 L/s, as summarized below in **Table 6.3.1.**

Table 6.3.1: Proposed CU Development Sanitary Flows (includes existing lands west of March Road in Northwest Quadrant)

Development Condition	Pop.	Area (ha)	Peak Res. / Inst. Flow(1) (L/s)	Peak Ext. Flow (L/s)	Peak Design Flow (L/s)
Outlet 1 – Street 1 and March Road					
Residential	2296	39.66	22.55	13.09	35.64
Institutional/Commercial/Mixed Use		5.17	1.68	1.71	3.39
Park		2.13	0.09	0.70	0.79
Outlet 2 – Street 10 and March Road					
Residential	133	2.20	1.54	0.72	2.26
Institutional/Commercial/Mixed Use		5.15	1.66	1.70	3.36
Total Flow (Outlet 1 and 2)	**2429**	**54.31**	**27.52**	**17.92**	**45.44**

(1) Peaking Factor for residential and institutional/commercial areas as per Section 6.5.1.1

As demonstrated in the KNUEA MSS report, Table C-6b sanitary sewer design sheet, the calculated sanitary flow was 62.50 L/s from the CU development property (Areas W1-W9). Refer to **Appendix C** for design sheet excerpts (Table C-6b) and sanitary drainage area plan excerpt (Drawing 112117-SAN1). Overall, the sanitary flows generated from the CU



LEGEND

PROPOSED DEVELOPMENT

PROPOSED SANITARY SEWER C/W FLOW DIRECTION

PROPOSED FUTURE SANITARY SEWER FLOW DIRECTION

SANITARY SEWER C/W FLOW DIRECTION TO BE CONSTRUCTED AS PART OF A FRONT ENDING AGREEMENT WITH THE CITY OF OTTAWA

NOVATECH

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CITY OF OTTAWA
CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

PROPOSED SANITARY LAYOUT

SCALE	DATE	JOB	FIGURE
1 : 4000	JUNE 2018	116132	FIGURE 8

M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 8 - SAN.dwg, FIGURE 8 -SAN, Jul 24, 2018 - 3:14pm, rgraylon development quadrant within the KNUEA have decreased approximately 27.3% from the estimated flows from the KNUEA MSS.

The detailed drainage areas are shown on the attached Sanitary Drainage Area Plan (**116132-SAN**) included in **Appendix F**. Design sheets can be found in **Appendix C.**

7.0 WATER DISTRIBUTION

7.1 Existing Water Infrastructure

Currently, the KNUEA is located at the north end of Kanata in the West Urban Community (WUC). The KNUEA is bounded by residential estate lots and farmland lots to the northeast and northwest. These properties are serviced by individual/private wells. There are existing urban residential developments to the southeast and southwest of the KNUEA. These properties are within the 2Ww pressure zone. Refer to excerpts from the 2013 IMP in **Appendix D**. The Morgan's Grant pressure zone is approximately 250m to the southwest. The Britannia Filtration Plant and Pumping Station services this community from a large diameter feedermain routed through Bells Corners. A second feedermain was recently constructed through Crystal Beach and the NCC Greenbelt to improve system reliability and capacity. Assisted by the Carlington Heights Pumping Station, these two pumping facilities supply water to the WUC.

A north-south feedermain generally follows the Teron Road / March Road corridor towards North Kanata. Between Shirley's Brook Drive and Klondike Road, the water main is reduced to a 400mm pipe and continues north to the Zone 2Ww boundary at Old Carp Road.

The Morgan's Grant Pressure Zone is an isolated parcel located west of March Road and south of the Study Area. There is a small local pump station at the intersection of Klondike Road and Wimbledon Way to meet pressure servicing requirements in this area. The station is needed due to local high topography with ground elevations between 91m and 109m. The Morgan's Grant Pump Station (MGPS) operates with discharge HGL values from 138m to 151m.

An existing water distribution schematic taken from the 2013 Infrastructure Master Plan is attached in **Appendix D**, and depicts a skeletonized system for the entire City of Ottawa. Most of the features discussed above can be identified on this high-level drawing. Figure 3 from Stantec's '*Kanata North Urban Expansion Potable Water Assessment Report' is* included in **Appendix D** and highlights the North Kanata area and depicts the Morgan's Grant Pressure Zone and part of the 2Ww Pressure Zone, in relation to the Study Area.

7.2 Future Planned Water Infrastructure

The City has identified several projects in the 2013 Infrastructure Master Plan to reinforce the current water distribution system. Specific to the WUC, some of these projects will directly affect the KNUEA, and have been listed below:

March Road Pipe Upgrades: March Road Watermain is predominantly a 600mm feedermain system with several short sections of 400mm pipe. These smaller pipe segments restrict capacity, and reduce system pressure in North Kanata. Replacement of the undersized pipes with 600mm conduit is proposed and construction is expected between 2019-2024 in the 2013 IMP. The timing of these upgrades is based on demand due to growth.

Morgan's Grant Secondary Supply and PRV: Objective of this project is to provide a secondary link between the 3W pressure zone and the Morgan's Grant pressure zone. This infrastructure would improve system reliability in the event of mechanical failure at the MGPS. Staff advises this project has not been scheduled. This project is only relevant to the Study Area if it's determined a connection is needed to this pressure zone.

Glen Cairn Pump Station Upgrades & Reservoir Expansion: Two distinct projects. City staff advises some pump improvements were done recently at the same time as the Campeau Drive facility works. Additional upgrades are expected in the future, the timing and need for which will be strongly linked to growth in the WUC.

No work is currently scheduled on the reservoir expansion. City staff has indicated work on the reservoir will be needed around 2019.

7.3 Recommendations in the MSS

Stantec Consulting was retained to analyze the regional-level impact to the water distribution system associated with development of the Kanata North Urban Expansion Area. Their analysis and findings are presented subsequently. Stantec's '*Kanata North Urban Expansion Potable Water Assessment Report*' is contained in **Appendix D** for reference.

The preferred servicing option is to service the development through connection to the Zone 2Ww pressure distribution zone as per the Kanata North CDP (June 28, 2016) based on recommendations from Stantec's report. It is preferable to connect to the Zone 2Ww pressure zone since it is at comparable elevations to the subject property. This will allow for servicing of all of the development area to be within tolerable servicing limits. Pressure reducing valves would be required if the development were serviced from the Morgan's Grant Pressure Zone because of excessively high pressures within the watermain system for the majority of the development. A full list of recommendations can be found in **Appendix D**.

Based on the modelling completed by Stantec, the following recommendations were made:

- The Kanata North Urban Expansion should be serviced entirely from the Zone 2Ww pressure zone due to topography and location.
- Site grading should not exceed 93m to maintain minimum pressures greater than 40 psi.
- Services installed in areas where the grade is less than 74m will need pressure reducing valves to keep the maximum pressure below 80 psi.
- To improve minimum pressures, two sections of off-site 406mm diameter watermain could be upgraded to reduce headloss from full buildout demands. In particular the upgrade along March Road and Solandt Drive would be required prior to any development within the KNUEA above the 93m elevation.
- A secondary connection from Old Carp Road is the preferred secondary connection over the Celtic Ridge connection. However, either connection will adequately service the development.

As per Section 7.4 in the MSS, the City agreed to a maximum of 200 units can be constructed and serviced with a single watermain connection along March Road. The CU development will ultimately have more than 200 units constructed, therefore a secondary connection will be required for the CU development. Since the timing of adjacent landowners were unknown at the time, the MSS stated that a second watermain could be constructed within the March Road ROW on an interim basis to provide a loop system for reliability.

7.4 Proposed Watermain System

7.4.1 Background

The site serviceability and stormwater management report builds on the preliminary storm servicing design provided in the MSS, and conforms to the recommendations from the EMP, the *Ottawa Sewer Design Guidelines* (October 2012) and technical bulletin *ISTB-2018-02* (March 2018). It also addresses the correspondence received from the City of Ottawa regarding amendments to the MSS.

The ultimate connection locations to the 2Ww pressure distribution zone are consistent with Stantec's report and the MSS. It is proposed to connect and extend the existing 406mm diameter watermain at the March Road / Maxwell Bridge Road intersection and provide a secondary connection to the existing 300mm watermain at the Old Carp Road / Halton Terrace intersection as per the MSS. Figure 2-1 from the Stantec Report, provided in **Appendix D**, shows the preliminary proposed watermain system and connection points to the existing system.

The CU development will proceed prior to adjacent properties within the KNUEA; therefore, it is proposed to construct a twin watermain system from the proposed connection points along March Road to service the development. The 400mm watermain extension will continue to the Street 1 intersection. From Halton Terrace a 300mm watermain will be twinned with the 400mm watermain down March Road approximately 580m to a future collector roadway within the Brigil site (southwest quadrant of the KNUEA). The 300mm will continue through the Brigil site and connect to Street 12 at the CU development to provide a loop system. The 300mm watermain through the Brigil site is consistent with the ultimate size and layout as per Stantec's Potable Water Assessment Report and the MSS. There have been discussions with Brigil about the 300mm watermain through their land and they support the approach and timing of the project.

It is our understanding that future plan of subdivision applications from adjacent landowners (refer to Section 1.2) within the KNUEA may be forthcoming. Timing for these applications is currently unknown but may progress concurrently with the CU development. During detailed design, if adjacent landowners are progressing with the CU Development alternative looping may be explored without the use of the twinning 300mm watermain along March Road. For the purposes of this report, a twinned watermain system along March Road was considered for the CU Development. The 300mm diameter watermain is required to meet fireflow and domestic demand for the CU Development.

Future and existing lands adjacent to March Road have been accounted for in the onsite servicing. Conceptually, a watermain system will service lands north of Street 1 and a watermain system will service future and existing lands along Street 10.

7.4.2 Future Block 312 and Future Claridge Lands

These lands have been conceptually serviced with a conservative loop system with a dead end to future Block 312, which represents a worst case scenario for this area. An allowance has been accounted for in the onsite watermain system to accommodate the hydraulic demand from these lands, however, they will be subject to a separate site plan or plan of subdivision application.

7.4.3 Existing St. Isidore Church and St. Isidore School

These lands have been conceptually serviced with a conservative loop system with one dead end system to St. Ididore church and another to St. Isidore School, which represents the worst case scenario for this area. An allowance has been accounted for in the onsite watermain system to accommodate the demand from these lands, however, they will be subject to a separate site plan or plan of subdivision application.

7.4.4 Existing Residential Lands, 1035 and 1015 March Road

Existing residential dwellings are located on 1035 and 1015 March Road. A portion of 1015 March Road is planned to become part of the future school site. These lands have been conceptually serviced with a 200mm watermain that will connect from Street 12 to the March Road 400mm diameter watermain. An allowance has been accounted for in the onsite watermain system to accommodate the demand from these lands, however, they will be subject to a separate site plan or plan of subdivision application.

7.4.5 Future Block 305, School Site

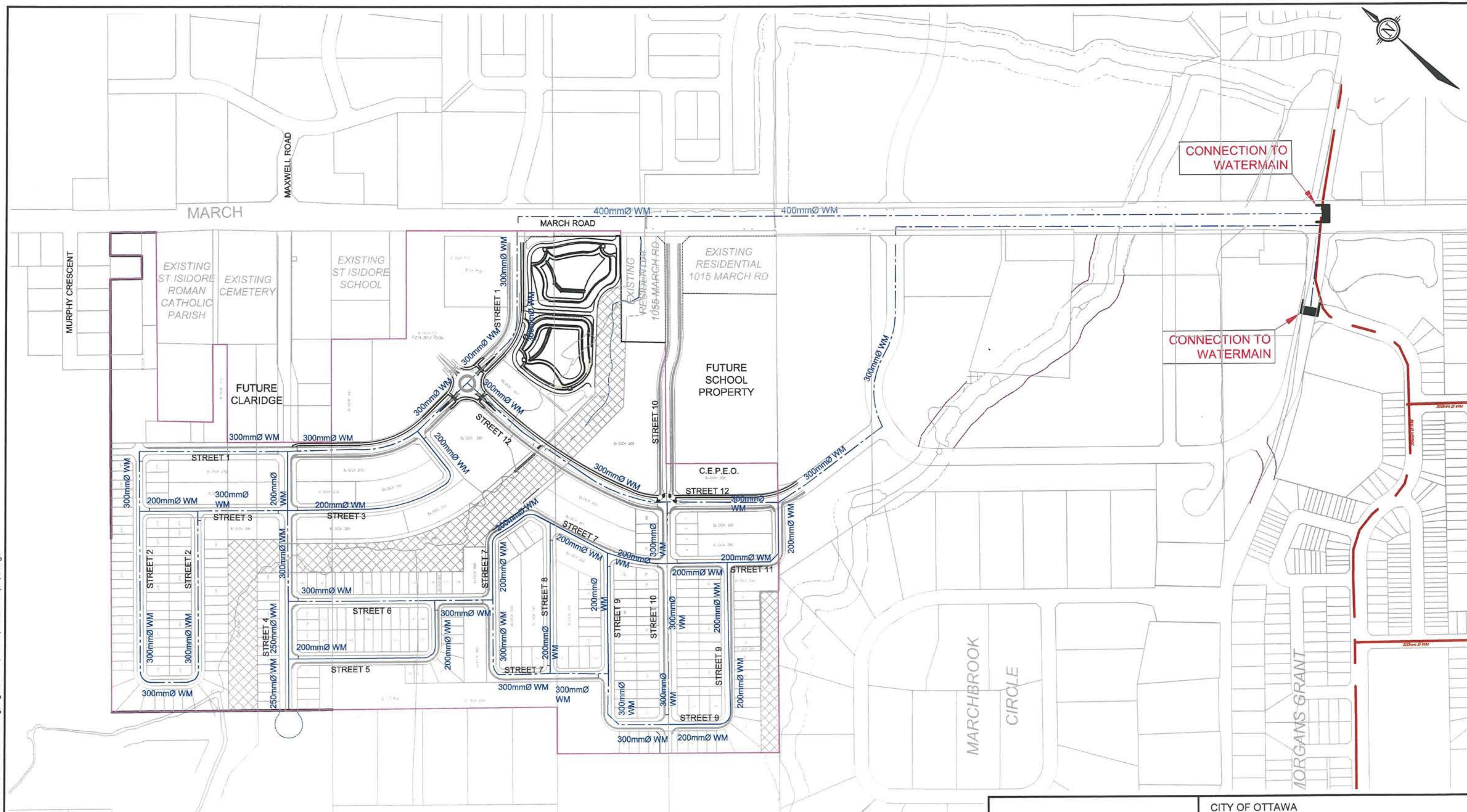
These lands have been conceptually serviced with a 200mm watermain that will connect from Street 12 to the March Road 400mm diameter watermain. However, the connection to March Road is dependant on land acquisition from the 1015 March Road property. If the land is not acquired, a dead end watermain will service future Block 305 via a 200mm watermain along Street 10. An allowance has been accounted for in the onsite watermain system to accommodate the demand from these lands, however, they will be subject to a separate site plan or plan of subdivision application.

Refer to **Fig-WM1 or Fig-WM2** – Watermain Network Node Locations in **Appendix D** for details.

Once building locations, watermain layout and fireflow details within the future Blocks and existing lands are finalized, further analysis may be required to confirm proposed watermain layout/system has sufficient pressures under all operating conditions.

7.4.6 Proposed Layout

It is proposed to service the CU development internally with a combination of 300mm (as per Stantec's recommendations) 200mm, and localized areas of 250mm pipe. **Figure 9** – Proposed Watermain Layout, highlights the proposed works, connection points and internal looping. The 300mm watermain loop is part of the backbone system servicing the KNUEA, which was predetermined by Stantec's Potable Water Assessment. The layout on site is consistent with Stantec's report. The remainder of the site will be serviced by 200mm watermain with localized 250mm watermain. The localized 250mm watermain is required to primarily service dead end systems located on Street 4, Block 312 and adjacent to St. Isidore School. The dead end on Street 4 was identified in the Stantec's Potable Water Assessment as a potential connection point to lands located west of the KNUEA that may be developed in the future. This dead end was also identified to have a fireflow capacity less than the residential capped fireflow of 167 L/s with a 200mm watermain. Conservative layouts (dead ends) have been applied to future Block 312 and future connection to St. Isidore School to provide a worst case scenarios for these areas. Once building layout, watermain layout and fireflow details are finalized during detailed design, area specific fireflows can be applied to determine if the 250mm watermain can be downsized to a 200mm watermain for each location.



LEGEND

- PROPERTY LINE
- PROPOSED BACKBONE WATERMAIN AS PER KANATA NORTH MASTER SERVICING STUDY - COMPLETED BY NOVATECH, JUNE 28, 2016 (WATER ANALYSIS BY STANTEC)
- PROPOSED LOCAL WATERMAIN AND ID NUMBER

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CITY OF OTTAWA
CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

PROPOSED WATERMAIN LAYOUT

SCALE 1 : 5000 (0 50 100 150 200)

DATE	JOB	FIGURE
JUNE 2018	116132	FIGURE 9

M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 9 - WM LAYOUT.dwg, Figure 9-WM, Jun 11, 2018 - 4:51pm, szorgel

There are some watermain crossings proposed under Tributaries 2 and 3. The proposed trenches for these crossings will be in rock and will require a clay cap to prevent surface water in the tributaries from migrating into the underlying trenches. Conceptual cross sections have been provided in **Appendix F (116132-CRK2-DRAFT and CRK3-DRAFT)** and will be further refined at the detailed design stage.

All existing watermain boundary conditions were provided by the City of Ottawa and are included in **Appendix D**.

7.5 Watermain Design Criteria

Typically, boundary conditions take into account existing demand (system level) on the watermain system and the proposed demand (as per the City of Ottawa Water Distribution Guidelines) from a subject site. The CU development is part of the larger KNUEA development with adjacent landowners separating the existing watermain system and the CU Development. It is our understanding that future plan of subdivision applications from adjacent landowners (refer to Section 1.2) within the KNUEA may be forthcoming. Timing for these applications is currently unknown. Therefore, two separate approaches have been taken to ensure the lands that are part of the KNUEA have been accounted for as part of the overall watermain system as per Stantec's Potable Water Assessment and the CU Development has been designed as per the City of Ottawa Guidelines.

7.5.1 Scenario 1 – Overall KNUEA System Level

- The purpose is to demonstrate that any changes to the CU development (population, local street WM layout, etc.) will have no adverse effects on the existing and proposed watermain system remains consistent with Stantec's Potable Water Assessment by taking into account watermain demand from adjacent sites within the KNUEA.
    - The system level demand and the design criteria for all lands within the KNUEA is consistent with Stantec's Potable Water Assessment (March 28, 2016).
    - The system level demand from adjacent properties considered as per Stantec's report.
    - The feedermain (300mm) system within the CU development is consistent with Stantec's report.
    - The local watermain configuration within the CU development is included to ensure acceptable pressures for all pipe runs under all operating conditions.
    - Population within the CU development revised as per the latest draft plan.
    - Refer to Figure-WM1 (**Appendix D**) – Watermain Network Node Locations for details.

<u>*Demand Values:*</u>

- Single Demand = 180L/capita/day
- Street Town Demand = 198L/capita/day
- Multi-Unit Town Demand = 198L/capita/day
- Apartment Demand = 219L/capita/day

- Residential Max Day = 1.33 x Avg. Day
- Residential Peak Hour = 1.70 x Max. Day
- Commercial/Institutional Demand = 50,000L/gross ha/day
- Commercial/Institutional Max Day = 1.33 x Avg. Day
- Commercial/Institutional Peak Hour = 1.70 x Max. Day
- Population Density
  - 3.4 persons/unit (Single)
  - 2.7 persons/unit (Street Town, Multi-Unit Town)
  - 1.8 persons/unit (Apartment)
- Fireflows
  - 167.0 L/s (As per Stantec report and fireflow cap as per Technical Bulletin ISDTB-2014-02).
  - Calculation method as per Technical Bulletin ISTB-2018-02.

7.5.2 Scenario 2 – CU Development Only (City Guideline Demands)

- The purpose is to demonstrate that the existing watermain system can accommodate the demand associated with the proposed CU development and existing lands within the northwest quadrant using the City of Ottawa Design Guidelines.
  - The demand for the subject site is as per City of Ottawa Guidelines – Water Distribution Systems.
  - Only the demand from the CU development are considered (typical subdivision analysis).
  - Feedermain system within the CU development is consistent with Stantec's report.
  - Local watermain configuration within the CU development has been updated and analyzed to ensure acceptable pressures under all operating conditions.
  - Population within the CU development revised as per the latest draft plan.
  - Refer to Figure-WM2 (**Appendix D**) – Watermain Network Node Locations for details.

<u>*Demand Values:*</u>

- Residential Demand = 350L/capital/day
- Residential Max Day = 2.5 x Avg. Day
- Residential Peak Hour = 2.2 x Max. Day
- Commercial/Institutional Demand = 50,000/gross ha/day
- Commercial/Institutional Max Day = 1.5 x Avg. Day
- Commercial/Institutional Peak Hour = 1.8 x Max. Day
- Population Density
  - 3.4 persons/unit (Single)
  - 2.7 persons/unit (Street Town, Multi-Unit Town)

    - 1.8 persons/unit (Apartment)
- Fireflows
    - 167.0 L/s (As per Stantec report and fireflow cap as per Technical Bulletin ISDTB-2014-02).
    - Calculation method as per Technical Bulletin ISTB-2018-02.

7.5.3 Design Criteria for Both Scenario 1 and 2

System Requirements

• Max. Pressure (Unoccupied Areas)	690 kPa (100 psi)
• Max. Pressure (Occupied Areas)	552 kPa (80 psi)
• Min. Pressure	276 kPa (40 psi) excluding fire flows
• Min. Pressure (Fire)	138 kPa (20 psi) including fire flows
• Max. Age (Quality)	192 hours (onsite)

Friction Factors:

• Watermain Size	C-Factor
• 200-250 mm	110
• 300-400 mm	120

Fireflow Analysis

Under the fireflow condition, the optional approach specified in Technical Bulletin ISTB-2018-02 was taken to analyze the watermain system. Fireflows were distributed to several hydrants located within 150m of the test property. A maximum of 5,700 L/s was given to hydrants located with 75m and a maximum of 3,800 L/s was given to hydrants located 75m - 150m. For dead-end locations, the same approach was taken as it is required in Technical Bulletin ISTB-2018-02.

7.6 Watermain Analysis

Hydraulic modelling of the CU development was completed using EPANET 2.0. EPANET is public domain software capable of modeling municipal water distribution systems by performing simulations of the water movement within a pressurized system.

7.6.1 Results – Scenario 1

Table 7.6.1 summarizes the watermain operating conditions during the high pressure, maximum daily demand and fire flow, and peak hour demands. Results of the hydraulic analysis are included in **Appendix D**. Refer to **Figure-WM1** – Watermain Network Node Locations for details about the node and pipe network in **Appendix D.**

Table 7.6.1: Water Analysis Summary – Scenario 1

Condition	Demand (L/s)	Min/Max Allowable Pressure (kPa/psi)	Min/Max Operating Pressure (kPa/psi)	Age (hrs)
High Pressure (Avg. Daily)	40.25	689.5/100 (Max)	467.0/67.7 (Max)	46.7
Maximum Daily Demand (c/w Fire Flow) All nodes unless noted below	53.57 (167)	137.9/20.0 (Min)	145.9/21.2 (Min) (Node N47-Future) 151.4/22.0 (Min) (Node N12-Onsite)	N/A
Peak Hour	91.72	275.8/40.0 (Min)	299.8/43.5 (Min)	N/A

The table above confirms the proposed watermain can service the proposed CU development during the high pressure and peak hour condition. The CU development can accommodate a fireflow of 167 L/s as per Stantec's Potable Water Assessment using a combination of 200mm, 300mm (as per Stantec's report) and localized 250mm diameter watermain. Once individual building details (footprint, building materials, exposure, etc.) have been finalized during detailed design, area specific fireflows will be applied throughout the site to determine whether the localized 250mm watermain can be downsized to a 200mm watermain. Refer to **Appendix D** for detailed hydraulic results. Maximum fireflows for high-density areas have also been indicated on **Figure-WM1** – Watermain Network Node Locations in **Appendix D.** All the results are based on current City of Ottawa watermain infrastructure and future upgrades as stated in Section 5.2 are not required based on the CU development demands.

7.6.2 Results – Scenario 2

Table 7.6.2 summarizes the watermain operating conditions during the high pressure, maximum daily demand and fire flow, and peak hour demands. Results of the hydraulic analysis are included in **Appendix D.** Refer to **Figure-WM2** – Watermain Network Node Locations for details about the node and pipe network in **Appendix D.**

Table 7.6.2: Water Analysis Summary – Scenario 2

Condition	Demand (L/s)	Min/Max Allowable Pressure (kPa/psi)	Min/Max Operating Pressure (kPa/psi)	Max. Age (hrs)
High Pressure (Avg. Daily)	13.65	689.5/100 (Max)	469.1/68.0 (Max)	51.0
Maximum Daily Demand (c/w Fire Flow) All nodes unless noted below	30.80 (167)	137.9/20.0 (Min)	151.7/22.0 (Min) (Node N47-Future) 157.8/22.9 (Min) (Node N12-Onsite)	N/A
Peak Hour	65.76	275.8/40.0 (Min)	333.3/48.3 (Min)	N/A

The table above confirms the proposed watermain can service the proposed development during the high pressure and peak hour condition. The development can accommodate a fireflow of 167 L/s as per Stantec's Potable Water Assessment using a combination of 200mm, 300mm (as per Stantec's report) and localized 250mm diameter watermain. Once individual building details (footprint, building materials, exposure, etc.) have been finalized during detailed design, area specific fireflows will be applied throughout the site to determine whether the localized 250mm watermain can be downsized to a 200mm watermain. Refer to **Appendix D** for detailed hydraulic results. Maximum fireflows for high-density areas have also been indicated on **Figure-WM2** – Watermain Network Node Locations in **Appendix D.** All the results are based on current City of Ottawa watermain infrastructure and future upgrades as stated in Section 5.2 are not required based on the CU development demands.

7.6.3 Deviations

Deviations from the City of Ottawa Design Guidelines – Water Distribution (2010) include:

- Isolation valves are to be located 2.0m away from the intersection, from the point where the projection of the property line intersects the watermain. This distance has been increased to accommodate intersection narrowing along the collector road to improve pedestrian crossings and to ensure no valve chamber is located under curb and located within the roadway. This occurs in the Street 10/Street 12 intersection.

8.0 NOISE

The analysis of the roadway traffic along March Road and on-site collector roads (Street 1, 10 and 12) indicates that the City of Ottawa's criteria for residential noise will be exceeded, primarily for units in close proximity to March Road and the collector roads. Attenuation measures are required and they may include the installation of a noise barrier, central air conditioning, forced air ventilation and/or a notice may be placed on title with regards to the noise levels to be expected.

The detailed results are included in the Noise Control Study. Refer to *Kanata North Urban Expansion Area, CU Developments Inc., Noise Control Feasibility Study, Novatech, July 23, 2018; Report No.: R-2018-080.*

9.0 UTILITY INFRASTRUCTURE

Select utility companies were circulated a copy of the KNUEA, along with a general description of the intended land use during the CDP process. The purpose of the circulation was to:

- Establish the limits of existing utility infrastructure near the study area; and,
- Identify any known constraints for extending utility services.

9.1 Hydro One

Hydro One protects an easement for an aerial transmission line that traverses the western edge of the Morgan's Grant community. The line crosses near the roadway intersection of Old Carp and Second Line, continuing generally in an east-west direction. This infrastructure is approximately 1km west of the KNUEA and will not be affected by development of the KNUEA. Hydro One does not service this area.

9.2 Hydro Ottawa

Hydro Ottawa provides service to this area. Pole mounted Hydro Ottawa infrastructure was recently upgraded on March Road between Klondike Road and Old Carp Road in conjunction with the City-initiated March Road widening. This is a 27kV aerial line located on the east side of March Road, that continues northward past the KNUEA. The existing pole line along the east side of March Road will require upgrading to service this size of development. Taller poles with two circuits and larger conductors would be required back to Klondike Road.

9.3 Enbridge Gas

Enbridge reports a 6" high-pressure gas main is located on the west side of March Road in the vicinity of KNUEA. This is the service main for Constance Bay, and is well suited to service the study area lands. Some pressure reducing stations would be installed to service the development otherwise there are no known constraints for gas service.

9.4 Communications

Bell Canada has fibre-optic cable at the intersection of March Road and Old Carp Road. This existing infrastructure would require reinforcing to service the KNUEA. The existing infrastructure would be extended north on March Road with a number of splitting points within the development.

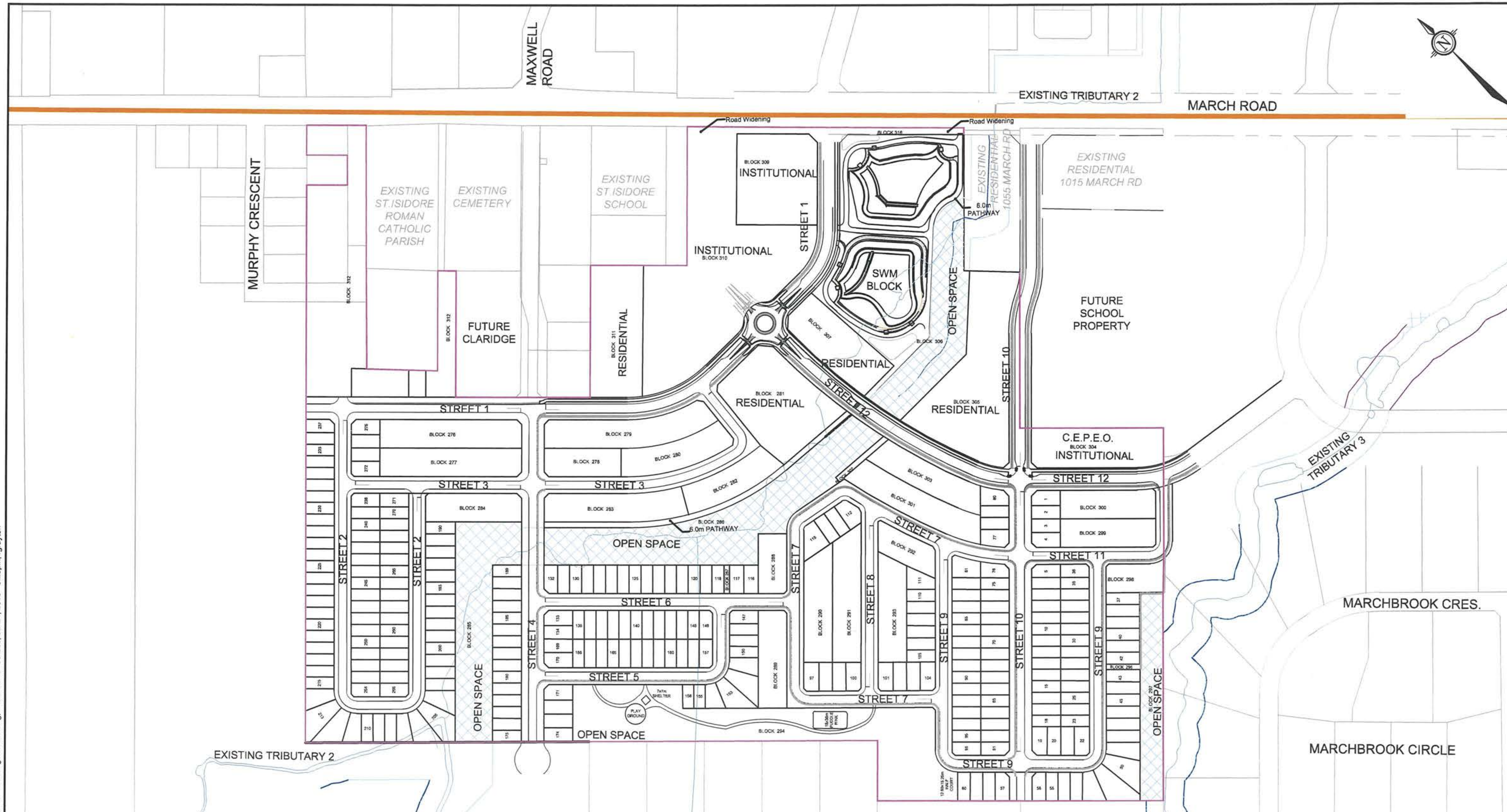
Rogers Ottawa has fibre-optic cable along March Road with larger cable up to the Old Carp Road intersection. This existing infrastructure would require upgrading to service the proposed development.

9.5 Utilities Summary

This information was developed in consultation with the respective utility companies, all of whom have indicated that there is adequate proximity and supply to service future development within the study area, refer to **Figure 10** – Existing Utility Infrastructure for location. The development will be serviced by hydro, phone, gas and cable, which will be constructed in a four-party trench, as per the cross sections laid out in the KNUEA MSS and utility standard right-of-way cross-sections. Canada Post will service the site with community mailboxes. Site lighting will be provided along roadways, sidewalks and walkways as per cross sections laid out in the KNUEA MSS. Cross sections can be found in **Appendix E**.

10.0 TRAFFIC IMPACT BRIEF

An analysis of the effect from the proposed CU development on the existing traffic patterns has been performed and detailed in the report *Transportation Impact Assessment, 1053, 1075 and 1145 March Road, Novatech, July 23, 2018; Report No.: R-2018-039* (submitted under a separate cover). Please refer to this report for more details.



LEGEND

PROPOSED DEVELOPMENT

EXISTING UTILITIES
- HYDRO OTTAWA 27KV LINE
- 6" HIGH PRESSURE GAS MAIN
- BELL FIBRE OPTIC & ROGERS CABLE

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
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CITY OF OTTAWA
CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

EXISTING UTILITY INFRASTRUCTURE

SCALE 1 : 4000 (0 40 80 120 160)

DATE JUNE 2018 | JOB 116132 | FIGURE FIGURE 10

M:\2016\116132\CAD\Design\Figures\Design Brief\FIG 10 - Existing Utilities.dwg, FIGURE 10 -Utilities, Jul 24, 2018 - 3:23pm, rgrayton

11.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987).

Typical erosion and sediment control measures recommended include, but are not limited to, the use of silt fences around perimeter of site (OPSD 219.110), catch basin inserts under catch basin/maintenance hole lids, heavy duty silt fence barrier (OPSD 219.130), straw bale check dams (OPSD 219.180), rock check dams (219.210 or OPSD 219.211), riprap (OPSS 511), mud mats, silt bags for dewatering operations, topsoil and sod to disturbed areas and natural grassed waterways. Dewatering and sediment control techniques will be developed for the individual situations based on the above guidelines and utilizing typical measures to ensure erosion and sediment control is controlled in an acceptable manner and there is no negative impact to adjacent Lands, water bodies or water treatment/conveyance facilities.

It will be the responsibility of the Contractor to submit a detailed construction schedule and appropriate staging, dewatering and erosion and sediment control plans to the Contract Administrator for review and approval prior to the commencement of work. A copy of the City of Ottawa Special Provision F-1004 will become part of any contract and which outlines the contractual requirements which includes preparation of a detailed erosion and sediment control plan.

General

- All erosion and sediment control measures are to be installed to the satisfaction of the engineer, the municipality and the conservation authority prior to undertaking any site alterations (filling, grading, removal of vegetation, etc.) and remain present during all phases of site preparation and construction.
- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accordance with the design drawings and that mitigation measures are being implemented as specified.
    - A light duty silt fence barrier is to be installed in the locations shown on the Erosion and Sediment Control Plan.
    - Straw bale barriers are to be installed in drainage ditches.
    - Catch basin inserts are to be placed under the grates of all proposed and existing catchbasins and structures.
    - After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.
- The contractor shall ensure that proper dust control is provided with the application of water (and if required, calcium chloride) during dry periods.
- The contractor shall immediately report to the engineer or inspector any accidental discharges of sediment material into any ditch or sewer system. Appropriate response measures shall be carried out by the contractor without delay.

The contractor acknowledges that failure to implement erosion and sediment control measures may result in penalties imposed by any applicable regulatory agency.

12.0 CONCLUSIONS

This Site Serviceability and Stormwater Management Study has evaluated the servicing (storm, sanitary and water servicing) for the CU development within the northwest quadrant of the KNUEA. The principal findings and conclusions of this study are as follows:

General

- The CU development reflected in this Site Serviceability Report can be adequately serviced by extending existing municipal water and sanitary infrastructure and constructing a stormwater management facility to service the development.
- The proposed servicing strategy for the CU development is generally consistent with the recommendations of the KNUEA Environmental Management Plan and the KNUEA Master Servicing Study. Any deviations from the EMP and MSS are considered minor and will not require an amendment to the EA.

Storm Drainage

- Pond 1 will provide the proposed subdivision with adequate quantity control up to the 100-year event, and will release outflows to Tributary 2 of Shirley's Brook at slightly less than pre-development conditions.
- The stormwater quality control criteria of 'enhanced' water quality control criteria corresponding to 80% removal of Total Suspended Solids (TSS) will be achieved by attenuating site runoff within Pond 1.
- Inlet control devices will be used to restrict inflows to the storm sewer system to the 1:2-year peak flow for local roads and the 1:5-year peak flow for collector roads.
- Adequate pipe capacity will be provided at the detailed design stage to contain the 100-year hydraulic grade line to within 0.30m of all pipe obverts.
- Potential locations for the implementation of low impact development features will be selected in consultation with the City of Ottawa during the detailed design stage.

Sanitary Collection

- The March Pump Station is to be the ultimate sanitary outlet for the KNUEA. Sufficient capacity has been determined as part of the MSS.
- As per recommendations in the KNUEA MSS, Option 2 was recommended as the preferred option. The sanitary flow will be conveyed to the March Pump Station via the EMT with the connection point at the intersection of Shirley's Brook Drive and Sandhill Road just east of March Road. Option 2 includes a new 600mm gravity sanitary sewer along March Road includes the CU development. This servicing option will require upgrading an existing 375mm diameter sanitary sewer along Shirley's Brook Drive to a 600mm diameter to be able to accommodate the increased flows from the KNUEA and provide a lower outlet elevation. The March Road trunk sewer and upgrade to Shirley's Brook Drive will be constructed as part of a front ending agreement with the City of Ottawa.

- On-site servicing for the CU development will consist of a combination of 200mm and 250mm gravity sewers. The total sanitary flow from the CU development was calculated to be 45.44 L/s.
- As demonstrated in the KNUEA MSS report, Table C-6b sanitary sewer design sheet, the calculated sanitary flow was 62.50 L/s from the CU development (Areas W1-W9).
- The sanitary flows from the CU development have decreased by 27.3% compared to the estimated sanitary flows for the same quadrant in the KNUEA MSS. Therefore, no further analysis is required and the downstream infrastructure can accommodate the proposed development provided that downstream upgrades are completed as stated in Table 6.2.1.
- No further upgrades to the existing sanitary system (other than works described in option 2) are required to accommodate the CU Development.

Water Distribution

- The development will be serviced entirely from the Zone 2Ww pressure zone due to topography and location as per Stantec's recommendations.
- The existing 406mm diameter watermain along March Road north will be extended to service the development. A secondary connection from Old Carp Road will be completed to provide a loop system for the development.
- Site grading will not exceed 92.65m to maintain minimum pressures greater than 40 psi under the peak hour condition and maintain minimum pressures greater than 20 psi under the fire flow condition.
- Based on the proposed layout, the proposed developments can be serviced with a combination of 200mm, 300mm and localized 250mm diameter watermain for Scenario 1 (overall system, consistent with Stantec's approach) and Scenario 2 (CU development specific demands as per the City of Ottawa Guidelines) under all operating conditions. A detailed hydraulic analysis of the watermain will be completed as part of the detailed engineering design.
- Once individual building details (footprint, building materials, exposure, etc.) have been finalized during detailed design, area specific fire flows will be applied throughout the site to determine whether the localized 250mm watermain can be downsized to a 200mm watermain.
- Fire flows for existing buildings and high-density areas are to be confirmed during detailed design.
- The proposed CU Development site can be serviced with the existing watermain infrastructure, no upgrades are required.

Utility Infrastructure

- Each utility company (Hydro Ottawa, Enbridge Gas, Bell Canada, Rogers Ottawa) has confirmed their plant is in reasonable proximity to the CU development, and that this development can be serviced.

13.0 CLOSURE

Novatech respectfully requests the City of Ottawa accept the findings of this Site Serviceability and Stormwater Management Report and provide clearance for the draft plan submission for the CU Development within the KNUEA.

NOVATECH

Prepared by:

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July 23/18
PROVINCE OF ONTARIO

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Senior Project Manager, Water Resources

APPENDIX A
Correspondence

APPENDIX B
Storm Drainage and Stormwater Management Calculations

1053, 1075 and 1145 March Road
CU Developments Inc.
Project No.: 116132

STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

LICENSED PROFESSIONAL ENGINEER
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July 23/18
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
Only Service Laterals	206	204			0.00	0.000	0.000	10.00				0	0	0.254	250	PVC	0.64	12.5	49.6	0.98	0.21	0%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-1	204	202	0.55	0.65	0.36	0.994	0.994	10.21	76.00			76	100	0.457	450	Conc	0.45	113.3	199.4	1.21	1.55	50%
					0.00	0.000	0.000	10.21														
					0.00	0.000	0.000	10.21														
NW-2			0.18	0.65	0.12	0.325	1.319	10.21	76.00			100										
					0.00	0.000	0.000	10.21														
					0.00	0.000	0.000	10.21														
NW-3	202	200	0.51	0.65	0.33	0.922	2.241	11.77	70.62			158	177	0.533	525	Conc	0.45	113.3	300.8	1.35	1.40	59%
					0.00	0.000	0.000	11.77														
					0.00	0.000	0.000	11.77														
NW-4			0.15	0.65	0.10	0.271	2.512	11.77	70.62			177										
					0.00	0.000	0.000	11.77														
					0.00	0.000	0.000	11.77														
NW-5	200	1200	0.38	0.65	0.25	0.687	3.198	13.17	66.45			213	244	0.610	600	Conc	0.45	81.5	429.4	1.47	0.92	57%
					0.00	0.000	0.000	13.17														
					0.00	0.000	0.000	13.17														
NW-6			0.14	0.65	0.09	0.253	3.451	13.17	66.45			229										
					0.00	0.000	0.000	13.17														
					0.00	0.000	0.000	13.17														
NW-7					0.00	0.000	3.451	13.17	66.45			229										
			0.09	0.65	0.06	0.163	0.163	13.17		89.97		15										
					0.00	0.000	0.000	13.17														
NW-8	1200	1202			0.00	0.000	3.451	14.09	63.99			221	337	0.686	675	Conc	0.52	101.0	632.0	1.71	0.98	53%
			0.41	0.65	0.27	0.741	0.904	14.09		86.60		78										
					0.00	0.000	0.000	14.09														
NW-9					0.00	0.000	3.451	14.09	63.99			221										
			0.10	0.65	0.07	0.181	1.084	14.09		86.60		94										
					0.00	0.000	0.000	14.09														
NW-10					0.00	0.000	3.451	14.09	63.99			221										
			0.14	0.65	0.09	0.253	1.337	14.09		86.60		116										
					0.00	0.000	0.000	14.09														
NW-11	1202	1204			0.00	0.000	3.451	15.08	61.58			213	395	0.686	675	Conc	0.69	101.6	728.0	1.97	0.86	54%
			0.06	0.65	0.04	0.108	1.446	15.08		83.31		120										
					0.00	0.000	0.000	15.08														
NW-12					0.00	0.000	3.451	15.08	61.58			213										
			0.41	0.65	0.27	0.741	2.186	15.08		83.31		182										
					0.00	0.000	0.000	15.08														
								15.94														

STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
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NW-13	206	208	0.25	0.65	0.16	0.452	0.452	10.00	76.81			35	35	0.381	375	PVC	0.50	64.4	129.2	1.13	0.95	27%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
	208	210			0.00	0.000	0.452	10.95	73.35			33	33	0.381	375	PVC	0.40	12.4	115.6	1.01	0.20	29%
					0.00	0.000	0.000	10.95														
					0.00	0.000	0.000	10.95														
NW-14	210	212	0.67	0.65	0.44	1.211	1.662	11.15	72.65			121	175	0.533	525	Conc	0.38	113.2	276.4	1.24	1.53	63%
					0.00	0.000	0.000	11.15														
					0.00	0.000	0.000	11.15														
NW-15			0.41	0.65	0.27	0.741	2.403	11.15	72.65			175										
					0.00	0.000	0.000	11.15														
					0.00	0.000	0.000	11.15														
NW-16	212	302	0.46	0.65	0.30	0.831	3.235	12.68	67.86			219	254	0.610	600	Conc	0.38	113.2	394.6	1.35	1.40	64%
					0.00	0.000	0.000	12.68														
					0.00	0.000	0.000	12.68														
NW-17			0.28	0.65	0.18	0.506	3.740	12.68	67.86			254										
					0.00	0.000	0.000	12.68														
					0.00	0.000	0.000	12.68														
								14.07														
NW-18	300	302	0.16	0.65	0.10	0.289	0.289	10.00	76.81			22	22	0.254	250	PVC	0.45	45.9	41.6	0.82	0.93	53%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
								10.93														
NW-19	302	304	0.29	0.65	0.19	0.524	4.554	14.07	64.05			292	292	0.610	600	Conc	0.65	61.8	516.1	1.77	0.58	57%
					0.00	0.000	0.000	14.07														
					0.00	0.000	0.000	14.07														
NW-20	304	306	0.35	0.65	0.23	0.632	5.186	14.65	62.60			325	325	0.686	675	Conc	0.65	58.8	706.6	1.91	0.51	46%
					0.00	0.000	0.000	14.65														
					0.00	0.000	0.000	14.65														
NW-21b	306	1204			0.00	0.000	5.186	15.17	61.38			318	446	0.762	750	Conc	0.50	81.5	820.8	1.80	0.75	54%
			0.24	0.65	0.16	0.434	0.434	15.17		83.02		36										
					0.00	0.000	0.000	15.17														
NW-22					0.00	0.000	5.186	15.17	61.38			318										
			0.44	0.65	0.29	0.795	1.229	15.17		83.02		102										
					0.00	0.000	0.000	15.17														
NW-23					0.00	0.000	5.186	15.17	61.38			318										
			0.17	0.65	0.11	0.307	1.536	15.17		83.02		128										
					0.00	0.000	0.000	15.17														
								15.92														

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					0.00	0.000	8.637	15.94	59.64			515										
NW-24	1204	1206	0.38	0.67	0.25	0.708	4.430	15.94		80.65		357	872	0.914	900	Conc	0.61	118.5	1,474.3	2.25	0.88	59%
					0.00	0.000	0.000	15.94														
					0.00	0.000	8.637	16.82	57.79			499										
NW-25	1206	1208	0.29	0.65	0.19	0.524	4.954	16.82		78.11		387	886	0.914	900	Conc	0.51	41.2	1,348.1	2.05	0.33	66%
					0.00	0.000	0.000	16.82														
					0.00	0.000	8.637	17.15	57.12			493										
	1208	1210			0.00	0.000	4.954	17.15		77.20		382	876	0.991	975	Conc	0.65	29.0	1,884.0	2.44	0.20	46%
					0.00	0.000	0.000	17.15														
								17.35														
					0.00	0.000	0.000	10.00														
NW-21a			0.12	0.65	0.08	0.217	0.217	10.00		104.19		23										
					0.00	0.000	0.000	10.00														
	308	310	0.41	0.65	0.27	0.741	0.741	10.00	76.81			57	79	0.381	375	PVC	0.31	108.3	101.8	0.89	2.02	78%
NW-26					0.00	0.000	0.217	10.00		104.19		23										
					0.00	0.000	0.000	10.00														
			0.40	0.65	0.26	0.723	1.464	12.02	69.82			102										
NW-27	310	312			0.00	0.000	0.217	12.02		94.60		21	123	0.457	450	Conc	0.33	52.9	170.7	1.04	0.85	72%
					0.00	0.000	0.000	12.02														
			0.26	0.65	0.17	0.470	1.933	12.87	67.30			130										
NW-28	312	314			0.00	0.000	0.217	12.87		91.14		20	150	0.533	525	Conc	0.29	59.3	241.4	1.08	0.91	62%
					0.00	0.000	0.000	12.87														
					0.00	0.000	1.933	13.78	64.79			125										
	314	316			0.00	0.000	0.217	13.78		87.70		19	144	0.533	525	Conc	0.28	14.1	237.2	1.06	0.22	61%
					0.00	0.000	0.000	13.78														
			0.29	0.65	0.19	0.524	2.458	14.01	64.22			158										
NW-29					0.00	0.000	0.217	14.01		86.91		19										
					0.00	0.000	0.000	14.01														
	316	1210	0.42	0.65	0.27	0.759	3.216	14.01	64.22			207	225	0.533	525	Conc	0.71	72.2	377.8	1.69	0.71	60%
NW-30					0.00	0.000	0.217	14.01		86.91		19										
					0.00	0.000	0.000	14.01														
								14.72														
					0.00	0.000	11.854	17.35	56.73			672										
	1210	1212			0.00	0.000	5.171	17.35		76.66		396	1,069	0.991	975	Conc	0.86	15.2	2,167.1	2.81	0.09	49%
					0.00	0.000	0.000	17.35														
					0.00	0.000	11.854	17.44	56.55			670										
NW-32	1212	1214	0.26	0.70	0.18	0.506	5.677	17.44		76.42		434	1,104	0.991	975	Conc	0.86	77.0	2,167.1	2.81	0.46	51%
					0.00	0.000	0.000	17.44														
								17.90														

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Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
					0.00	0.000	0.000	10.00														
NW-33	100	102	0.41	0.65	0.27	0.741	0.741	10.00		104.19		77	77	0.381	375	PVC	0.31	64.9	101.8	0.89	1.21	76%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	11.21														
NW-34	102	104	0.40	0.65	0.26	0.723	1.464	11.21		98.20		144	144	0.457	450	Conc	0.35	79.0	175.8	1.07	1.23	82%
					0.00	0.000	0.000	11.21														
								12.44														
					0.00	0.000	0.000	10.00														
NW-35	106	104	0.14	0.65	0.09	0.253	0.253	10.00		104.19		26	26	0.305	300	PVC	0.44	38.6	66.9	0.92	0.70	39%
					0.00	0.000	0.000	10.00														
								10.70														
NW-36			0.45	0.65	0.29	0.813	0.813	12.44	68.55			56										
					0.00	0.000	1.717	12.44		92.85		159										
	104	400			0.00	0.000	0.000	12.44					250	0.610	600	Conc	0.25	101.0	320.1	1.10	1.53	78%
NW-37			0.28	0.65	0.18	0.506	1.319	12.44	68.55			90										
					0.00	0.000	1.717	12.44		92.85		159										
					0.00	0.000	0.000	12.44														
			0.43	0.65	0.28	0.777	2.096	13.98	64.29			135										
NW-38	400	402			0.00	0.000	1.717	13.98		87.02		149	284	0.686	675	Conc	0.20	102.7	391.9	1.06	1.61	72%
					0.00	0.000	0.000	13.98														
								15.59														

1053, 1075 and 1145 March Road
CU Developments Inc.
Project No.: 116132

STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-39	500	502	0.23	0.65	0.15	0.416	0.416	10.00	76.81			32	117	0.457	450	Conc	0.44	67.2	197.2	1.20	0.93	59%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-40			0.09	0.65	0.06	0.163	0.578	10.00	76.81			44										
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-41a			0.83	0.41	0.34	0.946	1.524	10.00	76.81			117										
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-42	502	504	0.36	0.65	0.23	0.651	2.175	10.93	73.40			160	194	0.610	600	Conc	0.25	96.3	320.1	1.10	1.46	61%
					0.00	0.000	0.000	10.93														
					0.00	0.000	0.000	10.93														
NW-43a			0.10	0.65	0.07	0.181	2.355	10.93	73.40			173										
					0.00	0.000	0.000	10.93														
					0.00	0.000	0.000	10.93														
NW-41b			0.26	0.40	0.10	0.289	2.645	10.93	73.40			194										
					0.00	0.000	0.000	10.93														
					0.00	0.000	0.000	10.93														
	504	506			0.00	0.000	2.645	12.40	68.68			182	182	0.610	600	Conc	0.33	12.2	367.7	1.26	0.16	49%
					0.00	0.000	0.000	12.40														
					0.00	0.000	0.000	12.40														
NW-44	506	402	0.28	0.65	0.18	0.506	3.151	12.56	68.21			215	248	0.686	675	Conc	0.23	70.3	420.3	1.14	1.03	59%
					0.00	0.000	0.000	12.56														
					0.00	0.000	0.000	12.56														
NW-45			0.27	0.65	0.18	0.488	3.638	12.56	68.21			248										
					0.00	0.000	0.000	12.56														
					0.00	0.000	0.000	12.56														
								13.59														
NW-46	402	606	0.16	0.65	0.10	0.289	6.024	15.59	60.41			364	539	0.838	825	Conc	0.59	79.0	1,149.7	2.08	0.63	47%
					0.00	0.000	1.717	15.59		81.70		140										
					0.00	0.000	0.000	15.59														
NW-47			0.32	0.65	0.21	0.578	6.602	15.59	60.41			399										
					0.00	0.000	1.717	15.59		81.70		140										
					0.00	0.000	0.000	15.59														
								16.22														

1053, 1075 and 1145 March Road
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CU Developments Inc. - 1053, 1075 and 1145 March Road
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NOVATECH
Engineers, Planners & Landscape Architects

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Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-63	804	600	0.22	0.65	0.14	0.398	0.398	10.00	76.81			31	98	0.381	375	PVC	0.72	76.0	155.1	1.36	0.93	63%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-64			0.90	0.35	0.32	0.876	1.273	10.00	76.81			98										
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-48	600	602	0.24	0.65	0.16	0.434	1.707	10.93	73.41			125	309	0.533	525	Conc	0.72	68.1	380.4	1.70	0.67	81%
					0.00	0.000	0.000	10.93														
					0.00	0.000	0.000	10.93														
NW-49			2.57	0.35	0.90	2.501	4.208	10.93	73.41			309										
					0.00	0.000	0.000	10.93														
					0.00	0.000	0.000	10.93														
	602	604			0.00	0.000	4.208	11.60	71.17			299	299	0.610	600	Conc	0.72	15.4	543.2	1.86	0.14	55%
					0.00	0.000	0.000	11.60														
					0.00	0.000	0.000	11.60														
NW-50	604	606	0.38	0.65	0.25	0.687	4.894	11.74	70.73			346	373	0.610	600	Conc	0.77	90.1	561.7	1.92	0.78	66%
					0.00	0.000	0.000	11.74														
					0.00	0.000	0.000	11.74														
NW-51			0.21	0.65	0.14	0.379	5.274	11.74	70.73			373										
					0.00	0.000	0.000	11.74														
					0.00	0.000	0.000	11.74														
								12.52														
NW-52	606	608	0.25	0.65	0.16	0.452	12.327	16.22	59.03			728	879	1.067	1050	Conc	0.20	79.7	1,273.5	1.42	0.93	69%
					0.00	0.000	1.717	16.22		79.81		137										
					0.00	0.000	0.000	16.22														
NW-53			0.13	0.65	0.08	0.235	12.562	16.22	59.03			742										
					0.00	0.000	1.717	16.22		79.81		137										
					0.00	0.000	0.000	16.22														
	608	610			0.00	0.000	12.562	17.15	57.11			717	850	1.067	1050	Conc	0.33	9.2	1,635.8	1.83	0.08	52%
					0.00	0.000	1.717	17.15		77.19		133										
					0.00	0.000	0.000	17.15														
NW-54	610	612	0.21	0.65	0.14	0.379	12.942	17.24	56.95			737	869	1.067	1050	Conc	0.20	48.5	1,273.5	1.42	0.57	68%
					0.00	0.000	1.717	17.24		76.96		132										
					0.00	0.000	0.000	17.24														
	612	614			0.00	0.000	12.942	17.80	55.85			723	852	1.067	1050	Conc	0.26	12.9	1,452.0	1.62	0.13	59%
					0.00	0.000	1.717	17.80		75.47		130										
					0.00	0.000	0.000	17.80														
	614	616			0.00	0.000	12.942	17.94	55.61			720	849	1.067	1050	Conc	0.20	29.4	1,273.5	1.42	0.34	67%
					0.00	0.000	1.717	17.94		75.13		129										
					0.00	0.000	0.000	17.94														
								18.28														

1053, 1075 and 1145 March Road
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LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-55	700	702	0.27	0.65	0.18	0.488	0.488	10.00	76.81			37	37	0.305	300	PVC	1.16	86.6	108.6	1.49	0.97	35%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-57	702	704	0.24	0.65	0.16	0.434	0.922	11.58	71.22			66	179	0.457	450	Conc	0.76	67.1	259.1	1.58	0.71	69%
					0.00	0.000	0.000	11.58														
					0.00	0.000	0.000	11.58														
NW-58			0.21	0.65	0.14	0.379	1.301	11.58	71.22			93										
					0.00	0.000	0.000	11.58														
					0.00	0.000	0.000	11.58														
NW-59			0.24	0.65	0.16	0.434	1.735	11.58	71.22			124										
					0.00	0.000	0.000	11.58														
					0.00	0.000	0.000	11.58														
NW-60			0.43	0.65	0.28	0.777	2.512	11.58	71.22			179										
					0.00	0.000	0.000	11.58														
					0.00	0.000	0.000	11.58														
	704	616			0.00	0.000	2.512	12.29	69.00			173	173	0.533	525	Conc	0.49	12.1	313.8	1.40	0.14	55%
					0.00	0.000	0.000	12.29														
					0.00	0.000	0.000	12.29														
								12.43														
NW-61	616	618	0.41	0.65	0.27	0.741	16.194	18.28	54.97			890	1,018	1.219	1200	Conc	0.17	85.2	1,676.3	1.44	0.99	61%
					0.00	0.000	1.717	18.28		74.26		127										
					0.00	0.000	0.000	18.28														
								19.27														

1053, 1075 and 1145 March Road
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STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
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LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-62	802	804	0.16	0.65	0.10	0.289	0.289	10.00	76.81			22	22	0.254	250	PVC	1.61	57.0	78.6	1.55	0.61	28%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-65	804	806	0.25	0.65	0.16	0.452	0.741	10.61	74.53			55	66	0.305	300	PVC	1.48	83.8	122.6	1.68	0.83	54%
					0.00	0.000	0.000	10.61														
					0.00	0.000	0.000	10.61														
NW-56			0.08	0.65	0.05	0.145	0.885	10.61	74.53			66										
					0.00	0.000	0.000	10.61														
					0.00	0.000	0.000	10.61														
NW-66	806	808	0.17	0.65	0.11	0.307	1.193	11.44	71.68			85	146	0.457	450	Conc	1.51	74.3	365.2	2.22	0.56	40%
					0.00	0.000	0.000	11.44														
					0.00	0.000	0.000	11.44														
NW-67			0.24	0.65	0.16	0.434	1.626	11.44	71.68			117										
					0.00	0.000	0.000	11.44														
					0.00	0.000	0.000	11.44														
NW-68a			0.20	0.65	0.13	0.361	1.988	11.44	71.68			142										
					0.00	0.000	0.000	11.44														
					0.00	0.000	0.000	11.44														
NW-68b			0.03	0.65	0.02	0.054	2.042	11.44	71.68			146										
					0.00	0.000	0.000	11.44														
					0.00	0.000	0.000	11.44														
	808	618			0.00	0.000	2.042	12.00	69.89			143	143	0.457	450	Conc	0.96	6.3	291.2	1.77	0.06	49%
					0.00	0.000	0.000	12.00														
					0.00	0.000	0.000	12.00														
								12.06														
NW-69	618	620	0.23	0.65	0.15	0.416	18.652	19.27	53.24			993	1,135	1.219	1200	Conc	0.17	38.8	1,676.3	1.44	0.45	68%
					0.00	0.000	1.717	19.27		71.90		123										
					0.00	0.000	0.000	19.27														
NW-70	620	906	0.36	0.65	0.23	0.651	19.302	19.72	52.49			1,013	1,155	1.524	1500	Conc	0.17	42.1	3,039.6	1.67	0.42	38%
					0.00	0.000	1.717	19.72		70.87		122										
					0.00	0.000	0.000	19.72														
NW-71			0.21	0.65	0.14	0.379	19.682	19.72	52.49			1,033										
					0.00	0.000	1.717	19.72		70.87		122										
					0.00	0.000	0.000	19.72														
								20.14														

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Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-72	800	900	0.20	0.65	0.13	0.361	0.361	10.00	76.81			28	54	0.457	450	Conc	0.30	69.7	162.8	0.99	1.17	33%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-73			0.42	0.29	0.12	0.339	0.700	10.00	76.81			54										
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-74	900	902			0.00	0.000	0.700	11.17	72.58			51	90	0.457	450	Conc	0.56	75.2	222.4	1.35	0.93	40%
			0.12	0.65	0.08	0.217	0.217	11.17		98.39		21										
					0.00	0.000	0.000	11.17														
NW-75					0.00	0.000	0.700	11.17	72.58			51										
			0.10	0.65	0.07	0.181	0.398	11.17		98.39		39										
					0.00	0.000	0.000	11.17														
NW-76	902	904			0.00	0.000	0.700	12.10	69.59			49	228	0.533	525	Conc	2.20	75.0	665.0	2.98	0.42	34%
			0.35	0.65	0.23	0.632	1.030	12.10		94.29		97										
					0.00	0.000	0.000	12.10														
NW-77					0.00	0.000	0.700	12.10	69.59			49										
			0.27	0.65	0.18	0.488	1.518	12.10		94.29		143										
					0.00	0.000	0.000	12.10														
NW-82					0.00	0.000	0.700	12.10	69.59			49										
			0.21	0.65	0.14	0.379	1.897	12.10		94.29		179										
					0.00	0.000	0.000	12.10														
NW-78	904	906			0.00	0.000	0.700	12.52	68.33			48	279	0.533	525	Conc	2.01	71.7	635.7	2.84	0.42	44%
			0.33	0.65	0.21	0.596	2.494	12.52		92.55		231										
					0.00	0.000	0.000	12.52														
								12.94														
NW-79	900	1000	0.61	0.54	0.33	0.916	0.916	10.00	76.81			70	91	0.381	375	PVC	0.40	74.0	115.6	1.01	1.22	79%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NW-80			0.15	0.65	0.10	0.271	1.187	10.00	76.81			91										
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
	1000	1002			0.00	0.000	1.187	11.22	72.43			86	86	0.381	375	PVC	0.44	14.7	121.2	1.06	0.23	71%
					0.00	0.000	0.000	11.22														
					0.00	0.000	0.000	11.22														
NW-81	1002	1004	0.28	0.65	0.18	0.506	1.693	11.45	71.66			121	121	0.457	450	Conc	1.57	113.7	372.4	2.27	0.84	33%
					0.00	0.000	0.000	11.45														
					0.00	0.000	0.000	11.45														

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LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-83	1004	1100	0.38	0.65	0.25	0.687	2.379	12.28	69.03			164	212	0.457	450	Conc	1.60	98.4	376.0	2.29	0.72	56%
					0.00	0.000	0.000	12.28														
					0.00	0.000	0.000	12.28														
NW-84			0.38	0.65	0.25	0.687	3.066	12.28	69.03			212										
					0.00	0.000	0.000	12.28														
					0.00	0.000	0.000	12.28														
								13.00														
NW-85	1102	1100	0.28	0.65	0.18	0.506	0.506	10.00	76.81			39	39	0.305	300	PVC	0.45	62.4	67.6	0.93	1.12	57%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
								11.12														
NW-86	1100	906	0.33	0.65	0.21	0.596	4.168	13.00	66.93			279	315	0.686	675	Conc	0.31	85.0	488.0	1.32	1.07	65%
					0.00	0.000	0.000	13.00														
					0.00	0.000	0.000	13.00														
NW-87			0.30	0.65	0.20	0.542	4.710	13.00	66.93			315										
					0.00	0.000	0.000	13.00														
					0.00	0.000	0.000	13.00														
								14.07														
NW-88	906	1310			0.00	0.000	25.092	20.14	51.80			1,300	1,641	1.524	1500	Conc	0.16	81.4	2,948.9	1.62	0.84	56%
			0.37	0.65	0.24	0.669	4.879	20.14		69.94		341										
					0.00	0.000	0.000	20.14														
								20.98														
NW-89	1314	1312			0.00	0.000	0.000	10.00					166	0.533	525	Conc	0.23	68.4	215.0	0.96	1.18	77%
			0.28	0.65	0.18	0.506	0.506	10.00		104.19		53										
					0.00	0.000	0.000	10.00														
NW-90					0.00	0.000	0.000	10.00														
			0.60	0.65	0.39	1.084	1.590	10.00		104.19		166										
					0.00	0.000	0.000	10.00														
NW-91	1312	1310			0.00	0.000	0.000	11.18					272	0.686	675	Conc	0.24	72.0	429.4	1.16	1.03	63%
			0.22	0.65	0.14	0.398	1.988	11.18		98.33		195										
					0.00	0.000	0.000	11.18														
NW-92					0.00	0.000	0.000	11.18														
			0.43	0.65	0.28	0.777	2.765	11.18		98.33		272										
					0.00	0.000	0.000	11.18														
								12.22														

STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
					0.00	0.000	25.092	20.98	50.51			1,267										
	1310	1308			0.00	0.000	7.644	20.98		68.17		521	1,788	1.524	1500	Conc	0.15	24.1	2,855.2	1.57	0.26	63%
					0.00	0.000	0.000	20.98														
					0.00	0.000	25.092	21.24	50.12			1,258										
NW-93			0.36	0.66	0.24	0.661	8.304	21.24		67.65		562										
	1308	1306			0.00	0.000	0.000	21.24					1,837	1.524	1500	Conc	0.11	35.1	2,445.1	1.34	0.44	75%
					0.00	0.000	25.092	21.24	50.12			1,258										
NW-94			0.14	0.65	0.09	0.253	8.557	21.24		67.65		579										
					0.00	0.000	0.000	21.24														
					0.00	0.000	25.092	21.67	49.49			1,242										
	1306	1304			0.00	0.000	8.557	21.67		66.78		571	1,813	1.524	1500	Conc	0.12	44.0	2,553.8	1.40	0.52	71%
					0.00	0.000	0.000	21.67														
					0.00	0.000	25.092	22.20	48.74			1,223										
NW-95			0.37	0.66	0.24	0.679	9.236	22.20		65.77		607										
	1304	1302			0.00	0.000	0.000	22.20					1,879	1.524	1500	Conc	0.13	44.8	2,658.1	1.46	0.51	71%
					0.00	0.000	25.092	22.20	48.74			1,223										
NW-96			0.41	0.65	0.27	0.741	9.977	22.20		65.77		656										
					0.00	0.000	0.000	22.20														
					0.00	0.000	25.092	22.71	48.04			1,206										
NW-97			0.19	0.70	0.13	0.370	10.347	22.71		64.81		671										
	1302	1300			0.00	0.000	0.000	22.71					1,953	1.524	1500	Conc	0.12	85.0	2,553.8	1.40	1.01	76%
					0.00	0.000	25.092	22.71	48.04			1,206										
NW-98			0.61	0.70	0.43	1.187	11.534	22.71		64.81		748										
					0.00	0.000	0.000	22.71														
					0.00	0.000	25.092	23.72	46.72			1,172										
NW-99			0.15	0.70	0.11	0.292	11.826	23.72		63.02		745										
	1300	1214			0.00	0.000	0.000	23.72					2,039	1.524	1500	Conc	0.12	91.4	2,553.8	1.40	1.09	80%
					0.00	0.000	25.092	23.72	46.72			1,172										
NW-31			0.99	0.70	0.69	1.927	13.752	23.72		63.02		867										
					0.00	0.000	0.000	23.72														
								24.81														
					0.00	0.000	36.946	24.81	45.39			1,677										
NW-100	1214	1216	0.07	0.70	0.05	0.136	19.565	24.81		61.20		1,197	2,874	1.803	1800	Conc	0.11	63.9	3,830.6	1.50	0.71	75%
					0.00	0.000	0.000	24.81														
					0.00	0.000	36.946	25.52	44.57			1,647										
NW-113	1216	1218	0.18	0.70	0.13	0.350	19.916	25.52		60.08		1,196	2,843	1.803	1800	Conc	0.16	25.4	4,619.9	1.81	0.23	62%
					0.00	0.000	0.000	25.52														
					0.00	0.000	36.946	25.75	44.30			1,637										
	1218	INLET 1			0.00	0.000	19.916	25.75		59.72		1,189	2,826	1.803	1800	Conc	0.15	12.9	4,473.2	1.75	0.12	63%
					0.00	0.000	0.000	25.75														
								25.88														

1053, 1075 and 1145 March Road
CU Developments Inc.
Project No.: 116132

STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
FUTURE BLOCK / EXISTING LANDS ACCOUNTED FOR IN STORM SEWER SYSTEM OUTLETTING TO THE SWM POND THROUGH OUTLET #2																						
NW-111	1406	1408	0.63	0.70	0.44	1.226	18.660	14.17	63.80			1,190	1,190	1.067	1050	Conc	0.37	103.3	1,732.1	1.94	0.89	69%
					0.00	0.000	0.000	14.17														
					0.00	0.000	0.000	14.17														
	1408	1410			0.00	0.000	18.660	15.06	61.63			1,150	1,150	1.067	1050	Conc	0.45	39.7	1,910.2	2.14	0.31	60%
					0.00	0.000	0.000	15.06														
					0.00	0.000	0.000	15.06														
NW-112	1410	1412	2.58	0.85	2.19	6.097	24.756	15.37	60.91			1,508	1,508	1.219	1200	Conc	0.41	75.1	2,603.3	2.23	0.56	58%
					0.00	0.000	0.000	15.37														
					0.00	0.000	0.000	15.37														
	1412	1220			0.00	0.000	24.756	15.93	59.66			1,477	1,477	1.219	1200	Conc	0.39	74.7	2,539.0	2.17	0.57	58%
					0.00	0.000	0.000	15.93														
					0.00	0.000	0.000	15.93														
NW-114	1220	1222			0.00	0.000	24.756	16.50	58.44			1,447	1,648	1.372	1350	Conc	0.16	75.8	2,226.5	1.51	0.84	74%
			0.89	0.85	0.76	2.103	2.103	16.50		79.00		166										
					0.00	0.000	0.000	16.50														
NW-115					0.00	0.000	24.756	16.50	58.44			1,447										
			0.23	0.70	0.16	0.448	2.551	16.50		79.00		202										
					0.00	0.000	0.000	16.50														
NW-116	1222	1505			0.00	0.000	24.756	17.34	56.75			1,405	1,611	1.372	1350	Conc	0.13	30.5	2,006.9	1.36	0.37	80%
			0.07	0.70	0.05	0.136	2.687	17.34		76.69		206										
					0.00	0.000	0.000	17.34														
	1505	INLET 2			0.00	0.000	24.756	17.71	56.03			1,387	1,590	1.372	1350	Conc	1.80	8.3	7,467.8	5.05	0.03	21%
					0.00	0.000	2.687	17.71		75.70		203										
					0.00	0.000	0.000	17.71														
								17.74														

1053, 1075 and 1145 March Road
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STORM SEWER DESIGN SHEET
CU Developments Inc. - 1053, 1075 and 1145 March Road
FLOW RATES BASED ON RATIONAL METHOD

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA (ha)			FLOW							TOTAL FLOW	SEWER DATA								
Catchment ID	From Manhole	To Manhole	Area (ha)	C	AC (ha)	Indiv 2.78 AC	Accum 2.78 AC	Time of Concentration	Rainfall Intensity 2 Year (mm/hr)	Rainfall Intensity 5 Year (mm/hr)	Rainfall Intensity 10 Year (mm/hr)	Peak Flow (L/s)	Total Peak Flow, Q (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full
NW-43b	NADIA	TRIB 2	0.13	0.40	0.05	0.145	0.145	10.00	76.81			11	772	0.914	900	Conc	0.35	259.6	1,116.8	1.70	2.54	69%
					0.00	0.000	0.000	10.00														
					0.00	0.000	0.000	10.00														
NADIA LANE			25.83	0.35	9.04	25.133	25.277	132.00	30.53*			772										

Q = 2.78 AIC, where	Consultant:	Novatech	
Q = Peak Flow in Litres per Second (L/s)	Issued Date:	June 6, 2018	
A = Area in hectares (ha)	Design By:	Steve Zorgel	
I = Rainfall Intensity (mm/hr), 5 year storm	Client:	Dwg. Reference:	Checked By:
C = Runoff Coefficient	CU Developments Inc.	116132-STM	DDB

Legend:

*	Indicates 100 Year intensity for storm sewers
10.00	Storm sewers designed to the 2 year event (without ponding) for local roads
10.00	Storm sewers designed to the 5 year event (without ponding) for collector roads
10.00	Storm sewers designed to the 10 year event (without ponding) for arterial roads

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

Required Storage Volumes (Quality) - Upper Cell

Drainage Area	**35.3**	ha
% Impervious:	**58.9%**	
Enhanced protection (80% TSS removal):		
Treatment Volume	196	m3/ha
Extended Detention Storage	40	m3/ha required
	1,412	m3 required
	1412	m3 provided
	40.0	m3/ha provided
Perm Pool:	156	m3/ha required
	5509	m3 required
	5970	m3 provided
	169.1	m3/ha provided
Extended Detention:	149.0	L/s average

(% impervious was calculated as the average imperviousness for the drainage areas tributary to the SWM facility)

Required Forebay Length and Width

Parameters:

Length to width ratio of forebay, r =	4.0:1
Peak outflow rate during 25 mm storm, Q_p =	0.149 m^3/s (24hr ext. det)
Target particle size =	150 mm
Settling velocity, V_s =	0.0003 m/s

Forebay Settling Length, Dist

$$Dist = \sqrt{\frac{rQ_p}{V_s}}$$

= 45 m

Check Dispersion Length, $Dist_2$

Desired velocity in forebay, V_f =	0.5 m/s
Inlet flow rate, Q_{2yr} =	3.244 m^3/s
Depth in forebay, d =	1.5 m

$$Dist_2 = \frac{8Q}{dV_f}$$

= 35 m

Therefore, the settling length of 45 m governs the design

Required Length	**= 45 m**
Provided Length	**= 45 m**

Minimum Forebay width:

Length of Forebay, L =	45 m
Minimum width, W =	L/4
W =	11.1 m

	Required Width	**= 11.1 m**
	Provided Width	**= 11.5 m**

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

SWM Facility Outlet Calculations - Upper Cell

Orifice

C	0.61
Dia	330.00 mm
Area	0.0855 m^2
Invert	82.00 m
C/L	82.17 m

For Elevation = 082.60 m

Q orifice = $C \times A \times (2 \times g \times H)^{(1/2)}$

Q orifice = $1000\ L/m^3 \times 0.61 \times 0.0855\ m^2 \times (2 \times 9.81 \times (82.60\ m - 82.17\ m))^{(1/2)}$

Q orifice = 152.42 L/s

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CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

SWM Facility Stage-Storage Curve - Upper Cell

Stage	Elevation	Area	Volume		Outflow		
			Stage	Total	Orifice 1	Orifice 2	Total
	(m)	m^2	m^3	m^3	L/s	L/s	L/s
Bottom	80.50	3345.4	0.0	0.0	0.0	-	0.0
	81.00	3738.6	1771.0	1771.0	0.0	-	0.0
	81.50	4172.5	1977.8	3748.8	0.0	-	0.0
Permanent Pool	82.00	4711.7	2221.1	5969.8	0.0	-	0.0
Extended Detention	82.28	4964.0	1354.6	7324.4	78.4	-	78.4
	82.50	5166.4	1114.3	8438.8	133.8	-	133.8
2-Year	82.89	5512.0	2082.3	10521.0	196.8	-	196.8
	83.00	6781.8	676.2	11197.2	211.2	-	211.2
5-Year	83.30	5883.9	1899.8	13097.0	246.2	-	246.2
	83.50	6071.5	1195.5	14292.6	267.0	-	267.0
	84.00	6528.8	3150.1	17442.6	313.1	-	313.1
100-Year	84.50	7973.0	3625.4	21068.1	353.1	-	353.1
	84.70	7082.5	1505.5	22573.6	367.9	-	367.9
Top	85.00	8115.0	2279.6	24853.2	389.1	-	389.1

From Outlet Tab (Orifice 1)

C	0.61	
Dia	330.00	mm
Area	0.0855	m2
Invert	82.00	m
C/L	82.165	m

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

Required Storage Volumes (Quality) - Lower Cell

Drainage Area	**22.2**	ha
% Impervious:	**66.9%**	
Enhanced protection (80% TSS removal):		
Treatment Volume	204	m3/ha
Extended Detention Storage	80	m3/ha required
	1,775	m3 required
	1775	m3 provided
	80.0	m3/ha provided
Perm Pool:	124	m3/ha required
	2751	m3 required
	6409	m3 provided
	288.8	m3/ha provided
Extended Detention:	34.0	L/s average

(% impervious was calculated as the average imperviousness for the drainage areas tributary to the SWM facility)

Required Forebay Length and width

North Forebay

Parameters:

Length to width ratio of forebay, r = 4.0:1

Peak outflow rate during 25 mm storm, Q_p = 0.034 m^3/s (24hr ext. det)

Target particle size = 150 mm

Settling velocity, V_s = 0.0003 m/s

Forebay Settling Length, Dist

$$Dist = \sqrt{\frac{rQ_P}{V_S}}$$

= 21 m

Check Dispersion Length, $Dist_2$

Desired velocity in forebay, V_f = 0.5 m/s

Inlet flow rate, Q_{2yr} = 1.161 m^3/s

Depth in forebay, d = 1.5 m

$$Dist_2 = \frac{8Q}{dV_f}$$

= 12 m

Therefore, the settling length of 21 m governs the design

Required Length	**= 21 m**
Provided Length	**= 40 m**

Minimum Forebay width:

Length of Forebay, L = 21 m

Minimum width, W = L/4

W = 5.3 m

	Required Width	**= 5.3 m**
	Provided Width	**= 10.0 m**

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

Required Forebay Length and width

South Forebay

Parameters:

Length to width ratio of forebay, r =	4.0:1
Peak outflow rate during 25 mm storm, Q_p =	0.034 m^3/s (24hr ext. det)
Target particle size =	150 mm
Settling velocity, V_s =	0.0003 m/s

Forebay Settling Length, Dist

$$Dist = \sqrt{\frac{rQ_P}{V_S}}$$

= 21 m

Check Dispersion Length, Dist$_2$

Desired velocity in forebay, V_f =	0.5 m/s
Inlet flow rate , Q_{2yr} =	0.951 m^3/s
Depth in forebay, d =	1.5 m

$$Dist_2 = \frac{8Q}{dV_f}$$

= 10 m

Therefore, the settling length of 21 m governs the design

Required Length	**= 21 m**
Provided Length	**= 40 m**

Minimum Forebay width:

Length of Forebay, L =	21 m
Minimum width, W =	L/4
W =	5.3 m

Required Width	**= 5.3 m**
Provided Width	**= 10.0 m**

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

SWM Facility Outlet Calculations - Lower Cell

Orifice 1

C	0.61
Dia	130.00 mm
Area	0.0133 m^2
Invert	79.50 m
C/L	79.57 m

For Elevation = 080.44 m
Q orifice = $C \times A \times (2 \times g \times H)^{(1/2)}$
Q orifice = $1000\ L/m^3 \times 0.61 \times 0.0133\ m^2 \times (2 \times 9.81 \times (80.44\ m - 79.57\ m))^{(1/2)}$
Q orifice = 33.55 L/s

Orifice 2

C	0.61
Dia	360.00 mm
Area	0.1018 m^2
Invert	80.50 m
C/L	80.68 m

For Elevation = 081.00 m
Q orifice = $C \times A \times (2 \times g \times H)^{(1/2)}$
Q orifice = $1000\ L/m^3 \times 0.61 \times 0.1018\ m^2 \times (2 \times 9.81 \times (81.00\ m - 80.68\ m))^{(1/2)}$
Q orifice = 155.58 L/s

CLARIDGE / UNIFORM SUBDIVISION
NORTHWEST QUADRANT
SWM FACILITY DESIGN (POND 1)

NOVATECH
Engineers, Planners & Landscape Architects

SWM Facility Stage-Storage Curve - Lower Cell

Stage	Elevation	Area	Volume		Outflow		
			Stage	Total	Orifice 1	Orifice 2	Total
	(m)	m^2	m^3	m^3	L/s	L/s	L/s
Bottom	78.00	3340.0	0	0	0.0	0.0	0.0
	78.50	3929.6	1817	1817	0.0	0.0	0.0
	79.00	4555.7	2121	3939	0.0	0.0	0.0
Permanent Pool	79.50	5325.9	2470	6409	0.0	0.0	0.0
Extended Detention	79.82	5688.2	1762	8171	18.1	0.0	18.1
	80.00	5873.4	1041	9212	23.7	0.0	23.7
	80.50	6392.7	3067	12278	34.7	0.0	34.7
2-Year	80.87	6781.8	2437	14716	41.0	119.9	160.9
	81.00	6919.4	891	15606	43.0	155.6	198.5
5-Year	81.11	7036.3	768	16374	44.6	180.3	224.9
	81.50	7453.4	2825	19199	49.9	249.0	298.9
100-Year	81.98	7973.0	3702	22902	55.7	313.6	369.3
	82.00	7994.8	160	23061	56.0	316.0	371.9
Top	82.30	8309.5	2446	25507	59.3	350.1	409.4

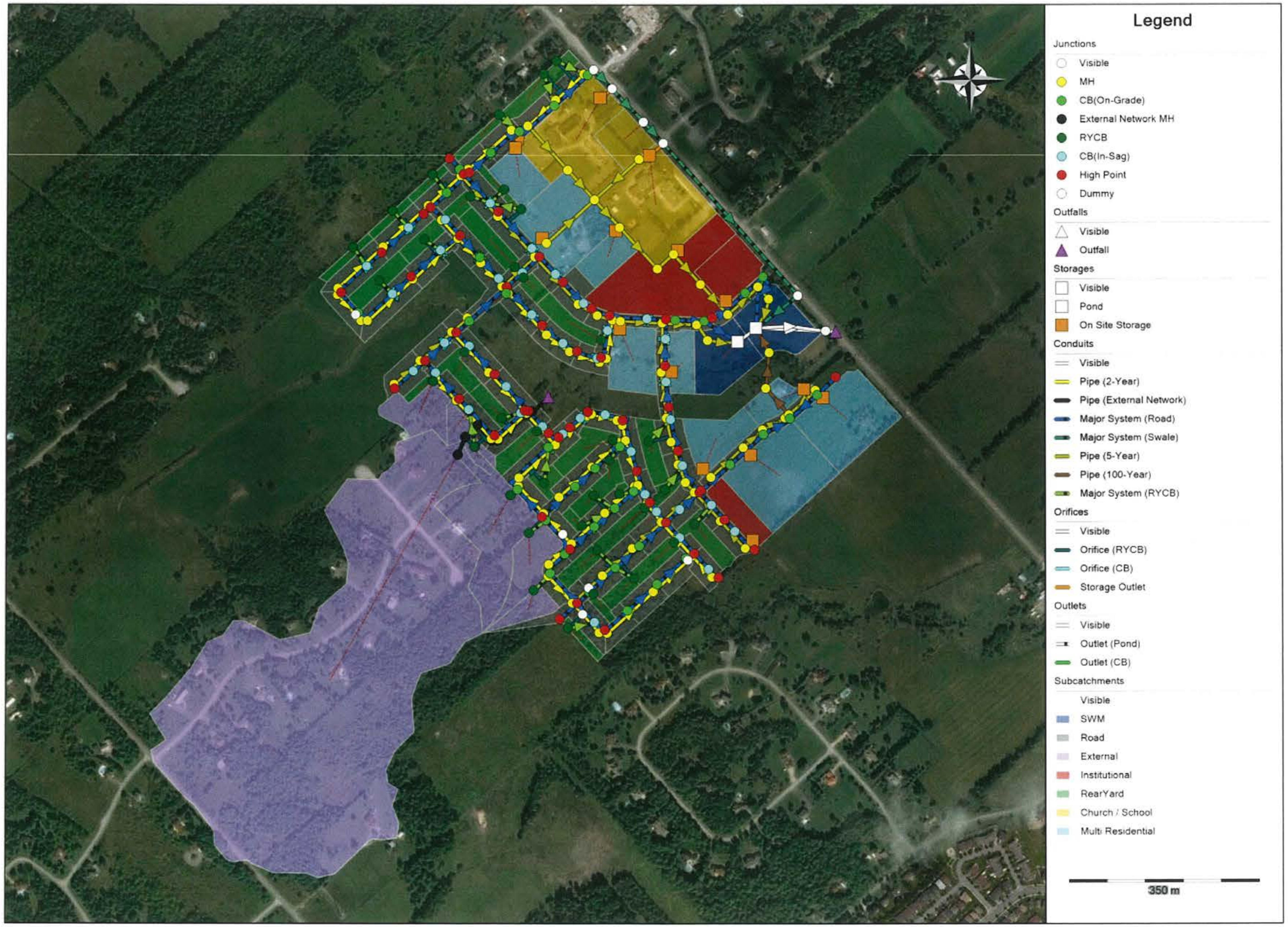
From Outlet Tab (Orifice 1)

C	0.61	
Dia	130.00	mm
Area	0.0133	m2
Invert	79.50	m
C/L	79.57	m

From Outlet Tab (Orifice 2)

C	0.61
Dia	360.00
Area	0.10
Invert	80.50
C/L	80.68

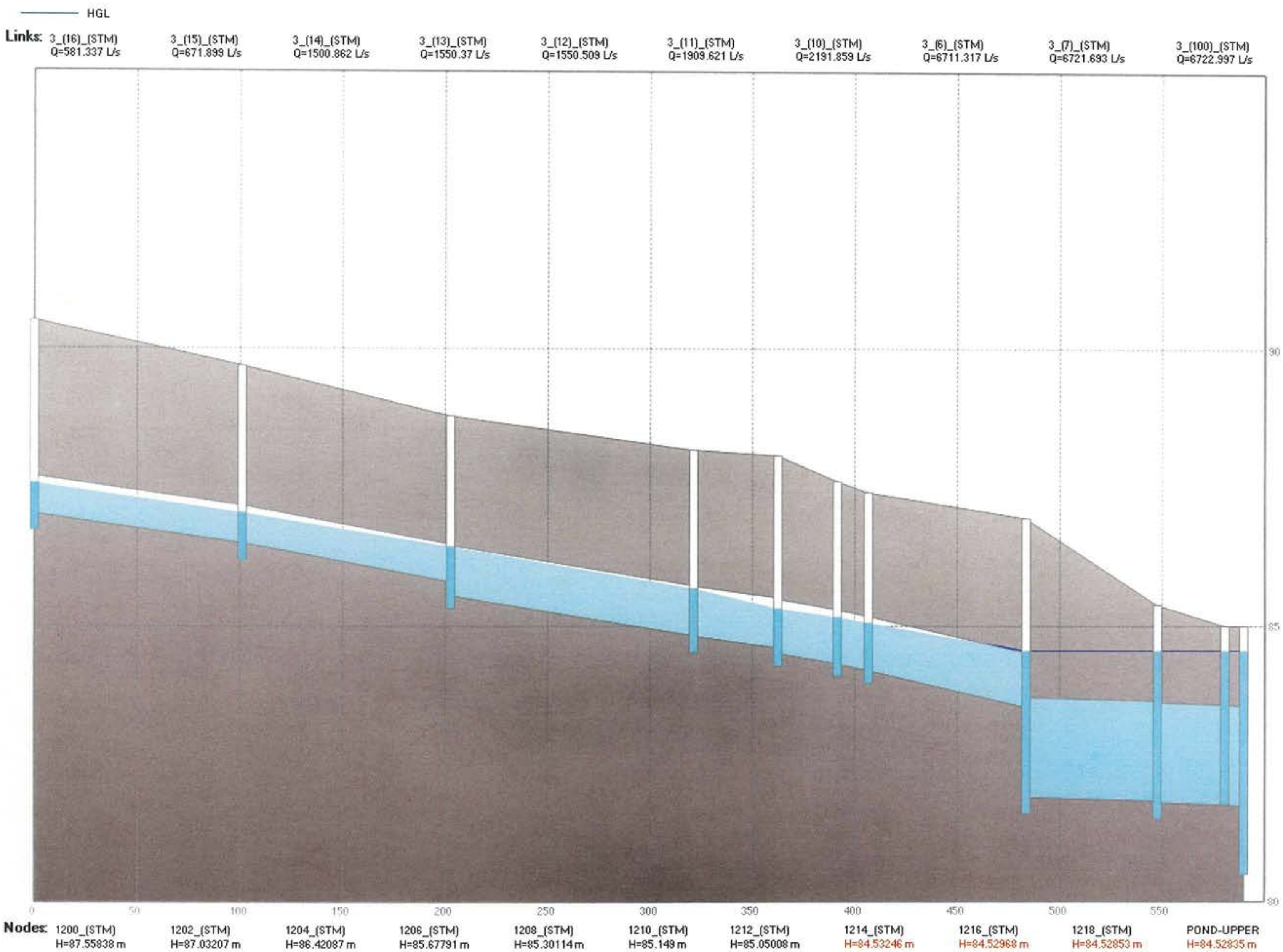
Claridge/Uniform Subdivision (116132)
PCSWMM Model Schematic



Date: 11/05/2018
M:\2016\116132\DATA\Reports\Design Brief\Appendix B - Storm Drainage\PCSWMM Model Schematic.pdf

Claridge/Uniform Subdivision (116132)

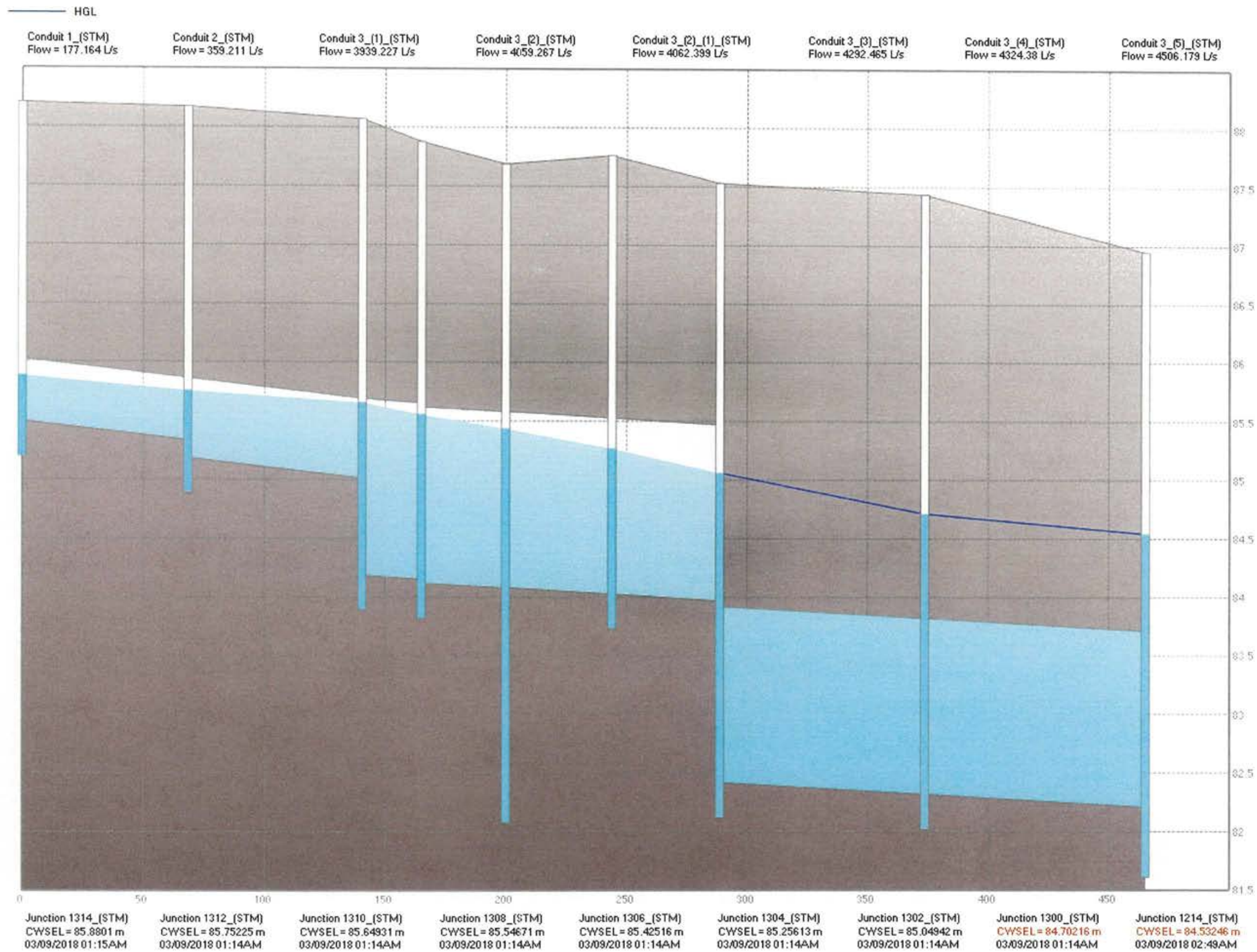
PCSWMM Model Profile - Street 1 (100-Year, 3 hour Chicago)



Date: 24/05/2018
M:\2016\116132\DATA\Reports\Design Brief\Appendix B - Storm Drainage\PCSWMM Model Profiles (3h-CHI).pdf

Claridge/Uniform Subdivision (116132)

PCSWMM Model Profile - Street 12 100-Year, 3 hour Chicago)



Date: 24/05/2018
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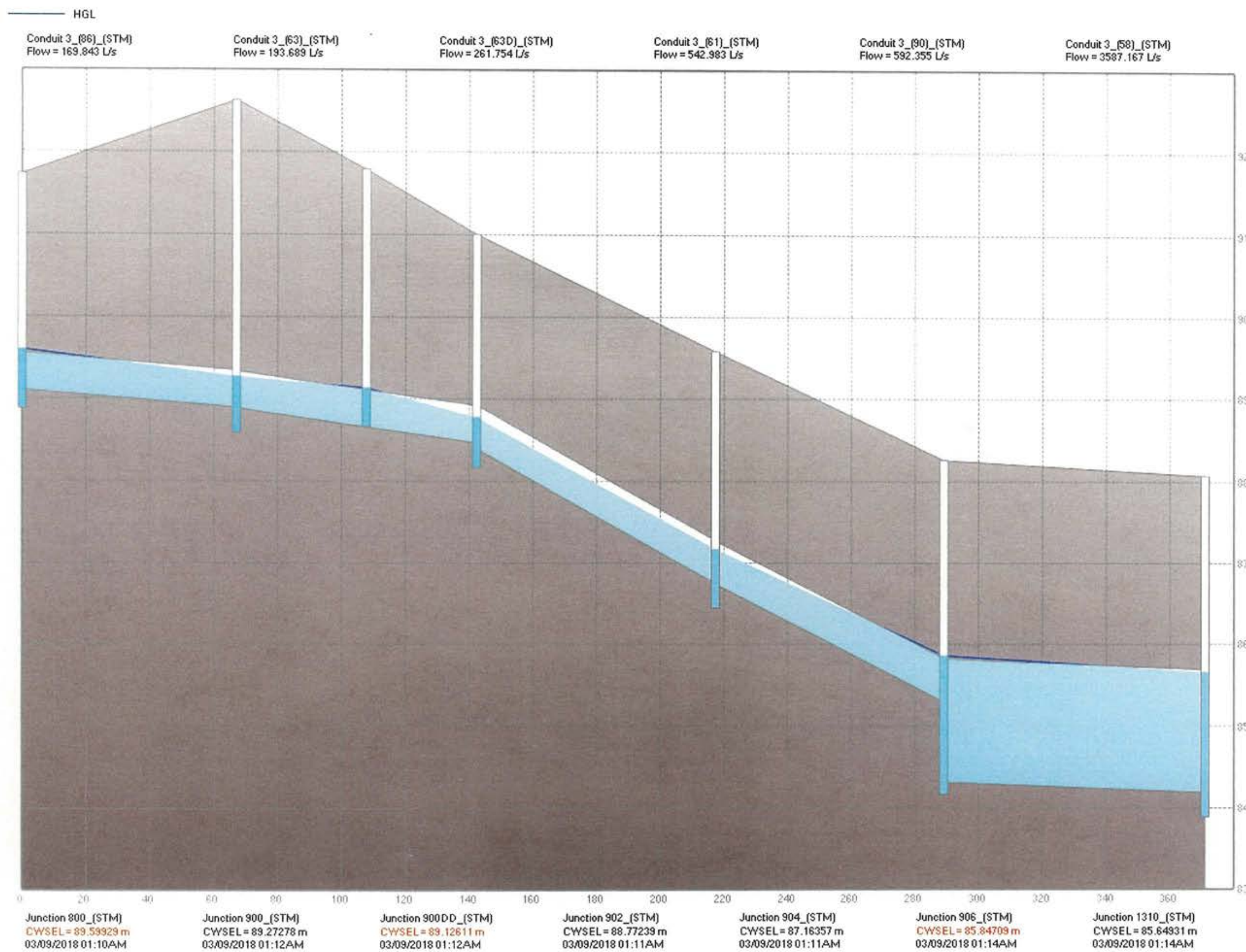
Claridge/Uniform Subdivision (116132)

PCSWMM Model Profile - Street 10 100-Year, 3 hour Chicago)



Date: 24/05/2018
M:\2016\116132\DATA\Reports\Design Brief\Appendix B - Storm Drainage\PCSWMM Model Profiles (3h-CHI).pdf

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

PCSWMM Model for Claridge Uniform Subdivision

WARNING 02: maximum depth increased for Node CB-003-004
WARNING 02: maximum depth increased for Node CB-111-112
WARNING 02: maximum depth increased for Node CB-142-143
WARNING 02: maximum depth increased for Node RYCB03
WARNING 02: maximum depth increased for Node RYCB04
WARNING 02: maximum depth increased for Node RYCB05
WARNING 02: maximum depth increased for Node RYCB07
WARNING 02: maximum depth increased for Node RYCB09
WARNING 02: maximum depth increased for Node RYCB10
WARNING 02: maximum depth increased for Node RYCB11
WARNING 02: maximum depth increased for Node RYCB16
WARNING 02: maximum depth increased for Node RYCB17
WARNING 02: maximum depth increased for Node RYCB19
WARNING 02: maximum depth increased for Node RYCB22
WARNING 02: maximum depth increased for Node RYCB26
WARNING 02: maximum depth increased for Node RYCB29
WARNING 02: maximum depth increased for Node RYCB30
WARNING 02: maximum depth increased for Node RYCB32
WARNING 02: maximum depth increased for Node RYCB34
WARNING 02: maximum depth increased for Node RYCB35
WARNING 02: maximum depth increased for Node RYCB40

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 133
Number of nodes ........... 297
Number of links ........... 495
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                      Data       Recording
Name                Data Source                       Type       Interval
------------------------------------------------------------------------
Raingage            C3hr-100yr                        INTENSITY   10 min.
```

```
********************
Subcatchment Summary
********************
Name                          Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------------------
NADIA                        25.83   1258.32     21.43    2.0000 Raingage             HW1_(STM-OS)
NW-001                        0.55    286.55     64.29    0.8000 Raingage             CB-109-110
NW-002                        0.18    242.24     64.29    1.6000 Raingage             RYCB28
NW-003                        0.51    263.39     64.29    0.8000 Raingage             CB-111-112
NW-004                        0.15    190.25     64.29    1.6000 Raingage             RYCB27
NW-005                        0.38    197.18     64.29    0.5000 Raingage             CB-113-114
NW-006                        0.14    179.07     64.29    1.6000 Raingage             RYCB26
NW-007                        0.09    114.32     64.29    0.4000 Raingage             CB-001-002
NW-008                        0.41    205.86     64.29    1.0000 Raingage             CB-003-004
NW-009                        0.10    134.95     64.29    1.5000 Raingage             RYCB34
NW-010                        0.14     93.30     64.29    1.5000 Raingage             RYCB25
NW-011                        0.06     71.64     64.29    1.8000 Raingage             RYCB35
NW-012                        0.41    198.40     64.29    0.6000 Raingage             CB-005-006
NW-013                        0.25    133.37     64.29    2.2000 Raingage             CB-107-108
NW-014                        0.67    314.09     64.29    0.4000 Raingage             CB-105-106
NW-015                        0.41    239.68     64.29    2.0000 Raingage             RYCB29
NW-016                        0.46    227.32     64.29    0.8000 Raingage             CB-103-104
NW-017                        0.28    179.25     64.29    1.5000 Raingage             RYCB30
NW-018                        0.16    355.59     64.29    1.1000 Raingage             CB-123-124
NW-019                        0.29    157.96     64.29    1.2000 Raingage             CB-125-126
NW-020                        0.35    191.67     64.29    1.2000 Raingage             CB-127-128
NW-021A                       0.12    114.22     64.29    0.8000 Raingage             CB-129
NW-021B                       0.24    136.83     64.29    1.0000 Raingage             CB-047-048
NW-022                        0.44    272.28     64.29    2.0000 Raingage             RYCB24
NW-023                        0.17    100.37     64.29    2.3000 Raingage             RYCB23
NW-024                        0.38    190.31     67.14    0.9000 Raingage             CB-007-008
NW-025                        0.29    143.95     64.29    1.0000 Raingage             CB-009-010
NW-026                        0.41    215.52     64.29    1.3000 Raingage             CB-130-131
NW-027                        0.40    203.22     64.29    1.1000 Raingage             CB-132-133
NW-028                        0.26    134.87     64.29    1.1000 Raingage             CB-134-135
NW-029                        0.29    138.34     64.29    1.3000 Raingage             CB-136-137
NW-030                        0.42    242.39     64.29    2.0000 Raingage             RYCB22
NW-031                        0.99    261.80     71.43    1.0000 Raingage             SU-031
NW-032                        0.26    399.17     71.43    1.5000 Raingage             CB-011-012
NW-033                        0.41    192.26     64.29    0.8000 Raingage             CB-041-042
NW-034                        0.40    179.30     64.29    1.0000 Raingage             CB-043-044
NW-035                        0.14     61.78     64.29    0.8000 Raingage             CB-045-046
NW-036                        0.45    232.75     64.29    0.7000 Raingage             CB-138-139
NW-037                        0.28    196.32     64.29    2.0000 Raingage             RYCB21
```

NW-038	0.43	221.34	64.29	0.7000	Raingage	CB-140-141
NW-039	0.23	122.04	64.29	1.0000	Raingage	CB-144-145
NW-040	0.09	138.34	64.29	1.8000	Raingage	RYCB19
NW-041A	0.83	181.82	30.00	2.0000	Raingage	RYCB40
NW-041B	0.26	105.82	28.57	2.0000	Raingage	CB-146-147
NW-042	0.36	188.19	64.29	1.1000	Raingage	CB-146-147
NW-043A	0.10	126.85	64.29	2.0000	Raingage	RYCB18
NW-043B	0.13	101.17	28.57	2.0000	Raingage	RYCB39
NW-044	0.28	148.18	64.29	0.8000	Raingage	CB-148-149
NW-045	0.27	180.87	64.29	1.5000	Raingage	RYCB20
NW-046	0.16	85.03	64.29	1.7000	Raingage	CB-142-143
NW-047	0.32	206.07	64.29	1.6000	Raingage	RYCB17
NW-048	0.24	122.61	64.29	1.2000	Raingage	CB-051-052
NW-049	2.57	359.10	21.43	2.0000	Raingage	RYCB38
NW-050	0.38	208.53	64.29	1.0000	Raingage	CB-053-054
NW-051	0.21	128.25	64.29	1.6000	Raingage	RYCB12
NW-052	0.25	136.34	64.29	1.7000	Raingage	CB-055-056
NW-053	0.13	71.87	64.29	0.7000	Raingage	CB-057-058
NW-054	0.21	114.69	64.29	0.9000	Raingage	CB-059-060
NW-055	0.27	146.79	64.29	1.7000	Raingage	CB-071-072
NW-056	0.08	84.71	64.29	1.0000	Raingage	RYCB08
NW-057	0.24	129.82	64.29	1.3000	Raingage	CB-073-074
NW-058	0.21	115.06	64.29	1.0000	Raingage	CB-075-076
NW-059	0.23	151.44	64.29	1.0000	Raingage	RYCB10
NW-060	0.43	266.19	64.29	1.6000	Raingage	RYCB13
NW-061	0.41	231.68	64.29	0.9000	Raingage	CB-061-062
NW-062	0.16	80.67	64.29	1.5000	Raingage	CB-087-088
NW-063	0.22	114.53	64.29	0.6000	Raingage	CB-049-050
NW-064	0.90	283.78	21.43	3.0000	Raingage	RYCB36
NW-065	0.25	122.06	64.29	0.7000	Raingage	CB-089-090
NW-066	0.17	105.95	64.29	1.0000	Raingage	RYCB09
NW-067	0.24	124.66	64.29	1.5000	Raingage	CB-091-092
NW-068A	0.20	103.00	64.29	2.2000	Raingage	CB-093-094
NW-068B	0.03	43.29	64.29	1.5000	Raingage	RYCB11
NW-069	0.23	123.36	64.29	1.2000	Raingage	CB-063-064
NW-070	0.36	244.99	64.29	1.8000	Raingage	RYCB07
NW-071	0.21	95.38	64.29	1.8000	Raingage	CB-065-066
NW-072	0.20	105.51	64.29	1.2000	Raingage	CB-085-086
NW-073	0.42	222.81	12.86	3.0000	Raingage	RYCB01
NW-074	0.12	52.98	64.29	2.2000	Raingage	CB-033-034
NW-075	0.10	126.98	64.29	1.0000	Raingage	RYCB03
NW-076	0.35	160.71	64.29	2.0000	Raingage	CB-035-036
NW-077	0.27	185.00	64.29	1.9000	Raingage	RYCB06
NW-078	0.33	150.50	64.29	1.8000	Raingage	CB-037-038
NW-079	0.61	321.08	48.57	1.5000	Raingage	CB-083-084
NW-080	0.15	181.34	64.29	1.7000	Raingage	RYCB02

NW-081	0.28	130.86	64.29	1.6000	Raingage	CB-081-082
NW-082	0.21	146.72	64.29	2.0000	Raingage	RYCB04
NW-083	0.38	173.52	64.29	1.7000	Raingage	CB-079-080
NW-084	0.38	173.67	64.29	1.8000	Raingage	CB-077-078
NW-085	0.28	157.10	64.29	1.0000	Raingage	CB-069-070
NW-086	0.33	181.74	64.29	1.3000	Raingage	CB-067-068
NW-087	0.30	205.53	64.29	2.1000	Raingage	RYCB05
NW-088	0.37	168.36	64.29	0.8000	Raingage	CB-039-040
NW-089	0.28	134.73	64.29	1.0000	Raingage	CB-031-032
NW-090	0.60	277.94	64.29	1.0000	Raingage	SU-090
NW-091	0.22	104.18	64.29	1.0000	Raingage	CB-029-030
NW-092	0.43	271.36	64.29	1.6000	Raingage	RYCB14
NW-093	0.36	178.37	65.71	0.8000	Raingage	CB-027-028
NW-094	0.14	118.96	64.29	1.6000	Raingage	RYCB15
NW-095	0.37	180.56	65.71	0.7000	Raingage	CB-025-026
NW-096	0.41	265.80	64.29	2.0000	Raingage	RYCB16
NW-097	0.19	252.22	71.43	1.1000	Raingage	CB-023-024
NW-098	0.61	240.85	71.43	1.0000	Raingage	SU-098
NW-099	0.15	216.85	71.43	0.6000	Raingage	CB-021-022
NW-100	0.07	104.03	71.43	2.2000	Raingage	CB-013-014
NW-101	0.20	110.32	64.29	1.4000	Raingage	CB-115-116
NW-102	0.35	184.21	64.29	1.4000	Raingage	CB-117-118
NW-103	0.17	242.28	64.29	2.0000	Raingage	RYCB31
NW-104A	0.31	160.58	64.29	1.0000	Raingage	CB-121-122
NW-104B	2.37	285.37	25.71	1.0000	Raingage	SU-104B
NW-105	0.18	139.23	64.29	2.0000	Raingage	RYCB33
NW-106	0.28	141.36	64.29	0.5000	Raingage	CB-119-120
NW-107	0.31	232.73	64.29	2.0000	Raingage	RYCB32
NW-108	0.66	144.57	64.29	1.0000	Raingage	SU-108
NW-109	1.98	274.75	67.14	1.0000	Raingage	SU-109
NW-110A	0.64	152.40	0.00	1.0000	Raingage	OVF-04
NW-110B	2.58	344.87	64.29	1.0000	Raingage	SU-110B
NW-111	0.63	214.78	71.43	1.0000	Raingage	SU-111
NW-112	2.58	532.38	92.86	1.0000	Raingage	SU-112
NW-113	0.18	250.83	71.43	2.4000	Raingage	CB-015-016
NW-114	0.89	214.98	92.86	1.0000	Raingage	SU-114
NW-115	0.23	316.89	71.43	1.8000	Raingage	CB-017-018
NW-116	0.07	95.19	71.43	1.8000	Raingage	CB-019-020
NW-117	0.15	129.41	71.43	1.7000	Raingage	CB-095-096
NW-118	0.91	311.39	71.43	1.0000	Raingage	SU-118
NW-119	0.20	165.70	71.43	1.7000	Raingage	CB-097-098
NW-120	2.31	334.41	64.29	1.0000	Raingage	SU-120
NW-121	0.14	108.80	71.43	2.7000	Raingage	CB-099-100
NW-122	0.50	204.10	81.43	1.0000	Raingage	SU-122
NW-123	1.96	333.24	80.00	1.0000	Raingage	SU-123
NW-124	0.16	126.38	71.43	2.0000	Raingage	CB-101-102

```
POND-1                          1.21    604.27      85.71     1.0000 Raingage             POND-UPPER
POND-2                          1.25    429.98      85.71     1.0000 Raingage             POND-LOWER
```

```
************
Node Summary
************
```

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
1+000	JUNCTION	90.47	1.00	0.0	
1+070	JUNCTION	90.12	1.00	0.0	
1+150	JUNCTION	90.01	1.00	0.0	
1+274	JUNCTION	89.07	1.00	0.0	
10+091	JUNCTION	92.07	1.00	0.0	
100_(STM)	JUNCTION	87.62	2.65	0.0	
1000_(STM)	JUNCTION	89.19	2.85	0.0	
1002_(STM)	JUNCTION	89.05	2.98	0.0	
1004_(STM)	JUNCTION	87.27	2.97	0.0	
1004D_(STM)	JUNCTION	86.19	3.47	0.0	
102_(STM)	JUNCTION	87.34	2.85	0.0	
104_(STM)	JUNCTION	86.91	3.17	0.0	
106_(STM)	JUNCTION	87.38	2.52	0.0	
11+094	JUNCTION	88.41	1.00	0.0	
11+162	JUNCTION	88.67	1.00	0.0	
1100_(STM)	JUNCTION	85.18	3.31	0.0	
1102_(STM)	JUNCTION	85.84	2.78	0.0	
12+000	JUNCTION	90.44	1.00	0.0	
12+040	JUNCTION	90.46	1.00	0.0	
12+134	JUNCTION	89.70	1.00	0.0	
12+242	JUNCTION	88.72	1.00	0.0	
12+310	JUNCTION	88.52	1.00	0.0	
12+384	JUNCTION	88.22	1.00	0.0	
12+428	JUNCTION	87.57	1.00	0.0	
12+523	JUNCTION	86.85	1.00	0.0	
12+600	JUNCTION	84.87	1.00	0.0	
1200_(STM)	JUNCTION	86.73	3.78	0.0	
1202_(STM)	JUNCTION	86.20	3.50	0.0	
1204_(STM)	JUNCTION	85.32	3.47	0.0	
1206_(STM)	JUNCTION	84.52	3.65	0.0	
1208_(STM)	JUNCTION	84.28	3.80	0.0	
1210_(STM)	JUNCTION	84.09	3.55	0.0	
1212_(STM)	JUNCTION	83.88	3.53	0.0	
1214_(STM)	JUNCTION	81.61	5.34	0.0	
1216_(STM)	JUNCTION	81.51	3.87	0.0	
1218_(STM)	JUNCTION	81.37	3.63	0.0	
1220_(STM)	JUNCTION	79.57	4.77	0.0	
1222_(STM)	JUNCTION	79.39	3.56	0.0	
13+093	JUNCTION	87.48	1.00	0.0	
13+171	JUNCTION	87.69	1.00	0.0	
13+251	JUNCTION	87.79	1.00	0.0	
13+413	JUNCTION	88.12	1.00	0.0	
13+490	JUNCTION	88.25	1.00	0.0	
1300_(STM)	JUNCTION	82.02	5.42	0.0	
1302_(STM)	JUNCTION	82.12	5.41	0.0	
1304_(STM)	JUNCTION	83.73	4.03	0.0	
1306_(STM)	JUNCTION	83.78	3.91	0.0	
1308_(STM)	JUNCTION	83.82	4.06	0.0	
1310_(STM)	JUNCTION	83.89	4.18	0.0	
1312_(STM)	JUNCTION	84.89	3.28	0.0	
1314_(STM)	JUNCTION	85.20	3.00	0.0	
1400_(STM)	JUNCTION	82.20	5.20	0.0	
1402_(STM)	JUNCTION	81.99	5.51	0.0	
1404_(STM)	JUNCTION	81.62	4.57	0.0	
1406_(STM)	JUNCTION	81.24	5.69	0.0	
1408_(STM)	JUNCTION	80.80	5.53	0.0	
1410_(STM)	JUNCTION	80.47	5.08	0.0	
1412_(STM)	JUNCTION	80.16	4.81	0.0	
1500_(STM)	JUNCTION	85.40	1.75	0.0	
1502_(STM)	JUNCTION	82.27	3.22	0.0	
1505_(STM)	JUNCTION	79.35	3.57	0.0	
1600_(STM)	JUNCTION	87.00	1.34	0.0	
1602_(STM)	JUNCTION	84.60	2.90	0.0	
1604_(STM)	JUNCTION	82.78	4.42	0.0	
1606_(STM)	JUNCTION	83.09	3.91	0.0	
2+089	JUNCTION	90.50	1.00	0.0	
2+112	JUNCTION	90.67	1.00	0.0	
2+218	JUNCTION	90.93	1.00	0.0	
2+335	JUNCTION	91.17	1.00	0.0	
2+516	JUNCTION	90.51	1.00	0.0	
200_(STM)	JUNCTION	87.18	3.43	0.0	
202_(STM)	JUNCTION	87.76	3.17	0.0	
204_(STM)	JUNCTION	88.35	2.77	0.0	
206_(STM)	JUNCTION	88.37	2.81	0.0	
208_(STM)	JUNCTION	88.04	2.80	0.0	
20A_(STM)	JUNCTION	88.42	2.56	0.0	
210_(STM)	JUNCTION	87.84	2.93	0.0	
212_(STM)	JUNCTION	87.24	3.35	0.0	
3+088	JUNCTION	90.17	1.00	0.0	
3+313	JUNCTION	88.52	1.00	0.0	
3+395	JUNCTION	88.32	1.00	0.0	
3+447	JUNCTION	87.97	1.00	0.0	

300_(STM)	JUNCTION	87.31	2.74	0.0
302_(STM)	JUNCTION	86.75	3.49	0.0
304_(STM)	JUNCTION	86.35	3.13	0.0
306_(STM)	JUNCTION	85.88	3.26	0.0
308_(STM)	JUNCTION	85.86	3.16	0.0
310_(STM)	JUNCTION	85.45	2.94	0.0
312_(STM)	JUNCTION	85.25	3.00	0.0
314_(STM)	JUNCTION	85.05	2.89	0.0
316_(STM)	JUNCTION	84.98	2.95	0.0
4+112	JUNCTION	90.12	1.00	0.0
4+213	JUNCTION	90.23	1.00	0.0
4+270	JUNCTION	89.37	1.00	0.0
400_(STM)	JUNCTION	86.58	3.62	0.0
402_(STM)	JUNCTION	86.14	4.15	0.0
5+111	JUNCTION	90.47	1.00	0.0
5+210	JUNCTION	90.87	1.00	0.0
5+285	JUNCTION	90.36	1.00	0.0
500_(STM)	JUNCTION	87.29	2.59	0.0
502_(STM)	JUNCTION	86.84	3.69	0.0
504_(STM)	JUNCTION	86.57	4.28	0.0
506_(STM)	JUNCTION	86.45	4.41	0.0
6+088	JUNCTION	90.12	1.00	0.0
6+278	JUNCTION	88.78	1.00	0.0
6+306	JUNCTION	88.67	1.00	0.0
6+345	JUNCTION	88.61	1.00	0.0
6+410	JUNCTION	88.49	1.00	0.0
6+505	JUNCTION	88.27	1.00	0.0
6+572	JUNCTION	88.20	1.00	0.0
600_(STM)	JUNCTION	87.22	2.99	0.0
600D_(STM)	JUNCTION	88.13	2.71	0.0
602_(STM)	JUNCTION	86.70	2.96	0.0
604_(STM)	JUNCTION	86.51	3.25	0.0
606_(STM)	JUNCTION	85.37	3.84	0.0
608_(STM)	JUNCTION	85.18	3.50	0.0
610_(STM)	JUNCTION	85.12	3.49	0.0
612_(STM)	JUNCTION	84.99	3.52	0.0
614_(STM)	JUNCTION	84.93	3.60	0.0
616_(STM)	JUNCTION	84.87	3.41	0.0
618_(STM)	JUNCTION	84.69	3.48	0.0
620_(STM)	JUNCTION	84.51	3.73	0.0
700_(STM)	JUNCTION	87.20	2.72	0.0
702_(STM)	JUNCTION	86.05	3.13	0.0
704_(STM)	JUNCTION	85.46	2.95	0.0
8+150	JUNCTION	90.57	1.00	0.0
800_(STM)	JUNCTION	88.88	2.85	0.0
802_(STM)	JUNCTION	88.90	2.58	0.0
804_(STM)	JUNCTION	87.93	2.71	0.0
806_(STM)	JUNCTION	86.54	3.49	0.0
808_(STM)	JUNCTION	85.39	2.83	0.0
9+000	JUNCTION	93.32	1.00	0.0
9+040	JUNCTION	92.52	1.00	0.0
9+261	JUNCTION	88.15	1.00	0.0
9+342	JUNCTION	87.99	1.00	0.0
9+347	JUNCTION	87.99	1.00	0.0
9+713	JUNCTION	84.10	1.00	0.0
900_(STM)	JUNCTION	88.59	4.05	0.0
900D_(STM)	JUNCTION	89.70	2.56	0.0
900DD_(STM)	JUNCTION	88.66	3.13	0.0
902_(STM)	JUNCTION	88.17	2.83	0.0
904_(STM)	JUNCTION	86.44	3.14	0.0
906_(STM)	JUNCTION	84.17	4.09	0.0
908_(STM)	JUNCTION	84.24	3.15	0.0
910_(STM)	JUNCTION	82.67	3.32	0.0
912_(STM)	JUNCTION	81.75	3.38	0.0
914_(STM)	JUNCTION	80.91	2.94	0.0
916_(STM)	JUNCTION	79.15	4.46	0.0
918_(STM)	JUNCTION	79.58	4.42	0.0
920_(STM)	JUNCTION	79.05	5.13	0.0
922_(STM)	JUNCTION	78.98	4.50	0.0
CB-001-002	JUNCTION	90.32	1.00	0.0
CB-003-004	JUNCTION	87.99	2.51	0.0
CB-005-006	JUNCTION	87.04	2.48	0.0
CB-007-008	JUNCTION	86.67	2.60	0.0
CB-009-010	JUNCTION	86.37	2.60	0.0
CB-011-012	JUNCTION	84.97	2.60	0.0
CB-013-014	JUNCTION	86.39	1.00	0.0
CB-015-016	JUNCTION	84.90	1.00	0.0
CB-017-018	JUNCTION	82.67	1.00	0.0
CB-019-020	JUNCTION	82.40	1.00	0.0
CB-021-022	JUNCTION	85.05	2.60	0.0
CB-023-024	JUNCTION	85.53	2.60	0.0
CB-025-026	JUNCTION	85.74	2.60	0.0
CB-027-028	JUNCTION	85.89	2.60	0.0
CB-029-030	JUNCTION	86.04	2.60	0.0
CB-031-032	JUNCTION	86.17	2.60	0.0
CB-033-034	JUNCTION	91.73	1.00	0.0
CB-035-036	JUNCTION	90.40	1.00	0.0
CB-037-038	JUNCTION	89.28	1.00	0.0
CB-039-040	JUNCTION	86.14	2.60	0.0
CB-041-042	JUNCTION	88.27	2.60	0.0
CB-043-044	JUNCTION	88.11	2.60	0.0
CB-045-046	JUNCTION	89.76	1.00	0.0

CB-047-048	JUNCTION	86.97	2.60	0.0
CB-049-050	JUNCTION	90.20	1.00	0.0
CB-051-052	JUNCTION	89.52	1.00	0.0
CB-053-054	JUNCTION	89.20	1.00	0.0
CB-055-056	JUNCTION	86.92	2.60	0.0
CB-057-058	JUNCTION	86.89	2.60	0.0
CB-059-060	JUNCTION	86.64	2.60	0.0
CB-061-062	JUNCTION	86.42	2.60	0.0
CB-063-064	JUNCTION	86.25	2.60	0.0
CB-065-066	JUNCTION	86.25	2.60	0.0
CB-067-068	JUNCTION	86.27	2.60	0.0
CB-069-070	JUNCTION	86.61	2.60	0.0
CB-071-072	JUNCTION	89.54	1.00	0.0
CB-073-074	JUNCTION	89.07	1.00	0.0
CB-075-076	JUNCTION	88.62	1.00	0.0
CB-077-078	JUNCTION	88.64	1.00	0.0
CB-079-080	JUNCTION	89.89	1.00	0.0
CB-081-082	JUNCTION	91.12	1.00	0.0
CB-083-084	JUNCTION	90.17	2.60	0.0
CB-085-086	JUNCTION	91.66	1.00	0.0
CB-087-088	JUNCTION	90.88	1.00	0.0
CB-089-090	JUNCTION	90.19	1.00	0.0
CB-091-092	JUNCTION	89.53	1.00	0.0
CB-093-094	JUNCTION	88.42	1.00	0.0
CB-095-096	JUNCTION	86.55	1.00	0.0
CB-097-098	JUNCTION	85.11	1.00	0.0
CB-099-100	JUNCTION	83.54	1.00	0.0
CB-101-102	JUNCTION	84.00	1.00	0.0
CB-103-104	JUNCTION	88.27	2.60	0.0
CB-105-106	JUNCTION	88.65	2.60	0.0
CB-107-108	JUNCTION	90.89	1.00	0.0
CB-109-110	JUNCTION	89.08	2.60	0.0
CB-111-112	JUNCTION	88.77	2.60	0.0
CB-113-114	JUNCTION	88.56	2.60	0.0
CB-115-116	JUNCTION	89.61	1.00	0.0
CB-117-118	JUNCTION	88.50	1.00	0.0
CB-119-120	JUNCTION	87.36	1.00	0.0
CB-121-122	JUNCTION	86.00	1.00	0.0
CB-123-124	JUNCTION	88.27	2.60	0.0
CB-125-126	JUNCTION	89.51	1.00	0.0
CB-127-128	JUNCTION	87.27	2.60	0.0
CB-129	JUNCTION	88.92	1.00	0.0
CB-130-131	JUNCTION	86.62	2.60	0.0
CB-132-133	JUNCTION	86.42	2.60	0.0
CB-134-135	JUNCTION	86.27	2.60	0.0
CB-136-137	JUNCTION	85.67	2.60	0.0
CB-138-139	JUNCTION	88.11	2.60	0.0
CB-140-141	JUNCTION	88.22	2.60	0.0
CB-142-143	JUNCTION	87.63	2.60	0.0
CB-144-145	JUNCTION	88.17	2.60	0.0
CB-146-147	JUNCTION	88.57	2.60	0.0
CB-148-149	JUNCTION	88.69	2.60	0.0
HP-W	JUNCTION	90.33	1.00	0.0
HW1_(STM-OS)	JUNCTION	88.83	1.07	0.0
OS-1_(STM-OS)	JUNCTION	88.37	2.64	0.0
OS-2_(STM-OS)	JUNCTION	88.19	2.34	0.0
OS-3_(STM-OS)	JUNCTION	88.03	2.98	0.0
OS-4_(STM-OS)	JUNCTION	87.96	3.05	0.0
OS-5_(STM-OS)	JUNCTION	87.71	2.49	0.0
OS-6_(STM-OS)	JUNCTION	86.37	3.96	0.0
OVF-02	JUNCTION	85.10	1.00	0.0
OVF-03	JUNCTION	84.81	1.00	0.0
OVF-04	JUNCTION	84.32	1.00	0.0
OVF-05	JUNCTION	84.00	1.00	0.0
OVF-06	JUNCTION	82.40	1.00	0.0
POND-OUT	JUNCTION	77.90	4.40	0.0
RYCB01	JUNCTION	90.45	1.95	0.0
RYCB02	JUNCTION	90.14	2.54	0.0
RYCB03	JUNCTION	89.91	2.17	0.0
RYCB04	JUNCTION	88.67	2.08	0.0
RYCB05	JUNCTION	86.60	1.95	0.0
RYCB06	JUNCTION	88.95	1.95	0.0
RYCB07	JUNCTION	86.80	1.95	0.0
RYCB08	JUNCTION	89.11	1.30	0.0
RYCB09	JUNCTION	88.75	1.30	0.0
RYCB10	JUNCTION	87.22	2.04	0.0
RYCB11	JUNCTION	87.25	2.17	0.0
RYCB12	JUNCTION	89.07	1.30	0.0
RYCB13	JUNCTION	87.77	1.30	0.0
RYCB14	JUNCTION	86.79	1.30	0.0
RYCB15	JUNCTION	86.91	1.30	0.0
RYCB16	JUNCTION	85.96	2.11	0.0
RYCB17	JUNCTION	87.50	2.17	0.0
RYCB18	JUNCTION	88.95	1.93	0.0
RYCB19	JUNCTION	88.00	2.20	0.0
RYCB20	JUNCTION	89.71	1.30	0.0
RYCB21	JUNCTION	89.17	0.87	0.0
RYCB22	JUNCTION	85.79	2.05	0.0
RYCB23	JUNCTION	87.70	1.30	0.0
RYCB24	JUNCTION	87.15	1.75	0.0
RYCB25	JUNCTION	89.00	1.30	0.0
RYCB26	JUNCTION	88.61	2.20	0.0

RYCB27	JUNCTION	88.71	2.23	0.0
RYCB28	JUNCTION	89.76	1.30	0.0
RYCB29	JUNCTION	88.52	2.17	0.0
RYCB30	JUNCTION	88.13	2.29	0.0
RYCB31	JUNCTION	87.75	1.07	0.0
RYCB32	JUNCTION	85.75	2.05	0.0
RYCB33	JUNCTION	85.93	1.30	0.0
RYCB34	JUNCTION	88.32	1.95	0.0
RYCB35	JUNCTION	88.10	1.79	0.0
RYCB36	JUNCTION	88.02	2.78	0.0
RYCB38	JUNCTION	87.58	2.74	0.0
RYCB39	JUNCTION	89.12	1.46	0.0
RYCB40	JUNCTION	87.96	2.24	0.0
OUT-EXT	OUTFALL	86.47	0.90	0.0
OUT-MAIN	OUTFALL	77.80	1.00	0.0
POND-LOWER	STORAGE	78.00	4.30	0.0
POND-UPPER	STORAGE	80.50	4.50	0.0
SU-031	STORAGE	85.99	1.75	0.0
SU-090	STORAGE	86.81	1.75	0.0
SU-098	STORAGE	86.04	1.75	0.0
SU-104B	STORAGE	84.81	1.75	0.0
SU-108	STORAGE	86.00	1.75	0.0
SU-109	STORAGE	85.75	1.75	0.0
SU-110B	STORAGE	84.00	1.75	0.0
SU-111	STORAGE	85.14	1.75	0.0
SU-112	STORAGE	82.98	1.75	0.0
SU-114	STORAGE	82.66	1.75	0.0
SU-118	STORAGE	85.99	1.75	0.0
SU-120	STORAGE	84.59	1.75	0.0
SU-122	STORAGE	80.88	1.75	0.0
SU-123	STORAGE	80.88	1.75	0.0

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
1_(STM)	1314_(STM)	1312_(STM)	CONDUIT	68.4	0.2339	0.0130
2_(STM)	1312_(STM)	1310_(STM)	CONDUIT	72.0	0.2402	0.0130
3_(1)_(STM)	1310_(STM)	1308_(STM)	CONDUIT	24.6	0.1507	0.0130
3_(10)_(STM)	1212_(STM)	1214_(STM)	CONDUIT	77.0	0.8574	0.0130
3_(100)_(STM)	1218_(STM)	POND-UPPER	CONDUIT	12.9	0.1550	0.0130
3_(11)_(STM)	1210_(STM)	1212_(STM)	CONDUIT	15.2	0.8539	0.0130
3_(12)_(STM)	1208_(STM)	1210_(STM)	CONDUIT	29.0	0.6548	0.0130
3_(13)_(STM)	1206_(STM)	1208_(STM)	CONDUIT	41.2	0.7038	0.0130
3_(14)_(STM)	1204_(STM)	1206_(STM)	CONDUIT	118.5	0.6074	0.0130
3_(15)_(STM)	1202_(STM)	1204_(STM)	CONDUIT	101.6	0.6888	0.0130
3_(16)_(STM)	1200_(STM)	1202_(STM)	CONDUIT	101.0	0.5246	0.0130
3_(2)_(1)_(STM)	1306_(STM)	1304_(STM)	CONDUIT	44.0	0.1227	0.0130
3_(2)_(STM)	1308_(STM)	1306_(STM)	CONDUIT	35.1	0.1083	0.0130
3_(24)_(STM)	212_(STM)	302_(STM)	CONDUIT	113.2	0.3799	0.0130
3_(25)_(1)_(STM)	300_(STM)	302_(STM)	CONDUIT	45.9	0.4506	0.0130
3_(26)_(1)_(STM)	304_(STM)	306_(STM)	CONDUIT	58.8	0.6461	0.0130
3_(26)_(STM)	302_(STM)	304_(STM)	CONDUIT	61.8	0.6503	0.0130
3_(27)_(STM)	306_(STM)	1204_(STM)	CONDUIT	81.5	0.5031	0.0130
3_(28)_(STM)	308_(STM)	310_(STM)	CONDUIT	108.3	0.3149	0.0130
3_(29)_(STM)	310_(STM)	312_(STM)	CONDUIT	52.9	0.3212	0.0130
3_(3)_(STM)	1304_(STM)	1302_(STM)	CONDUIT	44.8	0.1338	0.0130
3_(30)_(STM)	312_(STM)	314_(STM)	CONDUIT	59.3	0.2869	0.0130
3_(31)_(STM)	314_(STM)	316_(STM)	CONDUIT	14.1	0.2834	0.0130
3_(32)_(STM)	316_(STM)	1210_(STM)	CONDUIT	72.2	0.7064	0.0130
3_(33)_(STM)	100_(STM)	102_(STM)	CONDUIT	64.9	0.3083	0.0130
3_(34)_(STM)	102_(STM)	104_(STM)	CONDUIT	79.0	0.3545	0.0130
3_(35)_(STM)	106_(STM)	104_(STM)	CONDUIT	38.6	0.4406	0.0130
3_(36)_(STM)	500_(STM)	502_(STM)	CONDUIT	67.2	0.4403	0.0130
3_(37)_(STM)	502_(STM)	504_(STM)	CONDUIT	96.3	0.2493	0.0130
3_(38)_(STM)	504_(STM)	506_(STM)	CONDUIT	12.2	0.3282	0.0130
3_(39)_(STM)	506_(STM)	402_(STM)	CONDUIT	70.3	0.2306	0.0130
3_(4)_(STM)	1302_(STM)	1300_(STM)	CONDUIT	85.0	0.1177	0.0130
3_(40)_(STM)	400_(STM)	402_(STM)	CONDUIT	102.7	0.2045	0.0130
3_(41)_(STM)	104_(STM)	400_(STM)	CONDUIT	101.0	0.2475	0.0130
3_(42)_(STM)	402_(STM)	606_(STM)	CONDUIT	79.0	0.5949	0.0130
3_(44)_(STM)	600D_(STM)	600_(STM)	CONDUIT	52.4	0.7233	0.0130
3_(44A)_(STM)	804_(STM)	600D_(STM)	CONDUIT	23.6	0.7244	0.0130
3_(45)_(STM)	600_(STM)	602_(STM)	CONDUIT	68.1	0.7194	0.0130
3_(46)_(STM)	602_(STM)	604_(STM)	CONDUIT	15.4	0.7140	0.0130
3_(47)_(STM)	604_(STM)	606_(STM)	CONDUIT	90.1	0.7655	0.0130
3_(48)_(STM)	606_(STM)	608_(STM)	CONDUIT	79.7	0.1996	0.0130
3_(49)_(STM)	608_(STM)	610_(STM)	CONDUIT	9.2	0.3253	0.0130
3_(5)_(STM)	1300_(STM)	1214_(STM)	CONDUIT	91.4	0.1203	0.0130
3_(50)_(STM)	610_(STM)	612_(STM)	CONDUIT	48.5	0.2002	0.0130
3_(51)_(STM)	612_(STM)	614_(STM)	CONDUIT	12.9	0.2629	0.0130
3_(52)_(STM)	614_(STM)	616_(STM)	CONDUIT	29.4	0.2039	0.0130
3_(53)_(STM)	616_(STM)	618_(STM)	CONDUIT	85.2	0.1643	0.0130
3_(54)_(1)_(STM)	620_(STM)	906_(STM)	CONDUIT	42.1	0.1663	0.0130
3_(54)_(STM)	618_(STM)	620_(STM)	CONDUIT	38.8	0.1803	0.0130
3_(58)_(STM)	906_(STM)	1310_(STM)	CONDUIT	81.4	0.0369	0.0130
3_(6)_(STM)	1214_(STM)	1216_(STM)	CONDUIT	63.9	0.1095	0.0130
3_(61)_(STM)	902_(STM)	904_(STM)	CONDUIT	75.0	2.2000	0.0130
3_(63)_(STM)	900_(STM)	900DD_(STM)	CONDUIT	40.6	0.5668	0.0130
3_(63D)_(STM)	900DD_(STM)	902_(STM)	CONDUIT	34.6	0.5489	0.0130

3_(64)_(STM)	900_(STM)	900D_(STM)	CONDUIT	28.7	0.4352	0.0130
3_(64D)_(STM)	900D_(STM)	1000_(STM)	CONDUIT	45.3	0.3994	0.0130
3_(65)_(STM)	1000_(STM)	1002_(STM)	CONDUIT	14.7	0.4425	0.0130
3_(66)_(STM)	1002_(STM)	1004_(STM)	CONDUIT	113.7	1.5654	0.0130
3_(67)_(STM)	1004_(STM)	1004D_(STM)	CONDUIT	86.6	1.5944	0.0130
3_(67D)_(STM)	1004D_(STM)	1100_(STM)	CONDUIT	11.8	1.6094	0.0130
3_(68)_(STM)	1100_(STM)	906_(STM)	CONDUIT	85.0	0.3059	0.0130
3_(69)_(STM)	1102_(STM)	1100_(STM)	CONDUIT	62.4	0.4487	0.0130
3_(7)_(STM)	1216_(STM)	1218_(STM)	CONDUIT	25.4	0.1575	0.0130
3_(70)_(1)_(STM)	910_(STM)	912_(STM)	CONDUIT	48.3	1.8417	0.0130
3_(70)_(STM)	908_(STM)	910_(STM)	CONDUIT	81.5	1.7428	0.0130
3_(71)_(STM)	912_(STM)	914_(STM)	CONDUIT	47.4	1.7080	0.0130
3_(72)_(1)_(STM)	918_(STM)	916_(STM)	CONDUIT	66.7	0.1995	0.0130
3_(72)_(STM)	914_(STM)	916_(STM)	CONDUIT	9.1	1.8701	0.0130
3_(73)_(STM)	1412_(STM)	1220_(STM)	CONDUIT	74.7	0.3882	0.0130
3_(74)_(STM)	1410_(STM)	1412_(STM)	CONDUIT	75.1	0.4128	0.0130
3_(75)_(STM)	1408_(STM)	1410_(STM)	CONDUIT	39.7	0.4508	0.0130
3_(76)_(1)_(STM)	1404_(STM)	1406_(STM)	CONDUIT	69.2	0.5493	0.0130
3_(76)_(STM)	1406_(STM)	1408_(STM)	CONDUIT	103.3	0.3680	0.0130
3_(77)_(STM)	1402_(STM)	1404_(STM)	CONDUIT	74.0	0.2972	0.0130
3_(78)_(STM)	1400_(STM)	1402_(STM)	CONDUIT	110.1	0.2997	0.0130
3_(79)_(STM)	1500_(STM)	1404_(STM)	CONDUIT	120.0	1.6500	0.0130
3_(80)_(STM)	1502_(STM)	1404_(STM)	CONDUIT	110.5	0.3167	0.0130
3_(81)_(STM)	1604_(STM)	1400_(STM)	CONDUIT	69.9	0.4404	0.0130
3_(82)_(STM)	1606_(STM)	1604_(STM)	CONDUIT	76.6	0.4045	0.0130
3_(83)_(1)_(STM)	1600_(STM)	1602_(STM)	CONDUIT	107.9	2.5777	0.0130
3_(83)_(STM)	1602_(STM)	1400_(STM)	CONDUIT	31.5	1.9995	0.0130
3_(84)_(STM)	700_(STM)	702_(STM)	CONDUIT	86.6	1.1551	0.0130
3_(85)_(1)_(STM)	704_(STM)	616_(STM)	CONDUIT	12.1	0.4947	0.0130
3_(85)_(STM)	702_(STM)	704_(STM)	CONDUIT	67.1	0.7603	0.0130
3_(86)_(STM)	800_(STM)	900_(STM)	CONDUIT	67.1	0.3130	0.0130
3_(87)_(STM)	802_(STM)	804_(STM)	CONDUIT	57.0	1.6131	0.0130
3_(88)_(STM)	804_(STM)	806_(STM)	CONDUIT	83.8	1.4796	0.0130
3_(89)_(1)_(STM)	808_(STM)	618_(STM)	CONDUIT	6.3	0.9599	0.0130
3_(89)_(STM)	806_(STM)	808_(STM)	CONDUIT	74.3	1.5069	0.0130
3_(9)_(STM)	1220_(STM)	1222_(STM)	CONDUIT	75.8	0.1583	0.0130
3_(90)_(STM)	904_(STM)	906_(STM)	CONDUIT	71.7	2.0772	0.0130
3_(91)_(STM)	1222_(STM)	1505_(STM)	CONDUIT	30.5	0.1311	0.0130
3_(93)_(STM)	1505_(STM)	POND-LOWER	CONDUIT	8.3	1.8075	0.0130
3_(94)_(STM)	916_(STM)	920_(STM)	CONDUIT	64.5	0.1085	0.0130
3_(95)_(STM)	920_(STM)	922_(STM)	CONDUIT	65.9	0.1093	0.0130
3_(96)_(STM)	922_(STM)	POND-LOWER	CONDUIT	20.3	0.1476	0.0130
C1	CB-013-014	CB-015-016	CONDUIT	52.7	2.8259	0.0150
C10	CB-023-024	13+093	CONDUIT	30.2	-1.1586	0.0150
C100	CB-111-112	2+112	CONDUIT	37.7	-0.7956	0.0150
C101	2+112	2+089	CONDUIT	17.9	0.9508	0.0150
C102	2+089	CB-123-124	CONDUIT	35.5	1.7770	0.0150
C103	2+089	CB-113-114	CONDUIT	39.9	0.8518	0.0150
C104	12+000	CB-001-002	CONDUIT	26.7	0.4499	0.0150
C105	CB-001-002	12+040	CONDUIT	12.5	-1.1232	0.0150
C106	CB-113-114	12+040	CONDUIT	47.3	-0.6345	0.0150
C107	12+040	CB-003-004	CONDUIT	72.1	1.3316	0.0150
C108	HP-W	CB-115-116	CONDUIT	53.7	1.3421	0.0150
C109	CB-121-122	OVF-02	CONDUIT	15.5	5.8268	0.0150
C11	13+171	CB-023-024	CONDUIT	47.0	1.1927	0.0150
C110	CB-005-006	12+242	CONDUIT	20.9	-0.9571	0.0150
C111	12+242	CB-007-008	CONDUIT	43.7	1.0293	0.0150
C112	CB-047-048	12+242	CONDUIT	43.5	-0.3451	0.0150
C113	CB-009-010	12+384	CONDUIT	18.0	-1.3853	0.0150
C114	CB-136-137	12+428	CONDUIT	28.0	-1.0714	0.0150
C115	12+384	12+428	CONDUIT	36.0	1.8044	0.0150
C116	12+428	CB-011-012	CONDUIT	69.0	1.4487	0.0150
C117	CB-021-022	12+523	CONDUIT	36.0	-0.5550	0.0150
C118	CB-011-012	12+523	CONDUIT	34.5	-0.8108	0.0150
C119	12+523	CB-013-014	CONDUIT	17.9	2.5764	0.0150
C12	13+251	CB-025-026	CONDUIT	60.3	0.7465	0.0150
C120	CB-037-038	9+261	CONDUIT	65.3	1.7300	0.0150
C121	9+261	CB-039-040	CONDUIT	35.3	1.1599	0.0150
C122	CB-065-066	9+261	CONDUIT	26.9	-1.1160	0.0150
C123	CB-067-068	9+261	CONDUIT	37.8	-0.7416	0.0150
C124	CB-039-040	9+342	CONDUIT	48.2	-0.5191	0.0150
C125	CB-029-030	9+342	CONDUIT	32.5	-1.0764	0.0150
C126	9+342	CB-027-028	CONDUIT	58.6	0.8532	0.0150
C127	9+347	CB-095-096	CONDUIT	71.8	2.0046	0.0150
C128	CB-127-128	1+274	CONDUIT	21.5	-0.9288	0.0150
C129	CB-045-046	1+274	CONDUIT	93.9	0.7347	0.0150
C13	CB-025-026	13+171	CONDUIT	22.5	-1.5539	0.0150
C130	1+274	CB-047-048	CONDUIT	38.8	1.2876	0.0150
C131	1+274	CB-130-131	CONDUIT	69.1	1.2294	0.0150
C132	CB-099-100	916_(STM)	CONDUIT	7.7	20.5403	0.0150
C133	POND-OUT	OUT-MAIN	CONDUIT	5.0	2.0004	0.0350
C134	OVF-05	OVF-06	CONDUIT	375.8	0.4257	0.0350
C135	CB-117-118	CB-119-120	CONDUIT	81.9	1.3925	0.0150
C136	CB-119-120	CB-121-122	CONDUIT	83.2	1.6358	0.0150
C137	CB-015-016	POND-UPPER	CONDUIT	72.9	1.5085	0.0150
C138	OVF-06	POND-LOWER	CONDUIT	15.0	0.6667	0.0350
C139	OVF-03	OVF-04	CONDUIT	84.4	0.5803	0.0350
C14	CB-027-028	13+251	CONDUIT	28.4	-1.0570	0.0150
C140	OVF-04	OVF-05	CONDUIT	54.0	0.5924	0.0350
C141	CB-129	1+274	CONDUIT	12.6	-1.1946	0.0150
C15	3+447	CB-136-137	CONDUIT	51.8	1.3506	0.0150
C16	CB-134-135	3+447	CONDUIT	7.8	-1.2856	0.0150

C17	CB-132-133	3+395	CONDUIT	30.0	-1.0000	0.0150
C18	3+395	CB-134-135	CONDUIT	40.2	1.1189	0.0150
C19	CB-130-131	3+313	CONDUIT	27.9	-1.0734	0.0150
C2	9+713	CB-101-102	CONDUIT	46.8	0.2137	0.0150
C20	3+313	CB-132-133	CONDUIT	50.3	0.9938	0.0150
C21	10+091	CB-081-082	CONDUIT	54.9	1.7300	0.0150
C22	CB-081-082	CB-079-080	CONDUIT	73.5	1.6746	0.0150
C23	CB-079-080	CB-077-078	CONDUIT	71.1	1.7588	0.0150
C24	CB-083-084	10+091	CONDUIT	25.2	-1.1918	0.0150
C25	CB-033-034	CB-035-036	CONDUIT	64.9	2.0507	0.0150
C26	CB-035-036	CB-037-038	CONDUIT	59.8	1.8726	0.0150
C27	13+490	CB-031-032	CONDUIT	50.5	0.9510	0.0150
C28	CB-031-032	13+413	CONDUIT	29.1	-1.2041	0.0150
C29	13+413	CB-029-030	CONDUIT	36.0	1.3344	0.0150
C3	12+600	CB-017-018	CONDUIT	76.6	2.8719	0.0150
C30	CB-089-090	CB-091-092	CONDUIT	50.0	1.3192	0.0150
C31	CB-091-092	CB-093-094	CONDUIT	47.2	2.3547	0.0150
C32	CB-071-072	CB-073-074	CONDUIT	51.1	0.9196	0.0150
C33	CB-073-074	CB-075-076	CONDUIT	60.4	0.7452	0.0150
C34	6+345	CB-059-060	CONDUIT	33.2	1.1152	0.0150
C35	CB-059-060	6+410	CONDUIT	34.4	-0.7270	0.0150
C36	CB-055-056	6+306	CONDUIT	18.3	-0.8201	0.0150
C37	6+306	CB-057-058	CONDUIT	26.1	0.6887	0.0150
C38	CB-057-058	6+345	CONDUIT	17.7	-0.6769	0.0150
C39	CB-051-052	CB-053-054	CONDUIT	106.0	0.3018	0.0150
C4	CB-017-018	CB-019-020	CONDUIT	44.7	0.6041	0.0150
C40	CB-085-086	CB-087-088	CONDUIT	46.9	1.6647	0.0150
C41	11+162	CB-069-070	CONDUIT	24.4	1.8837	0.0150
C42	5+111	CB-144-145	CONDUIT	64.6	1.0830	0.0150
C43	CB-146-147	5+111	CONDUIT	26.5	-1.1326	0.0150
C44	5+210	CB-146-147	CONDUIT	68.6	1.0201	0.0150
C45	5+210	CB-148-149	CONDUIT	65.0	0.8929	0.0150
C46	1+000	CB-041-042	CONDUIT	46.6	1.2874	0.0150
C47	CB-140-141	4+112	CONDUIT	30.5	-0.9850	0.0150
C48	4+112	CB-138-139	CONDUIT	70.7	0.5797	0.0150
C49	CB-007-008	12+310	CONDUIT	20.2	-1.2401	0.0150
C5	CB-101-102	CB-099-100	CONDUIT	67.2	0.6844	0.0150
C50	12+310	CB-009-010	CONDUIT	54.9	1.0014	0.0150
C51	2+335	CB-107-108	CONDUIT	48.8	0.5738	0.0150
C52	CB-107-108	CB-105-106	CONDUIT	83.4	0.7671	0.0150
C53	CB-105-106	2+516	CONDUIT	47.7	-0.5447	0.0150
C54	2+516	CB-103-104	CONDUIT	72.2	0.8868	0.0150
C55	2+335	CB-109-110	CONDUIT	68.9	0.7112	0.0150
C56	CB-109-110	2+218	CONDUIT	37.7	-0.6630	0.0150
C57	2+218	CB-111-112	CONDUIT	67.9	0.8253	0.0150
C58	CB-125-126	CB-127-128	CONDUIT	52.3	1.2245	0.0150
C59	CB-003-004	12+134	CONDUIT	21.4	-0.9365	0.0150
C6	CB-097-098	CB-099-100	CONDUIT	57.8	2.7191	0.0150
C60	12+134	CB-005-006	CONDUIT	92.2	1.2795	0.0150
C61	CB-115-116	CB-117-118	CONDUIT	66.8	1.6627	0.0150
C62	OVF-02	OVF-03	CONDUIT	48.7	0.5951	0.0350
C63	6+088	CB-051-052	CONDUIT	68.4	0.8773	0.0150
C64	6+088	CB-071-072	CONDUIT	81.6	0.7105	0.0150
C65	CB-049-050	6+088	CONDUIT	9.2	0.8695	0.0150
C66	6+505	CB-063-064	CONDUIT	44.9	0.9363	0.0150
C67	CB-093-094	CB-063-064	CONDUIT	22.1	2.5851	0.0150
C68	8+150	CB-049-050	CONDUIT	70.1	0.5281	0.0150
C69	CB-087-088	8+150	CONDUIT	13.8	2.2481	0.0150
C7	CB-019-020	POND-LOWER	CONDUIT	108.7	0.0920	0.0150
C70	8+150	CB-089-090	CONDUIT	61.3	0.6203	0.0150
C71	6+410	CB-061-062	CONDUIT	60.6	0.7752	0.0150
C72	CB-075-076	CB-061-062	CONDUIT	24.1	2.4924	0.0150
C73	CB-061-062	6+505	CONDUIT	37.8	-0.6620	0.0150
C74	CB-063-064	6+572	CONDUIT	17.5	-1.9979	0.0150
C75	6+572	CB-065-066	CONDUIT	20.6	1.7009	0.0150
C76	CB-077-078	11+094	CONDUIT	18.3	1.2545	0.0150
C77	CB-069-070	11+094	CONDUIT	39.2	-0.5108	0.0150
C78	11+094	CB-067-068	CONDUIT	39.8	1.3577	0.0150
C79	9+040	CB-033-034	CONDUIT	31.1	2.5376	0.0150
C8	CB-095-096	CB-097-098	CONDUIT	83.1	1.7333	0.0150
C80	9+040	CB-085-086	CONDUIT	74.5	1.1552	0.0150
C81	9+040	CB-083-084	CONDUIT	48.1	1.5588	0.0150
C82	9+000	9+040	CONDUIT	44.2	1.8111	0.0150
C83	6+278	CB-055-056	CONDUIT	9.7	2.6900	0.0150
C84	CB-053-054	6+278	CONDUIT	26.2	1.6020	0.0150
C85	CB-142-143	4+270	CONDUIT	16.1	-0.8676	0.0150
C86	4+270	6+278	CONDUIT	23.4	2.5226	0.0150
C87	CB-148-149	5+285	CONDUIT	7.3	-0.9535	0.0150
C88	5+285	4+213	CONDUIT	7.2	1.7984	0.0150
C89	4+213	CB-142-143	CONDUIT	39.1	2.5580	0.0150
C9	13+093	CB-021-022	CONDUIT	49.6	1.6752	0.0150
C90	4+213	CB-140-141	CONDUIT	61.0	0.6724	0.0150
C91	CB-041-042	1+070	CONDUIT	29.0	-0.8612	0.0150
C92	CB-144-145	1+070	CONDUIT	29.7	-1.1801	0.0150
C93	1+070	CB-043-044	CONDUIT	48.7	0.8414	0.0150
C94	CB-043-044	1+150	CONDUIT	29.4	-1.0204	0.0150
C95	CB-138-139	1+150	CONDUIT	34.7	-0.8640	0.0150
C96	1+150	CB-045-046	CONDUIT	31.2	0.8017	0.0150
C97	CB-103-104	3+088	CONDUIT	44.8	-0.6699	0.0150
C98	CB-123-124	3+088	CONDUIT	39.8	-0.7539	0.0150
C99	3+088	CB-125-126	CONDUIT	53.9	1.2246	0.0150
RYCB01-MAJOR	RYCB01	CB-085-086	CONDUIT	43.7	1.0068	0.0350

RYCB02-MAJOR	RYCB02	CB-083-084	CONDUIT	50.0	1.2209	0.0350
RYCB03-MAJOR	RYCB03	CB-033-034	CONDUIT	8.9	0.5620	0.0350
RYCB04-MAJOR	RYCB04	CB-035-036	CONDUIT	39.8	0.1257	0.0350
RYCB05-MAJOR	RYCB05	CB-067-068	CONDUIT	13.9	2.7406	0.0350
RYCB06-MAJOR	RYCB06	CB-035-036	CONDUIT	46.2	0.4325	0.0350
RYCB07-MAJOR	RYCB07	6+572	CONDUIT	14.4	1.7404	0.0350
RYCB08-MAJOR	RYCB08	CB-091-092	CONDUIT	67.5	0.8591	0.0350
RYCB09-MAJOR	RYCB09	CB-091-092	CONDUIT	45.0	0.4893	0.0350
RYCB10-MAJOR	RYCB10	CB-075-076	CONDUIT	31.6	1.0771	0.0350
RYCB11-MAJOR	RYCB11	CB-093-094	CONDUIT	26.3	2.6659	0.0350
RYCB12-MAJOR	RYCB12	CB-053-054	CONDUIT	66.7	1.3042	0.0350
RYCB13-MAJOR	RYCB13	CB-075-076	CONDUIT	17.3	0.8675	0.0350
RYCB14-MAJOR	RYCB14	CB-029-030	CONDUIT	46.3	0.3242	0.0350
RYCB15-MAJOR	RYCB15	CB-027-028	CONDUIT	54.4	0.7722	0.0350
RYCB16-MAJOR	RYCB16	CB-025-026	CONDUIT	57.0	0.7538	0.0350
RYCB17-MAJOR	RYCB17	CB-142-143	CONDUIT	13.9	1.0083	0.0350
RYCB18-MAJOR	RYCB18	CB-146-147	CONDUIT	69.4	0.5906	0.0350
RYCB19-MAJOR	RYCB19	CB-144-145	CONDUIT	15.8	0.8247	0.0350
RYCB20-MAJOR	RYCB20	CB-148-149	CONDUIT	36.3	1.1568	0.0350
RYCB21-MAJOR	RYCB21	CB-138-139	CONDUIT	14.1	0.2127	0.0350
RYCB22-MAJOR	RYCB22	CB-136-137	CONDUIT	21.4	1.2607	0.0350
RYCB23-MAJOR	RYCB23	CB-047-048	CONDUIT	9.3	1.3933	0.0350
RYCB24-MAJOR	RYCB24	CB-047-048	CONDUIT	17.2	0.1744	0.0350
RYCB25-MAJOR	RYCB25	CB-003-004	CONDUIT	38.1	1.3108	0.0350
RYCB26-MAJOR	RYCB26	CB-113-114	CONDUIT	42.8	0.8184	0.0350
RYCB27-MAJOR	RYCB27	CB-111-112	CONDUIT	42.7	0.6325	0.0350
RYCB28-MAJOR	RYCB28	CB-109-110	CONDUIT	43.0	0.1859	0.0350
RYCB29-MAJOR	RYCB29	CB-105-106	CONDUIT	34.7	0.4035	0.0350
RYCB30-MAJOR	RYCB30	CB-103-104	CONDUIT	35.7	0.6999	0.0350
RYCB31-MAJOR	RYCB31	CB-117-118	CONDUIT	49.4	0.0405	0.0350
RYCB32-MAJOR	RYCB32	CB-119-120	CONDUIT	62.2	0.2252	0.0350
RYCB33-MAJOR	RYCB33	CB-121-122	CONDUIT	62.7	1.4842	0.0350
RYCB34-MAJOR	RYCB34	CB-003-004	CONDUIT	35.3	1.3305	0.0350
RYCB35-MAJOR	RYCB35	CB-003-004	CONDUIT	58.0	0.1551	0.0350
RYCB36-MAJOR	RYCB36	CB-049-050	CONDUIT	39.0	0.7687	0.0350
RYCB38-MAJOR	RYCB38	CB-051-052	CONDUIT	16.7	3.0033	0.0350
RYCB40-MAJOR	RYCB40	CB-144-145	CONDUIT	16.4	0.7917	0.0350
STM-1_(STM)	200_(STM)	1200_(STM)	CONDUIT	81.5	0.4503	0.0130
STM-2_(STM)	202_(STM)	200_(STM)	CONDUIT	113.3	0.4502	0.0130
STM-2-10_(STM-OS)	OS-2_(STM-OS)	OS-3_(STM-OS)	CONDUIT	38.1	0.3410	0.0130
STM-2-11_(STM-OS)	OS-3_(STM-OS)	OS-4_(STM-OS)	CONDUIT	10.6	0.3762	0.0130
STM-2-12_(STM-OS)	OS-4_(STM-OS)	OS-5_(STM-OS)	CONDUIT	71.4	0.3503	0.0130
STM-2-13_(STM-OS)	OS-5_(STM-OS)	OS-6_(STM-OS)	CONDUIT	12.4	0.3225	0.0130
STM-2-15_(STM-OS)	OS-6_(STM-OS)	OUT-EXT	CONDUIT	57.6	0.3472	0.0130
STM-2-8_(STM-OS)	HW1_(STM-OS)	OS-1_(STM-OS)	CONDUIT	35.7	0.3641	0.0130
STM-2-9_(STM-OS)	OS-1_(STM-OS)	OS-2_(STM-OS)	CONDUIT	33.8	0.3550	0.0130
STM-3_(STM)	204_(STM)	202_(STM)	CONDUIT	113.3	0.4493	0.0130
STM-4_(STM)	206_(STM)	204_(STM)	CONDUIT	12.5	0.6418	0.0130
STM-5_(STM)	206_(STM)	20A_(STM)	CONDUIT	49.8	0.4919	0.0130
STM-5A_(STM)	20A_(STM)	208_(STM)	CONDUIT	14.6	0.5128	0.0130
STM-6_(STM)	208_(STM)	210_(STM)	CONDUIT	12.4	0.4037	0.0130
STM-7_(STM)	210_(STM)	212_(STM)	CONDUIT	113.2	0.3799	0.0130
CB-003-PIPE	CB-003-004	1200_(STM)	ORIFICE			
CB-004-PIPE	CB-003-004	1200_(STM)	ORIFICE			
CB-005-PIPE	CB-005-006	1202_(STM)	ORIFICE			
CB-006-PIPE	CB-005-006	1202_(STM)	ORIFICE			
CB-007-PIPE	CB-007-008	1204_(STM)	ORIFICE			
CB-008-PIPE	CB-007-008	1204_(STM)	ORIFICE			
CB-009-PIPE	CB-009-010	1206_(STM)	ORIFICE			
CB-010-PIPE	CB-009-010	1206_(STM)	ORIFICE			
CB-011-PIPE	CB-011-012	1212_(STM)	ORIFICE			
CB-012-PIPE	CB-011-012	1212_(STM)	ORIFICE			
CB-021-PIPE	CB-021-022	1300_(STM)	ORIFICE			
CB-022-PIPE	CB-021-022	1300_(STM)	ORIFICE			
CB-023-PIPE	CB-023-024	1302_(STM)	ORIFICE			
CB-024-PIPE	CB-023-024	1302_(STM)	ORIFICE			
CB-025-PIPE	CB-025-026	1304_(STM)	ORIFICE			
CB-026-PIPE	CB-025-026	1304_(STM)	ORIFICE			
CB-027-PIPE	CB-027-028	1308_(STM)	ORIFICE			
CB-028-PIPE	CB-027-028	1308_(STM)	ORIFICE			
CB-029-PIPE	CB-029-030	1312_(STM)	ORIFICE			
CB-030-PIPE	CB-029-030	1312_(STM)	ORIFICE			
CB-031-PIPE	CB-031-032	1314_(STM)	ORIFICE			
CB-032-PIPE	CB-031-032	1314_(STM)	ORIFICE			
CB-039-PIPE	CB-039-040	906_(STM)	ORIFICE			
CB-040-PIPE	CB-039-040	906_(STM)	ORIFICE			
CB-041-PIPE	CB-041-042	100_(STM)	ORIFICE			
CB-042-PIPE	CB-041-042	100_(STM)	ORIFICE			
CB-043-PIPE	CB-043-044	102_(STM)	ORIFICE			
CB-044-PIPE	CB-043-044	102_(STM)	ORIFICE			
CB-047-PIPE	CB-047-048	306_(STM)	ORIFICE			
CB-048-PIPE	CB-047-048	306_(STM)	ORIFICE			
CB-055-PIPE	CB-055-056	606_(STM)	ORIFICE			
CB-056-PIPE	CB-055-056	606_(STM)	ORIFICE			
CB-057-PIPE	CB-057-058	606_(STM)	ORIFICE			
CB-058-PIPE	CB-057-058	606_(STM)	ORIFICE			
CB-059-PIPE	CB-059-060	610_(STM)	ORIFICE			
CB-060-PIPE	CB-059-060	610_(STM)	ORIFICE			
CB-061-PIPE	CB-061-062	616_(STM)	ORIFICE			
CB-062-PIPE	CB-061-062	616_(STM)	ORIFICE			
CB-063-PIPE	CB-063-064	618_(STM)	ORIFICE			
CB-064-PIPE	CB-063-064	618_(STM)	ORIFICE			

CB-065-PIPE	CB-065-066	620_(STM)	ORIFICE
CB-066-PIPE	CB-065-066	620_(STM)	ORIFICE
CB-067-PIPE	CB-067-068	1100_(STM)	ORIFICE
CB-068-PIPE	CB-067-068	1100_(STM)	ORIFICE
CB-069-PIPE	CB-069-070	1102_(STM)	ORIFICE
CB-070-PIPE	CB-069-070	1102_(STM)	ORIFICE
CB-083-PIPE	CB-083-084	900D_(STM)	ORIFICE
CB-084-PIPE	CB-083-084	900D_(STM)	ORIFICE
CB-103-PIPE	CB-103-104	212_(STM)	ORIFICE
CB-104-PIPE	CB-103-104	212_(STM)	ORIFICE
CB-105-PIPE	CB-105-106	210_(STM)	ORIFICE
CB-106-PIPE	CB-105-106	210_(STM)	ORIFICE
CB-109-PIPE	CB-109-110	204_(STM)	ORIFICE
CB-110-PIPE	CB-109-110	204_(STM)	ORIFICE
CB-111-PIPE	CB-111-112	202_(STM)	ORIFICE
CB-112-PIPE	CB-111-112	202_(STM)	ORIFICE
CB-113-PIPE	CB-113-114	200_(STM)	ORIFICE
CB-114-PIPE	CB-113-114	200_(STM)	ORIFICE
CB-123-PIPE	CB-123-124	300_(STM)	ORIFICE
CB-124-PIPE	CB-123-124	300_(STM)	ORIFICE
CB-127-PIPE	CB-127-128	304_(STM)	ORIFICE
CB-128-PIPE	CB-127-128	304_(STM)	ORIFICE
CB-130-PIPE	CB-130-131	308_(STM)	ORIFICE
CB-131-PIPE	CB-130-131	308_(STM)	ORIFICE
CB-132-PIPE	CB-132-133	310_(STM)	ORIFICE
CB-133-PIPE	CB-132-133	310_(STM)	ORIFICE
CB-134-PIPE	CB-134-135	312_(STM)	ORIFICE
CB-135-PIPE	CB-134-135	312_(STM)	ORIFICE
CB-136-PIPE	CB-136-137	316_(STM)	ORIFICE
CB-137-PIPE	CB-136-137	316_(STM)	ORIFICE
CB-138-PIPE	CB-138-139	104_(STM)	ORIFICE
CB-139-PIPE	CB-138-139	104_(STM)	ORIFICE
CB-140-PIPE	CB-140-141	400_(STM)	ORIFICE
CB-141-PIPE	CB-140-141	400_(STM)	ORIFICE
CB-142-PIPE	CB-142-143	402_(STM)	ORIFICE
CB-143-PIPE	CB-142-143	402_(STM)	ORIFICE
CB-144-PIPE	CB-144-145	500_(STM)	ORIFICE
CB-145-PIPE	CB-144-145	500_(STM)	ORIFICE
CB-146-PIPE	CB-146-147	502_(STM)	ORIFICE
CB-147-PIPE	CB-146-147	502_(STM)	ORIFICE
CB-148-PIPE	CB-148-149	506_(STM)	ORIFICE
CB-149-PIPE	CB-148-149	506_(STM)	ORIFICE
LOWER-OUT1	POND-LOWER	POND-OUT	ORIFICE
LOWER-OUT2	POND-LOWER	POND-OUT	ORIFICE
OR-SU-031	SU-031	1212_(STM)	ORIFICE
OR-SU-090	SU-090	1314_(STM)	ORIFICE
OR-SU-098	SU-098	1300_(STM)	ORIFICE
OR-SU-104B	SU-104B	OVF-03	ORIFICE
OR-SU-108	SU-108	1400_(STM)	ORIFICE
OR-SU-109	SU-109	1500_(STM)	ORIFICE
OR-SU-110B	SU-110B	OVF-05	ORIFICE
OR-SU-111	SU-111	1406_(STM)	ORIFICE
OR-SU-112	SU-112	1410_(STM)	ORIFICE
OR-SU-114	SU-114	1220_(STM)	ORIFICE
OR-SU-118	SU-118	908_(STM)	ORIFICE
OR-SU-120	SU-120	910_(STM)	ORIFICE
OR-SU-122	SU-122	918_(STM)	ORIFICE
OR-SU-123	SU-123	918_(STM)	ORIFICE
RYCB01-PIPE	RYCB01	800_(STM)	ORIFICE
RYCB02-PIPE	RYCB02	900D_(STM)	ORIFICE
RYCB03-PIPE	RYCB03	900DD_(STM)	ORIFICE
RYCB04-PIPE	RYCB04	902_(STM)	ORIFICE
RYCB05-PIPE	RYCB05	1100_(STM)	ORIFICE
RYCB06-PIPE	RYCB06	902_(STM)	ORIFICE
RYCB07-PIPE	RYCB07	620_(STM)	ORIFICE
RYCB08-PIPE	RYCB08	804_(STM)	ORIFICE
RYCB09-PIPE	RYCB09	806_(STM)	ORIFICE
RYCB10-PIPE	RYCB10	702_(STM)	ORIFICE
RYCB11-PIPE	RYCB11	806_(STM)	ORIFICE
RYCB12-PIPE	RYCB12	604_(STM)	ORIFICE
RYCB13-PIPE	RYCB13	702_(STM)	ORIFICE
RYCB14-PIPE	RYCB14	1312_(STM)	ORIFICE
RYCB15-PIPE	RYCB15	1308_(STM)	ORIFICE
RYCB16-PIPE	RYCB16	1304_(STM)	ORIFICE
RYCB17-PIPE	RYCB17	402_(STM)	ORIFICE
RYCB18-PIPE	RYCB18	502_(STM)	ORIFICE
RYCB19-PIPE	RYCB19	500_(STM)	ORIFICE
RYCB20-PIPE	RYCB20	506_(STM)	ORIFICE
RYCB21-PIPE	RYCB21	104_(STM)	ORIFICE
RYCB22-PIPE	RYCB22	316_(STM)	ORIFICE
RYCB23-PIPE	RYCB23	306_(STM)	ORIFICE
RYCB24-PIPE	RYCB24	306_(STM)	ORIFICE
RYCB25-PIPE	RYCB25	1200_(STM)	ORIFICE
RYCB26-PIPE	RYCB26	200_(STM)	ORIFICE
RYCB27-PIPE	RYCB27	202_(STM)	ORIFICE
RYCB28-PIPE	RYCB28	204_(STM)	ORIFICE
RYCB29-PIPE	RYCB29	210_(STM)	ORIFICE
RYCB30-PIPE	RYCB30	212_(STM)	ORIFICE
RYCB31-PIPE	RYCB31	1602_(STM)	ORIFICE
RYCB32-PIPE	RYCB32	1606_(STM)	ORIFICE
RYCB33-PIPE	RYCB33	1606_(STM)	ORIFICE
RYCB34-PIPE	RYCB34	1200_(STM)	ORIFICE

RYCB35-PIPE	RYCB35	1202_(STM)	ORIFICE
RYCB36-PIPE	RYCB36	600_(STM)	ORIFICE
RYCB38-PIPE	RYCB38	602_(STM)	ORIFICE
RYCB39-PIPE	RYCB39	OS-1_(STM-OS)	ORIFICE
RYCB40-PIPE	RYCB40	500_(STM)	ORIFICE
UPPER-LOWER	POND-UPPER	POND-LOWER	ORIFICE
CB-001-PIPE	CB-001-002	1200_(STM)	OUTLET
CB-002-PIPE	CB-001-002	1200_(STM)	OUTLET
CB-013-PIPE	CB-013-014	1214_(STM)	OUTLET
CB-014-PIPE	CB-013-014	1214_(STM)	OUTLET
CB-015-PIPE	CB-015-016	1216_(STM)	OUTLET
CB-016-PIPE	CB-015-016	1216_(STM)	OUTLET
CB-017-PIPE	CB-017-018	1220_(STM)	OUTLET
CB-018-PIPE	CB-017-018	1220_(STM)	OUTLET
CB-019-PIPE	CB-019-020	1222_(STM)	OUTLET
CB-020-PIPE	CB-019-020	1222_(STM)	OUTLET
CB-033-PIPE	CB-033-034	900DD_(STM)	OUTLET
CB-034-PIPE	CB-033-034	900DD_(STM)	OUTLET
CB-035-PIPE	CB-035-036	902_(STM)	OUTLET
CB-036-PIPE	CB-035-036	902_(STM)	OUTLET
CB-037-PIPE	CB-037-038	904_(STM)	OUTLET
CB-038-PIPE	CB-037-038	904_(STM)	OUTLET
CB-045-PIPE	CB-045-046	106_(STM)	OUTLET
CB-046-PIPE	CB-045-046	106_(STM)	OUTLET
CB-049-PIPE	CB-049-050	600D_(STM)	OUTLET
CB-050-PIPE	CB-049-050	600D_(STM)	OUTLET
CB-051-PIPE	CB-051-052	602_(STM)	OUTLET
CB-052-PIPE	CB-051-052	602_(STM)	OUTLET
CB-053-PIPE	CB-053-054	604_(STM)	OUTLET
CB-054-PIPE	CB-053-054	604_(STM)	OUTLET
CB-071-PIPE	CB-071-072	700_(STM)	OUTLET
CB-072-PIPE	CB-071-072	700_(STM)	OUTLET
CB-073-PIPE	CB-073-074	702_(STM)	OUTLET
CB-074-PIPE	CB-073-074	702_(STM)	OUTLET
CB-075-PIPE	CB-075-076	702_(STM)	OUTLET
CB-076-PIPE	CB-075-076	702_(STM)	OUTLET
CB-077-PIPE	CB-077-078	1004D_(STM)	OUTLET
CB-078-PIPE	CB-077-078	1004D_(STM)	OUTLET
CB-079-PIPE	CB-079-080	1004_(STM)	OUTLET
CB-080-PIPE	CB-079-080	1004_(STM)	OUTLET
CB-081-PIPE	CB-081-082	1002_(STM)	OUTLET
CB-082-PIPE	CB-081-082	1002_(STM)	OUTLET
CB-085-PIPE	CB-085-086	800_(STM)	OUTLET
CB-086-PIPE	CB-085-086	800_(STM)	OUTLET
CB-087-PIPE	CB-087-088	802_(STM)	OUTLET
CB-088-PIPE	CB-087-088	802_(STM)	OUTLET
CB-089-PIPE	CB-089-090	804_(STM)	OUTLET
CB-090-PIPE	CB-089-090	804_(STM)	OUTLET
CB-091-PIPE	CB-091-092	806_(STM)	OUTLET
CB-092-PIPE	CB-091-092	806_(STM)	OUTLET
CB-093-PIPE	CB-093-094	806_(STM)	OUTLET
CB-094-PIPE	CB-093-094	806_(STM)	OUTLET
CB-095-PIPE	CB-095-096	908_(STM)	OUTLET
CB-096-PIPE	CB-095-096	908_(STM)	OUTLET
CB-097-PIPE	CB-097-098	910_(STM)	OUTLET
CB-098-PIPE	CB-097-098	910_(STM)	OUTLET
CB-099-PIPE	CB-099-100	914_(STM)	OUTLET
CB-100-PIPE	CB-099-100	914_(STM)	OUTLET
CB-101-PIPE	CB-101-102	918_(STM)	OUTLET
CB-102-PIPE	CB-101-102	918_(STM)	OUTLET
CB-107-PIPE	CB-107-108	20A_(STM)	OUTLET
CB-108-PIPE	CB-107-108	20A_(STM)	OUTLET
CB-115-PIPE	CB-115-116	1600_(STM)	OUTLET
CB-116-PIPE	CB-115-116	1600_(STM)	OUTLET
CB-117-PIPE	CB-117-118	1602_(STM)	OUTLET
CB-118-PIPE	CB-117-118	1602_(STM)	OUTLET
CB-119-PIPE	CB-119-120	1604_(STM)	OUTLET
CB-120-PIPE	CB-119-120	1604_(STM)	OUTLET
CB-121-PIPE	CB-121-122	1606_(STM)	OUTLET
CB-122-PIPE	CB-121-122	1606_(STM)	OUTLET
CB-125-PIPE	CB-125-126	302_(STM)	OUTLET
CB-126-PIPE	CB-125-126	302_(STM)	OUTLET
CB-129-PIPE	CB-129	308_(STM)	OUTLET

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
1_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	208.01
2_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	412.03
3_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2744.03
3_(10)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	2075.30
3_(100)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	4526.33
3_(11)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	2071.06
3_(12)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	1813.54
3_(13)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	1518.79
3_(14)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	1411.01
3_(15)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	697.68
3_(16)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	608.89

3_(2)_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2476.04
3_(2)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2326.03
3_(24)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	378.49
3_(25)_(1)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	39.92
3_(26)_(1)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	675.71
3_(26)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	495.19
3_(27)_(STM)	CIRCULAR	0.75	0.44	0.19	0.75	1	789.66
3_(28)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	98.40
3_(29)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	161.60
3_(3)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2586.15
3_(30)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	230.35
3_(31)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	228.96
3_(32)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	361.49
3_(33)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	97.36
3_(34)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	169.77
3_(35)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	64.19
3_(36)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	189.19
3_(37)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	306.61
3_(38)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	351.76
3_(39)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	403.65
3_(4)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2425.26
3_(40)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	380.11
3_(41)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	305.50
3_(42)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	1107.25
3_(44)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	149.12
3_(44A)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	149.23
3_(45)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	364.79
3_(46)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	518.87
3_(47)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	537.24
3_(48)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1219.92
3_(49)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1557.68
3_(5)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2452.35
3_(50)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1221.80
3_(51)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1400.27
3_(52)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1233.25
3_(53)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	1580.34
3_(54)_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2882.46
3_(54)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	1655.38
3_(58)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	1357.14
3_(6)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	3803.43
3_(61)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	637.92
3_(63)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	214.66
3_(63D)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	211.24
3_(64)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	115.67
3_(64D)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	110.81
3_(65)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	116.64
3_(66)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	356.73
3_(67)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	360.03
3_(67D)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	361.72
3_(68)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	464.93
3_(69)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	64.78
3_(7)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	4561.83
3_(70)_(1)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	833.31
3_(70)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	376.40
3_(71)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	802.50
3_(72)_(1)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	808.72
3_(72)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	1149.59
3_(73)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	2429.35
3_(74)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	2505.04
3_(75)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1833.65
3_(76)_(1)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	1660.98
3_(76)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1656.65
3_(77)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	782.53
3_(78)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	785.82
3_(79)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	552.46
3_(80)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	473.10
3_(81)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	557.90
3_(82)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	534.68
3_(83)_(1)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	95.48
3_(83)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	136.75
3_(84)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	103.94
3_(85)_(1)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	302.50
3_(85)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	248.62
3_(86)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	159.51
3_(87)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	75.53
3_(88)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	117.63
3_(89)_(1)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	279.35
3_(89)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	350.01
3_(9)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2123.42
3_(90)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	619.87
3_(91)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1933.02
3_(93)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	7176.26
3_(94)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1758.42
3_(95)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1764.46
3_(96)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2051.00
C1	18mROW	1.00	15.07	0.37	18.00	1	86900.39
C10	18mROW	1.00	15.07	0.37	18.00	1	55643.98
C100	18mROW	1.00	15.07	0.37	18.00	1	46110.06
C101	18mROW	1.00	15.07	0.37	18.00	1	50407.53
C102	18mROW	1.00	15.07	0.37	18.00	1	68910.63
C103	18mROW	1.00	15.07	0.37	18.00	1	47709.23
C104	18mROW	1.00	15.07	0.37	18.00	1	34675.78

C105	18mROW	1.00	15.07	0.37	18.00	1	54786.87
C106	18mROW	1.00	15.07	0.37	18.00	1	41179.00
C107	18mROW	1.00	15.07	0.37	18.00	1	59652.57
C108	18mROW	1.00	15.07	0.37	18.00	1	59887.16
C109	18mROW	1.00	15.07	0.37	18.00	1	124784.59
C11	18mROW	1.00	15.07	0.37	18.00	1	56456.44
C110	18mROW	1.00	15.07	0.37	18.00	1	50572.86
C111	18mROW	1.00	15.07	0.37	18.00	1	52447.24
C112	18mROW	1.00	15.07	0.37	18.00	1	30369.11
C113	18mROW	1.00	15.07	0.37	18.00	1	60842.80
C114	18mROW	1.00	15.07	0.37	18.00	1	53507.63
C115	18mROW	1.00	15.07	0.37	18.00	1	69440.18
C116	18mROW	1.00	15.07	0.37	18.00	1	62221.34
C117	18mROW	1.00	15.07	0.37	18.00	1	38511.37
C118	18mROW	1.00	15.07	0.37	18.00	1	46548.03
C119	18mROW	1.00	15.07	0.37	18.00	1	82976.51
C12	18mROW	1.00	15.07	0.37	18.00	1	44664.60
C120	18mROW	1.00	15.07	0.37	18.00	1	67992.91
C121	18mROW	1.00	15.07	0.37	18.00	1	55675.34
C122	18mROW	1.00	15.07	0.37	18.00	1	54611.01
C123	18mROW	1.00	15.07	0.37	18.00	1	44518.72
C124	18mROW	1.00	15.07	0.37	18.00	1	37245.57
C125	18mROW	1.00	15.07	0.37	18.00	1	53631.87
C126	18mROW	1.00	15.07	0.37	18.00	1	47748.46
C127	18mROW	1.00	15.07	0.37	18.00	1	73191.80
C128	18mROW	1.00	15.07	0.37	18.00	1	49820.37
C129	18mROW	1.00	15.07	0.37	18.00	1	44308.97
C13	18mROW	1.00	15.07	0.37	18.00	1	64441.13
C130	18mROW	1.00	15.07	0.37	18.00	1	58659.22
C131	18mROW	1.00	15.07	0.37	18.00	1	57319.16
C132	RECT_OPEN	1.00	6.00	0.75	6.00	1	149656.82
C133	RECT_OPEN	1.00	5.00	0.71	5.00	1	16146.11
C134	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4982.31
C135	18mROW	1.00	15.07	0.37	18.00	1	61002.56
C136	18mROW	1.00	15.07	0.37	18.00	1	66116.48
C137	RECT_OPEN	1.00	6.00	0.75	6.00	1	40556.60
C138	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6234.90
C139	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5817.19
C14	18mROW	1.00	15.07	0.37	18.00	1	53146.32
C140	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5877.06
C141	18mROW	1.00	15.07	0.37	18.00	1	56501.91
C15	18mROW	1.00	15.07	0.37	18.00	1	60076.74
C16	18mROW	1.00	15.07	0.37	18.00	1	58613.95
C17	18mROW	1.00	15.07	0.37	18.00	1	51694.14
C18	18mROW	1.00	15.07	0.37	18.00	1	54681.92
C19	18mROW	1.00	15.07	0.37	18.00	1	53558.35
C2	18mROW	1.00	15.07	0.37	18.00	1	23895.60
C20	18mROW	1.00	15.07	0.37	18.00	1	51534.79
C21	18mROW	1.00	15.07	0.37	18.00	1	67993.29
C22	18mROW	1.00	15.07	0.37	18.00	1	66896.81
C23	18mROW	1.00	15.07	0.37	18.00	1	68556.33
C24	18mROW	1.00	15.07	0.37	18.00	1	56434.52
C25	18mROW	1.00	15.07	0.37	18.00	1	74028.30
C26	18mROW	1.00	15.07	0.37	18.00	1	70740.61
C27	18mROW	1.00	15.07	0.37	18.00	1	50412.38
C28	18mROW	1.00	15.07	0.37	18.00	1	56724.70
C29	18mROW	1.00	15.07	0.37	18.00	1	59715.97
C3	18mROW	1.00	15.07	0.37	18.00	1	87605.10
C30	18mROW	1.00	15.07	0.37	18.00	1	59375.53
C31	18mROW	1.00	15.07	0.37	18.00	1	79325.34
C32	18mROW	1.00	15.07	0.37	18.00	1	49573.56
C33	18mROW	1.00	15.07	0.37	18.00	1	44624.27
C34	18mROW	1.00	15.07	0.37	18.00	1	54591.01
C35	18mROW	1.00	15.07	0.37	18.00	1	44076.89
C36	18mROW	1.00	15.07	0.37	18.00	1	46814.36
C37	18mROW	1.00	15.07	0.37	18.00	1	42900.12
C38	18mROW	1.00	15.07	0.37	18.00	1	42530.30
C39	18mROW	1.00	15.07	0.37	18.00	1	28397.75
C4	18mROW	1.00	15.07	0.37	18.00	1	40177.85
C40	18mROW	1.00	15.07	0.37	18.00	1	66698.57
C41	18mROW	1.00	15.07	0.37	18.00	1	70948.80
C42	18mROW	1.00	15.07	0.37	18.00	1	53796.33
C43	18mROW	1.00	15.07	0.37	18.00	1	55015.71
C44	18mROW	1.00	15.07	0.37	18.00	1	52212.77
C45	18mROW	1.00	15.07	0.37	18.00	1	48847.75
C46	18mROW	1.00	15.07	0.37	18.00	1	58655.44
C47	18mROW	1.00	15.07	0.37	18.00	1	51306.52
C48	18mROW	1.00	15.07	0.37	18.00	1	39359.07
C49	18mROW	1.00	15.07	0.37	18.00	1	57567.26
C5	18mROW	1.00	15.07	0.37	18.00	1	42765.72
C50	18mROW	1.00	15.07	0.37	18.00	1	51730.21
C51	18mROW	1.00	15.07	0.37	18.00	1	39157.34
C52	18mROW	1.00	15.07	0.37	18.00	1	45275.09
C53	18mROW	1.00	15.07	0.37	18.00	1	38153.52
C54	18mROW	1.00	15.07	0.37	18.00	1	48680.28
C55	18mROW	1.00	15.07	0.37	18.00	1	43593.95
C56	18mROW	1.00	15.07	0.37	18.00	1	42091.21
C57	18mROW	1.00	15.07	0.37	18.00	1	46962.95
C58	18mROW	1.00	15.07	0.37	18.00	1	57203.26
C59	18mROW	1.00	15.07	0.37	18.00	1	50026.41
C6	18mROW	1.00	15.07	0.37	18.00	1	85243.53
C60	18mROW	1.00	15.07	0.37	18.00	1	58474.33

C61	18mROW	1.00	15.07	0.37	18.00	1	66657.50
C62	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5890.51
C63	18mROW	1.00	15.07	0.37	18.00	1	48419.81
C64	18mROW	1.00	15.07	0.37	18.00	1	43572.81
C65	18mROW	1.00	15.07	0.37	18.00	1	48203.73
C66	18mROW	1.00	15.07	0.37	18.00	1	50020.11
C67	18mROW	1.00	15.07	0.37	18.00	1	83115.43
C68	18mROW	1.00	15.07	0.37	18.00	1	37568.16
C69	18mROW	1.00	15.07	0.37	18.00	1	77508.84
C7	RECT_OPEN	1.00	6.00	0.75	6.00	1	10016.89
C70	18mROW	1.00	15.07	0.37	18.00	1	40713.81
C71	18mROW	1.00	15.07	0.37	18.00	1	45513.34
C72	18mROW	1.00	15.07	0.37	18.00	1	81611.38
C73	18mROW	1.00	15.07	0.37	18.00	1	42058.88
C74	18mROW	1.00	15.07	0.37	18.00	1	73068.54
C75	18mROW	1.00	15.07	0.37	18.00	1	67419.83
C76	18mROW	1.00	15.07	0.37	18.00	1	57899.34
C77	18mROW	1.00	15.07	0.37	18.00	1	36947.56
C78	18mROW	1.00	15.07	0.37	18.00	1	60234.57
C79	18mROW	1.00	15.07	0.37	18.00	1	82348.39
C8	18mROW	1.00	15.07	0.37	18.00	1	68058.00
C80	18mROW	1.00	15.07	0.37	18.00	1	55560.31
C81	18mROW	1.00	15.07	0.37	18.00	1	64541.51
C82	18mROW	1.00	15.07	0.37	18.00	1	69568.51
C83	18mROW	1.00	15.07	0.37	18.00	1	84785.06
C84	18mROW	1.00	15.07	0.37	18.00	1	65429.38
C85	18mROW	1.00	15.07	0.37	18.00	1	48151.05
C86	18mROW	1.00	15.07	0.37	18.00	1	82104.92
C87	18mROW	1.00	15.07	0.37	18.00	1	50477.36
C88	18mROW	1.00	15.07	0.37	18.00	1	69323.83
C89	18mROW	1.00	15.07	0.37	18.00	1	82678.82
C9	18mROW	1.00	15.07	0.37	18.00	1	66907.54
C90	18mROW	1.00	15.07	0.37	18.00	1	42390.59
C91	18mROW	1.00	15.07	0.37	18.00	1	47972.46
C92	18mROW	1.00	15.07	0.37	18.00	1	56156.65
C93	18mROW	1.00	15.07	0.37	18.00	1	47419.31
C94	18mROW	1.00	15.07	0.37	18.00	1	52218.98
C95	18mROW	1.00	15.07	0.37	18.00	1	48051.98
C96	18mROW	1.00	15.07	0.37	18.00	1	46287.42
C97	18mROW	1.00	15.07	0.37	18.00	1	42310.11
C98	18mROW	1.00	15.07	0.37	18.00	1	44886.30
C99	18mROW	1.00	15.07	0.37	18.00	1	57207.22
RYCB01-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	211.00
RYCB02-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	232.35
RYCB03-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	157.64
RYCB04-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	74.54
RYCB05-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	348.11
RYCB06-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	138.29
RYCB07-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	277.41
RYCB08-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	194.90
RYCB09-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	147.09
RYCB10-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	218.24
RYCB11-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	343.33
RYCB12-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	240.14
RYCB13-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	195.86
RYCB14-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	119.73
RYCB15-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	184.78
RYCB16-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	182.57
RYCB17-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	211.15
RYCB18-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	161.60
RYCB19-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	190.96
RYCB20-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	226.16
RYCB21-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	96.97
RYCB22-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	236.11
RYCB23-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	248.21
RYCB24-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	87.83
RYCB25-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	240.75
RYCB26-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	190.23
RYCB27-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	167.24
RYCB28-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	90.67
RYCB29-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	133.57
RYCB30-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	175.92
RYCB31-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	42.29
RYCB32-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	99.79
RYCB33-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	256.18
RYCB34-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	242.56
RYCB35-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	82.82
RYCB36-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	184.37
RYCB38-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	364.41
RYCB40-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	187.10
STM-1_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	412.06
STM-2_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	288.57
STM-2-10_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1057.15
STM-2-11_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1110.41
STM-2-12_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1071.58
STM-2-13_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1028.13
STM-2-15_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1066.80
STM-2-8_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1092.49
STM-2-9_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1078.73
STM-3_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	191.12
STM-4_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	47.64
STM-5_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	122.98

STM-5A_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	125.56
STM-6_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	111.40
STM-7_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	265.10

****
Transect Summary
****

Transect 18mROW

Area:

0.0009	0.0035	0.0078	0.0139	0.0217
0.0313	0.0424	0.0539	0.0664	0.0802
0.0953	0.1117	0.1292	0.1481	0.1682
0.1895	0.2121	0.2359	0.2597	0.2836
0.3075	0.3313	0.3552	0.3791	0.4029
0.4268	0.4507	0.4746	0.4984	0.5223
0.5462	0.5701	0.5939	0.6178	0.6417
0.6656	0.6895	0.7133	0.7372	0.7611
0.7850	0.8089	0.8328	0.8567	0.8805
0.9044	0.9283	0.9522	0.9761	1.0000

Hrad:

0.0262	0.0524	0.0787	0.1049	0.1311
0.1573	0.1962	0.2469	0.2908	0.3274
0.3577	0.3829	0.4038	0.4212	0.4357
0.4478	0.4579	0.4670	0.4779	0.4901
0.5034	0.5175	0.5323	0.5476	0.5632
0.5793	0.5956	0.6121	0.6289	0.6458
0.6629	0.6801	0.6974	0.7148	0.7323
0.7498	0.7674	0.7851	0.8029	0.8206
0.8384	0.8563	0.8742	0.8921	0.9100
0.9280	0.9460	0.9640	0.9820	1.0000

Width:

0.0728	0.1456	0.2184	0.2912	0.3640
0.4368	0.4733	0.4996	0.5522	0.6047
0.6573	0.7098	0.7624	0.8149	0.8675
0.9201	0.9726	0.9989	0.9989	0.9990
0.9990	0.9990	0.9991	0.9991	0.9991
0.9992	0.9992	0.9992	0.9993	0.9993
0.9994	0.9994	0.9994	0.9995	0.9995
0.9995	0.9996	0.9996	0.9996	0.9997
0.9997	0.9997	0.9998	0.9998	0.9998
0.9999	0.9999	0.9999	1.0000	1.0000

Transect 18mROW(Half)

Area:

0.0009	0.0035	0.0078	0.0139	0.0217
0.0313	0.0423	0.0538	0.0663	0.0801
0.0952	0.1115	0.1291	0.1479	0.1680
0.1894	0.2120	0.2357	0.2595	0.2834
0.3073	0.3311	0.3550	0.3789	0.4027
0.4266	0.4505	0.4744	0.4982	0.5221
0.5460	0.5699	0.5938	0.6176	0.6415
0.6654	0.6893	0.7132	0.7371	0.7610
0.7849	0.8088	0.8327	0.8566	0.8805
0.9044	0.9283	0.9522	0.9761	1.0000

Hrad:

0.0312	0.0623	0.0935	0.1246	0.1558
0.1869	0.2326	0.2914	0.3417	0.3829
0.4165	0.4438	0.4659	0.4839	0.4983
0.5100	0.5192	0.5274	0.5374	0.5489
0.5615	0.5749	0.5889	0.6034	0.6182
0.6333	0.6486	0.6641	0.6796	0.6952
0.7108	0.7265	0.7421	0.7578	0.7734
0.7890	0.8045	0.8200	0.8354	0.8508
0.8660	0.8812	0.8964	0.9114	0.9264
0.9413	0.9561	0.9708	0.9855	1.0000

Width:

0.0726	0.1453	0.2179	0.2905	0.3631
0.4358	0.4722	0.4985	0.5511	0.6037
0.6563	0.7089	0.7614	0.8140	0.8666
0.9192	0.9718	0.9981	0.9981	0.9982
0.9983	0.9983	0.9984	0.9984	0.9985
0.9986	0.9986	0.9987	0.9987	0.9988
0.9989	0.9989	0.9990	0.9990	0.9991
0.9992	0.9992	0.9993	0.9993	0.9994
0.9995	0.9995	0.9996	0.9996	0.9997
0.9998	0.9998	0.9999	0.9999	1.0000

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****

Flow Units .... LPS

Process Models:

```
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... HORTON
  Flow Routing Method ...... DYNWAVE
  Starting Date ............ 03/09/2018 00:00:00
  Ending Date .............. 03/11/2018 00:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00
  Routing Time Step ........ 2.00 sec
  Variable Time Step ....... YES
  Maximum Trials ........... 8
  Number of Threads ........ 4
  Head Tolerance ........... 0.001500 m

  **************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  **************************     ---------       -------
  Total Precipitation ......         5.932        71.667
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         2.194        26.509
  Surface Runoff ...........         3.758        45.399
  Final Storage ............         0.025         0.300
  Continuity Error (%) .....        -0.755

  **************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  **************************     ---------     ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         3.758        37.577
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         3.103        31.031
  Flooding Loss ............         0.157         1.568
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         1.238        12.382
  Final Stored Volume ......         1.746        17.465
  Continuity Error (%) .....        -0.210


  *************************
  Highest Continuity Errors
  *************************
  Node 4+213 (-4.93%)
  Node 918_(STM) (2.54%)
  Node CB-107-108 (-2.42%)
  Node 1+274 (-2.19%)
  Node 11+094 (-2.17%)


  ***************************
  Time-Step Critical Elements
  ***************************
  Link 3_(93)_(STM) (2.15%)
  Link STM-2-11_(STM-OS) (1.19%)


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link 3_(93)_(STM) (44)
  Link 3_(91)_(STM) (41)
  Link 3_(96)_(STM) (37)
  Link OR-SU-122 (32)
  Link 3_(9)_(STM) (30)


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :     0.50 sec
  Average Time Step           :     1.97 sec
  Maximum Time Step           :     2.00 sec
  Percent in Steady State     :     0.00
  Average Iterations per Step :     4.22
  Percent Not Converging      :    21.76


  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
NADIA	71.67	0.00	0.00	44.91	27.00	6.97	2145.96	0.377
NW-001	71.67	0.00	0.00	15.99	55.84	0.31	200.33	0.779
NW-002	71.67	0.00	0.00	19.98	52.13	0.10	87.42	0.727
NW-003	71.67	0.00	0.00	15.99	55.84	0.28	185.17	0.779
NW-004	71.67	0.00	0.00	19.99	52.13	0.08	72.22	0.727
NW-005	71.67	0.00	0.00	16.09	55.69	0.21	136.18	0.777
NW-006	71.67	0.00	0.00	19.98	52.13	0.07	64.25	0.727
NW-007	71.67	0.00	0.00	15.82	56.19	0.05	33.42	0.784
NW-008	71.67	0.00	0.00	15.96	55.88	0.23	150.43	0.780
NW-009	71.67	0.00	0.00	19.98	52.13	0.05	47.76	0.727
NW-010	71.67	0.00	0.00	20.12	52.17	0.08	67.01	0.728
NW-011	71.67	0.00	0.00	19.98	52.13	0.03	27.38	0.727
NW-012	71.67	0.00	0.00	16.07	55.82	0.23	144.55	0.779
NW-013	71.67	0.00	0.00	15.84	56.15	0.14	97.64	0.783
NW-014	71.67	0.00	0.00	16.19	55.57	0.37	234.97	0.775
NW-015	71.67	0.00	0.00	20.11	52.17	0.22	192.25	0.728
NW-016	71.67	0.00	0.00	16.01	55.81	0.26	165.68	0.779
NW-017	71.67	0.00	0.00	20.12	52.17	0.15	129.24	0.728
NW-018	71.67	0.00	0.00	15.69	56.89	0.09	68.31	0.794
NW-019	71.67	0.00	0.00	15.91	55.98	0.16	109.32	0.781
NW-020	71.67	0.00	0.00	15.91	55.98	0.20	132.12	0.781
NW-021A	71.67	0.00	0.00	15.82	56.21	0.07	46.55	0.784
NW-021B	71.67	0.00	0.00	15.92	55.96	0.13	89.37	0.781
NW-022	71.67	0.00	0.00	20.10	52.16	0.23	205.23	0.728
NW-023	71.67	0.00	0.00	20.08	52.16	0.09	77.57	0.728
NW-024	71.67	0.00	0.00	14.68	57.13	0.22	144.40	0.797
NW-025	71.67	0.00	0.00	15.96	55.88	0.16	105.50	0.780
NW-026	71.67	0.00	0.00	15.91	55.98	0.23	153.97	0.781
NW-027	71.67	0.00	0.00	15.94	55.92	0.22	147.57	0.780
NW-028	71.67	0.00	0.00	15.93	55.94	0.14	94.60	0.781
NW-029	71.67	0.00	0.00	15.93	55.94	0.16	106.00	0.781
NW-030	71.67	0.00	0.00	20.11	52.17	0.22	194.35	0.728
NW-031	71.67	0.00	0.00	12.91	58.82	0.58	378.14	0.821
NW-032	71.67	0.00	0.00	12.55	59.70	0.16	117.78	0.833
NW-033	71.67	0.00	0.00	16.02	55.78	0.23	146.82	0.778
NW-034	71.67	0.00	0.00	16.00	55.82	0.22	143.37	0.779
NW-035	71.67	0.00	0.00	16.04	55.76	0.08	48.54	0.778
NW-036	71.67	0.00	0.00	16.01	55.80	0.25	162.36	0.779
NW-037	71.67	0.00	0.00	20.07	52.16	0.15	131.79	0.728
NW-038	71.67	0.00	0.00	16.02	55.79	0.24	155.13	0.779
NW-039	71.67	0.00	0.00	15.95	55.91	0.13	85.86	0.780
NW-040	71.67	0.00	0.00	19.97	52.11	0.05	44.84	0.727
NW-041A	71.67	0.00	0.00	35.79	36.53	0.30	198.70	0.510
NW-041B	71.67	0.00	0.00	35.56	37.08	0.09	83.00	0.517
NW-042	71.67	0.00	0.00	15.93	55.93	0.20	134.13	0.780
NW-043A	71.67	0.00	0.00	19.98	52.12	0.05	46.47	0.727
NW-043B	71.67	0.00	0.00	35.10	37.94	0.05	50.95	0.529
NW-044	71.67	0.00	0.00	15.99	55.84	0.16	103.04	0.779
NW-045	71.67	0.00	0.00	20.11	52.17	0.14	125.04	0.728
NW-046	71.67	0.00	0.00	15.87	56.06	0.09	61.79	0.782
NW-047	71.67	0.00	0.00	20.11	52.17	0.17	148.36	0.728
NW-048	71.67	0.00	0.00	15.93	55.94	0.14	89.40	0.781
NW-049	71.67	0.00	0.00	40.42	31.68	0.82	409.26	0.442
NW-050	71.67	0.00	0.00	15.93	55.94	0.21	139.01	0.781
NW-051	71.67	0.00	0.00	20.12	52.17	0.11	97.14	0.728
NW-052	71.67	0.00	0.00	15.86	56.10	0.14	94.43	0.783
NW-053	71.67	0.00	0.00	15.98	55.85	0.07	46.54	0.779
NW-054	71.67	0.00	0.00	15.95	55.90	0.12	77.43	0.780
NW-055	71.67	0.00	0.00	15.86	56.09	0.15	102.63	0.783
NW-056	71.67	0.00	0.00	20.06	52.16	0.04	39.29	0.728
NW-057	71.67	0.00	0.00	15.89	56.01	0.13	89.09	0.782
NW-058	71.67	0.00	0.00	15.93	55.93	0.12	77.87	0.780
NW-059	71.67	0.00	0.00	20.18	52.16	0.12	107.33	0.728
NW-060	71.67	0.00	0.00	20.12	52.17	0.22	199.01	0.728
NW-061	71.67	0.00	0.00	15.94	55.93	0.23	149.77	0.780
NW-062	71.67	0.00	0.00	15.89	56.02	0.09	58.54	0.782
NW-063	71.67	0.00	0.00	16.04	55.76	0.12	78.83	0.778
NW-064	71.67	0.00	0.00	38.37	34.20	0.31	258.84	0.477
NW-065	71.67	0.00	0.00	16.03	55.77	0.14	88.92	0.778
NW-066	71.67	0.00	0.00	20.18	52.16	0.09	75.55	0.728
NW-067	71.67	0.00	0.00	15.89	56.03	0.13	90.00	0.782
NW-068A	71.67	0.00	0.00	15.84	56.15	0.11	75.57	0.783
NW-068B	71.67	0.00	0.00	19.99	52.13	0.02	15.86	0.727
NW-069	71.67	0.00	0.00	15.91	55.97	0.13	86.24	0.781
NW-070	71.67	0.00	0.00	20.08	52.16	0.19	167.10	0.728
NW-071	71.67	0.00	0.00	15.90	56.00	0.12	78.56	0.781
NW-072	71.67	0.00	0.00	15.92	55.96	0.11	75.28	0.781
NW-073	71.67	0.00	0.00	40.86	32.03	0.14	138.63	0.447
NW-074	71.67	0.00	0.00	15.87	56.07	0.06	43.64	0.782
NW-075	71.67	0.00	0.00	20.02	52.15	0.05	46.57	0.728
NW-076	71.67	0.00	0.00	15.88	56.04	0.19	130.94	0.782
NW-077	71.67	0.00	0.00	20.08	52.16	0.14	127.60	0.728
NW-078	71.67	0.00	0.00	15.90	56.01	0.18	122.55	0.781
NW-079	71.67	0.00	0.00	23.04	49.04	0.30	183.95	0.684
NW-080	71.67	0.00	0.00	19.99	52.13	0.08	72.08	0.727
NW-081	71.67	0.00	0.00	15.91	55.98	0.16	104.07	0.781
NW-082	71.67	0.00	0.00	20.07	52.16	0.11	99.36	0.728

NW-083	71.67	0.00	0.00	15.91	55.98	0.21	141.81	0.781
NW-084	71.67	0.00	0.00	15.89	56.01	0.21	140.49	0.782
NW-085	71.67	0.00	0.00	15.92	55.95	0.16	103.70	0.781
NW-086	71.67	0.00	0.00	15.89	56.01	0.19	124.07	0.782
NW-087	71.67	0.00	0.00	20.07	52.16	0.16	141.71	0.728
NW-088	71.67	0.00	0.00	16.03	55.77	0.20	131.42	0.778
NW-089	71.67	0.00	0.00	15.98	55.85	0.16	102.91	0.779
NW-090	71.67	0.00	0.00	15.99	55.84	0.33	217.02	0.779
NW-091	71.67	0.00	0.00	15.98	55.86	0.12	78.95	0.779
NW-092	71.67	0.00	0.00	20.11	52.17	0.22	197.82	0.728
NW-093	71.67	0.00	0.00	15.36	56.45	0.21	133.90	0.788
NW-094	71.67	0.00	0.00	20.05	52.16	0.07	65.61	0.728
NW-095	71.67	0.00	0.00	15.38	56.41	0.21	136.53	0.787
NW-096	71.67	0.00	0.00	20.08	52.16	0.21	191.32	0.728
NW-097	71.67	0.00	0.00	12.57	59.56	0.11	81.54	0.831
NW-098	71.67	0.00	0.00	12.77	58.98	0.36	239.82	0.823
NW-099	71.67	0.00	0.00	12.59	59.42	0.09	66.21	0.829
NW-100	71.67	0.00	0.00	12.54	59.76	0.04	32.86	0.834
NW-101	71.67	0.00	0.00	15.89	56.03	0.11	76.85	0.782
NW-102	71.67	0.00	0.00	15.89	56.02	0.19	129.73	0.782
NW-103	71.67	0.00	0.00	19.97	52.11	0.09	82.15	0.727
NW-104A	71.67	0.00	0.00	15.95	55.90	0.17	114.30	0.780
NW-104B	71.67	0.00	0.00	37.17	34.58	0.82	334.58	0.482
NW-105	71.67	0.00	0.00	20.05	52.16	0.10	86.07	0.728
NW-106	71.67	0.00	0.00	16.10	55.68	0.16	99.53	0.777
NW-107	71.67	0.00	0.00	20.06	52.16	0.16	147.10	0.728
NW-108	71.67	0.00	0.00	16.38	55.35	0.37	226.70	0.772
NW-109	71.67	0.00	0.00	15.34	56.36	1.12	687.04	0.786
NW-110A	71.67	0.00	0.00	48.51	23.54	0.15	75.96	0.328
NW-110B	71.67	0.00	0.00	16.79	54.92	1.42	857.72	0.766
NW-111	71.67	0.00	0.00	12.81	58.92	0.37	243.05	0.822
NW-112	71.67	0.00	0.00	3.16	68.48	1.76	1221.53	0.956
NW-113	71.67	0.00	0.00	12.54	59.78	0.10	79.34	0.834
NW-114	71.67	0.00	0.00	3.15	68.47	0.61	423.88	0.955
NW-115	71.67	0.00	0.00	12.55	59.69	0.14	103.62	0.833
NW-116	71.67	0.00	0.00	12.55	59.69	0.04	31.02	0.833
NW-117	71.67	0.00	0.00	12.59	59.43	0.09	65.58	0.829
NW-118	71.67	0.00	0.00	12.82	58.92	0.54	352.85	0.822
NW-119	71.67	0.00	0.00	12.59	59.42	0.12	85.55	0.829
NW-120	71.67	0.00	0.00	16.71	55.00	1.27	769.04	0.767
NW-121	71.67	0.00	0.00	12.58	59.50	0.08	61.10	0.830
NW-122	71.67	0.00	0.00	8.23	63.45	0.31	217.35	0.885
NW-123	71.67	0.00	0.00	9.06	62.63	1.23	809.26	0.874
NW-124	71.67	0.00	0.00	12.59	59.44	0.09	68.46	0.829
POND-1	71.67	0.00	0.00	6.30	65.33	0.79	555.90	0.912
POND-2	71.67	0.00	0.00	6.33	65.32	0.82	565.36	0.911

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
1+000	JUNCTION	0.00	0.00	90.47	0 00:00	0.00
1+070	JUNCTION	0.00	0.00	90.12	0 00:00	0.00
1+150	JUNCTION	0.00	0.00	90.01	0 00:00	0.00
1+274	JUNCTION	0.00	0.05	89.12	0 01:14	0.05
10+091	JUNCTION	0.00	0.03	92.10	0 01:23	0.03
100_(STM)	JUNCTION	0.31	2.15	89.77	0 01:12	0.99
1000_(STM)	JUNCTION	0.31	0.58	89.77	0 01:11	0.58
1002_(STM)	JUNCTION	0.31	0.49	89.54	0 01:11	0.49
1004_(STM)	JUNCTION	0.31	0.53	87.80	0 01:12	0.53
1004D_(STM)	JUNCTION	0.01	0.41	86.60	0 01:12	0.41
102_(STM)	JUNCTION	0.32	2.33	89.67	0 01:12	1.19
104_(STM)	JUNCTION	0.32	2.59	89.50	0 01:11	1.43
106_(STM)	JUNCTION	0.30	2.40	89.78	0 01:11	1.00
11+094	JUNCTION	0.00	0.09	88.50	0 01:13	0.09
11+162	JUNCTION	0.00	0.00	88.67	0 00:00	0.00
1100_(STM)	JUNCTION	0.32	0.98	86.16	0 01:13	0.97
1102_(STM)	JUNCTION	0.31	0.47	86.31	0 01:20	0.47
12+000	JUNCTION	0.00	0.00	90.44	0 00:00	0.00
12+040	JUNCTION	0.00	0.00	90.46	0 00:00	0.00
12+134	JUNCTION	0.00	0.00	89.70	0 00:00	0.00
12+242	JUNCTION	0.00	0.05	88.77	0 01:17	0.05
12+310	JUNCTION	0.00	0.02	88.54	0 01:21	0.02
12+384	JUNCTION	0.00	0.00	88.22	0 00:00	0.00
12+428	JUNCTION	0.00	0.00	87.57	0 00:00	0.00
12+523	JUNCTION	0.00	0.00	86.85	0 00:00	0.00
12+600	JUNCTION	0.00	0.00	84.87	0 00:00	0.00
1200_(STM)	JUNCTION	0.32	0.83	87.56	0 01:12	0.83
1202_(STM)	JUNCTION	0.32	0.83	87.03	0 01:12	0.83
1204_(STM)	JUNCTION	0.25	1.06	86.38	0 01:14	1.06
1206_(STM)	JUNCTION	0.33	1.09	85.61	0 01:14	1.09
1208_(STM)	JUNCTION	0.25	1.01	85.29	0 01:14	1.01
1210_(STM)	JUNCTION	0.25	1.05	85.14	0 01:14	1.05
1212_(STM)	JUNCTION	0.34	1.16	85.04	0 01:14	1.16
1214_(STM)	JUNCTION	1.02	2.93	84.54	0 02:43	2.93
1216_(STM)	JUNCTION	1.11	3.03	84.54	0 02:43	3.03

1218_(STM)	JUNCTION	1.24	3.16	84.53	0	02:43	3.16
1220_(STM)	JUNCTION	1.31	1.95	81.52	0	07:37	1.95
1222_(STM)	JUNCTION	1.48	2.14	81.53	0	07:44	2.14
13+093	JUNCTION	0.00	0.00	87.48	0	00:00	0.00
13+171	JUNCTION	0.00	0.00	87.69	0	00:00	0.00
13+251	JUNCTION	0.00	0.02	87.81	0	01:39	0.02
13+413	JUNCTION	0.00	0.00	88.12	0	00:00	0.00
13+490	JUNCTION	0.00	0.00	88.25	0	00:00	0.00
1300_(STM)	JUNCTION	0.76	2.68	84.70	0	01:14	2.68
1302_(STM)	JUNCTION	0.72	2.93	85.05	0	01:14	2.93
1304_(STM)	JUNCTION	0.36	1.53	85.26	0	01:13	1.53
1306_(STM)	JUNCTION	0.36	1.65	85.43	0	01:13	1.65
1308_(STM)	JUNCTION	0.36	1.73	85.55	0	01:13	1.73
1310_(STM)	JUNCTION	0.36	1.76	85.65	0	01:13	1.76
1312_(STM)	JUNCTION	0.32	0.87	85.76	0	01:13	0.87
1314_(STM)	JUNCTION	0.31	0.68	85.88	0	01:14	0.68
1400_(STM)	JUNCTION	0.43	0.95	83.15	0	01:11	0.95
1402_(STM)	JUNCTION	0.31	0.82	82.81	0	01:12	0.82
1404_(STM)	JUNCTION	0.32	0.88	82.50	0	01:13	0.88
1406_(STM)	JUNCTION	0.32	1.13	82.37	0	01:13	1.13
1408_(STM)	JUNCTION	0.43	1.26	82.06	0	01:11	1.26
1410_(STM)	JUNCTION	0.57	1.43	81.90	0	01:10	1.43
1412_(STM)	JUNCTION	0.76	1.56	81.72	0	01:10	1.55
1500_(STM)	JUNCTION	0.31	0.69	86.09	0	01:14	0.69
1502_(STM)	JUNCTION	0.00	0.00	82.27	0	00:00	0.00
1505_(STM)	JUNCTION	1.51	2.18	81.53	0	07:20	2.18
1600_(STM)	JUNCTION	0.68	0.79	87.79	0	01:11	0.79
1602_(STM)	JUNCTION	0.31	1.23	85.83	0	01:07	1.01
1604_(STM)	JUNCTION	0.31	0.71	83.49	0	01:11	0.71
1606_(STM)	JUNCTION	0.31	0.64	83.73	0	01:10	0.64
2+089	JUNCTION	0.00	0.00	90.50	0	00:00	0.00
2+112	JUNCTION	0.00	0.00	90.67	0	00:00	0.00
2+218	JUNCTION	0.00	0.00	90.93	0	00:00	0.00
2+335	JUNCTION	0.00	0.00	91.17	0	00:00	0.00
2+516	JUNCTION	0.00	0.02	90.53	0	01:21	0.02
200_(STM)	JUNCTION	0.32	0.90	88.07	0	01:13	0.90
202_(STM)	JUNCTION	0.31	0.73	88.49	0	01:14	0.73
204_(STM)	JUNCTION	0.31	0.62	88.97	0	01:14	0.62
206_(STM)	JUNCTION	0.29	0.65	89.02	0	01:13	0.64
208_(STM)	JUNCTION	0.31	0.97	89.01	0	01:13	0.97
20A_(STM)	JUNCTION	0.01	0.70	89.12	0	01:11	0.59
210_(STM)	JUNCTION	0.32	1.17	89.01	0	01:13	1.16
212_(STM)	JUNCTION	0.32	1.41	88.65	0	01:09	1.30
3+088	JUNCTION	0.00	0.00	90.17	0	00:00	0.00
3+313	JUNCTION	0.00	0.00	88.52	0	00:00	0.00
3+395	JUNCTION	0.00	0.00	88.32	0	00:00	0.00
3+447	JUNCTION	0.00	0.05	88.02	0	01:12	0.05
300_(STM)	JUNCTION	0.31	1.57	88.87	0	01:12	0.69
302_(STM)	JUNCTION	0.32	1.15	87.90	0	01:12	1.06
304_(STM)	JUNCTION	0.24	1.25	87.60	0	01:10	1.03
306_(STM)	JUNCTION	0.24	1.14	87.02	0	01:12	1.08
308_(STM)	JUNCTION	0.31	0.56	86.42	0	01:26	0.56
310_(STM)	JUNCTION	0.31	0.68	86.14	0	01:15	0.68
312_(STM)	JUNCTION	0.32	0.80	86.05	0	01:14	0.80
314_(STM)	JUNCTION	0.32	0.91	85.96	0	01:13	0.91
316_(STM)	JUNCTION	0.32	0.95	85.93	0	01:13	0.95
4+112	JUNCTION	0.00	0.00	90.12	0	00:00	0.00
4+213	JUNCTION	0.00	0.04	90.27	0	01:13	0.04
4+270	JUNCTION	0.00	0.03	89.40	0	01:18	0.03
400_(STM)	JUNCTION	0.32	2.91	89.49	0	01:11	1.49
402_(STM)	JUNCTION	0.26	2.36	88.50	0	01:10	1.72
5+111	JUNCTION	0.00	0.01	90.48	0	01:25	0.01
5+210	JUNCTION	0.00	0.00	90.87	0	00:00	0.00
5+285	JUNCTION	0.00	0.05	90.41	0	01:11	0.05
500_(STM)	JUNCTION	0.32	1.56	88.85	0	01:13	1.55
502_(STM)	JUNCTION	0.32	1.94	88.78	0	01:10	1.65
504_(STM)	JUNCTION	0.32	1.95	88.52	0	01:10	1.66
506_(STM)	JUNCTION	0.32	2.04	88.49	0	01:10	1.72
6+088	JUNCTION	0.00	0.05	90.17	0	01:12	0.05
6+278	JUNCTION	0.00	0.09	88.87	0	01:16	0.09
6+306	JUNCTION	0.00	0.11	88.78	0	01:16	0.11
6+345	JUNCTION	0.00	0.10	88.71	0	01:17	0.10
6+410	JUNCTION	0.00	0.10	88.59	0	01:20	0.10
6+505	JUNCTION	0.00	0.10	88.37	0	01:22	0.10
6+572	JUNCTION	0.00	0.09	88.29	0	01:24	0.09
600_(STM)	JUNCTION	0.31	1.90	89.12	0	01:11	1.21
600D_(STM)	JUNCTION	0.01	0.34	88.47	0	01:12	0.33
602_(STM)	JUNCTION	0.27	1.69	88.39	0	01:11	1.50
604_(STM)	JUNCTION	0.32	1.72	88.23	0	01:11	1.55
606_(STM)	JUNCTION	0.34	2.13	87.50	0	01:10	1.89
608_(STM)	JUNCTION	0.34	1.81	86.99	0	01:11	1.78
610_(STM)	JUNCTION	0.34	1.80	86.92	0	01:11	1.76
612_(STM)	JUNCTION	0.33	1.72	86.72	0	01:10	1.66
614_(STM)	JUNCTION	0.33	1.71	86.64	0	01:10	1.63
616_(STM)	JUNCTION	0.19	1.67	86.54	0	01:10	1.58
618_(STM)	JUNCTION	0.23	1.57	86.26	0	01:10	1.52
620_(STM)	JUNCTION	0.05	1.55	86.06	0	01:11	1.54
700_(STM)	JUNCTION	0.30	0.60	87.80	0	01:14	0.60
702_(STM)	JUNCTION	0.32	1.64	87.69	0	01:12	1.63
704_(STM)	JUNCTION	0.32	1.31	86.77	0	01:10	1.23
8+150	JUNCTION	0.00	0.04	90.61	0	01:11	0.04
800_(STM)	JUNCTION	0.29	0.82	89.70	0	01:10	0.75

802_(STM)	JUNCTION	0.30	0.43	89.33	0	01:12	0.43
804_(STM)	JUNCTION	0.30	0.52	88.45	0	01:13	0.52
806_(STM)	JUNCTION	0.31	0.61	87.15	0	01:13	0.60
808_(STM)	JUNCTION	0.31	1.09	86.48	0	01:10	1.04
9+000	JUNCTION	0.00	0.00	93.32	0	00:00	0.00
9+040	JUNCTION	0.00	0.00	92.52	0	00:00	0.00
9+261	JUNCTION	0.00	0.10	88.25	0	01:25	0.10
9+342	JUNCTION	0.00	0.07	88.06	0	01:28	0.07
9+347	JUNCTION	0.00	0.00	87.99	0	00:00	0.00
9+713	JUNCTION	0.00	0.00	84.10	0	00:00	0.00
900_(STM)	JUNCTION	0.30	0.67	89.26	0	01:11	0.67
900D_(STM)	JUNCTION	0.01	0.29	90.00	0	01:10	0.29
900DD_(STM)	JUNCTION	0.01	0.50	89.16	0	01:11	0.46
902_(STM)	JUNCTION	0.23	0.59	88.76	0	01:11	0.59
904_(STM)	JUNCTION	0.35	0.76	87.20	0	01:11	0.75
906_(STM)	JUNCTION	0.11	1.68	85.85	0	01:13	1.68
908_(STM)	JUNCTION	0.31	0.57	84.81	0	01:11	0.57
910_(STM)	JUNCTION	0.32	0.77	83.44	0	01:15	0.77
912_(STM)	JUNCTION	0.32	0.95	82.70	0	01:15	0.95
914_(STM)	JUNCTION	0.34	1.05	81.96	0	01:12	1.05
916_(STM)	JUNCTION	1.71	2.38	81.53	0	07:13	2.38
918_(STM)	JUNCTION	1.29	1.96	81.54	0	08:20	1.95
920_(STM)	JUNCTION	1.81	2.48	81.53	0	07:15	2.48
922_(STM)	JUNCTION	1.88	2.55	81.53	0	07:19	2.55
CB-001-002	JUNCTION	0.00	0.04	90.36	0	01:10	0.04
CB-003-004	JUNCTION	0.05	1.70	89.69	0	01:18	1.70
CB-005-006	JUNCTION	0.06	1.70	88.74	0	01:23	1.70
CB-007-008	JUNCTION	0.06	1.87	88.54	0	01:22	1.87
CB-009-010	JUNCTION	0.05	1.79	88.16	0	01:19	1.79
CB-011-012	JUNCTION	0.05	1.76	86.73	0	01:17	1.76
CB-013-014	JUNCTION	0.00	0.03	86.42	0	01:10	0.03
CB-015-016	JUNCTION	0.00	0.02	84.92	0	01:10	0.02
CB-017-018	JUNCTION	0.00	0.06	82.73	0	01:10	0.06
CB-019-020	JUNCTION	0.00	0.04	82.44	0	01:13	0.04
CB-021-022	JUNCTION	0.03	1.70	86.75	0	01:14	1.70
CB-023-024	JUNCTION	0.04	1.74	87.27	0	01:16	1.74
CB-025-026	JUNCTION	0.05	1.79	87.53	0	01:18	1.79
CB-027-028	JUNCTION	0.08	1.92	87.81	0	01:38	1.92
CB-029-030	JUNCTION	0.08	1.97	88.01	0	01:38	1.97
CB-031-032	JUNCTION	0.05	1.77	87.94	0	01:18	1.77
CB-033-034	JUNCTION	0.00	0.03	91.76	0	01:10	0.03
CB-035-036	JUNCTION	0.00	0.05	90.45	0	01:10	0.05
CB-037-038	JUNCTION	0.00	0.07	89.35	0	01:10	0.07
CB-039-040	JUNCTION	0.08	1.94	88.08	0	01:27	1.94
CB-041-042	JUNCTION	0.05	1.83	90.10	0	01:19	1.83
CB-043-044	JUNCTION	0.05	1.82	89.93	0	01:19	1.82
CB-045-046	JUNCTION	0.00	0.04	89.80	0	01:09	0.04
CB-047-048	JUNCTION	0.06	1.81	88.78	0	01:16	1.81
CB-049-050	JUNCTION	0.00	0.07	90.27	0	01:11	0.07
CB-051-052	JUNCTION	0.00	0.13	89.65	0	01:15	0.13
CB-053-054	JUNCTION	0.00	0.10	89.30	0	01:14	0.10
CB-055-056	JUNCTION	0.07	1.88	88.80	0	01:16	1.88
CB-057-058	JUNCTION	0.05	1.85	88.74	0	01:17	1.85
CB-059-060	JUNCTION	0.08	1.96	88.60	0	01:20	1.96
CB-061-062	JUNCTION	0.09	1.96	88.38	0	01:22	1.96
CB-063-064	JUNCTION	0.11	2.04	88.29	0	01:24	2.04
CB-065-066	JUNCTION	0.08	2.01	88.26	0	01:25	2.01
CB-067-068	JUNCTION	0.10	1.98	88.25	0	01:25	1.98
CB-069-070	JUNCTION	0.07	1.89	88.50	0	01:12	1.89
CB-071-072	JUNCTION	0.00	0.06	89.60	0	01:12	0.06
CB-073-074	JUNCTION	0.00	0.08	89.15	0	01:11	0.08
CB-075-076	JUNCTION	0.00	0.08	88.70	0	01:11	0.08
CB-077-078	JUNCTION	0.00	0.09	88.73	0	01:10	0.09
CB-079-080	JUNCTION	0.00	0.07	89.96	0	01:10	0.07
CB-081-082	JUNCTION	0.00	0.05	91.17	0	01:10	0.05
CB-083-084	JUNCTION	0.07	1.93	92.10	0	01:23	1.93
CB-085-086	JUNCTION	0.00	0.04	91.70	0	01:10	0.04
CB-087-088	JUNCTION	0.00	0.05	90.93	0	01:10	0.05
CB-089-090	JUNCTION	0.00	0.06	90.25	0	01:10	0.06
CB-091-092	JUNCTION	0.00	0.06	89.59	0	01:10	0.06
CB-093-094	JUNCTION	0.00	0.07	88.49	0	01:10	0.07
CB-095-096	JUNCTION	0.00	0.04	86.59	0	01:10	0.04
CB-097-098	JUNCTION	0.00	0.06	85.17	0	01:10	0.06
CB-099-100	JUNCTION	0.00	0.01	83.55	0	01:10	0.01
CB-101-102	JUNCTION	0.00	0.05	84.05	0	01:10	0.05
CB-103-104	JUNCTION	0.07	1.83	90.10	0	01:22	1.83
CB-105-106	JUNCTION	0.07	1.88	90.53	0	01:20	1.88
CB-107-108	JUNCTION	0.00	0.06	90.95	0	01:10	0.06
CB-109-110	JUNCTION	0.06	1.85	90.93	0	01:20	1.85
CB-111-112	JUNCTION	0.07	1.85	90.62	0	01:22	1.85
CB-113-114	JUNCTION	0.06	1.83	90.39	0	01:22	1.83
CB-115-116	JUNCTION	0.00	0.04	89.65	0	01:10	0.04
CB-117-118	JUNCTION	0.00	0.07	88.57	0	01:10	0.07
CB-119-120	JUNCTION	0.00	0.08	87.44	0	01:10	0.08
CB-121-122	JUNCTION	0.00	0.07	86.07	0	01:10	0.07
CB-123-124	JUNCTION	0.03	1.71	89.98	0	01:15	1.71
CB-125-126	JUNCTION	0.00	0.06	89.57	0	01:10	0.06
CB-127-128	JUNCTION	0.07	1.86	89.13	0	01:13	1.86
CB-129	JUNCTION	0.00	0.20	89.12	0	01:14	0.20
CB-130-131	JUNCTION	0.07	1.89	88.51	0	01:24	1.89
CB-132-133	JUNCTION	0.07	1.87	88.29	0	01:22	1.87
CB-134-135	JUNCTION	0.04	1.75	88.02	0	01:11	1.75

CB-136-137	JUNCTION	0.07	1.87	87.54	0	01:23	1.87
CB-138-139	JUNCTION	0.06	1.83	89.94	0	01:17	1.83
CB-140-141	JUNCTION	0.07	1.86	90.08	0	01:22	1.86
CB-142-143	JUNCTION	0.05	1.78	89.41	0	01:18	1.78
CB-144-145	JUNCTION	0.06	1.80	89.97	0	01:18	1.80
CB-146-147	JUNCTION	0.08	1.91	90.48	0	01:24	1.91
CB-148-149	JUNCTION	0.04	1.73	90.42	0	01:11	1.73
HP-W	JUNCTION	0.00	0.00	90.33	0	00:00	0.00
HW1_(STM-OS)	JUNCTION	0.05	1.07	89.90	0	01:08	1.07
OS-1_(STM-OS)	JUNCTION	0.34	1.44	89.81	0	01:08	1.37
OS-2_(STM-OS)	JUNCTION	0.33	1.20	89.39	0	01:09	1.20
OS-3_(STM-OS)	JUNCTION	0.33	1.15	89.18	0	01:08	1.15
OS-4_(STM-OS)	JUNCTION	0.33	1.08	89.04	0	01:08	1.08
OS-5_(STM-OS)	JUNCTION	0.33	0.99	88.70	0	01:09	0.98
OS-6_(STM-OS)	JUNCTION	0.33	1.04	87.41	0	01:09	1.01
OVF-02	JUNCTION	0.00	0.22	85.32	0	01:11	0.22
OVF-03	JUNCTION	0.01	0.30	85.11	0	01:12	0.30
OVF-04	JUNCTION	0.01	0.32	84.64	0	01:14	0.32
OVF-05	JUNCTION	0.02	0.55	84.55	0	01:16	0.55
OVF-06	JUNCTION	0.02	0.41	82.81	0	01:21	0.41
POND-OUT	JUNCTION	0.05	0.08	77.98	0	07:14	0.08
RYCB01	JUNCTION	0.01	1.17	91.62	0	01:10	1.14
RYCB02	JUNCTION	0.01	0.42	90.56	0	01:10	0.41
RYCB03	JUNCTION	0.00	0.25	90.16	0	01:10	0.24
RYCB04	JUNCTION	0.01	0.67	89.34	0	01:10	0.66
RYCB05	JUNCTION	0.01	1.23	87.83	0	01:10	1.19
RYCB06	JUNCTION	0.01	1.02	89.97	0	01:10	1.00
RYCB07	JUNCTION	0.02	1.65	88.45	0	01:10	1.61
RYCB08	JUNCTION	0.00	0.22	89.33	0	01:10	0.22
RYCB09	JUNCTION	0.01	0.44	89.19	0	01:10	0.44
RYCB10	JUNCTION	0.01	1.00	88.22	0	01:11	0.99
RYCB11	JUNCTION	0.00	0.12	87.37	0	01:10	0.12
RYCB12	JUNCTION	0.01	0.65	89.72	0	01:10	0.64
RYCB13	JUNCTION	0.02	1.20	88.97	0	01:10	1.20
RYCB14	JUNCTION	0.02	1.24	88.03	0	01:11	1.24
RYCB15	JUNCTION	0.01	0.37	87.28	0	01:10	0.36
RYCB16	JUNCTION	0.02	1.88	87.84	0	01:11	1.88
RYCB17	JUNCTION	0.01	1.41	88.91	0	01:10	1.34
RYCB18	JUNCTION	0.00	0.25	89.20	0	01:10	0.24
RYCB19	JUNCTION	0.01	0.89	88.89	0	01:13	0.88
RYCB20	JUNCTION	0.01	0.99	90.70	0	01:10	0.96
RYCB21	JUNCTION	0.01	0.76	89.93	0	01:15	0.76
RYCB22	JUNCTION	0.02	1.86	87.65	0	01:10	1.85
RYCB23	JUNCTION	0.01	0.45	88.15	0	01:09	0.44
RYCB24	JUNCTION	0.02	1.66	88.81	0	01:10	1.65
RYCB25	JUNCTION	0.01	0.38	89.38	0	01:10	0.37
RYCB26	JUNCTION	0.01	0.36	88.97	0	01:10	0.35
RYCB27	JUNCTION	0.01	0.42	89.13	0	01:10	0.41
RYCB28	JUNCTION	0.01	0.62	90.38	0	01:10	0.61
RYCB29	JUNCTION	0.02	1.98	90.50	0	01:14	1.98
RYCB30	JUNCTION	0.01	1.14	89.27	0	01:12	1.13
RYCB31	JUNCTION	0.01	0.50	88.25	0	01:10	0.50
RYCB32	JUNCTION	0.01	1.31	87.06	0	01:10	1.27
RYCB33	JUNCTION	0.01	0.54	86.47	0	01:10	0.53
RYCB34	JUNCTION	0.00	0.25	88.57	0	01:10	0.25
RYCB35	JUNCTION	0.00	0.18	88.28	0	01:11	0.18
RYCB36	JUNCTION	0.03	2.67	90.69	0	01:10	2.66
RYCB38	JUNCTION	0.07	2.70	90.28	0	01:15	2.70
RYCB39	JUNCTION	0.02	0.77	89.89	0	01:09	0.76
RYCB40	JUNCTION	0.03	2.13	90.09	0	01:11	2.13
OUT-EXT	OUTFALL	0.03	0.64	87.11	0	01:09	0.64
OUT-MAIN	OUTFALL	0.05	0.08	77.88	0	07:14	0.08
POND-LOWER	STORAGE	2.86	3.52	81.52	0	07:14	3.52
POND-UPPER	STORAGE	2.11	4.03	84.53	0	02:41	4.03
SU-031	STORAGE	0.04	1.74	87.72	0	01:14	1.74
SU-090	STORAGE	0.04	1.73	88.54	0	01:15	1.73
SU-098	STORAGE	0.04	1.74	87.77	0	01:14	1.74
SU-104B	STORAGE	0.06	1.72	86.53	0	01:28	1.72
SU-108	STORAGE	0.04	1.74	87.74	0	01:14	1.74
SU-109	STORAGE	0.04	1.74	87.49	0	01:13	1.74
SU-110B	STORAGE	0.05	1.74	85.74	0	01:14	1.74
SU-111	STORAGE	0.04	1.74	86.88	0	01:14	1.74
SU-112	STORAGE	0.02	1.01	83.99	0	01:10	1.01
SU-114	STORAGE	0.03	1.74	84.40	0	01:13	1.74
SU-118	STORAGE	0.04	1.74	87.72	0	01:14	1.74
SU-120	STORAGE	0.04	1.74	86.33	0	01:13	1.74
SU-122	STORAGE	0.23	1.71	82.60	0	01:13	1.71
SU-123	STORAGE	0.23	1.74	82.62	0	01:13	1.74

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
1+000	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1+070	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr

1+150	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
1+274	JUNCTION	0.00	141.34	0	01:11	0	0.0982	-2.141	
10+091	JUNCTION	0.00	24.01	0	01:16	0	0.00775	3.856	
100_(STM)	JUNCTION	0.00	66.05	0	01:19	0	0.227	0.491	
1000_(STM)	JUNCTION	0.00	99.98	0	01:10	0	0.324	0.088	
1002_(STM)	JUNCTION	0.00	137.75	0	01:11	0	0.417	0.119	
1004_(STM)	JUNCTION	0.00	185.46	0	01:11	0	0.551	0.001	
1004D_(STM)	JUNCTION	0.00	233.17	0	01:12	0	0.701	-0.003	
102_(STM)	JUNCTION	0.00	142.40	0	01:19	0	0.447	-0.311	
104_(STM)	JUNCTION	0.00	332.13	0	01:11	0	0.905	0.670	
106_(STM)	JUNCTION	0.00	54.41	0	01:11	0	0.059	1.410	
11+094	JUNCTION	0.00	288.19	0	01:12	0	0.233	-2.122	
11+162	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
1100_(STM)	JUNCTION	0.00	444.93	0	01:10	0	1.3	0.228	
1102_(STM)	JUNCTION	0.00	39.74	0	01:12	0	0.176	0.180	
12+000	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+040	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+134	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+242	JUNCTION	0.00	88.00	0	01:15	0	0.0486	1.535	
12+310	JUNCTION	0.00	25.80	0	01:16	0	0.00504	16.595	
12+384	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+428	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+523	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
12+600	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
1200_(STM)	JUNCTION	0.00	583.87	0	01:11	0	1.45	0.249	
1202_(STM)	JUNCTION	0.00	673.95	0	01:12	0	1.74	-0.199	
1204_(STM)	JUNCTION	0.00	1531.72	0	01:12	0	3.94	-0.247	
1206_(STM)	JUNCTION	0.00	1561.82	0	01:14	0	4.12	-0.054	
1208_(STM)	JUNCTION	0.00	1561.42	0	01:14	0	4.12	0.087	
1210_(STM)	JUNCTION	0.00	1920.37	0	01:14	0	5.23	0.033	
1212_(STM)	JUNCTION	0.00	2202.09	0	01:14	0	5.97	0.218	
1214_(STM)	JUNCTION	0.00	6732.02	0	01:14	0	17.3	-0.392	
1216_(STM)	JUNCTION	0.00	6740.48	0	01:14	0	17.4	-0.072	
1218_(STM)	JUNCTION	0.00	6741.47	0	01:14	0	17.4	0.013	
1220_(STM)	JUNCTION	0.00	2449.03	0	01:10	0	5.08	0.323	
1222_(STM)	JUNCTION	0.00	2477.59	0	01:11	0	5.1	0.631	
13+093	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
13+171	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
13+251	JUNCTION	0.00	26.52	0	01:32	0	0.00493	10.649	
13+413	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
13+490	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
1300_(STM)	JUNCTION	0.00	4521.22	0	01:14	0	11.4	0.201	
1302_(STM)	JUNCTION	0.00	4342.43	0	01:14	0	10.9	-0.108	
1304_(STM)	JUNCTION	0.00	4304.62	0	01:13	0	10.8	0.039	
1306_(STM)	JUNCTION	0.00	4068.29	0	01:13	0	10.4	-0.066	
1308_(STM)	JUNCTION	0.00	4068.13	0	01:13	0	10.3	-0.053	

1310_(STM)	JUNCTION	0.00	3949.56	0	01:13	0	9.93	-0.055	
1312_(STM)	JUNCTION	0.00	352.99	0	01:11	0	0.99	0.159	
1314_(STM)	JUNCTION	0.00	175.54	0	01:15	0	0.491	0.020	
1400_(STM)	JUNCTION	0.00	589.62	0	01:11	0	1.12	0.207	
1402_(STM)	JUNCTION	0.00	588.59	0	01:12	0	1.12	-0.221	
1404_(STM)	JUNCTION	0.00	1018.60	0	01:12	0	2.24	0.018	
1406_(STM)	JUNCTION	0.00	1163.86	0	01:13	0	2.61	0.284	
1408_(STM)	JUNCTION	0.00	1169.84	0	01:14	0	2.62	-0.512	
1410_(STM)	JUNCTION	0.00	2155.59	0	01:10	0	4.42	0.095	
1412_(STM)	JUNCTION	0.00	2133.11	0	01:10	0	4.4	0.462	
1500_(STM)	JUNCTION	0.00	431.38	0	01:13	0	1.12	0.025	
1502_(STM)	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
1505_(STM)	JUNCTION	0.00	2477.78	0	01:11	0	5.09	0.309	
1600_(STM)	JUNCTION	0.00	38.00	0	01:08	0	0.0726	1.121	
1602_(STM)	JUNCTION	0.00	157.63	0	01:10	0	0.277	0.081	
1604_(STM)	JUNCTION	0.00	303.60	0	01:10	0	0.479	0.179	
1606_(STM)	JUNCTION	0.00	267.65	0	01:10	0	0.364	0.102	
2+089	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
2+112	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
2+218	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
2+335	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
2+516	JUNCTION	0.00	32.50	0	01:15	0	0.00496	30.317	
200_(STM)	JUNCTION	0.00	393.37	0	01:11	0	1.05	-0.489	
202_(STM)	JUNCTION	0.00	290.51	0	01:10	0	0.767	0.291	
204_(STM)	JUNCTION	0.00	165.72	0	01:13	0	0.406	0.733	
206_(STM)	JUNCTION	0.00	31.22	0	01:11	0	0.00438	-10.385	
208_(STM)	JUNCTION	0.00	67.09	0	01:18	0	0.0927	0.376	
20A_(STM)	JUNCTION	0.00	70.88	0	01:10	0	0.0969	1.087	
210_(STM)	JUNCTION	0.00	294.22	0	01:09	0	0.728	0.226	
212_(STM)	JUNCTION	0.00	456.99	0	01:09	0	1.13	-0.100	
3+088	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
3+313	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
3+395	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
3+447	JUNCTION	0.00	44.26	0	01:11	0	0.0237	-6.593	
300_(STM)	JUNCTION	0.00	37.77	0	01:15	0	0.0894	0.295	
302_(STM)	JUNCTION	0.00	526.92	0	01:11	0	1.32	0.062	
304_(STM)	JUNCTION	0.00	552.08	0	01:13	0	1.51	-0.115	
306_(STM)	JUNCTION	0.00	790.02	0	01:12	0	1.97	0.082	
308_(STM)	JUNCTION	0.00	78.92	0	01:24	0	0.338	-0.131	
310_(STM)	JUNCTION	0.00	129.45	0	01:24	0	0.563	0.272	
312_(STM)	JUNCTION	0.00	176.04	0	01:17	0	0.682	0.256	
314_(STM)	JUNCTION	0.00	185.12	0	01:18	0	0.68	0.086	
316_(STM)	JUNCTION	0.00	361.88	0	01:13	0	1.08	0.030	
4+112	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
4+213	JUNCTION	0.00	54.98	0	01:11	0	0.0327	-4.701	
4+270	JUNCTION	0.00	27.44	0	01:18	0	0.0155	1.473	

400_(STM)	JUNCTION	0.00	391.60	0	01:20	0	1.15	-0.127	
402_(STM)	JUNCTION	0.00	1043.12	0	01:10	0	2.51	0.114	
5+111	JUNCTION	0.00	12.60	0	01:21	0	0.00109	64.546	
5+210	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
5+285	JUNCTION	0.00	54.78	0	01:11	0	0.0327	-0.079	
500_(STM)	JUNCTION	0.00	257.73	0	01:09	0	0.484	0.180	
502_(STM)	JUNCTION	0.00	360.36	0	01:09	0	0.832	-0.003	
504_(STM)	JUNCTION	0.00	340.64	0	01:10	0	0.832	-0.056	
506_(STM)	JUNCTION	0.00	501.85	0	01:10	0	1.1	-0.116	
6+088	JUNCTION	0.00	95.08	0	01:11	0	0.0655	-0.911	
6+278	JUNCTION	0.00	333.86	0	01:16	0	0.444	-0.033	
6+306	JUNCTION	0.00	346.70	0	01:16	0	0.378	-0.075	
6+345	JUNCTION	0.00	331.51	0	01:17	0	0.33	-0.951	
6+410	JUNCTION	0.00	296.87	0	01:19	0	0.256	0.436	
6+505	JUNCTION	0.00	300.84	0	01:22	0	0.31	-0.196	
6+572	JUNCTION	0.00	284.72	0	01:24	0	0.27	0.203	
600_(STM)	JUNCTION	0.00	280.06	0	01:11	0	0.415	0.213	
600D_(STM)	JUNCTION	0.00	69.00	0	01:11	0	0.117	0.293	
602_(STM)	JUNCTION	0.00	522.08	0	01:09	0	1.16	-0.098	
604_(STM)	JUNCTION	0.00	626.47	0	01:09	0	1.29	0.259	
606_(STM)	JUNCTION	0.00	1631.22	0	01:13	0	4.13	-0.064	
608_(STM)	JUNCTION	0.00	1631.24	0	01:13	0	4.13	0.072	
610_(STM)	JUNCTION	0.00	1669.51	0	01:13	0	4.32	0.016	
612_(STM)	JUNCTION	0.00	1669.67	0	01:13	0	4.32	-0.033	
614_(STM)	JUNCTION	0.00	1670.56	0	01:13	0	4.32	-0.085	
616_(STM)	JUNCTION	0.00	2058.94	0	01:13	0	5.28	-0.008	
618_(STM)	JUNCTION	0.00	2351.11	0	01:13	0	6.05	-0.017	
620_(STM)	JUNCTION	0.00	2534.99	0	01:13	0	6.45	-0.033	
700_(STM)	JUNCTION	0.00	38.00	0	01:03	0	0.1	0.408	
702_(STM)	JUNCTION	0.00	352.98	0	01:10	0	0.625	0.162	
704_(STM)	JUNCTION	0.00	352.89	0	01:10	0	0.624	-0.026	
8+150	JUNCTION	0.00	55.03	0	01:10	0	0.0541	0.434	
800_(STM)	JUNCTION	0.00	173.64	0	01:10	0	0.208	0.476	
802_(STM)	JUNCTION	0.00	38.00	0	01:05	0	0.0746	0.892	
804_(STM)	JUNCTION	0.00	122.26	0	01:12	0	0.212	0.037	
806_(STM)	JUNCTION	0.00	261.20	0	01:13	0	0.481	0.087	
808_(STM)	JUNCTION	0.00	259.85	0	01:13	0	0.48	0.008	
9+000	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+040	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+261	JUNCTION	0.00	328.13	0	01:12	0	0.5	-0.740	
9+342	JUNCTION	0.00	263.95	0	01:27	0	0.293	-0.648	
9+347	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+713	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
900_(STM)	JUNCTION	0.00	205.21	0	01:10	0	0.252	0.013	
900D_(STM)	JUNCTION	0.00	130.19	0	01:10	0	0.369	0.041	
900DD_(STM)	JUNCTION	0.00	266.15	0	01:10	0	0.346	-0.010	
902_(STM)	JUNCTION	0.00	541.85	0	01:11	0	0.722	0.037	
904_(STM)	JUNCTION	0.00	594.82	0	01:11	0	0.862	0.447	
906_(STM)	JUNCTION	0.00	3609.98	0	01:13	0	8.94	-0.020	
908_(STM)	JUNCTION	0.00	245.94	0	01:10	0	0.596	0.059	
910_(STM)	JUNCTION	0.00	764.34	0	01:12	0	1.95	0.125	
912_(STM)	JUNCTION	0.00	764.10	0	01:12	0	1.95	-0.023	
914_(STM)	JUNCTION	0.00	766.66	0	01:12	0	2.13	0.012	
916_(STM)	JUNCTION	0.00	1588.94	0	01:11	0	4.26	0.872	
918_(STM)	JUNCTION	0.00	682.81	0	01:13	0	1.86	2.603	
920_(STM)	JUNCTION	0.00	1569.30	0	01:11	0	4.2	1.502	
922_(STM)	JUNCTION	0.00	1545.65	0	01:11	0	4.18	1.332	
CB-001-002	JUNCTION	33.42	33.42	0	01:10	0.0485	0.0485	-0.009	
CB-003-004	JUNCTION	150.43	150.43	0	01:10	0.23	0.23	-0.142	
CB-005-006	JUNCTION	144.55	144.55	0	01:10	0.226	0.249	0.034	
CB-007-008	JUNCTION	144.40	144.40	0	01:10	0.219	0.244	-0.112	
CB-009-010	JUNCTION	105.50	105.50	0	01:10	0.161	0.164	-0.283	
CB-011-012	JUNCTION	117.78	117.78	0	01:10	0.157	0.157	0.006	
CB-013-014	JUNCTION	32.86	32.86	0	01:10	0.0435	0.0435	-0.019	
CB-015-016	JUNCTION	79.34	92.11	0	01:10	0.105	0.118	1.245	
CB-017-018	JUNCTION	103.62	103.62	0	01:10	0.139	0.139	-0.166	
CB-019-020	JUNCTION	31.02	81.56	0	01:10	0.0415	0.0825	0.280	
CB-021-022	JUNCTION	66.21	66.21	0	01:10	0.092	0.092	-0.021	
CB-023-024	JUNCTION	81.54	81.54	0	01:10	0.111	0.111	-0.133	
CB-025-026	JUNCTION	136.53	137.32	0	01:10	0.211	0.214	-0.025	
CB-027-028	JUNCTION	133.90	153.19	0	01:27	0.205	0.345	0.450	
CB-029-030	JUNCTION	78.95	156.08	0	01:27	0.121	0.293	-0.061	
CB-031-032	JUNCTION	102.91	102.91	0	01:10	0.158	0.158	-0.139	
CB-033-034	JUNCTION	43.64	43.64	0	01:10	0.0647	0.0647	-0.015	
CB-035-036	JUNCTION	130.94	148.83	0	01:10	0.195	0.216	-0.007	
CB-037-038	JUNCTION	122.55	203.01	0	01:10	0.183	0.277	-0.528	
CB-039-040	JUNCTION	131.42	341.28	0	01:25	0.204	0.622	0.157	
CB-041-042	JUNCTION	146.82	146.82	0	01:10	0.228	0.227	0.020	
CB-043-044	JUNCTION	143.37	143.37	0	01:10	0.221	0.221	-0.079	
CB-045-046	JUNCTION	48.54	60.46	0	01:11	0.0754	0.0754	-0.617	
CB-047-048	JUNCTION	89.37	182.88	0	01:12	0.135	0.211	-0.413	
CB-049-050	JUNCTION	78.83	142.45	0	01:10	0.123	0.158	-0.079	
CB-051-052	JUNCTION	89.40	322.88	0	01:12	0.135	0.358	0.531	
CB-053-054	JUNCTION	139.01	352.34	0	01:14	0.21	0.45	-0.215	
CB-055-056	JUNCTION	94.43	385.81	0	01:16	0.139	0.584	-0.018	
CB-057-058	JUNCTION	46.54	371.05	0	01:16	0.0714	0.451	0.041	
CB-059-060	JUNCTION	77.43	370.72	0	01:17	0.118	0.453	0.621	
CB-061-062	JUNCTION	149.77	401.11	0	01:19	0.227	0.638	0.087	
CB-063-064	JUNCTION	86.24	347.13	0	01:22	0.13	0.568	0.535	
CB-065-066	JUNCTION	78.56	304.02	0	01:24	0.118	0.455	0.337	
CB-067-068	JUNCTION	124.07	334.19	0	01:13	0.185	0.398	1.317	
CB-069-070	JUNCTION	103.70	189.47	0	01:10	0.157	0.201	0.971	

CB-071-072	JUNCTION	102.63	129.67	0	01:10	0.151	0.183	-0.102
CB-073-074	JUNCTION	89.09	171.90	0	01:10	0.133	0.216	0.004
CB-075-076	JUNCTION	77.87	262.04	0	01:10	0.118	0.247	-0.762
CB-077-078	JUNCTION	140.49	289.71	0	01:10	0.21	0.359	-0.068
CB-079-080	JUNCTION	141.81	204.64	0	01:10	0.213	0.283	0.017
CB-081-082	JUNCTION	104.07	104.07	0	01:10	0.156	0.163	-0.074
CB-083-084	JUNCTION	183.95	183.95	0	01:10	0.297	0.298	-0.067
CB-085-086	JUNCTION	75.28	75.28	0	01:10	0.114	0.114	-0.002
CB-087-088	JUNCTION	58.54	93.96	0	01:10	0.0874	0.129	-0.020
CB-089-090	JUNCTION	88.92	115.01	0	01:10	0.138	0.166	-0.040
CB-091-092	JUNCTION	90.00	162.37	0	01:10	0.134	0.206	-0.008
CB-093-094	JUNCTION	75.57	195.11	0	01:10	0.11	0.221	-0.874
CB-095-096	JUNCTION	65.58	65.58	0	01:10	0.091	0.091	-0.043
CB-097-098	JUNCTION	85.55	114.11	0	01:10	0.119	0.151	0.026
CB-099-100	JUNCTION	61.10	157.61	0	01:10	0.0839	0.167	-0.028
CB-101-102	JUNCTION	68.46	68.46	0	01:10	0.0949	0.0949	-0.000
CB-103-104	JUNCTION	165.68	165.68	0	01:10	0.256	0.258	-0.184
CB-105-106	JUNCTION	234.97	286.73	0	01:10	0.374	0.43	0.352
CB-107-108	JUNCTION	97.64	97.64	0	01:10	0.143	0.143	-2.359
CB-109-110	JUNCTION	200.33	200.33	0	01:10	0.308	0.308	-0.083
CB-111-112	JUNCTION	185.17	185.17	0	01:10	0.285	0.285	-0.055
CB-113-114	JUNCTION	136.18	136.18	0	01:10	0.214	0.213	-0.141
CB-115-116	JUNCTION	76.85	76.85	0	01:10	0.115	0.115	-0.054
CB-117-118	JUNCTION	129.73	166.31	0	01:10	0.194	0.236	-0.047
CB-119-120	JUNCTION	99.53	220.33	0	01:10	0.156	0.277	0.084
CB-121-122	JUNCTION	114.30	284.74	0	01:10	0.174	0.334	-0.083
CB-123-124	JUNCTION	68.31	68.31	0	01:10	0.0892	0.0892	-0.157
CB-125-126	JUNCTION	109.32	109.32	0	01:10	0.164	0.164	-1.174
CB-127-128	JUNCTION	132.12	199.11	0	01:10	0.199	0.27	0.739
CB-129	JUNCTION	46.55	46.55	0	01:10	0.0674	0.0733	-0.136
CB-130-131	JUNCTION	153.97	181.49	0	01:11	0.231	0.277	0.822
CB-132-133	JUNCTION	147.57	147.57	0	01:10	0.224	0.224	-0.119
CB-134-135	JUNCTION	94.60	94.60	0	01:10	0.143	0.144	-0.104
CB-136-137	JUNCTION	106.00	151.33	0	01:10	0.16	0.187	1.061
CB-138-139	JUNCTION	162.36	185.51	0	01:10	0.251	0.256	-0.264
CB-140-141	JUNCTION	155.13	164.49	0	01:10	0.24	0.252	0.205
CB-142-143	JUNCTION	61.79	92.93	0	01:13	0.0916	0.133	0.591
CB-144-145	JUNCTION	85.86	126.83	0	01:11	0.131	0.15	-0.460
CB-146-147	JUNCTION	217.13	217.13	0	01:10	0.298	0.298	-0.093
CB-148-149	JUNCTION	103.04	103.04	0	01:10	0.158	0.158	0.002
HP-W	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW1_(STM-OS)	JUNCTION	2145.96	2145.96	0	01:20	6.98	6.98	0.014
OS-1_(STM-OS)	JUNCTION	0.00	1158.83	0	01:08	0	5.46	-0.006
OS-2_(STM-OS)	JUNCTION	0.00	1158.52	0	01:08	0	5.46	-0.009
OS-3_(STM-OS)	JUNCTION	0.00	1147.74	0	01:08	0	5.46	-0.052
OS-4_(STM-OS)	JUNCTION	0.00	1145.08	0	01:08	0	5.46	0.093
OS-5_(STM-OS)	JUNCTION	0.00	1149.55	0	01:09	0	5.46	-0.049
OS-6_(STM-OS)	JUNCTION	0.00	1153.91	0	01:09	0	5.46	0.005
OVF-02	JUNCTION	0.00	245.04	0	01:10	0	0.229	-0.010
OVF-03	JUNCTION	0.00	414.73	0	01:11	0	1.05	-0.051
OVF-04	JUNCTION	75.96	481.72	0	01:12	0.152	1.2	0.087
OVF-05	JUNCTION	0.00	987.83	0	01:13	0	2.62	-0.544
OVF-06	JUNCTION	0.00	972.68	0	01:18	0	2.63	0.496
POND-OUT	JUNCTION	0.00	302.46	0	07:14	0	25.6	0.001
RYCB01	JUNCTION	138.63	138.63	0	01:10	0.135	0.135	0.001
RYCB02	JUNCTION	72.08	72.08	0	01:10	0.0791	0.0791	-0.002
RYCB03	JUNCTION	46.57	46.57	0	01:10	0.0513	0.0513	-0.002
RYCB04	JUNCTION	99.36	99.36	0	01:10	0.11	0.11	-0.001
RYCB05	JUNCTION	141.71	141.71	0	01:10	0.157	0.157	-0.001
RYCB06	JUNCTION	127.60	127.60	0	01:10	0.142	0.142	-0.001
RYCB07	JUNCTION	167.10	167.10	0	01:10	0.186	0.186	-0.002
RYCB08	JUNCTION	39.29	39.29	0	01:10	0.0436	0.0436	-0.000
RYCB09	JUNCTION	75.55	75.55	0	01:10	0.0863	0.0863	-0.001
RYCB10	JUNCTION	107.33	107.33	0	01:10	0.123	0.123	0.002
RYCB11	JUNCTION	15.86	15.86	0	01:10	0.0174	0.0174	0.001
RYCB12	JUNCTION	97.14	97.14	0	01:10	0.109	0.109	-0.001
RYCB13	JUNCTION	199.01	199.01	0	01:10	0.224	0.224	0.002
RYCB14	JUNCTION	197.82	197.82	0	01:10	0.222	0.29	-0.170
RYCB15	JUNCTION	65.61	65.61	0	01:10	0.0726	0.0726	-0.002
RYCB16	JUNCTION	191.32	191.32	0	01:10	0.213	0.213	-0.036
RYCB17	JUNCTION	148.36	148.36	0	01:10	0.166	0.166	0.003
RYCB18	JUNCTION	46.47	46.47	0	01:10	0.0509	0.0509	-0.002
RYCB19	JUNCTION	44.84	44.84	0	01:10	0.049	0.0526	0.023
RYCB20	JUNCTION	125.04	125.04	0	01:10	0.14	0.14	-0.002
RYCB21	JUNCTION	131.79	131.79	0	01:10	0.146	0.175	0.131
RYCB22	JUNCTION	194.35	194.35	0	01:10	0.218	0.218	-0.041
RYCB23	JUNCTION	77.57	77.57	0	01:10	0.0865	0.0884	-0.017
RYCB24	JUNCTION	205.23	205.23	0	01:10	0.229	0.248	0.062
RYCB25	JUNCTION	67.01	67.01	0	01:10	0.0753	0.0753	-0.002
RYCB26	JUNCTION	64.25	64.25	0	01:10	0.0704	0.0704	-0.002
RYCB27	JUNCTION	72.22	72.22	0	01:10	0.0792	0.0792	-0.002
RYCB28	JUNCTION	87.42	94.16	0	01:10	0.0958	0.121	-0.001
RYCB29	JUNCTION	192.25	194.23	0	01:10	0.216	0.237	0.175
RYCB30	JUNCTION	129.24	129.24	0	01:10	0.145	0.145	0.003
RYCB31	JUNCTION	82.15	82.43	0	01:10	0.0898	0.09	-0.002
RYCB32	JUNCTION	147.10	147.10	0	01:10	0.163	0.163	-0.001
RYCB33	JUNCTION	86.07	86.07	0	01:10	0.0953	0.0953	-0.001
RYCB34	JUNCTION	47.76	47.76	0	01:10	0.0523	0.0523	-0.003
RYCB35	JUNCTION	27.38	29.15	0	01:10	0.03	0.0359	0.000
RYCB36	JUNCTION	258.84	258.84	0	01:10	0.308	0.308	0.022
RYCB38	JUNCTION	409.26	409.26	0	01:15	0.815	0.815	0.002
RYCB39	JUNCTION	50.95	50.95	0	01:10	0.0486	0.0486	-3.207

RYCB40	JUNCTION	198.70	198.70	0	01:10	0.304	0.307	-0.000
OUT-EXT	OUTFALL	0.00	1176.99	0	01:09	0	5.46	0.000
OUT-MAIN	OUTFALL	0.00	302.46	0	07:14	0	25.6	0.000
POND-LOWER	STORAGE	565.36	5254.03	0	01:11	0.816	37	0.025
POND-UPPER	STORAGE	555.90	7089.85	0	01:13	0.789	24.3	-0.056
SU-031	STORAGE	378.14	378.14	0	01:10	0.584	0.584	0.048
SU-090	STORAGE	217.02	217.02	0	01:10	0.333	0.333	0.038
SU-098	STORAGE	239.82	239.82	0	01:10	0.361	0.361	0.035
SU-104B	STORAGE	334.58	334.58	0	01:10	0.818	0.818	0.026
SU-108	STORAGE	226.70	226.70	0	01:10	0.367	0.367	0.025
SU-109	STORAGE	687.04	687.04	0	01:10	1.12	1.12	0.033
SU-110B	STORAGE	857.72	857.72	0	01:10	1.42	1.42	0.028
SU-111	STORAGE	243.05	243.05	0	01:10	0.37	0.37	0.042
SU-112	STORAGE	1221.53	1221.53	0	01:10	1.76	1.76	-0.006
SU-114	STORAGE	423.88	423.88	0	01:10	0.609	0.609	0.038
SU-118	STORAGE	352.85	352.85	0	01:10	0.537	0.537	0.048
SU-120	STORAGE	769.04	769.04	0	01:10	1.27	1.27	0.041
SU-122	STORAGE	217.35	217.35	0	01:10	0.315	0.362	-0.260
SU-123	STORAGE	809.26	809.26	0	01:10	1.23	1.28	-0.029

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
100_(STM)	JUNCTION	0.08	1.471	0.509
102_(STM)	JUNCTION	0.12	1.576	0.519
104_(STM)	JUNCTION	0.14	1.691	0.576
106_(STM)	JUNCTION	0.10	1.802	0.118
1214_(STM)	JUNCTION	1.14	0.050	2.406
1216_(STM)	JUNCTION	7.30	0.897	0.844
1218_(STM)	JUNCTION	7.74	0.964	0.466
1220_(STM)	JUNCTION	11.66	0.153	2.817
1222_(STM)	JUNCTION	17.91	0.431	1.419
1300_(STM)	JUNCTION	6.46	0.883	2.734
1412_(STM)	JUNCTION	0.06	0.059	3.251
1505_(STM)	JUNCTION	19.68	0.532	1.388
1602_(STM)	JUNCTION	0.15	0.630	1.670
208_(STM)	JUNCTION	0.13	0.285	1.828
20A_(STM)	JUNCTION	0.11	0.321	1.859
210_(STM)	JUNCTION	0.15	0.341	1.762
212_(STM)	JUNCTION	0.15	0.411	1.946
300_(STM)	JUNCTION	0.09	1.015	1.172
302_(STM)	JUNCTION	0.08	0.192	2.335
304_(STM)	JUNCTION	0.13	0.350	1.884
306_(STM)	JUNCTION	0.13	0.159	2.114
314_(STM)	JUNCTION	0.11	0.059	1.977
316_(STM)	JUNCTION	0.14	0.099	1.993
400_(STM)	JUNCTION	0.14	1.930	0.712
402_(STM)	JUNCTION	0.15	1.155	1.787
500_(STM)	JUNCTION	0.21	0.811	1.033
502_(STM)	JUNCTION	0.19	1.039	1.749
504_(STM)	JUNCTION	0.19	1.024	2.327
506_(STM)	JUNCTION	0.20	1.065	2.362
600_(STM)	JUNCTION	0.12	0.991	1.098
602_(STM)	JUNCTION	0.19	0.838	1.268
604_(STM)	JUNCTION	0.18	0.789	1.532
606_(STM)	JUNCTION	0.21	0.775	1.710
608_(STM)	JUNCTION	0.17	0.427	1.687
610_(STM)	JUNCTION	0.17	0.418	1.696
612_(STM)	JUNCTION	0.14	0.344	1.792
614_(STM)	JUNCTION	0.13	0.330	1.890
616_(STM)	JUNCTION	0.12	0.315	1.740
618_(STM)	JUNCTION	0.11	0.182	1.912
620_(STM)	JUNCTION	0.06	0.049	2.178
702_(STM)	JUNCTION	0.22	0.892	1.487
704_(STM)	JUNCTION	0.23	0.483	1.637
800_(STM)	JUNCTION	0.02	0.094	2.027
808_(STM)	JUNCTION	0.18	0.311	1.739
900DD_(STM)	JUNCTION	0.02	0.049	2.631
912_(STM)	JUNCTION	0.04	0.020	2.425
914_(STM)	JUNCTION	0.39	0.117	1.896
918_(STM)	JUNCTION	23.56	0.759	2.458
920_(STM)	JUNCTION	30.12	0.955	2.650
922_(STM)	JUNCTION	35.98	1.052	1.943
HW1_(STM-OS)	JUNCTION	0.84	0.170	0.000
OS-1_(STM-OS)	JUNCTION	0.84	0.213	1.197
RYCB39	JUNCTION	1.10	0.521	0.689

****
Node Flooding Summary
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Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate LPS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Depth Meters
HW1_(STM-OS)	0.75	1035.09	0 01:20	1.568	0.000

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
POND-LOWER	14.757	58	0	0	19.354	76	0 07:14	343.12
POND-UPPER	9.283	38	0	0	20.813	86	0 02:41	364.75
SU-031	0.001	1	0	0	0.069	93	0 01:14	232.97
SU-090	0.001	1	0	0	0.045	91	0 01:15	126.28
SU-098	0.000	1	0	0	0.046	92	0 01:14	144.20
SU-104B	0.003	2	0	0	0.119	85	0 01:28	187.34
SU-108	0.000	1	0	0	0.043	95	0 01:14	138.35
SU-109	0.001	1	0	0	0.117	94	0 01:13	431.38
SU-110B	0.002	1	0	0	0.155	93	0 01:14	513.70
SU-111	0.000	1	0	0	0.046	92	0 01:14	146.62
SU-112	0.000	0	0	0	0.000	0	0 01:10	1221.07
SU-114	0.001	1	0	0	0.069	95	0 01:13	269.98
SU-118	0.001	1	0	0	0.067	93	0 01:14	213.24
SU-120	0.001	1	0	0	0.133	95	0 01:13	482.63
SU-122	0.000	1	0	0	0.040	81	0 01:13	131.31
SU-123	0.001	1	0	0	0.134	95	0 01:13	513.51

****
Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OUT-EXT	8.41	551.64	1176.99	5.458
OUT-MAIN	98.85	148.87	302.46	25.573
System	53.63	700.51	1355.83	31.031

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1_(STM)	CONDUIT	177.20	0 01:19	1.28	0.85	0.76
2_(STM)	CONDUIT	359.72	0 01:16	1.50	0.87	0.89
3_(1)_(STM)	CONDUIT	3948.40	0 01:13	2.27	1.44	0.95
3_(10)_(STM)	CONDUIT	2202.51	0 01:15	3.18	1.06	0.87
3_(100)_(STM)	CONDUIT	6742.13	0 01:14	3.39	1.49	1.00
3_(11)_(STM)	CONDUIT	1920.47	0 01:14	2.81	0.93	0.86
3_(12)_(STM)	CONDUIT	1561.59	0 01:15	2.36	0.86	0.83
3_(13)_(STM)	CONDUIT	1561.42	0 01:14	2.68	1.03	0.86
3_(14)_(STM)	CONDUIT	1512.43	0 01:14	2.52	1.07	0.91
3_(15)_(STM)	CONDUIT	673.21	0 01:12	2.20	0.96	0.82
3_(16)_(STM)	CONDUIT	583.43	0 01:12	1.95	0.96	0.79
3_(2)_(1)_(STM)	CONDUIT	4070.13	0 01:13	2.53	1.64	0.86
3_(2)_(STM)	CONDUIT	4068.29	0 01:13	2.38	1.75	0.93
3_(24)_(STM)	CONDUIT	451.29	0 01:11	1.68	1.19	1.00
3_(25)_(1)_(STM)	CONDUIT	41.35	0 01:18	1.02	1.04	1.00
3_(26)_(1)_(STM)	CONDUIT	553.17	0 01:19	1.59	0.82	1.00
3_(26)_(STM)	CONDUIT	513.38	0 01:13	1.97	1.04	1.00
3_(27)_(STM)	CONDUIT	792.84	0 01:12	1.85	1.00	0.96
3_(28)_(STM)	CONDUIT	78.90	0 01:25	1.03	0.80	0.76
3_(29)_(STM)	CONDUIT	137.95	0 01:17	1.17	0.85	0.93
3_(3)_(STM)	CONDUIT	4304.29	0 01:14	2.95	1.66	0.77
3_(30)_(STM)	CONDUIT	185.12	0 01:18	1.14	0.80	0.97
3_(31)_(STM)	CONDUIT	191.59	0 01:19	1.13	0.84	1.00
3_(32)_(STM)	CONDUIT	361.91	0 01:13	1.78	1.00	0.89
3_(33)_(STM)	CONDUIT	76.53	0 01:19	0.98	0.79	1.00
3_(34)_(STM)	CONDUIT	154.46	0 01:20	1.16	0.91	1.00
3_(35)_(STM)	CONDUIT	33.48	0 01:08	0.85	0.52	1.00
3_(36)_(STM)	CONDUIT	257.57	0 01:09	1.64	1.36	1.00
3_(37)_(STM)	CONDUIT	340.64	0 01:10	1.20	1.11	1.00
3_(38)_(STM)	CONDUIT	340.78	0 01:10	1.21	0.97	1.00
3_(39)_(STM)	CONDUIT	502.64	0 01:10	1.41	1.25	1.00
3_(4)_(STM)	CONDUIT	4339.34	0 01:14	2.46	1.79	1.00
3_(40)_(STM)	CONDUIT	408.52	0 01:20	1.45	1.07	1.00

3_(41)_(STM)	CONDUIT	332.25	0	01:20	1.37	1.09	1.00
3_(42)_(STM)	CONDUIT	979.99	0	01:13	1.83	0.89	1.00
3_(44)_(STM)	CONDUIT	82.46	0	01:17	1.31	0.55	0.95
3_(44A)_(STM)	CONDUIT	31.00	0	01:11	0.77	0.21	0.64
3_(45)_(STM)	CONDUIT	272.30	0	01:09	1.46	0.75	1.00
3_(46)_(STM)	CONDUIT	521.91	0	01:09	1.92	1.01	1.00
3_(47)_(STM)	CONDUIT	593.54	0	01:09	2.16	1.10	1.00
3_(48)_(STM)	CONDUIT	1631.24	0	01:13	1.88	1.34	1.00
3_(49)_(STM)	CONDUIT	1631.81	0	01:13	1.88	1.05	1.00
3_(5)_(STM)	CONDUIT	4521.24	0	01:14	2.56	1.84	1.00
3_(50)_(STM)	CONDUIT	1669.67	0	01:13	1.93	1.37	1.00
3_(51)_(STM)	CONDUIT	1670.56	0	01:13	1.93	1.19	1.00
3_(52)_(STM)	CONDUIT	1670.48	0	01:13	1.99	1.35	1.00
3_(53)_(STM)	CONDUIT	2059.64	0	01:13	1.82	1.30	1.00
3_(54)_(1)_(STM)	CONDUIT	2536.50	0	01:13	1.45	0.88	0.97
3_(54)_(STM)	CONDUIT	2351.48	0	01:13	2.08	1.42	1.00
3_(58)_(STM)	CONDUIT	3599.97	0	01:13	2.04	2.65	0.99
3_(6)_(STM)	CONDUIT	6732.98	0	01:14	2.74	1.77	1.00
3_(61)_(STM)	CONDUIT	538.82	0	01:11	2.93	0.84	0.79
3_(63)_(STM)	CONDUIT	196.91	0	01:11	1.32	0.92	0.91
3_(63D)_(STM)	CONDUIT	262.11	0	01:11	1.74	1.24	0.90
3_(64)_(STM)	CONDUIT	29.38	0	01:10	0.47	0.25	0.55
3_(64D)_(STM)	CONDUIT	99.98	0	01:10	1.19	0.90	0.71
3_(65)_(STM)	CONDUIT	99.75	0	01:11	1.25	0.86	0.68
3_(66)_(STM)	CONDUIT	137.46	0	01:11	1.88	0.39	0.47
3_(67)_(STM)	CONDUIT	185.17	0	01:12	1.55	0.51	0.70
3_(67D)_(STM)	CONDUIT	232.78	0	01:12	1.84	0.64	0.74
3_(68)_(STM)	CONDUIT	442.93	0	01:11	1.43	0.95	0.97
3_(69)_(STM)	CONDUIT	39.72	0	01:12	1.01	0.61	0.78
3_(7)_(STM)	CONDUIT	6741.47	0	01:14	3.08	1.48	1.00
3_(70)_(1)_(STM)	CONDUIT	764.10	0	01:12	3.30	0.92	0.90
3_(70)_(STM)	CONDUIT	245.89	0	01:11	2.30	0.65	0.65
3_(71)_(STM)	CONDUIT	762.16	0	01:12	2.74	0.95	1.00
3_(72)_(1)_(STM)	CONDUIT	681.74	0	01:14	1.46	0.84	1.00
3_(72)_(STM)	CONDUIT	766.66	0	01:12	2.50	0.67	0.80
3_(73)_(STM)	CONDUIT	2133.01	0	01:10	1.93	0.88	0.95
3_(74)_(STM)	CONDUIT	2133.11	0	01:10	1.97	0.85	0.97
3_(75)_(STM)	CONDUIT	1194.39	0	01:14	1.80	0.65	0.93
3_(76)_(1)_(STM)	CONDUIT	1017.27	0	01:13	1.78	0.61	0.73
3_(76)_(STM)	CONDUIT	1169.84	0	01:14	1.62	0.71	0.81
3_(77)_(STM)	CONDUIT	588.41	0	01:12	1.79	0.75	0.59
3_(78)_(STM)	CONDUIT	588.59	0	01:12	1.65	0.75	0.63
3_(79)_(STM)	CONDUIT	431.24	0	01:14	2.67	0.78	0.71
3_(80)_(STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.21
3_(81)_(STM)	CONDUIT	299.43	0	01:11	1.37	0.54	0.59
3_(82)_(STM)	CONDUIT	265.60	0	01:10	1.33	0.50	0.55
3_(83)_(1)_(STM)	CONDUIT	38.00	0	01:11	1.01	0.40	0.72
3_(83)_(STM)	CONDUIT	157.64	0	01:10	2.25	1.15	0.97
3_(84)_(STM)	CONDUIT	54.44	0	01:17	1.17	0.52	1.00
3_(85)_(1)_(STM)	CONDUIT	352.91	0	01:10	1.73	1.17	1.00
3_(85)_(STM)	CONDUIT	352.89	0	01:10	2.22	1.42	1.00
3_(86)_(STM)	CONDUIT	175.83	0	01:10	1.25	1.10	0.84
3_(87)_(STM)	CONDUIT	38.00	0	01:12	1.54	0.50	0.60
3_(88)_(STM)	CONDUIT	105.93	0	01:13	1.89	0.90	0.74
3_(89)_(1)_(STM)	CONDUIT	259.88	0	01:13	1.66	0.93	1.00
3_(89)_(STM)	CONDUIT	259.85	0	01:13	1.82	0.74	0.84
3_(9)_(STM)	CONDUIT	2447.27	0	01:11	1.86	1.15	1.00
3_(90)_(STM)	CONDUIT	593.27	0	01:11	3.22	0.96	0.89
3_(91)_(STM)	CONDUIT	2477.78	0	01:11	2.32	1.28	1.00
3_(93)_(STM)	CONDUIT	2474.87	0	01:11	4.53	0.34	1.00
3_(94)_(STM)	CONDUIT	1569.30	0	01:11	1.56	0.89	1.00
3_(95)_(STM)	CONDUIT	1545.65	0	01:11	1.72	0.88	1.00
3_(96)_(STM)	CONDUIT	1530.05	0	01:11	1.91	0.75	1.00
C1	CHANNEL	12.84	0	01:10	0.70	0.00	0.02
C10	CHANNEL	0.00	0	00:00	0.00	0.00	0.07
C100	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C101	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C102	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C103	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C104	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C105	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C106	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C107	CHANNEL	0.00	0	00:00	0.00	0.00	0.10
C108	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C109	CHANNEL	245.04	0	01:10	0.58	0.00	0.14
C11	CHANNEL	0.00	0	00:00	0.00	0.00	0.07
C110	CHANNEL	40.43	0	01:17	0.16	0.00	0.13
C111	CHANNEL	41.93	0	01:17	0.19	0.00	0.16
C112	CHANNEL	88.00	0	01:15	0.17	0.00	0.13
C113	CHANNEL	0.00	0	00:00	0.00	0.00	0.09
C114	CHANNEL	0.00	0	00:00	0.00	0.00	0.13
C115	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C116	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C117	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C118	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C119	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C12	CHANNEL	4.93	0	01:39	0.29	0.00	0.10
C120	CHANNEL	142.88	0	01:10	1.15	0.00	0.07
C121	CHANNEL	307.31	0	01:25	0.39	0.01	0.22
C122	CHANNEL	261.32	0	01:25	0.39	0.00	0.25
C123	CHANNEL	235.88	0	01:14	0.27	0.01	0.24
C124	CHANNEL	263.95	0	01:27	0.20	0.01	0.21

C125	CHANNEL	138.56	0	01:28	0.16	0.00	0.22
C126	CHANNEL	123.36	0	01:28	0.18	0.00	0.19
C127	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C128	CHANNEL	111.20	0	01:12	0.18	0.00	0.16
C129	CHANNEL	16.72	0	01:10	0.58	0.00	0.04
C13	CHANNEL	0.00	0	00:00	0.00	0.00	0.10
C130	CHANNEL	64.18	0	01:14	0.25	0.00	0.13
C131	CHANNEL	62.71	0	01:14	0.20	0.00	0.16
C132	CONDUIT	151.89	0	01:10	1.77	0.00	0.01
C133	CONDUIT	302.46	0	07:14	0.74	0.02	0.08
C134	CONDUIT	972.68	0	01:18	0.84	0.20	0.48
C135	CHANNEL	122.55	0	01:10	0.71	0.00	0.07
C136	CHANNEL	175.25	0	01:10	1.02	0.00	0.07
C137	CONDUIT	76.62	0	01:10	0.62	0.00	0.37
C138	CONDUIT	952.50	0	01:21	1.23	0.15	0.37
C139	CONDUIT	408.83	0	01:12	0.70	0.07	0.31
C14	CHANNEL	26.52	0	01:32	0.15	0.00	0.17
C140	CONDUIT	475.36	0	01:14	0.49	0.08	0.43
C141	CHANNEL	26.33	0	01:07	0.12	0.00	0.13
C15	CHANNEL	41.78	0	01:12	0.11	0.00	0.15
C16	CHANNEL	44.26	0	01:11	0.25	0.00	0.10
C17	CHANNEL	0.00	0	00:00	0.00	0.00	0.13
C18	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C19	CHANNEL	0.00	0	00:00	0.00	0.00	0.15
C2	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
C20	CHANNEL	0.00	0	00:00	0.00	0.00	0.13
C21	CHANNEL	11.34	0	01:23	0.41	0.00	0.03
C22	CHANNEL	63.34	0	01:10	0.53	0.00	0.06
C23	CHANNEL	151.20	0	01:10	0.71	0.00	0.08
C24	CHANNEL	24.01	0	01:16	0.10	0.00	0.18
C25	CHANNEL	17.90	0	01:10	0.29	0.00	0.04
C26	CHANNEL	81.18	0	01:10	0.60	0.00	0.06
C27	CHANNEL	0.00	0	00:00	0.00	0.00	0.09
C28	CHANNEL	0.00	0	00:00	0.00	0.00	0.09
C29	CHANNEL	0.00	0	00:00	0.00	0.00	0.19
C3	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
C30	CHANNEL	73.61	0	01:10	0.64	0.00	0.06
C31	CHANNEL	121.59	0	01:10	0.91	0.00	0.06
C32	CHANNEL	88.38	0	01:12	0.52	0.00	0.07
C33	CHANNEL	129.81	0	01:11	0.67	0.00	0.08
C34	CHANNEL	330.89	0	01:17	0.34	0.01	0.23
C35	CHANNEL	296.87	0	01:19	0.19	0.01	0.23
C36	CHANNEL	346.70	0	01:16	0.29	0.01	0.20
C37	CHANNEL	346.00	0	01:16	0.48	0.01	0.18
C38	CHANNEL	331.51	0	01:17	0.34	0.01	0.18
C39	CHANNEL	266.24	0	01:15	0.65	0.01	0.11

C4	CHANNEL	51.80	0	01:10	0.70	0.00	0.05
C40	CHANNEL	35.69	0	01:10	0.56	0.00	0.04
C41	CHANNEL	0.00	0	00:00	0.00	0.00	0.14
C42	CHANNEL	0.14	0	01:25	0.12	0.00	0.10
C43	CHANNEL	12.60	0	01:21	0.08	0.00	0.16
C44	CHANNEL	0.00	0	00:00	0.00	0.00	0.15
C45	CHANNEL	0.00	0	00:00	0.00	0.00	0.07
C46	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C47	CHANNEL	0.00	0	00:00	0.00	0.00	0.13
C48	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C49	CHANNEL	25.80	0	01:16	0.17	0.00	0.15
C5	CHANNEL	26.70	0	01:10	0.77	0.00	0.03
C50	CHANNEL	6.04	0	01:21	0.18	0.00	0.11
C51	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
C52	CHANNEL	53.19	0	01:10	0.33	0.00	0.16
C53	CHANNEL	32.50	0	01:15	0.13	0.00	0.15
C54	CHANNEL	2.20	0	01:21	0.16	0.00	0.12
C55	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C56	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C57	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C58	CHANNEL	67.67	0	01:10	0.41	0.00	0.16
C59	CHANNEL	0.00	0	00:00	0.00	0.00	0.10
C6	CHANNEL	71.69	0	01:10	1.66	0.00	0.04
C60	CHANNEL	0.00	0	00:00	0.00	0.00	0.11
C61	CHANNEL	36.94	0	01:10	0.37	0.00	0.05
C62	CONDUIT	237.51	0	01:11	0.52	0.04	0.26
C63	CHANNEL	46.16	0	01:12	0.26	0.00	0.09
C64	CHANNEL	41.54	0	01:12	0.38	0.00	0.06
C65	CHANNEL	95.08	0	01:11	0.84	0.00	0.06
C66	CHANNEL	297.95	0	01:22	0.14	0.01	0.27
C67	CHANNEL	155.32	0	01:10	0.70	0.00	0.24
C68	CHANNEL	25.29	0	01:11	0.27	0.00	0.06
C69	CHANNEL	55.03	0	01:10	0.80	0.00	0.04
C7	CONDUIT	27.51	0	01:13	0.19	0.00	0.02
C70	CHANNEL	27.41	0	01:11	0.32	0.00	0.05
C71	CHANNEL	290.88	0	01:20	0.18	0.01	0.23
C72	CHANNEL	217.92	0	01:11	0.62	0.00	0.20
C73	CHANNEL	300.84	0	01:22	0.19	0.01	0.23
C74	CHANNEL	284.72	0	01:24	0.14	0.00	0.27
C75	CHANNEL	284.09	0	01:24	0.16	0.00	0.25
C76	CHANNEL	238.58	0	01:10	1.09	0.00	0.09
C77	CHANNEL	89.49	0	01:11	0.29	0.00	0.19
C78	CHANNEL	242.10	0	01:13	0.43	0.00	0.23
C79	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C8	CHANNEL	28.75	0	01:10	0.39	0.00	0.05
C80	CHANNEL	0.00	0	00:00	0.00	0.00	0.02

C81	CHANNEL	0.00	0	00:00	0.00	0.00	0.16
C82	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C83	CHANNEL	333.48	0	01:16	0.73	0.00	0.19
C84	CHANNEL	317.11	0	01:15	1.16	0.00	0.09
C85	CHANNEL	27.44	0	01:18	0.10	0.00	0.11
C86	CHANNEL	27.07	0	01:18	0.23	0.00	0.06
C87	CHANNEL	54.78	0	01:11	0.20	0.00	0.09
C88	CHANNEL	54.98	0	01:11	1.12	0.00	0.04
C89	CHANNEL	33.85	0	01:13	0.33	0.00	0.10
C9	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C90	CHANNEL	17.36	0	01:13	0.12	0.00	0.14
C91	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C92	CHANNEL	0.00	0	00:00	0.00	0.00	0.10
C93	CHANNEL	0.00	0	00:00	0.00	0.00	0.11
C94	CHANNEL	0.00	0	00:00	0.00	0.00	0.11
C95	CHANNEL	0.00	0	00:00	0.00	0.00	0.12
C96	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C97	CHANNEL	0.00	0	00:00	0.00	0.00	0.11
C98	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C99	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
RYCB01-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
RYCB02-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
RYCB03-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB04-MAJOR	CONDUIT	0.08	0	01:07	0.03	0.00	0.11
RYCB05-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
RYCB06-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
RYCB07-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.15
RYCB08-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.10
RYCB09-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.10
RYCB10-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
RYCB11-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
RYCB12-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.16
RYCB13-MAJOR	CONDUIT	59.96	0	01:10	1.08	0.31	0.45
RYCB14-MAJOR	CONDUIT	49.23	0	01:11	0.41	0.41	0.71
RYCB15-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
RYCB16-MAJOR	CONDUIT	4.50	0	01:11	0.10	0.02	0.40
RYCB17-MAJOR	CONDUIT	17.89	0	01:18	0.33	0.08	0.45
RYCB18-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
RYCB19-MAJOR	CONDUIT	10.19	0	01:13	0.25	0.05	0.43
RYCB20-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.22
RYCB21-MAJOR	CONDUIT	32.97	0	01:18	0.36	0.34	0.70
RYCB22-MAJOR	CONDUIT	15.08	0	01:10	0.26	0.06	0.47
RYCB23-MAJOR	CONDUIT	45.07	0	01:20	0.57	0.18	0.58
RYCB24-MAJOR	CONDUIT	37.44	0	01:10	0.39	0.43	0.64
RYCB25-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.32
RYCB26-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.38
RYCB27-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.42
RYCB28-MAJOR	CONDUIT	17.98	0	01:20	0.21	0.20	0.57
RYCB29-MAJOR	CONDUIT	18.23	0	01:20	0.18	0.14	0.63
RYCB30-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.38
RYCB31-MAJOR	CONDUIT	0.28	0	01:10	0.09	0.01	0.14
RYCB32-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
RYCB33-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
RYCB34-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.32
RYCB35-MAJOR	CONDUIT	5.55	0	01:19	0.12	0.07	0.42
RYCB36-MAJOR	CONDUIT	41.87	0	01:10	0.88	0.23	0.42
RYCB38-MAJOR	CONDUIT	215.68	0	01:15	1.97	0.59	0.65
RYCB40-MAJOR	CONDUIT	45.08	0	01:13	0.56	0.24	0.58
STM-1_(STM)	CONDUIT	388.99	0	01:13	1.52	0.94	0.87
STM-2_(STM)	CONDUIT	285.51	0	01:14	1.43	0.99	0.90
STM-2-10_(STM-OS)	CONDUIT	1147.74	0	01:08	1.85	1.09	0.95
STM-2-11_(STM-OS)	CONDUIT	1145.08	0	01:08	1.96	1.03	0.89
STM-2-12_(STM-OS)	CONDUIT	1149.55	0	01:09	2.08	1.07	0.81
STM-2-13_(STM-OS)	CONDUIT	1153.91	0	01:09	2.30	1.12	0.74
STM-2-15_(STM-OS)	CONDUIT	1176.99	0	01:09	2.27	1.10	0.77
STM-2-8_(STM-OS)	CONDUIT	1123.70	0	01:52	1.77	1.03	1.00
STM-2-9_(STM-OS)	CONDUIT	1158.52	0	01:08	1.87	1.07	0.97
STM-3_(STM)	CONDUIT	162.63	0	01:14	1.28	0.85	0.75
STM-4_(STM)	CONDUIT	13.06	0	01:13	0.68	0.27	0.41
STM-5_(STM)	CONDUIT	30.11	0	01:11	0.38	0.24	0.96
STM-5A_(STM)	CONDUIT	67.09	0	01:18	0.89	0.53	1.00
STM-6_(STM)	CONDUIT	68.82	0	01:18	0.74	0.62	1.00
STM-7_(STM)	CONDUIT	281.28	0	01:16	1.45	1.06	1.00
CB-003-PIPE	ORIFICE	31.79	0	01:18			1.00
CB-004-PIPE	ORIFICE	31.79	0	01:18			1.00
CB-005-PIPE	ORIFICE	31.78	0	01:23			1.00
CB-006-PIPE	ORIFICE	31.78	0	01:23			1.00
CB-007-PIPE	ORIFICE	33.40	0	01:22			1.00
CB-008-PIPE	ORIFICE	33.40	0	01:22			1.00
CB-009-PIPE	ORIFICE	24.75	0	01:19			1.00
CB-010-PIPE	ORIFICE	24.75	0	01:19			1.00
CB-011-PIPE	ORIFICE	24.57	0	01:18			1.00
CB-012-PIPE	ORIFICE	24.57	0	01:18			1.00
CB-021-PIPE	ORIFICE	18.84	0	01:14			1.00
CB-022-PIPE	ORIFICE	18.84	0	01:14			1.00
CB-023-PIPE	ORIFICE	19.08	0	01:16			1.00
CB-024-PIPE	ORIFICE	19.08	0	01:16			1.00
CB-025-PIPE	ORIFICE	32.65	0	01:18			1.00
CB-026-PIPE	ORIFICE	32.65	0	01:18			1.00
CB-027-PIPE	ORIFICE	33.84	0	01:38			1.00
CB-028-PIPE	ORIFICE	33.84	0	01:38			1.00
CB-029-PIPE	ORIFICE	20.33	0	01:38			1.00

CB-030-PIPE	ORIFICE	20.33	0	01:38	1.00
CB-031-PIPE	ORIFICE	24.65	0	01:18	1.00
CB-032-PIPE	ORIFICE	24.65	0	01:18	1.00
CB-039-PIPE	ORIFICE	34.01	0	01:27	1.00
CB-040-PIPE	ORIFICE	34.01	0	01:27	1.00
CB-041-PIPE	ORIFICE	33.02	0	01:19	1.00
CB-042-PIPE	ORIFICE	33.02	0	01:19	1.00
CB-043-PIPE	ORIFICE	32.94	0	01:19	1.00
CB-044-PIPE	ORIFICE	32.94	0	01:19	1.00
CB-047-PIPE	ORIFICE	19.45	0	01:16	1.00
CB-048-PIPE	ORIFICE	19.45	0	01:16	1.00
CB-055-PIPE	ORIFICE	19.84	0	01:18	1.00
CB-056-PIPE	ORIFICE	19.84	0	01:18	1.00
CB-057-PIPE	ORIFICE	19.66	0	01:18	1.00
CB-058-PIPE	ORIFICE	19.66	0	01:18	1.00
CB-059-PIPE	ORIFICE	20.28	0	01:20	1.00
CB-060-PIPE	ORIFICE	20.28	0	01:20	1.00
CB-061-PIPE	ORIFICE	25.96	0	01:22	1.00
CB-062-PIPE	ORIFICE	25.96	0	01:22	1.00
CB-063-PIPE	ORIFICE	20.70	0	01:24	1.00
CB-064-PIPE	ORIFICE	20.70	0	01:24	1.00
CB-065-PIPE	ORIFICE	20.49	0	01:25	1.00
CB-066-PIPE	ORIFICE	20.49	0	01:25	1.00
CB-067-PIPE	ORIFICE	20.36	0	01:25	1.00
CB-068-PIPE	ORIFICE	20.36	0	01:25	1.00
CB-069-PIPE	ORIFICE	19.87	0	01:12	1.00
CB-070-PIPE	ORIFICE	19.87	0	01:12	1.00
CB-083-PIPE	ORIFICE	30.24	0	01:23	1.00
CB-084-PIPE	ORIFICE	30.24	0	01:23	1.00
CB-103-PIPE	ORIFICE	29.43	0	01:22	1.00
CB-104-PIPE	ORIFICE	29.43	0	01:22	1.00
CB-105-PIPE	ORIFICE	46.08	0	01:20	1.00
CB-106-PIPE	ORIFICE	46.08	0	01:20	1.00
CB-109-PIPE	ORIFICE	33.15	0	01:20	1.00
CB-110-PIPE	ORIFICE	33.15	0	01:20	1.00
CB-111-PIPE	ORIFICE	33.17	0	01:22	1.00
CB-112-PIPE	ORIFICE	33.17	0	01:22	1.00
CB-113-PIPE	ORIFICE	25.05	0	01:22	1.00
CB-114-PIPE	ORIFICE	25.05	0	01:22	1.00
CB-123-PIPE	ORIFICE	18.89	0	01:15	1.00
CB-124-PIPE	ORIFICE	18.89	0	01:15	1.00
CB-127-PIPE	ORIFICE	19.71	0	01:12	1.00
CB-128-PIPE	ORIFICE	19.71	0	01:12	1.00
CB-130-PIPE	ORIFICE	29.96	0	01:24	1.00
CB-131-PIPE	ORIFICE	29.96	0	01:24	1.00
CB-132-PIPE	ORIFICE	25.30	0	01:22	1.00
CB-133-PIPE	ORIFICE	25.30	0	01:22	1.00
CB-134-PIPE	ORIFICE	19.12	0	01:11	1.00
CB-135-PIPE	ORIFICE	19.12	0	01:11	1.00
CB-136-PIPE	ORIFICE	19.75	0	01:23	1.00
CB-137-PIPE	ORIFICE	19.75	0	01:23	1.00
CB-138-PIPE	ORIFICE	29.46	0	01:17	1.00
CB-139-PIPE	ORIFICE	29.46	0	01:17	1.00
CB-140-PIPE	ORIFICE	29.69	0	01:22	1.00
CB-141-PIPE	ORIFICE	29.69	0	01:22	1.00
CB-142-PIPE	ORIFICE	19.26	0	01:18	1.00
CB-143-PIPE	ORIFICE	19.26	0	01:18	1.00
CB-144-PIPE	ORIFICE	19.38	0	01:19	1.00
CB-145-PIPE	ORIFICE	19.38	0	01:19	1.00
CB-146-PIPE	ORIFICE	30.07	0	01:24	1.00
CB-147-PIPE	ORIFICE	30.07	0	01:24	1.00
CB-148-PIPE	ORIFICE	19.01	0	01:11	1.00
CB-149-PIPE	ORIFICE	19.01	0	01:11	1.00
LOWER-OUT1	ORIFICE	50.17	0	07:14	1.00
LOWER-OUT2	ORIFICE	252.29	0	07:14	1.00
OR-SU-031	ORIFICE	232.97	0	01:14	1.00
OR-SU-090	ORIFICE	126.28	0	01:15	1.00
OR-SU-098	ORIFICE	144.20	0	01:14	1.00
OR-SU-104B	ORIFICE	187.34	0	01:30	1.00
OR-SU-108	ORIFICE	138.35	0	01:14	1.00
OR-SU-109	ORIFICE	431.38	0	01:13	1.00
OR-SU-110B	ORIFICE	513.70	0	01:11	1.00
OR-SU-111	ORIFICE	146.62	0	01:14	1.00
OR-SU-112	ORIFICE	1221.07	0	01:10	1.00
OR-SU-114	ORIFICE	269.98	0	01:13	1.00
OR-SU-118	ORIFICE	213.24	0	01:14	1.00
OR-SU-120	ORIFICE	482.63	0	01:13	1.00
OR-SU-122	ORIFICE	131.31	0	01:13	1.00
OR-SU-123	ORIFICE	513.51	0	01:13	1.00
RYCB01-PIPE	ORIFICE	135.64	0	01:10	1.00
RYCB02-PIPE	ORIFICE	71.46	0	01:10	1.00
RYCB03-PIPE	ORIFICE	46.03	0	01:10	0.99
RYCB04-PIPE	ORIFICE	98.14	0	01:10	1.00
RYCB05-PIPE	ORIFICE	139.37	0	01:10	1.00
RYCB06-PIPE	ORIFICE	125.70	0	01:10	1.00
RYCB07-PIPE	ORIFICE	163.86	0	01:10	1.00
RYCB08-PIPE	ORIFICE	38.36	0	01:10	0.87
RYCB09-PIPE	ORIFICE	74.90	0	01:10	1.00
RYCB10-PIPE	ORIFICE	105.58	0	01:11	1.00
RYCB11-PIPE	ORIFICE	15.16	0	01:10	0.47
RYCB12-PIPE	ORIFICE	96.04	0	01:10	1.00
RYCB13-PIPE	ORIFICE	137.42	0	01:10	1.00

RYCB14-PIPE	ORIFICE	140.32	0	01:11	1.00
RYCB15-PIPE	ORIFICE	65.10	0	01:10	1.00
RYCB16-PIPE	ORIFICE	175.99	0	01:11	1.00
RYCB17-PIPE	ORIFICE	149.99	0	01:10	1.00
RYCB18-PIPE	ORIFICE	45.90	0	01:10	0.99
RYCB19-PIPE	ORIFICE	45.35	0	01:11	1.00
RYCB20-PIPE	ORIFICE	123.19	0	01:10	1.00
RYCB21-PIPE	ORIFICE	106.09	0	01:15	1.00
RYCB22-PIPE	ORIFICE	174.59	0	01:10	1.00
RYCB23-PIPE	ORIFICE	75.26	0	01:09	1.00
RYCB24-PIPE	ORIFICE	164.49	0	01:10	1.00
RYCB25-PIPE	ORIFICE	66.48	0	01:10	1.00
RYCB26-PIPE	ORIFICE	63.76	0	01:10	1.00
RYCB27-PIPE	ORIFICE	71.60	0	01:10	1.00
RYCB28-PIPE	ORIFICE	93.38	0	01:10	1.00
RYCB29-PIPE	ORIFICE	178.84	0	01:10	1.00
RYCB30-PIPE	ORIFICE	127.97	0	01:10	1.00
RYCB31-PIPE	ORIFICE	81.63	0	01:10	1.00
RYCB32-PIPE	ORIFICE	144.57	0	01:10	1.00
RYCB33-PIPE	ORIFICE	85.20	0	01:10	1.00
RYCB34-PIPE	ORIFICE	47.46	0	01:10	1.00
RYCB35-PIPE	ORIFICE	28.49	0	01:11	0.72
RYCB36-PIPE	ORIFICE	211.53	0	01:10	1.00
RYCB38-PIPE	ORIFICE	212.11	0	01:09	1.00
RYCB39-PIPE	ORIFICE	51.25	0	01:10	1.00
RYCB40-PIPE	ORIFICE	176.85	0	01:09	1.00
UPPER-LOWER	ORIFICE	355.64	0	02:41	1.00
CB-001-PIPE	DUMMY	16.50	0	01:10	
CB-002-PIPE	DUMMY	16.50	0	01:10	
CB-013-PIPE	DUMMY	9.82	0	01:10	
CB-014-PIPE	DUMMY	9.82	0	01:10	
CB-015-PIPE	DUMMY	5.88	0	01:10	
CB-016-PIPE	DUMMY	5.88	0	01:10	
CB-017-PIPE	DUMMY	24.00	0	01:05	
CB-018-PIPE	DUMMY	24.00	0	01:05	
CB-019-PIPE	DUMMY	16.42	0	01:13	
CB-020-PIPE	DUMMY	16.42	0	01:13	
CB-033-PIPE	DUMMY	12.53	0	01:10	
CB-034-PIPE	DUMMY	12.53	0	01:10	
CB-035-PIPE	DUMMY	32.00	0	01:09	
CB-036-PIPE	DUMMY	32.00	0	01:09	
CB-037-PIPE	DUMMY	28.00	0	01:03	
CB-038-PIPE	DUMMY	28.00	0	01:03	
CB-045-PIPE	DUMMY	16.61	0	01:09	
CB-046-PIPE	DUMMY	16.61	0	01:09	
CB-049-PIPE	DUMMY	19.00	0	01:04	
CB-050-PIPE	DUMMY	19.00	0	01:04	
CB-051-PIPE	DUMMY	19.00	0	01:04	
CB-052-PIPE	DUMMY	19.00	0	01:04	
CB-053-PIPE	DUMMY	16.58	0	01:14	
CB-054-PIPE	DUMMY	16.58	0	01:14	
CB-071-PIPE	DUMMY	19.00	0	01:03	
CB-072-PIPE	DUMMY	19.00	0	01:03	
CB-073-PIPE	DUMMY	19.00	0	01:03	
CB-074-PIPE	DUMMY	19.00	0	01:03	
CB-075-PIPE	DUMMY	19.00	0	01:04	
CB-076-PIPE	DUMMY	19.00	0	01:04	
CB-077-PIPE	DUMMY	24.00	0	01:02	
CB-078-PIPE	DUMMY	24.00	0	01:02	
CB-079-PIPE	DUMMY	24.00	0	01:04	
CB-080-PIPE	DUMMY	24.00	0	01:04	
CB-081-PIPE	DUMMY	19.00	0	01:04	
CB-082-PIPE	DUMMY	19.00	0	01:04	
CB-085-PIPE	DUMMY	19.00	0	01:08	
CB-086-PIPE	DUMMY	19.00	0	01:08	
CB-087-PIPE	DUMMY	19.00	0	01:05	
CB-088-PIPE	DUMMY	19.00	0	01:05	
CB-089-PIPE	DUMMY	19.00	0	01:04	
CB-090-PIPE	DUMMY	19.00	0	01:04	
CB-091-PIPE	DUMMY	19.00	0	01:03	
CB-092-PIPE	DUMMY	19.00	0	01:03	
CB-093-PIPE	DUMMY	19.00	0	01:03	
CB-094-PIPE	DUMMY	19.00	0	01:03	
CB-095-PIPE	DUMMY	17.54	0	01:10	
CB-096-PIPE	DUMMY	17.54	0	01:10	
CB-097-PIPE	DUMMY	19.00	0	01:04	
CB-098-PIPE	DUMMY	19.00	0	01:04	
CB-099-PIPE	DUMMY	2.75	0	01:10	
CB-100-PIPE	DUMMY	2.75	0	01:10	
CB-101-PIPE	DUMMY	19.00	0	01:05	
CB-102-PIPE	DUMMY	19.00	0	01:05	
CB-107-PIPE	DUMMY	19.00	0	01:04	
CB-108-PIPE	DUMMY	19.00	0	01:04	
CB-115-PIPE	DUMMY	19.00	0	01:08	
CB-116-PIPE	DUMMY	19.00	0	01:08	
CB-117-PIPE	DUMMY	19.00	0	01:02	
CB-118-PIPE	DUMMY	19.00	0	01:02	
CB-119-PIPE	DUMMY	19.00	0	01:03	
CB-120-PIPE	DUMMY	19.00	0	01:03	
CB-121-PIPE	DUMMY	19.00	0	01:03	
CB-122-PIPE	DUMMY	19.00	0	01:03	
CB-125-PIPE	DUMMY	19.00	0	01:03	

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CB-126-PIPE          DUMMY        19.00      0  01:03
CB-129-PIPE          DUMMY        19.00      0  01:02
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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
1_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
2_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(1)_(STM)	1.00	0.01	0.00	0.00	0.12	0.00	0.00	0.87	0.01	0.00
3_(10)_(STM)	1.00	0.01	0.00	0.00	0.16	0.01	0.00	0.83	0.10	0.00
3_(100)_(STM)	1.00	0.00	0.00	0.00	0.98	0.00	0.00	0.02	0.00	0.00
3_(11)_(STM)	1.00	0.01	0.28	0.00	0.67	0.04	0.00	0.00	0.91	0.00
3_(12)_(STM)	1.00	0.01	0.00	0.00	0.67	0.04	0.00	0.27	0.38	0.00
3_(13)_(STM)	1.00	0.01	0.00	0.00	0.01	0.01	0.00	0.98	0.00	0.00
3_(14)_(STM)	1.00	0.01	0.17	0.00	0.75	0.03	0.00	0.05	0.93	0.00
3_(15)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(16)_(STM)	1.00	0.01	0.13	0.00	0.80	0.05	0.00	0.01	0.97	0.00
3_(2)_(1)_(STM)	1.00	0.01	0.16	0.00	0.83	0.00	0.00	0.00	0.75	0.00
3_(2)_(STM)	1.00	0.01	0.23	0.00	0.76	0.00	0.00	0.00	0.88	0.00
3_(24)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(25)_(1)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(26)_(1)_(STM)	1.00	0.01	0.00	0.00	0.02	0.01	0.00	0.97	0.00	0.00
3_(26)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(27)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(28)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
3_(29)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(3)_(STM)	1.00	0.01	0.00	0.00	0.10	0.00	0.00	0.90	0.01	0.00
3_(30)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(31)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(32)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(33)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
3_(34)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
3_(35)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
3_(36)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(37)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00
3_(38)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00
3_(39)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
3_(4)_(STM)	1.00	0.01	0.19	0.00	0.80	0.00	0.00	0.00	0.48	0.00
3_(40)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(41)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00
3_(42)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
3_(44)_(STM)	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(44A)_(STM)	1.00	0.00	0.96	0.00	0.03	0.00	0.00	0.00	0.98	0.00
3_(45)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.95	0.02	0.00
3_(46)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(47)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(48)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(49)_(STM)	1.00	0.01	0.00	0.00	0.07	0.00	0.00	0.92	0.00	0.00
3_(5)_(STM)	1.00	0.01	0.00	0.00	0.46	0.00	0.00	0.53	0.06	0.00
3_(50)_(STM)	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(51)_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00
3_(52)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
3_(53)_(STM)	1.00	0.01	0.22	0.00	0.78	0.00	0.00	0.00	0.96	0.00
3_(54)_(1)_(STM)	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
3_(54)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
3_(58)_(STM)	1.00	0.00	0.10	0.00	0.89	0.00	0.00	0.00	0.63	0.00
3_(6)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(61)_(STM)	1.00	0.01	0.58	0.00	0.37	0.04	0.00	0.00	0.99	0.00
3_(63)_(STM)	1.00	0.00	0.28	0.00	0.71	0.00	0.00	0.00	0.98	0.00
3_(63D)_(STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
3_(64)_(STM)	1.00	0.00	0.96	0.00	0.00	0.00	0.04	0.00	0.00	0.00
3_(64D)_(STM)	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(65)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(66)_(STM)	1.00	0.01	0.00	0.00	0.87	0.08	0.00	0.04	0.23	0.00
3_(67)_(STM)	1.00	0.00	0.04	0.00	0.88	0.08	0.00	0.00	0.99	0.00
3_(67D)_(STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
3_(68)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
3_(69)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(7)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(70)_(1)_(STM)	1.00	0.00	0.00	0.00	0.00	0.02	0.00	0.98	0.00	0.00
3_(70)_(STM)	1.00	0.01	0.00	0.00	0.00	0.02	0.00	0.98	0.01	0.00
3_(71)_(STM)	1.00	0.01	0.00	0.00	0.31	0.02	0.00	0.67	0.31	0.00
3_(72)_(1)_(STM)	1.00	0.00	0.00	0.00	0.97	0.00	0.00	0.02	0.00	0.00
3_(72)_(STM)	1.00	0.01	0.00	0.00	0.40	0.00	0.00	0.58	0.06	0.00
3_(73)_(STM)	1.00	0.01	0.02	0.00	0.96	0.00	0.00	0.02	0.20	0.00
3_(74)_(STM)	1.00	0.00	0.01	0.00	0.97	0.00	0.00	0.02	0.31	0.00
3_(75)_(STM)	1.00	0.01	0.00	0.00	0.44	0.00	0.00	0.56	0.06	0.00
3_(76)_(1)_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.98	0.00
3_(76)_(STM)	1.00	0.01	0.00	0.00	0.36	0.00	0.00	0.64	0.34	0.00
3_(77)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(78)_(STM)	1.00	0.01	0.10	0.00	0.89	0.00	0.00	0.00	0.97	0.00
3_(79)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(80)_(STM)	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3_(81)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
3_(82)_(STM)	1.00	0.01	0.00	0.00	0.12	0.00	0.00	0.87	0.10	0.00

3_(83)_(1)_(STM)	1.00	0.01	0.00	0.00	0.98	0.01	0.00	0.00	0.99	0.00
3_(83)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(84)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.01	0.00
3_(85)_(1)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(85)_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
3_(86)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(87)_(STM)	1.00	0.01	0.00	0.00	0.00	0.01	0.00	0.98	0.01	0.00
3_(88)_(STM)	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
3_(89)_(1)_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
3_(89)_(STM)	1.00	0.01	0.00	0.00	0.01	0.03	0.00	0.95	0.02	0.00
3_(9)_(STM)	1.00	0.01	0.00	0.00	0.98	0.00	0.00	0.01	0.00	0.00
3_(90)_(STM)	1.00	0.01	0.00	0.00	0.00	0.01	0.00	0.98	0.00	0.00
3_(91)_(STM)	1.00	0.01	0.00	0.00	0.97	0.00	0.00	0.03	0.00	0.00
3_(93)_(STM)	1.00	0.01	0.00	0.00	0.97	0.00	0.00	0.02	0.00	0.00
3_(94)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(95)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(96)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C1	1.00	0.89	0.01	0.00	0.02	0.08	0.00	0.00	0.93	0.00
C10	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C100	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C101	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C102	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C103	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C104	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C105	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C106	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C107	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C109	1.00	0.77	0.08	0.00	0.09	0.05	0.00	0.00	0.99	0.00
C11	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C110	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.95	0.01	0.00
C111	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C112	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C113	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C114	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C115	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C116	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C117	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C118	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C119	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	0.02	0.02	0.00	0.01	0.00	0.00	0.95	0.00	0.00
C120	1.00	0.00	0.86	0.00	0.08	0.06	0.00	0.00	0.95	0.00
C121	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C122	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.01	0.00
C123	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C124	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.01	0.00
C125	1.00	0.02	0.01	0.00	0.04	0.00	0.00	0.93	0.03	0.00
C126	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C127	1.00	0.88	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C128	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.01	0.00
C129	1.00	0.00	0.87	0.00	0.07	0.06	0.00	0.00	0.94	0.00
C13	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C130	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.02	0.00
C131	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.02	0.00
C132	1.00	0.91	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
C133	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C134	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C135	1.00	0.82	0.04	0.00	0.05	0.09	0.00	0.00	0.96	0.00
C136	1.00	0.82	0.02	0.00	0.08	0.09	0.00	0.00	0.01	0.00
C137	1.00	0.83	0.07	0.00	0.07	0.00	0.00	0.04	0.13	0.00
C138	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
C139	1.00	0.03	0.29	0.00	0.68	0.00	0.00	0.00	0.69	0.00
C14	1.00	0.02	0.02	0.00	0.02	0.00	0.00	0.94	0.01	0.00
C140	1.00	0.00	0.04	0.00	0.96	0.00	0.00	0.00	1.00	0.00
C141	1.00	0.00	0.01	0.00	0.85	0.15	0.00	0.00	0.05	0.00
C15	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C16	1.00	0.02	0.00	0.00	0.02	0.00	0.00	0.96	0.00	0.00
C17	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C19	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C21	1.00	0.00	0.03	0.00	0.92	0.05	0.00	0.00	0.05	0.00
C22	1.00	0.84	0.03	0.00	0.08	0.05	0.00	0.00	1.00	0.00
C23	1.00	0.83	0.02	0.00	0.06	0.09	0.00	0.00	0.06	0.00
C24	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.01	0.00
C25	1.00	0.85	0.04	0.00	0.11	0.00	0.00	0.00	1.00	0.00
C26	1.00	0.84	0.02	0.00	0.06	0.09	0.00	0.00	0.99	0.00
C27	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C28	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C29	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.76	0.00	0.00	0.15	0.09	0.00	0.00	0.05	0.00
C31	1.00	0.86	0.02	0.00	0.04	0.08	0.00	0.00	0.01	0.00
C32	1.00	0.77	0.00	0.00	0.19	0.04	0.00	0.00	0.06	0.00
C33	1.00	0.85	0.02	0.00	0.08	0.05	0.00	0.00	0.00	0.00
C34	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.02	0.00
C35	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.01	0.00
C36	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
C37	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.01	0.00
C38	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
C39	1.00	0.00	0.77	0.00	0.22	0.00	0.00	0.00	0.99	0.00

C4	1.00	0.84	0.05	0.00	0.05	0.06	0.00	0.00	0.93	0.00
C40	1.00	0.85	0.01	0.00	0.05	0.08	0.00	0.00	0.03	0.00
C41	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C42	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C43	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C44	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C45	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C46	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C5	1.00	0.84	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00
C50	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C51	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C52	1.00	0.87	0.00	0.00	0.03	0.00	0.00	0.10	0.02	0.00
C53	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.01	0.00
C54	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C55	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.85	0.00	0.00	0.04	0.00	0.00	0.11	0.02	0.00
C59	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.88	0.00	0.00	0.04	0.08	0.00	0.00	0.00	0.00
C60	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C61	1.00	0.85	0.02	0.00	0.12	0.01	0.00	0.00	1.00	0.00
C62	1.00	0.32	0.47	0.00	0.22	0.00	0.00	0.00	0.99	0.00
C63	1.00	0.00	0.00	0.00	0.74	0.25	0.00	0.00	0.06	0.00
C64	1.00	0.00	0.00	0.00	0.74	0.25	0.00	0.00	0.06	0.00
C65	1.00	0.00	0.77	0.00	0.14	0.08	0.00	0.00	0.93	0.00
C66	1.00	0.02	0.01	0.00	0.05	0.00	0.00	0.92	0.04	0.00
C67	1.00	0.88	0.00	0.00	0.05	0.00	0.00	0.07	0.04	0.00
C68	1.00	0.00	0.00	0.00	0.72	0.27	0.00	0.00	0.06	0.00
C69	1.00	0.00	0.88	0.00	0.04	0.08	0.00	0.00	0.98	0.00
C7	1.00	0.84	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
C70	1.00	0.00	0.00	0.00	0.72	0.27	0.00	0.00	0.06	0.00
C71	1.00	0.02	0.01	0.00	0.04	0.00	0.00	0.93	0.03	0.00
C72	1.00	0.86	0.00	0.00	0.05	0.00	0.00	0.09	0.03	0.00
C73	1.00	0.02	0.01	0.00	0.04	0.00	0.00	0.93	0.02	0.00
C74	1.00	0.02	0.01	0.00	0.04	0.00	0.00	0.92	0.02	0.00
C75	1.00	0.02	0.01	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C76	1.00	0.00	0.85	0.00	0.07	0.07	0.00	0.00	0.94	0.00
C77	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
C78	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C79	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.87	0.02	0.00	0.07	0.04	0.00	0.00	1.00	0.00
C80	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C81	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.02	0.00
C84	1.00	0.00	0.00	0.00	0.14	0.86	0.00	0.00	0.93	0.00
C85	1.00	0.02	0.01	0.00	0.02	0.00	0.00	0.95	0.00	0.00
C86	1.00	0.01	0.02	0.00	0.86	0.11	0.00	0.00	0.97	0.00
C87	1.00	0.02	0.00	0.00	0.02	0.00	0.00	0.96	0.00	0.00
C88	1.00	0.02	0.00	0.00	0.96	0.01	0.00	0.00	0.97	0.00
C89	1.00	0.02	0.00	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C9	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C90	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.94	0.02	0.00
C91	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C92	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C93	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C94	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C95	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C96	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C97	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C98	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C99	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB01-MAJOR	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB02-MAJOR	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB03-MAJOR	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB04-MAJOR	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB05-MAJOR	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB06-MAJOR	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB07-MAJOR	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB08-MAJOR	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB09-MAJOR	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB10-MAJOR	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB11-MAJOR	1.00	0.88	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB12-MAJOR	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB13-MAJOR	1.00	0.86	0.13	0.00	0.00	0.00	0.00	0.00	0.97	0.00
RYCB14-MAJOR	1.00	0.96	0.01	0.00	0.01	0.00	0.03	0.00	0.00	0.00
RYCB15-MAJOR	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB16-MAJOR	1.00	0.97	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00
RYCB17-MAJOR	1.00	0.97	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
RYCB18-MAJOR	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB19-MAJOR	1.00	0.97	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00
RYCB20-MAJOR	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB21-MAJOR	1.00	0.97	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00
RYCB22-MAJOR	1.00	0.96	0.03	0.00	0.00	0.00	0.00	0.00	0.98	0.00
RYCB23-MAJOR	1.00	0.97	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00
RYCB24-MAJOR	1.00	0.97	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00
RYCB25-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB26-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00

RYCB27-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB28-MAJOR	1.00	0.97	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
RYCB29-MAJOR	1.00	0.97	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00
RYCB30-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB31-MAJOR	1.00	0.86	0.11	0.00	0.00	0.00	0.03	0.00	0.00	0.00
RYCB32-MAJOR	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB33-MAJOR	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB34-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB35-MAJOR	1.00	0.97	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
RYCB36-MAJOR	1.00	0.78	0.22	0.00	0.00	0.00	0.00	0.00	0.97	0.00
RYCB38-MAJOR	1.00	0.78	0.21	0.00	0.00	0.02	0.00	0.00	0.97	0.00
RYCB40-MAJOR	1.00	0.97	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
STM-1_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
STM-2_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
STM-2-10_(STM-OS)	1.00	0.02	0.00	0.00	0.05	0.00	0.00	0.93	0.00	0.00
STM-2-11_(STM-OS)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
STM-2-12_(STM-OS)	1.00	0.02	0.89	0.00	0.09	0.00	0.00	0.00	0.94	0.00
STM-2-13_(STM-OS)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
STM-2-15_(STM-OS)	1.00	0.02	0.00	0.00	0.97	0.01	0.00	0.00	0.00	0.00
STM-2-8_(STM-OS)	1.00	0.02	0.00	0.00	0.06	0.00	0.00	0.92	0.00	0.00
STM-2-9_(STM-OS)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
STM-3_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
STM-4_(STM)	1.00	0.97	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STM-5_(STM)	1.00	0.00	0.94	0.00	0.06	0.00	0.00	0.00	0.97	0.00
STM-5A_(STM)	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00
STM-6_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.01	0.00
STM-7_(STM)	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00

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Conduit Surcharge Summary
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Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
3_(1)_(STM)	0.01	0.01	0.01	0.30	0.01
3_(10)_(STM)	0.01	0.01	1.14	0.14	0.01
3_(100)_(STM)	7.74	7.74	7.87	0.33	0.04
3_(13)_(STM)	0.01	0.01	0.01	0.09	0.01
3_(14)_(STM)	0.01	0.01	0.01	0.14	0.01
3_(2)_(1)_(STM)	0.01	0.01	0.01	0.37	0.01
3_(2)_(STM)	0.01	0.01	0.01	0.41	0.01
3_(24)_(STM)	0.08	0.21	0.08	0.19	0.08
3_(25)_(1)_(STM)	0.09	0.09	0.11	0.01	0.01
3_(26)_(1)_(STM)	0.12	0.13	0.13	0.01	0.10
3_(26)_(STM)	0.11	0.11	0.13	0.13	0.10
3_(27)_(STM)	0.01	0.15	0.01	0.01	0.01
3_(29)_(STM)	0.01	0.01	0.06	0.01	0.01
3_(3)_(STM)	0.01	0.01	0.01	0.38	0.01
3_(30)_(STM)	0.01	0.01	0.11	0.01	0.01
3_(31)_(STM)	0.13	0.13	0.14	0.01	0.02
3_(32)_(STM)	0.01	0.16	0.01	0.01	0.01
3_(33)_(STM)	0.08	0.08	0.12	0.01	0.01
3_(34)_(STM)	0.13	0.13	0.14	0.01	0.01
3_(35)_(STM)	0.10	0.10	0.14	0.01	0.01
3_(36)_(STM)	0.19	0.21	0.19	0.25	0.18
3_(37)_(STM)	0.19	0.19	0.19	0.13	0.17
3_(38)_(STM)	0.20	0.21	0.20	0.01	0.20
3_(39)_(STM)	0.18	0.20	0.18	0.15	0.17
3_(4)_(STM)	5.83	5.84	6.46	0.42	0.41
3_(40)_(STM)	0.14	0.14	0.15	0.07	0.03
3_(41)_(STM)	0.13	0.14	0.14	0.21	0.11
3_(42)_(STM)	0.21	0.21	0.21	0.01	0.18
3_(44)_(STM)	0.01	0.01	0.12	0.01	0.01
3_(45)_(STM)	0.13	0.13	0.19	0.01	0.01
3_(46)_(STM)	0.18	0.19	0.18	0.01	0.18
3_(47)_(STM)	0.19	0.19	0.22	0.20	0.17
3_(48)_(STM)	0.17	0.22	0.17	0.32	0.17
3_(49)_(STM)	0.17	0.19	0.17	0.11	0.17
3_(5)_(STM)	6.42	6.46	7.08	0.42	0.56
3_(50)_(STM)	0.14	0.19	0.14	0.33	0.14
3_(51)_(STM)	0.13	0.15	0.13	0.27	0.13
3_(52)_(STM)	0.13	0.14	0.13	0.33	0.13
3_(53)_(STM)	0.11	0.13	0.11	0.29	0.11
3_(54)_(1)_(STM)	0.01	0.06	0.01	0.01	0.01
3_(54)_(STM)	0.06	0.11	0.06	0.32	0.06
3_(58)_(STM)	0.01	0.12	0.01	0.67	0.01
3_(6)_(STM)	6.84	7.08	7.30	0.41	0.30
3_(63)_(STM)	0.01	0.01	0.02	0.01	0.01
3_(63D)_(STM)	0.01	0.02	0.01	0.10	0.01
3_(68)_(STM)	0.01	0.01	0.01	0.01	0.01
3_(7)_(STM)	7.47	7.49	7.74	0.33	0.18
3_(70)_(1)_(STM)	0.01	0.01	0.04	0.01	0.01
3_(71)_(STM)	0.08	0.08	0.39	0.01	0.01
3_(72)_(1)_(STM)	23.55	23.56	27.21	0.01	0.07
3_(72)_(STM)	0.01	0.42	0.01	0.01	0.01
3_(73)_(STM)	0.01	0.06	11.66	0.01	0.01
3_(74)_(STM)	0.01	0.01	0.06	0.01	0.01
3_(83)_(1)_(STM)	0.01	0.01	0.19	0.01	0.01

3_(83)_(STM)	0.01	0.15	0.01	0.10	0.01
3_(84)_(STM)	0.01	0.01	0.22	0.01	0.01
3_(85)_(1)_(STM)	0.12	0.24	0.12	0.18	0.12
3_(85)_(STM)	0.22	0.22	0.23	0.22	0.22
3_(86)_(STM)	0.01	0.02	0.01	0.03	0.01
3_(89)_(1)_(STM)	0.11	0.21	0.11	0.01	0.11
3_(89)_(STM)	0.01	0.01	0.18	0.01	0.01
3_(9)_(STM)	15.53	15.57	17.90	0.14	0.01
3_(90)_(STM)	0.01	0.01	0.06	0.01	0.01
3_(91)_(STM)	18.99	18.99	19.67	0.20	0.01
3_(93)_(STM)	19.67	19.67	22.15	0.01	0.01
3_(94)_(STM)	27.21	27.21	30.12	0.01	0.01
3_(95)_(STM)	31.59	31.59	35.98	0.01	0.01
3_(96)_(STM)	35.98	35.98	37.85	0.01	0.01
RYCB14-MAJOR	0.01	0.01	0.46	0.01	0.01
STM-2-10_(STM-OS)	0.01	0.01	0.01	0.79	0.01
STM-2-11_(STM-OS)	0.01	0.01	0.01	0.75	0.01
STM-2-12_(STM-OS)	0.01	0.01	0.01	0.78	0.01
STM-2-13_(STM-OS)	0.01	0.01	0.01	0.81	0.01
STM-2-15_(STM-OS)	0.01	0.01	0.01	0.78	0.01
STM-2-8_(STM-OS)	0.84	0.84	0.84	0.71	0.84
STM-2-9_(STM-OS)	0.01	0.87	0.01	0.78	0.01
STM-5_(STM)	0.01	0.01	0.11	0.01	0.01
STM-5A_(STM)	0.11	0.11	0.13	0.01	0.01
STM-6_(STM)	0.13	0.13	0.15	0.01	0.01
STM-7_(STM)	0.14	0.15	0.15	0.16	0.12

```
Analysis begun on:  Tue Jun 05 11:22:40 2018
Analysis ended on:  Tue Jun 05 11:23:11 2018
Total elapsed time: 00:00:31
```

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

PCSWMM Model for Claridge Uniform Subdivision

WARNING 02: maximum depth increased for Node CB-003-004
WARNING 02: maximum depth increased for Node CB-111-112
WARNING 02: maximum depth increased for Node CB-142-143
WARNING 02: maximum depth increased for Node RYCB03
WARNING 02: maximum depth increased for Node RYCB04
WARNING 02: maximum depth increased for Node RYCB05
WARNING 02: maximum depth increased for Node RYCB07
WARNING 02: maximum depth increased for Node RYCB09
WARNING 02: maximum depth increased for Node RYCB10
WARNING 02: maximum depth increased for Node RYCB11
WARNING 02: maximum depth increased for Node RYCB16
WARNING 02: maximum depth increased for Node RYCB17
WARNING 02: maximum depth increased for Node RYCB19
WARNING 02: maximum depth increased for Node RYCB22
WARNING 02: maximum depth increased for Node RYCB26
WARNING 02: maximum depth increased for Node RYCB29
WARNING 02: maximum depth increased for Node RYCB30
WARNING 02: maximum depth increased for Node RYCB32
WARNING 02: maximum depth increased for Node RYCB34
WARNING 02: maximum depth increased for Node RYCB35
WARNING 02: maximum depth increased for Node RYCB40

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 133
Number of nodes ........... 297
Number of links ........... 495
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                     Data       Recording
Name                 Data Source                     Type       Interval
-------------------------------------------------------------------------
Raingage             S24hr-100yr                     INTENSITY    60 min.



********************
Subcatchment Summary
********************
Name                       Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------------------
NADIA                     25.83   1258.32     21.43    2.0000 Raingage             HW1_(STM-OS)
NW-001                     0.55    286.55     64.29    0.8000 Raingage             CB-109-110
NW-002                     0.18    242.24     64.29    1.6000 Raingage             RYCB28
NW-003                     0.51    263.39     64.29    0.8000 Raingage             CB-111-112
NW-004                     0.15    190.25     64.29    1.6000 Raingage             RYCB27
NW-005                     0.38    197.18     64.29    0.5000 Raingage             CB-113-114
NW-006                     0.14    179.07     64.29    1.6000 Raingage             RYCB26
NW-007                     0.09    114.32     64.29    0.4000 Raingage             CB-001-002
NW-008                     0.41    205.86     64.29    1.0000 Raingage             CB-003-004
NW-009                     0.10    134.95     64.29    1.5000 Raingage             RYCB34
NW-010                     0.14     93.30     64.29    1.5000 Raingage             RYCB25
NW-011                     0.06     71.64     64.29    1.8000 Raingage             RYCB35
NW-012                     0.41    198.40     64.29    0.6000 Raingage             CB-005-006
NW-013                     0.25    133.37     64.29    2.2000 Raingage             CB-107-108
NW-014                     0.67    314.09     64.29    0.4000 Raingage             CB-105-106
NW-015                     0.41    239.68     64.29    2.0000 Raingage             RYCB29
NW-016                     0.46    227.32     64.29    0.8000 Raingage             CB-103-104
NW-017                     0.28    179.25     64.29    1.5000 Raingage             RYCB30
NW-018                     0.16    355.59     64.29    1.1000 Raingage             CB-123-124
NW-019                     0.29    157.96     64.29    1.2000 Raingage             CB-125-126
NW-020                     0.35    191.67     64.29    1.2000 Raingage             CB-127-128
NW-021A                    0.12    114.22     64.29    0.8000 Raingage             CB-129
NW-021B                    0.24    136.83     64.29    1.0000 Raingage             CB-047-048
NW-022                     0.44    272.28     64.29    2.0000 Raingage             RYCB24
NW-023                     0.17    100.37     64.29    2.3000 Raingage             RYCB23
NW-024                     0.38    190.31     67.14    0.9000 Raingage             CB-007-008
NW-025                     0.29    143.95     64.29    1.0000 Raingage             CB-009-010
NW-026                     0.41    215.52     64.29    1.3000 Raingage             CB-130-131
NW-027                     0.40    203.22     64.29    1.1000 Raingage             CB-132-133
NW-028                     0.26    134.87     64.29    1.1000 Raingage             CB-134-135
NW-029                     0.29    138.34     64.29    1.3000 Raingage             CB-136-137
NW-030                     0.42    242.39     64.29    2.0000 Raingage             RYCB22
NW-031                     0.99    261.80     71.43    1.0000 Raingage             SU-031
NW-032                     0.26    399.17     71.43    1.5000 Raingage             CB-011-012
NW-033                     0.41    192.26     64.29    0.8000 Raingage             CB-041-042
NW-034                     0.40    179.30     64.29    1.0000 Raingage             CB-043-044
NW-035                     0.14     61.78     64.29    0.8000 Raingage             CB-045-046
NW-036                     0.45    232.75     64.29    0.7000 Raingage             CB-138-139
NW-037                     0.28    196.32     64.29    2.0000 Raingage             RYCB21
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NW-038	0.43	221.34	64.29	0.7000	Raingage	CB-140-141
NW-039	0.23	122.04	64.29	1.0000	Raingage	CB-144-145
NW-040	0.09	138.34	64.29	1.8000	Raingage	RYCB19
NW-041A	0.83	181.82	30.00	2.0000	Raingage	RYCB40
NW-041B	0.26	105.82	28.57	2.0000	Raingage	CB-146-147
NW-042	0.36	188.19	64.29	1.1000	Raingage	CB-146-147
NW-043A	0.10	126.85	64.29	2.0000	Raingage	RYCB18
NW-043B	0.13	101.17	28.57	2.0000	Raingage	RYCB39
NW-044	0.28	148.18	64.29	0.8000	Raingage	CB-148-149
NW-045	0.27	180.87	64.29	1.5000	Raingage	RYCB20
NW-046	0.16	85.03	64.29	1.7000	Raingage	CB-142-143
NW-047	0.32	206.07	64.29	1.6000	Raingage	RYCB17
NW-048	0.24	122.61	64.29	1.2000	Raingage	CB-051-052
NW-049	2.57	359.10	21.43	2.0000	Raingage	RYCB38
NW-050	0.38	208.53	64.29	1.0000	Raingage	CB-053-054
NW-051	0.21	128.25	64.29	1.6000	Raingage	RYCB12
NW-052	0.25	136.34	64.29	1.7000	Raingage	CB-055-056
NW-053	0.13	71.87	64.29	0.7000	Raingage	CB-057-058
NW-054	0.21	114.69	64.29	0.9000	Raingage	CB-059-060
NW-055	0.27	146.79	64.29	1.7000	Raingage	CB-071-072
NW-056	0.08	84.71	64.29	1.0000	Raingage	RYCB08
NW-057	0.24	129.82	64.29	1.3000	Raingage	CB-073-074
NW-058	0.21	115.06	64.29	1.0000	Raingage	CB-075-076
NW-059	0.23	151.44	64.29	1.0000	Raingage	RYCB10
NW-060	0.43	266.19	64.29	1.6000	Raingage	RYCB13
NW-061	0.41	231.68	64.29	0.9000	Raingage	CB-061-062
NW-062	0.16	80.67	64.29	1.5000	Raingage	CB-087-088
NW-063	0.22	114.53	64.29	0.6000	Raingage	CB-049-050
NW-064	0.90	283.78	21.43	3.0000	Raingage	RYCB36
NW-065	0.25	122.06	64.29	0.7000	Raingage	CB-089-090
NW-066	0.17	105.95	64.29	1.0000	Raingage	RYCB09
NW-067	0.24	124.66	64.29	1.5000	Raingage	CB-091-092
NW-068A	0.20	103.00	64.29	2.2000	Raingage	CB-093-094
NW-068B	0.03	43.29	64.29	1.5000	Raingage	RYCB11
NW-069	0.23	123.36	64.29	1.2000	Raingage	CB-063-064
NW-070	0.36	244.99	64.29	1.8000	Raingage	RYCB07
NW-071	0.21	95.38	64.29	1.8000	Raingage	CB-065-066
NW-072	0.20	105.51	64.29	1.2000	Raingage	CB-085-086
NW-073	0.42	222.81	12.86	3.0000	Raingage	RYCB01
NW-074	0.12	52.98	64.29	2.2000	Raingage	CB-033-034
NW-075	0.10	126.98	64.29	1.0000	Raingage	RYCB03
NW-076	0.35	160.71	64.29	2.0000	Raingage	CB-035-036
NW-077	0.27	185.00	64.29	1.9000	Raingage	RYCB06
NW-078	0.33	150.50	64.29	1.8000	Raingage	CB-037-038
NW-079	0.61	321.08	48.57	1.5000	Raingage	CB-083-084
NW-080	0.15	181.34	64.29	1.7000	Raingage	RYCB02
NW-081	0.28	130.86	64.29	1.6000	Raingage	CB-081-082
NW-082	0.21	146.72	64.29	2.0000	Raingage	RYCB04
NW-083	0.38	173.52	64.29	1.7000	Raingage	CB-079-080
NW-084	0.38	173.67	64.29	1.8000	Raingage	CB-077-078
NW-085	0.28	157.10	64.29	1.0000	Raingage	CB-069-070
NW-086	0.33	181.74	64.29	1.3000	Raingage	CB-067-068
NW-087	0.30	205.53	64.29	2.1000	Raingage	RYCB05
NW-088	0.37	168.36	64.29	0.8000	Raingage	CB-039-040
NW-089	0.28	134.73	64.29	1.0000	Raingage	CB-031-032
NW-090	0.60	277.94	64.29	1.0000	Raingage	SU-090
NW-091	0.22	104.18	64.29	1.0000	Raingage	CB-029-030
NW-092	0.43	271.36	64.29	1.6000	Raingage	RYCB14
NW-093	0.36	178.37	65.71	0.8000	Raingage	CB-027-028
NW-094	0.14	118.96	64.29	1.6000	Raingage	RYCB15
NW-095	0.37	180.56	65.71	0.7000	Raingage	CB-025-026
NW-096	0.41	265.80	64.29	2.0000	Raingage	RYCB16
NW-097	0.19	252.22	71.43	1.1000	Raingage	CB-023-024
NW-098	0.61	240.85	71.43	1.0000	Raingage	SU-098
NW-099	0.15	216.85	71.43	0.6000	Raingage	CB-021-022
NW-100	0.07	104.03	71.43	2.2000	Raingage	CB-013-014
NW-101	0.20	110.32	64.29	1.4000	Raingage	CB-115-116
NW-102	0.35	184.21	64.29	1.4000	Raingage	CB-117-118
NW-103	0.17	242.28	64.29	2.0000	Raingage	RYCB31
NW-104A	0.31	160.58	64.29	1.0000	Raingage	CB-121-122
NW-104B	2.37	285.37	25.71	1.0000	Raingage	SU-104B
NW-105	0.18	139.23	64.29	2.0000	Raingage	RYCB33
NW-106	0.28	141.36	64.29	0.5000	Raingage	CB-119-120
NW-107	0.31	232.73	64.29	2.0000	Raingage	RYCB32
NW-108	0.66	144.57	64.29	1.0000	Raingage	SU-108
NW-109	1.98	274.75	67.14	1.0000	Raingage	SU-109
NW-110A	0.64	152.40	0.00	1.0000	Raingage	OVF-04
NW-110B	2.58	344.87	64.29	1.0000	Raingage	SU-110B
NW-111	0.63	214.78	71.43	1.0000	Raingage	SU-111
NW-112	2.58	532.38	92.86	1.0000	Raingage	SU-112
NW-113	0.18	250.83	71.43	2.4000	Raingage	CB-015-016
NW-114	0.89	214.98	92.86	1.0000	Raingage	SU-114
NW-115	0.23	316.89	71.43	1.8000	Raingage	CB-017-018
NW-116	0.07	95.19	71.43	1.8000	Raingage	CB-019-020
NW-117	0.15	129.41	71.43	1.7000	Raingage	CB-095-096
NW-118	0.91	311.39	71.43	1.0000	Raingage	SU-118
NW-119	0.20	165.70	71.43	1.7000	Raingage	CB-097-098
NW-120	2.31	334.41	64.29	1.0000	Raingage	SU-120
NW-121	0.14	108.80	71.43	2.7000	Raingage	CB-099-100
NW-122	0.50	204.10	81.43	1.0000	Raingage	SU-122
NW-123	1.96	333.24	80.00	1.0000	Raingage	SU-123
NW-124	0.16	126.38	71.43	2.0000	Raingage	CB-101-102

POND-1	1.21	604.27	85.71	1.0000	Raingage	POND-UPPER
POND-2	1.25	429.98	85.71	1.0000	Raingage	POND-LOWER

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
1+000	JUNCTION	90.47	1.00	0.0	
1+070	JUNCTION	90.12	1.00	0.0	
1+150	JUNCTION	90.01	1.00	0.0	
1+274	JUNCTION	89.07	1.00	0.0	
10+091	JUNCTION	92.07	1.00	0.0	
100_(STM)	JUNCTION	87.62	2.65	0.0	
1000_(STM)	JUNCTION	89.19	2.85	0.0	
1002_(STM)	JUNCTION	89.05	2.98	0.0	
1004_(STM)	JUNCTION	87.27	2.97	0.0	
1004D_(STM)	JUNCTION	86.19	3.47	0.0	
102_(STM)	JUNCTION	87.34	2.85	0.0	
104_(STM)	JUNCTION	86.91	3.17	0.0	
106_(STM)	JUNCTION	87.38	2.52	0.0	
11+094	JUNCTION	88.41	1.00	0.0	
11+162	JUNCTION	88.67	1.00	0.0	
1100_(STM)	JUNCTION	85.18	3.31	0.0	
1102_(STM)	JUNCTION	85.84	2.78	0.0	
12+000	JUNCTION	90.44	1.00	0.0	
12+040	JUNCTION	90.46	1.00	0.0	
12+134	JUNCTION	89.70	1.00	0.0	
12+242	JUNCTION	88.72	1.00	0.0	
12+310	JUNCTION	88.52	1.00	0.0	
12+384	JUNCTION	88.22	1.00	0.0	
12+428	JUNCTION	87.57	1.00	0.0	
12+523	JUNCTION	86.85	1.00	0.0	
12+600	JUNCTION	84.87	1.00	0.0	
1200_(STM)	JUNCTION	86.73	3.78	0.0	
1202_(STM)	JUNCTION	86.20	3.50	0.0	
1204_(STM)	JUNCTION	85.32	3.47	0.0	
1206_(STM)	JUNCTION	84.52	3.65	0.0	
1208_(STM)	JUNCTION	84.28	3.80	0.0	
1210_(STM)	JUNCTION	84.09	3.55	0.0	
1212_(STM)	JUNCTION	83.88	3.53	0.0	
1214_(STM)	JUNCTION	81.61	5.34	0.0	
1216_(STM)	JUNCTION	81.51	3.87	0.0	
1218_(STM)	JUNCTION	81.37	3.63	0.0	
1220 (STM)	JUNCTION	79.57	4.77	0.0	
1222_(STM)	JUNCTION	79.39	3.56	0.0	
13+093	JUNCTION	87.48	1.00	0.0	
13+171	JUNCTION	87.69	1.00	0.0	
13+251	JUNCTION	87.79	1.00	0.0	
13+413	JUNCTION	88.12	1.00	0.0	
13+490	JUNCTION	88.25	1.00	0.0	
1300_(STM)	JUNCTION	82.02	5.42	0.0	
1302_(STM)	JUNCTION	82.12	5.41	0.0	
1304_(STM)	JUNCTION	83.73	4.03	0.0	
1306_(STM)	JUNCTION	83.78	3.91	0.0	
1308_(STM)	JUNCTION	83.82	4.06	0.0	
1310_(STM)	JUNCTION	83.89	4.18	0.0	
1312_(STM)	JUNCTION	84.89	3.28	0.0	
1314_(STM)	JUNCTION	85.20	3.00	0.0	
1400_(STM)	JUNCTION	82.20	5.20	0.0	
1402_(STM)	JUNCTION	81.99	5.51	0.0	
1404_(STM)	JUNCTION	81.62	4.57	0.0	
1406_(STM)	JUNCTION	81.24	5.69	0.0	
1408_(STM)	JUNCTION	80.80	5.53	0.0	
1410_(STM)	JUNCTION	80.47	5.08	0.0	
1412_(STM)	JUNCTION	80.16	4.81	0.0	
1500_(STM)	JUNCTION	85.40	1.75	0.0	
1502_(STM)	JUNCTION	82.27	3.22	0.0	
1505_(STM)	JUNCTION	79.35	3.57	0.0	
1600_(STM)	JUNCTION	87.00	1.34	0.0	
1602_(STM)	JUNCTION	84.60	2.90	0.0	
1604_(STM)	JUNCTION	82.78	4.42	0.0	
1606_(STM)	JUNCTION	83.09	3.91	0.0	
2+089	JUNCTION	90.50	1.00	0.0	
2+112	JUNCTION	90.67	1.00	0.0	
2+218	JUNCTION	90.93	1.00	0.0	
2+335	JUNCTION	91.17	1.00	0.0	
2+516	JUNCTION	90.51	1.00	0.0	
200_(STM)	JUNCTION	87.18	3.43	0.0	
202_(STM)	JUNCTION	87.76	3.17	0.0	
204_(STM)	JUNCTION	88.35	2.77	0.0	
206_(STM)	JUNCTION	88.37	2.81	0.0	
208_(STM)	JUNCTION	88.04	2.80	0.0	
20A_(STM)	JUNCTION	88.42	2.56	0.0	
210_(STM)	JUNCTION	87.84	2.93	0.0	
212_(STM)	JUNCTION	87.24	3.35	0.0	
3+088	JUNCTION	90.17	1.00	0.0	
3+313	JUNCTION	88.52	1.00	0.0	
3+395	JUNCTION	88.32	1.00	0.0	
3+447	JUNCTION	87.97	1.00	0.0	

300_(STM)	JUNCTION	87.31	2.74	0.0
302_(STM)	JUNCTION	86.75	3.49	0.0
304_(STM)	JUNCTION	86.35	3.13	0.0
306_(STM)	JUNCTION	85.88	3.26	0.0
308_(STM)	JUNCTION	85.86	3.16	0.0
310_(STM)	JUNCTION	85.45	2.94	0.0
312_(STM)	JUNCTION	85.25	3.00	0.0
314_(STM)	JUNCTION	85.05	2.89	0.0
316_(STM)	JUNCTION	84.98	2.95	0.0
4+112	JUNCTION	90.12	1.00	0.0
4+213	JUNCTION	90.23	1.00	0.0
4+270	JUNCTION	89.37	1.00	0.0
400_(STM)	JUNCTION	86.58	3.62	0.0
402_(STM)	JUNCTION	86.14	4.15	0.0
5+111	JUNCTION	90.47	1.00	0.0
5+210	JUNCTION	90.87	1.00	0.0
5+285	JUNCTION	90.36	1.00	0.0
500_(STM)	JUNCTION	87.29	2.59	0.0
502_(STM)	JUNCTION	86.84	3.69	0.0
504_(STM)	JUNCTION	86.57	4.28	0.0
506_(STM)	JUNCTION	86.45	4.41	0.0
6+088	JUNCTION	90.12	1.00	0.0
6+278	JUNCTION	88.78	1.00	0.0
6+306	JUNCTION	88.67	1.00	0.0
6+345	JUNCTION	88.61	1.00	0.0
6+410	JUNCTION	88.49	1.00	0.0
6+505	JUNCTION	88.27	1.00	0.0
6+572	JUNCTION	88.20	1.00	0.0
600_(STM)	JUNCTION	87.22	2.99	0.0
600D_(STM)	JUNCTION	88.13	2.71	0.0
602_(STM)	JUNCTION	86.70	2.96	0.0
604_(STM)	JUNCTION	86.51	3.25	0.0
606_(STM)	JUNCTION	85.37	3.84	0.0
608_(STM)	JUNCTION	85.18	3.50	0.0
610_(STM)	JUNCTION	85.12	3.49	0.0
612_(STM)	JUNCTION	84.99	3.52	0.0
614_(STM)	JUNCTION	84.93	3.60	0.0
616_(STM)	JUNCTION	84.87	3.41	0.0
618_(STM)	JUNCTION	84.69	3.48	0.0
620_(STM)	JUNCTION	84.51	3.73	0.0
700_(STM)	JUNCTION	87.20	2.72	0.0
702_(STM)	JUNCTION	86.05	3.13	0.0
704_(STM)	JUNCTION	85.46	2.95	0.0
8+150	JUNCTION	90.57	1.00	0.0
800_(STM)	JUNCTION	88.88	2.85	0.0
802_(STM)	JUNCTION	88.90	2.58	0.0
804_(STM)	JUNCTION	87.93	2.71	0.0
806_(STM)	JUNCTION	86.54	3.49	0.0
808_(STM)	JUNCTION	85.39	2.83	0.0
9+000	JUNCTION	93.32	1.00	0.0
9+040	JUNCTION	92.52	1.00	0.0
9+261	JUNCTION	88.15	1.00	0.0
9+342	JUNCTION	87.99	1.00	0.0
9+347	JUNCTION	87.99	1.00	0.0
9+713	JUNCTION	84.10	1.00	0.0
900_(STM)	JUNCTION	88.59	4.05	0.0
900D_(STM)	JUNCTION	89.70	2.56	0.0
900DD_(STM)	JUNCTION	88.66	3.13	0.0
902_(STM)	JUNCTION	88.17	2.83	0.0
904_(STM)	JUNCTION	86.44	3.14	0.0
906_(STM)	JUNCTION	84.17	4.09	0.0
908_(STM)	JUNCTION	84.24	3.15	0.0
910_(STM)	JUNCTION	82.67	3.32	0.0
912_(STM)	JUNCTION	81.75	3.38	0.0
914_(STM)	JUNCTION	80.91	2.94	0.0
916_(STM)	JUNCTION	79.15	4.46	0.0
918_(STM)	JUNCTION	79.58	4.42	0.0
920_(STM)	JUNCTION	79.05	5.13	0.0
922_(STM)	JUNCTION	78.98	4.50	0.0
CB-001-002	JUNCTION	90.32	1.00	0.0
CB-003-004	JUNCTION	87.99	2.51	0.0
CB-005-006	JUNCTION	87.04	2.48	0.0
CB-007-008	JUNCTION	86.67	2.60	0.0
CB-009-010	JUNCTION	86.37	2.60	0.0
CB-011-012	JUNCTION	84.97	2.60	0.0
CB-013-014	JUNCTION	86.39	1.00	0.0
CB-015-016	JUNCTION	84.90	1.00	0.0
CB-017-018	JUNCTION	82.67	1.00	0.0
CB-019-020	JUNCTION	82.40	1.00	0.0
CB-021-022	JUNCTION	85.05	2.60	0.0
CB-023-024	JUNCTION	85.53	2.60	0.0
CB-025-026	JUNCTION	85.74	2.60	0.0
CB-027-028	JUNCTION	85.89	2.60	0.0
CB-029-030	JUNCTION	86.04	2.60	0.0
CB-031-032	JUNCTION	86.17	2.60	0.0
CB-033-034	JUNCTION	91.73	1.00	0.0
CB-035-036	JUNCTION	90.40	1.00	0.0
CB-037-038	JUNCTION	89.28	1.00	0.0
CB-039-040	JUNCTION	86.14	2.60	0.0
CB-041-042	JUNCTION	88.27	2.60	0.0
CB-043-044	JUNCTION	88.11	2.60	0.0
CB-045-046	JUNCTION	89.76	1.00	0.0

CB-047-048	JUNCTION	86.97	2.60	0.0
CB-049-050	JUNCTION	90.20	1.00	0.0
CB-051-052	JUNCTION	89.52	1.00	0.0
CB-053-054	JUNCTION	89.20	1.00	0.0
CB-055-056	JUNCTION	86.92	2.60	0.0
CB-057-058	JUNCTION	86.89	2.60	0.0
CB-059-060	JUNCTION	86.64	2.60	0.0
CB-061-062	JUNCTION	86.42	2.60	0.0
CB-063-064	JUNCTION	86.25	2.60	0.0
CB-065-066	JUNCTION	86.25	2.60	0.0
CB-067-068	JUNCTION	86.27	2.60	0.0
CB-069-070	JUNCTION	86.61	2.60	0.0
CB-071-072	JUNCTION	89.54	1.00	0.0
CB-073-074	JUNCTION	89.07	1.00	0.0
CB-075-076	JUNCTION	88.62	1.00	0.0
CB-077-078	JUNCTION	88.64	1.00	0.0
CB-079-080	JUNCTION	89.89	1.00	0.0
CB-081-082	JUNCTION	91.12	1.00	0.0
CB-083-084	JUNCTION	90.17	2.60	0.0
CB-085-086	JUNCTION	91.66	1.00	0.0
CB-087-088	JUNCTION	90.88	1.00	0.0
CB-089-090	JUNCTION	90.19	1.00	0.0
CB-091-092	JUNCTION	89.53	1.00	0.0
CB-093-094	JUNCTION	88.42	1.00	0.0
CB-095-096	JUNCTION	86.55	1.00	0.0
CB-097-098	JUNCTION	85.11	1.00	0.0
CB-099-100	JUNCTION	83.54	1.00	0.0
CB-101-102	JUNCTION	84.00	1.00	0.0
CB-103-104	JUNCTION	88.27	2.60	0.0
CB-105-106	JUNCTION	88.65	2.60	0.0
CB-107-108	JUNCTION	90.89	1.00	0.0
CB-109-110	JUNCTION	89.08	2.60	0.0
CB-111-112	JUNCTION	88.77	2.60	0.0
CB-113-114	JUNCTION	88.56	2.60	0.0
CB-115-116	JUNCTION	89.61	1.00	0.0
CB-117-118	JUNCTION	88.50	1.00	0.0
CB-119-120	JUNCTION	87.36	1.00	0.0
CB-121-122	JUNCTION	86.00	1.00	0.0
CB-123-124	JUNCTION	88.27	2.60	0.0
CB-125-126	JUNCTION	89.51	1.00	0.0
CB-127-128	JUNCTION	87.27	2.60	0.0
CB-129	JUNCTION	88.92	1.00	0.0
CB-130-131	JUNCTION	86.62	2.60	0.0
CB-132-133	JUNCTION	86.42	2.60	0.0
CB-134-135	JUNCTION	86.27	2.60	0.0
CB-136-137	JUNCTION	85.67	2.60	0.0
CB-138-139	JUNCTION	88.11	2.60	0.0
CB-140-141	JUNCTION	88.22	2.60	0.0
CB-142-143	JUNCTION	87.63	2.60	0.0
CB-144-145	JUNCTION	88.17	2.60	0.0
CB-146-147	JUNCTION	88.57	2.60	0.0
CB-148-149	JUNCTION	88.69	2.60	0.0
HP-W	JUNCTION	90.33	1.00	0.0
HW1_(STM-OS)	JUNCTION	88.83	1.07	0.0
OS-1_(STM-OS)	JUNCTION	88.37	2.64	0.0
OS-2_(STM-OS)	JUNCTION	88.19	2.34	0.0
OS-3_(STM-OS)	JUNCTION	88.03	2.98	0.0
OS-4_(STM-OS)	JUNCTION	87.96	3.05	0.0
OS-5_(STM-OS)	JUNCTION	87.71	2.49	0.0
OS-6_(STM-OS)	JUNCTION	86.37	3.96	0.0
OVF-02	JUNCTION	85.10	1.00	0.0
OVF-03	JUNCTION	84.81	1.00	0.0
OVF-04	JUNCTION	84.32	1.00	0.0
OVF-05	JUNCTION	84.00	1.00	0.0
OVF-06	JUNCTION	82.40	1.00	0.0
POND-OUT	JUNCTION	77.90	4.40	0.0
RYCB01	JUNCTION	90.45	1.95	0.0
RYCB02	JUNCTION	90.14	2.54	0.0
RYCB03	JUNCTION	89.91	2.17	0.0
RYCB04	JUNCTION	88.67	2.08	0.0
RYCB05	JUNCTION	86.60	1.95	0.0
RYCB06	JUNCTION	88.95	1.95	0.0
RYCB07	JUNCTION	86.80	1.95	0.0
RYCB08	JUNCTION	89.11	1.30	0.0
RYCB09	JUNCTION	88.75	1.30	0.0
RYCB10	JUNCTION	87.22	2.04	0.0
RYCB11	JUNCTION	87.25	2.17	0.0
RYCB12	JUNCTION	89.07	1.30	0.0
RYCB13	JUNCTION	87.77	1.30	0.0
RYCB14	JUNCTION	86.79	1.30	0.0
RYCB15	JUNCTION	86.91	1.30	0.0
RYCB16	JUNCTION	85.96	2.11	0.0
RYCB17	JUNCTION	87.50	2.17	0.0
RYCB18	JUNCTION	88.95	1.93	0.0
RYCB19	JUNCTION	88.00	2.20	0.0
RYCB20	JUNCTION	89.71	1.30	0.0
RYCB21	JUNCTION	89.17	0.87	0.0
RYCB22	JUNCTION	85.79	2.05	0.0
RYCB23	JUNCTION	87.70	1.30	0.0
RYCB24	JUNCTION	87.15	1.75	0.0
RYCB25	JUNCTION	89.00	1.30	0.0
RYCB26	JUNCTION	86.61	2.20	0.0

RYCB27	JUNCTION	88.71	2.23	0.0
RYCB28	JUNCTION	89.76	1.30	0.0
RYCB29	JUNCTION	88.52	2.17	0.0
RYCB30	JUNCTION	88.13	2.29	0.0
RYCB31	JUNCTION	87.75	1.07	0.0
RYCB32	JUNCTION	85.75	2.05	0.0
RYCB33	JUNCTION	85.93	1.30	0.0
RYCB34	JUNCTION	88.32	1.95	0.0
RYCB35	JUNCTION	88.10	1.79	0.0
RYCB36	JUNCTION	88.02	2.78	0.0
RYCB38	JUNCTION	87.58	2.74	0.0
RYCB39	JUNCTION	89.12	1.46	0.0
RYCB40	JUNCTION	87.96	2.24	0.0
OUT-EXT	OUTFALL	86.47	0.90	0.0
OUT-MAIN	OUTFALL	77.80	1.00	0.0
POND-LOWER	STORAGE	78.00	4.30	0.0
POND-UPPER	STORAGE	80.50	4.50	0.0
SU-031	STORAGE	85.99	1.75	0.0
SU-090	STORAGE	86.81	1.75	0.0
SU-098	STORAGE	86.04	1.75	0.0
SU-104B	STORAGE	84.81	1.75	0.0
SU-108	STORAGE	86.00	1.75	0.0
SU-109	STORAGE	85.75	1.75	0.0
SU-110B	STORAGE	84.00	1.75	0.0
SU-111	STORAGE	85.14	1.75	0.0
SU-112	STORAGE	82.98	1.75	0.0
SU-114	STORAGE	82.66	1.75	0.0
SU-118	STORAGE	85.99	1.75	0.0
SU-120	STORAGE	84.59	1.75	0.0
SU-122	STORAGE	80.88	1.75	0.0
SU-123	STORAGE	80.88	1.75	0.0

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
1_(STM)	1314_(STM)	1312_(STM)	CONDUIT	68.4	0.2339	0.0130
2_(STM)	1312_(STM)	1310_(STM)	CONDUIT	72.0	0.2402	0.0130
3_(1)_(STM)	1310_(STM)	1308_(STM)	CONDUIT	24.6	0.1507	0.0130
3_(10)_(STM)	1212_(STM)	1214_(STM)	CONDUIT	77.0	0.8574	0.0130
3_(100)_(STM)	1218_(STM)	POND-UPPER	CONDUIT	12.9	0.1550	0.0130
3_(11)_(STM)	1210_(STM)	1212_(STM)	CONDUIT	15.2	0.8539	0.0130
3_(12)_(STM)	1208_(STM)	1210_(STM)	CONDUIT	29.0	0.6548	0.0130
3_(13)_(STM)	1206_(STM)	1208_(STM)	CONDUIT	41.2	0.7038	0.0130
3_(14)_(STM)	1204_(STM)	1206_(STM)	CONDUIT	118.5	0.6074	0.0130
3_(15)_(STM)	1202_(STM)	1204_(STM)	CONDUIT	101.6	0.6888	0.0130
3_(16)_(STM)	1200_(STM)	1202_(STM)	CONDUIT	101.0	0.5246	0.0130
3_(2)_(1)_(STM)	1306_(STM)	1304_(STM)	CONDUIT	44.0	0.1227	0.0130
3_(2)_(STM)	1308_(STM)	1306_(STM)	CONDUIT	35.1	0.1083	0.0130
3_(24)_(STM)	212_(STM)	302_(STM)	CONDUIT	113.2	0.3799	0.0130
3_(25)_(1)_(STM)	300_(STM)	302_(STM)	CONDUIT	45.9	0.4506	0.0130
3_(26)_(1)_(STM)	304_(STM)	306_(STM)	CONDUIT	58.8	0.6461	0.0130
3_(26)_(STM)	302_(STM)	304_(STM)	CONDUIT	61.8	0.6503	0.0130
3_(27)_(STM)	306_(STM)	1204_(STM)	CONDUIT	81.5	0.5031	0.0130
3_(28)_(STM)	308_(STM)	310_(STM)	CONDUIT	108.3	0.3149	0.0130
3_(29)_(STM)	310_(STM)	312_(STM)	CONDUIT	52.9	0.3212	0.0130
3_(3)_(STM)	1304_(STM)	1302_(STM)	CONDUIT	44.8	0.1338	0.0130
3_(30)_(STM)	312_(STM)	314_(STM)	CONDUIT	59.3	0.2869	0.0130
3_(31)_(STM)	314_(STM)	316_(STM)	CONDUIT	14.1	0.2834	0.0130
3_(32)_(STM)	316_(STM)	1210_(STM)	CONDUIT	72.2	0.7064	0.0130
3_(33)_(STM)	100_(STM)	102_(STM)	CONDUIT	64.9	0.3083	0.0130
3_(34)_(STM)	102_(STM)	104_(STM)	CONDUIT	79.0	0.3545	0.0130
3_(35)_(STM)	106_(STM)	104_(STM)	CONDUIT	38.6	0.4406	0.0130
3_(36)_(STM)	500_(STM)	502_(STM)	CONDUIT	67.2	0.4403	0.0130
3_(37)_(STM)	502_(STM)	504_(STM)	CONDUIT	96.3	0.2493	0.0130
3_(38)_(STM)	504_(STM)	506_(STM)	CONDUIT	12.2	0.3282	0.0130
3_(39)_(STM)	506_(STM)	402_(STM)	CONDUIT	70.3	0.2306	0.0130
3_(4)_(STM)	1302_(STM)	1300_(STM)	CONDUIT	85.0	0.1177	0.0130
3_(40)_(STM)	400_(STM)	402_(STM)	CONDUIT	102.7	0.2045	0.0130
3_(41)_(STM)	104_(STM)	400_(STM)	CONDUIT	101.0	0.2475	0.0130
3_(42)_(STM)	402_(STM)	606_(STM)	CONDUIT	79.0	0.5949	0.0130
3_(44)_(STM)	600D_(STM)	600_(STM)	CONDUIT	52.4	0.7233	0.0130
3_(44A)_(STM)	804_(STM)	600D_(STM)	CONDUIT	23.6	0.7244	0.0130
3_(45)_(STM)	600_(STM)	602_(STM)	CONDUIT	68.1	0.7194	0.0130
3_(46)_(STM)	602_(STM)	604_(STM)	CONDUIT	15.4	0.7140	0.0130
3_(47)_(STM)	604_(STM)	606_(STM)	CONDUIT	90.1	0.7655	0.0130
3_(48)_(STM)	606_(STM)	608_(STM)	CONDUIT	79.7	0.1996	0.0130
3_(49)_(STM)	608_(STM)	610_(STM)	CONDUIT	9.2	0.3253	0.0130
3_(5)_(STM)	1300_(STM)	1214_(STM)	CONDUIT	91.4	0.1203	0.0130
3_(50)_(STM)	610_(STM)	612_(STM)	CONDUIT	48.5	0.2002	0.0130
3_(51)_(STM)	612_(STM)	614_(STM)	CONDUIT	12.9	0.2629	0.0130
3_(52)_(STM)	614_(STM)	616_(STM)	CONDUIT	29.4	0.2039	0.0130
3_(53)_(STM)	616_(STM)	618_(STM)	CONDUIT	85.2	0.1643	0.0130
3_(54)_(1)_(STM)	620_(STM)	906_(STM)	CONDUIT	42.1	0.1663	0.0130
3_(54)_(STM)	618_(STM)	620_(STM)	CONDUIT	38.8	0.1803	0.0130
3_(58)_(STM)	906_(STM)	1310_(STM)	CONDUIT	81.4	0.0369	0.0130
3_(6)_(STM)	1214_(STM)	1216_(STM)	CONDUIT	63.9	0.1095	0.0130
3_(61)_(STM)	902_(STM)	904_(STM)	CONDUIT	75.0	2.2000	0.0130
3_(63)_(STM)	900_(STM)	900DD_(STM)	CONDUIT	40.6	0.5668	0.0130
3_(63D)_(STM)	900DD_(STM)	902_(STM)	CONDUIT	34.6	0.5489	0.0130

3_(64)_(STM)	900_(STM)	900D_(STM)	CONDUIT	28.7	0.4352	0.0130
3_(64D)_(STM)	900D_(STM)	1000_(STM)	CONDUIT	45.3	0.3994	0.0130
3_(65)_(STM)	1000_(STM)	1002_(STM)	CONDUIT	14.7	0.4425	0.0130
3_(66)_(STM)	1002_(STM)	1004_(STM)	CONDUIT	113.7	1.5654	0.0130
3_(67)_(STM)	1004_(STM)	1004D_(STM)	CONDUIT	86.6	1.5944	0.0130
3_(67D)_(STM)	1004D_(STM)	1100_(STM)	CONDUIT	11.8	1.6094	0.0130
3_(68)_(STM)	1100_(STM)	906_(STM)	CONDUIT	85.0	0.3059	0.0130
3_(69)_(STM)	1102_(STM)	1100_(STM)	CONDUIT	62.4	0.4487	0.0130
3_(7)_(STM)	1216_(STM)	1218_(STM)	CONDUIT	25.4	0.1575	0.0130
3_(70)_(1)_(STM)	910_(STM)	912_(STM)	CONDUIT	48.3	1.8417	0.0130
3_(70)_(STM)	908_(STM)	910_(STM)	CONDUIT	81.5	1.7428	0.0130
3_(71)_(STM)	912_(STM)	914_(STM)	CONDUIT	47.4	1.7080	0.0130
3_(72)_(1)_(STM)	918_(STM)	916_(STM)	CONDUIT	66.7	0.1995	0.0130
3_(72)_(STM)	914_(STM)	916_(STM)	CONDUIT	9.1	1.8701	0.0130
3_(73)_(STM)	1412_(STM)	1220_(STM)	CONDUIT	74.7	0.3882	0.0130
3_(74)_(STM)	1410_(STM)	1412_(STM)	CONDUIT	75.1	0.4128	0.0130
3_(75)_(STM)	1408_(STM)	1410_(STM)	CONDUIT	39.7	0.4508	0.0130
3_(76)_(1)_(STM)	1404_(STM)	1406_(STM)	CONDUIT	69.2	0.5493	0.0130
3_(76)_(STM)	1406_(STM)	1408_(STM)	CONDUIT	103.3	0.3680	0.0130
3_(77)_(STM)	1402_(STM)	1404_(STM)	CONDUIT	74.0	0.2972	0.0130
3_(78)_(STM)	1400_(STM)	1402_(STM)	CONDUIT	110.1	0.2997	0.0130
3_(79)_(STM)	1500_(STM)	1404_(STM)	CONDUIT	120.0	1.6500	0.0130
3_(80)_(STM)	1502_(STM)	1404_(STM)	CONDUIT	110.5	0.3167	0.0130
3_(81)_(STM)	1604_(STM)	1400_(STM)	CONDUIT	69.9	0.4404	0.0130
3_(82)_(STM)	1606_(STM)	1604_(STM)	CONDUIT	76.6	0.4045	0.0130
3_(83)_(1)_(STM)	1600_(STM)	1602_(STM)	CONDUIT	107.9	2.5777	0.0130
3_(83)_(STM)	1602_(STM)	1400_(STM)	CONDUIT	31.5	1.9995	0.0130
3_(84)_(STM)	700_(STM)	702_(STM)	CONDUIT	86.6	1.1551	0.0130
3_(85)_(1)_(STM)	704_(STM)	616_(STM)	CONDUIT	12.1	0.4947	0.0130
3_(85)_(STM)	702_(STM)	704_(STM)	CONDUIT	67.1	0.7603	0.0130
3_(86)_(STM)	800_(STM)	900_(STM)	CONDUIT	67.1	0.3130	0.0130
3_(87)_(STM)	802_(STM)	804_(STM)	CONDUIT	57.0	1.6131	0.0130
3_(88)_(STM)	804_(STM)	806_(STM)	CONDUIT	83.8	1.4796	0.0130
3_(89)_(1)_(STM)	808_(STM)	618_(STM)	CONDUIT	6.3	0.9599	0.0130
3_(89)_(STM)	806_(STM)	808_(STM)	CONDUIT	74.3	1.5069	0.0130
3_(9)_(STM)	1220_(STM)	1222_(STM)	CONDUIT	75.8	0.1583	0.0130
3_(90)_(STM)	904_(STM)	906_(STM)	CONDUIT	71.7	2.0772	0.0130
3_(91)_(STM)	1222_(STM)	1505_(STM)	CONDUIT	30.5	0.1311	0.0130
3_(93)_(STM)	1505_(STM)	POND-LOWER	CONDUIT	8.3	1.8075	0.0130
3_(94)_(STM)	916_(STM)	920_(STM)	CONDUIT	64.5	0.1085	0.0130
3_(95)_(STM)	920_(STM)	922_(STM)	CONDUIT	65.9	0.1093	0.0130
3_(96)_(STM)	922_(STM)	POND-LOWER	CONDUIT	20.3	0.1476	0.0130
C1	CB-013-014	CB-015-016	CONDUIT	52.7	2.8259	0.0150
C10	CB-023-024	13+093	CONDUIT	30.2	-1.1586	0.0150
C100	CB-111-112	2+112	CONDUIT	37.7	-0.7956	0.0150
C101	2+112	2+089	CONDUIT	17.9	0.9508	0.0150
C102	2+089	CB-123-124	CONDUIT	35.5	1.7770	0.0150
C103	2+089	CB-113-114	CONDUIT	39.9	0.8518	0.0150
C104	12+000	CB-001-002	CONDUIT	26.7	0.4499	0.0150
C105	CB-001-002	12+040	CONDUIT	12.5	-1.1232	0.0150
C106	CB-113-114	12+040	CONDUIT	47.3	-0.6345	0.0150
C107	12+040	CB-003-004	CONDUIT	72.1	1.3316	0.0150
C108	HP-W	CB-115-116	CONDUIT	53.7	1.3421	0.0150
C109	CB-121-122	OVF-02	CONDUIT	15.5	5.8268	0.0150
C11	13+171	CB-023-024	CONDUIT	47.0	1.1927	0.0150
C110	CB-005-006	12+242	CONDUIT	20.9	-0.9571	0.0150
C111	12+242	CB-007-008	CONDUIT	43.7	1.0293	0.0150
C112	CB-047-048	12+242	CONDUIT	43.5	-0.3451	0.0150
C113	CB-009-010	12+384	CONDUIT	18.0	-1.3853	0.0150
C114	CB-136-137	12+428	CONDUIT	28.0	-1.0714	0.0150
C115	12+384	12+428	CONDUIT	36.0	1.8044	0.0150
C116	12+428	CB-011-012	CONDUIT	69.0	1.4487	0.0150
C117	CB-021-022	12+523	CONDUIT	36.0	-0.5550	0.0150
C118	CB-011-012	12+523	CONDUIT	34.5	-0.8108	0.0150
C119	12+523	CB-013-014	CONDUIT	17.9	2.5764	0.0150
C12	13+251	CB-025-026	CONDUIT	60.3	0.7465	0.0150
C120	CB-037-038	9+261	CONDUIT	65.3	1.7300	0.0150
C121	9+261	CB-039-040	CONDUIT	35.3	1.1599	0.0150
C122	CB-065-066	9+261	CONDUIT	26.9	-1.1160	0.0150
C123	CB-067-068	9+261	CONDUIT	37.8	-0.7416	0.0150
C124	CB-039-040	9+342	CONDUIT	48.2	-0.5191	0.0150
C125	CB-029-030	9+342	CONDUIT	32.5	-1.0764	0.0150
C126	9+342	CB-027-028	CONDUIT	58.6	0.8532	0.0150
C127	9+347	CB-095-096	CONDUIT	71.8	2.0046	0.0150
C128	CB-127-128	1+274	CONDUIT	21.5	-0.9288	0.0150
C129	CB-045-046	1+274	CONDUIT	93.9	0.7347	0.0150
C13	CB-025-026	13+171	CONDUIT	22.5	-1.5539	0.0150
C130	1+274	CB-047-048	CONDUIT	38.8	1.2876	0.0150
C131	1+274	CB-130-131	CONDUIT	69.1	1.2294	0.0150
C132	CB-099-100	916_(STM)	CONDUIT	7.7	20.5403	0.0150
C133	POND-OUT	OUT-MAIN	CONDUIT	5.0	2.0004	0.0350
C134	OVF-05	OVF-06	CONDUIT	375.8	0.4257	0.0350
C135	CB-117-118	CB-119-120	CONDUIT	81.9	1.3925	0.0150
C136	CB-119-120	CB-121-122	CONDUIT	83.2	1.6358	0.0150
C137	CB-015-016	POND-UPPER	CONDUIT	72.9	1.5085	0.0150
C138	OVF-06	POND-LOWER	CONDUIT	15.0	0.6667	0.0350
C139	OVF-03	OVF-04	CONDUIT	84.4	0.5803	0.0350
C14	CB-027-028	13+251	CONDUIT	28.4	-1.0570	0.0150
C140	OVF-04	OVF-05	CONDUIT	54.0	0.5924	0.0350
C141	CB-129	1+274	CONDUIT	12.6	-1.1946	0.0150
C15	3+447	CB-136-137	CONDUIT	51.8	1.3506	0.0150
C16	CB-134-135	3+447	CONDUIT	7.8	-1.2856	0.0150

C17	CB-132-133	3+395	CONDUIT	30.0	-1.0000	0.0150
C18	3+395	CB-134-135	CONDUIT	40.2	1.1189	0.0150
C19	CB-130-131	3+313	CONDUIT	27.9	-1.0734	0.0150
C2	9+713	CB-101-102	CONDUIT	46.8	0.2137	0.0150
C20	3+313	CB-132-133	CONDUIT	50.3	0.9938	0.0150
C21	10+091	CB-081-082	CONDUIT	54.9	1.7300	0.0150
C22	CB-081-082	CB-079-080	CONDUIT	73.5	1.6746	0.0150
C23	CB-079-080	CB-077-078	CONDUIT	71.1	1.7588	0.0150
C24	CB-083-084	10+091	CONDUIT	25.2	-1.1918	0.0150
C25	CB-033-034	CB-035-036	CONDUIT	64.9	2.0507	0.0150
C26	CB-035-036	CB-037-038	CONDUIT	59.8	1.8726	0.0150
C27	13+490	CB-031-032	CONDUIT	50.5	0.9510	0.0150
C28	CB-031-032	13+413	CONDUIT	29.1	-1.2041	0.0150
C29	13+413	CB-029-030	CONDUIT	36.0	1.3344	0.0150
C3	12+600	CB-017-018	CONDUIT	76.6	2.8719	0.0150
C30	CB-089-090	CB-091-092	CONDUIT	50.0	1.3192	0.0150
C31	CB-091-092	CB-093-094	CONDUIT	47.2	2.3547	0.0150
C32	CB-071-072	CB-073-074	CONDUIT	51.1	0.9196	0.0150
C33	CB-073-074	CB-075-076	CONDUIT	60.4	0.7452	0.0150
C34	6+345	CB-059-060	CONDUIT	33.2	1.1152	0.0150
C35	CB-059-060	6+410	CONDUIT	34.4	-0.7270	0.0150
C36	CB-055-056	6+306	CONDUIT	18.3	-0.8201	0.0150
C37	6+306	CB-057-058	CONDUIT	26.1	0.6887	0.0150
C38	CB-057-058	6+345	CONDUIT	17.7	-0.6769	0.0150
C39	CB-051-052	CB-053-054	CONDUIT	106.0	0.3018	0.0150
C4	CB-017-018	CB-019-020	CONDUIT	44.7	0.6041	0.0150
C40	CB-085-086	CB-087-088	CONDUIT	46.9	1.6647	0.0150
C41	11+162	CB-069-070	CONDUIT	24.4	1.8837	0.0150
C42	5+111	CB-144-145	CONDUIT	64.6	1.0830	0.0150
C43	CB-146-147	5+111	CONDUIT	26.5	-1.1326	0.0150
C44	5+210	CB-146-147	CONDUIT	68.6	1.0201	0.0150
C45	5+210	CB-148-149	CONDUIT	65.0	0.8929	0.0150
C46	1+000	CB-041-042	CONDUIT	46.6	1.2874	0.0150
C47	CB-140-141	4+112	CONDUIT	30.5	-0.9850	0.0150
C48	4+112	CB-138-139	CONDUIT	70.7	0.5797	0.0150
C49	CB-007-008	12+310	CONDUIT	20.2	-1.2401	0.0150
C5	CB-101-102	CB-099-100	CONDUIT	67.2	0.6844	0.0150
C50	12+310	CB-009-010	CONDUIT	54.9	1.0014	0.0150
C51	2+335	CB-107-108	CONDUIT	48.8	0.5738	0.0150
C52	CB-107-108	CB-105-106	CONDUIT	83.4	0.7671	0.0150
C53	CB-105-106	2+516	CONDUIT	47.7	-0.5447	0.0150
C54	2+516	CB-103-104	CONDUIT	72.2	0.8868	0.0150
C55	2+335	CB-109-110	CONDUIT	68.9	0.7112	0.0150
C56	CB-109-110	2+218	CONDUIT	37.7	-0.6630	0.0150
C57	2+218	CB-111-112	CONDUIT	67.9	0.8253	0.0150
C58	CB-125-126	CB-127-128	CONDUIT	52.3	1.2245	0.0150

C59	CB-003-004	12+134	CONDUIT	21.4	-0.9365	0.0150
C6	CB-097-098	CB-099-100	CONDUIT	57.8	2.7191	0.0150
C60	12+134	CB-005-006	CONDUIT	92.2	1.2795	0.0150
C61	CB-115-116	CB-117-118	CONDUIT	66.8	1.6627	0.0150
C62	OVF-02	OVF-03	CONDUIT	48.7	0.5951	0.0350
C63	6+088	CB-051-052	CONDUIT	68.4	0.8773	0.0150
C64	6+088	CB-071-072	CONDUIT	81.6	0.7105	0.0150
C65	CB-049-050	6+088	CONDUIT	9.2	0.8695	0.0150
C66	6+505	CB-063-064	CONDUIT	44.9	0.9363	0.0150
C67	CB-093-094	CB-063-064	CONDUIT	22.1	2.5851	0.0150
C68	8+150	CB-049-050	CONDUIT	70.1	0.5281	0.0150
C69	CB-087-088	8+150	CONDUIT	13.8	2.2481	0.0150
C7	CB-019-020	POND-LOWER	CONDUIT	108.7	0.0920	0.0150
C70	8+150	CB-089-090	CONDUIT	61.3	0.6203	0.0150
C71	6+410	CB-061-062	CONDUIT	60.6	0.7752	0.0150
C72	CB-075-076	CB-061-062	CONDUIT	24.1	2.4924	0.0150
C73	CB-061-062	6+505	CONDUIT	37.8	-0.6620	0.0150
C74	CB-063-064	6+572	CONDUIT	17.5	-1.9979	0.0150
C75	6+572	CB-065-066	CONDUIT	20.6	1.7009	0.0150
C76	CB-077-078	11+094	CONDUIT	18.3	1.2545	0.0150
C77	CB-069-070	11+094	CONDUIT	39.2	-0.5108	0.0150
C78	11+094	CB-067-068	CONDUIT	39.8	1.3577	0.0150
C79	9+040	CB-033-034	CONDUIT	31.1	2.5376	0.0150
C8	CB-095-096	CB-097-098	CONDUIT	83.1	1.7333	0.0150
C80	9+040	CB-085-086	CONDUIT	74.5	1.1552	0.0150
C81	9+040	CB-083-084	CONDUIT	48.1	1.5588	0.0150
C82	9+000	9+040	CONDUIT	44.2	1.8111	0.0150
C83	6+278	CB-055-056	CONDUIT	9.7	2.6900	0.0150
C84	CB-053-054	6+278	CONDUIT	26.2	1.6020	0.0150
C85	CB-142-143	4+270	CONDUIT	16.1	-0.8676	0.0150
C86	4+270	6+278	CONDUIT	23.4	2.5226	0.0150
C87	CB-148-149	5+285	CONDUIT	7.3	-0.9535	0.0150
C88	5+285	4+213	CONDUIT	7.2	1.7984	0.0150
C89	4+213	CB-142-143	CONDUIT	39.1	2.5580	0.0150
C9	13+093	CB-021-022	CONDUIT	49.6	1.6752	0.0150
C90	4+213	CB-140-141	CONDUIT	61.0	0.6724	0.0150
C91	CB-041-042	1+070	CONDUIT	29.0	-0.8612	0.0150
C92	CB-144-145	1+070	CONDUIT	29.7	-1.1801	0.0150
C93	1+070	CB-043-044	CONDUIT	48.7	0.8414	0.0150
C94	CB-043-044	1+150	CONDUIT	29.4	-1.0204	0.0150
C95	CB-138-139	1+150	CONDUIT	34.7	-0.8640	0.0150
C96	1+150	CB-045-046	CONDUIT	31.2	0.8017	0.0150
C97	CB-103-104	3+088	CONDUIT	44.8	-0.6699	0.0150
C98	CB-123-124	3+088	CONDUIT	39.8	-0.7539	0.0150
C99	3+088	CB-125-126	CONDUIT	53.9	1.2246	0.0150
RYCB01-MAJOR	RYCB01	CB-085-086	CONDUIT	43.7	1.0068	0.0350

RYCB02-MAJOR	RYCB02	CB-083-084	CONDUIT	50.0	1.2209	0.0350
RYCB03-MAJOR	RYCB03	CB-033-034	CONDUIT	8.9	0.5620	0.0350
RYCB04-MAJOR	RYCB04	CB-035-036	CONDUIT	39.8	0.1257	0.0350
RYCB05-MAJOR	RYCB05	CB-067-068	CONDUIT	13.9	2.7406	0.0350
RYCB06-MAJOR	RYCB06	CB-035-036	CONDUIT	46.2	0.4325	0.0350
RYCB07-MAJOR	RYCB07	6+572	CONDUIT	14.4	1.7404	0.0350
RYCB08-MAJOR	RYCB08	CB-091-092	CONDUIT	67.5	0.8591	0.0350
RYCB09-MAJOR	RYCB09	CB-091-092	CONDUIT	45.0	0.4893	0.0350
RYCB10-MAJOR	RYCB10	CB-075-076	CONDUIT	31.6	1.0771	0.0350
RYCB11-MAJOR	RYCB11	CB-093-094	CONDUIT	26.3	2.6659	0.0350
RYCB12-MAJOR	RYCB12	CB-053-054	CONDUIT	66.7	1.3042	0.0350
RYCB13-MAJOR	RYCB13	CB-075-076	CONDUIT	17.3	0.8675	0.0350
RYCB14-MAJOR	RYCB14	CB-029-030	CONDUIT	46.3	0.3242	0.0350
RYCB15-MAJOR	RYCB15	CB-027-028	CONDUIT	54.4	0.7722	0.0350
RYCB16-MAJOR	RYCB16	CB-025-026	CONDUIT	57.0	0.7538	0.0350
RYCB17-MAJOR	RYCB17	CB-142-143	CONDUIT	13.9	1.0083	0.0350
RYCB18-MAJOR	RYCB18	CB-146-147	CONDUIT	69.4	0.5906	0.0350
RYCB19-MAJOR	RYCB19	CB-144-145	CONDUIT	15.8	0.8247	0.0350
RYCB20-MAJOR	RYCB20	CB-148-149	CONDUIT	36.3	1.1568	0.0350
RYCB21-MAJOR	RYCB21	CB-138-139	CONDUIT	14.1	0.2127	0.0350
RYCB22-MAJOR	RYCB22	CB-136-137	CONDUIT	21.4	1.2607	0.0350
RYCB23-MAJOR	RYCB23	CB-047-048	CONDUIT	9.3	1.3933	0.0350
RYCB24-MAJOR	RYCB24	CB-047-048	CONDUIT	17.2	0.1744	0.0350
RYCB25-MAJOR	RYCB25	CB-003-004	CONDUIT	38.1	1.3108	0.0350
RYCB26-MAJOR	RYCB26	CB-113-114	CONDUIT	42.8	0.8184	0.0350
RYCB27-MAJOR	RYCB27	CB-111-112	CONDUIT	42.7	0.6325	0.0350
RYCB28-MAJOR	RYCB28	CB-109-110	CONDUIT	43.0	0.1859	0.0350
RYCB29-MAJOR	RYCB29	CB-105-106	CONDUIT	34.7	0.4035	0.0350
RYCB30-MAJOR	RYCB30	CB-103-104	CONDUIT	35.7	0.6999	0.0350
RYCB31-MAJOR	RYCB31	CB-117-118	CONDUIT	49.4	0.0405	0.0350
RYCB32-MAJOR	RYCB32	CB-119-120	CONDUIT	62.2	0.2252	0.0350
RYCB33-MAJOR	RYCB33	CB-121-122	CONDUIT	62.7	1.4842	0.0350
RYCB34-MAJOR	RYCB34	CB-003-004	CONDUIT	35.3	1.3305	0.0350
RYCB35-MAJOR	RYCB35	CB-003-004	CONDUIT	58.0	0.1551	0.0350
RYCB36-MAJOR	RYCB36	CB-049-050	CONDUIT	39.0	0.7687	0.0350
RYCB38-MAJOR	RYCB38	CB-051-052	CONDUIT	16.7	3.0033	0.0350
RYCB40-MAJOR	RYCB40	CB-144-145	CONDUIT	16.4	0.7917	0.0350
STM-1_(STM)	200_(STM)	1200_(STM)	CONDUIT	81.5	0.4503	0.0130
STM-2_(STM)	202_(STM)	200_(STM)	CONDUIT	113.3	0.4502	0.0130
STM-2-10_(STM-OS)	OS-2_(STM-OS)	OS-3_(STM-OS)	CONDUIT	38.1	0.3410	0.0130
STM-2-11_(STM-OS)	OS-3_(STM-OS)	OS-4_(STM-OS)	CONDUIT	10.6	0.3762	0.0130
STM-2-12_(STM-OS)	OS-4_(STM-OS)	OS-5_(STM-OS)	CONDUIT	71.4	0.3503	0.0130
STM-2-13_(STM-OS)	OS-5_(STM-OS)	OS-6_(STM-OS)	CONDUIT	12.4	0.3225	0.0130
STM-2-15_(STM-OS)	OS-6_(STM-OS)	OUT-EXT	CONDUIT	57.6	0.3472	0.0130
STM-2-8_(STM-OS)	HW1_(STM-OS)	OS-1_(STM-OS)	CONDUIT	35.7	0.3641	0.0130
STM-2-9_(STM-OS)	OS-1_(STM-OS)	OS-2_(STM-OS)	CONDUIT	33.8	0.3550	0.0130

STM-3_(STM)	204_(STM)	202_(STM)	CONDUIT	113.3	0.4493	0.0130
STM-4_(STM)	206_(STM)	204_(STM)	CONDUIT	12.5	0.6418	0.0130
STM-5_(STM)	206_(STM)	20A_(STM)	CONDUIT	49.8	0.4919	0.0130
STM-5A_(STM)	20A_(STM)	208_(STM)	CONDUIT	14.6	0.5128	0.0130
STM-6_(STM)	208_(STM)	210_(STM)	CONDUIT	12.4	0.4037	0.0130
STM-7_(STM)	210_(STM)	212_(STM)	CONDUIT	113.2	0.3799	0.0130
CB-003-PIPE	CB-003-004	1200_(STM)	ORIFICE			
CB-004-PIPE	CB-003-004	1200_(STM)	ORIFICE			
CB-005-PIPE	CB-005-006	1202_(STM)	ORIFICE			
CB-006-PIPE	CB-005-006	1202_(STM)	ORIFICE			
CB-007-PIPE	CB-007-008	1204_(STM)	ORIFICE			
CB-008-PIPE	CB-007-008	1204_(STM)	ORIFICE			
CB-009-PIPE	CB-009-010	1206_(STM)	ORIFICE			
CB-010-PIPE	CB-009-010	1206_(STM)	ORIFICE			
CB-011-PIPE	CB-011-012	1212_(STM)	ORIFICE			
CB-012-PIPE	CB-011-012	1212_(STM)	ORIFICE			
CB-021-PIPE	CB-021-022	1300_(STM)	ORIFICE			
CB-022-PIPE	CB-021-022	1300_(STM)	ORIFICE			
CB-023-PIPE	CB-023-024	1302_(STM)	ORIFICE			
CB-024-PIPE	CB-023-024	1302_(STM)	ORIFICE			
CB-025-PIPE	CB-025-026	1304_(STM)	ORIFICE			
CB-026-PIPE	CB-025-026	1304_(STM)	ORIFICE			
CB-027-PIPE	CB-027-028	1308_(STM)	ORIFICE			
CB-028-PIPE	CB-027-028	1308_(STM)	ORIFICE			
CB-029-PIPE	CB-029-030	1312_(STM)	ORIFICE			
CB-030-PIPE	CB-029-030	1312_(STM)	ORIFICE			
CB-031-PIPE	CB-031-032	1314_(STM)	ORIFICE			
CB-032-PIPE	CB-031-032	1314_(STM)	ORIFICE			
CB-039-PIPE	CB-039-040	906_(STM)	ORIFICE			
CB-040-PIPE	CB-039-040	906_(STM)	ORIFICE			
CB-041-PIPE	CB-041-042	100_(STM)	ORIFICE			
CB-042-PIPE	CB-041-042	100_(STM)	ORIFICE			
CB-043-PIPE	CB-043-044	102_(STM)	ORIFICE			
CB-044-PIPE	CB-043-044	102_(STM)	ORIFICE			
CB-047-PIPE	CB-047-048	306_(STM)	ORIFICE			
CB-048-PIPE	CB-047-048	306_(STM)	ORIFICE			
CB-055-PIPE	CB-055-056	606_(STM)	ORIFICE			
CB-056-PIPE	CB-055-056	606_(STM)	ORIFICE			
CB-057-PIPE	CB-057-058	606_(STM)	ORIFICE			
CB-058-PIPE	CB-057-058	606_(STM)	ORIFICE			
CB-059-PIPE	CB-059-060	610_(STM)	ORIFICE			
CB-060-PIPE	CB-059-060	610_(STM)	ORIFICE			
CB-061-PIPE	CB-061-062	616_(STM)	ORIFICE			
CB-062-PIPE	CB-061-062	616_(STM)	ORIFICE			
CB-063-PIPE	CB-063-064	618_(STM)	ORIFICE			
CB-064-PIPE	CB-063-064	618_(STM)	ORIFICE			

CB-065-PIPE	CB-065-066	620_(STM)	ORIFICE
CB-066-PIPE	CB-065-066	620_(STM)	ORIFICE
CB-067-PIPE	CB-067-068	1100_(STM)	ORIFICE
CB-068-PIPE	CB-067-068	1100_(STM)	ORIFICE
CB-069-PIPE	CB-069-070	1102_(STM)	ORIFICE
CB-070-PIPE	CB-069-070	1102_(STM)	ORIFICE
CB-083-PIPE	CB-083-084	900D_(STM)	ORIFICE
CB-084-PIPE	CB-083-084	900D_(STM)	ORIFICE
CB-103-PIPE	CB-103-104	212_(STM)	ORIFICE
CB-104-PIPE	CB-103-104	212_(STM)	ORIFICE
CB-105-PIPE	CB-105-106	210_(STM)	ORIFICE
CB-106-PIPE	CB-105-106	210_(STM)	ORIFICE
CB-109-PIPE	CB-109-110	204_(STM)	ORIFICE
CB-110-PIPE	CB-109-110	204_(STM)	ORIFICE
CB-111-PIPE	CB-111-112	202_(STM)	ORIFICE
CB-112-PIPE	CB-111-112	202_(STM)	ORIFICE
CB-113-PIPE	CB-113-114	200_(STM)	ORIFICE
CB-114-PIPE	CB-113-114	200_(STM)	ORIFICE
CB-123-PIPE	CB-123-124	300_(STM)	ORIFICE
CB-124-PIPE	CB-123-124	300_(STM)	ORIFICE
CB-127-PIPE	CB-127-128	304_(STM)	ORIFICE
CB-128-PIPE	CB-127-128	304_(STM)	ORIFICE
CB-130-PIPE	CB-130-131	308_(STM)	ORIFICE
CB-131-PIPE	CB-130-131	308_(STM)	ORIFICE
CB-132-PIPE	CB-132-133	310_(STM)	ORIFICE
CB-133-PIPE	CB-132-133	310_(STM)	ORIFICE
CB-134-PIPE	CB-134-135	312_(STM)	ORIFICE
CB-135-PIPE	CB-134-135	312_(STM)	ORIFICE
CB-136-PIPE	CB-136-137	316_(STM)	ORIFICE
CB-137-PIPE	CB-136-137	316_(STM)	ORIFICE
CB-138-PIPE	CB-138-139	104_(STM)	ORIFICE
CB-139-PIPE	CB-138-139	104_(STM)	ORIFICE
CB-140-PIPE	CB-140-141	400_(STM)	ORIFICE
CB-141-PIPE	CB-140-141	400_(STM)	ORIFICE
CB-142-PIPE	CB-142-143	402_(STM)	ORIFICE
CB-143-PIPE	CB-142-143	402_(STM)	ORIFICE
CB-144-PIPE	CB-144-145	500_(STM)	ORIFICE
CB-145-PIPE	CB-144-145	500_(STM)	ORIFICE
CB-146-PIPE	CB-146-147	502_(STM)	ORIFICE
CB-147-PIPE	CB-146-147	502_(STM)	ORIFICE
CB-148-PIPE	CB-148-149	506_(STM)	ORIFICE
CB-149-PIPE	CB-148-149	506_(STM)	ORIFICE
LOWER-OUT1	POND-LOWER	POND-OUT	ORIFICE
LOWER-OUT2	POND-LOWER	POND-OUT	ORIFICE
OR-SU-031	SU-031	1212_(STM)	ORIFICE
OR-SU-090	SU-090	1314_(STM)	ORIFICE
OR-SU-098	SU-098	1300_(STM)	ORIFICE
OR-SU-104B	SU-104B	OVF-03	ORIFICE
OR-SU-108	SU-108	1400_(STM)	ORIFICE
OR-SU-109	SU-109	1500_(STM)	ORIFICE
OR-SU-110B	SU-110B	OVF-05	ORIFICE
OR-SU-111	SU-111	1406_(STM)	ORIFICE
OR-SU-112	SU-112	1410_(STM)	ORIFICE
OR-SU-114	SU-114	1220_(STM)	ORIFICE
OR-SU-118	SU-118	908_(STM)	ORIFICE
OR-SU-120	SU-120	910_(STM)	ORIFICE
OR-SU-122	SU-122	918_(STM)	ORIFICE
OR-SU-123	SU-123	918_(STM)	ORIFICE
RYCB01-PIPE	RYCB01	800_(STM)	ORIFICE
RYCB02-PIPE	RYCB02	900D_(STM)	ORIFICE
RYCB03-PIPE	RYCB03	900DD_(STM)	ORIFICE
RYCB04-PIPE	RYCB04	902_(STM)	ORIFICE
RYCB05-PIPE	RYCB05	1100_(STM)	ORIFICE
RYCB06-PIPE	RYCB06	902_(STM)	ORIFICE
RYCB07-PIPE	RYCB07	620_(STM)	ORIFICE
RYCB08-PIPE	RYCB08	804_(STM)	ORIFICE
RYCB09-PIPE	RYCB09	806_(STM)	ORIFICE
RYCB10-PIPE	RYCB10	702_(STM)	ORIFICE
RYCB11-PIPE	RYCB11	806_(STM)	ORIFICE
RYCB12-PIPE	RYCB12	604_(STM)	ORIFICE
RYCB13-PIPE	RYCB13	702_(STM)	ORIFICE
RYCB14-PIPE	RYCB14	1312_(STM)	ORIFICE
RYCB15-PIPE	RYCB15	1308_(STM)	ORIFICE
RYCB16-PIPE	RYCB16	1304_(STM)	ORIFICE
RYCB17-PIPE	RYCB17	402_(STM)	ORIFICE
RYCB18-PIPE	RYCB18	502_(STM)	ORIFICE
RYCB19-PIPE	RYCB19	500_(STM)	ORIFICE
RYCB20-PIPE	RYCB20	506_(STM)	ORIFICE
RYCB21-PIPE	RYCB21	104_(STM)	ORIFICE
RYCB22-PIPE	RYCB22	316_(STM)	ORIFICE
RYCB23-PIPE	RYCB23	306_(STM)	ORIFICE
RYCB24-PIPE	RYCB24	306_(STM)	ORIFICE
RYCB25-PIPE	RYCB25	1200_(STM)	ORIFICE
RYCB26-PIPE	RYCB26	200_(STM)	ORIFICE
RYCB27-PIPE	RYCB27	202_(STM)	ORIFICE
RYCB28-PIPE	RYCB28	204_(STM)	ORIFICE
RYCB29-PIPE	RYCB29	210_(STM)	ORIFICE
RYCB30-PIPE	RYCB30	212_(STM)	ORIFICE
RYCB31-PIPE	RYCB31	1602_(STM)	ORIFICE
RYCB32-PIPE	RYCB32	1606_(STM)	ORIFICE
RYCB33-PIPE	RYCB33	1606_(STM)	ORIFICE
RYCB34-PIPE	RYCB34	1200_(STM)	ORIFICE

RYCB35-PIPE	RYCB35	1202_(STM)	ORIFICE
RYCB36-PIPE	RYCB36	600_(STM)	ORIFICE
RYCB38-PIPE	RYCB38	602_(STM)	ORIFICE
RYCB39-PIPE	RYCB39	OS-1_(STM-OS)	ORIFICE
RYCB40-PIPE	RYCB40	500_(STM)	ORIFICE
UPPER-LOWER	POND-UPPER	POND-LOWER	ORIFICE
CB-001-PIPE	CB-001-002	1200_(STM)	OUTLET
CB-002-PIPE	CB-001-002	1200_(STM)	OUTLET
CB-013-PIPE	CB-013-014	1214_(STM)	OUTLET
CB-014-PIPE	CB-013-014	1214_(STM)	OUTLET
CB-015-PIPE	CB-015-016	1216_(STM)	OUTLET
CB-016-PIPE	CB-015-016	1216_(STM)	OUTLET
CB-017-PIPE	CB-017-018	1220_(STM)	OUTLET
CB-018-PIPE	CB-017-018	1220_(STM)	OUTLET
CB-019-PIPE	CB-019-020	1222_(STM)	OUTLET
CB-020-PIPE	CB-019-020	1222_(STM)	OUTLET
CB-033-PIPE	CB-033-034	900DD_(STM)	OUTLET
CB-034-PIPE	CB-033-034	900DD_(STM)	OUTLET
CB-035-PIPE	CB-035-036	902_(STM)	OUTLET
CB-036-PIPE	CB-035-036	902_(STM)	OUTLET
CB-037-PIPE	CB-037-038	904_(STM)	OUTLET
CB-038-PIPE	CB-037-038	904_(STM)	OUTLET
CB-045-PIPE	CB-045-046	106_(STM)	OUTLET
CB-046-PIPE	CB-045-046	106_(STM)	OUTLET
CB-049-PIPE	CB-049-050	600D_(STM)	OUTLET
CB-050-PIPE	CB-049-050	600D_(STM)	OUTLET
CB-051-PIPE	CB-051-052	602_(STM)	OUTLET
CB-052-PIPE	CB-051-052	602_(STM)	OUTLET
CB-053-PIPE	CB-053-054	604_(STM)	OUTLET
CB-054-PIPE	CB-053-054	604_(STM)	OUTLET
CB-071-PIPE	CB-071-072	700_(STM)	OUTLET
CB-072-PIPE	CB-071-072	700_(STM)	OUTLET
CB-073-PIPE	CB-073-074	702_(STM)	OUTLET
CB-074-PIPE	CB-073-074	702_(STM)	OUTLET
CB-075-PIPE	CB-075-076	702_(STM)	OUTLET
CB-076-PIPE	CB-075-076	702_(STM)	OUTLET
CB-077-PIPE	CB-077-078	1004D_(STM)	OUTLET
CB-078-PIPE	CB-077-078	1004D_(STM)	OUTLET
CB-079-PIPE	CB-079-080	1004_(STM)	OUTLET
CB-080-PIPE	CB-079-080	1004_(STM)	OUTLET
CB-081-PIPE	CB-081-082	1002_(STM)	OUTLET
CB-082-PIPE	CB-081-082	1002_(STM)	OUTLET
CB-085-PIPE	CB-085-086	800_(STM)	OUTLET
CB-086-PIPE	CB-085-086	800_(STM)	OUTLET
CB-087-PIPE	CB-087-088	802_(STM)	OUTLET
CB-088-PIPE	CB-087-088	802_(STM)	OUTLET
CB-089-PIPE	CB-089-090	804_(STM)	OUTLET
CB-090-PIPE	CB-089-090	804_(STM)	OUTLET
CB-091-PIPE	CB-091-092	806_(STM)	OUTLET
CB-092-PIPE	CB-091-092	806_(STM)	OUTLET
CB-093-PIPE	CB-093-094	806_(STM)	OUTLET
CB-094-PIPE	CB-093-094	806_(STM)	OUTLET
CB-095-PIPE	CB-095-096	908_(STM)	OUTLET
CB-096-PIPE	CB-095-096	908_(STM)	OUTLET
CB-097-PIPE	CB-097-098	910_(STM)	OUTLET
CB-098-PIPE	CB-097-098	910_(STM)	OUTLET
CB-099-PIPE	CB-099-100	914_(STM)	OUTLET
CB-100-PIPE	CB-099-100	914_(STM)	OUTLET
CB-101-PIPE	CB-101-102	918_(STM)	OUTLET
CB-102-PIPE	CB-101-102	918_(STM)	OUTLET
CB-107-PIPE	CB-107-108	20A_(STM)	OUTLET
CB-108-PIPE	CB-107-108	20A_(STM)	OUTLET
CB-115-PIPE	CB-115-116	1600_(STM)	OUTLET
CB-116-PIPE	CB-115-116	1600_(STM)	OUTLET
CB-117-PIPE	CB-117-118	1602_(STM)	OUTLET
CB-118-PIPE	CB-117-118	1602_(STM)	OUTLET
CB-119-PIPE	CB-119-120	1604_(STM)	OUTLET
CB-120-PIPE	CB-119-120	1604_(STM)	OUTLET
CB-121-PIPE	CB-121-122	1606_(STM)	OUTLET
CB-122-PIPE	CB-121-122	1606_(STM)	OUTLET
CB-125-PIPE	CB-125-126	302_(STM)	OUTLET
CB-126-PIPE	CB-125-126	302_(STM)	OUTLET
CB-129-PIPE	CB-129	308_(STM)	OUTLET

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
1_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	208.01
2_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	412.03
3_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2744.03
3_(10)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	2075.30
3_(100)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	4526.33
3_(11)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	2071.06
3_(12)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	1813.54
3_(13)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	1518.79
3_(14)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	1411.01
3_(15)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	697.68
3_(16)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	608.89

3_(2)_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2476.04
3_(2)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2326.03
3_(24)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	378.49
3_(25)_(1)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	39.92
3_(26)_(1)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	675.71
3_(26)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	495.19
3_(27)_(STM)	CIRCULAR	0.75	0.44	0.19	0.75	1	789.66
3_(28)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	98.40
3_(29)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	161.60
3_(3)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2586.15
3_(30)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	230.35
3_(31)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	228.96
3_(32)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	361.49
3_(33)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	97.36
3_(34)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	169.77
3_(35)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	64.19
3_(36)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	189.19
3_(37)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	306.61
3_(38)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	351.76
3_(39)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	403.65
3_(4)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2425.26
3_(40)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	380.11
3_(41)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	305.50
3_(42)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	1107.25
3_(44)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	149.12
3_(44A)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	149.23
3_(45)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	364.79
3_(46)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	518.87
3_(47)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	537.24
3_(48)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1219.92
3_(49)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1557.68
3_(5)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2452.35
3_(50)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1221.80
3_(51)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1400.27
3_(52)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1233.25
3_(53)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	1580.34
3_(54)_(1)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	2882.46
3_(54)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	1655.38
3_(58)_(STM)	CIRCULAR	1.50	1.77	0.38	1.50	1	1357.14
3_(6)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	3803.43
3_(61)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	637.92
3_(63)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	214.66
3_(63D)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	211.24
3_(64)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	115.67
3_(64D)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	110.81
3_(65)_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	116.64
3_(66)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	356.73
3_(67)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	360.03
3_(67D)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	361.72
3_(68)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	464.93
3_(69)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	64.78
3_(7)_(STM)	CIRCULAR	1.80	2.54	0.45	1.80	1	4561.83
3_(70)_(1)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	833.31
3_(70)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	376.40
3_(71)_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	802.50
3_(72)_(1)_(STM)	CIRCULAR	0.90	0.64	0.23	0.90	1	808.72
3_(72)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	1149.59
3_(73)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	2429.35
3_(74)_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	2505.04
3_(75)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1833.65
3_(76)_(1)_(STM)	CIRCULAR	0.97	0.75	0.24	0.97	1	1660.98
3_(76)_(STM)	CIRCULAR	1.05	0.87	0.26	1.05	1	1656.65
3_(77)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	782.53
3_(78)_(STM)	CIRCULAR	0.82	0.53	0.21	0.82	1	785.82
3_(79)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	552.46
3_(80)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	473.10
3_(81)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	557.90
3_(82)_(STM)	CIRCULAR	0.68	0.36	0.17	0.68	1	534.68
3_(83)_(1)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	95.48
3_(83)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	136.75
3_(84)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	103.94
3_(85)_(1)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	302.50
3_(85)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	248.62
3_(86)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	159.51
3_(87)_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	75.53
3_(88)_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	117.63
3_(89)_(1)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	279.35
3_(89)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	350.01
3_(9)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2123.42
3_(90)_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	619.87
3_(91)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1933.02
3_(93)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	7176.26
3_(94)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1758.42
3_(95)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	1764.46
3_(96)_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2051.00
C1	18mROW	1.00	15.07	0.37	18.00	1	86900.39
C10	18mROW	1.00	15.07	0.37	18.00	1	55643.98
C100	18mROW	1.00	15.07	0.37	18.00	1	46110.06
C101	18mROW	1.00	15.07	0.37	18.00	1	50407.53
C102	18mROW	1.00	15.07	0.37	18.00	1	68910.63
C103	18mROW	1.00	15.07	0.37	18.00	1	47709.23
C104	18mROW	1.00	15.07	0.37	18.00	1	34675.78

C61	18mROW	1.00	15.07	0.37	18.00	1	66657.50
C62	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5890.51
C63	18mROW	1.00	15.07	0.37	18.00	1	48419.81
C64	18mROW	1.00	15.07	0.37	18.00	1	43572.81
C65	18mROW	1.00	15.07	0.37	18.00	1	48203.73
C66	18mROW	1.00	15.07	0.37	18.00	1	50020.11
C67	18mROW	1.00	15.07	0.37	18.00	1	83115.43
C68	18mROW	1.00	15.07	0.37	18.00	1	37568.16
C69	18mROW	1.00	15.07	0.37	18.00	1	77508.84
C7	RECT_OPEN	1.00	6.00	0.75	6.00	1	10016.89
C70	18mROW	1.00	15.07	0.37	18.00	1	40713.81
C71	18mROW	1.00	15.07	0.37	18.00	1	45513.34
C72	18mROW	1.00	15.07	0.37	18.00	1	81611.38
C73	18mROW	1.00	15.07	0.37	18.00	1	42058.88
C74	18mROW	1.00	15.07	0.37	18.00	1	73068.54
C75	18mROW	1.00	15.07	0.37	18.00	1	67419.83
C76	18mROW	1.00	15.07	0.37	18.00	1	57899.34
C77	18mROW	1.00	15.07	0.37	18.00	1	36947.56
C78	18mROW	1.00	15.07	0.37	18.00	1	60234.57
C79	18mROW	1.00	15.07	0.37	18.00	1	82348.39
C8	18mROW	1.00	15.07	0.37	18.00	1	68058.00
C80	18mROW	1.00	15.07	0.37	18.00	1	55560.31
C81	18mROW	1.00	15.07	0.37	18.00	1	64541.51
C82	18mROW	1.00	15.07	0.37	18.00	1	69568.51
C83	18mROW	1.00	15.07	0.37	18.00	1	84785.06
C84	18mROW	1.00	15.07	0.37	18.00	1	65429.38
C85	18mROW	1.00	15.07	0.37	18.00	1	48151.05
C86	18mROW	1.00	15.07	0.37	18.00	1	82104.92
C87	18mROW	1.00	15.07	0.37	18.00	1	50477.36
C88	18mROW	1.00	15.07	0.37	18.00	1	69323.83
C89	18mROW	1.00	15.07	0.37	18.00	1	82678.82
C9	18mROW	1.00	15.07	0.37	18.00	1	66907.54
C90	18mROW	1.00	15.07	0.37	18.00	1	42390.59
C91	18mROW	1.00	15.07	0.37	18.00	1	47972.46
C92	18mROW	1.00	15.07	0.37	18.00	1	56156.65
C93	18mROW	1.00	15.07	0.37	18.00	1	47419.31
C94	18mROW	1.00	15.07	0.37	18.00	1	52218.98
C95	18mROW	1.00	15.07	0.37	18.00	1	48051.98
C96	18mROW	1.00	15.07	0.37	18.00	1	46287.42
C97	18mROW	1.00	15.07	0.37	18.00	1	42310.11
C98	18mROW	1.00	15.07	0.37	18.00	1	44886.30
C99	18mROW	1.00	15.07	0.37	18.00	1	57207.22
RYCB01-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	211.00
RYCB02-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	232.35
RYCB03-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	157.64
RYCB04-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	74.54
RYCB05-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	348.11
RYCB06-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	138.29
RYCB07-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	277.41
RYCB08-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	194.90
RYCB09-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	147.09
RYCB10-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	218.24
RYCB11-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	343.33
RYCB12-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	240.14
RYCB13-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	195.86
RYCB14-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	119.73
RYCB15-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	184.78
RYCB16-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	182.57
RYCB17-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	211.15
RYCB18-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	161.60
RYCB19-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	190.96
RYCB20-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	226.16
RYCB21-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	96.97
RYCB22-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	236.11
RYCB23-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	248.21
RYCB24-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	87.83
RYCB25-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	240.75
RYCB26-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	190.23
RYCB27-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	167.24
RYCB28-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	90.67
RYCB29-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	133.57
RYCB30-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	175.92
RYCB31-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	42.29
RYCB32-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	99.79
RYCB33-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	256.18
RYCB34-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	242.56
RYCB35-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	82.82
RYCB36-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	184.37
RYCB38-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	364.41
RYCB40-MAJOR	TRIANGULAR	0.30	0.27	0.14	1.80	1	187.10
STM-1_(STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	412.06
STM-2_(STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	288.57
STM-2-10_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1057.15
STM-2-11_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1110.41
STM-2-12_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1071.58
STM-2-13_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1028.13
STM-2-15_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1066.80
STM-2-8_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1092.49
STM-2-9_(STM-OS)	CIRCULAR	0.90	0.64	0.23	0.90	1	1078.73
STM-3_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	191.12
STM-4_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	47.64
STM-5_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	122.98

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STM-5A_(STM)     CIRCULAR          0.38     0.11     0.09     0.38        1   125.56
STM-6_(STM)      CIRCULAR          0.38     0.11     0.09     0.38        1   111.40
STM-7_(STM)      CIRCULAR          0.53     0.22     0.13     0.53        1   265.10


****************
Transect Summary
****************

Transect 18mROW
Area:
            0.0009     0.0035     0.0078     0.0139     0.0217
            0.0313     0.0424     0.0539     0.0664     0.0802
            0.0953     0.1117     0.1292     0.1481     0.1682
            0.1895     0.2121     0.2359     0.2597     0.2836
            0.3075     0.3313     0.3552     0.3791     0.4029
            0.4268     0.4507     0.4746     0.4984     0.5223
            0.5462     0.5701     0.5939     0.6178     0.6417
            0.6656     0.6895     0.7133     0.7372     0.7611
            0.7850     0.8089     0.8328     0.8567     0.8805
            0.9044     0.9283     0.9522     0.9761     1.0000
Hrad:
            0.0262     0.0524     0.0787     0.1049     0.1311
            0.1573     0.1962     0.2469     0.2908     0.3274
            0.3577     0.3829     0.4038     0.4212     0.4357
            0.4478     0.4579     0.4670     0.4779     0.4901
            0.5034     0.5175     0.5323     0.5476     0.5632
            0.5793     0.5956     0.6121     0.6289     0.6458
            0.6629     0.6801     0.6974     0.7148     0.7323
            0.7498     0.7674     0.7851     0.8029     0.8206
            0.8384     0.8563     0.8742     0.8921     0.9100
            0.9280     0.9460     0.9640     0.9820     1.0000
Width:
            0.0728     0.1456     0.2184     0.2912     0.3640
            0.4368     0.4733     0.4996     0.5522     0.6047
            0.6573     0.7098     0.7624     0.8149     0.8675
            0.9201     0.9726     0.9989     0.9989     0.9990
            0.9990     0.9990     0.9991     0.9991     0.9991
            0.9992     0.9992     0.9992     0.9993     0.9993
            0.9994     0.9994     0.9994     0.9995     0.9995
            0.9995     0.9996     0.9996     0.9996     0.9997
            0.9997     0.9997     0.9998     0.9998     0.9998
            0.9999     0.9999     0.9999     1.0000     1.0000

Transect 18mROW(Half)
Area:
            0.0009     0.0035     0.0078     0.0139     0.0217
            0.0313     0.0423     0.0538     0.0663     0.0801
            0.0952     0.1115     0.1291     0.1479     0.1680
            0.1894     0.2120     0.2357     0.2595     0.2834
            0.3073     0.3311     0.3550     0.3789     0.4027
            0.4266     0.4505     0.4744     0.4982     0.5221
            0.5460     0.5699     0.5938     0.6176     0.6415
            0.6654     0.6893     0.7132     0.7371     0.7610
            0.7849     0.8088     0.8327     0.8566     0.8805
            0.9044     0.9283     0.9522     0.9761     1.0000
Hrad:
            0.0312     0.0623     0.0935     0.1246     0.1558
            0.1869     0.2326     0.2914     0.3417     0.3829
            0.4165     0.4438     0.4659     0.4839     0.4983
            0.5100     0.5192     0.5274     0.5374     0.5489
            0.5615     0.5749     0.5889     0.6034     0.6182
            0.6333     0.6486     0.6641     0.6796     0.6952
            0.7108     0.7265     0.7421     0.7578     0.7734
            0.7890     0.8045     0.8200     0.8354     0.8508
            0.8660     0.8812     0.8964     0.9114     0.9264
            0.9413     0.9561     0.9708     0.9855     1.0000
Width:
            0.0726     0.1453     0.2179     0.2905     0.3631
            0.4358     0.4722     0.4985     0.5511     0.6037
            0.6563     0.7089     0.7614     0.8140     0.8666
            0.9192     0.9718     0.9981     0.9981     0.9982
            0.9983     0.9983     0.9984     0.9984     0.9985
            0.9986     0.9986     0.9987     0.9987     0.9988
            0.9989     0.9989     0.9990     0.9990     0.9991
            0.9992     0.9992     0.9993     0.9993     0.9994
            0.9995     0.9995     0.9996     0.9996     0.9997
            0.9998     0.9998     0.9999     0.9999     1.0000


*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
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    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... HORTON
  Flow Routing Method ...... DYNWAVE
  Starting Date ............ 03/09/2018 00:00:00
  Ending Date .............. 03/11/2018 00:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00
  Routing Time Step ........ 2.00 sec
  Variable Time Step ....... YES
  Maximum Trials ........... 8
  Number of Threads ........ 4
  Head Tolerance ........... 0.001500 m

  **************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  **************************     ---------       -------
  Total Precipitation ......         8.835       106.730
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         4.152        50.154
  Surface Runoff ...........         4.671        56.429
  Final Storage ............         0.025         0.300
  Continuity Error (%) .....        -0.144

  **************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  **************************     ---------     ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         4.671        46.710
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         3.943        39.428
  Flooding Loss ............         0.064         0.636
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         1.238        12.382
  Final Stored Volume ......         1.933        19.328
  Continuity Error (%) .....        -0.506


  *************************
  Highest Continuity Errors
  *************************
  Node 920_(STM) (1.65%)
  Node 1505_(STM) (-1.65%)
  Node 922_(STM) (1.26%)
  Node CB-015-016 (1.22%)
  Node 916_(STM) (1.14%)


  ***************************
  Time-Step Critical Elements
  ***************************
  Link STM-2-11_(STM-OS) (1.98%)
  Link 3_(93)_(STM) (1.92%)


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link 3_(93)_(STM) (57)
  Link OR-SU-122 (50)
  Link 3_(96)_(STM) (49)
  Link 3_(91)_(STM) (48)
  Link 3_(9)_(STM) (39)


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :     0.50 sec
  Average Time Step           :     1.98 sec
  Maximum Time Step           :     2.00 sec
  Percent in Steady State     :     0.00
  Average Iterations per Step :     4.57
  Percent Not Converging      :    23.79


  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
NADIA	106.73	0.00	0.00	81.07	25.71	6.64	1697.93	0.241
NW-001	106.73	0.00	0.00	28.88	77.51	0.43	62.68	0.726
NW-002	106.73	0.00	0.00	59.12	47.86	0.09	20.92	0.448
NW-003	106.73	0.00	0.00	28.88	77.51	0.40	57.97	0.726
NW-004	106.73	0.00	0.00	59.13	47.86	0.07	17.29	0.448
NW-005	106.73	0.00	0.00	28.96	77.43	0.30	43.54	0.726
NW-006	106.73	0.00	0.00	59.12	47.86	0.06	15.37	0.448
NW-007	106.73	0.00	0.00	28.73	77.63	0.07	9.81	0.727
NW-008	106.73	0.00	0.00	28.86	77.53	0.32	46.72	0.726
NW-009	106.73	0.00	0.00	59.12	47.86	0.05	11.43	0.448
NW-010	106.73	0.00	0.00	59.19	47.79	0.07	16.44	0.448
NW-011	106.73	0.00	0.00	59.12	47.86	0.03	6.55	0.448
NW-012	106.73	0.00	0.00	28.95	77.45	0.31	46.06	0.726
NW-013	106.73	0.00	0.00	28.75	77.62	0.20	28.91	0.727
NW-014	106.73	0.00	0.00	29.04	77.36	0.52	76.32	0.725
NW-015	106.73	0.00	0.00	59.19	47.80	0.20	47.05	0.448
NW-016	106.73	0.00	0.00	28.90	77.49	0.35	52.06	0.726
NW-017	106.73	0.00	0.00	59.19	47.79	0.13	31.71	0.448
NW-018	106.73	0.00	0.00	28.57	77.79	0.12	17.84	0.729
NW-019	106.73	0.00	0.00	28.82	77.56	0.23	33.39	0.727
NW-020	106.73	0.00	0.00	28.81	77.56	0.28	40.33	0.727
NW-021A	106.73	0.00	0.00	28.73	77.64	0.09	13.64	0.727
NW-021B	106.73	0.00	0.00	28.83	77.56	0.19	27.41	0.727
NW-022	106.73	0.00	0.00	59.18	47.80	0.21	50.04	0.448
NW-023	106.73	0.00	0.00	59.17	47.81	0.08	18.87	0.448
NW-024	106.73	0.00	0.00	26.55	79.83	0.31	43.93	0.748
NW-025	106.73	0.00	0.00	28.86	77.53	0.22	32.78	0.726
NW-026	106.73	0.00	0.00	28.81	77.57	0.32	46.98	0.727
NW-027	106.73	0.00	0.00	28.84	77.54	0.31	45.55	0.727
NW-028	106.73	0.00	0.00	28.83	77.55	0.20	29.09	0.727
NW-029	106.73	0.00	0.00	28.83	77.55	0.22	32.61	0.727
NW-030	106.73	0.00	0.00	59.19	47.80	0.20	47.57	0.448
NW-031	106.73	0.00	0.00	23.20	83.15	0.83	115.42	0.779
NW-032	106.73	0.00	0.00	22.86	83.43	0.22	30.68	0.782
NW-033	106.73	0.00	0.00	28.91	77.48	0.32	46.36	0.726
NW-034	106.73	0.00	0.00	28.89	77.50	0.31	44.96	0.726
NW-035	106.73	0.00	0.00	28.92	77.47	0.10	15.37	0.726
NW-036	106.73	0.00	0.00	28.90	77.49	0.35	51.14	0.726
NW-037	106.73	0.00	0.00	59.16	47.82	0.13	31.95	0.448
NW-038	106.73	0.00	0.00	28.90	77.49	0.33	48.88	0.726
NW-039	106.73	0.00	0.00	28.85	77.54	0.18	26.55	0.726
NW-040	106.73	0.00	0.00	59.11	48.03	0.05	10.71	0.450
NW-041A	106.73	0.00	0.00	73.13	33.72	0.28	83.25	0.316
NW-041B	106.73	0.00	0.00	72.86	34.03	0.09	25.68	0.319
NW-042	106.73	0.00	0.00	28.84	77.55	0.28	41.32	0.727
NW-043A	106.73	0.00	0.00	59.11	47.87	0.05	11.11	0.448
NW-043B	106.73	0.00	0.00	72.44	34.53	0.04	12.90	0.324
NW-044	106.73	0.00	0.00	28.88	77.51	0.22	32.22	0.726
NW-045	106.73	0.00	0.00	59.19	47.80	0.13	30.59	0.448
NW-046	106.73	0.00	0.00	28.78	77.59	0.13	18.58	0.727
NW-047	106.73	0.00	0.00	59.19	47.80	0.15	36.32	0.448
NW-048	106.73	0.00	0.00	28.83	77.55	0.19	27.47	0.727
NW-049	106.73	0.00	0.00	76.99	29.82	0.77	235.34	0.279
NW-050	106.73	0.00	0.00	28.83	77.55	0.29	42.73	0.727
NW-051	106.73	0.00	0.00	59.20	47.79	0.10	23.86	0.448
NW-052	106.73	0.00	0.00	28.77	77.60	0.19	28.23	0.727
NW-053	106.73	0.00	0.00	28.88	77.51	0.10	14.54	0.726
NW-054	106.73	0.00	0.00	28.85	77.53	0.16	23.98	0.726
NW-055	106.73	0.00	0.00	28.77	77.60	0.21	30.72	0.727
NW-056	106.73	0.00	0.00	59.16	47.82	0.04	9.52	0.448
NW-057	106.73	0.00	0.00	28.80	77.58	0.18	27.05	0.727
NW-058	106.73	0.00	0.00	28.84	77.55	0.16	23.98	0.727
NW-059	106.73	0.00	0.00	59.23	47.76	0.11	26.75	0.447
NW-060	106.73	0.00	0.00	59.19	47.79	0.21	48.84	0.448
NW-061	106.73	0.00	0.00	28.84	77.54	0.31	46.15	0.727
NW-062	106.73	0.00	0.00	28.80	77.58	0.12	17.74	0.727
NW-063	106.73	0.00	0.00	28.93	77.47	0.17	24.99	0.726
NW-064	106.73	0.00	0.00	75.17	31.69	0.29	88.07	0.297
NW-065	106.73	0.00	0.00	28.92	77.61	0.19	28.13	0.727
NW-066	106.73	0.00	0.00	59.23	47.76	0.08	18.84	0.447
NW-067	106.73	0.00	0.00	28.80	77.58	0.19	27.26	0.727
NW-068A	106.73	0.00	0.00	28.75	77.62	0.15	22.38	0.727
NW-068B	106.73	0.00	0.00	59.13	47.86	0.02	3.80	0.448
NW-069	106.73	0.00	0.00	28.82	77.56	0.18	26.37	0.727
NW-070	106.73	0.00	0.00	59.17	47.81	0.17	40.65	0.448
NW-071	106.73	0.00	0.00	28.81	77.57	0.16	23.91	0.727
NW-072	106.73	0.00	0.00	28.82	77.56	0.16	23.08	0.727
NW-073	106.73	0.00	0.00	77.34	29.55	0.13	40.11	0.277
NW-074	106.73	0.00	0.00	28.78	77.59	0.09	13.12	0.727
NW-075	106.73	0.00	0.00	59.14	47.84	0.05	11.19	0.448
NW-076	106.73	0.00	0.00	28.79	77.59	0.27	39.55	0.727
NW-077	106.73	0.00	0.00	59.17	47.81	0.13	31.01	0.448
NW-078	106.73	0.00	0.00	28.81	77.57	0.25	37.25	0.727
NW-079	106.73	0.00	0.00	41.60	64.88	0.39	65.37	0.608
NW-080	106.73	0.00	0.00	59.13	47.86	0.07	17.26	0.448
NW-081	106.73	0.00	0.00	28.81	77.56	0.22	31.77	0.727
NW-082	106.73	0.00	0.00	59.17	47.82	0.10	24.10	0.448

NW-083	106.73	0.00	0.00	28.81	77.57	0.30	43.27	0.727
NW-084	106.73	0.00	0.00	28.80	77.58	0.29	42.67	0.727
NW-085	106.73	0.00	0.00	28.83	77.55	0.22	31.84	0.727
NW-086	106.73	0.00	0.00	28.80	77.58	0.26	37.65	0.727
NW-087	106.73	0.00	0.00	59.16	47.82	0.14	34.36	0.448
NW-088	106.73	0.00	0.00	28.92	77.47	0.28	41.58	0.726
NW-089	106.73	0.00	0.00	28.87	77.51	0.22	32.12	0.726
NW-090	106.73	0.00	0.00	28.88	77.51	0.46	67.89	0.726
NW-091	106.73	0.00	0.00	28.87	77.52	0.17	24.62	0.726
NW-092	106.73	0.00	0.00	59.19	47.79	0.20	48.47	0.448
NW-093	106.73	0.00	0.00	27.73	78.65	0.29	41.55	0.737
NW-094	106.73	0.00	0.00	59.15	47.82	0.07	15.85	0.448
NW-095	106.73	0.00	0.00	27.76	78.63	0.29	42.67	0.737
NW-096	106.73	0.00	0.00	59.17	47.81	0.20	46.54	0.448
NW-097	106.73	0.00	0.00	22.89	83.41	0.16	21.69	0.782
NW-098	106.73	0.00	0.00	23.09	83.26	0.51	71.29	0.780
NW-099	106.73	0.00	0.00	22.92	83.39	0.13	18.03	0.781
NW-100	106.73	0.00	0.00	22.85	83.44	0.06	8.48	0.782
NW-101	106.73	0.00	0.00	28.80	77.58	0.16	23.27	0.727
NW-102	106.73	0.00	0.00	28.80	77.58	0.27	39.34	0.727
NW-103	106.73	0.00	0.00	59.11	47.87	0.08	19.62	0.449
NW-104A	106.73	0.00	0.00	28.85	77.53	0.24	35.40	0.726
NW-104B	106.73	0.00	0.00	63.43	43.19	1.02	191.42	0.405
NW-105	106.73	0.00	0.00	59.16	47.82	0.09	20.80	0.448
NW-106	106.73	0.00	0.00	28.97	77.43	0.22	31.88	0.725
NW-107	106.73	0.00	0.00	59.16	47.82	0.15	35.58	0.448
NW-108	106.73	0.00	0.00	29.19	77.21	0.51	74.92	0.723
NW-109	106.73	0.00	0.00	27.07	79.29	1.57	223.90	0.743
NW-110A	106.73	0.00	0.00	83.96	22.83	0.15	50.52	0.214
NW-110B	106.73	0.00	0.00	29.52	76.85	1.99	287.11	0.720
NW-111	106.73	0.00	0.00	23.13	83.22	0.52	72.97	0.780
NW-112	106.73	0.00	0.00	5.74	100.45	2.59	320.16	0.941
NW-113	106.73	0.00	0.00	22.85	83.44	0.15	20.42	0.782
NW-114	106.73	0.00	0.00	5.73	100.46	0.89	110.57	0.941
NW-115	106.73	0.00	0.00	22.86	83.43	0.19	27.02	0.782
NW-116	106.73	0.00	0.00	22.86	83.43	0.06	8.09	0.782
NW-117	106.73	0.00	0.00	22.92	83.39	0.13	17.83	0.781
NW-118	106.73	0.00	0.00	23.13	83.22	0.76	105.94	0.780
NW-119	106.73	0.00	0.00	22.92	83.39	0.17	23.30	0.781
NW-120	106.73	0.00	0.00	29.45	76.92	1.77	257.20	0.721
NW-121	106.73	0.00	0.00	22.90	83.40	0.12	16.41	0.781
NW-122	106.73	0.00	0.00	14.95	91.33	0.45	59.58	0.856
NW-123	106.73	0.00	0.00	16.26	90.02	1.77	234.37	0.843
NW-124	106.73	0.00	0.00	22.91	83.39	0.13	18.59	0.781
POND-1	106.73	0.00	0.00	11.46	94.78	1.15	146.99	0.888
POND-2	106.73	0.00	0.00	11.49	94.76	1.18	151.93	0.888

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
1+000	JUNCTION	0.00	0.00	90.47	0 00:00	0.00
1+070	JUNCTION	0.00	0.00	90.12	0 00:00	0.00
1+150	JUNCTION	0.00	0.00	90.01	0 00:00	0.00
1+274	JUNCTION	0.00	0.01	89.08	0 13:00	0.01
10+091	JUNCTION	0.00	0.00	92.07	0 00:00	0.00
100_(STM)	JUNCTION	0.32	0.48	88.10	0 13:00	0.48
1000_(STM)	JUNCTION	0.32	0.51	89.70	0 13:00	0.51
1002_(STM)	JUNCTION	0.31	0.45	89.50	0 13:00	0.45
1004_(STM)	JUNCTION	0.31	0.48	87.75	0 13:00	0.48
1004D_(STM)	JUNCTION	0.03	0.30	86.49	0 13:00	0.30
102_(STM)	JUNCTION	0.32	0.57	87.91	0 13:00	0.57
104_(STM)	JUNCTION	0.33	0.64	87.55	0 13:00	0.64
106_(STM)	JUNCTION	0.30	0.40	87.78	0 13:00	0.40
11+094	JUNCTION	0.00	0.03	88.44	0 13:00	0.03
11+162	JUNCTION	0.00	0.00	88.67	0 00:00	0.00
1100_(STM)	JUNCTION	0.34	0.73	85.91	0 13:00	0.73
1102_(STM)	JUNCTION	0.31	0.47	86.31	0 13:01	0.47
12+000	JUNCTION	0.00	0.00	90.44	0 00:00	0.00
12+040	JUNCTION	0.00	0.00	90.46	0 00:00	0.00
12+134	JUNCTION	0.00	0.00	89.70	0 00:00	0.00
12+242	JUNCTION	0.00	0.00	88.72	0 00:00	0.00
12+310	JUNCTION	0.00	0.00	88.52	0 00:00	0.00
12+384	JUNCTION	0.00	0.00	88.22	0 00:00	0.00
12+428	JUNCTION	0.00	0.00	87.57	0 00:00	0.00
12+523	JUNCTION	0.00	0.00	86.85	0 00:00	0.00
12+600	JUNCTION	0.00	0.00	84.87	0 00:00	0.00
1200_(STM)	JUNCTION	0.33	0.64	87.37	0 13:00	0.64
1202_(STM)	JUNCTION	0.33	0.64	86.84	0 13:00	0.64
1204_(STM)	JUNCTION	0.27	0.71	86.03	0 13:00	0.71
1206_(STM)	JUNCTION	0.34	0.79	85.31	0 13:00	0.79
1208_(STM)	JUNCTION	0.27	0.72	85.00	0 13:00	0.72
1210_(STM)	JUNCTION	0.27	0.74	84.83	0 13:00	0.74
1212_(STM)	JUNCTION	0.36	0.84	84.72	0 13:00	0.84
1214_(STM)	JUNCTION	1.14	2.90	84.51	0 14:25	2.90
1216_(STM)	JUNCTION	1.24	2.99	84.50	0 14:25	2.99

1218_(STM)	JUNCTION	1.38	3.13	84.50	0	14:14	3.13
1220_(STM)	JUNCTION	1.46	2.42	81.99	0	19:46	2.42
1222_(STM)	JUNCTION	1.60	2.60	81.99	0	20:06	2.59
13+093	JUNCTION	0.00	0.00	87.48	0	00:00	0.00
13+171	JUNCTION	0.00	0.00	87.69	0	00:00	0.00
13+251	JUNCTION	0.00	0.00	87.79	0	00:00	0.00
13+413	JUNCTION	0.00	0.00	88.12	0	00:00	0.00
13+490	JUNCTION	0.00	0.00	88.25	0	00:00	0.00
1300_(STM)	JUNCTION	0.87	2.48	84.50	0	14:23	2.48
1302_(STM)	JUNCTION	0.82	2.40	84.52	0	13:03	2.40
1304_(STM)	JUNCTION	0.40	1.16	84.89	0	13:00	1.16
1306_(STM)	JUNCTION	0.40	1.22	85.00	0	13:00	1.22
1308_(STM)	JUNCTION	0.40	1.26	85.08	0	13:00	1.26
1310_(STM)	JUNCTION	0.39	1.26	85.15	0	13:00	1.26
1312_(STM)	JUNCTION	0.33	0.60	85.49	0	13:00	0.60
1314_(STM)	JUNCTION	0.33	0.56	85.76	0	13:00	0.56
1400_(STM)	JUNCTION	0.45	0.74	82.94	0	13:00	0.74
1402_(STM)	JUNCTION	0.33	0.62	82.61	0	13:00	0.62
1404_(STM)	JUNCTION	0.34	0.66	82.28	0	13:00	0.66
1406_(STM)	JUNCTION	0.44	0.78	82.02	0	13:00	0.78
1408_(STM)	JUNCTION	0.62	1.18	81.98	0	19:54	1.18
1410_(STM)	JUNCTION	0.80	1.51	81.98	0	20:03	1.51
1412_(STM)	JUNCTION	1.01	1.82	81.98	0	19:54	1.82
1500_(STM)	JUNCTION	0.32	0.55	85.95	0	13:00	0.55
1502_(STM)	JUNCTION	0.00	0.00	82.27	0	00:00	0.00
1505_(STM)	JUNCTION	1.62	2.64	81.99	0	19:56	2.64
1600_(STM)	JUNCTION	0.67	0.75	87.75	0	13:00	0.75
1602_(STM)	JUNCTION	0.31	0.46	85.06	0	13:00	0.46
1604_(STM)	JUNCTION	0.31	0.52	83.30	0	13:00	0.52
1606_(STM)	JUNCTION	0.31	0.48	83.57	0	13:00	0.48
2+089	JUNCTION	0.00	0.00	90.50	0	00:00	0.00
2+112	JUNCTION	0.00	0.00	90.67	0	00:00	0.00
2+218	JUNCTION	0.00	0.00	90.93	0	00:00	0.00
2+335	JUNCTION	0.00	0.00	91.17	0	00:00	0.00
2+516	JUNCTION	0.00	0.00	90.51	0	00:00	0.00
200_(STM)	JUNCTION	0.33	0.65	87.83	0	13:00	0.65
202_(STM)	JUNCTION	0.32	0.58	88.34	0	13:00	0.58
204_(STM)	JUNCTION	0.32	0.51	88.85	0	13:00	0.51
206_(STM)	JUNCTION	0.00	0.00	88.37	0	00:00	0.00
208_(STM)	JUNCTION	0.31	0.42	88.46	0	13:00	0.42
20A_(STM)	JUNCTION	0.02	0.11	88.53	0	13:00	0.11
210_(STM)	JUNCTION	0.32	0.59	88.43	0	13:00	0.59
212_(STM)	JUNCTION	0.33	0.69	87.93	0	13:00	0.69
3+088	JUNCTION	0.00	0.00	90.17	0	00:00	0.00
3+313	JUNCTION	0.00	0.00	88.52	0	00:00	0.00
3+395	JUNCTION	0.00	0.00	88.32	0	00:00	0.00
3+447	JUNCTION	0.00	0.00	87.97	0	00:00	0.00
300_(STM)	JUNCTION	0.31	0.42	87.73	0	13:00	0.42
302_(STM)	JUNCTION	0.33	0.62	87.37	0	13:00	0.62
304_(STM)	JUNCTION	0.26	0.60	86.95	0	13:00	0.60
306_(STM)	JUNCTION	0.26	0.67	86.55	0	13:00	0.67
308_(STM)	JUNCTION	0.32	0.52	86.38	0	13:00	0.52
310_(STM)	JUNCTION	0.32	0.57	86.02	0	13:00	0.57
312_(STM)	JUNCTION	0.33	0.60	85.85	0	13:00	0.60
314_(STM)	JUNCTION	0.33	0.62	85.67	0	13:00	0.62
316_(STM)	JUNCTION	0.33	0.63	85.61	0	13:00	0.63
4+112	JUNCTION	0.00	0.00	90.12	0	00:00	0.00
4+213	JUNCTION	0.00	0.00	90.23	0	00:00	0.00
4+270	JUNCTION	0.00	0.00	89.37	0	00:00	0.00
400_(STM)	JUNCTION	0.34	0.68	87.26	0	13:00	0.68
402_(STM)	JUNCTION	0.27	0.71	86.85	0	13:00	0.71
5+111	JUNCTION	0.00	0.00	90.47	0	00:00	0.00
5+210	JUNCTION	0.00	0.00	90.87	0	00:00	0.00
5+285	JUNCTION	0.00	0.00	90.36	0	00:00	0.00
500_(STM)	JUNCTION	0.31	0.56	87.85	0	13:00	0.56
502_(STM)	JUNCTION	0.32	0.65	87.49	0	13:00	0.65
504_(STM)	JUNCTION	0.32	0.68	87.25	0	13:00	0.68
506_(STM)	JUNCTION	0.33	0.75	87.20	0	13:00	0.75
6+088	JUNCTION	0.00	0.02	90.14	0	13:00	0.02
6+278	JUNCTION	0.01	0.05	88.83	0	13:00	0.05
6+306	JUNCTION	0.00	0.05	88.72	0	13:00	0.05
6+345	JUNCTION	0.00	0.04	88.65	0	13:01	0.04
6+410	JUNCTION	0.00	0.00	88.49	0	00:00	0.00
6+505	JUNCTION	0.00	0.00	88.27	0	00:00	0.00
6+572	JUNCTION	0.00	0.00	88.20	0	00:00	0.00
600_(STM)	JUNCTION	0.31	0.50	87.72	0	13:00	0.50
600D_(STM)	JUNCTION	0.01	0.11	88.24	0	13:00	0.11
602_(STM)	JUNCTION	0.27	0.66	87.36	0	13:00	0.66
604_(STM)	JUNCTION	0.31	0.68	87.19	0	13:00	0.68
606_(STM)	JUNCTION	0.36	1.03	86.40	0	13:00	1.03
608_(STM)	JUNCTION	0.35	1.03	86.21	0	13:00	1.03
610_(STM)	JUNCTION	0.36	1.03	86.15	0	13:00	1.03
612_(STM)	JUNCTION	0.35	0.99	85.98	0	13:01	0.99
614_(STM)	JUNCTION	0.35	0.96	85.89	0	13:01	0.96
616_(STM)	JUNCTION	0.22	0.92	85.79	0	13:00	0.92
618_(STM)	JUNCTION	0.26	0.93	85.62	0	13:00	0.93
620_(STM)	JUNCTION	0.09	0.96	85.47	0	13:00	0.96
700_(STM)	JUNCTION	0.31	0.40	87.60	0	13:00	0.40
702_(STM)	JUNCTION	0.32	0.55	86.60	0	13:00	0.55
704_(STM)	JUNCTION	0.32	0.65	86.11	0	13:00	0.65
8+150	JUNCTION	0.00	0.02	90.59	0	13:00	0.02
800_(STM)	JUNCTION	0.29	0.49	89.36	0	13:00	0.49

802_(STM)	JUNCTION	0.30	0.38	89.28	0	13:00	0.38
804_(STM)	JUNCTION	0.31	0.42	88.35	0	13:00	0.42
806_(STM)	JUNCTION	0.31	0.47	87.01	0	13:00	0.47
808_(STM)	JUNCTION	0.32	0.58	85.97	0	13:00	0.58
9+000	JUNCTION	0.00	0.00	93.32	0	00:00	0.00
9+040	JUNCTION	0.00	0.00	92.52	0	00:00	0.00
9+261	JUNCTION	0.00	0.03	88.18	0	13:00	0.03
9+342	JUNCTION	0.00	0.00	87.99	0	00:00	0.00
9+347	JUNCTION	0.00	0.00	87.99	0	00:00	0.00
9+713	JUNCTION	0.00	0.00	84.10	0	00:00	0.00
900_(STM)	JUNCTION	0.30	0.47	89.06	0	13:00	0.47
900D_(STM)	JUNCTION	0.02	0.21	89.92	0	13:00	0.21
900DD_(STM)	JUNCTION	0.02	0.20	88.86	0	13:00	0.20
902_(STM)	JUNCTION	0.23	0.40	88.57	0	13:00	0.40
904_(STM)	JUNCTION	0.36	0.55	87.00	0	13:00	0.55
906_(STM)	JUNCTION	0.17	1.10	85.27	0	13:00	1.10
908_(STM)	JUNCTION	0.32	0.47	84.71	0	13:00	0.47
910_(STM)	JUNCTION	0.33	0.60	83.27	0	13:00	0.60
912_(STM)	JUNCTION	0.33	0.60	82.35	0	13:00	0.60
914_(STM)	JUNCTION	0.53	1.07	81.98	0	20:31	1.07
916_(STM)	JUNCTION	1.81	2.83	81.98	0	20:31	2.83
918_(STM)	JUNCTION	1.44	2.41	81.99	0	20:29	2.41
920_(STM)	JUNCTION	1.91	2.94	81.99	0	19:36	2.94
922_(STM)	JUNCTION	1.98	3.01	81.99	0	20:15	3.00
CB-001-002	JUNCTION	0.00	0.02	90.34	0	13:00	0.02
CB-003-004	JUNCTION	0.04	0.94	88.93	0	13:00	0.94
CB-005-006	JUNCTION	0.04	0.92	87.96	0	13:00	0.92
CB-007-008	JUNCTION	0.04	0.84	87.51	0	13:00	0.84
CB-009-010	JUNCTION	0.03	0.81	87.18	0	13:00	0.81
CB-011-012	JUNCTION	0.03	0.72	85.69	0	13:00	0.72
CB-013-014	JUNCTION	0.00	0.01	86.40	0	13:00	0.01
CB-015-016	JUNCTION	0.00	0.01	84.91	0	13:00	0.01
CB-017-018	JUNCTION	0.00	0.03	82.70	0	12:30	0.03
CB-019-020	JUNCTION	0.00	0.02	82.42	0	13:00	0.02
CB-021-022	JUNCTION	0.02	0.42	85.47	0	13:00	0.42
CB-023-024	JUNCTION	0.03	0.59	86.12	0	13:00	0.59
CB-025-026	JUNCTION	0.03	0.80	86.54	0	13:00	0.80
CB-027-028	JUNCTION	0.03	0.76	86.65	0	13:00	0.76
CB-029-030	JUNCTION	0.03	0.75	86.79	0	13:00	0.75
CB-031-032	JUNCTION	0.03	0.78	86.95	0	13:00	0.78
CB-033-034	JUNCTION	0.00	0.02	91.75	0	13:00	0.02
CB-035-036	JUNCTION	0.00	0.03	90.43	0	13:00	0.03
CB-037-038	JUNCTION	0.00	0.04	89.32	0	13:00	0.04
CB-039-040	JUNCTION	0.04	1.04	87.18	0	13:00	1.04
CB-041-042	JUNCTION	0.04	0.93	89.20	0	13:00	0.93
CB-043-044	JUNCTION	0.04	0.88	88.99	0	13:00	0.88
CB-045-046	JUNCTION	0.00	0.02	89.78	0	13:00	0.02
CB-047-048	JUNCTION	0.04	0.97	87.94	0	13:00	0.97
CB-049-050	JUNCTION	0.00	0.03	90.23	0	13:00	0.03
CB-051-052	JUNCTION	0.00	0.04	89.56	0	13:00	0.04
CB-053-054	JUNCTION	0.01	0.05	89.25	0	13:00	0.05
CB-055-056	JUNCTION	0.09	1.81	88.73	0	13:00	1.81
CB-057-058	JUNCTION	0.05	1.76	88.65	0	13:01	1.76
CB-059-060	JUNCTION	0.04	1.65	88.29	0	13:02	1.65
CB-061-062	JUNCTION	0.08	1.73	88.15	0	13:02	1.73
CB-063-064	JUNCTION	0.06	1.70	87.95	0	13:01	1.70
CB-065-066	JUNCTION	0.04	1.19	87.44	0	13:00	1.19
CB-067-068	JUNCTION	0.09	1.83	88.10	0	13:04	1.83
CB-069-070	JUNCTION	0.06	1.69	88.30	0	13:01	1.69
CB-071-072	JUNCTION	0.00	0.03	89.57	0	13:00	0.03
CB-073-074	JUNCTION	0.00	0.03	89.10	0	13:00	0.03
CB-075-076	JUNCTION	0.00	0.03	88.65	0	13:00	0.03
CB-077-078	JUNCTION	0.00	0.04	88.68	0	13:00	0.04
CB-079-080	JUNCTION	0.00	0.03	89.92	0	13:00	0.03
CB-081-082	JUNCTION	0.00	0.03	91.15	0	13:00	0.03
CB-083-084	JUNCTION	0.07	1.72	91.89	0	13:01	1.72
CB-085-086	JUNCTION	0.00	0.02	91.68	0	13:00	0.02
CB-087-088	JUNCTION	0.00	0.02	90.90	0	13:00	0.02
CB-089-090	JUNCTION	0.00	0.03	90.22	0	13:00	0.03
CB-091-092	JUNCTION	0.00	0.03	89.56	0	13:00	0.03
CB-093-094	JUNCTION	0.00	0.03	88.45	0	13:00	0.03
CB-095-096	JUNCTION	0.00	0.02	86.57	0	13:00	0.02
CB-097-098	JUNCTION	0.00	0.03	85.14	0	13:00	0.03
CB-099-100	JUNCTION	0.00	0.01	83.55	0	13:00	0.01
CB-101-102	JUNCTION	0.00	0.02	84.02	0	13:00	0.02
CB-103-104	JUNCTION	0.05	1.44	89.71	0	13:00	1.44
CB-105-106	JUNCTION	0.06	1.58	90.23	0	13:00	1.58
CB-107-108	JUNCTION	0.00	0.03	90.92	0	13:00	0.03
CB-109-110	JUNCTION	0.06	1.61	90.69	0	13:00	1.61
CB-111-112	JUNCTION	0.05	1.42	90.19	0	13:00	1.42
CB-113-114	JUNCTION	0.05	1.39	89.95	0	13:00	1.39
CB-115-116	JUNCTION	0.00	0.02	89.63	0	13:00	0.02
CB-117-118	JUNCTION	0.00	0.03	88.53	0	13:00	0.03
CB-119-120	JUNCTION	0.00	0.03	87.39	0	13:00	0.03
CB-121-122	JUNCTION	0.00	0.03	86.03	0	13:00	0.03
CB-123-124	JUNCTION	0.02	0.41	88.68	0	13:00	0.41
CB-125-126	JUNCTION	0.00	0.03	89.54	0	13:00	0.03
CB-127-128	JUNCTION	0.08	1.79	89.06	0	13:02	1.79
CB-129	JUNCTION	0.00	0.03	88.95	0	13:00	0.03
CB-130-131	JUNCTION	0.05	1.22	87.84	0	13:00	1.22
CB-132-133	JUNCTION	0.06	1.52	87.94	0	13:00	1.52
CB-134-135	JUNCTION	0.04	1.03	87.30	0	13:00	1.03

CB-136-137	JUNCTION	0.05	1.28	86.95	0	13:00	1.28
CB-138-139	JUNCTION	0.05	1.39	89.50	0	13:00	1.39
CB-140-141	JUNCTION	0.05	1.28	89.50	0	13:00	1.28
CB-142-143	JUNCTION	0.02	0.45	88.08	0	13:00	0.45
CB-144-145	JUNCTION	0.03	0.87	89.04	0	13:00	0.87
CB-146-147	JUNCTION	0.07	1.72	90.29	0	13:01	1.72
CB-148-149	JUNCTION	0.05	1.25	89.94	0	13:00	1.25
HP-W	JUNCTION	0.00	0.00	90.33	0	00:00	0.00
HW1_(STM-OS)	JUNCTION	0.04	1.07	89.90	0	12:41	1.07
OS-1_(STM-OS)	JUNCTION	0.27	1.36	89.73	0	12:42	1.36
OS-2_(STM-OS)	JUNCTION	0.26	1.19	89.38	0	12:42	1.19
OS-3_(STM-OS)	JUNCTION	0.26	1.13	89.16	0	12:42	1.13
OS-4_(STM-OS)	JUNCTION	0.26	1.06	89.02	0	12:42	1.06
OS-5_(STM-OS)	JUNCTION	0.26	0.98	88.69	0	12:42	0.98
OS-6_(STM-OS)	JUNCTION	0.26	1.01	87.38	0	12:43	1.01
OVF-02	JUNCTION	0.00	0.07	85.17	0	13:00	0.07
OVF-03	JUNCTION	0.02	0.21	85.02	0	13:01	0.21
OVF-04	JUNCTION	0.02	0.23	84.55	0	13:00	0.23
OVF-05	JUNCTION	0.04	0.40	84.40	0	13:00	0.40
OVF-06	JUNCTION	0.04	0.32	82.72	0	13:02	0.32
POND-OUT	JUNCTION	0.06	0.09	77.99	0	20:03	0.09
RYCB01	JUNCTION	0.01	0.23	90.68	0	13:00	0.23
RYCB02	JUNCTION	0.00	0.13	90.27	0	12:55	0.13
RYCB03	JUNCTION	0.00	0.10	90.01	0	12:45	0.10
RYCB04	JUNCTION	0.01	0.16	88.83	0	12:45	0.16
RYCB05	JUNCTION	0.01	0.20	86.80	0	12:45	0.20
RYCB06	JUNCTION	0.01	0.19	89.14	0	12:45	0.19
RYCB07	JUNCTION	0.01	0.23	87.03	0	12:45	0.23
RYCB08	JUNCTION	0.00	0.09	89.20	0	12:55	0.09
RYCB09	JUNCTION	0.01	0.14	88.89	0	12:55	0.14
RYCB10	JUNCTION	0.01	0.17	87.39	0	12:55	0.17
RYCB11	JUNCTION	0.00	0.05	87.30	0	13:00	0.05
RYCB12	JUNCTION	0.01	0.16	89.23	0	12:50	0.16
RYCB13	JUNCTION	0.01	0.26	88.03	0	12:55	0.26
RYCB14	JUNCTION	0.01	0.26	87.05	0	13:00	0.26
RYCB15	JUNCTION	0.00	0.12	87.03	0	12:35	0.12
RYCB16	JUNCTION	0.01	0.25	86.21	0	12:45	0.25
RYCB17	JUNCTION	0.01	0.21	87.71	0	12:55	0.21
RYCB18	JUNCTION	0.00	0.10	89.05	0	12:40	0.10
RYCB19	JUNCTION	0.00	0.09	88.09	0	12:50	0.09
RYCB20	JUNCTION	0.01	0.19	89.90	0	12:55	0.19
RYCB21	JUNCTION	0.01	0.19	89.36	0	12:45	0.19
RYCB22	JUNCTION	0.01	0.25	86.04	0	12:55	0.25
RYCB23	JUNCTION	0.01	0.14	87.84	0	12:45	0.14
RYCB24	JUNCTION	0.01	0.27	87.42	0	12:45	0.27
RYCB25	JUNCTION	0.00	0.12	89.12	0	12:55	0.12
RYCB26	JUNCTION	0.00	0.12	88.73	0	12:55	0.12
RYCB27	JUNCTION	0.00	0.13	88.84	0	12:55	0.13
RYCB28	JUNCTION	0.01	0.15	89.91	0	12:46	0.15
RYCB29	JUNCTION	0.01	0.25	88.77	0	12:55	0.25
RYCB30	JUNCTION	0.01	0.19	88.32	0	12:55	0.19
RYCB31	JUNCTION	0.01	0.14	87.89	0	12:50	0.14
RYCB32	JUNCTION	0.01	0.21	85.96	0	12:45	0.21
RYCB33	JUNCTION	0.01	0.15	86.08	0	12:35	0.15
RYCB34	JUNCTION	0.00	0.10	88.42	0	12:50	0.10
RYCB35	JUNCTION	0.00	0.07	88.17	0	12:55	0.07
RYCB36	JUNCTION	0.02	0.57	88.59	0	13:00	0.57
RYCB38	JUNCTION	0.06	2.57	90.15	0	13:00	2.57
RYCB39	JUNCTION	0.02	0.62	89.74	0	12:42	0.62
RYCB40	JUNCTION	0.01	0.52	88.48	0	13:00	0.52
OUT-EXT	OUTFALL	0.03	0.63	87.10	0	12:43	0.63
OUT-MAIN	OUTFALL	0.06	0.09	77.89	0	20:03	0.09
POND-LOWER	STORAGE	2.96	3.98	81.98	0	20:01	3.98
POND-UPPER	STORAGE	2.25	4.00	84.50	0	14:14	4.00
SU-031	STORAGE	0.04	0.54	86.52	0	13:00	0.54
SU-090	STORAGE	0.03	0.58	87.38	0	13:00	0.58
SU-098	STORAGE	0.03	0.51	86.55	0	13:00	0.51
SU-104B	STORAGE	0.06	1.48	86.29	0	13:02	1.48
SU-108	STORAGE	0.04	0.59	86.59	0	13:00	0.59
SU-109	STORAGE	0.05	0.58	86.33	0	13:00	0.58
SU-110B	STORAGE	0.06	0.78	84.78	0	13:00	0.78
SU-111	STORAGE	0.03	0.52	85.66	0	13:00	0.52
SU-112	STORAGE	0.04	0.39	83.37	0	13:00	0.39
SU-114	STORAGE	0.04	0.42	83.08	0	13:00	0.42
SU-118	STORAGE	0.04	0.53	86.52	0	13:00	0.53
SU-120	STORAGE	0.05	0.65	85.24	0	13:00	0.65
SU-122	STORAGE	0.43	1.11	81.99	0	19:30	1.10
SU-123	STORAGE	0.44	1.11	81.99	0	20:28	1.11

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
1+000	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
1+070	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

1+150	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1+274	JUNCTION	0.00	3.04	0	13:00	0	0.0128	0.717
10+091	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
100_(STM)	JUNCTION	0.00	46.35	0	13:00	0	0.316	0.211
1000_(STM)	JUNCTION	0.00	64.43	0	13:00	0	0.434	0.081
1002_(STM)	JUNCTION	0.00	84.60	0	13:00	0	0.593	0.066
1004_(STM)	JUNCTION	0.00	116.33	0	13:00	0	0.832	0.019
1004D_(STM)	JUNCTION	0.00	156.31	0	13:00	0	1.12	-0.001
102_(STM)	JUNCTION	0.00	91.30	0	13:00	0	0.622	0.007
104_(STM)	JUNCTION	0.00	186.66	0	13:00	0	1.2	0.202
106_(STM)	JUNCTION	0.00	12.32	0	13:00	0	0.0919	0.383
11+094	JUNCTION	0.00	25.78	0	13:00	0	0.118	-0.327
11+162	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1100_(STM)	JUNCTION	0.00	267.30	0	13:00	0	1.88	0.017
1102_(STM)	JUNCTION	0.00	37.59	0	13:01	0	0.261	0.133
12+000	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+040	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+134	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+242	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+310	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+384	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+428	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+523	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
12+600	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1200_(STM)	JUNCTION	0.00	301.23	0	13:00	0	1.85	0.264
1202_(STM)	JUNCTION	0.00	353.82	0	13:00	0	2.18	-0.058
1204_(STM)	JUNCTION	0.00	808.93	0	13:00	0	5	0.091
1206_(STM)	JUNCTION	0.00	841.65	0	13:00	0	5.22	-0.153
1208_(STM)	JUNCTION	0.00	841.60	0	13:00	0	5.23	0.006
1210_(STM)	JUNCTION	0.00	1058.41	0	13:00	0	6.57	-0.005
1212_(STM)	JUNCTION	0.00	1204.03	0	13:00	0	7.62	0.183
1214_(STM)	JUNCTION	0.00	3591.82	0	13:00	0	21.5	-0.242
1216_(STM)	JUNCTION	0.00	3566.11	0	13:00	0	21.6	-0.065
1218_(STM)	JUNCTION	0.00	3564.83	0	13:00	0	21.6	0.036
1220_(STM)	JUNCTION	0.00	964.25	0	12:42	0	7.31	0.428
1222_(STM)	JUNCTION	0.00	949.03	0	12:42	0	7.38	0.645
13+093	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
13+171	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
13+251	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
13+413	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
13+490	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1300_(STM)	JUNCTION	0.00	2385.89	0	13:00	0	13.9	0.084
1302_(STM)	JUNCTION	0.00	2308.32	0	13:00	0	13.2	-0.059
1304_(STM)	JUNCTION	0.00	2286.82	0	13:00	0	13.1	0.013
1306_(STM)	JUNCTION	0.00	2198.10	0	13:00	0	12.6	-0.043
1308_(STM)	JUNCTION	0.00	2198.08	0	13:00	0	12.6	-0.030

1310_(STM)	JUNCTION	0.00	2141.14	0	13:00	0	12.2	-0.015
1312_(STM)	JUNCTION	0.00	173.07	0	13:00	0	1.05	0.030
1314_(STM)	JUNCTION	0.00	100.00	0	13:00	0	0.682	0.049
1400_(STM)	JUNCTION	0.00	250.26	0	13:00	0	1.57	0.240
1402_(STM)	JUNCTION	0.00	250.22	0	13:00	0	1.57	-0.378
1404_(STM)	JUNCTION	0.00	473.79	0	13:00	0	3.15	-0.007
1406_(STM)	JUNCTION	0.00	546.56	0	13:00	0	3.69	0.384
1408_(STM)	JUNCTION	0.00	546.59	0	13:00	0	3.71	-0.100
1410_(STM)	JUNCTION	0.00	863.88	0	13:00	0	6.3	-0.084
1412_(STM)	JUNCTION	0.00	856.11	0	12:52	0	6.28	0.344
1500_(STM)	JUNCTION	0.00	223.88	0	13:00	0	1.57	0.011
1502_(STM)	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
1505_(STM)	JUNCTION	0.00	1869.81	0	12:16	0	8.5	-1.622
1600_(STM)	JUNCTION	0.00	15.38	0	13:00	0	0.122	0.654
1602_(STM)	JUNCTION	0.00	63.81	0	13:00	0	0.422	0.084
1604_(STM)	JUNCTION	0.00	111.57	0	13:00	0	0.64	0.053
1606_(STM)	JUNCTION	0.00	81.59	0	13:00	0	0.427	0.080
2+089	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
2+112	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
2+218	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
2+335	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
2+516	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
200_(STM)	JUNCTION	0.00	216.88	0	13:00	0	1.34	-0.065
202_(STM)	JUNCTION	0.00	158.00	0	13:00	0	0.983	0.180
204_(STM)	JUNCTION	0.00	82.76	0	13:00	0	0.515	0.042
206_(STM)	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
208_(STM)	JUNCTION	0.00	20.91	0	13:00	0	0.161	0.206
20A_(STM)	JUNCTION	0.00	20.91	0	13:00	0	0.161	0.018
210_(STM)	JUNCTION	0.00	152.24	0	13:00	0	0.915	0.036
212_(STM)	JUNCTION	0.00	235.95	0	13:00	0	1.4	0.023
3+088	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
3+313	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
3+395	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
3+447	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
300_(STM)	JUNCTION	0.00	17.84	0	13:00	0	0.122	0.287
302_(STM)	JUNCTION	0.00	275.77	0	13:00	0	1.7	0.020
304_(STM)	JUNCTION	0.00	314.36	0	13:00	0	2.03	0.021
306_(STM)	JUNCTION	0.00	411.34	0	13:00	0	2.51	0.008
308_(STM)	JUNCTION	0.00	62.17	0	13:00	0	0.42	0.191
310_(STM)	JUNCTION	0.00	107.71	0	13:00	0	0.73	0.107
312_(STM)	JUNCTION	0.00	136.79	0	13:00	0	0.928	0.078
314_(STM)	JUNCTION	0.00	136.78	0	13:00	0	0.927	-0.029
316_(STM)	JUNCTION	0.00	216.94	0	13:00	0	1.35	0.012
4+112	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
4+213	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
4+270	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr

400_(STM)	JUNCTION	0.00	235.52	0	13:00	0	1.53	-0.035	
402_(STM)	JUNCTION	0.00	541.33	0	13:00	0	3.08	0.126	
5+111	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
5+210	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
5+285	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
500_(STM)	JUNCTION	0.00	120.49	0	13:00	0	0.507	0.067	
502_(STM)	JUNCTION	0.00	188.60	0	13:00	0	0.922	0.094	
504_(STM)	JUNCTION	0.00	188.55	0	13:00	0	0.921	-0.044	
506_(STM)	JUNCTION	0.00	251.17	0	13:00	0	1.27	0.038	
6+088	JUNCTION	0.00	8.29	0	13:00	0	0.0368	0.354	
6+278	JUNCTION	0.00	59.38	0	13:00	0	0.328	0.003	
6+306	JUNCTION	0.00	47.27	0	13:00	0	0.103	0.231	
6+345	JUNCTION	0.00	21.08	0	13:00	0	0.0209	1.898	
6+410	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
6+505	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
6+572	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
600_(STM)	JUNCTION	0.00	115.55	0	13:00	0	0.457	0.297	
600D_(STM)	JUNCTION	0.00	27.49	0	13:00	0	0.172	-0.001	
602_(STM)	JUNCTION	0.00	360.93	0	13:00	0	1.39	-0.068	
604_(STM)	JUNCTION	0.00	384.74	0	13:00	0	1.49	0.023	
606_(STM)	JUNCTION	0.00	1003.17	0	13:00	0	5.17	-0.014	
608_(STM)	JUNCTION	0.00	1003.02	0	13:00	0	5.17	-0.002	
610_(STM)	JUNCTION	0.00	1040.08	0	13:00	0	5.35	0.020	
612_(STM)	JUNCTION	0.00	1040.06	0	13:01	0	5.35	-0.006	
614_(STM)	JUNCTION	0.00	1040.07	0	13:01	0	5.35	-0.027	
616_(STM)	JUNCTION	0.00	1235.01	0	13:00	0	6.56	0.023	
618_(STM)	JUNCTION	0.00	1380.54	0	13:00	0	7.52	0.061	
620_(STM)	JUNCTION	0.00	1452.16	0	13:00	0	7.88	-0.036	
700_(STM)	JUNCTION	0.00	23.67	0	13:00	0	0.176	0.148	
702_(STM)	JUNCTION	0.00	146.67	0	13:00	0	0.829	0.095	
704_(STM)	JUNCTION	0.00	146.67	0	13:00	0	0.828	0.007	
8+150	JUNCTION	0.00	9.61	0	13:00	0	0.0421	0.301	
800_(STM)	JUNCTION	0.00	55.36	0	13:00	0	0.246	0.131	
802_(STM)	JUNCTION	0.00	15.95	0	13:00	0	0.115	0.305	
804_(STM)	JUNCTION	0.00	47.13	0	13:00	0	0.316	0.111	
806_(STM)	JUNCTION	0.00	108.18	0	13:00	0	0.714	0.071	
808_(STM)	JUNCTION	0.00	108.18	0	13:00	0	0.713	0.008	
9+000	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+040	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+261	JUNCTION	0.00	21.38	0	13:00	0	0.0998	-0.353	
9+342	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+347	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
9+713	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
900_(STM)	JUNCTION	0.00	65.21	0	13:00	0	0.278	0.129	
900D_(STM)	JUNCTION	0.00	74.32	0	13:00	0	0.466	-0.002	
900DD_(STM)	JUNCTION	0.00	85.29	0	13:00	0	0.395	-0.003	

902_(STM)	JUNCTION	0.00	166.34	0	13:00	0	0.828	0.031	
904_(STM)	JUNCTION	0.00	200.01	0	13:00	0	1.07	0.080	
906_(STM)	JUNCTION	0.00	1968.34	0	13:00	0	11.2	0.041	
908_(STM)	JUNCTION	0.00	117.87	0	13:00	0	0.858	0.040	
910_(STM)	JUNCTION	0.00	395.32	0	13:00	0	2.78	0.012	
912_(STM)	JUNCTION	0.00	395.24	0	13:00	0	2.78	0.066	
914_(STM)	JUNCTION	0.00	396.23	0	13:00	0	2.89	0.003	
916_(STM)	JUNCTION	0.00	732.19	0	13:00	0	5.68	1.152	
918_(STM)	JUNCTION	0.00	308.61	0	13:00	0	2.51	-0.927	
920_(STM)	JUNCTION	0.00	721.56	0	12:59	0	5.65	1.681	
922_(STM)	JUNCTION	0.00	721.35	0	12:59	0	5.61	1.280	
CB-001-002	JUNCTION	9.81	9.81	0	13:00	0.067	0.067	-0.004	
CB-003-004	JUNCTION	46.72	46.72	0	13:00	0.319	0.319	-0.000	
CB-005-006	JUNCTION	46.06	46.06	0	13:00	0.314	0.314	-0.000	
CB-007-008	JUNCTION	43.93	43.93	0	13:00	0.306	0.306	-0.000	
CB-009-010	JUNCTION	32.78	32.78	0	13:00	0.224	0.224	-0.000	
CB-011-012	JUNCTION	30.68	30.68	0	13:00	0.22	0.22	-0.000	
CB-013-014	JUNCTION	8.48	8.48	0	13:00	0.0608	0.0608	-0.000	
CB-015-016	JUNCTION	20.42	22.94	0	13:00	0.146	0.157	1.238	
CB-017-018	JUNCTION	27.02	27.02	0	13:00	0.194	0.194	-0.007	
CB-019-020	JUNCTION	8.09	14.09	0	13:00	0.058	0.0862	0.015	
CB-021-022	JUNCTION	18.03	18.03	0	13:00	0.129	0.129	-0.000	
CB-023-024	JUNCTION	21.69	21.69	0	13:00	0.155	0.155	-0.000	
CB-025-026	JUNCTION	42.67	42.67	0	13:00	0.294	0.294	-0.001	
CB-027-028	JUNCTION	41.55	41.55	0	13:00	0.286	0.286	-0.000	
CB-029-030	JUNCTION	24.62	24.62	0	13:00	0.168	0.168	-0.000	
CB-031-032	JUNCTION	32.12	32.12	0	13:00	0.219	0.219	-0.000	
CB-033-034	JUNCTION	13.12	13.12	0	13:00	0.0895	0.0895	-0.001	
CB-035-036	JUNCTION	39.55	43.77	0	13:00	0.27	0.288	-0.004	
CB-037-038	JUNCTION	37.25	55.06	0	13:00	0.254	0.341	-0.012	
CB-039-040	JUNCTION	41.58	49.22	0	13:00	0.283	0.319	-0.000	
CB-041-042	JUNCTION	46.36	46.36	0	13:00	0.316	0.316	-0.000	
CB-043-044	JUNCTION	44.96	44.96	0	13:00	0.307	0.307	-0.000	
CB-045-046	JUNCTION	15.37	15.37	0	13:00	0.105	0.105	0.002	
CB-047-048	JUNCTION	27.41	28.13	0	13:00	0.187	0.19	-0.000	
CB-049-050	JUNCTION	24.99	29.60	0	13:00	0.17	0.19	-0.009	
CB-051-052	JUNCTION	27.47	59.56	0	13:00	0.187	0.224	0.026	
CB-053-054	JUNCTION	42.73	60.42	0	13:00	0.291	0.328	-0.006	
CB-055-056	JUNCTION	28.23	86.97	0	13:00	0.193	0.522	-0.005	
CB-057-058	JUNCTION	14.54	60.85	0	13:00	0.0992	0.202	-0.093	
CB-059-060	JUNCTION	23.98	43.96	0	13:00	0.164	0.183	-0.151	
CB-061-062	JUNCTION	46.15	60.73	0	13:00	0.315	0.378	-0.007	
CB-063-064	JUNCTION	26.37	42.85	0	13:00	0.18	0.251	-0.044	
CB-065-066	JUNCTION	23.91	31.41	0	13:00	0.163	0.198	0.000	
CB-067-068	JUNCTION	37.65	59.87	0	13:00	0.257	0.361	0.316	
CB-069-070	JUNCTION	31.84	41.64	0	13:00	0.217	0.261	-0.044	

CB-071-072	JUNCTION	30.72	34.64	0	13:00	0.21	0.227	-0.008
CB-073-074	JUNCTION	27.05	38.02	0	13:00	0.185	0.236	-0.003
CB-075-076	JUNCTION	23.98	35.18	0	13:00	0.164	0.213	-0.023
CB-077-078	JUNCTION	42.67	65.78	0	13:00	0.291	0.403	-0.007
CB-079-080	JUNCTION	43.27	54.86	0	13:00	0.295	0.352	0.003
CB-081-082	JUNCTION	31.77	31.77	0	13:00	0.217	0.217	-0.005
CB-083-084	JUNCTION	65.37	65.37	0	13:00	0.393	0.393	-0.004
CB-085-086	JUNCTION	23.08	23.08	0	13:00	0.157	0.157	-0.003
CB-087-088	JUNCTION	17.74	25.56	0	13:00	0.121	0.158	-0.003
CB-089-090	JUNCTION	28.13	33.12	0	13:00	0.192	0.214	-0.005
CB-091-092	JUNCTION	27.26	38.71	0	13:00	0.186	0.239	-0.004
CB-093-094	JUNCTION	22.38	38.54	0	13:00	0.153	0.227	0.025
CB-095-096	JUNCTION	17.83	17.83	0	13:00	0.128	0.128	-0.002
CB-097-098	JUNCTION	23.30	29.20	0	13:00	0.167	0.195	-0.002
CB-099-100	JUNCTION	16.41	28.48	0	13:00	0.118	0.174	-0.025
CB-101-102	JUNCTION	18.59	18.59	0	13:00	0.133	0.133	-0.001
CB-103-104	JUNCTION	52.06	52.06	0	13:00	0.355	0.355	-0.000
CB-105-106	JUNCTION	76.32	84.31	0	13:00	0.521	0.557	-0.000
CB-107-108	JUNCTION	28.91	28.91	0	13:00	0.197	0.197	-0.003
CB-109-110	JUNCTION	62.68	62.68	0	13:00	0.427	0.427	-0.000
CB-111-112	JUNCTION	57.97	57.97	0	13:00	0.395	0.395	-0.001
CB-113-114	JUNCTION	43.54	43.54	0	13:00	0.297	0.297	-0.001
CB-115-116	JUNCTION	23.27	23.27	0	13:00	0.159	0.159	-0.006
CB-117-118	JUNCTION	39.34	47.23	0	13:00	0.268	0.306	-0.007
CB-119-120	JUNCTION	31.88	50.30	0	13:00	0.217	0.305	0.009
CB-121-122	JUNCTION	35.40	55.70	0	13:00	0.241	0.333	-0.014
CB-123-124	JUNCTION	17.84	17.84	0	13:00	0.122	0.122	-0.000
CB-125-126	JUNCTION	33.39	33.39	0	13:00	0.228	0.228	-0.212
CB-127-128	JUNCTION	40.33	52.42	0	13:00	0.275	0.332	0.148
CB-129	JUNCTION	13.64	14.49	0	13:00	0.0931	0.0967	-0.002
CB-130-131	JUNCTION	46.98	47.68	0	13:00	0.32	0.323	-0.001
CB-132-133	JUNCTION	45.55	45.55	0	13:00	0.311	0.311	-0.000
CB-134-135	JUNCTION	29.09	29.09	0	13:00	0.198	0.198	-0.000
CB-136-137	JUNCTION	32.61	32.61	0	13:00	0.222	0.222	-0.001
CB-138-139	JUNCTION	51.14	51.14	0	13:00	0.349	0.349	-0.001
CB-140-141	JUNCTION	48.88	48.88	0	13:00	0.333	0.333	0.000
CB-142-143	JUNCTION	18.58	18.58	0	13:00	0.127	0.127	-0.000
CB-144-145	JUNCTION	26.55	26.55	0	13:00	0.181	0.181	0.000
CB-146-147	JUNCTION	67.00	67.00	0	13:00	0.369	0.369	-0.002
CB-148-149	JUNCTION	32.22	32.22	0	13:00	0.22	0.22	-0.000
HP-W	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW1_(STM-OS)	JUNCTION	1697.93	1697.93	0	13:00	6.64	6.64	0.006
OS-1_(STM-OS)	JUNCTION	0.00	1129.51	0	12:42	0	6.05	0.002
OS-2_(STM-OS)	JUNCTION	0.00	1129.23	0	12:42	0	6.05	0.008
OS-3_(STM-OS)	JUNCTION	0.00	1128.90	0	12:42	0	6.05	-0.010
OS-4_(STM-OS)	JUNCTION	0.00	1128.50	0	12:43	0	6.05	0.037
OS-5_(STM-OS)	JUNCTION	0.00	1129.47	0	12:42	0	6.05	-0.095
OS-6_(STM-OS)	JUNCTION	0.00	1129.85	0	12:43	0	6.05	0.006
OVF-02	JUNCTION	0.00	30.48	0	13:00	0	0.142	-0.051
OVF-03	JUNCTION	0.00	202.49	0	13:00	0	1.16	-0.037
OVF-04	JUNCTION	50.52	252.27	0	13:00	0.147	1.31	0.044
OVF-05	JUNCTION	0.00	538.08	0	13:00	0	3.3	-0.213
OVF-06	JUNCTION	0.00	531.14	0	13:00	0	3.3	0.152
POND-OUT	JUNCTION	0.00	368.96	0	20:03	0	33.4	0.001
RYCB01	JUNCTION	40.11	40.11	0	13:00	0.125	0.125	0.003
RYCB02	JUNCTION	17.26	17.26	0	12:55	0.0726	0.0726	0.003
RYCB03	JUNCTION	11.19	11.19	0	12:45	0.0471	0.0471	0.003
RYCB04	JUNCTION	24.10	24.10	0	12:45	0.101	0.101	0.003
RYCB05	JUNCTION	34.36	34.36	0	12:45	0.144	0.144	0.002
RYCB06	JUNCTION	31.01	31.01	0	12:45	0.13	0.13	0.002
RYCB07	JUNCTION	40.65	40.65	0	12:45	0.171	0.171	0.002
RYCB08	JUNCTION	9.52	9.52	0	12:55	0.04	0.04	0.003
RYCB09	JUNCTION	18.84	18.84	0	12:55	0.079	0.079	0.003
RYCB10	JUNCTION	26.75	26.75	0	12:55	0.112	0.112	0.003
RYCB11	JUNCTION	3.80	3.80	0	13:00	0.016	0.016	0.003
RYCB12	JUNCTION	23.86	23.86	0	12:50	0.1	0.1	0.003
RYCB13	JUNCTION	48.84	48.84	0	12:55	0.205	0.205	0.002
RYCB14	JUNCTION	48.47	48.47	0	13:00	0.204	0.204	0.002
RYCB15	JUNCTION	15.85	15.85	0	12:35	0.0666	0.0666	0.003
RYCB16	JUNCTION	46.54	46.54	0	12:45	0.195	0.195	0.002
RYCB17	JUNCTION	36.32	36.32	0	12:55	0.153	0.153	0.002
RYCB18	JUNCTION	11.11	11.11	0	12:40	0.0467	0.0467	0.003
RYCB19	JUNCTION	10.71	10.71	0	12:50	0.0452	0.0452	0.003
RYCB20	JUNCTION	30.59	30.59	0	12:55	0.128	0.128	0.002
RYCB21	JUNCTION	31.95	31.95	0	12:45	0.134	0.134	0.002
RYCB22	JUNCTION	47.57	47.57	0	12:55	0.2	0.2	0.002
RYCB23	JUNCTION	18.87	18.87	0	12:45	0.0793	0.0793	0.003
RYCB24	JUNCTION	50.04	50.04	0	12:45	0.21	0.21	0.002
RYCB25	JUNCTION	16.44	16.44	0	12:55	0.069	0.069	0.003
RYCB26	JUNCTION	15.37	15.37	0	12:55	0.0646	0.0646	0.003
RYCB27	JUNCTION	17.29	17.29	0	12:55	0.0727	0.0727	0.002
RYCB28	JUNCTION	20.92	20.92	0	12:45	0.088	0.088	0.002
RYCB29	JUNCTION	47.05	47.05	0	12:55	0.198	0.198	0.002
RYCB30	JUNCTION	31.71	31.71	0	12:55	0.133	0.133	0.002
RYCB31	JUNCTION	19.62	19.64	0	12:50	0.0825	0.0826	0.002
RYCB32	JUNCTION	35.58	35.58	0	12:45	0.149	0.149	0.002
RYCB33	JUNCTION	20.80	20.80	0	12:35	0.0874	0.0874	0.003
RYCB34	JUNCTION	11.43	11.43	0	12:50	0.0481	0.0481	0.003
RYCB35	JUNCTION	6.55	6.55	0	12:55	0.0276	0.0276	0.003
RYCB36	JUNCTION	88.07	88.07	0	13:00	0.285	0.285	0.003
RYCB38	JUNCTION	235.34	235.34	0	13:00	0.767	0.767	0.001
RYCB39	JUNCTION	12.90	12.90	0	13:00	0.0442	0.0443	-3.065

RYCB40	JUNCTION	83.25	83.25	0	13:00	0.28	0.28	0.002
OUT-EXT	OUTFALL	0.00	1131.96	0	12:43	0	6.05	0.000
OUT-MAIN	OUTFALL	0.00	368.96	0	20:03	0	33.4	0.000
POND-LOWER	STORAGE	151.93	3223.00	0	12:25	1.18	47.4	-0.047
POND-UPPER	STORAGE	146.99	3729.57	0	13:00	1.15	28.9	-0.013
SU-031	STORAGE	115.42	115.42	0	13:00	0.826	0.826	-0.000
SU-090	STORAGE	67.89	67.89	0	13:00	0.463	0.463	-0.000
SU-098	STORAGE	71.29	71.29	0	13:00	0.51	0.51	-0.000
SU-104B	STORAGE	191.42	191.42	0	13:00	1.02	1.02	0.004
SU-108	STORAGE	74.92	74.92	0	13:00	0.512	0.512	-0.000
SU-109	STORAGE	223.90	223.90	0	13:00	1.57	1.57	-0.001
SU-110B	STORAGE	287.11	287.11	0	13:00	1.99	1.99	0.000
SU-111	STORAGE	72.97	72.97	0	13:00	0.522	0.522	-0.000
SU-112	STORAGE	320.16	320.16	0	13:00	2.59	2.59	-0.000
SU-114	STORAGE	110.57	110.57	0	13:00	0.894	0.894	-0.000
SU-118	STORAGE	105.94	105.94	0	13:00	0.758	0.758	-0.000
SU-120	STORAGE	257.20	257.20	0	13:00	1.77	1.77	-0.000
SU-122	STORAGE	59.58	59.58	0	13:00	0.453	0.498	0.486
SU-123	STORAGE	234.37	234.37	0	13:00	1.77	1.8	0.187

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
1214_(STM)	JUNCTION	0.23	0.012	2.444
1216_(STM)	JUNCTION	9.38	0.857	0.884
1218_(STM)	JUNCTION	9.95	0.926	0.504
1220_(STM)	JUNCTION	20.15	0.620	2.350
1222_(STM)	JUNCTION	23.64	0.888	0.962
1300_(STM)	JUNCTION	7.98	0.679	2.938
1410_(STM)	JUNCTION	2.11	0.010	3.570
1412_(STM)	JUNCTION	15.37	0.325	2.985
1505_(STM)	JUNCTION	24.98	0.987	0.933
914_(STM)	JUNCTION	10.77	0.140	1.873
918_(STM)	JUNCTION	28.36	1.209	2.008
920_(STM)	JUNCTION	34.61	1.409	2.196
922_(STM)	JUNCTION	35.65	1.506	1.489
HW1_(STM-OS)	JUNCTION	0.75	0.170	0.000
OS-1_(STM-OS)	JUNCTION	0.74	0.127	1.283
RYCB39	JUNCTION	1.16	0.367	0.843

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Node Flooding Summary
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Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate LPS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Depth Meters
HW1_(STM-OS)	0.60	582.57	0 13:00	0.636	0.000

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
POND-LOWER	15.716	62	0	0	22.873	90	0 20:01	720.85
POND-UPPER	10.027	41	0	0	20.559	85	0 14:14	352.91
SU-031	0.000	0	0	0	0.000	0	0 13:00	115.41
SU-090	0.000	0	0	0	0.000	0	0 13:00	67.89
SU-098	0.000	0	0	0	0.000	0	0 13:00	71.29
SU-104B	0.000	0	0	0	0.009	6	0 13:02	172.32
SU-108	0.000	0	0	0	0.000	0	0 13:00	74.90
SU-109	0.000	0	0	0	0.000	0	0 13:00	223.88
SU-110B	0.000	0	0	0	0.000	0	0 13:00	287.07
SU-111	0.000	0	0	0	0.000	0	0 13:00	72.96
SU-112	0.000	0	0	0	0.000	0	0 13:00	320.16
SU-114	0.000	0	0	0	0.000	0	0 13:00	110.57
SU-118	0.000	0	0	0	0.000	0	0 13:00	105.94
SU-120	0.000	0	0	0	0.000	0	0 13:00	257.17
SU-122	0.000	0	0	0	0.000	1	0 19:30	59.50
SU-123	0.000	0	0	0	0.000	0	0 20:28	233.99

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Outfall Loading Summary

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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OUT-EXT	9.24	480.67	1131.96	6.053
OUT-MAIN	95.76	201.39	368.96	33.375
System	52.50	682.06	1419.68	39.428

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1_(STM)	CONDUIT	99.99	0 13:00	1.08	0.48	0.44
2_(STM)	CONDUIT	173.05	0 13:00	1.23	0.42	0.41
3_(1)_(STM)	CONDUIT	2141.36	0 13:00	1.84	0.78	0.63
3_(10)_(STM)	CONDUIT	1203.46	0 12:56	2.88	0.58	0.67
3_(100)_(STM)	CONDUIT	3562.60	0 13:00	1.97	0.79	1.00
3_(11)_(STM)	CONDUIT	1058.68	0 13:00	2.59	0.51	0.54
3_(12)_(STM)	CONDUIT	841.81	0 13:00	2.15	0.46	0.52
3_(13)_(STM)	CONDUIT	841.60	0 13:00	2.41	0.55	0.54
3_(14)_(STM)	CONDUIT	808.91	0 13:00	2.28	0.57	0.55
3_(15)_(STM)	CONDUIT	353.78	0 13:00	1.96	0.51	0.50
3_(16)_(STM)	CONDUIT	301.22	0 13:00	1.68	0.49	0.50
3_(2)_(1)_(STM)	CONDUIT	2198.36	0 13:00	2.02	0.89	0.59
3_(2)_(STM)	CONDUIT	2198.10	0 13:00	1.89	0.95	0.63
3_(24)_(STM)	CONDUIT	235.89	0 13:00	1.37	0.62	0.59
3_(25)_(1)_(STM)	CONDUIT	17.84	0 13:00	0.83	0.45	0.45
3_(26)_(1)_(STM)	CONDUIT	314.34	0 13:00	1.58	0.47	0.55
3_(26)_(STM)	CONDUIT	275.76	0 13:00	1.80	0.56	0.53
3_(27)_(STM)	CONDUIT	411.25	0 13:00	1.63	0.52	0.56
3_(28)_(STM)	CONDUIT	62.16	0 13:00	0.97	0.63	0.56
3_(29)_(STM)	CONDUIT	107.70	0 13:00	1.07	0.67	0.61
3_(3)_(STM)	CONDUIT	2286.77	0 13:00	2.31	0.88	0.55
3_(30)_(STM)	CONDUIT	136.78	0 13:00	1.08	0.59	0.57
3_(31)_(STM)	CONDUIT	136.94	0 13:01	1.05	0.60	0.59
3_(32)_(STM)	CONDUIT	216.93	0 13:00	1.61	0.60	0.60
3_(33)_(STM)	CONDUIT	46.34	0 13:00	0.86	0.48	0.49
3_(34)_(STM)	CONDUIT	91.27	0 13:00	1.07	0.54	0.53
3_(35)_(STM)	CONDUIT	12.32	0 13:00	0.69	0.19	0.30
3_(36)_(STM)	CONDUIT	120.42	0 13:00	1.32	0.64	0.56
3_(37)_(STM)	CONDUIT	188.55	0 13:00	1.09	0.61	0.59
3_(38)_(STM)	CONDUIT	188.67	0 13:01	1.06	0.54	0.63
3_(39)_(STM)	CONDUIT	251.03	0 13:00	1.20	0.62	0.57
3_(4)_(STM)	CONDUIT	2300.87	0 13:00	1.33	0.95	1.00
3_(40)_(STM)	CONDUIT	235.46	0 13:00	1.29	0.62	0.51
3_(41)_(STM)	CONDUIT	186.65	0 13:00	1.21	0.61	0.54
3_(42)_(STM)	CONDUIT	541.30	0 13:00	1.78	0.49	0.59
3_(44)_(STM)	CONDUIT	27.49	0 13:00	1.03	0.18	0.29
3_(44A)_(STM)	CONDUIT	6.19	0 13:00	0.36	0.04	0.21
3_(45)_(STM)	CONDUIT	115.54	0 13:00	1.22	0.32	0.51
3_(46)_(STM)	CONDUIT	360.90	0 13:00	1.85	0.70	0.65
3_(47)_(STM)	CONDUIT	384.70	0 13:00	2.07	0.72	0.63
3_(48)_(STM)	CONDUIT	1003.02	0 13:00	1.60	0.82	0.68
3_(49)_(STM)	CONDUIT	1003.00	0 13:00	1.60	0.64	0.68
3_(5)_(STM)	CONDUIT	2385.70	0 13:00	1.45	0.97	1.00
3_(50)_(STM)	CONDUIT	1040.06	0 13:01	1.71	0.85	0.66
3_(51)_(STM)	CONDUIT	1040.07	0 13:01	1.84	0.74	0.62
3_(52)_(STM)	CONDUIT	1040.25	0 13:01	1.91	0.84	0.61
3_(53)_(STM)	CONDUIT	1234.90	0 13:01	1.66	0.78	0.63
3_(54)_(1)_(STM)	CONDUIT	1452.02	0 13:00	1.33	0.50	0.60
3_(54)_(STM)	CONDUIT	1380.81	0 13:01	2.05	0.83	0.58
3_(58)_(STM)	CONDUIT	1968.14	0 13:00	1.56	1.45	0.67
3_(6)_(STM)	CONDUIT	3564.20	0 13:00	1.69	0.94	1.00
3_(61)_(STM)	CONDUIT	166.34	0 13:00	1.94	0.26	0.42
3_(63)_(STM)	CONDUIT	65.21	0 13:00	1.06	0.30	0.41
3_(63D)_(STM)	CONDUIT	85.28	0 13:00	1.26	0.40	0.44
3_(64)_(STM)	CONDUIT	9.86	0 13:00	0.26	0.09	0.38
3_(64D)_(STM)	CONDUIT	64.43	0 13:00	1.08	0.58	0.53
3_(65)_(STM)	CONDUIT	64.43	0 13:00	1.10	0.55	0.53
3_(66)_(STM)	CONDUIT	84.59	0 13:00	1.63	0.24	0.36
3_(67)_(STM)	CONDUIT	116.32	0 13:00	1.38	0.32	0.52
3_(67D)_(STM)	CONDUIT	156.30	0 13:00	1.71	0.43	0.56
3_(68)_(STM)	CONDUIT	267.23	0 13:00	1.30	0.57	0.56
3_(69)_(STM)	CONDUIT	37.59	0 13:02	1.00	0.58	0.52
3_(7)_(STM)	CONDUIT	3564.83	0 13:00	1.87	0.78	1.00
3_(70)_(1)_(STM)	CONDUIT	395.24	0 13:00	2.88	0.47	0.49
3_(70)_(STM)	CONDUIT	117.86	0 13:00	2.09	0.31	0.38
3_(71)_(STM)	CONDUIT	395.21	0 13:00	2.57	0.49	0.56
3_(72)_(1)_(STM)	CONDUIT	308.39	0 13:00	0.66	0.38	1.00
3_(72)_(STM)	CONDUIT	396.37	0 13:00	2.02	0.34	1.00
3_(73)_(STM)	CONDUIT	832.72	0 12:42	1.65	0.34	1.00
3_(74)_(STM)	CONDUIT	856.11	0 12:52	1.68	0.34	1.00

3_(75)_(STM)	CONDUIT	543.94	0	13:01	1.55	0.30	0.92
3_(76)_(1)_(STM)	CONDUIT	473.69	0	13:00	1.56	0.29	0.43
3_(76)_(STM)	CONDUIT	546.59	0	13:00	1.51	0.33	0.60
3_(77)_(STM)	CONDUIT	250.18	0	13:00	1.38	0.32	0.37
3_(78)_(STM)	CONDUIT	250.22	0	13:00	1.31	0.32	0.39
3_(79)_(STM)	CONDUIT	223.64	0	13:00	2.31	0.40	0.46
3_(80)_(STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
3_(81)_(STM)	CONDUIT	111.55	0	13:00	1.14	0.20	0.32
3_(82)_(STM)	CONDUIT	81.58	0	13:00	0.93	0.15	0.30
3_(83)_(1)_(STM)	CONDUIT	15.37	0	13:00	0.77	0.16	0.45
3_(83)_(STM)	CONDUIT	63.81	0	13:00	1.79	0.47	0.50
3_(84)_(STM)	CONDUIT	23.67	0	13:00	1.18	0.23	0.33
3_(85)_(1)_(STM)	CONDUIT	146.66	0	13:00	1.13	0.48	0.58
3_(85)_(STM)	CONDUIT	146.67	0	13:00	1.53	0.59	0.58
3_(86)_(STM)	CONDUIT	55.35	0	13:00	0.91	0.35	0.41
3_(87)_(STM)	CONDUIT	15.95	0	13:00	1.22	0.21	0.31
3_(88)_(STM)	CONDUIT	40.94	0	13:00	1.51	0.35	0.41
3_(89)_(1)_(STM)	CONDUIT	108.17	0	13:00	1.26	0.39	0.53
3_(89)_(STM)	CONDUIT	108.18	0	13:00	1.46	0.31	0.47
3_(9)_(STM)	CONDUIT	941.76	0	12:42	1.10	0.44	1.00
3_(90)_(STM)	CONDUIT	200.00	0	13:00	2.55	0.32	0.39
3_(91)_(STM)	CONDUIT	1355.13	0	12:23	1.51	0.70	1.00
3_(93)_(STM)	CONDUIT	2047.57	0	12:16	2.37	0.29	1.00
3_(94)_(STM)	CONDUIT	721.56	0	12:59	0.50	0.41	1.00
3_(95)_(STM)	CONDUIT	721.35	0	12:59	0.71	0.41	1.00
3_(96)_(STM)	CONDUIT	720.88	0	12:59	1.16	0.35	1.00
C1	CHANNEL	2.52	0	13:00	0.54	0.00	0.01
C10	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C100	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C101	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C102	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C103	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C104	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C105	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C106	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C107	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C108	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C109	CHANNEL	30.48	0	13:00	0.59	0.00	0.05
C11	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C110	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C111	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C112	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C113	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C114	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C115	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C116	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C117	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C118	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C119	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C12	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C120	CHANNEL	21.38	0	13:00	0.70	0.00	0.03
C121	CHANNEL	7.64	0	13:00	0.39	0.00	0.02
C122	CHANNEL	7.50	0	13:00	0.38	0.00	0.02
C123	CHANNEL	6.24	0	13:00	0.27	0.00	0.13
C124	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C125	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C126	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C127	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C128	CHANNEL	0.75	0	13:00	0.18	0.00	0.10
C129	CHANNEL	3.04	0	13:00	0.41	0.00	0.02
C13	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C130	CHANNEL	0.72	0	13:00	0.28	0.00	0.01
C131	CHANNEL	0.71	0	13:00	0.27	0.00	0.01
C132	CONDUIT	27.45	0	13:00	0.89	0.00	0.01
C133	CONDUIT	368.96	0	20:03	0.80	0.02	0.09
C134	CONDUIT	531.14	0	13:00	0.71	0.11	0.36
C135	CHANNEL	18.42	0	13:00	0.49	0.00	0.03
C136	CHANNEL	20.30	0	13:00	0.58	0.00	0.03
C137	CONDUIT	21.03	0	13:00	0.37	0.00	0.35
C138	CONDUIT	526.51	0	13:02	1.04	0.08	0.28
C139	CONDUIT	202.16	0	13:01	0.56	0.03	0.22
C14	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C140	CONDUIT	251.25	0	13:00	0.42	0.04	0.32
C141	CHANNEL	0.85	0	13:00	0.09	0.00	0.02
C15	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C16	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C17	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C18	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C19	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C2	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C20	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C21	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C22	CHANNEL	11.58	0	13:00	0.37	0.00	0.03
C23	CHANNEL	23.11	0	13:00	0.50	0.00	0.04
C24	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C25	CHANNEL	4.22	0	13:00	0.21	0.00	0.02
C26	CHANNEL	17.81	0	13:00	0.48	0.00	0.03
C27	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C28	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C29	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C3	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C30	CHANNEL	11.45	0	13:00	0.43	0.00	0.03

C31	CHANNEL	16.16	0	13:00	0.60	0.00	0.03
C32	CHANNEL	10.97	0	13:00	0.35	0.00	0.03
C33	CHANNEL	11.21	0	13:00	0.39	0.00	0.03
C34	CHANNEL	20.80	0	13:01	0.47	0.00	0.04
C35	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
C36	CHANNEL	47.27	0	13:00	0.16	0.00	0.13
C37	CHANNEL	46.79	0	13:00	0.45	0.00	0.11
C38	CHANNEL	21.08	0	13:00	0.18	0.00	0.10
C39	CHANNEL	18.01	0	13:00	0.24	0.00	0.05
C4	CHANNEL	6.01	0	13:00	0.45	0.00	0.02
C40	CHANNEL	7.82	0	13:00	0.42	0.00	0.02
C41	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C42	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C43	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C44	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C45	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C46	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C47	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C48	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C49	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C5	CHANNEL	3.16	0	13:00	0.47	0.00	0.01
C50	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C51	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C52	CHANNEL	8.00	0	13:00	0.34	0.00	0.03
C53	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C54	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C55	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C56	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C57	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C58	CHANNEL	11.33	0	13:00	0.40	0.00	0.11
C59	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C6	CHANNEL	8.91	0	13:00	1.04	0.00	0.02
C60	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C61	CHANNEL	7.89	0	13:00	0.30	0.00	0.03
C62	CONDUIT	30.46	0	13:00	0.17	0.01	0.14
C63	CHANNEL	4.36	0	13:00	0.20	0.00	0.03
C64	CHANNEL	3.92	0	13:00	0.20	0.00	0.03
C65	CHANNEL	8.29	0	13:00	0.42	0.00	0.02
C66	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C67	CHANNEL	16.48	0	13:00	0.63	0.00	0.06
C68	CHANNEL	4.61	0	13:00	0.22	0.00	0.03
C69	CHANNEL	9.61	0	13:00	0.56	0.00	0.02
C7	CONDUIT	6.62	0	13:00	0.10	0.00	0.01
C70	CHANNEL	5.00	0	13:00	0.23	0.00	0.03
C71	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C72	CHANNEL	14.58	0	13:00	0.58	0.00	0.08
C73	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C74	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C75	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C76	CHANNEL	25.78	0	13:00	0.61	0.00	0.04
C77	CHANNEL	9.80	0	13:00	0.30	0.00	0.06
C78	CHANNEL	15.98	0	13:00	0.44	0.00	0.13
C79	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C8	CHANNEL	5.90	0	13:00	0.31	0.00	0.02
C80	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C81	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C82	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C83	CHANNEL	59.22	0	13:00	0.73	0.00	0.13
C84	CHANNEL	59.38	0	13:00	0.76	0.00	0.05
C85	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C86	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C87	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C88	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C89	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C9	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C90	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C91	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C92	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C93	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C94	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C95	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C96	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
C97	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C98	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C99	CHANNEL	0.00	0	00:00	0.00	0.00	0.01
RYCB01-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
RYCB02-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.20
RYCB03-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.03
RYCB04-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB05-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.39
RYCB06-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB07-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB08-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB09-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB10-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB11-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB12-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
RYCB13-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB14-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB15-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB16-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB17-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00

RYCB18-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.20
RYCB19-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB20-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB21-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB22-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB23-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB24-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB25-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB26-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB27-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB28-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.02
RYCB29-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB30-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB31-MAJOR	CONDUIT	0.02	0	13:00	0.02	0.00	0.07
RYCB32-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
RYCB33-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB34-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB35-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
RYCB36-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
RYCB38-MAJOR	CONDUIT	27.75	0	13:00	1.24	0.08	0.29
RYCB40-MAJOR	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
STM-1_(STM)	CONDUIT	216.85	0	13:00	1.38	0.53	0.54
STM-2_(STM)	CONDUIT	157.98	0	13:00	1.37	0.55	0.53
STM-2-10_(STM-OS)	CONDUIT	1128.90	0	12:42	1.82	1.07	0.94
STM-2-11_(STM-OS)	CONDUIT	1128.50	0	12:43	1.93	1.02	0.87
STM-2-12_(STM-OS)	CONDUIT	1129.47	0	12:42	2.08	1.05	0.80
STM-2-13_(STM-OS)	CONDUIT	1129.85	0	12:43	2.28	1.10	0.73
STM-2-15_(STM-OS)	CONDUIT	1131.96	0	12:43	2.24	1.06	0.74
STM-2-8_(STM-OS)	CONDUIT	1123.54	0	13:17	1.77	1.03	1.00
STM-2-9_(STM-OS)	CONDUIT	1129.23	0	12:42	1.80	1.05	0.96
STM-3_(STM)	CONDUIT	82.75	0	13:00	1.18	0.43	0.46
STM-4_(STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.02
STM-5_(STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.14
STM-5A_(STM)	CONDUIT	20.91	0	13:00	0.79	0.17	0.29
STM-6_(STM)	CONDUIT	20.91	0	13:00	0.72	0.19	0.34
STM-7_(STM)	CONDUIT	152.20	0	13:00	1.33	0.57	0.52
CB-003-PIPE	ORIFICE	23.36	0	13:00			1.00
CB-004-PIPE	ORIFICE	23.36	0	13:00			1.00
CB-005-PIPE	ORIFICE	23.03	0	13:00			1.00
CB-006-PIPE	ORIFICE	23.03	0	13:00			1.00
CB-007-PIPE	ORIFICE	21.96	0	13:00			1.00
CB-008-PIPE	ORIFICE	21.96	0	13:00			1.00
CB-009-PIPE	ORIFICE	16.39	0	13:00			1.00
CB-010-PIPE	ORIFICE	16.39	0	13:00			1.00
CB-011-PIPE	ORIFICE	15.34	0	13:00			1.00
CB-012-PIPE	ORIFICE	15.34	0	13:00			1.00
CB-021-PIPE	ORIFICE	9.01	0	13:00			1.00
CB-022-PIPE	ORIFICE	9.01	0	13:00			1.00
CB-023-PIPE	ORIFICE	10.84	0	13:00			1.00
CB-024-PIPE	ORIFICE	10.84	0	13:00			1.00
CB-025-PIPE	ORIFICE	21.33	0	13:00			1.00
CB-026-PIPE	ORIFICE	21.33	0	13:00			1.00
CB-027-PIPE	ORIFICE	20.77	0	13:00			1.00
CB-028-PIPE	ORIFICE	20.77	0	13:00			1.00
CB-029-PIPE	ORIFICE	12.31	0	13:00			1.00
CB-030-PIPE	ORIFICE	12.31	0	13:00			1.00
CB-031-PIPE	ORIFICE	16.06	0	13:00			1.00
CB-032-PIPE	ORIFICE	16.06	0	13:00			1.00
CB-039-PIPE	ORIFICE	24.61	0	13:00			1.00
CB-040-PIPE	ORIFICE	24.61	0	13:00			1.00
CB-041-PIPE	ORIFICE	23.17	0	13:00			1.00
CB-042-PIPE	ORIFICE	23.17	0	13:00			1.00
CB-043-PIPE	ORIFICE	22.48	0	13:00			1.00
CB-044-PIPE	ORIFICE	22.48	0	13:00			1.00
CB-047-PIPE	ORIFICE	14.06	0	13:00			1.00
CB-048-PIPE	ORIFICE	14.06	0	13:00			1.00
CB-055-PIPE	ORIFICE	19.42	0	13:00			1.00
CB-056-PIPE	ORIFICE	19.42	0	13:00			1.00
CB-057-PIPE	ORIFICE	19.16	0	13:01			1.00
CB-058-PIPE	ORIFICE	19.16	0	13:01			1.00
CB-059-PIPE	ORIFICE	18.56	0	13:02			1.00
CB-060-PIPE	ORIFICE	18.56	0	13:02			1.00
CB-061-PIPE	ORIFICE	24.32	0	13:02			1.00
CB-062-PIPE	ORIFICE	24.32	0	13:02			1.00
CB-063-PIPE	ORIFICE	18.81	0	13:01			1.00
CB-064-PIPE	ORIFICE	18.81	0	13:01			1.00
CB-065-PIPE	ORIFICE	15.70	0	13:00			1.00
CB-066-PIPE	ORIFICE	15.70	0	13:00			1.00
CB-067-PIPE	ORIFICE	19.58	0	13:04			1.00
CB-068-PIPE	ORIFICE	19.58	0	13:04			1.00
CB-069-PIPE	ORIFICE	18.79	0	13:01			1.00
CB-070-PIPE	ORIFICE	18.79	0	13:01			1.00
CB-083-PIPE	ORIFICE	28.54	0	13:01			1.00
CB-084-PIPE	ORIFICE	28.54	0	13:01			1.00
CB-103-PIPE	ORIFICE	26.03	0	13:00			1.00
CB-104-PIPE	ORIFICE	26.03	0	13:00			1.00
CB-105-PIPE	ORIFICE	42.14	0	13:00			1.00
CB-106-PIPE	ORIFICE	42.14	0	13:00			1.00
CB-109-PIPE	ORIFICE	30.92	0	13:00			1.00
CB-110-PIPE	ORIFICE	30.92	0	13:00			1.00
CB-111-PIPE	ORIFICE	28.98	0	13:00			1.00
CB-112-PIPE	ORIFICE	28.98	0	13:00			1.00

CB-113-PIPE	ORIFICE	21.76	0	13:00	1.00
CB-114-PIPE	ORIFICE	21.76	0	13:00	1.00
CB-123-PIPE	ORIFICE	8.92	0	13:00	1.00
CB-124-PIPE	ORIFICE	8.92	0	13:00	1.00
CB-127-PIPE	ORIFICE	19.32	0	13:02	1.00
CB-128-PIPE	ORIFICE	19.32	0	13:02	1.00
CB-130-PIPE	ORIFICE	23.84	0	13:00	1.00
CB-131-PIPE	ORIFICE	23.84	0	13:00	1.00
CB-132-PIPE	ORIFICE	22.77	0	13:00	1.00
CB-133-PIPE	ORIFICE	22.77	0	13:00	1.00
CB-134-PIPE	ORIFICE	14.54	0	13:00	1.00
CB-135-PIPE	ORIFICE	14.54	0	13:00	1.00
CB-136-PIPE	ORIFICE	16.30	0	13:00	1.00
CB-137-PIPE	ORIFICE	16.30	0	13:00	1.00
CB-138-PIPE	ORIFICE	25.56	0	13:00	1.00
CB-139-PIPE	ORIFICE	25.56	0	13:00	1.00
CB-140-PIPE	ORIFICE	24.44	0	13:00	1.00
CB-141-PIPE	ORIFICE	24.44	0	13:00	1.00
CB-142-PIPE	ORIFICE	9.29	0	13:00	1.00
CB-143-PIPE	ORIFICE	9.29	0	13:00	1.00
CB-144-PIPE	ORIFICE	13.27	0	13:00	1.00
CB-145-PIPE	ORIFICE	13.27	0	13:00	1.00
CB-146-PIPE	ORIFICE	28.55	0	13:01	1.00
CB-147-PIPE	ORIFICE	28.55	0	13:01	1.00
CB-148-PIPE	ORIFICE	16.11	0	13:00	1.00
CB-149-PIPE	ORIFICE	16.11	0	13:00	1.00
LOWER-OUT1	ORIFICE	55.71	0	20:03	1.00
LOWER-OUT2	ORIFICE	313.25	0	20:03	1.00
OR-SU-031	ORIFICE	115.41	0	13:00	1.00
OR-SU-090	ORIFICE	67.89	0	13:00	1.00
OR-SU-098	ORIFICE	71.29	0	13:00	1.00
OR-SU-104B	ORIFICE	172.32	0	13:02	1.00
OR-SU-108	ORIFICE	74.90	0	13:00	1.00
OR-SU-109	ORIFICE	223.88	0	13:00	1.00
OR-SU-110B	ORIFICE	287.07	0	13:00	1.00
OR-SU-111	ORIFICE	72.96	0	13:00	1.00
OR-SU-112	ORIFICE	320.16	0	13:00	0.45
OR-SU-114	ORIFICE	110.57	0	13:00	1.00
OR-SU-118	ORIFICE	105.94	0	13:00	1.00
OR-SU-120	ORIFICE	257.17	0	13:00	1.00
OR-SU-122	ORIFICE	59.50	0	12:43	1.00
OR-SU-123	ORIFICE	233.99	0	13:00	1.00
RYCB01-PIPE	ORIFICE	40.10	0	13:00	0.90
RYCB02-PIPE	ORIFICE	17.26	0	12:55	0.51
RYCB03-PIPE	ORIFICE	11.19	0	12:45	0.38
RYCB04-PIPE	ORIFICE	24.10	0	12:45	0.64
RYCB05-PIPE	ORIFICE	34.36	0	12:45	0.81
RYCB06-PIPE	ORIFICE	31.01	0	12:45	0.76
RYCB07-PIPE	ORIFICE	40.65	0	12:45	0.91
RYCB08-PIPE	ORIFICE	9.52	0	12:55	0.35
RYCB09-PIPE	ORIFICE	18.84	0	12:55	0.54
RYCB10-PIPE	ORIFICE	26.75	0	12:56	0.69
RYCB11-PIPE	ORIFICE	3.80	0	13:00	0.19
RYCB12-PIPE	ORIFICE	23.86	0	12:50	0.64
RYCB13-PIPE	ORIFICE	48.84	0	12:55	1.00
RYCB14-PIPE	ORIFICE	48.47	0	13:00	1.00
RYCB15-PIPE	ORIFICE	15.85	0	12:35	0.49
RYCB16-PIPE	ORIFICE	46.54	0	12:45	0.99
RYCB17-PIPE	ORIFICE	36.32	0	12:55	0.84
RYCB18-PIPE	ORIFICE	11.11	0	12:40	0.38
RYCB19-PIPE	ORIFICE	10.71	0	12:50	0.37
RYCB20-PIPE	ORIFICE	30.59	0	12:55	0.75
RYCB21-PIPE	ORIFICE	31.95	0	12:45	0.77
RYCB22-PIPE	ORIFICE	47.57	0	12:55	1.00
RYCB23-PIPE	ORIFICE	18.87	0	12:45	0.54
RYCB24-PIPE	ORIFICE	50.04	0	12:45	1.00
RYCB25-PIPE	ORIFICE	16.44	0	12:55	0.50
RYCB26-PIPE	ORIFICE	15.37	0	12:55	0.48
RYCB27-PIPE	ORIFICE	17.29	0	12:55	0.51
RYCB28-PIPE	ORIFICE	20.92	0	12:46	0.58
RYCB29-PIPE	ORIFICE	47.05	0	12:55	1.00
RYCB30-PIPE	ORIFICE	31.71	0	12:55	0.77
RYCB31-PIPE	ORIFICE	19.64	0	12:50	0.56
RYCB32-PIPE	ORIFICE	35.58	0	12:45	0.83
RYCB33-PIPE	ORIFICE	20.80	0	12:35	0.58
RYCB34-PIPE	ORIFICE	11.43	0	12:50	0.39
RYCB35-PIPE	ORIFICE	6.55	0	12:55	0.27
RYCB36-PIPE	ORIFICE	88.06	0	13:00	1.00
RYCB38-PIPE	ORIFICE	207.40	0	13:00	1.00
RYCB39-PIPE	ORIFICE	12.96	0	12:42	1.00
RYCB40-PIPE	ORIFICE	83.23	0	13:00	1.00
UPPER-LOWER	ORIFICE	352.91	0	14:14	1.00
CB-001-PIPE	DUMMY	4.91	0	13:00	
CB-002-PIPE	DUMMY	4.91	0	13:00	
CB-013-PIPE	DUMMY	2.98	0	13:00	
CB-014-PIPE	DUMMY	2.98	0	13:00	
CB-015-PIPE	DUMMY	0.95	0	13:00	
CB-016-PIPE	DUMMY	0.95	0	13:00	
CB-017-PIPE	DUMMY	10.51	0	12:30	
CB-018-PIPE	DUMMY	10.51	0	12:30	
CB-019-PIPE	DUMMY	3.72	0	13:00	
CB-020-PIPE	DUMMY	3.72	0	13:00	

CB-033-PIPE	DUMMY	4.45	0	13:00
CB-034-PIPE	DUMMY	4.45	0	13:00
CB-035-PIPE	DUMMY	12.98	0	13:00
CB-036-PIPE	DUMMY	12.98	0	13:00
CB-037-PIPE	DUMMY	16.84	0	13:00
CB-038-PIPE	DUMMY	16.84	0	13:00
CB-045-PIPE	DUMMY	6.16	0	13:00
CB-046-PIPE	DUMMY	6.16	0	13:00
CB-049-PIPE	DUMMY	10.65	0	13:00
CB-050-PIPE	DUMMY	10.65	0	13:00
CB-051-PIPE	DUMMY	19.00	0	12:56
CB-052-PIPE	DUMMY	19.00	0	12:56
CB-053-PIPE	DUMMY	0.00	0	00:00
CB-054-PIPE	DUMMY	0.00	0	00:00
CB-071-PIPE	DUMMY	11.83	0	13:00
CB-072-PIPE	DUMMY	11.83	0	13:00
CB-073-PIPE	DUMMY	13.41	0	13:00
CB-074-PIPE	DUMMY	13.41	0	13:00
CB-075-PIPE	DUMMY	10.30	0	13:00
CB-076-PIPE	DUMMY	10.30	0	13:00
CB-077-PIPE	DUMMY	20.00	0	13:00
CB-078-PIPE	DUMMY	20.00	0	13:00
CB-079-PIPE	DUMMY	15.87	0	13:00
CB-080-PIPE	DUMMY	15.87	0	13:00
CB-081-PIPE	DUMMY	10.09	0	13:00
CB-082-PIPE	DUMMY	10.09	0	13:00
CB-085-PIPE	DUMMY	7.63	0	13:00
CB-086-PIPE	DUMMY	7.63	0	13:00
CB-087-PIPE	DUMMY	7.97	0	13:00
CB-088-PIPE	DUMMY	7.97	0	13:00
CB-089-PIPE	DUMMY	10.83	0	13:00
CB-090-PIPE	DUMMY	10.83	0	13:00
CB-091-PIPE	DUMMY	11.27	0	13:00
CB-092-PIPE	DUMMY	11.27	0	13:00
CB-093-PIPE	DUMMY	11.03	0	13:00
CB-094-PIPE	DUMMY	11.03	0	13:00
CB-095-PIPE	DUMMY	5.97	0	13:00
CB-096-PIPE	DUMMY	5.97	0	13:00
CB-097-PIPE	DUMMY	10.15	0	13:00
CB-098-PIPE	DUMMY	10.15	0	13:00
CB-099-PIPE	DUMMY	0.51	0	13:00
CB-100-PIPE	DUMMY	0.51	0	13:00
CB-101-PIPE	DUMMY	7.71	0	13:00
CB-102-PIPE	DUMMY	7.71	0	13:00
CB-107-PIPE	DUMMY	10.46	0	13:00
CB-108-PIPE	DUMMY	10.46	0	13:00
CB-115-PIPE	DUMMY	7.69	0	13:00
CB-116-PIPE	DUMMY	7.69	0	13:00
CB-117-PIPE	DUMMY	14.40	0	13:00
CB-118-PIPE	DUMMY	14.40	0	13:00
CB-119-PIPE	DUMMY	14.99	0	13:00
CB-120-PIPE	DUMMY	14.99	0	13:00
CB-121-PIPE	DUMMY	12.61	0	13:00
CB-122-PIPE	DUMMY	12.61	0	13:00
CB-125-PIPE	DUMMY	11.03	0	13:00
CB-126-PIPE	DUMMY	11.03	0	13:00
CB-129-PIPE	DUMMY	14.49	0	13:00

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		Fraction of Time in Flow Class								
1_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
2_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(1)_(STM)	1.00	0.03	0.00	0.00	0.47	0.00	0.00	0.50	0.00	0.00
3_(10)_(STM)	1.00	0.02	0.00	0.00	0.20	0.01	0.00	0.77	0.13	0.00
3_(100)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(11)_(STM)	1.00	0.02	0.05	0.00	0.47	0.45	0.00	0.00	0.85	0.00
3_(12)_(STM)	1.00	0.03	0.00	0.00	0.43	0.49	0.00	0.04	0.56	0.00
3_(13)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(14)_(STM)	1.00	0.03	0.02	0.00	0.45	0.18	0.00	0.33	0.48	0.00
3_(15)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(16)_(STM)	1.00	0.03	0.03	0.00	0.85	0.09	0.00	0.00	0.94	0.00
3_(2)_(1)_(STM)	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.70	0.00
3_(2)_(STM)	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.48	0.00
3_(24)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(25)_(1)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(26)_(1)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
3_(26)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(27)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(28)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
3_(29)_(STM)	1.00	0.03	0.00	0.00	0.04	0.00	0.00	0.93	0.00	0.00
3_(3)_(STM)	1.00	0.03	0.00	0.00	0.11	0.00	0.00	0.86	0.00	0.00
3_(30)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
3_(31)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
3_(32)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00

3_(33)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.01	0.00
3_(34)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(35)_(STM)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
3_(36)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(37)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
3_(38)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.93	0.00	0.00
3_(39)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(4)_(STM)	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.52	0.00
3_(40)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(41)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
3_(42)_(STM)	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.95	0.00	0.00
3_(44)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(44A)_(STM)	1.00	0.02	0.95	0.00	0.03	0.00	0.00	0.00	0.75	0.00
3_(45)_(STM)	1.00	0.03	0.00	0.00	0.03	0.01	0.00	0.93	0.03	0.00
3_(46)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(47)_(STM)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
3_(48)_(STM)	1.00	0.03	0.00	0.00	0.04	0.00	0.00	0.93	0.00	0.00
3_(49)_(STM)	1.00	0.03	0.00	0.00	0.09	0.00	0.00	0.87	0.00	0.00
3_(5)_(STM)	1.00	0.03	0.00	0.00	0.52	0.00	0.00	0.45	0.05	0.00
3_(50)_(STM)	1.00	0.03	0.00	0.00	0.04	0.00	0.00	0.93	0.00	0.00
3_(51)_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.93	0.00	0.00
3_(52)_(STM)	1.00	0.04	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
3_(53)_(STM)	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.93	0.00
3_(54)_(1)_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
3_(54)_(STM)	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.96	0.00	0.00
3_(58)_(STM)	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.01	0.28	0.00
3_(6)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(61)_(STM)	1.00	0.03	0.18	0.00	0.75	0.05	0.00	0.00	0.97	0.00
3_(63)_(STM)	1.00	0.02	0.10	0.00	0.88	0.00	0.00	0.00	0.96	0.00
3_(63D)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(64)_(STM)	1.00	0.02	0.94	0.00	0.00	0.00	0.03	0.00	0.00	0.00
3_(64D)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(65)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(66)_(STM)	1.00	0.03	0.00	0.00	0.46	0.50	0.00	0.01	0.64	0.00
3_(67)_(STM)	1.00	0.02	0.02	0.00	0.45	0.51	0.00	0.00	0.97	0.00
3_(67D)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(68)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(69)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(7)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(70)_(1)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(70)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(71)_(STM)	1.00	0.03	0.00	0.00	0.44	0.03	0.00	0.50	0.45	0.00
3_(72)_(1)_(STM)	1.00	0.02	0.00	0.00	0.82	0.00	0.00	0.16	0.03	0.00
3_(72)_(STM)	1.00	0.03	0.00	0.00	0.52	0.00	0.00	0.45	0.05	0.00
3_(73)_(STM)	1.00	0.03	0.00	0.00	0.74	0.00	0.00	0.23	0.00	0.00
3_(74)_(STM)	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.00	0.37	0.00
3_(75)_(STM)	1.00	0.03	0.00	0.00	0.53	0.00	0.00	0.44	0.05	0.00
3_(76)_(1)_(STM)	1.00	0.03	0.00	0.00	0.95	0.02	0.00	0.00	0.95	0.00
3_(76)_(STM)	1.00	0.03	0.00	0.00	0.50	0.00	0.00	0.48	0.12	0.00
3_(77)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(78)_(STM)	1.00	0.03	0.01	0.00	0.95	0.00	0.00	0.01	0.94	0.00
3_(79)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
3_(80)_(STM)	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3_(81)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(82)_(STM)	1.00	0.03	0.00	0.00	0.54	0.00	0.00	0.43	0.53	0.00
3_(83)_(1)_(STM)	1.00	0.03	0.01	0.00	0.55	0.41	0.00	0.00	0.96	0.00
3_(83)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(84)_(STM)	1.00	0.03	0.00	0.00	0.00	0.02	0.00	0.95	0.01	0.00
3_(85)_(1)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(85)_(STM)	1.00	0.03	0.00	0.00	0.00	0.03	0.00	0.94	0.00	0.00
3_(86)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(87)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(88)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(89)_(1)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(89)_(STM)	1.00	0.03	0.00	0.00	0.00	0.05	0.00	0.92	0.03	0.00
3_(9)_(STM)	1.00	0.02	0.00	0.00	0.82	0.00	0.00	0.16	0.00	0.00
3_(90)_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
3_(91)_(STM)	1.00	0.03	0.00	0.00	0.83	0.00	0.00	0.14	0.01	0.00
3_(93)_(STM)	1.00	0.03	0.00	0.00	0.89	0.03	0.00	0.06	0.08	0.00
3_(94)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(95)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3_(96)_(STM)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C1	1.00	0.46	0.02	0.00	0.02	0.50	0.00	0.00	0.49	0.00
C10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C100	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C101	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C102	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C103	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C104	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C105	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C106	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C107	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	1.00	0.45	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C109	1.00	0.35	0.08	0.00	0.09	0.48	0.00	0.00	0.63	0.00
C11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C110	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C111	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C112	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C113	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C114	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C115	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C116	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C117	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C118	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C119	1.00	0.48	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C120	1.00	0.02	0.42	0.00	0.06	0.51	0.00	0.00	0.48	0.00
C121	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C122	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C123	1.00	0.03	0.00	0.00	0.04	0.00	0.00	0.93	0.03	0.00
C124	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C125	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C126	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C127	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C128	1.00	0.07	0.00	0.00	0.03	0.00	0.00	0.89	0.02	0.00
C129	1.00	0.02	0.43	0.00	0.09	0.47	0.00	0.00	0.48	0.00
C13	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C130	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00
C131	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00
C132	1.00	0.49	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00
C133	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.01	0.00
C134	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.91	0.00
C135	1.00	0.40	0.04	0.00	0.05	0.51	0.00	0.00	0.51	0.00
C136	1.00	0.40	0.02	0.00	0.08	0.51	0.00	0.00	0.24	0.00
C137	1.00	0.46	0.00	0.00	0.17	0.00	0.00	0.37	0.17	0.00
C138	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C139	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.63	0.00
C14	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C140	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.98	0.00
C141	1.00	0.02	0.05	0.00	0.91	0.01	0.00	0.00	0.45	0.00
C15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C17	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.41	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C21	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C22	1.00	0.41	0.03	0.00	0.12	0.44	0.00	0.00	0.98	0.00
C23	1.00	0.41	0.02	0.00	0.06	0.51	0.00	0.00	0.50	0.00
C24	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C25	1.00	0.42	0.04	0.00	0.54	0.00	0.00	0.00	0.98	0.00
C26	1.00	0.41	0.02	0.00	0.06	0.51	0.00	0.00	0.93	0.00
C27	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C28	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C29	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.39	0.01	0.00	0.09	0.51	0.00	0.00	0.35	0.00
C31	1.00	0.43	0.01	0.00	0.05	0.51	0.00	0.00	0.02	0.00
C32	1.00	0.40	0.01	0.00	0.13	0.46	0.00	0.00	0.14	0.00
C33	1.00	0.42	0.02	0.00	0.08	0.48	0.00	0.00	0.00	0.00
C34	1.00	0.26	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.00
C35	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C36	1.00	0.25	0.00	0.00	0.03	0.00	0.00	0.71	0.00	0.00
C37	1.00	0.25	0.00	0.00	0.02	0.00	0.00	0.72	0.02	0.00
C38	1.00	0.26	0.01	0.00	0.02	0.00	0.00	0.72	0.00	0.00
C39	1.00	0.02	0.39	0.00	0.59	0.00	0.00	0.00	0.98	0.00
C4	1.00	0.43	0.03	0.00	0.04	0.50	0.00	0.00	0.00	0.00
C40	1.00	0.43	0.01	0.00	0.06	0.51	0.00	0.00	0.02	0.00
C41	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C42	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C44	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C45	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.41	0.00	0.00	0.08	0.50	0.00	0.00	0.00	0.00
C50	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C51	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C52	1.00	0.44	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.43	0.00	0.00	0.03	0.00	0.00	0.54	0.02	0.00
C59	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.45	0.00	0.00	0.04	0.51	0.00	0.00	0.00	0.00
C60	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C61	1.00	0.42	0.03	0.00	0.38	0.17	0.00	0.00	0.98	0.00
C62	1.00	0.02	0.34	0.00	0.63	0.00	0.00	0.00	0.97	0.00
C63	1.00	0.02	0.02	0.00	0.70	0.26	0.00	0.00	0.49	0.00
C64	1.00	0.02	0.02	0.00	0.72	0.24	0.00	0.00	0.49	0.00
C65	1.00	0.02	0.39	0.00	0.09	0.50	0.00	0.00	0.49	0.00
C66	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C67	1.00	0.45	0.00	0.00	0.02	0.00	0.00	0.53	0.01	0.00
C68	1.00	0.02	0.02	0.00	0.70	0.26	0.00	0.00	0.48	0.00
C69	1.00	0.02	0.43	0.00	0.05	0.50	0.00	0.00	0.69	0.00
C7	1.00	0.44	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00
C70	1.00	0.02	0.02	0.00	0.70	0.26	0.00	0.00	0.48	0.00
C71	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C72	1.00	0.44	0.00	0.00	0.03	0.00	0.00	0.54	0.02	0.00

C73	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C74	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C75	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C76	1.00	0.02	0.41	0.00	0.06	0.51	0.00	0.00	0.51	0.00
C77	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.95	0.01	0.00
C78	1.00	0.03	0.00	0.00	0.04	0.00	0.00	0.93	0.03	0.00
C79	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.44	0.02	0.00	0.10	0.44	0.00	0.00	0.98	0.00
C80	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.03	0.00
C84	1.00	0.02	0.00	0.00	0.00	0.98	0.00	0.00	0.48	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C86	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C87	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C88	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C89	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C90	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C91	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C92	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C93	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C94	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C95	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C96	1.00	0.45	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C97	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C98	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C99	1.00	0.43	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB01-MAJOR	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB02-MAJOR	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB03-MAJOR	1.00	0.46	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB04-MAJOR	1.00	0.43	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB05-MAJOR	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB06-MAJOR	1.00	0.43	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB07-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB08-MAJOR	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB09-MAJOR	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB10-MAJOR	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB11-MAJOR	1.00	0.45	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB12-MAJOR	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB13-MAJOR	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB14-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB15-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB16-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB17-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB18-MAJOR	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB19-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB20-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB21-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB22-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB23-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB24-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB25-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB26-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB27-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB28-MAJOR	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB29-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB30-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB31-MAJOR	1.00	0.43	0.53	0.00	0.00	0.00	0.03	0.00	0.00	0.00
RYCB32-MAJOR	1.00	0.41	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB33-MAJOR	1.00	0.43	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB34-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB35-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB36-MAJOR	1.00	0.41	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RYCB38-MAJOR	1.00	0.41	0.58	0.00	0.00	0.01	0.00	0.00	0.73	0.00
RYCB40-MAJOR	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STM-1_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
STM-2_(STM)	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.95	0.00	0.00
STM-2-10_(STM-OS)	1.00	0.25	0.00	0.00	0.05	0.00	0.00	0.70	0.00	0.00
STM-2-11_(STM-OS)	1.00	0.25	0.00	0.00	0.04	0.00	0.00	0.71	0.00	0.00
STM-2-12_(STM-OS)	1.00	0.25	0.65	0.00	0.10	0.00	0.00	0.00	0.70	0.00
STM-2-13_(STM-OS)	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
STM-2-15_(STM-OS)	1.00	0.25	0.00	0.00	0.74	0.01	0.00	0.00	0.00	0.00
STM-2-8_(STM-OS)	1.00	0.25	0.00	0.00	0.06	0.00	0.00	0.69	0.00	0.00
STM-2-9_(STM-OS)	1.00	0.25	0.00	0.00	0.04	0.00	0.00	0.71	0.00	0.00
STM-3_(STM)	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.96	0.00	0.00
STM-4_(STM)	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STM-5_(STM)	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STM-5A_(STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
STM-6_(STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.00	0.00
STM-7_(STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00

```
************************
Conduit Surcharge Summary
************************

-----------------------------------------------------------------------
                                                     Hours        Hours
                     --------- Hours Full --------  Above Full   Capacity
Conduit              Both Ends  Upstream  Dnstream  Normal Flow   Limited
```

3_(10)_(STM)	0.01	0.01	0.23	0.01	0.01
3_(100)_(STM)	9.95	9.95	10.11	0.01	0.01
3_(4)_(STM)	7.20	7.20	7.98	0.01	0.01
3_(5)_(STM)	7.93	7.98	8.80	0.01	0.37
3_(58)_(STM)	0.01	0.01	0.01	0.82	0.01
3_(6)_(STM)	8.78	8.80	9.38	0.01	0.32
3_(7)_(STM)	9.63	9.64	9.95	0.01	0.28
3_(71)_(STM)	0.01	0.01	10.77	0.01	0.01
3_(72)_(1)_(STM)	28.36	28.36	31.81	0.01	0.01
3_(72)_(STM)	11.61	11.61	15.62	0.01	0.01
3_(73)_(STM)	15.36	15.36	20.15	0.01	0.01
3_(74)_(STM)	2.09	2.09	15.36	0.01	0.01
3_(75)_(STM)	0.01	0.01	2.09	0.01	0.01
3_(9)_(STM)	22.19	22.19	23.64	0.01	0.01
3_(91)_(STM)	24.43	24.43	24.97	0.01	0.01
3_(93)_(STM)	24.97	24.97	27.10	0.01	0.01
3_(94)_(STM)	31.81	31.81	34.61	0.01	0.01
3_(95)_(STM)	35.59	35.59	35.65	0.01	0.01
3_(96)_(STM)	35.65	35.65	35.67	0.01	0.01
STM-2-10_(STM-OS)	0.01	0.01	0.01	0.67	0.01
STM-2-11_(STM-OS)	0.01	0.01	0.01	0.61	0.01
STM-2-12_(STM-OS)	0.01	0.01	0.01	0.65	0.01
STM-2-13_(STM-OS)	0.01	0.01	0.01	0.70	0.01
STM-2-15_(STM-OS)	0.01	0.01	0.01	0.66	0.01
STM-2-8_(STM-OS)	0.74	0.75	0.74	0.62	0.74
STM-2-9_(STM-OS)	0.01	0.79	0.01	0.65	0.01

```
Analysis begun on:  Tue Jun 05 11:18:54 2018
Analysis ended on:  Tue Jun 05 11:19:30 2018
Total elapsed time: 00:00:36
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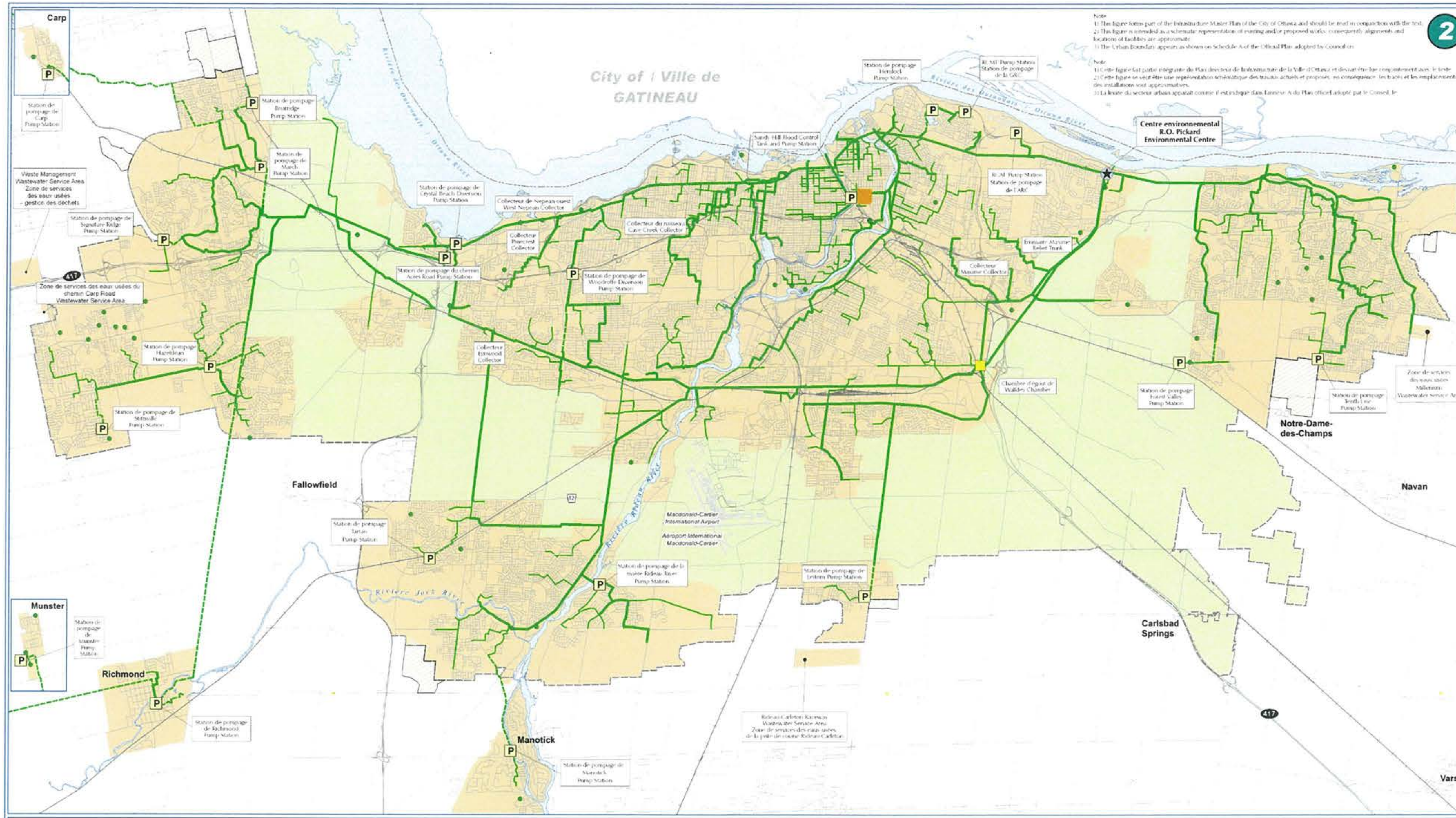
APPENDIX C
Wastewater Collection



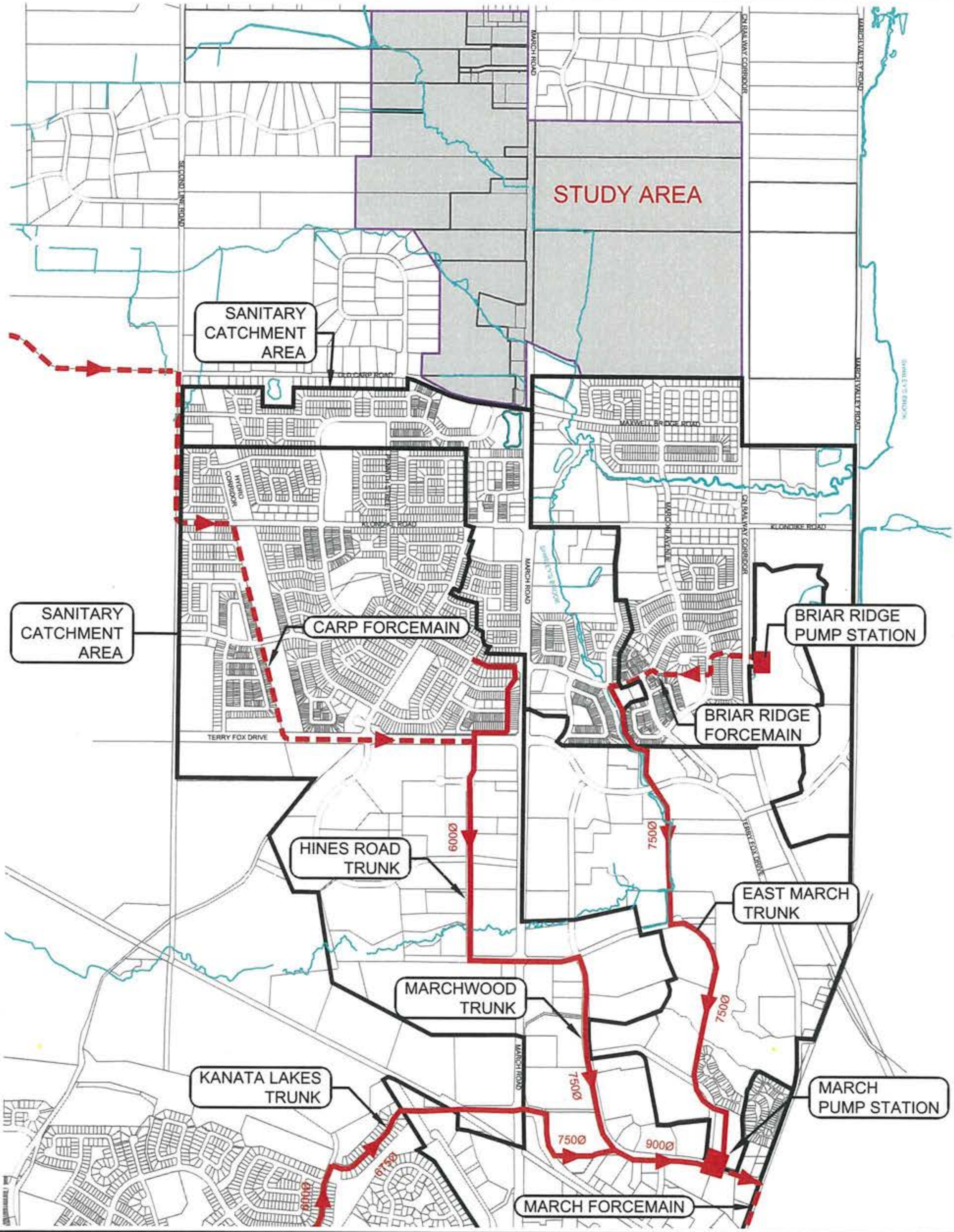
INFRASTRUCTURE MASTER PLAN - Figure 2
Existing Wastewater Collection System: Schematic

PLAN DIRECTEUR DE L'INFRASTRUCURE Figure 2
Réseau de collecte des eaux usées existant : schéma

- Local Pump Station / Stations de pompage locale
- Treatment Plant / Usine de traitement
- P Main Pump Station / Stations de pompage principal
- Chambers / Chambres
- Storage Tank / Réservoir d'entreposage
- Collector Sewer / Égout collecteur
- Main Sewer / Égout principal
- Forcemains / Conduites de refoulement
- Urban Boundary / Limite urbaine
- Greenbelt / Ceinture de verdure
- Public Service Area / Zone de desserte
- Urban Expansion Areas / Zones d'expansion urbaine

Ottawa

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013



KANATA NORTH
COMMUNITY DESIGN PLAN

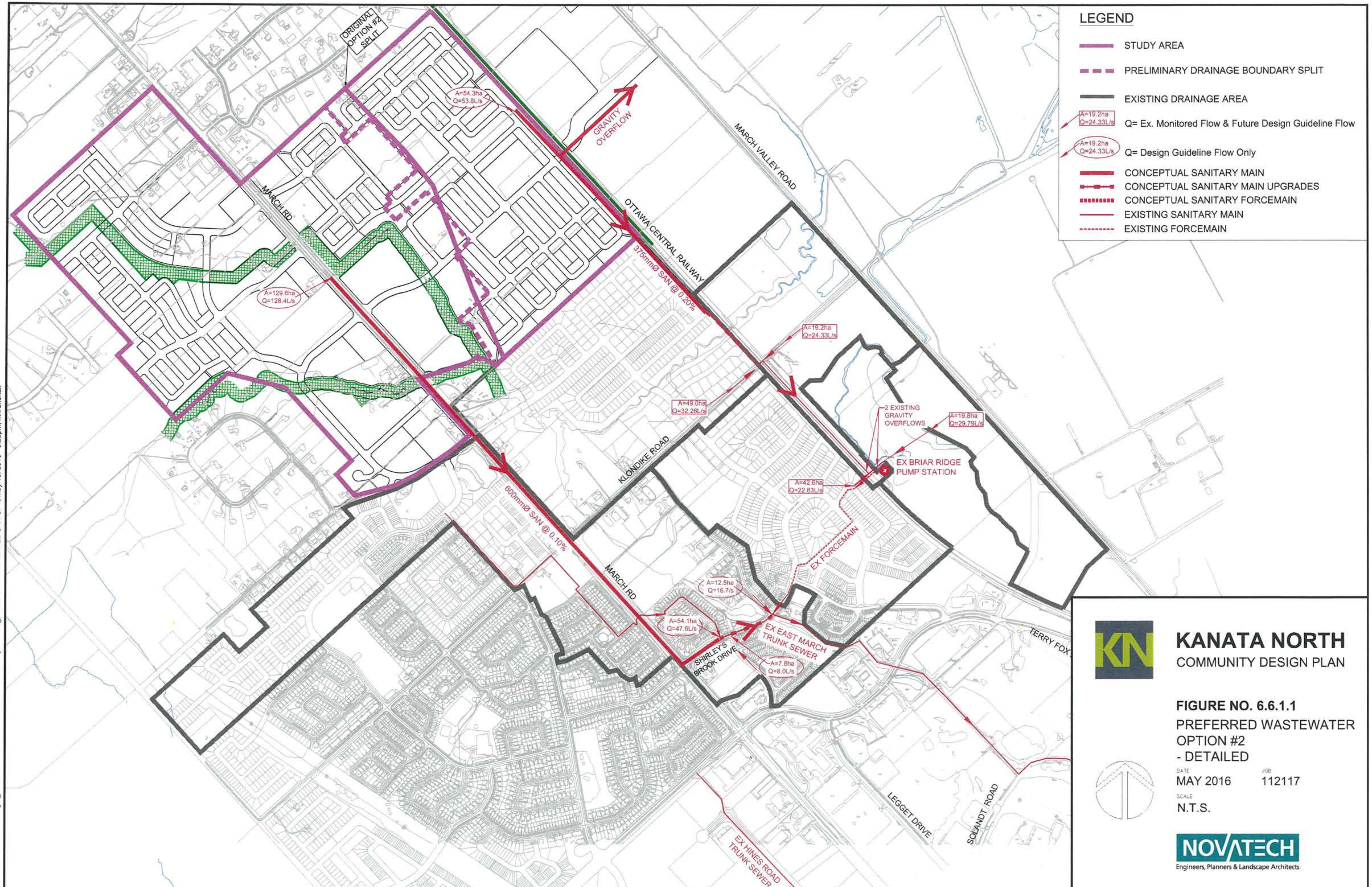
NOVATECH
Engineers, Planners & Landscape Architects

FIGURE NO. 6.2
NORTH KANATA WASTEWATER TRUNK INFRASTRUCTURE

DATE FEB 2016
JOB 112117
SCALE N.T.S.

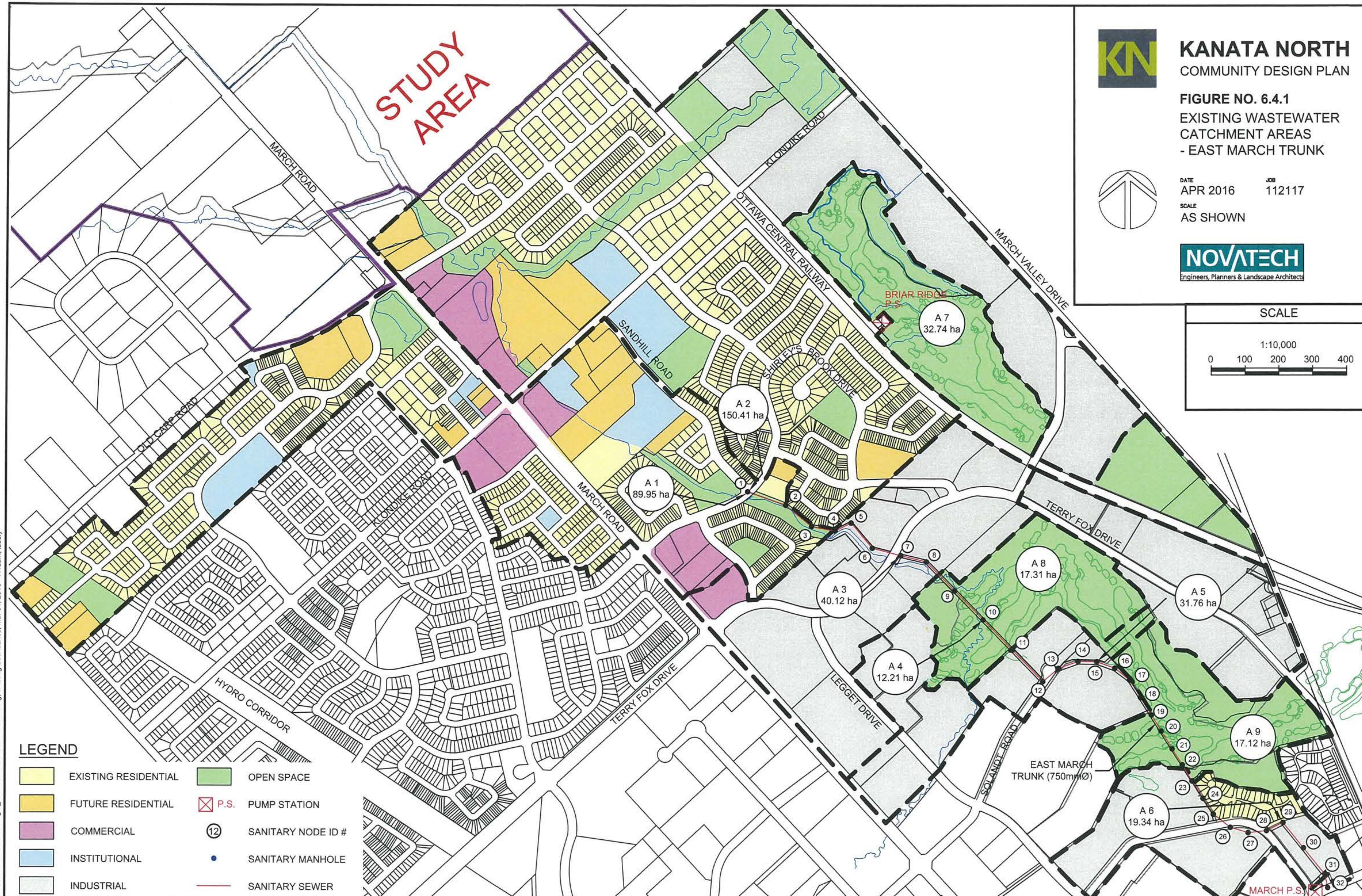
M:\2012\112117\CAD\Design_MSS\FIGURES\FIGURE 7.1 - WASTEWATER COLLECTION INFRASTRUCTURE.dwg, WW COLL, Feb 24, 2016 - 9:43am, lseely

SHT8x11.DWG - 216mmx279mm



M:\2012\112117\CAD\Design_MSS\FIGURES\FIGURE 6.5.1 - 6.5.5 SAN Options.dwg, FIG 6.6.1.1 PREFERRED SAN OPT, May 16, 2016 - 3:22pm, mhrehoriak

SHT11x17.DWG - 279mmx432mm



KANATA NORTH
COMMUNITY DESIGN PLAN
FIGURE NO. 6.4.1
EXISTING WASTEWATER CATCHMENT AREAS - EAST MARCH TRUNK
DATE
APR 2016
JOB
112117
SCALE
AS SHOWN
NOVATECH
Engineers, Planners & Landscape Architects
SCALE
1:10,000
0 100 200 300 400
STUDY AREA
MARCH ROAD
KLONDIKE ROAD
OTTAWA CENTRAL RAILWAY
MARCH VALLEY DRIVE
SANDHILL ROAD
SHIRLEY'S BROOK DRIVE
OLD CARP ROAD
TERRY FOX DRIVE
LEGGET DRIVE
SOLANDT ROAD
HYDRO CORRIDOR
BRIAR RIDGE P.S.
MARCH P.S.
EAST MARCH TRUNK (750mmØ)
A 1 89.95 ha
A 2 150.41 ha
A 3 40.12 ha
A 4 12.21 ha
A 5 31.76 ha
A 6 19.34 ha
A 7 32.74 ha
A 8 17.31 ha
A 9 17.12 ha
LEGEND
EXISTING RESIDENTIAL
FUTURE RESIDENTIAL
COMMERCIAL
INSTITUTIONAL
INDUSTRIAL
OPEN SPACE
P.S. PUMP STATION
SANITARY NODE ID #
SANITARY MANHOLE
SANITARY SEWER
M:\2012\112117\CAD\Design_MSS\FIGURES\FIGURE 7.2.dwg, Existing Boundaries, Mar 31, 2016 - 7:18am, lseely
SHT11X17.DWG - 279mmX432mm

SANITARY SEWER DESIGN SHEET
1053, 1075 and 1145 March Road
Developer: CU Developments Inc.

LICENSED PROFESSIONAL ENGINEER
S. A. N. ZORGEL
100191487
July 23/18
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 116132
DESIGNED BY : TJM/SAZ
CHECKED BY : DDB
DATE PREPARED : 6-Jun-18

LOCATION: STREET	LOCATION: FROM MH	LOCATION: TO MH	LOCATION: Area ID	LOCATION: Total Area (ha.)	RESIDENTIAL INDIVIDUAL: Single Units	RESIDENTIAL INDIVIDUAL: Semi/ Town Units	RESIDENTIAL INDIVIDUAL: Multi-Unit	RESIDENTIAL INDIVIDUAL: Population (in 1000's)	RESIDENTIAL INDIVIDUAL: AREA (ha.)	RESIDENTIAL CUMULATIVE: Population (in 1000's)	RESIDENTIAL CUMULATIVE: AREA (ha.)	RESIDENTIAL CUMULATIVE: PEAK FACTOR M	RESIDENTIAL CUMULATIVE: POPULATION FLOW Qr(p) (L/s)	COMM: AREA (ha.)	COMM: Accu. AREA (ha.)	INST: AREA (ha.)	INST: Accu. AREA (ha.)	PARK: AREA (ha.)	PARK: Accu. AREA (ha.)	COMM/INST/PARK FLOW Qc(p) (L/s)	INFILTRATION: Total Area (ha.)	INFILTRATION: Accu. Total AREA (ha.)	INFILTRATION: PEAK EXTRAN. FLOW Q(i) (L/s)	FLOW: PEAK DESIGN FLOW Q(d) (L/s)	PROPOSED SEWER: LENGTH (m)	PROPOSED SEWER: PIPE SIZE (mm)	PROPOSED SEWER: PIPE ID (mm)	PROPOSED SEWER: TYPE OF PIPE	PROPOSED SEWER: GRADE %	PROPOSED SEWER: CAPACITY (L/s)	PROPOSED SEWER: FULL FLOW VELOCITY (m/s)	PROPOSED SEWER: Qpeak/ Qcap	PROPOSED SEWER: d/ D_{full}
Outlet 1 - Street 1 and March Road																																	
Street 4	101	103	B1	0.59	10			0.034	0.59	0.034	0.59	3.7	0.41		0.00		0.00		0.00	0.00	0.59	0.59	0.19	0.60	64.8	200	203.20	DR 35	0.43	22.4	0.69	2.7%	
Street 4	103	401	B2	0.61	10			0.034	0.61	0.068	1.20	3.6	0.80		0.00		0.00		0.00	0.00	0.61	1.20	0.40	1.20	79.0	200	203.20	DR 35	0.46	23.2	0.72	5.2%	
Street 4	105	401	B3	0.30	3			0.010	0.30	0.010	0.30	3.7	0.12		0.00		0.00		0.00	0.00	0.30	0.30	0.10	0.22	35.6	200	203.20	DR 35	0.86	31.7	0.98	0.7%	
Street 6	401	403	B4	0.64	12			0.041	0.64	0.119	2.14	3.6	1.38		0.00		0.00		0.00	0.00	0.64	2.14	0.71	2.09	101.0	200	203.20	DR 35	0.39	21.4	0.66	9.8%	
Street 6	403	405	B5	0.75	15			0.051	0.75	0.170	2.89	3.5	1.95		0.00		0.00		0.00	0.00	0.75	2.89	0.95	2.90	99.7	200	203.20	DR 35	0.39	21.4	0.66	13.6%	
Street 5 / Park	501	503	B6 / B11a	1.34	5			0.017	0.34	0.017	0.34	3.7	0.20		0.00		0.00	1.00	1.00	0.04	1.34	1.34	0.44	0.69	56.5	200	203.20	DR 35	0.66	27.8	0.86	2.5%	
Street 5	503	505	B7	0.54	10			0.034	0.54	0.051	0.88	3.7	0.60		0.00		0.00		1.00	0.04	0.54	1.88	0.62	1.27	93.3	200	203.20	DR 35	0.47	23.5	0.72	5.4%	
Street 5	505	507	B8	0.17	2			0.007	0.17	0.058	1.05	3.6	0.68		0.00		0.00		1.00	0.04	0.17	2.05	0.68	1.40	12.2	200	203.20	DR 35	0.41	21.9	0.68	6.4%	
Street 5	507	405	B9	0.32	5			0.017	0.32	0.075	1.37	3.6	0.88		0.00		0.00		1.00	0.04	0.32	2.37	0.78	1.70	70.3	200	203.20	DR 35	0.40	21.6	0.67	7.9%	
Street 6	405	607	B10	0.24	2			0.007	0.24	0.252	4.50	3.5	2.84		0.00		0.00		1.00	0.04	0.24	5.50	1.82	4.70	79.0	200	203.20	DR 35	0.58	26.1	0.80	18.0%	
Park / Street 7	805	601	B11b / B22	1.45	4			0.014	0.32	0.014	0.32	3.7	0.16		0.00		0.00	1.13	1.13	0.05	1.45	1.45	0.48	0.69	79.0	200	203.20	DR 35	0.85	31.5	0.97	2.2%	
Street 7	601	603	B12	0.32	4			0.014	0.32	0.027	0.64	3.7	0.33		0.00		0.00		1.13	0.05	0.32	1.77	0.58	0.96	67.9	200	203.20	DR 35	0.85	31.5	0.97	3.0%	
Street 7	603	605	B13	0.09		3		0.008	0.09	0.035	0.73	3.7	0.42		0.00		0.00		1.13	0.05	0.09	1.86	0.61	1.08	15.7	200	203.20	DR 35	0.85	31.5	0.97	3.4%	
Street 7	605	607	B14	0.61		21		0.057	0.61	0.092	1.34	3.6	1.07		0.00		0.00		1.13	0.05	0.61	2.47	0.82	1.94	93.0	200	203.20	DR 35	0.97	33.7	1.04	5.7%	
Street 7	607	609	B15	0.52		15		0.041	0.52	0.384	6.36	3.4	4.26		0.00		0.00		2.13	0.09	0.52	8.49	2.80	7.16	79.7	200	203.20	DR 35	0.40	21.6	0.67	33.1%	
Street 7	609	611						0.000	0.00	0.384	6.36	3.4	4.26		0.00		0.00		2.13	0.09	0.00	8.49	2.80	7.16	8.0	200	203.20	DR 35	0.50	24.2	0.75	29.6%	
Street 7	611	613	B16	0.31	4			0.014	0.31	0.398	6.67	3.4	4.41		0.00		0.00		2.13	0.09	0.31	8.80	2.90	7.40	51.5	200	203.20	DR 35	0.40	21.6	0.67	34.2%	
Street 7	613	615						0.000	0.00	0.398	6.67	3.4	4.41		0.00		0.00		2.13	0.09	0.00	8.80	2.90	7.40	12.1	200	203.20	DR 35	0.41	21.9	0.68	33.8%	
Street 7	615	617	B17	0.20		5		0.014	0.20	0.411	6.87	3.4	4.55		0.00		0.00		2.13	0.09	0.20	9.00	2.97	7.61	32.7	200	203.20	DR 35	0.40	21.6	0.67	35.2%	
Street 8	701	703	B18	0.73		25		0.068	0.73	0.068	0.73	3.6	0.79		0.00		0.00		0.00	0.00	0.73	0.73	0.24	1.03	83.5	200	203.20	DR 35	1.22	37.8	1.17	2.7%	
Street 8	703	705	B19	0.37		10		0.027	0.37	0.095	1.10	3.6	1.10		0.00		0.00		0.00	0.00	0.37	1.10	0.36	1.47	67.1	200	203.20	DR 35	0.76	29.8	0.92	4.9%	
Street 8	705	617						0.000	0.00	0.095	1.10	3.6	1.10		0.00		0.00		0.00	0.00	0.00	1.10	0.36	1.47	14.1	200	203.20	DR 35	1.63	43.7	1.35	3.4%	
Street 7	617	619	B20	0.60		19		0.051	0.60	0.557	8.57	3.4	6.06		0.00		0.00		2.13	0.09	0.60	10.70	3.53	9.69	85.2	200	203.20	DR 35	0.41	21.9	0.68	44.2%	
Street 9	803	805	B21	0.33	5			0.017	0.33	0.017	0.33	3.7	0.20		0.00		0.00		0.00	0.00	0.33	0.33	0.11	0.31	57.0	200	203.20	DR 35	1.58	43.0	1.33	0.7%	
Street 9	805	807	B23	0.49	9			0.031	0.49	0.048	0.82	3.7	0.56		0.00		0.00		0.00	0.00	0.49	2.27	0.75	1.31	83.8	200	203.20	DR 35	1.28	38.7	1.19	3.4%	
Street 9	807	809	B24	0.54	9			0.031	0.54	0.078	1.36	3.6	0.92		0.00		0.00		0.00	0.00	0.54	2.81	0.93	1.84	74.4	200	203.20	DR 35	1.69	44.5	1.37	4.1%	
Street 9	809	619						0.000	0.00	0.078	1.36	3.6	0.92		0.00		0.00		0.00	0.00	0.00	2.81	0.93	1.84	8.3	200	203.20	DR 35	3.48	63.8	1.97	2.9%	
Street 7	619	621	B25	0.16		4		0.011	0.16	0.646	10.09	3.3	6.97		0.00		0.00		2.13	0.09	0.16	13.67	4.51	11.58	38.6	200	203.20	DR 35	0.39	21.4	0.66	54.2%	
Street 7	621	907	B26	0.06				0.000	0.06	0.646	10.15	3.3	6.97		0.00		0.00		2.13	0.09	0.06	13.73	4.53	11.60	41.1	200	203.20	DR 35	0.46	23.2	0.72	50.0%	
Street 9	801	901	B27	0.32	4			0.014	0.32	0.014	0.32	3.7	0.16		0.00		0.00		0.00	0.00	0.32	0.32	0.11	0.27	67.0	200	203.20	DR 35	0.66	27.8	0.86	1.0%	
Street 10	901	903	B28	0.48	8			0.027	0.48	0.041	0.80	3.7	0.48		0.00		0.00		0.00	0.00	0.48	0.80	0.26	0.75	75.0	200	203.20	DR 35	0.59	26.3	0.81	2.8%	
Street 10	903	905	B29	0.63	12			0.041	0.63	0.082	1.43	3.6	0.96		0.00		0.00		0.00	0.00	0.63	1.43	0.47	1.43	75.0	200	203.20	DR 35	2.60	55.2	1.70	2.6%	
Street 10	905	907	B30	0.56	10			0.034	0.56	0.116	1.99	3.6	1.34		0.00		0.00		0.00	0.00	0.56	1.99	0.66	2.00	71.7	200	203.20	DR 35	2.12	49.8	1.54	4.0%	
Street 9	901	1001	B31	0.57	9			0.031	0.57	0.031	0.57	3.7	0.37		0.00		0.00		0.00	0.00	0.57	0.57	0.19	0.55	72.1	200	203.20	DR 35	0.65	27.6	0.85	2.0%	
Street 9	1001	1003	B32	0.22	2			0.007	0.22	0.037	0.79	3.7	0.44		0.00		0.00		0.00	0.00	0.22	0.79	0.26	0.71	13.4	200	203.20	DR 35	0.42	22.2	0.68	3.2%	
Street 9	1003	1005	B33	0.92	16			0.054	0.92	0.092	1.71	3.6	1.07		0.00		0.00		0.00	0.00	0.92	1.71	0.56	1.64	114.4	200	203.20	DR 35	1.34	39.6	1.22	4.1%	
Street 9	1005	1101	B34	0.61	11			0.037	0.61	0.129	2.32	3.6	1.49		0.00		0.00		0.00	0.00	0.61	2.32	0.77	2.26	98.3	200	203.20	DR 35	1.86	46.7	1.44	4.8%	
Street 11	1103	1101	B35	0.53		17		0.046	0.53	0.046	0.53	3.7	0.54		0.00		0.00		0.00	0.00	0.53	0.53	0.17	0.72	66.7	200	203.20	DR 35	0.40	21.6	0.67	3.3%	
Street 11	1101	907	B36	0.25		5		0.014	0.25	0.189	3.10	3.5	2.15		0.00		0.00		0.00	0.00	0.25	3.10	1.02	3.18	82.0	200	203.20	DR 35	0.76	29.8	0.92	10.7%	
Street 10	907	1311	B37	0.56	8			0.027	0.56	0.977	15.80	3.2	10.28		0.00		0.00		2.13	0.09	0.56	19.38	6.40	16.77	82.0	250	254.00	DR 35	0.35	36.7	0.72	45.7%	0.47
Street 12	1315	1313	B38	0.44		10		0.027	0.44	0.027	0.44	3.7	0.32		0.00		0.00		0.00	0.00	0.44	0.44	0.15	0.47	68.0	200	203.20	DR 35	0.69	28.4	0.88	1.6%	
Street 12	1313	1311	B39	0.24		4		0.011	0.24	0.038	0.68	3.7	0.45		0.00		0.00		0.00	0.00	0.24	0.68	0.22	0.67	72.5	200	203.20	DR 35	1.13	36.4	1.12	1.9%	

SANITARY SEWER DESIGN SHEET
1053, 1075 and 1145 March Road
Developer: CU Developments Inc.

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 116132
DESIGNED BY : TJM/SAZ
CHECKED BY : DDB
DATE PREPARED : 6-Jun-18

LOCATION					RESIDENTIAL									COMMERCIAL / INSTITUTIONAL / PARK							INFILTRATION			FLOW	PROPOSED SEWER								
					INDIVIDUAL					CUMULATIVE				COMM		INST		PARK															
STREET	FROM MH	TO MH	Area ID	Total Area (ha.)	Single Units	Semi/ Town Units	Multi-Unit	Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)	PEAK FACTOR M	POPULATION FLOW Qr(p) (L/s)	AREA (ha.)	Accu. AREA (ha.)	AREA (ha.)	Accu. AREA (ha.)	AREA (ha.)	Accu. AREA (ha.)	COMM/INST/PARK FLOW Qc(p) (L/s)	Total Area (ha.)	Accu. Total AREA (ha.)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap	d/ D_{full}
Street 12	1311	1309	B40	0.25				0.000	0.25	1.015	16.73	3.2	10.65		0.00		0.00		2.13	0.09	0.25	20.31	6.70	17.44	24.4	250	254.00	DR 35	0.49	43.4	0.86	40.2%	0.44
Street 12	1309	1307				4		0.011	0.00	1.026	16.73	3.2	10.75		0.00		0.00		2.13	0.09	0.00	20.31	6.70	17.55	34.2	250	254.00	DR 35	0.34	36.2	0.71	48.5%	0.47
Street 12	1307	1305	B41	0.23		6		0.016	0.23	1.042	16.96	3.2	10.91		0.00		0.00		2.13	0.09	0.23	20.54	6.78	17.78	43.7	250	254.00	DR 35	0.33	35.6	0.70	49.9%	0.50
Street 12	1305	1303	B42	0.29		7		0.019	0.29	1.061	17.25	3.2	11.10		0.00		0.00		2.13	0.09	0.29	20.83	6.87	18.06	44.5	250	254.00	DR 35	0.40	39.2	0.77	46.0%	0.47
Street 12	1303	1301	B43	0.20				0.000	0.20	1.061	17.45	3.2	11.10		0.00		0.00		2.13	0.09	0.20	21.03	6.94	18.13	84.8	250	254.00	DR 35	0.36	37.2	0.73	48.7%	0.47
Street 12	1301	1215	B44	1.83			92	0.166	1.83	1.227	19.28	3.2	12.69		0.00		0.00		2.13	0.09	1.83	22.86	7.54	20.33	95.1	250	254.00	DR 35	0.66	50.4	0.99	40.3%	0.44
Street 2	207	205	B45	0.19	2			0.007	0.19	0.007	0.19	3.7	0.08		0.00		0.00		0.00	0.00	0.19	0.19	0.06	0.15	12.5	200	203.20	DR 35	1.12	36.2	1.12	0.4%	
Street 2	205	203	B46	0.91	18			0.061	0.91	0.068	1.10	3.6	0.80		0.00		0.00		0.00	0.00	0.91	1.10	0.36	1.16	113.3	200	203.20	DR 35	0.47	23.5	0.72	5.0%	
Street 2	203	201	B47	0.90	18			0.061	0.90	0.129	2.00	3.6	1.49		0.00		0.00		0.00	0.00	0.90	2.00	0.66	2.15	113.3	200	203.20	DR 35	0.47	23.5	0.72	9.2%	
Street 2	201	1201	B48	0.61	9			0.031	0.61	0.160	2.61	3.5	1.84		0.00		0.00		0.00	0.00	0.61	2.61	0.86	2.70	82.0	200	203.20	DR 35	0.60	26.5	0.82	10.2%	
Street 1	1201	1203	B49	0.70		19		0.051	0.70	0.211	3.31	3.5	2.40		0.00		0.00		0.00	0.00	0.70	3.31	1.09	3.49	101.0	200	203.20	DR 35	0.60	26.5	0.82	13.2%	
Street 1	1203	1205	B50	0.56		15		0.041	0.56	0.252	3.87	3.5	2.84		0.00		0.00		0.00	0.00	0.56	3.87	1.28	4.12	101.6	200	203.20	DR 35	0.61	26.7	0.82	15.4%	
Street 2	207	209	B51	0.32	5			0.017	0.32	0.017	0.32	3.7	0.20		0.00		0.00		0.00	0.00	0.32	0.32	0.11	0.31	61.4	200	203.20	DR 35	0.65	27.6	0.85	1.1%	
Street 2	209	211	B52	0.19	2			0.007	0.19	0.024	0.51	3.7	0.29		0.00		0.00		0.00	0.00	0.19	0.51	0.17	0.45	12.4	200	203.20	DR 35	0.40	21.6	0.67	2.1%	
Street 2	211	213	B53	0.98	19			0.065	0.98	0.088	1.49	3.6	1.03		0.00		0.00		0.00	0.00	0.98	1.49	0.49	1.52	113.2	200	203.20	DR 35	0.40	21.6	0.67	7.0%	
Street 2	213	303	B54	0.70	13			0.044	0.70	0.133	2.19	3.6	1.53		0.00		0.00		0.00	0.00	0.70	2.19	0.72	2.26	113.2	200	203.20	DR 35	0.40	21.6	0.67	10.4%	
Street 3	301	303	B55	0.23		6		0.016	0.23	0.016	0.23	3.7	0.19		0.00		0.00		0.00	0.00	0.23	0.23	0.08	0.27	45.9	200	203.20	DR 35	0.78	30.2	0.93	0.9%	
Street 3	303	305	B56	0.48		16		0.043	0.48	0.192	2.90	3.5	2.19		0.00		0.00		0.00	0.00	0.48	2.90	0.96	3.15	61.8	200	203.20	DR 35	0.86	31.7	0.98	9.9%	
Street 3	305	307	B57	0.55		14		0.038	0.55	0.230	3.45	3.5	2.61		0.00		0.00		0.00	0.00	0.55	3.45	1.14	3.75	61.8	200	203.20	DR 35	0.87	31.9	0.98	11.7%	
Street 4	307	1205	B58	0.17				0.000	0.17	0.230	3.62	3.5	2.61		0.00		0.00		0.00	0.00	0.17	3.62	1.19	3.80	82.0	200	203.20	DR 35	0.55	25.4	0.78	15.0%	
Street 1	1205	1207	B59	0.60		16		0.043	0.60	0.525	8.09	3.4	5.73		0.00		0.00		0.00	0.00	0.60	8.09	2.67	8.40	115.1	200	203.20	DR 35	0.69	28.4	0.88	29.6%	
Street 1	1207	1209	B60	0.27		7		0.019	0.27	0.544	8.36	3.4	5.93		0.00		0.00		0.00	0.00	0.27	8.36	2.76	8.68	44.3	200	203.20	DR 35	0.59	26.3	0.81	33.0%	
Street 1	1209	1211	B61	0.12		2		0.005	0.12	0.549	8.48	3.4	5.98		0.00		0.00		0.00	0.00	0.12	8.48	2.80	8.78	25.0	200	203.20	DR 35	0.72	29.0	0.90	30.2%	
Street 3	309	311	B62	0.89		31		0.084	0.89	0.084	0.89	3.6	0.98		0.00		0.00		0.00	0.00	0.89	0.89	0.29	1.27	99.7	200	203.20	DR 35	0.51	24.4	0.75	5.2%	
Street 3	311	313	B63	0.49		16		0.043	0.49	0.127	1.38	3.6	1.47		0.00		0.00		0.00	0.00	0.49	1.38	0.46	1.92	56.7	200	203.20	DR 35	0.52	24.7	0.76	7.8%	
Street 3	313	315	B64	0.51		15		0.041	0.51	0.167	1.89	3.5	1.92		0.00		0.00		0.00	0.00	0.51	1.89	0.62	2.54	56.2	200	203.20	DR 35	0.53	24.9	0.77	10.2%	
Street 3	315	317	B65	0.12		2		0.005	0.12	0.173	2.01	3.5	1.98		0.00		0.00		0.00	0.00	0.12	2.01	0.66	2.64	13.6	200	203.20	DR 35	0.52	24.7	0.76	10.7%	
Street 3	317	1211	B66	0.11				0.000	0.11	0.173	2.12	3.5	1.98		0.00		0.00		0.00	0.00	0.11	2.12	0.70	2.68	73.0	200	203.20	DR 35	1.01	34.4	1.06	7.8%	
Street 1	1211	1213	B67	0.22				0.000	0.22	0.722	10.82	3.3	7.74		0.00		0.00		0.00	0.00	0.22	10.82	3.57	11.31	18.6	200	203.20	DR 35	0.59	26.3	0.81	43.0%	
Street 1	1213	1215						0.000	0.00	0.722	10.82	3.3	7.74		0.00		0.00		0.00	0.00	0.00	10.82	3.57	11.31	76.8	200	203.20	DR 35	0.69	28.4	0.88	39.8%	
Street 1	1215	1217	B68	0.13				0.000	0.13	1.948	30.23	3.1	19.42		0.00		0.00		2.13	0.09	0.13	33.81	11.16	30.67	60.0	250	254.00	DR 35	0.82	56.2	1.11	54.6%	0.53
Street 1	1217	1219	B69	0.14				0.000	0.14	1.948	30.37	3.1	19.42		0.00		0.00		2.13	0.09	0.14	33.95	11.20	30.72	30.0	250	254.00	DR 35	0.90	58.9	1.16	52.2%	0.50
Street 1	1219	1221						0.000	0.00	1.948	30.37	3.1	19.42		0.00		0.00		2.13	0.09	0.00	33.95	11.20	30.72	30.0	250	254.00	DR 35	0.80	55.5	1.10	55.4%	0.53
FUTURE BLOCK / EXISTING LANDS ACCOUNTED FOR	FUT / EX	1407		0.00				0.000		0.257	5.69	3.5	2.90		0.00		4.34		0.00	1.41	0.00	10.03	3.31	7.62	69.2	200	203.20	DR 35	0.45	23.0	0.71	33.2%	
Easement - Park&Ride	1407	1409	B77	3.33			50	0.090	3.33	0.347	9.02	3.4	3.87		0.00		4.34		0.00	1.41	3.33	13.36	4.41	9.69	103.3	200	203.20	DR 35	0.44	22.7	0.70	42.7%	
Easement - Park&Ride	1409	1411		0.00				0.000		0.347	9.02	3.4	3.87		0.00		4.34		0.00	1.41	0.00	13.36	4.41	9.69	39.5	200	203.20	DR 35	0.48	23.7	0.73	40.9%	
Easement - Park&Ride	1411	1413		0.00				0.000		0.347	9.02	3.4	3.87		0.00		4.34		0.00	1.41	0.00	13.36	4.41	9.69	72.1	200	203.20	DR 35	0.39	21.4	0.66	45.3%	
Easement - Park&Ride	1413	1221		0.00				0.000		0.347	9.02	3.4	3.87		0.00		4.34		0.00	1.41	0.00	13.36	4.41	9.69	74.2	200	203.20	DR 35	0.44	22.7	0.70	42.7%	
Street 1	1221	1223	B78	1.10				0.000	0.27	2.296	39.66	3.0	22.55		0.00	0.83	5.17		2.13	1.77	1.10	48.41	15.98	40.29	104.8	250	254.00	DR 35	1.42	73.9	1.46	54.5%	0.53
Total Flows - Outlet 1													**22.55**							**1.77**			**15.98**	**40.29**									

SANITARY SEWER DESIGN SHEET
1053, 1075 and 1145 March Road
Developer: CU Developments Inc.

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 116132
DESIGNED BY : TJM/SAZ
CHECKED BY : DDB
DATE PREPARED : 6-Jun-18

LOCATION					RESIDENTIAL									COMMERCIAL / INSTITUTIONAL / PARK							INFILTRATION			FLOW	PROPOSED SEWER								
					INDIVIDUAL					CUMULATIVE				COMM		INST		PARK															
STREET	FROM MH	TO MH	Area ID	Total Area (ha.)	Single Units	Semi/ Town Units	Multi-Unit	Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)	PEAK FACTOR M	POPULATION FLOW Qr(p) (L/s)	AREA (ha.)	Accu. AREA (ha.)	AREA (ha.)	Accu. AREA (ha.)	AREA (ha.)	Accu. AREA (ha.)	COMM/INST/PARK FLOW Qc(p) (L/s)	Total Area (ha.)	Accu. Total AREA (ha.)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap	d/ D_{full}

Notes:
1. Q(d) = Qr(p) + Q(i) + Qc(p)
2. Q(i) = 0.33 L/sec/ha
3. Qr(p) = (PxqxM/86,400)
3. Qc(p) = (A*q*Pf)/86,400

*Assumes existing single lot along roadway will ultimately become 2 single units.
**Assumes north half of property is 50% towns and 50% singles at same density as CU lands (25 singles/ha, 47 towns/ha),
south half of property assumed to be multi unit residential at same density as CU lands (62.8units/ha).

Definitions:
Q(d) = Design Flow (L/sec)
Qr(p) = Population Flow (L/sec), Residential
Q(i) = Extraneous Flow (L/sec)
Qc(p) = Population Flow (L/sec), Commercial/Institutional/Park

P = Population (3.4 persons per single unit, 2.7 persons per townhouse unit, 1.8 persons per multi-unit)
q = Average per capita flow = 280 L/cap/day - Residential
q = Average per gross ha. flow = 35000 L/gross ha/day - Light industrial
q = Average per gross ha. flow = 28000 L/gross ha/day - Commercial/Institutional
q = Average per gross ha. flow = 3700 L/gross ha/day - Park (20L/day/person, 185 persons/ha - as per Appendix 4-A of the City of Ottawa Sewer Design Guidelines)
M = Harmon Formula (maximum of 4.0), K = Correction Factor = 0.8
Min pipe size 200mm @ min. slope 0.32%
Mannings n = 0.013
Pf = Peak factor (Commercial/Institional/Park) = 1.0 (less than 20% of total contributing areas), 1.5 (if area is 20% or greater of total contributing area)

KANATA NORTH URBAN EXPANSION AREA
COMMUNITY DESIGN PLAN

TABLE C-6b:
SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION				RESIDENTIAL AREA AND POPULATION										ICI								INFILTRATION				FLOW	PIPE					
									Cumulative					IND			COMM		INST													
Street	From Node	To Node	Total Area (ha)	Dwellings SFH 3.4 pers/ea	Dwellings SD/TH 2.7 pers/ea	Density (Net ha) Low[3] 101 pers/ha	Density (Net ha) High[4] 161 per/ha	Pop.	Residential Area (ha)	Pop. New	Pop. Exist	Peak Factor	Peak Flow (l/s)	Area (ha)	Accu. Area (ha)	Peak Factor	Area (ha)	Accu. Area (ha)	Area (ha)	Accu. Area (ha)	Peak Flow (l/s)	Total Area (ha)	Accu. Area New	Accu. Area Exist	Infiltration Flow (l/s)	Total Flow (l/s)	Dia Act (mm)	Dia Nom (mm)	Slope (%)	Velocity (Full) (m/s)	Capacity (Full) (l/s)	Ratio Q/Qfull (%)
EAST KNCDP																																
E-1	E-1	E-3	4.47			3.00		303.0	3.00	**303**		4.00	4.9								0.0	4.47	4.47		1.3	6.2	203	200	0.40	0.67	21.6	28%
E-2	E-2	E-3	5.91			4.29		433.3	7.29	**736**		3.88	11.6								0.0	5.91	10.38		2.9	14.5	203	200	0.35	0.62	20.2	72%
E-3	E-3	E-6	9.42			6.51		657.5	13.80	**1394**		3.70	20.9								0.0	9.42	19.80		5.5	26.4	254	250	0.40	0.77	39.2	67%
E-4	E-4	E-5	6.89			3.12	1.36	534.1	3.12	**534**		3.96	8.6								0.0	6.89	6.89		1.9	10.5	203	200	1.00	1.05	34.2	31%
E-5	E-5	E-9	4.70			1.46		147.5	4.58	**682**		3.90	10.8						**2.29**	2.29	2.0	4.70	11.59		3.2	16.0	203	200	0.35	0.62	20.2	79%
E-6	E-6	E-9	3.28			2.32		234.3	16.12	**1628**		3.65	24.1								0.0	3.28	23.08		6.5	30.6	305	300	0.25	0.69	50.4	61%
E-7	E-7	E-8	10.04			7.21		728.2	7.21	**728**		3.88	11.5								0.0	10.04	10.04		2.8	14.3	203	200	0.40	0.67	21.6	66%
E-8	E-8	E-9	4.05			2.94		296.9	10.15	**1025**		3.79	15.8								0.0	4.05	14.09		3.9	19.7	254	250	0.30	0.67	33.9	58%
E-9	E-9	*MH 209*	3.98			3.06		309.1	33.91	**3644**		3.37	49.7							2.29	2.0	3.98	52.74		14.8	66.5	381	375	0.22	0.75	85.7	78%
Total Flows From East KNUEA			**52.74**					**3644**	**33.91**	**3644**		**3.37**	**49.7**							**2.29**	**1.99**		**52.74**		**14.77**	**66.49**						
*X-1 (Brookside Subdivision)**		*MH 209*	*32.80*					*2216.1*	*26.04*		*2216*	*3.55*	*18.2*				*6.76*	*6.76*			*2.3*	*32.80*		*32.80*	*11.5*	*32.0*						
				*Population from Novatech #103106 Sanitary Sewer Design Sheet																												
	MH 209	*MH 208*						*0.0*	*59.95*	**3644**	*2216*	*3.18*	*63.3*					*6.76*		*2.29*	*7.9*	*0.00*	**52.74**	*32.80*	*26.2*	*97.4*	457	450	0.20	0.81	132.9	73%
	MH 208	*MH 207*						*0.0*	*59.95*	**3644**	*2216*	*3.18*	*63.3*					*6.76*		*2.29*	*7.9*	*0.00*	**52.74**	*32.80*	*26.2*	*97.4*	457	450	0.20	0.81	132.9	73%
X-2 (Brookside Subdivision)	*MH 207*	*MH 206*	*3.12*		*44*			*118.8*	*63.07*	**3644**	*2335*	*3.17*	*64.0*					*6.76*		*2.29*	*7.9*	*3.12*	**52.74**	*35.92*	*27.3*	*99.2*	*457*	*450*	*0.20*	*0.81*	*132.9*	*75%*
*X-3 (Brookside Subdivision)***	*MH 206*	*MH 205*	*9.81*		*244*			*658.8*	*72.88*	**3644**	*2994*	*3.13*	*67.9*					*6.76*		*2.29*	*7.9*	*9.81*	**52.74**	*45.73*	*30.8*	*106.5*	*457*	*450*	*0.21*	*0.83*	*136.2*	*78%*
				**244 TH units = 107 Units from Novatech #103106 Sanitary Sewer Design Sheet, plus future 137 units North of Klondike and West of Marconi (5.67ha @ 65pers/ha)																												
X-13 (Future Industrial Lands)	Future	*MH 205*	20.99											15.85	15.85	3.6					13.2	20.99	**20.99**		5.9	19.1						
Briar Ridge Pump Station Access Road	*MH 205*	*MH 204*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.20*	*0.81*	*132.9*	*94%*
Briar Ridge Pump Station Access Road	*MH 204*	*MH 203*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.20*	*0.81*	*132.9*	*94%*
Briar Ridge Pump Station Access Road	*MH 203*	*MH 202*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.25*	*0.91*	*148.6*	*85%*
Briar Ridge Pump Station Access Road	*MH 202*	*MH 201A*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.26*	*0.92*	*151.6*	*83%*
Briar Ridge Pump Station Access Road	*MH 201A*	*MH 201*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.25*	*0.91*	*148.6*	*85%*
Briar Ridge Pump Station Access Road	*MH 201*	*MH 200*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.25*	*0.91*	*148.6*	*85%*
Briar Ridge Pump Station Access Road	*MH 200*	*EXMH1*							*72.88*	**3644**	*2994*	*3.13*	*67.9*		*15.85*	*3.6*		*6.76*		*2.29*	*21.1*	*0.00*	**73.73**	*45.73*	*36.6*	*125.6*	*457*	*450*	*0.23*	*0.87*	*142.5*	*88%*
RIDDELL VILLAGE (X-4)***		*EXMH1*	*42.42*					*3100*			*3100*	*3.43*	*24.6*						*2.96*	*2.96*	*1.0*	*42.42*		*42.42*	*14.8*	*40.5*						
				***Population from Novatech #103106 Sanitary Sewer Design Sheet																												
	EXMH1	*EXMH2*							*72.88*	**3644**	*6094*	*2.97*	*85.6*		*15.85*	*3.6*		*6.76*		*5.25*	*23.6*	*0.00*	**73.73**	*88.15*	*51.5*	*160.8*	*457*	*450*	*0.30*	*0.99*	*162.8*	*99%*
	EXMH2	*EXMH4*							*72.88*	**3644**	*6094*	*2.97*	*85.6*		*15.85*	*3.6*		*6.76*		*5.25*	*23.6*	*0.00*	**73.73**	*88.15*	*51.5*	*160.8*	*457*	*450*	*0.30*	*0.99*	*162.8*	*99%*
X-14 (Future Industrial Lands east of Marshes Golf Course)	*EXMH4*	*EXMH5*	19.23						*72.88*	**3644**	*6094*	*2.97*	*85.6*	*19.23*	*35.08*	*3.1*		*6.76*		*5.25*	*35.6*	*19.23*	**92.96**	*88.15*	*56.9*	*178.1*	*457*	*450*	*0.44*	*1.20*	*197.2*	*90%*
	EXMH5	*PS*							*72.88*	**3644**	*6094*	*2.97*	*85.6*		*35.08*	*3.1*		*6.76*		*5.25*	*35.6*	*0.00*	**92.96**	*88.15*	*56.9*	*178.1*	*457*	*450*	*0.40*	*1.14*	*188.0*	*95%*
Briar Ridge Pump Station									*72.88*	**3644**	*6094*	*2.97*	*85.6*		*35.08*	*3.1*		*6.76*		*5.25*	*35.6*	*0.00*	**92.96**	*88.15*	*56.9*	*178.1*						
WEST KNUEA / MARCH ROAD																																
W-1	W-1	W-3	7.51			5.14		519.1	5.14	**519**		3.97	8.3								0.0	7.51	7.51		2.1	10.4	203	200	0.40	0.67	21.6	48%
													0.0																			
W-2	W-2	W-3	8.94			2.36		238.4	2.36	**238**		4.00	3.9						**4.32**	4.32	3.8	8.94	8.94		2.5	10.1	203	200	0.35	0.62	20.2	50%
													0.0																			
W-3	W-3	W-4	6.52			1.97	2.16	546.7	11.63	**1304**		3.72	19.7								0.0	6.52	22.97		6.4	26.1	254	250	0.70	1.02	51.9	50%
W-5	W-5	W-6	4.20			2.74		276.7	2.74	**277**		4.00	4.5								0.0	4.20	4.20		1.2	5.7	203	200	0.35	0.62	20.2	28%
W-6	W-6	W-8	4.29			3.04		307.0	5.78	**584**		3.94	9.3								0.0	4.29	8.49		2.4	11.7	203	200	0.35	0.62	20.2	58%
													0.0																			
W-7	W-7	W-8	7.39			4.24		428.2	4.24	**428**		4.00	6.9								0.0	7.39	7.39		2.1	9.0	203	200	1.60	1.33	43.2	21%
W-8	W-8	W-9	2.85			1.02	0.55	191.6	11.59	**1204**		3.75	18.3								0.0	2.85	18.73		5.2	23.5	254	250	0.35	0.72	36.7	64%
W-4	W-4	MR-1	3.10					0.0	23.22	**2508**		3.51	35.6				**0.35**	0.35	**0.83**	5.15	4.8	3.10	26.07		7.3	47.7	254	250	1.00	1.22	62.0	77%
													0.0																			
W-14	W-14	W-15	3.79			0.36		36.4	0.36	**36**		4.00	0.6						**2.89**	2.89	2.5	3.79	3.79		1.1	4.2	203	200	0.35	0.62	20.2	21%
W-15	W-15	W-17	3.17			2.20		222.2	2.56	**259**		4.00	4.2								0.0	3.17	6.96		1.9	6.1	203	200	0.35	0.62	20.2	30%

KANATA NORTH URBAN EXPANSION AREA
COMMUNITY DESIGN PLAN

TABLE C-6b:
SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION				RESIDENTIAL AREA AND POPULATION										ICI								INFILTRATION				FLOW	PIPE					
									Cumulative					IND			COMM		INST													
Street	From Node	To Node	Total Area (ha)	Dwellings SFH 3.4	Dwellings SD/TH 2.7	Density (Net ha) Low[3] 101	Density (Net ha) High[4] 161	Pop.	Residential Area (ha)	Residential Pop. New	Residential Pop. Exist	Peak Factor	Peak Flow (l/s)	Area (ha)	Accu. Area (ha)	Peak Factor	Area (ha)	Accu. Area (ha)	Area (ha)	Accu. Area (ha)	Peak Flow (l/s)	Total Area (ha)	Accu. Area New (ha)	Accu. Area Exist	Infiltration Flow (l/s)	Total Flow (l/s)	Dia Act (mm)	Dia Nom (mm)	Slope (%)	Velocity (Full) (m/s)	Capacity (Full) (l/s)	Ratio Q/Qfull (%)
W-16	W-16	W-17	6.55			3.17	1.78	606.8	4.95	**607**		3.93	9.7								0.0	6.55	6.55		1.8	11.5	203	200	0.35	0.62	20.2	57%
W-17	W-17	MR-1	3.43					0.0	7.51	**865**		3.84	13.5				**3.05**	3.05		8.04	9.6	6.48	19.99		5.6	28.7	254	250	0.30	0.67	33.9	84%
MR-1 (MARCH ROAD)	MR-1	MR-2	1.36					0.0	30.73	**3373**		3.40	46.4					3.40		8.04	9.9	1.36	47.42		13.3	69.6	610	600	0.10	0.69	202.4	34%
W-9	W-9	MR-2	7.17				1.13	181.9	1.13	**182**		4.00	2.9				**1.38**	1.38	**3.77**	3.77	4.5	7.17	25.90		7.3	14.7	203	200	1.20	1.15	37.4	39%
MR-2 (MARCH ROAD)	MR-2	MR-3	1.37					0.0	33.23	**3555**		3.38	48.7					4.78		11.81	14.4	1.37	74.69		20.9	84.0	610	600	0.10	0.69	202.4	41%
W-10	W-10	W-11	1.53				0.78	125.6	0.78	**126**		4.00	2.0								0.0	1.53	1.53		0.4	2.5	203	200	0.70	0.88	28.6	9%
W-11	W-11	MR-3	3.55				1.64	264.0	2.42	**390**		4.00	6.3				**1.08**	1.08			0.9	3.55	5.08		1.4	8.7	203	200	0.70	0.88	28.6	30%
W-18	W-18	W-19	3.90			1.21	1.82	415.2	3.03	**415**		4.00	6.7								0.0	3.90	3.90		1.1	7.8	203	200	0.35	0.62	20.2	39%
W-19	W-19	MR-3	9.23					0.0	3.03	**415**		4.00	6.7				**8.83**	8.83			7.7	9.23	13.13		3.7	18.1	254	250	0.25	0.61	31.0	58%
MR-3 (MARCH ROAD)	MR-3	MR-4	4.74					0.0	38.68	**4360**		3.30	58.3				2.06	16.75		11.81	24.8	4.74	97.64		27.3	110.4	610	600	0.10	0.69	202.4	55%
W-12	W-12	X-12	11.62			2.24	6.98	1350.0	9.22	**1350**		3.71	20.3						**2.01**	2.01	1.7	11.62	11.62		3.3	25.3	254	250	0.30	0.67	33.9	75%
X-12 (BIDGOOD / HALTON TERRACE)	X-12	MR-4	3.54				0.79	127.2	10.01	**1477**		3.68	22.0								0.0	3.54	15.16		4.2	26.3	254	250	1.00	1.22	62.0	42%
X-5 (760 & 788 March Road)	X-5	MR-4	1.76				1.76	283.4	1.76	**283**		4.00	4.6								0.0	1.76	1.76		0.5	5.1						
MR-4 (MARCH ROAD)	MR-4	*MH 186*	4.71					0.0	50.45	**6120**		3.16	78.4					16.75		13.82	26.5	4.71	119.27		33.4	138.3	610	600	0.10	0.69	202.4	68%
*X-6 (750 March Road, Blue Heron Co-op Homes)*****	*X-6*	*X-8*	*1.29*		*83*			*224.1*	*1.29*		*224*	*4.00*	*2.1*								*0.0*	*1.29*		*1.29*	*0.5*	*2.5*						
			**** 83 units obtained from Co-op website (http://www.chaseo.ca/member/blue-heron-co-op/)																													
*X-7 (Morgans Grant) ******	*X-7*	*X-8*	*48.45*					*3188.0*	*49.74*		*3188*	*3.42*	*25.2*								*0.0*	*48.45*		*49.74*	*17.4*	*42.6*						
			***** Information obtained from JL Richards #24566, Sanitary Design Sheet, July 2012																													
X-8 (Inverary Drive)	*X-8*	*MH 186*	*4.31*	*39*	*49*			*264.9*	*54.05*		*3677*	*3.37*	*28.6*								*0.0*	*4.31*		*54.05*	*18.9*	*47.6*						
Shirley's Brooke Drive	*MH 186*	*MH 184*	*0.00*					*0.0*	*104.50*	**6120**	*3677*	*2.96*	*98.7*					*16.75*		*13.82*	*26.5*	*0.00*	*119.27*	*54.05*	*52.3*	*177.5*	610	600	0.10	0.69	202.4	88%
X-9 (Mckinley Drive)	*X-9*	*MH 184*	*7.84*		*117*			*315.9*			*316*	*4.00*	*2.9*				*2.73*	*2.73*			*2.4*	*7.84*		*7.84*	*2.7*	*8.0*						
Shirleys Brooke Drive	*MH 184*	*MH 182*	*0.00*					*0.0*	*104.50*	**6120**	*3993*	*2.95*	*100.4*					*19.48*		*13.82*	*28.9*	*0.00*	*119.27*	*61.89*	*55.1*	*184.4*	610	600	0.10	0.69	202.4	91%
Shirleys Brooke Drive	*MH 182*	*MH 1*	*0.00*					*0.0*	*104.50*	**6120**	*3993*	*2.95*	*100.4*					*19.48*		*13.82*	*28.9*	*0.00*	*119.27*	*61.89*	*55.1*	*184.4*	610	600	0.10	0.69	202.4	91%
X-10 (Sandhill Road)		*MH 1*	*11.62*	*9*	*60*		*5.32*	*1049.1*	*11.62*		*1049*	*3.79*	*9.2*						*2.11*	*2.11*	*1.8*	*11.62*		*11.62*	*4.1*	*15.1*						
X-11		*MH 1*	*0.87*				*0.87*	*140.1*	*0.87*		*140*	*4.00*	*1.3*								*0.0*	*0.87*		*0.87*	*0.3*	*1.6*						
Briar Ridge Pump Station	*PS*	*MH 1*							72.88	**3644**	6094	2.97	85.623	0	35.08	3.1	0.00	6.76	0.00	5.25	35.6	0.00	92.96	88.15	56.9	178.1						
EAST MARCH TRUNK	*MH 1*	*EMT*	0.00					0.0	189.87	**9764**	11276	2.63	172.7		35.08	3.1		26.24		21.18	66.3	0.00	212.23	162.53	116.3	355.3	762	750	0.10	0.80	367.1	97%

DESIGN PARAMETERS

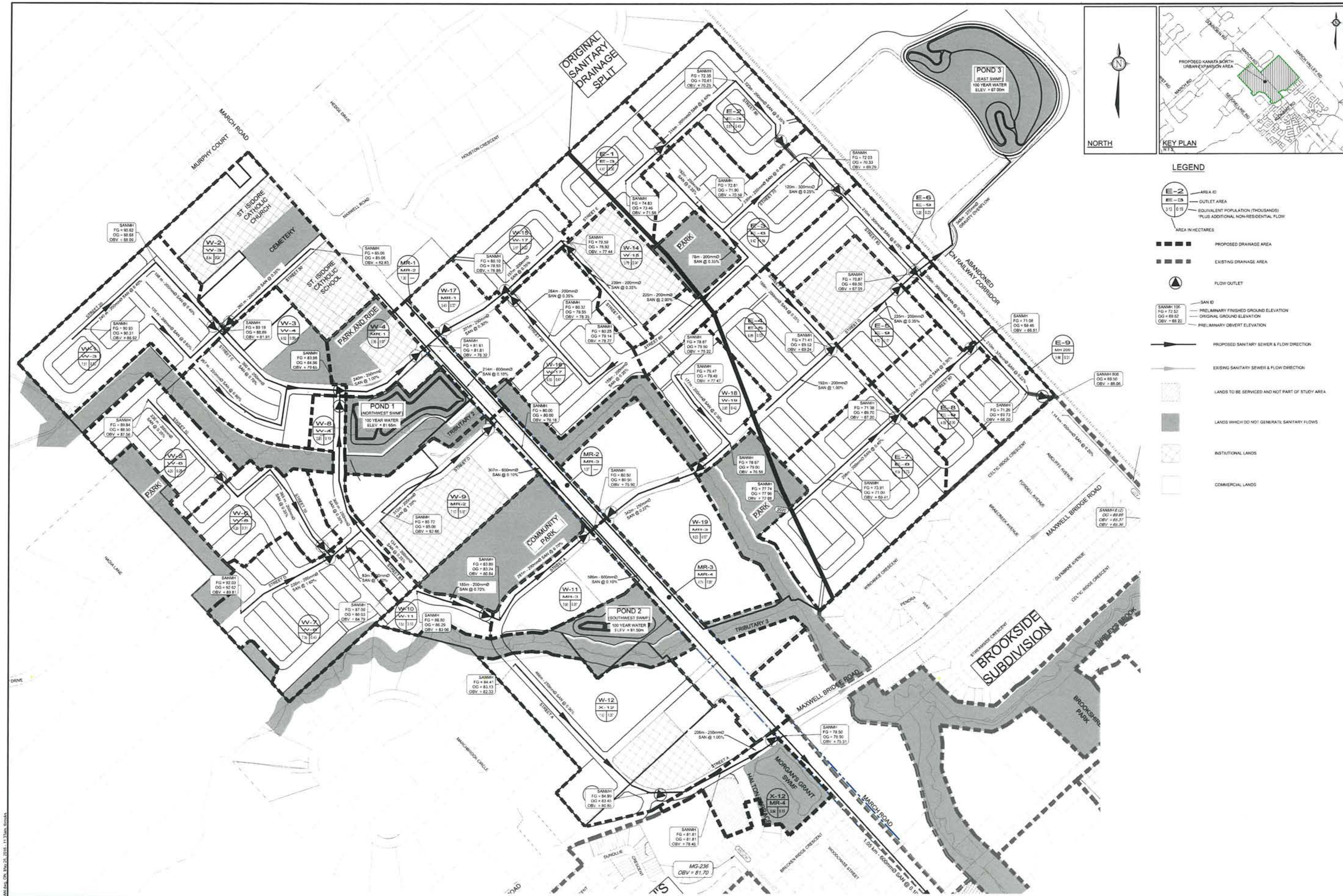
Average Daily Flow (Future)=	350 L/cap/day	Industrial Peak Factor= per MOE graph		
Average Daily Flow (Existing)=	200 L/cap/day	Extraneous Flow (Future)=	0.28 L/s/ha	
Indust/Comm/Inst Flow (Future)=	50000 L/ha/day	Extraneous Flow (Existing)=	0.35 L/s/ha	(Jan 2008 monitored event)
Indust/Comm/Inst Flow (Existing)=	20000 L/ha/day	Minimum Velocity=	0.60 m/s	
Max Res Peak Factor=	4.00	Manning's n=	0.013	
Comm/Inst Peak Factor=	1.50			

Designed:	Alex McAuley	PROJECT:	Kanata North Community Design Plan
Checked:	CJR	CLIENT:	Kanata North Land Owners
Dwg. Reference:	112117-SAN1 112117-SAN2	Date:	May, 2016

Notes:
1. Existing sanitary sewers tributary to, and not receiving flow from the KNUEA Trunk sewer have not been analysed for capacity
2. Existing unit counts obtained from City of Ottawa geoOttawa (2014) parcel counts, unless otherwise indicated
3. Low Density based on (16.6 Singles/net ha * 3.4pers/unit) + (16.5 Towns/net ha * 2.7pers/unit)
4. High Density based on (35.8 Towns/net ha * 2.7pers/unit) + (35.8 Apartments/net ha * 1.8pers/unit)
5. Overall unit counts for the KNCDP are based on Demonstration Plan "A-24", plus 10% to allow for flexibility in unit type distribution

Upgraded Existing Sanitary Sewers

M:\2012\112117\DATA\Calculations\Sewer Calcs\SAN\SAN Design.xlsx



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM

No	REVISION	DATE	BY
3	ISSUED WITH DRAFT MASTER SERVICING STUDY	MAY 20/16	JLS
2	ISSUED WITH DRAFT MASTER SERVICING STUDY	APR 4/16	JLS
1	ISSUED WITH DRAFT MASTER SERVICING STUDY	FEB 26/16	JLS

SCALE 1:3000

DESIGN ARM / TB
CHECKED ARM
DRAWN TB
CHECKED CJR
APPROVED JLS

FOR REVIEW ONLY

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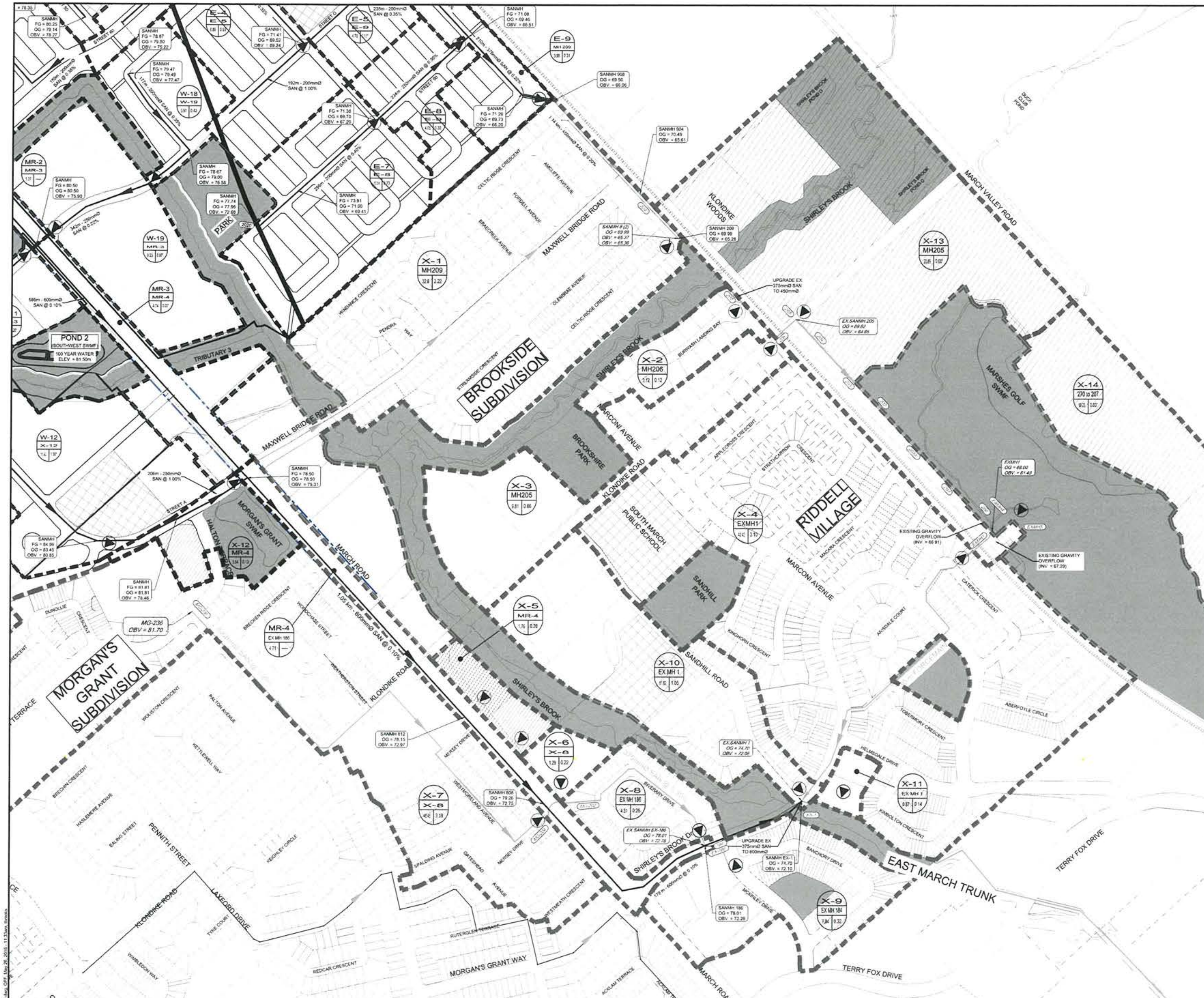
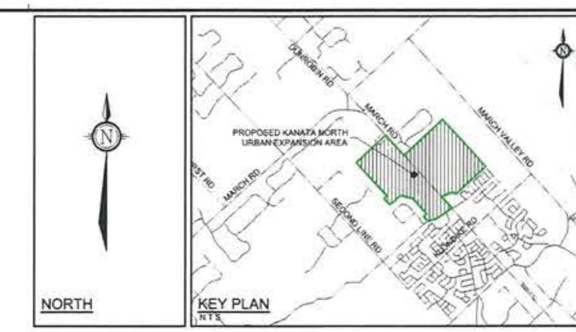
LOCATION
KANATA NORTH URBAN EXPANSION AREA
COMMUNITY DESIGN PLAN

DRAWING NAME
ONSITE SANITARY
DRAINAGE AREA PLAN

PROJECT No. 112117-04
REV. REV # 3
DRAWING No. 112117-SAN1





LEGEND

- X-4 — AREA ID
- X-5 — OUTLET AREA
- 3.13 | 0.19 — EQUIVALENT POPULATION (THOUSANDS) *PLUS ADDITIONAL NON-RESIDENTIAL FLOW; CONTRIBUTING AREA IN HECTARES
- PROPOSED DRAINAGE AREA
- EXISTING DRAINAGE AREA
- FLOW OUTLET
- SANMH 106 — SAN ID; FG = 72.52 — PRELIMINARY FINISHED GROUND ELEVATION; OG = 69.52 — ORIGINAL GROUND ELEVATION; OBV = 68.22 — PRELIMINARY OBVERT ELEVATION
- PROPOSED SANITARY SEWER & FLOW DIRECTION
- EXISING SANITARY MAINLINE SEWER & FLOW DIRECTION
- UNDEVELOPED LANDS TO BE SERVICED AND NOT PART OF STUDY AREA
- LANDS WHICH DO NOT GENERATE SANITARY FLOWS
- INSTITUTIONAL LANDS
- COMMERCIAL LANDS

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
3	ISSUED WITH DRAFT MASTER SERVICING STUDY	MAY 20/16	JLS
2	ISSUED WITH DRAFT MASTER SERVICING STUDY	APR 4/16	JLS
1	ISSUED WITH DRAFT MASTER SERVICING STUDY	FEB 26/16	JLS

SCALE 1:3000

DESIGN ARM / TB
CHECKED ARM
DRAWN TB
CHECKED CJR
APPROVED JLS

FOR REVIEW ONLY

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Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
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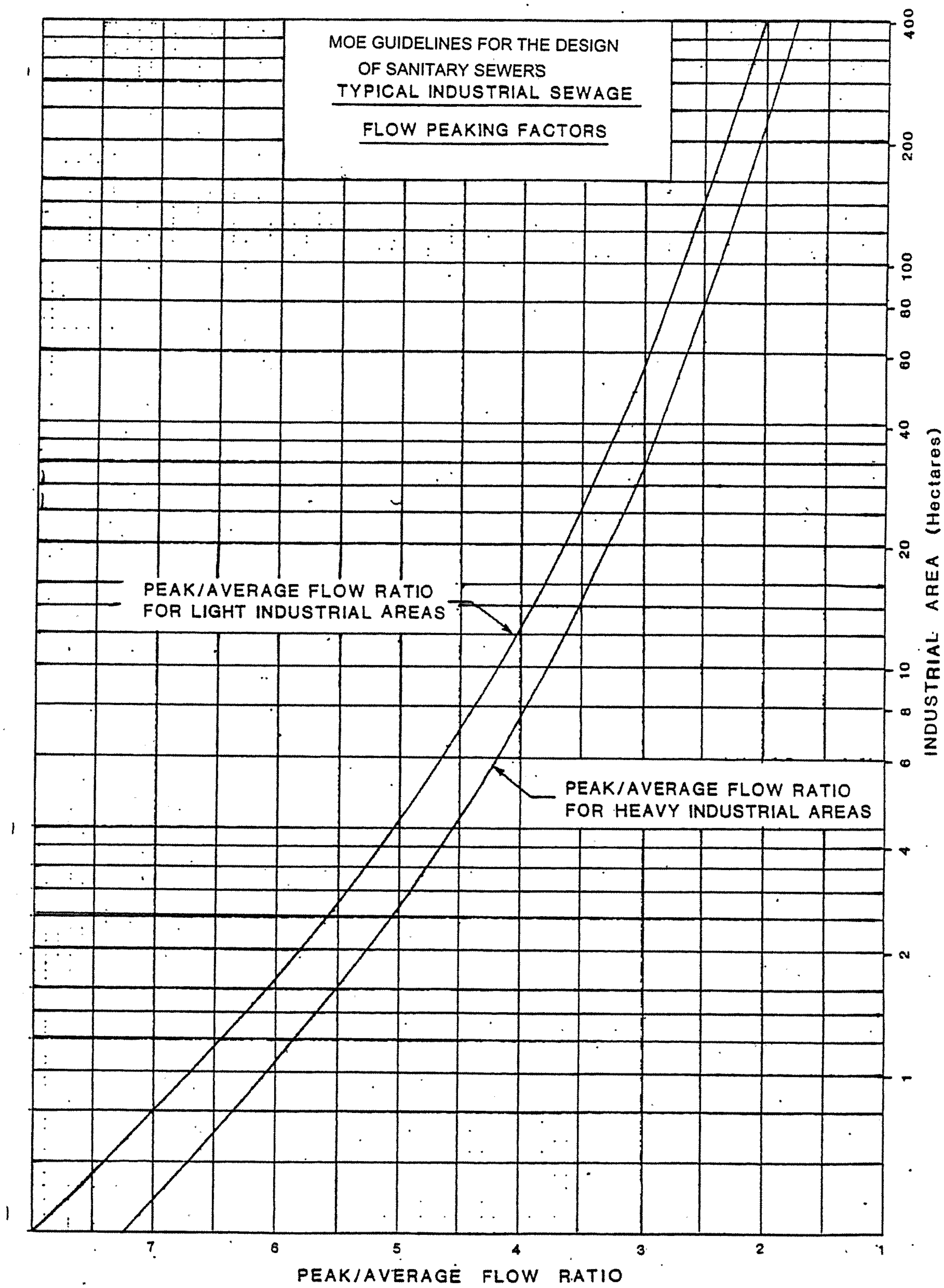
Website www.novatech-eng.com

LOCATION
KANATA NORTH URBAN EXPANSION AREA
COMMUNITY DESIGN PLAN

DRAWING NAME
OFFSITE SANITARY DRAINAGE AREA PLAN

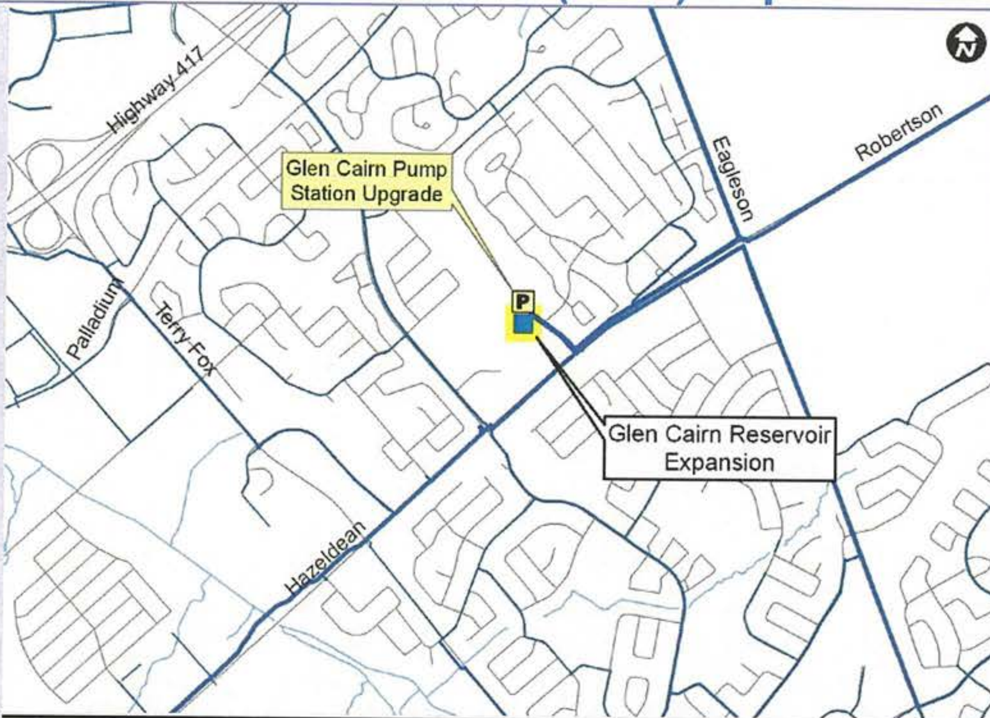
PROJECT No. 112117-04
REV. REV # 3
DRAWING No. 112117-SAN2

APPENDIX 4-B PEAKING FACTOR FOR INDUSTRIAL AREAS



APPENDIX D
Water Distribution

Glen Cairn Reservoir (GCR) Expansion



Scope and Justification

Add 17 ML storage volume at the GCR to defer and reduce pumping expansion needs to Zone 2W from the Carlington Heights PS and defer Water Purification Plant expansion.

Timing

2019-2024: Increase storage at GCPS

Action Item Funding

Construction Cost Estimate = $6.2M
Capital Cost Estimate* = $13.1M (90% Development Charges, 10% Rate)
**including construction cost, engineering, city internal costs and contingency allowance. Funding split subject to review as part of 2014 Development Charges by-law.*

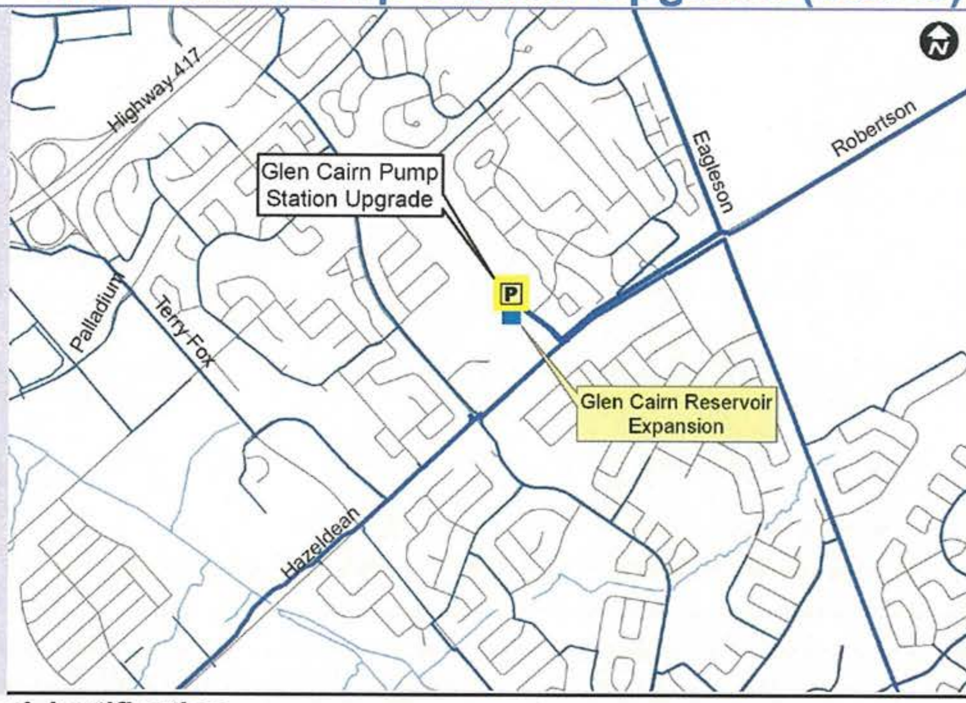
EA Requirements and Consultation

Class EA Schedule 'B' project - Notices, consultation and filing of Environmental Project File for public review required.

Follow Up Actions

The Official Plan projections and actual development pressures will determine the exact timing for implementation. Monitor development needs to ensure infrastructure is constructed in a manner that is coincident with development.

Glen Cairn Pump Station Upgrade (GCPS)



Scope and Justification

Increase pumping capacity at the GCPS to meet 2031 peak demand to Zone 3W to supplement the Campeau Drive Pump Station. An expansion of the facility is assumed.

Timing

2019-2024: Upgrade PS

Action Item Funding

Construction Cost Estimate = $1.5M
Capital Cost Estimate* = $3.1M (90% Development Charges, 10% Rate)
**including construction cost, engineering, city internal costs and contingency allowance. Funding split subject to review as part of 2014 Development Charges by-law.*

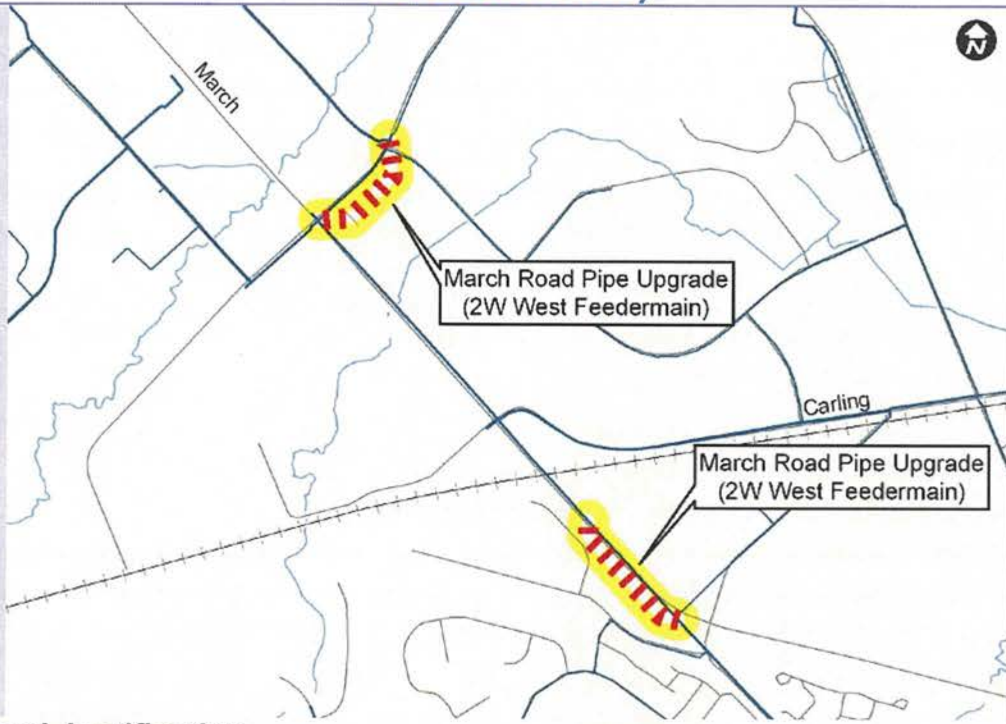
EA Requirements and Consultation

Class EA Schedule 'B' project - Notices, consultation and filing of Environmental Project File for public review required.

Follow Up Actions

The Official Plan projections and actual development pressures will determine the exact timing for implementation. Monitor development needs to ensure infrastructure is constructed in a manner that is coincident with development. Consider Coordination of works with 2019 mechanical renewal.

March Road Pipe Upgrade (Zone 2W West Feedermain)



Scope and Justification

Upgrade existing watermain segments in the North Kanata area, on March Road and Solandt Road.

Timing:

2019 – 2024: Construct feedermain

Action Item Funding

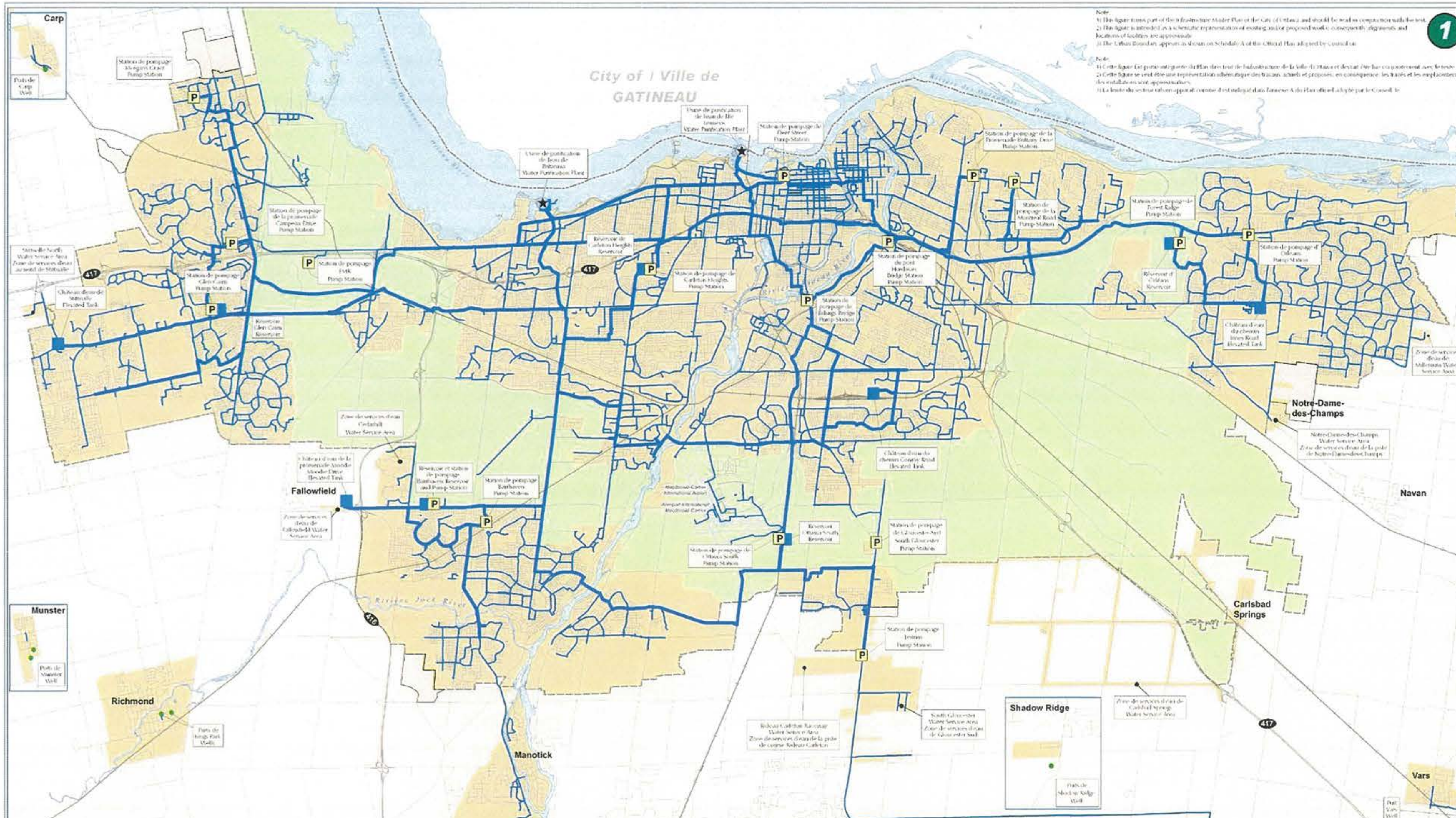
Construction Cost Estimate = $1.2M
Capital Cost Estimate* = $2.2M (90% Development Charges, 10% Rate)
**including construction cost, engineering, city internal costs and contingency allowance. Funding split subject to review as part of 2014 Development Charges by-law.*

EA Requirements and Consultation

The 610 mm watermain upgrades are Schedule 'A' projects – No consultation required prior to implementation.

Follow Up Actions

Project timing to be confirmed based on actual increases in demand due to growth.

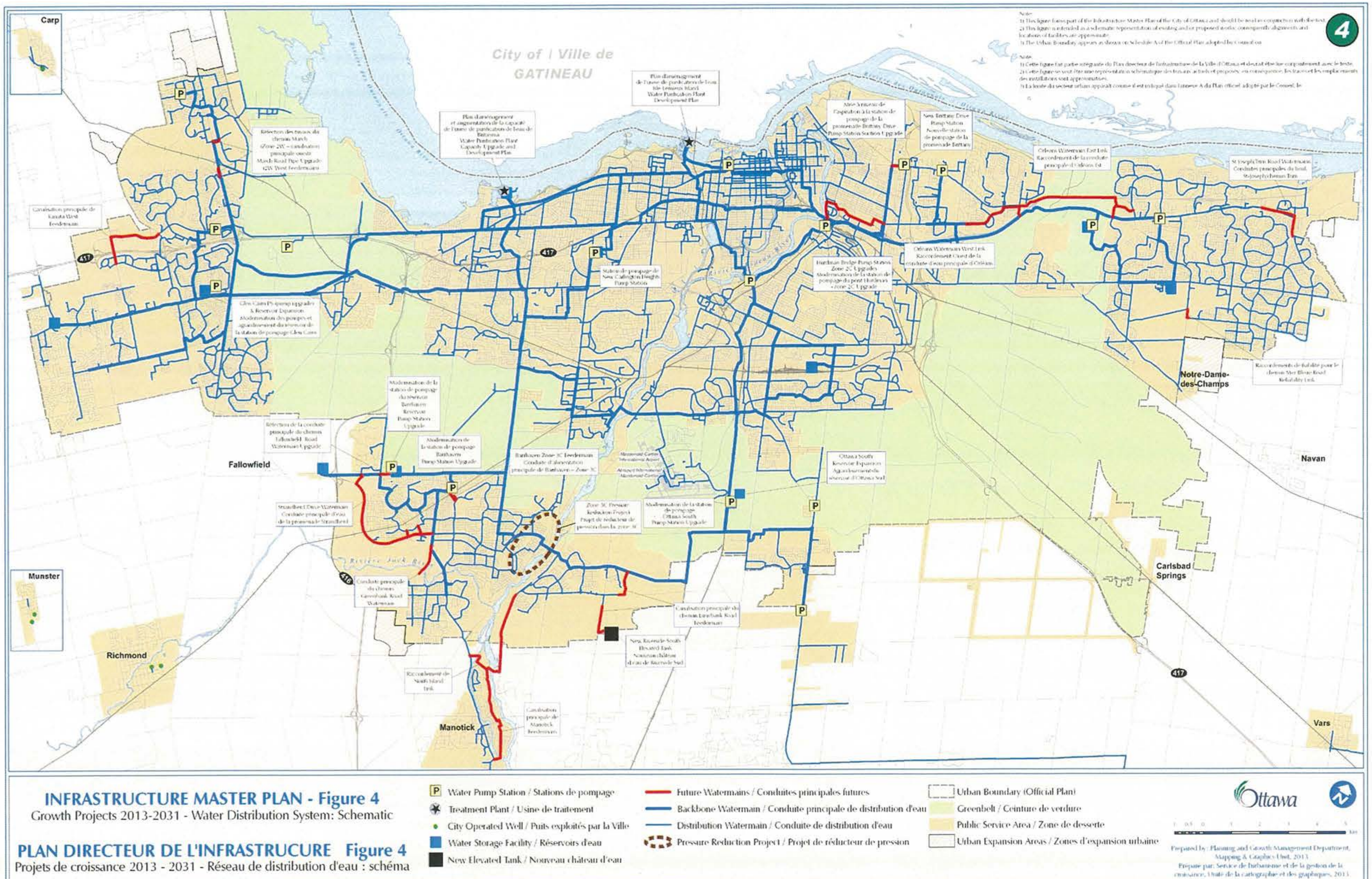


INFRASTRUCTURE MASTER PLAN - Figure 1
Existing Water Distribution System: Schematic

PLAN DIRECTEUR DE L'INFRASTRUCURE Figure 1
Réseau de distribution d'eau existant : schéma

- P Water Pump Station / Stations de pompage
- Treatment Plant / Usine de traitement
- Water Storage Facility / Réservoirs d'eau
- City Operated Well / Puits exploités par la Ville
- Backbone Watermain / Conduite principale de distribution d'eau
- Distribution Watermain / Conduite de distribution d'eau
- Urban Boundary (Official Plan)
- Greenbelt / Ceinture de verdure
- Public Service Area / Zone de desserte
- Urban Expansion Areas / Zone d'expansion urbaine

Ottawa



INFRASTRUCTURE MASTER PLAN - Figure 4
Growth Projects 2013-2031 - Water Distribution System: Schematic

PLAN DIRECTEUR DE L'INFRASTRUCURE Figure 4
Projets de croissance 2013 - 2031 - Réseau de distribution d'eau : schéma

Kanata North Urban Expansion Potable Water Assessment

Final Report

Prepared for:
Novatech Engineering Consultants

Prepared by:
Stantec Consulting Ltd.
400-1331 Clyde Avenue
Ottawa, ON, K2C 3G4

March 28, 2016

Sign-off Sheet

This document entitled Kanata North Urban Expansion Potable Water Assessment was prepared by Stantec Consulting Ltd. for the account of Novatech Engineering Consultants. The material in it reflects Stantec's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Megan A Young

Prepared by ______________________________
(signature)

Megan Young, E.I.T

Kevin Alemany

Reviewed by ______________________________
(signature)

Kevin Alemany M.A.Sc., P.Eng.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Abbreviations

PRV	Pressure Reducing Valve
Dia.	Diameter
w/m	Watermain
HGL	Hydraulic Gradeline
KNUE	Kanata North Urban Expansion
AVDY	Average Day Demand
MXDY	Maximum Day Demand
PKHR	Peak Hour Demand
EPS	Extended Period Simulation
SS	Steady State
FF	Fire Flow
FUS	Fire Underwriters Survey

1.0 Background

1.1 PROPOSED DEVELOPMENT AREA

The proposed development site is located in Kanata, northwest of Old Carp Road and Maxwell Bridge Road, on the northwest and southeast side of March Road. It is the proposed location for a housing development that is projected to have a total of 3340 units and an estimated population of 9230 persons. **Figure 1-1** outlines the proposed development site boundary in red.

Figure 1-1: Proposed Development Site Location

The lands will include a mixture of low density, medium density and high density residential units including a mix of commercial and institutional lands. A development concept plan for the area is provided in **Appendix A.**

The southwest boundary of the site is adjacent to an existing residential development which has potable water serviced by the City of Ottawa. These lands are serviced by "Pressure Zone 2W". Given that it is on the most western boundary of Zone 2W, this particular area is also referred to as Zone 2Ww herein to distinguish its general location.

The northwest and northeast limits of the proposed development site border residential estate lots and farmland lots which are currently serviced by individual/private wells. The southeast boundary of the development site is bordered by an existing railway corridor, which is contiguous to farmland also currently serviced by well infrastructure.

1.2 GROUND ELEVATIONS

Ground elevations on the proposed development site vary between 69 and 94 metres. The portion of the site located on the west side of March Road decreases gradually in elevation from 94 metres on the western limits to about 80 metres along March Road. The portion of the site located east of March Road consists of 2 plateaus separated by a ridge. The western Plateau adjacent to March Road has an elevation of 80 metres, and the eastern plateau has an elevation of 69 metres. **Figure 1-2** illustrates the ground elevations assigned to nodes in the hydraulic model.

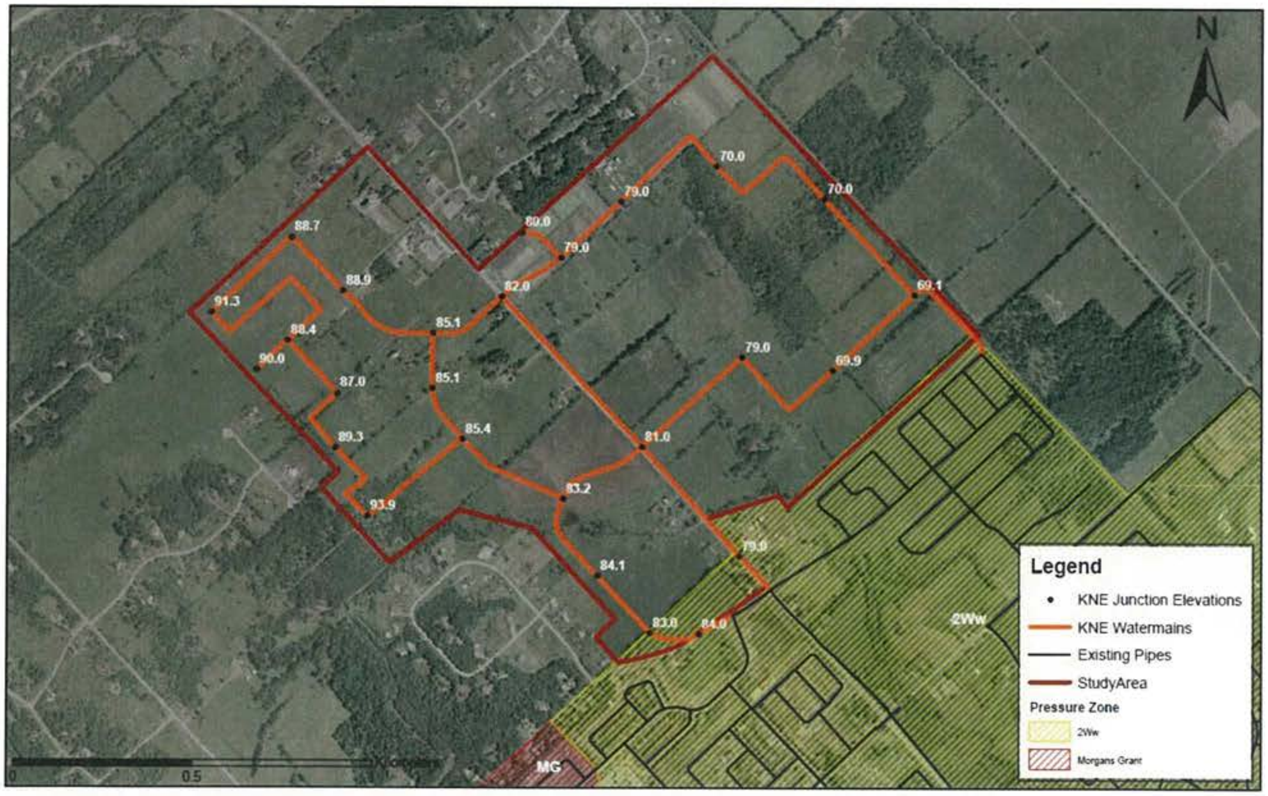


Figure 1-2: Development Site Elevations

1.3 EXISTING PRESSURE ZONES

The proposed site is situated near two existing water distribution pressure zones. Both of these pressure zones were analyzed to determine their compatibility with the potential site infrastructure.

Pressure zone 2Ww is located adjacent to the southeastern boundary of the proposed development site. This adjacency allows potential connection at several locations. Zone 2Ww has ground elevations similar to that of the proposed site, with values ranging between 68 and 99 metres. The overall hydraulic grade line in Zone 2Ww typically varies between 125 and 131 metres. The resulting pressures in Zone 2Ww typically range between 40 and 90 psi.

The Morgan's Grant Pressure Zone (Zone MG) is located approximately 250 metres southwest of the proposed development area. Connection to this pressure zone, given the existing structures and property ownership in the area, may require the creation of a minimum of 350 metres of additional pipeline – this does not account for the requirements to get a second redundant feed to the area. With ground elevations ranging between 91 and 107 metres, Zone MG is elevated compared to the upstream Zone 2W. To meet pressure servicing requirements at these elevations the Morgan's Grant Pumping Station was constructed. This pumping station allows the watermain infrastructure to maintain pressures between 58 and 82 psi. The overall hydraulic grade line in Zone MG varies from approximately 138 to 151 m.

1.4 EXISTING WATERMAIN NETWORK

Zone 2Ww is fed from a large dia. transmission w/m in Zone 2W along Timm Road and Robertson Road. Ultimately, this area is fed by pumps located at the Britannia Water Purification Plant and the Carlington Heights Pumping Station. The Glen Cairn Reservoir located to the south of Zone 2Ww provides balancing and emergency storage to Zone 2W/2Ww.

The existing Zone 2Ww pipe network consists primarily of a 1067mm dia. feedermain along Eagleson that drops down to 914mm, 610mm and 406mm before reaching the boundary of the KNUE lands (see **Figure 1-3**). Two sections of the 610mm dia. w/m along March Road step down in diameter from a 610mm to 406mm and back up to 610mm. These sections are discussed later in this assessment as they are deemed to create significant headloss relative to their lengths under high demands.

A secondary larger dia. w/m loops to the eastern boundary of Zone 2Ww with pipes ranging in size from 305 to 406mm dia. There is a small section of the secondary feed that drops down to 203mm on Penfield Drive.

The entire Zone 2Ww area north of Campeau Drive is fed by a single 914mm dia. watermain along Teron Road. There is an interzonal 203mm dia. w/m connection to Zone 3W in the western boundary of Zone 2Ww along Beaverbrook. Although the interzonal valve along Beaverbrook could be opened, this pipe has minimal capacity to provide to Zone 2Ww. The City has indicted that are two redundant feeds to the 2Ww area, however both include sections of private watermain which cannot be relied upon by the City for back-up supply purposes. These segments are shown in white in **Figure 1-3** below. The Critical Infrastructure Identification Study for Zone 2W recommended that ownership of some of these 406mm and 305mm sections of private watermain be transferred to the City to ensure adequate back-up supply in the event of a major failure condition. It is understood that this recommendation has yet to be implemented but it is the City's intent to pursue it.

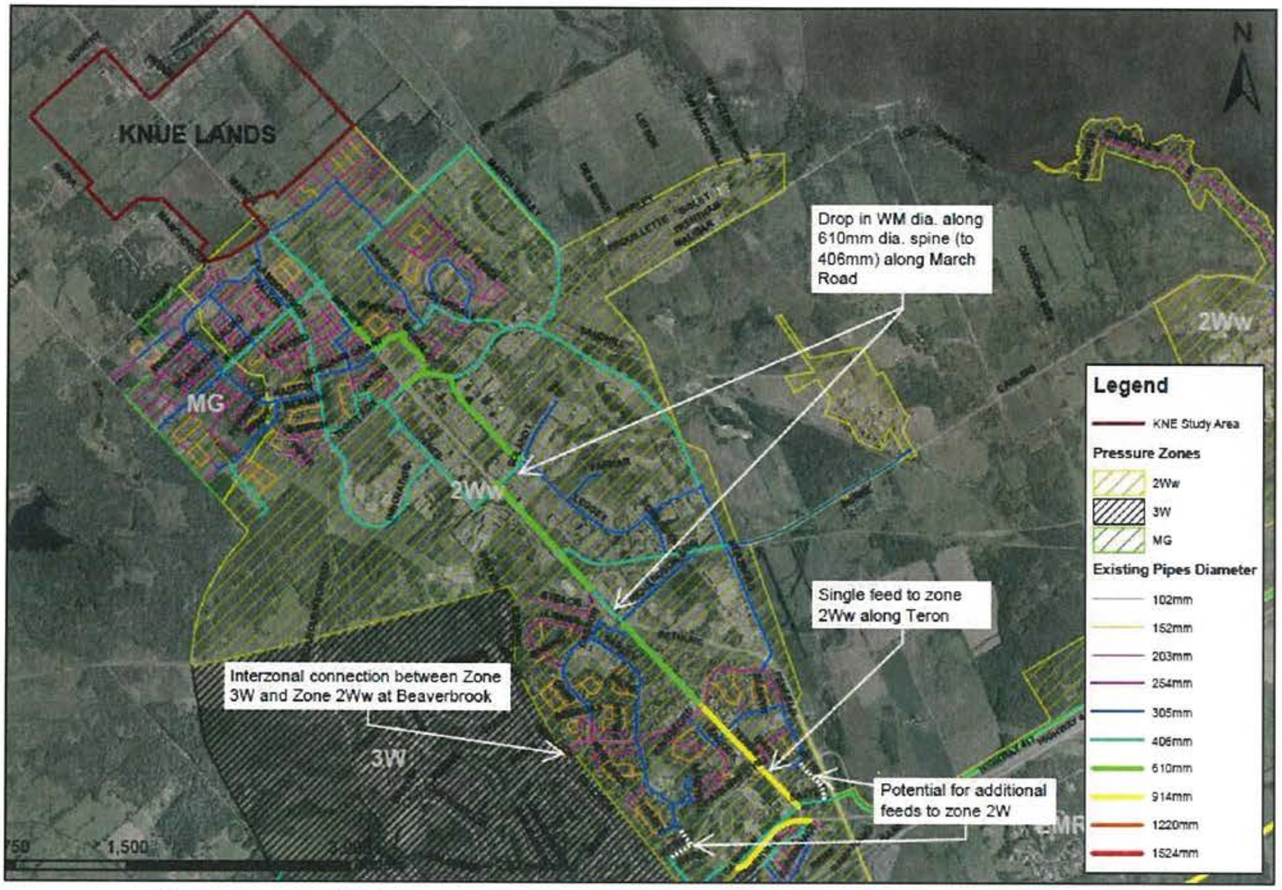


Figure 1-3: Existing Zone 2Ww Pipe Network (diameter shown in mm)

2.0 Approach

The following sections provide an analysis of the system pressures based on anticipated hydraulic gradelines to determine the appropriate servicing pressure zone, the system demands associated with the development area being assessed, and the modifications to the hydraulic model used in the assessment.

2.1 ALLOWABLE PRESSURES

An analysis of the existing pressure zone boundaries was performed to determine the appropriate servicing pressure zone for the KNUE lands. The proposed site has a total elevation change of 25m which is equivalent to a change in pressure of 36 psi. The desired pressure range for a given structure, as per the City of Ottawa Design Guidelines (Newell, W.R., 2010), is between 50 and 70 psi, with an absolute range between 40 and 80 psi. If pressures within the service area exceed 80 psi then, per the Ontario Plumbing Code (Government of Ontario, 2012), pressure controls are required, such as pressure reducing valves, to restrict high pressures to a maximum of 80 psi.

Considering the ground elevations of the proposed development, the proximity to existing watermains of each potential servicing pressure zone and the existing HGLs of the pressure zones, direct connections to the Zone 2Ww are the preferred alternative to the Zone MG. The Morgan's Grant pressure zone would produce tolerable pressures for a very small portion of the proposed site, but would produce excessively high pressures in the majority of the site. Pressure reducing valves would be required to mitigate the high pressures (as per the Ontario Plumbing Code) for most of the site. Servicing from Zone 2Ww allows for the higher elevation areas within the site to be inside tolerable servicing limits, while maintaining a more suitable HGL in the areas of lower elevations.

The North Eastern portion of the proposed site, located past the existing ridge, reaches elevations as low as 69 metres. This portion of the site will require pressure reduction measures to alleviate the high pressure in the region, regardless of the elected pressure zone. Connection of this area to Zone 2Ww will result in pressures up to 88 psi based on a maximum Zone 2Ww HGL of 130.9m. As per the Ontario Pluming Code, pressure reduction measures (i.e. individual household PRVs) will be required to mitigate high pressures in the system.

2.2 ANTICIPATED WATER DEMAND

The projected population for the KNUE lands is approximately 9230. Accordingly, zone/system level basic unit demands and outdoor water projections were applied to determine average day, maximum day and peak demands. **Table 2-1** summarizes the projected demands. These demands were distributed across all the new nodes added to the hydraulic model to simulate the pipe network in the KNUE lands. The total average day maximum day and peak hour demand (determined from the model) for the KNUE lands are 39.0L/s, 52.0L/s and 89.3L/s.

It is noted that each individual subdivision within the expansion area must be designed in accordance with the design parameters in the City's Water Design Guidelines (Newell, W.R., 2010), which has demands that are significantly higher than the system level parameters.

Table 2-1 - Projected Potable Water Demands for KNUE Lands

					Average Daily Demand (L/s)						Outdoor Water Demand		
Land Use	Area (ha)	Quantity of Housing Units	Population	Avg Daily Flow (L/cap) [Res] (L/ha) [Comm & Inst]	SFH	MLT	APT	COM_OGB	INS_OGB	Total AVDY	OWD_OGB	Max Daily Demand	PKHR from Model:
Institutional	15.6	-	-	50000					9.0	9.0			
Commercial	15.3	-	-	50000				8.9		8.9			
Firehall	0.8	-	-	50000					0.5	0.5			
Subtotal:	*31.7*	*0.0*	*0.0*					*8.9*	*9.5*	*18.3*			
Low density (SF)	64.7	1073	3637	180	7.6					7.6	13.0		
Med density (Street Town)		1067	2881	198		6.6				6.6			
Med Density (Multi-Unit Town)	16.8	600	1620	198		3.7				3.7			
High density (Apt)		600	1080	219			2.7			2.7			
Subtotal:		*3340*	*9218*		*7.6*	*10.3*	*2.7*	*0.0*	*0.0*	*20.6*	*13.0*		
Total:	***31.7***	***3340***	***9218***		***7.6***	***10.3***	***2.7***	***8.9***	***9.5***	***39.0***	***13.0***	***52.0***	***89.3***

PKHR Factor
1.7

2.3 WATERMAIN INFRASTRUCTURE DESIGN ALTERNATIVES

Given the layout of the existing Zone 2Ww large dia. w/m, the recommended alignment for a larger diameter feedermain to and through the KNUE lands, is along March Road. This alignment preserves the continuity of the larger diameter network and serves as the main feed to the proposed growth area.

To provide redundancy and added capacity to the KNUE lands, a secondary 305mm dia. w/m looping to the existing Zone 2Ww pipe network was considered. Two alternative alignments were considered, the first, an extension off an existing 305mm dia. w/m on Old Carp Road/Halton to the west of March Road, and the second, to an existing looped 203mm diameter network along Celtic Ridge to the east of March Road as depicted in **Figure 2-1**.

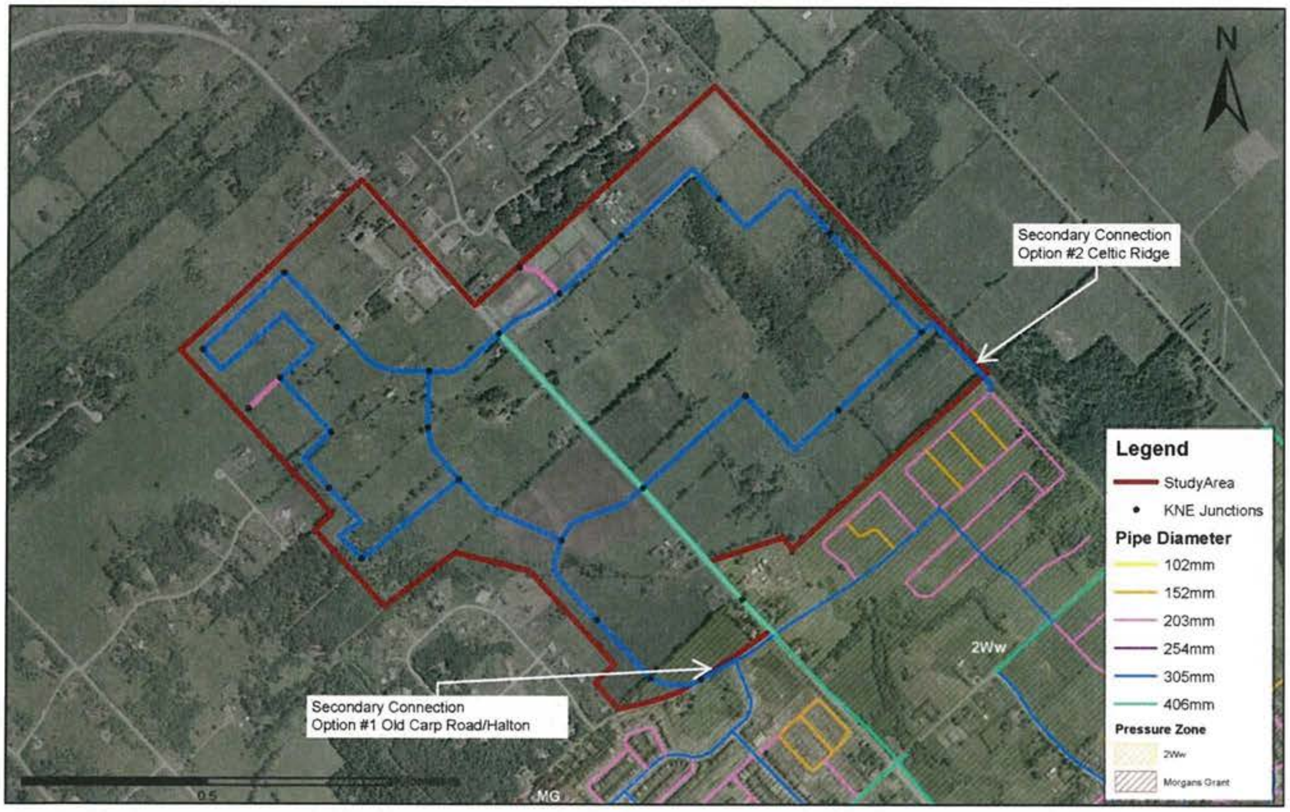


Figure 2-1: Proposed KNUE Pipe Diameters (mm) & Access Points to Existing Infrastructure

3.0 Hydraulic Modeling

3.1 HYDRAULIC MODEL DEVELOPMENT

With the permission of the City of Ottawa, the City's 2013 Water Master Plan all pipe computer model was used to assess the proposed growth scenarios. The hydraulic modeling software used is H2OMap water by Innovyze.

A watermain network in the KNUE lands was created using the proposed road network plans. Nodes were input into the model to provide a good distribution of demands and a good representation of ground elevation conditions. **Figure 3-1** and **Figure 3-2** show the locations and the IDs of the future nodes and watermains entered into the model respectively.

Using the base 2012 summer and winter scenarios, new child scenarios were developed with future KNUE nodes and pipes included in the model. An additional set of scenarios was created to model the future upgrades to the existing Zone 2Ww network, in particular, the two sections of 406mm dia. w/m along the 610mm dia. feedermain on March Road.

Ground elevations were assigned to nodes according to the location of the node with respect to the topography.

Residential, Institutional and Commercial demands were distributed according to the Kanata North Community Design Plan (Novatech, 2016). The Kanata North Community Design Plan (Novatech, 2016) was used in conjunction with the Kanata North Onsite Sanitary Drainage Area Plan (Novatech, 2016) to distribute residential and outdoor water demands according to the projected population and housing type present in each area.

Pipe diameters were assigned with diameters ranging from 305mm to 406mm to provide a strong network of watermains along primary routes. Hazen Williams carrying capacity "C" factors were applied based on City of Ottawa Design Water Guidelines (Newell, W.R., 2010)(110 for 203mm and 120 for 305/406mm).

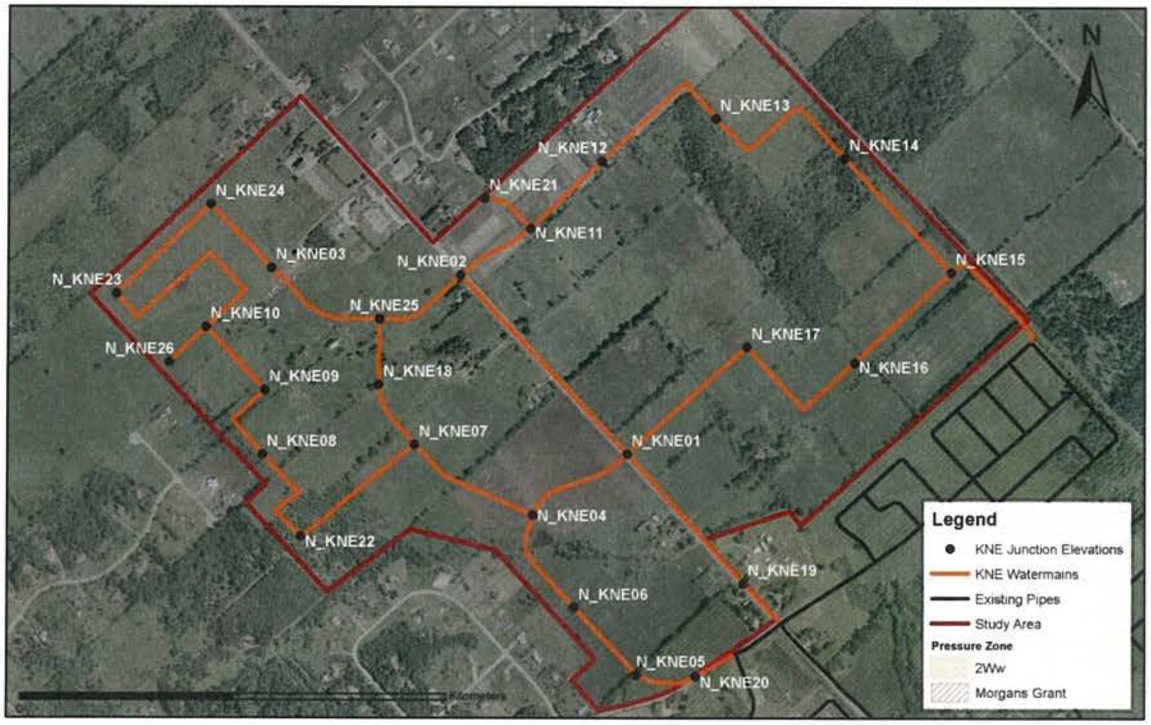


Figure 3-1: KNUE Lands Model Node ID's

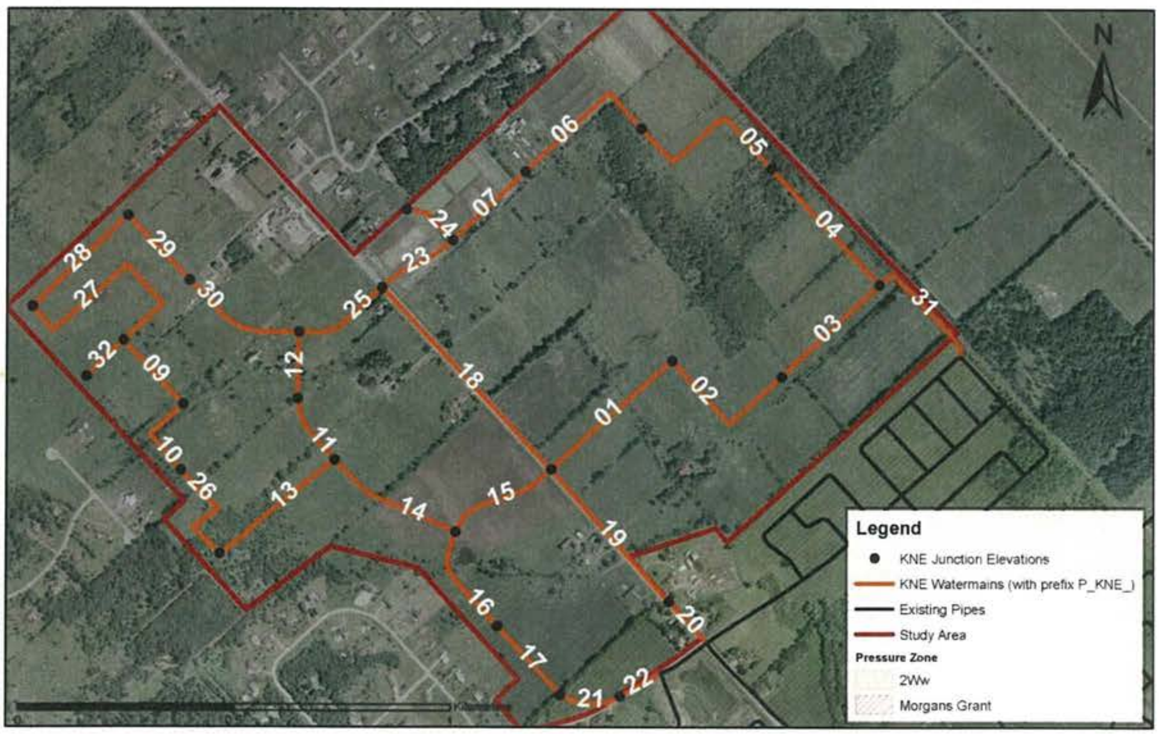


Figure 3-2: KNUE Lands Model Pipe ID's

Figure 3-3 provides the node allocation of each area of development to the watermain network. Areas shown without colour shading do not have allocated demands.

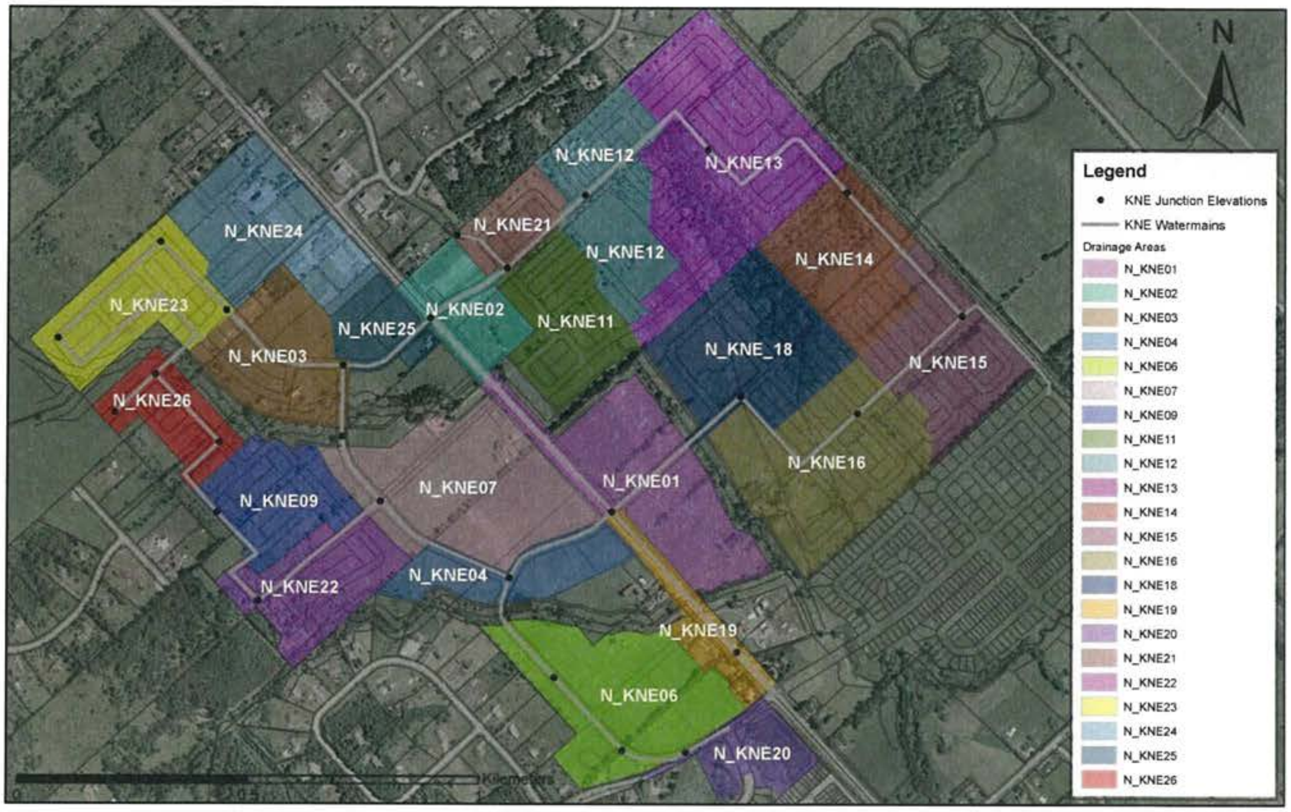


Figure 3-3: Area Demand Allocation

The demand applied from each of these areas on the respective node is summarized in **Table 3-1** below. This table summarizes residential, commercial, institutional and outdoor water demands.

Table 3-1: Node Average Day Demand Allocations

Node Allocation	Average Day Demand (L/s)				Total
	Residential	Commercial	Institutional	Outdoor	
N_KNE01	0.00	5.11	0.00	0.00	5.11
N_KNE02	0.00	0.00	0.00	0.00	0.00
N_KNE03	1.42	1.82	0.00	0.00	3.24
N_KNE04	1.15	0.39	0.00	0.00	1.54
N_KNE05	0.00	0.00	0.00	0.00	0.00
N_KNE06	2.53	0.00	1.18	0.53	4.25
N_KNE07	0.55	0.13	2.31	0.00	3.00
N_KNE08	0.00	0.00	0.00	0.00	0.00
N_KNE09	0.93	0.00	0.00	0.00	0.93
N_KNE10	0.00	0.00	0.00	4.07	4.07
N_KNE11	1.33	0.00	0.00	0.00	1.33
N_KNE12	0.74	0.00	1.67	0.00	2.41
N_KNE13	2.38	0.00	0.00	4.54	6.92
N_KNE14	0.81	0.00	1.33	0.00	2.14
N_KNE15	1.41	0.00	0.00	3.87	5.28
N_KNE16	1.80	0.00	0.00	0.00	1.80
N_KNE17	1.83	0.00	0.00	0.00	1.83
N_KNE18	0.00	0.00	0.00	0.00	0.00
N_KNE19	0.00	1.19	0.00	0.00	1.19
N_KNE20	0.32	0.00	0.00	0.00	0.32
N_KNE21	0.48	0.00	0.00	0.00	0.48
N_KNE22	0.95	0.00	0.00	0.00	0.95
N_KNE23	1.15	0.00	0.00	0.00	1.15
N_KNE24	0.53	0.00	2.50	0.00	3.03
N_KNE25	0.00	0.20	0.48	0.00	0.68
N_KNE26	0.62	0.00	0.00	0.00	0.62
TOTAL:	20.9	8.9	9.5	13.0	52.3

3.2 RESULTS

3.2.1 Average Daily Demands

The winter model scenario was tested to observe the pressures in the KNUE lands under the 2012 average daily demand conditions. No outdoor water demand was applied in this scenario. **Figure 3-4** provides the results of each node within the KNUE lands. The Hydraulic Gradeline under average day demands varies between 127m and 130m, as a result, **nodes with ground elevations lower than 74m can anticipate maximum pressures to exceed 80 psi**. The Ontario Building Code requires services with pressures greater than 80 psi to have pressure reduction measures such as pressure reduction valves installed along the service lines. The same results are observed for both secondary looping scenarios (i.e. option 1 through Old Carp Road and option 2 through Celtic Ridge).

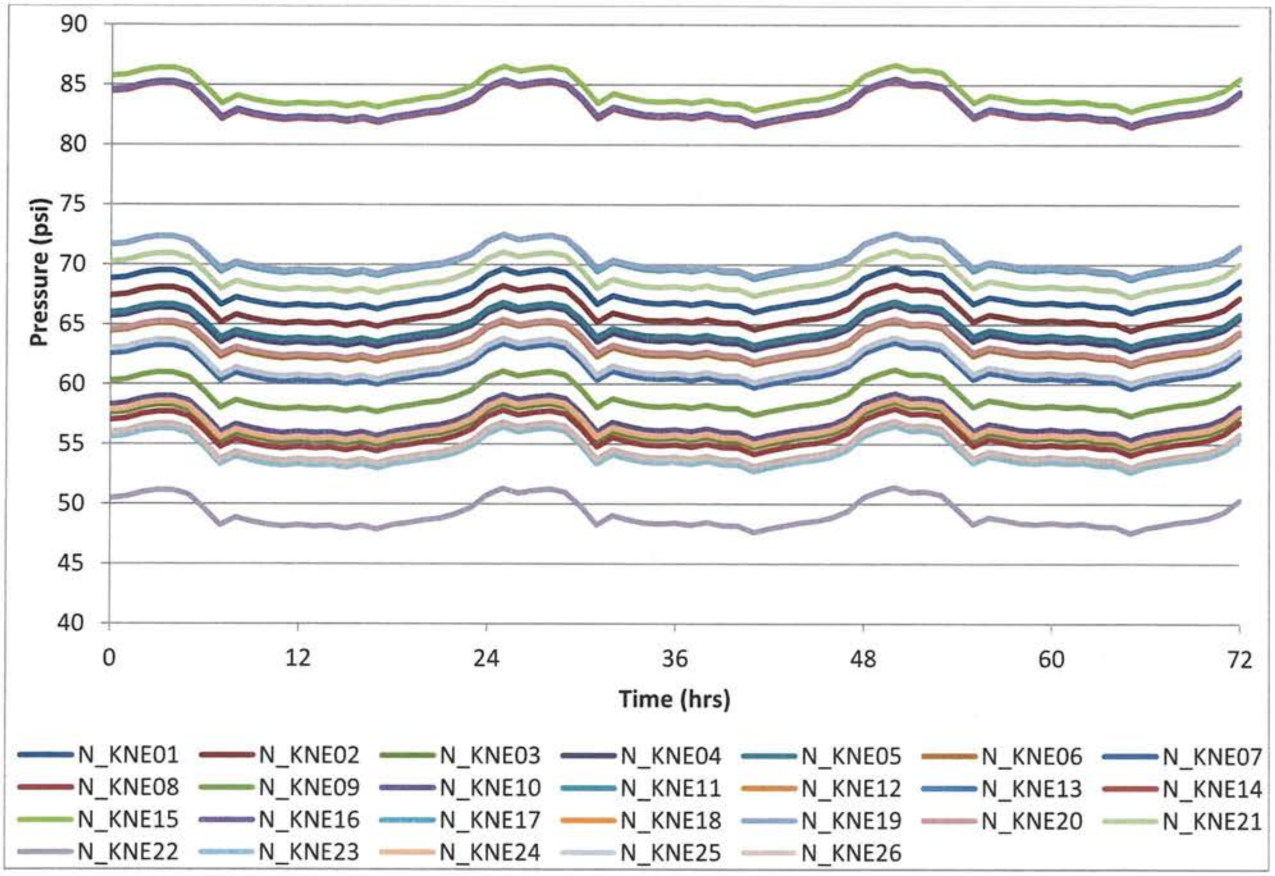


Figure 3-4: Pressures under Existing (2012) Plus KNUE Build-out AVDY Demands

3.2.2 Peak Hour Demands

The summer model scenario was tested to observe the pressures in the KNUE lands under the 2012 maximum daily demand & peak hour conditions. **Figure 3-5** shows the resulting minimum pressures in Zone 2Ww prior to the KNUE lands being added to the network. Minimum pressures in Zone 2Ww drop down close to 40 psi at the suction side to the Morgan's Grant Pump Station.

Figure 3-6 shows the resulting minimum pressures throughout zone 2Ww and the KNUE lands when the KNUE buildout demand is added to the network. As shown, there is a slight impact on the pressures in the existing Zone 2Ww due to additional headloss through the existing Zone 2Ww pipe network. Under peak demands, pressures drop by up to 4 psi, resulting in some "borderline" minimum pressure areas in the existing Zone 2Ww area falling below the 40 psi threshold. **Figure 3-7** further illustrates how the node pressures in the KNUE lands are impacted under peak demand conditions. Under this scenario, the HGL drops to approximately 121m in the KNUE lands resulting in elevations greater than 93m experiencing pressures less than the design guideline minimum requirement of 40 psi.

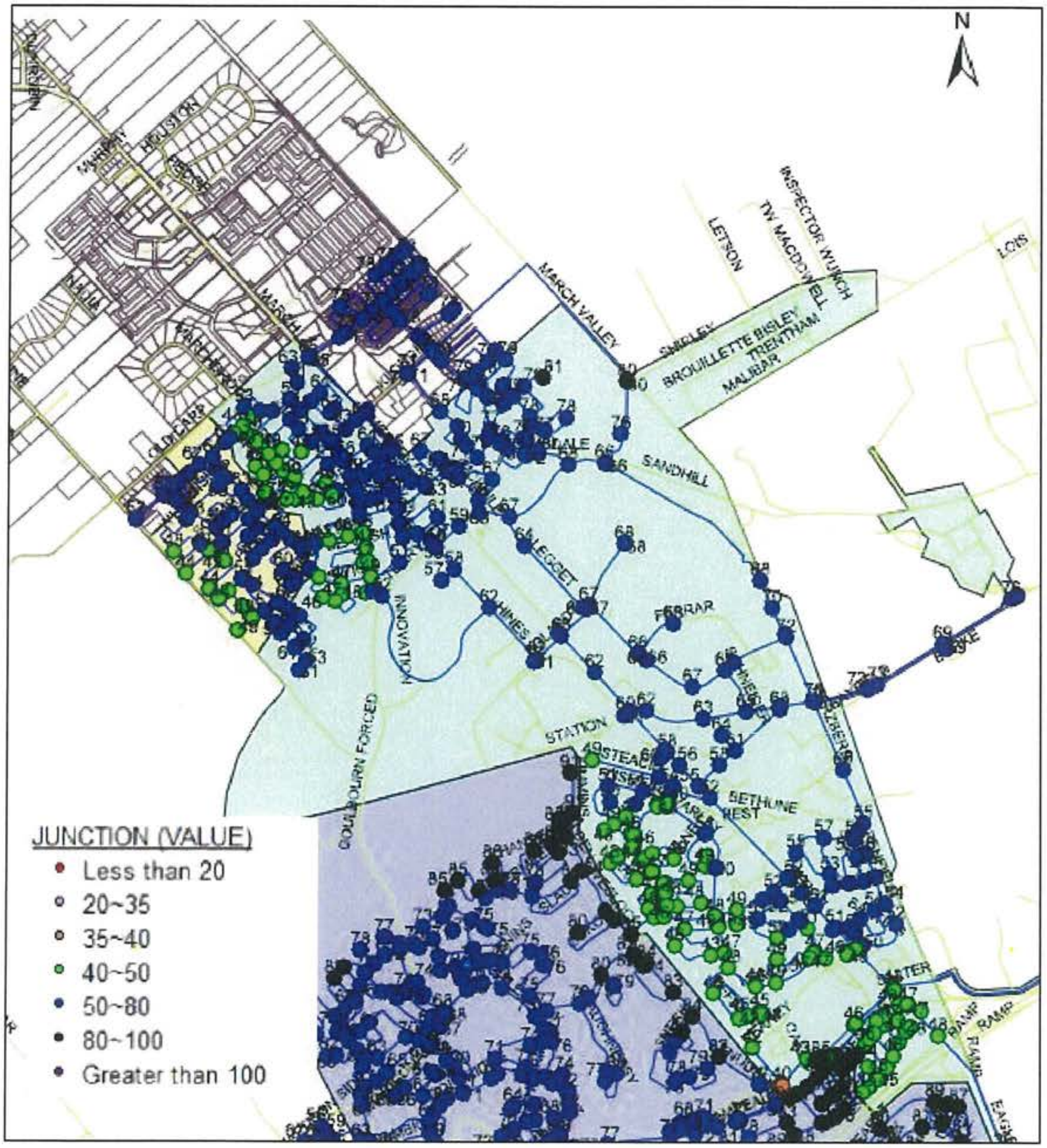


Figure 3-5: Zone 2Ww Minimum Pressures under Existing Network & Existing 2012 PKHR Demands (no KNUE)

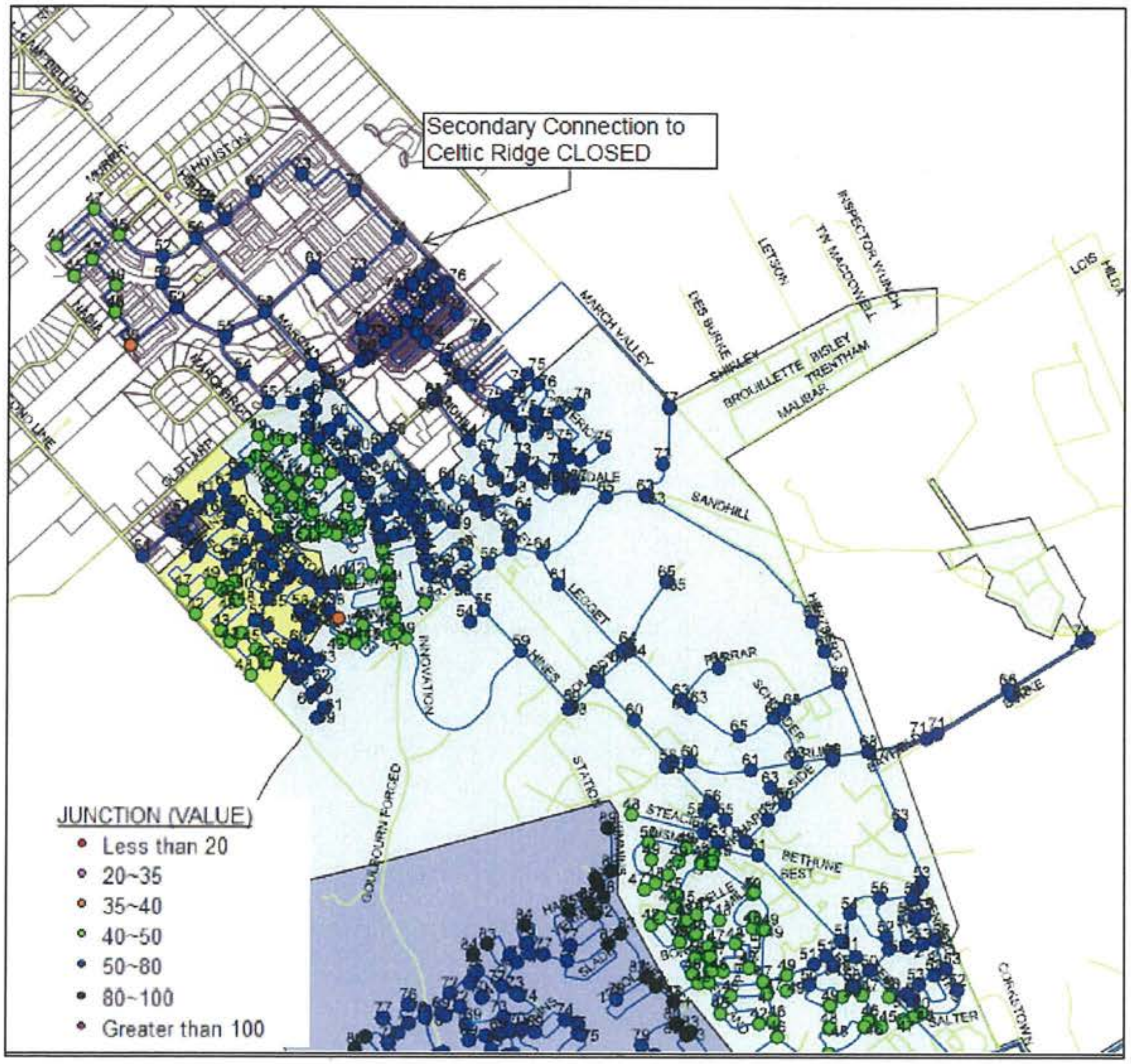


Figure 3-6: Zone 2Ww Minimum Pressures with Existing Network & Existing + KNUE 2012 PKHR Demands

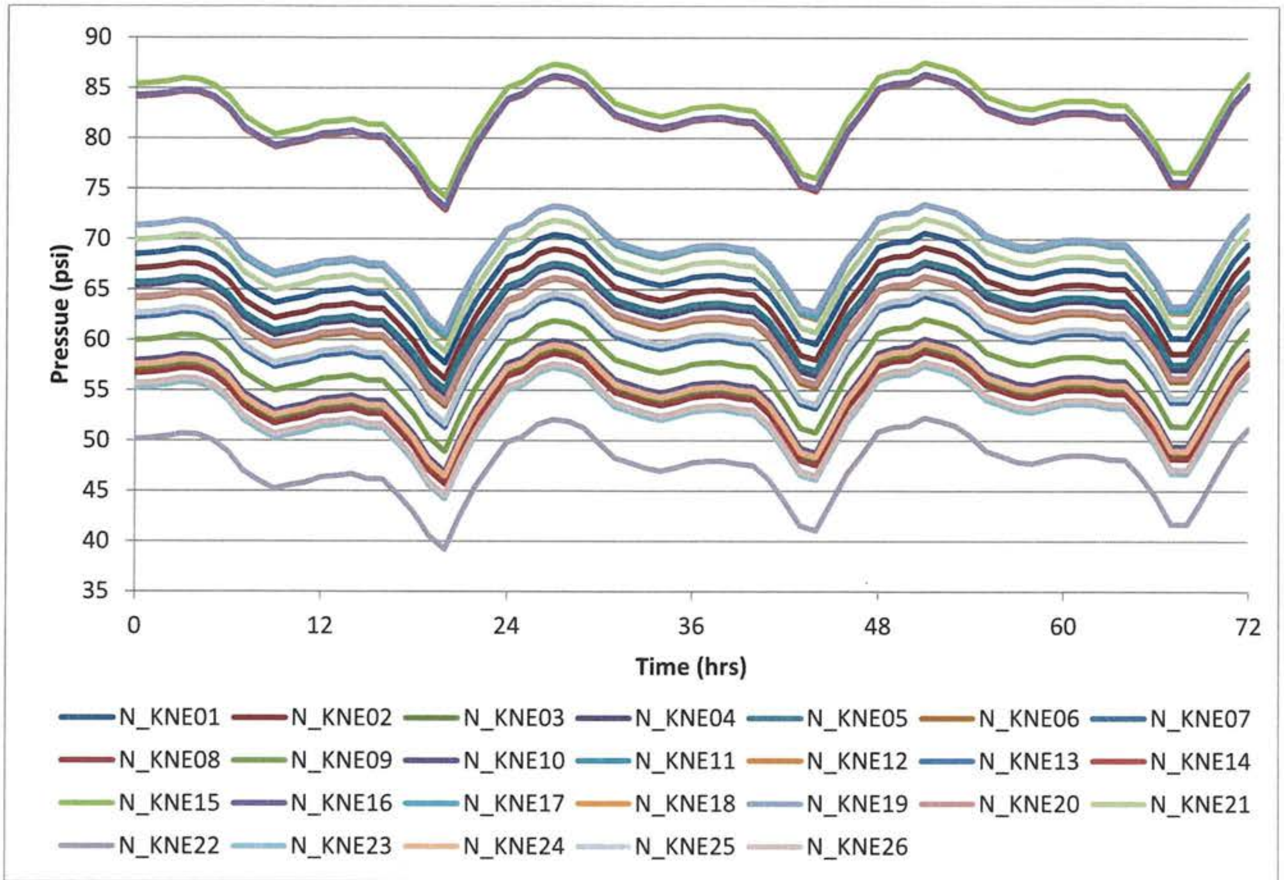


Figure 3-7: Pressures under Existing Network & Existing + KNUE 2012 PKHR EPS Demands

To improve minimum pressures, upgrades to two lengths of 406mm dia. w/m along the March Road alignment were made in the model (sections were upsized to 610mm dia.) **Figure 3-8** shows the resulting improvements to the minimum pressures in Zone 2Ww and the KNUE lands. These improvements decrease the headloss under peak demands and increase the minimum HGL in the KNUE lands to 122m. Under this scenario, nodes in the KNUE lands with ground elevations greater than 94m would experience pressures less than 40 psi. **Figure 3-9** further illustrates how the node pressures in the KNUE lands are impacted under peak demand conditions. Development exceeding 93m in elevation will therefore need to be phased such the replacement of the 406mm watermain on March and Solandt Road is occurs first. Elevations exceeding 93m are only seen at node N_KNE22 in the model.

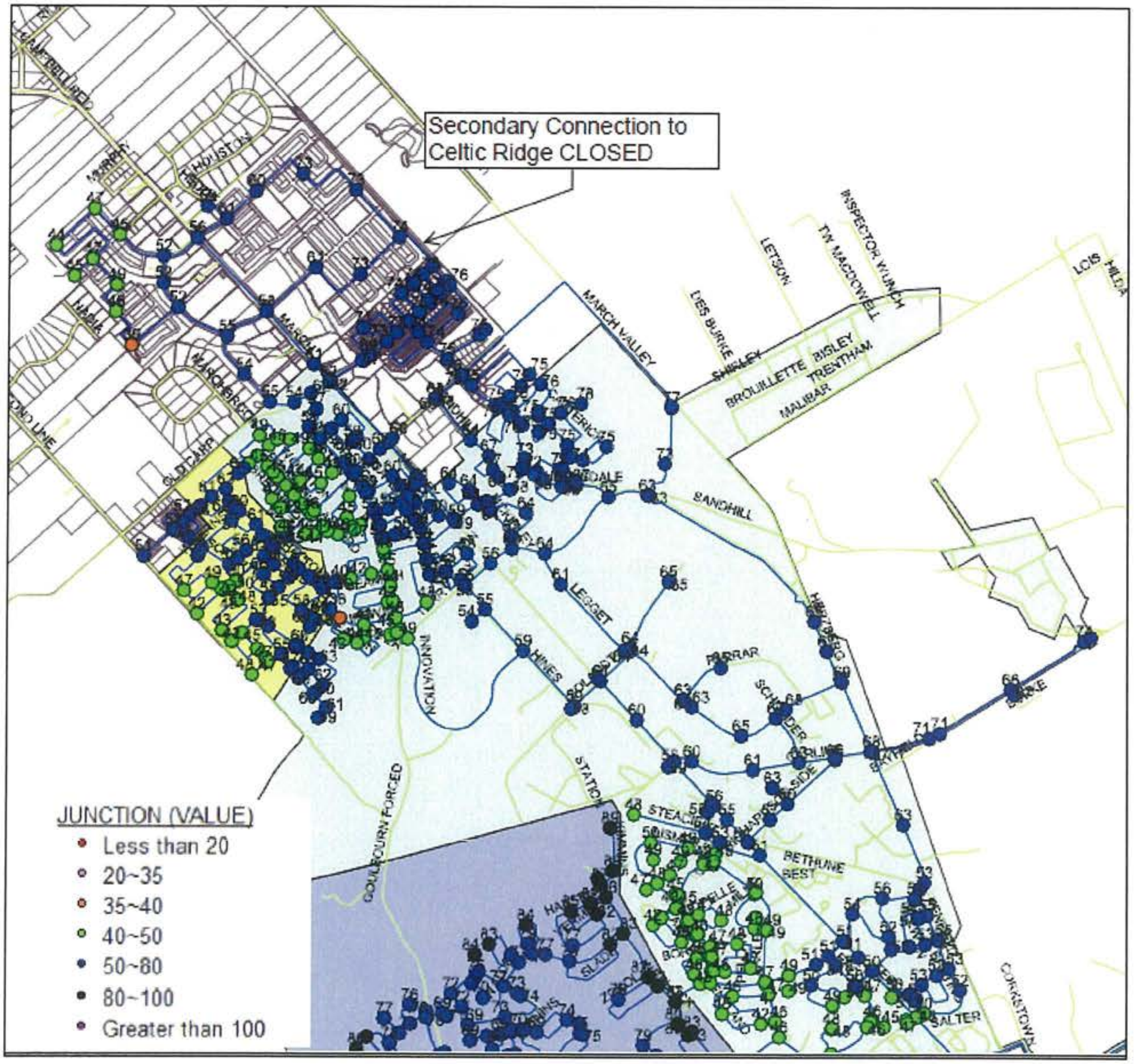


Figure 3-8: Minimum Pressures (psi) with Upgraded 2Ww Network & Existing + KNUE PKHR Demands

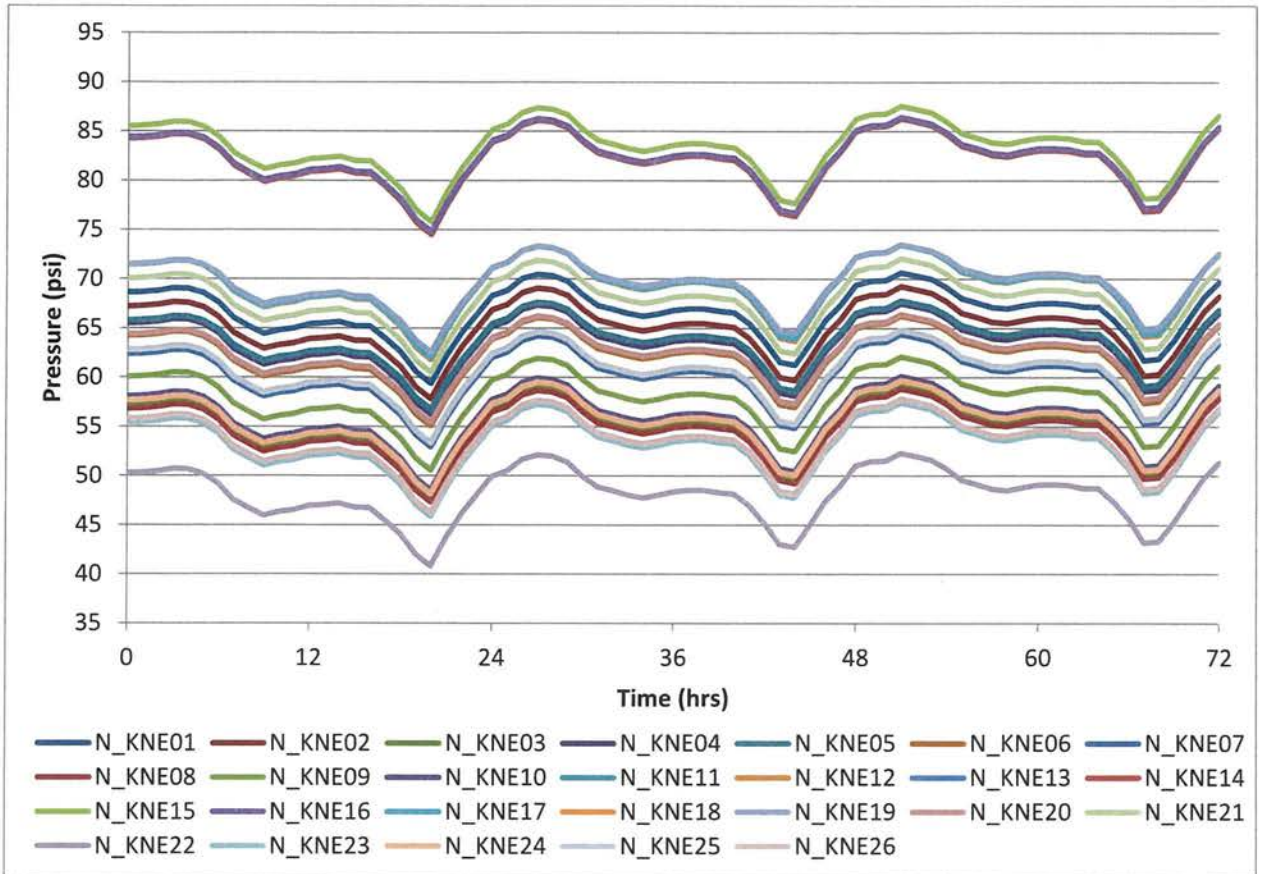


Figure 3-9: Pressures with upgraded 2Ww Network & Existing + KNUE 2012 MXDY EPS Demands

3.2.3 Max Day + Fire Flow Demands

A fire flow assessment was carried out on the proposed KNUE pipe network under MXDY steady state (SS) demand conditions and existing Zone 2Ww pipe conditions.

Table 3-2 provides the results of the fire flow analysis. Two scenarios were considered, existing Zone 2Ww piping with the main 406mm dia. w/m feed along March Road into the KNUE land and the secondary 305mm dia. w/m feed either from Old Carp Road (Option 1) or Celtic Ridge (Option 2).

The Old Carp Road (Option 1) scenario provides fire flow capacities greater than 117 L/s (7,020 L/min) at all nodes. The Celtic Ridge (Option 2) scenario is able to provide fire flow capacities greater than 115 L/s (6,900 L/min) at all nodes. A fire flow 167L/s (10,000L/min) is considered to be a strong flow capable of meeting typical residential construction requirements. Both layouts provide protection above the 167L/s (10,000L/min) at all nodes with the exception nodes N_KNE26 and N_KNE21, which are located at the ends of dead ends. The fireflow at these dead ends would be improved with additional looping with watermains outside the trunk system. This should be accounted for in the implementation strategy for this area. Further information on implementation strategies is provided in **section 3.3** of this report.

Fire flow requirements will still need to be assessed at a subdivision level to determine the Fire Underwriter Survey (FUS) fire flow requirements and any special provisions that may be required in the building designs. Fire flow assessments specific to the development of individual subdivisions within the study area will be carried out as part of each subdivision approval process. Infrastructure will have to be designed accordingly to ensure design guidelines are met and that building designs satisfy the available fire flow requirements as outlined in the Fire Underwriters Survey (FUS).

Table 3-2 - Projected Fire Flows in KNUE Lands Under 2012 MXDY SS Demands

	Available Flow at Hydrant (L/s)	
ID	**Feed from Old Carp Road**	**Feed from Celtic Ridge**
N_KNE01	418	413
N_KNE02	360	357
N_KNE03	222	215
N_KNE04	367	314
N_KNE05	366	215
N_KNE06	353	245
N_KNE07	310	290
N_KNE08	216	208
N_KNE09	220	213
N_KNE10	206	199
N_KNE11	323	335
N_KNE12	294	316
N_KNE13	335	372
N_KNE14	323	380
N_KNE15	335	428
N_KNE16	347	400
N_KNE17	328	354
N_KNE18	301	288
N_KNE19	497	501
N_KNE20	374	318
N_KNE21	131	132
N_KNE22	206	196
N_KNE23	193	188
N_KNE24	213	206
N_KNE25	311	300
N_KNE26	117	115
MIN	117	115
AVG	295	288

3.2.4 Failure Scenarios

The failure scenario analysis was completed to simulate average day demands with a pipe failure along the 406mm dia. w/m March Road feed into the KNUE lands. The winter demand scenario was tested. The two secondary servicing options were assessed. **Table 3-3** shows that under a failure scenario of the large dia. feed into the KNUE lands, the system will continue to provide the typical average day demands and a reduced fire flow as compared to the maximum day + fire flow scenario. The secondary service connection, referred to as Option 1 (Old Carp Road), provides on average 22% greater fire flow capacity than the Celtic Ridge connection.

Table 3-3 - Projected Fire Flows in KNUE Lands Under 2012 BSDY Demands with Pipe Failures

	Available Flow at Hydrant (L/s)		
ID	**BSDY + Fire + 406 BRK March Feed from Old Carp Road**	**BSDY + Fire + 406 BRK March Feed from Celtic Ridge**	**% Difference**
N_KNE01	176	135	-23%
N_KNE02	165	125	-24%
N_KNE03	131	100	-23%
N_KNE04	176	120	-32%
N_KNE05	266	109	-59%
N_KNE06	215	114	-47%
N_KNE07	158	115	-27%
N_KNE08	127	95	-25%
N_KNE09	133	102	-23%
N_KNE10	125	96	-23%
N_KNE11	167	136	-18%
N_KNE12	162	139	-14%
N_KNE13	185	166	-10%
N_KNE14	184	172	-6%
N_KNE15	186	184	-1%
N_KNE16	188	170	-10%
N_KNE17	166	140	-16%
N_KNE18	152	113	-26%
N_KNE19	172	133	-23%
N_KNE20	306	358	17%
N_KNE21	149	94	-37%
N_KNE22	115	84	-27%
N_KNE23	119	92	-23%
N_KNE24	129	100	-23%
N_KNE25	154	114	-26%
N_KNE26	115	76	-34%
MIN	115	76	-34%
AVG	166	130	-22%

Figure 3-10 shows the results of a failure of the 406mm feed along March Road into the KNUE lands under winter demands conditions. As shown, pressures remain above 40 psi under this condition.

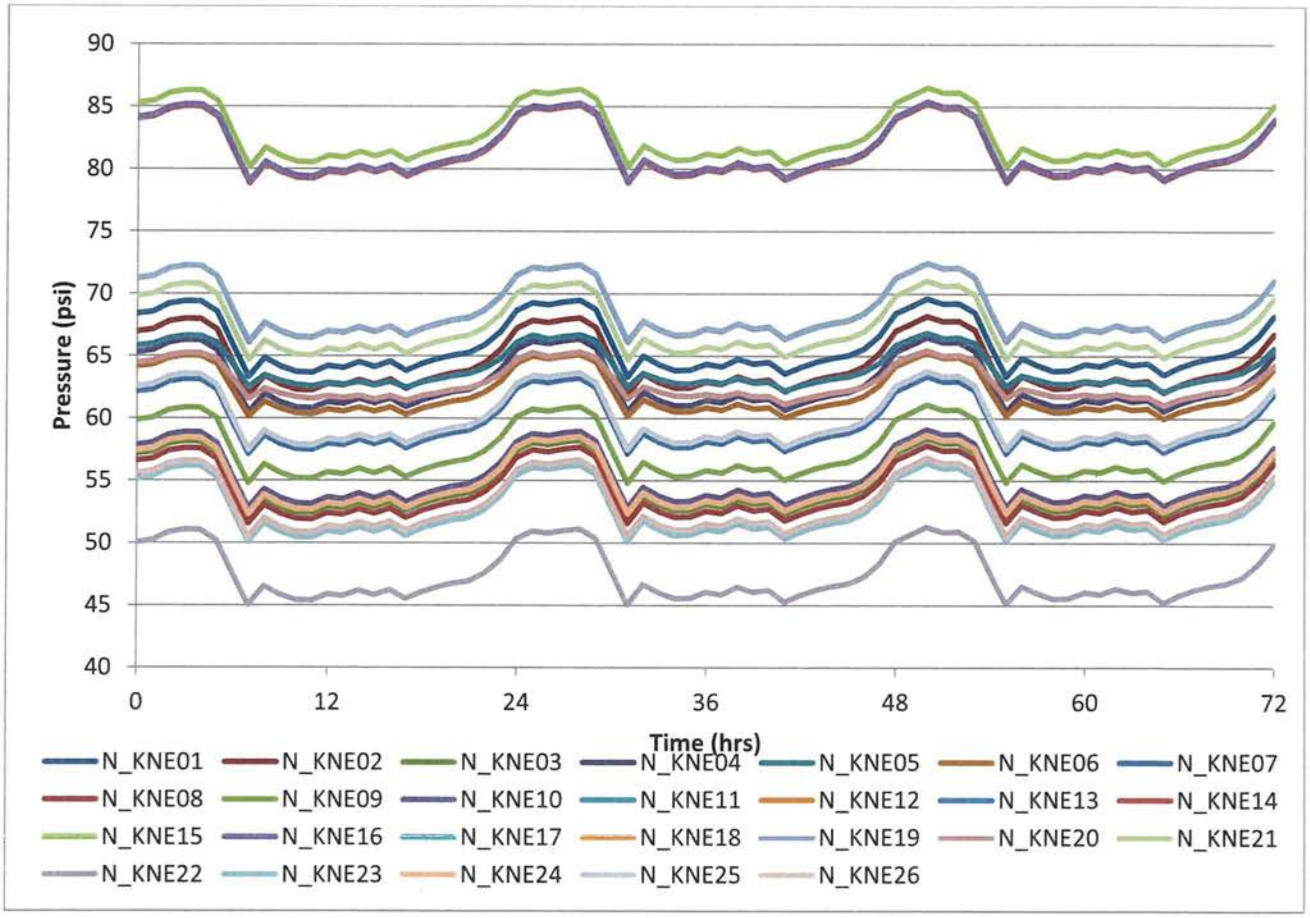


Figure 3-10: KNUE Pressures under Existing 2Ww Pipe Network & Existing + KNUE 2012 BSDY Demands with a pipe failure along the KNUE March Road feed.

3.2.5 2031 Demands

The winter model scenario was tested to observe the pressures in the KNUE lands and zone 2Ww under the 2031 average daily demand conditions. No outdoor water demand was applied in this scenario. **Figure 3-11** shows the resulting maximum pressures throughout zone 2Ww and the KNUE lands when the KNUE build-out demand is added to the network. It should be noted that all 2031 scenarios are represent the assumed replacement of the 406mm watermain along Solandt Road and March Road to 610mm.

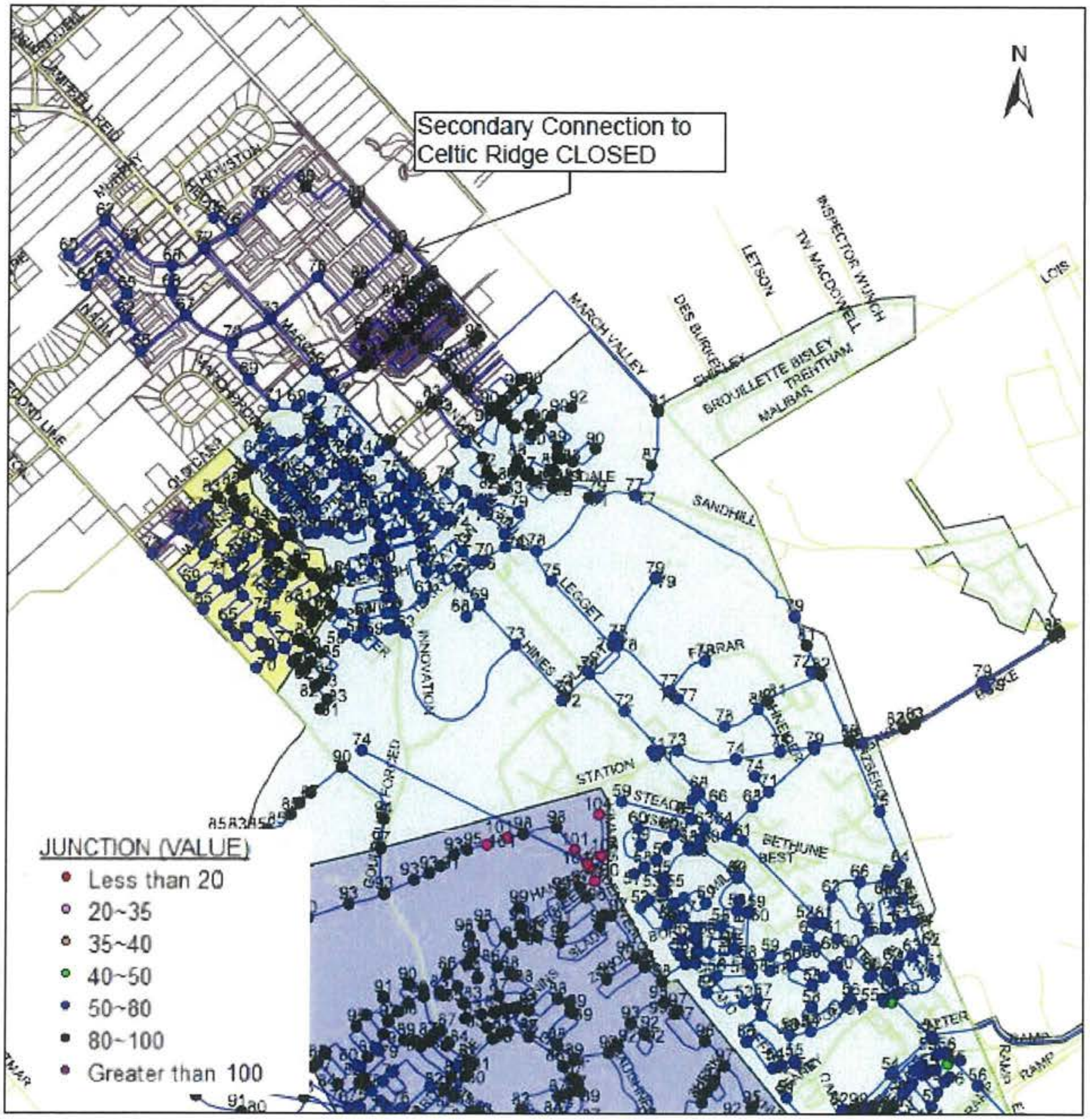


Figure 3-11: Resulting Maximum Pressures Under 2031 Average Day Demands

The summer model scenario was tested to observe the pressures in the KNUE lands and the 2Ww under the 2031 maximum daily demand & peak hour conditions. **Figure 3-12** shows the resulting minimum pressures throughout zone 2Ww and the KNUE lands when the KNUE build-out demand is added to the network. There was no significant change in the KNUE lands servicing.

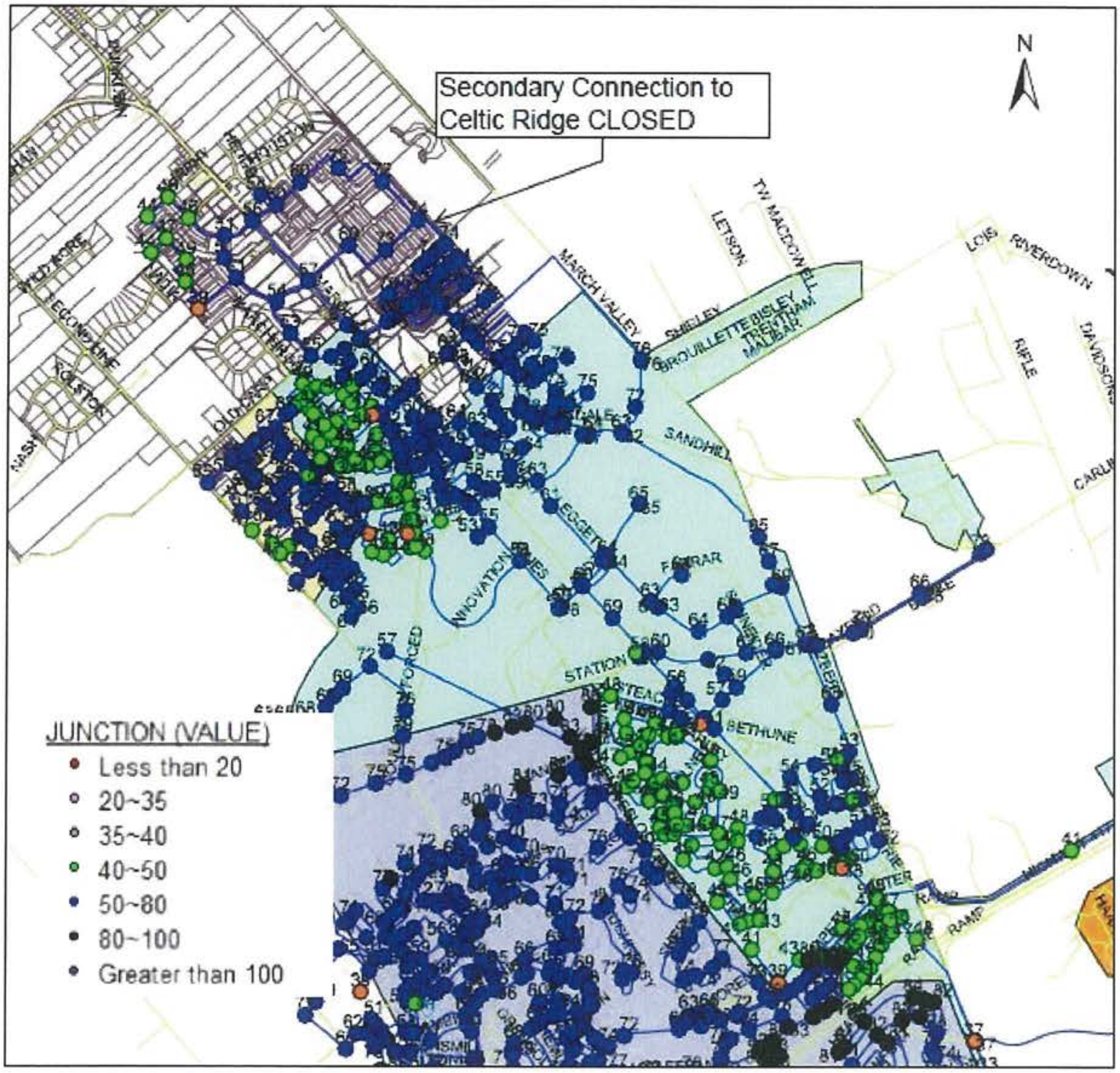


Figure 3-12: Resulting Minimum Pressures Under 2031 Peak Hour Demands

3.3 WATERMAIN INFRASTRUCTURE PHASING

The City of Ottawa Water Design Guidelines (Section 4.3.1) (Newell, W.R., 2010) state that two watermain connections are required to service a development area where the total water demand exceeds $50m^3/d$. A secondary w/m connection to the March Road w/m, either along Old Carp Road or Celtic Ridge is required to achieve this guideline objective.

As an interim condition, fireflow and peak hour demand scenarios were modeled in a scenario where the entire development area was serviced by the single 406mm feed on March Road. The minimum pressure in the peak hour scenario was not reduced and fireflow was reduced below the 167 L/s minimum only at dead end locations. Under this interim single feed condition, the development area could be serviced; however the overall reliability would be reduced until the secondary feed is constructed.

Where dead ends must be used, a minimum pipe size of 150mm is required and water age analyses for flushing requirements must be completed. A dead end can service a maximum of 49 homes permanently and 75 homes on a temporarily basis of 2 years. Watermain implementation phasing, determined on site by site basis, will need to follow all requirements presented in the City of Ottawa Water Design Guidelines (Newell, W.R., 2010).

Two dead ends have been incorporated into the model to show potential connection points of the trunk watermain to surrounding areas that may be developed in the future. These dead-end watermains are highlighted in **Figure 3-13** below. The nodes at the end of these dead ends provide a worse-case scenario analysis for fireflow. It should be noted that these dead ends will need to follow the above mentioned requirements per the City of Ottawa Water Design Guidelines (Newell, W.R., 2010). Additional watermain may need to be implemented when these trunk mains develop to ensure the dead ends meet required standards. A proposed strategy for implementation is provided in **Figure 3-13** below. Development with elevations exceeding 93m cannot occur until the upgrade of the 406mm watermains on Solandt Road and March Road to 610mm watermains has occurred.

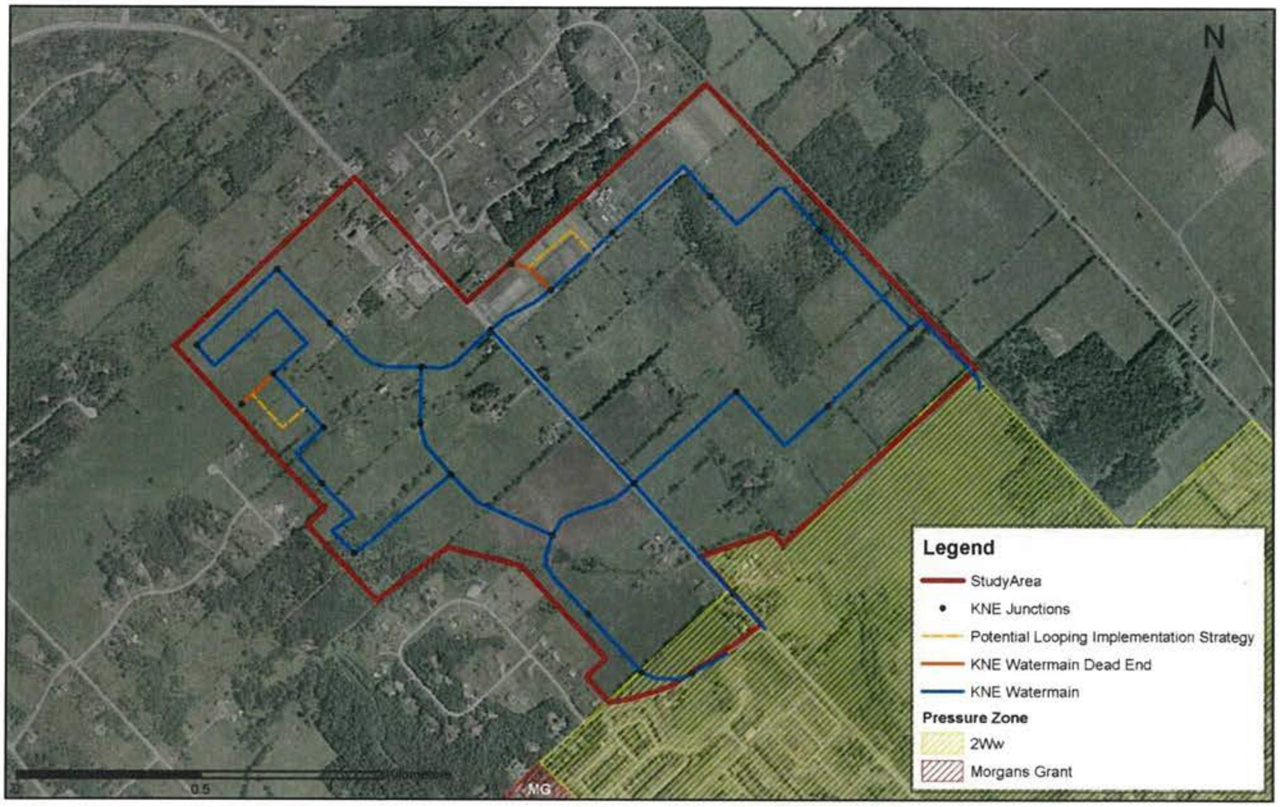


Figure 3-13: Dead End Implementation Strategy

4.0 Recommendations

Stantec Consulting LTD. (Stantec) has completed a hydraulic assessment of the potable water servicing alternatives for Kanata North Urban Expansion (KNUE) area on behalf of Novatech Engineering Consultants LTD. The purpose of this study is to provide a review of the existing conditions and watermain infrastructure in the area of the proposed development as well as offer an analysis of the potential servicing alternative opportunities and constraints.

Based on the findings of the analysis, the proposed pipe network shown in **Figure 2-1** of this report provides sufficient internal capacity to meet the pressure and flow requirements within the KNUE lands. There are two alternative secondary 305mm dia. w/m connections proposed (Old Carp Road and Celtic Ridge). Under typical demand conditions and pipe network conditions, both options provide similar results. The secondary connection to Old Carp Road provides better fire flow capacity under a pipe failure scenario, and thus is the preferred scenario. A diagram of this alternative is provided in **Figure 4-1** below:

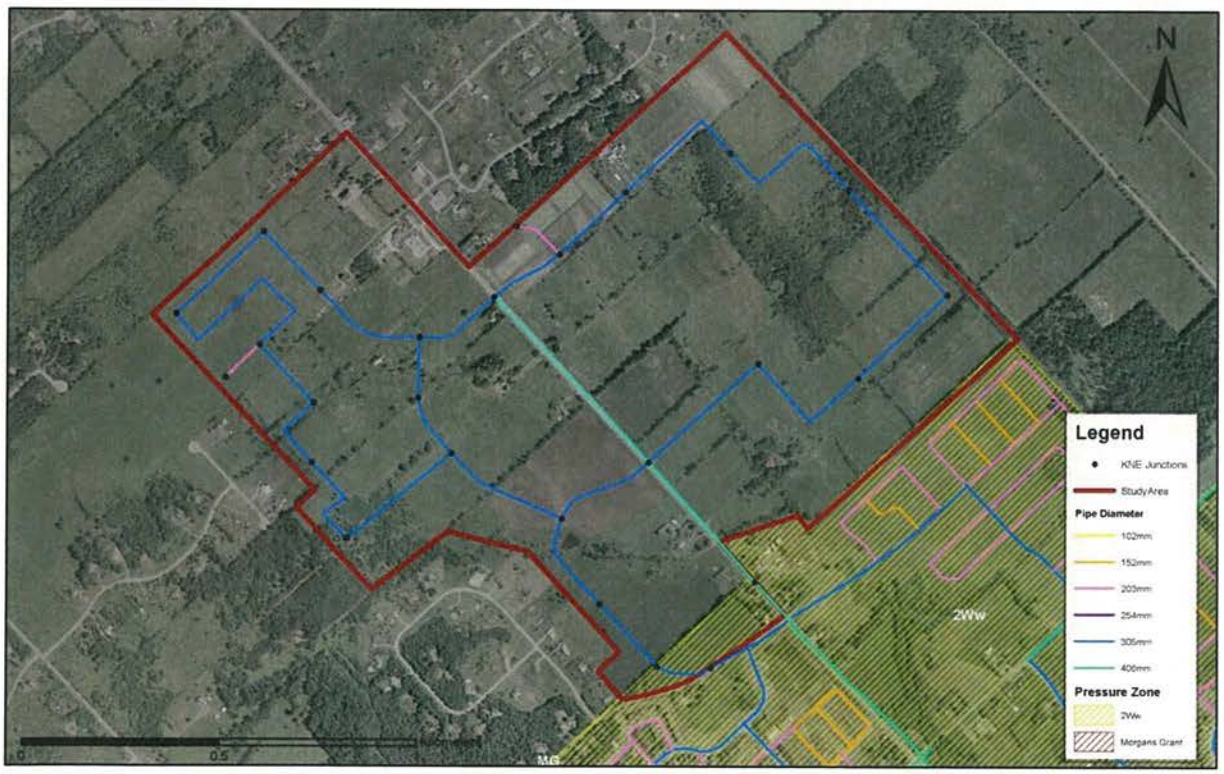


Figure 4-1: Preferred Watermain Layout

It should be noted that the dead end watermains shown above are to provide potential connection points of the trunk watermain to future development. These dead ends may require more watermain looping in actual development than shown in the layout above such that no permanent dead end permanently services greater than 49 homes as per section 4.3.1 of the City of Ottawa Water Design Guidelines (Newell, W.R., 2010).

The proposed KNUE area is recommended to be serviced entirely by the Zone 2Ww due to its topography and location. However, to keep minimum pressures above 40 psi and maximum pressures below 80 psi the following is recommended:

- Ensure site grading does not exceed 93m to maintain minimum pressures above 40 psi.

- Ensure services installed on lands with elevations less than 74m are equipped with pressure reduction valves to meet building code requirements (i.e. keeping maximum pressure below 80 psi).

- Upgrade the two sections of 406mm dia. w/m that break up the 610mm dia. watermain (a total length of approximately 550m) along March Road as described in this report to reduce headloss under build-out demands. This will allow site grading to be increased up to 94m in elevation, while still providing the minimum 40psi of pressure. It is recommended that these upgrades be carried prior to any lands greater than 93m being developed.

From a fire flow perspective, under normal conditions both secondary 305mm dia. connections to the KNUE lands (Old Carp Road and Celtic Ridge) provide adequate flows for typical fire flow requirements. Fire flow requirements will still need to be evaluated at the subdivision planning level to establish FUS requirements.

From a redundancy perspective, under a major pipe failure, the Old Carp Road alignment provides better capacity than the Celtic Ridge connection but both scenarios provide reduced fire flow compared to the maximum day plus fire flow scenario with no break.

In critical areas, where performance is expected to be close to design limits, additional losses through the local system could result in substandard service. Adjustments to future plans of subdivision or site plans in the study area may be needed in these areas. Adjustments could include one or more of the following:

- ROW adjustments to allow for improved watermain looping;
- reduce maximum elevation of serviced land; and/or
- adjust development characteristics to reduce fire flow requirements.

Lastly, through this assessment, there is a section of 914mm diameter watermain along Teron Drive that provides a "singe feed" to the entire Zone 2Ww area north of Campeau Drive. This single feed connection is noted for the City to consider for improved reliability from a zone servicing perspective. The City has indicated that it is the City's intent to acquire existing private watermain connections at the south end of the 2Ww service area to improve back-up supply to the zone.

5.0 Works Cited

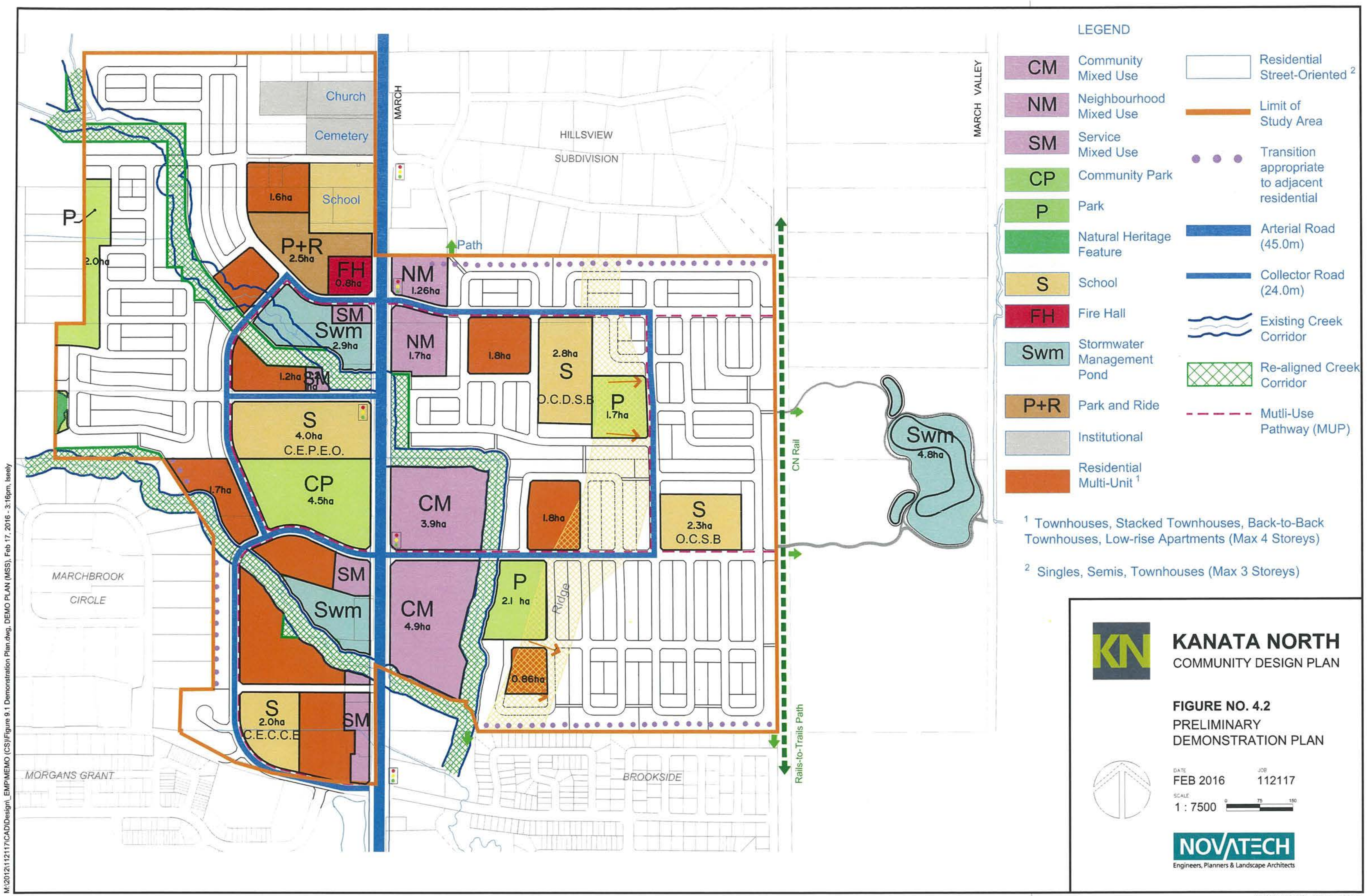
Ministry of the Environment. (2008). *Design Guideline for Drinking Water Systems* . Government of Ontario.

Newell, W.R. (2010). *Ottawa Design Guidelines - Water Distribution*. Ottawa: City of Ottawa.

Novatech. (2016). *Kanata North Community Design Plan* . Ottawa: Novatech.

Novatech. (2016). *Kanata North Onsite Sanitary Drainage Area Plan*. Ottawa: Novatech.

Appendix A Development Concept Plan


LEGEND
CM Community Mixed Use
NM Neighbourhood Mixed Use
SM Service Mixed Use
CP Community Park
P Park
Natural Heritage Feature
S School
FH Fire Hall
Swm Stormwater Management Pond
P+R Park and Ride
Institutional
Residential Multi-Unit 1
Residential Street-Oriented 2
Limit of Study Area
Transition appropriate to adjacent residential
Arterial Road (45.0m)
Collector Road (24.0m)
Existing Creek Corridor
Re-aligned Creek Corridor
Mutli-Use Pathway (MUP)
1 Townhouses, Stacked Townhouses, Back-to-Back Townhouses, Low-rise Apartments (Max 4 Storeys)
2 Singles, Semis, Townhouses (Max 3 Storeys)
KANATA NORTH
COMMUNITY DESIGN PLAN
FIGURE NO. 4.2
PRELIMINARY DEMONSTRATION PLAN
DATE FEB 2016
JOB 112117
SCALE 1 : 7500
NOVATECH
Engineers, Planners & Landscape Architects
Church
Cemetery
MARCH
HILLSVIEW
SUBDIVISION
MARCH VALLEY
School
1.6ha
P+R 2.5ha
FH 0.8ha
NM 1.26ha
Path
P
2.0ha
SM
Swm 2.9ha
NM 1.7ha
1.8ha
2.8ha S O.C.D.S.B
P 1.7ha
1.2ha
S 4.0ha C.E.P.E.O.
CP 4.5ha
1.7ha
CM 3.9ha
1.8ha
S 2.3ha O.C.S.B
CN Rail
Swm 4.8ha
SM
Swm
CM 4.9ha
P 2.1 ha
Ridge
0.86ha
MARCHBROOK CIRCLE
S 2.0ha C.E.C.C.E
SM
MORGANS GRANT
BROOKSIDE
Rails-to-Trails Path
M:\2012\112117\CAD\Design_EMP\MEMO (CS)\Figure 9.1 Demonstration Plan.dwg, DEMO PLAN (MSS), Feb 17, 2016 - 3:16pm, lseely

Steve Zorgel

From:	Bougadis, John <John.Bougadis@ottawa.ca>
Sent:	September-19-17 9:36 AM
To:	Steve Zorgel
Cc:	Newton, Tim
Subject:	RE: Boundary Condition Request - Kanata North
Attachments:	KNE_Boundary Conditions_14Sept2017.docx

Hi Steve,

I have provided comments to your questions in red below.

Feel free to give me a call if you have any questions.

Thanks

John
x14990

From: Steve Zorgel [mailto:s.zorgel@novatech-eng.com]
Sent: Tuesday, September 12, 2017 10:22 AM
To: Bougadis, John <John.Bougadis@ottawa.ca>
Cc: Newton, Tim <Tim.Newton@ottawa.ca>
Subject: FW: Boundary Condition Request - Kanata North

Hi John,

I'm forwarding our concerns/request (please see email below) for Junic/Multivesco's portion of the Kanata North project, as Tim Newton won't be back in the Office until September 21. If you have any questions please give us a call, thank you.

Regards,

Steve Zorgel, P.Eng., Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Steve Zorgel
Sent: September-12-17 9:50 AM
To: 'Newton, Tim' <Tim.Newton@ottawa.ca>
Cc: Alex McAuley <a.mcauley@novatech-eng.com>
Subject: Boundary Condition Request - Kanata North

Hi Tim,

We have some concerns/requests regarding the boundary conditions (attached for reference) for Junic / Multivesco's portion of the Kanata North project:

- Possible error in the Peak Hour boundary condition (based on water demand spreadsheet sent June 5, 2017);
  - Peak Hour boundary condition (as provided by the City) = 117.9m. However, Stantec's KNUE Potable Water Assessment PKHR boundary condition = 121m.
    - Stantec's model assumed a higher peak hour demand (attached, 39.0L/s AvgDay, 52.0 L/s MXDY, 89.3L/s PKHR) for the entire Kanata North development. The connections are at the same locations on March Road and a secondary connection at Old Carp Road/Halton (as highlighted, attached). However, a higher BC was achieved in the Stantec model for the peak hour condition (121m). Please review all BCs to ensure there are no errors in the system. The discrepancy in HGL is a result of two factors:
      - Double counting of demands: refer to the explanation provided in the Notes section of the attached water boundary condition for clarification. In short, design and system level demands were included in the water model for the Junic/Multivesco site which produced the June 2017 boundary conditions. The water model which generated the results summarized in the September 2017 boundary condition removed the system level demands for the Junic/Multivesco site.
      - System level vs design demands: design demands are greater in magnitude than system level demands; therefore, the HGL will be lower during peak hour for the September 2017 boundary condition when compared to the results from the Kanata North CDP.
    - Further to Stantec's report, we have compared the boundary conditions provided by the City and water demand (different operating scenarios, attached graph), and suspect the curve should be more linear between the peak hour (37L/s) and max day + fire flow (190.7L/s).

- Revised Watermain Demand;
  - As indicated in my previous email, we have corrected an error in the Max Day and Peak Hour demand calculations and have updated unit counts, please provide new boundary conditions based on the revised water demand spreadsheet (September 11, 2017); Demands were updated.

- Additional Scenarios;
  - As per the revised water demand spreadsheet (September 11, 2017), we are requesting additional boundary condition scenarios based on upgrading certain sections of watermain along March Road and Solandt Drive. We have attached an excerpt from Stantec's report for location reference. Additional scenarios provided.

Please give me a call if you have any questions or concerns, thank you.

Regards,

Steve Zorgel, P.Eng., Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Steve Zorgel
Sent: September-07-17 12:03 PM
To: 'Newton, Tim' <Tim.Newton@ottawa.ca>
Subject: RE: Boundary Condition Request - Kanata North

Hi Tim,

We would like to request revised boundary conditions for Junic /Multivesco's portion of the Kanata North project. We have updated unit counts/commercial areas and have corrected an error in the demand calculations. Please find attached the revised water demand spreadsheet, fireflow calculations (unchanged) and boundary condition request figure (unchanged). I have attached the old boundary conditions for reference/comparison as well. If you have any questions please give us a call, thank you.

Regards,

Steve Zorgel, P.Eng., Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Bougadis, John [mailto:John.Bougadis@ottawa.ca]
Sent: July-26-17 1:57 PM
To: Steve Zorgel <s.zorgel@novatech-eng.com>
Cc: Newton, Tim <Tim.Newton@ottawa.ca>
Subject: RE: Boundary Condition Request - Kanata North

Hi Steve,

This BC request may have slipped through the cracks (see attached e-mail).

Feel free to give me a call to discuss.

Thanks

John
x14990

From: Steve Zorgel [mailto:s.zorgel@novatech-eng.com]
Sent: Monday, July 17, 2017 2:29 PM
To: Bougadis, John <John.Bougadis@ottawa.ca>
Subject: FW: Boundary Condition Request - Kanata North

Hi John,

As per our discussion regarding the boundary condition request for Junic/Multivesco's portion of the Kanata North project, could you provide us with status update on when we can expect the boundary conditions? Thank you.

Regards,

Steve Zorgel, P.Eng., Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Steve Zorgel
Sent: June-06-17 9:29 AM

To: 'Newton, Tim' <Tim.Newton@ottawa.ca>
Cc: Marc St.Pierre <m.stpierre@novatech-eng.com>; Alex McAuley <a.mcauley@novatech-eng.com>; Drew Blair <D.Blair@novatech-eng.com>
Subject: RE: Boundary Condition Request - Kanata North

Hi Tim,

Please find attached the revised watermain boundary condition request following comments/discussions with the City for the Kanata North Expansion Area. The revised B.C request is specific to the Junic/Multivesco site. Documents consist of the following:

- Water Demand for the Junic / Multivesco site;
- Fireflow Calculations;
- Figure-BC – Boundary Condition Request (Junic / Multivesco site);
- Keyplan -Excerpt (Keyplan with property boundaries) from the Master Servicing Study, completed by Novatech for reference.

There will be two connection points for the looped watermain. The first connection will be at the intersection of March Road and Street C to the 400mm watermain (400mm as per Kanata North Master Servicing Study, June 28, 2016). The second connection will be on Street B and the Brigil Lands property limit to the 300mm watermain (as per MSS). Under fireflow conditions, we would like to request boundary conditions for 3 scenarios, as per attached water demand table.

If you have any questions or concerns, please don't hesitate to ask.

Regards,

Steve Zorgel, **P.Eng.**, Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Steve Zorgel
Sent: May-25-17 1:57 PM
To: 'Newton, Tim' <Tim.Newton@ottawa.ca>
Cc: Alex McAuley <a.mcauley@novatech-eng.com>
Subject: RE: Boundary Condition Request - Kanata North

Hi Tim,

We have been working with Stantec to obtain the files required to complete the boundary condition request for the Kanata North Expansion Area. I have attached our demand/fireflow requirements again for the site, as well as a link (below) provided by Stantec to access the model and shapefile requested (files listed below).

The following files are located at a shared Dropbox link (https://www.dropbox.com/sh/97iq4ungmk1qdcu/AAAhf46i4S3oX4cm_WD0JbOKa?dl=0)

1. 'AVDY Flow – 25MAY2017.xlsx', a spreadsheet summarizing the AVDY flows;
2. 'H2OMap_Nodes_Shapefile.zip', a shapefile of the Kanata North nodes from the H2OMap model;
3. 'Ottawa 2013 WMP Model – KNE.zip', a copy of the Kanata North H2OMap model.

They will be available to download for one week. Please confirm receipt of the files.

If you have any questions or concerns please give us a call, thank you.

Regards,

Steve Zorgel, **P.Eng.**, Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Newton, Tim [mailto:Tim.Newton@ottawa.ca]
Sent: May-25-17 9:10 AM
To: Steve Zorgel <s.zorgel@novatech-eng.com>
Cc: Alex McAuley <a.mcauley@novatech-eng.com>; Bougadis, John <John.Bougadis@ottawa.ca>
Subject: RE: Boundary Condition Request - Kanata North

Hi Steve

If you require further guidance on how to proceed, please feel free to contact John Bougadis (Senior Project Manager – Infrastructure Planning) directly. John can be reached by phone at 613-580-2424 ext. 14990 or by e-mail: John.Bougadis@ottawa.ca

Regards,
Tim

From: Newton, Tim
Sent: Monday, May 15, 2017 1:15 PM
To: 'Steve Zorgel' <s.zorgel@novatech-eng.com>
Cc: Alex McAuley <a.mcauley@novatech-eng.com>
Subject: RE: Boundary Condition Request - Kanata North

Hi Steve

Sorry for the delay in replying to this request. I did receive an response from my internal contact about a week ago that I have been slow in actioning.

A “system level” analysis (i.e. monitored parameters used when the design population exceeds 3000) was undertaken to size backbone water infrastructure during the Kanata North MSS.

The City requires the following from Novatech to complete this request:

- The water distribution model used to undertake the water servicing analysis for the Kanata North CDP.
- Shapefile of the demand allocation within the CDP.
- Average, maximum day and peak hour demands using design parameters applied to the subdivision of interest.
- Design fire flow requirements based on the subdivision of interest.

Please feel free to contact me if you have any questions.

Regards,

Tim

From: Steve Zorgel [mailto:s.zorgel@novatech-eng.com]
Sent: Monday, May 15, 2017 9:40 AM
To: Newton, Tim <Tim.Newton@ottawa.ca>
Cc: Alex McAuley <a.mcauley@novatech-eng.com>
Subject: FW: Boundary Condition Request - Kanata North

Hi Tim,

I'm following up with a boundary condition request for the Kanata North Urban Expansion Area that was sent on April 21, 2017 (I've attached the files for reference). Are you able to provide a status update or timeframe as to when we can expect the boundary conditions? Thank you.

Regards,

Steve Zorgel, P.Eng., Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

From: Rygus, Kathy [mailto:Kathy.Rygus@ottawa.ca]
Sent: April-21-17 10:22 AM
To: Steve Zorgel <s.zorgel@novatech-eng.com>; Newton, Tim <Tim.Newton@ottawa.ca>
Cc: Moodie, Derrick <Derrick.Moodie@ottawa.ca>; Marc St.Pierre <m.stpierre@novatech-eng.com>; Alex McAuley <a.mcauley@novatech-eng.com>
Subject: RE: Boundary Condition Request - Kanata North

Hi Steve,
Tim Newton is the Senior Engineer for the West Development Review team, so I am forwarding your request to him.
Tim is away today but will be back on Monday.
Thanks,
Kathy

From: Steve Zorgel [mailto:s.zorgel@novatech-eng.com]
Sent: Friday, April 21, 2017 9:57 AM
To: Rygus, Kathy
Cc: Moodie, Derrick; Marc St.Pierre; Alex McAuley
Subject: Boundary Condition Request - Kanata North

Hi Kathy,

As you are aware, we have been working on the proposed Kanata North Urban Expansion Area (KNUEA) subdivision located off March Road between Maxwell Bridge Road and the Urban limit, see Keyplan for location. We have been tasked by Junic/Multivesco with preparing engineering drawings and reports in support of draft plan approval for the northwest portion of the KNUEA site. As part of draft plan approval, we are required to complete a hydraulic assessment and will require boundary conditions for the analysis of the watermain network.

There will be two connection points for the looped watermain. The first connection will be at the intersection of March Road and Maxwell Bridge Road to the existing 400mm watermain. The second connection will be on Celtic Ridge

Crescent to the existing 200mm watermain. Please see attached water demand, fireflows and figure (1 file). Under fireflow conditions, we would like to request boundary conditions for 3 scenarios, as per attached water demand table.

Please don't hesitate to ask if you have any questions or concerns. Thank you.

Regards,

Steve Zorgel, **P.Eng.**, Project Coordinator | Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x298 | Fax: 613.254.5867

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KNE Subdivision Boundary Conditions

Information Provided:

Date provided: September 2017

Table 1 Junic/Multivesco Site Water Demand

Scenario	Demand	
	L/min	L/s
Average Daily Demand	795.6	13.26
Maximum Daily Demand	1788.6	29.81
Peak Hour	3816	63.6
Fire Flow Demand # 1	10000	167
Fire Flow Demand # 2	14000	233
Fire Flow Demand # 3	18000	300

Location:

Figure 1 Connection Location

Results:

Table 2 Existing Watermain Scenario

Connection 1 - March Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.8	73.9
Peak Hour	118.8	56.8
Scenario 1 Max Day plus Fire (10,000 l/min)	116.5	53.5
Scenario 2 Max Day plus Fire (14,000 l/min)	112.7	48.1
Scenario 3 Max Day plus Fire (18,000 l/min)	108.4	42.0

[1] Ground Elevation = 78.9 m

Connection 2 - Old Carp

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.8	73.9
Peak Hour	118.8	56.8
Scenario 1 Max Day plus Fire (10,000 l/min)	116.6	52.6
Scenario 2 Max Day plus Fire (14,000 l/min)	112.9	47.3
Scenario 3 Max Day plus Fire (18,000 l/min)	108.7	41.3

[1] Ground Elevation = 79.6 m

Table 3 Upsized 406mm to 610mm watermain on March Rd and Solandt Rd Scenario

Connection 1 - R1: March Road (N3714)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.9	74.0
Peak Hour	120.5	59.2
Scenario 4 Max Day plus Fire (10,000 l/min)	118.8	56.8
Scenario 5 Max Day plus Fire (14,000 l/min)	115.8	52.5
Scenario 6 Max Day plus Fire (18,000 l/min)	112.4	47.6

[1] Ground Elevation = 78.9 m

Connection 2 - Old Carp (N_KNE1)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.9	73.0
Peak Hour	120.5	58.2
Scenario 4 Max Day plus Fire (10,000 l/min)	118.9	55.9
Scenario 5 Max Day plus Fire (14,000 l/min)	116.0	51.7
Scenario 6 Max Day plus Fire (18,000 l/min)	112.6	46.9

[1] Ground Elevation = 79.6 m

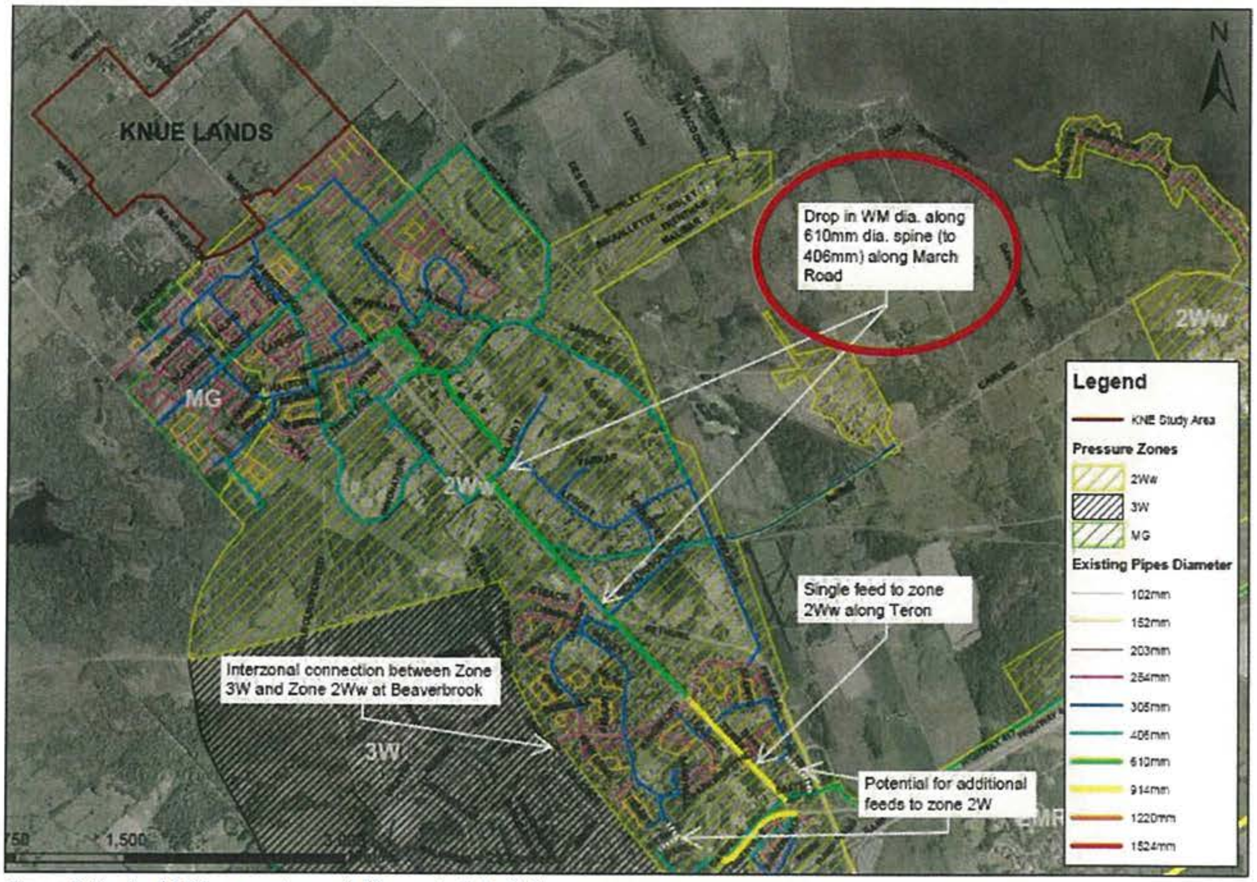


Figure 2 Upsized 610mm watermain (Scenario 4, 5, & 6)

Notes:

- June 2017 Boundary Conditions (BC) Memo: The Junic/Multivesco site water demand was added to the March Rd and Old Carp Rd Connection as shown in Figure 1. Our previous BC also included system level demands in the Junic/Multivesco site as allocated by Stantec in the 2016 MSS. Adding the total demand from this site in the two connections resulted in double counting of some of the demands. As such June 2017 BC Memo results in Peak Hour HGL much lower than expected. Not adding additional demands from the Junic/Multivesco Site on the two connection nodes in the City Water model produces a very similar Peak Hour HGL when compared to Stantec's March 24, 2016 Water model.
- This September 2017 Memo provides the BC's by customizing the City Model by removing the system level demands from the Junic/Multivesco site from the City's water model and by adding the Junic / Multivesco total Water demand (presented in Table 1) in the two connections (shown in Figure 1), thereby not double counting the demands from the Site. Existing System level demands that have been removed from the City water model are highlighted in Red in Figure 3 below.

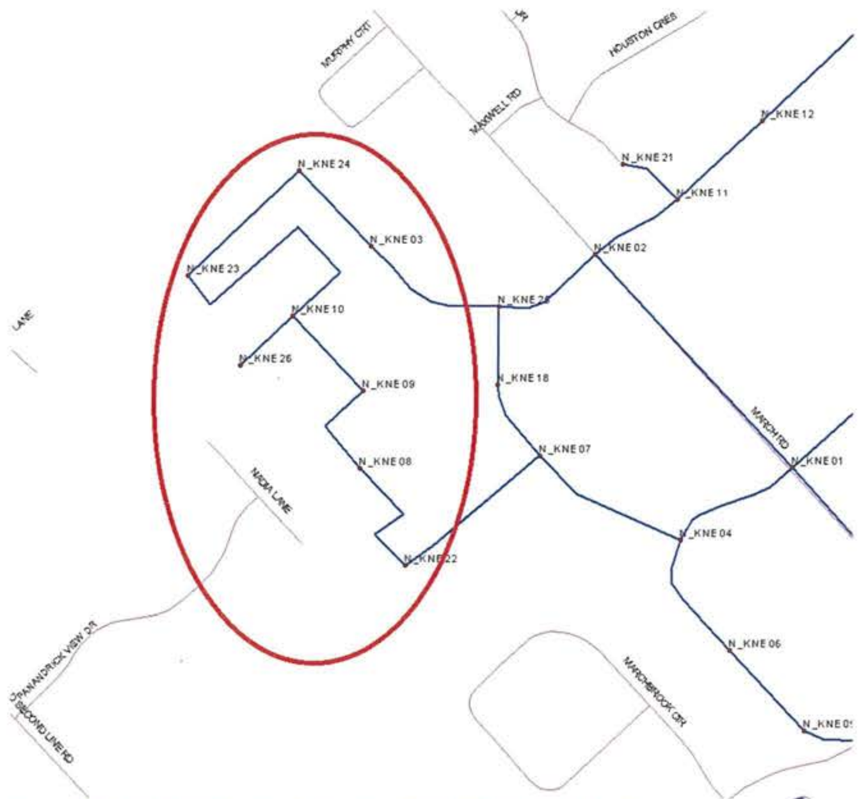


Figure 3 System level demands removed from City Water Model

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 116132
Project Name: Kanata North Expansion Area
Date: 05/06/2017
Input By: Steve Zorgel
Reviewed By: Alex McAuley

Legend
No Information or Input Required

Building Description: Single Residential Unit (typical)
Wood frame

Step			Input	Multiplier Options	Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	150			
		Number of Floors/Storeys	2			
		Area of structure considered (m^2)			**300**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**6,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge (cumulative %)**					
	(3)	North Side	20.1 - 30 m		10%	**3,315**
		East Side	3.1 - 10 m		20%	
		South Side	10.1 - 20 m		15%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**65%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**8,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**133**
				or	USGPM	2,114
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	960

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 116132
Project Name: Kanata North Expansion Area
Date: 05/06/2017
Input By: Steve Zorgel
Reviewed By: Alex McAuley

Legend

No Information or Input Required

Building Description: Existing School, 1 Storey, Assumed Non-Sprinklered (Conservative)
Non-combustible construction

Step			Input	Multiplier Options	Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame		1.5	0.8	
		Ordinary construction		1		
		Non-combustible construction	Yes	0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	4000			
		Number of Floors/Storeys	1			
		Area of structure considered (m^2)			**4,000**	
	F	**Base fire flow without reductions**				**11,000**
		$F = 220\,C\,(A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge (cumulative %)**					
	(3)	North Side	> 45.1m		0%	**0**
		East Side	> 45.1m		0%	
		South Side	> 45.1m		0%	
		West Side	> 45.1m		0%	
				Cumulative Total	**0%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	1080

WATERMAIN DESIGN SHEET
Scenario 1 - Full Buildout (System Level Demands)

Population and Consumption Rate Calculations

Node	Number of Single Units	Number of Townhouse Units	Number of Multi-Unit Townhouse Units	Number of Multi-Unit Apartment Units	Multi-Use / Commerical Area (ha)	*Institutional Area (ha)	Residential Population	Consumption Rates (L/s) Average Daily	Maximum Daily	Maximum Hourly
R1										
R2										
N_KNE19**								1.19	1.58	2.72
N_KNE01,N_KNE14-17**								12.29	16.35	28.07
N1							0	0.00	0.00	0.00
N_KNE04,N_KNE05-06, N_KNE20**							0	5.57	7.41	12.72
N_KNE07**								2.99	3.98	6.83
N_KNE02,11-13,21**								6.60	8.78	15.07
TOTAL OFFSITE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28.64**	**38.09**	**65.40**
N_KNE07		6					16	0.04	0.05	0.08
N2		8					22	0.05	0.07	0.11
						3.78	0	2.19	2.92	4.96
N3	4						14	0.03	0.04	0.06
N4		9					24	0.06	0.07	0.13
N_KNE18		8					22	0.05	0.07	0.11
N5			17	17			77	0.18	0.24	0.41
N_KNE25			29	29			131	0.31	0.42	0.71
N6							0	0.00	0.00	0.00
N7						0.83	0	0.48	0.64	1.09
N_KNE02							0	0.00	0.00	0.00
N8	12						41	0.09	0.11	0.19
N9	5	12					49	0.11	0.15	0.25
N10		10					27	0.06	0.08	0.14
N11	16						54	0.11	0.15	0.26
N12	13						44	0.09	0.12	0.21
N_KNE22	12						41	0.09	0.11	0.19
N13	16						54	0.11	0.15	0.26
N14	4						14	0.03	0.04	0.06
N15	9						31	0.06	0.08	0.14
N16	13						44	0.09	0.12	0.21
N17	1	13					39	0.09	0.12	0.20
N18	2	19					58	0.13	0.18	0.30
N19	2	4					18	0.04	0.05	0.09
N20		26					70	0.16	0.21	0.36
N_KNE08	4	5					27	0.06	0.08	0.13
N21	2	13					42	0.09	0.13	0.21
N_KNE09		22					59	0.14	0.18	0.31
N22	11						37	0.08	0.10	0.18
N23	18						61	0.13	0.17	0.29
N_KNE10	8						27	0.06	0.08	0.13
N24	4						14	0.03	0.04	0.06
N25	8						27	0.06	0.08	0.13
N26	2						7	0.01	0.02	0.03
N_KNE26	5						17	0.04	0.05	0.08
N27	7						24	0.05	0.07	0.11
N28	11						37	0.08	0.10	0.18
N29		24					65	0.15	0.20	0.34
N30		22					59	0.14	0.18	0.31
N31		21					57	0.13	0.17	0.29
N32		9					24	0.06	0.07	0.13
N33		8					22	0.05	0.07	0.11
N34		13	25	25			148	0.35	0.47	0.79
N_KNE03****	5	17	8	8			99	0.23	0.30	0.51
N35****	5	6	9	8			72	0.16	0.22	0.37
N36****	5	5	8	8			67	0.15	0.20	0.35
N37		24					65	0.15	0.20	0.34
N_KNE24	4	4					24	0.05	0.07	0.12
N38	14						48	0.10	0.13	0.22
N39	19						65	0.13	0.18	0.30
N_KNE23	12						41	0.09	0.11	0.19
N40	13						44	0.09	0.12	0.21
N41	19						65	0.13	0.18	0.30
N42	5	13					52	0.12	0.15	0.26
N43		9					24	0.06	0.07	0.13
N44	8						27	0.06	0.08	0.13
N45	6						20	0.04	0.06	0.10
N46	5						17	0.04	0.05	0.08
N47***	3						10	0.02	0.03	0.05
						2.06	0	1.19	1.59	2.70
N48			19	19			86	0.20	0.27	0.46
N49			18	18			81	0.19	0.26	0.44
N50					0.33		0	0.19	0.25	0.43
N51					1.02		0	0.59	0.79	1.34
N52							0	0.00	0.00	0.00
N53						2.24	0	1.30	1.73	2.94
N54							0	0.00	0.00	0.00

N55							0	0.00	0.00	0.00
TOTAL ONSITE	**312**	**330**	**133**	**132**	**1.35**	**8.91**	**2549**	**11.61**	**15.48**	**26.32**
TOTAL KANATA NORTH	**312**	**330**	**133**	**132**	**1.35**	**8.91**	**2549**	**40.25**	**53.57**	**91.72**

*Includes Fire Halls, Schools, Existing Schools, etc.
**Values are based on Stantec report. Values represent demand from future buildouts.
***Assumes existing single lot along roadway will ultimately become 2 single units.
****Assumes north half of property is 50% towns and 50% singles at same density as CU lands (25 singles/ha, 47 towns/ha), south half of property assumed to be multi unit residential at same density as CU lands (62.8units/ha).

Notes:
1) Nodes with prefixes N_KNE## are the Same Identification and Approximate Location of Nodes within Stantec's Kanata North Urban Expansion (KNUEA) Potable Water Assessment, dated March 28, 2016

Water Demand Parameters For Claridge / Uniform Site - As per City of Ottawa Guidelines

Single Residential Units	3.4	persons/unit
Townhouse Residential Units	2.7	persons/unit
Multi-Unit Residential (Townhouse)	2.7	persons/unit
Multi-Unit Residential (Apartment)	1.8	persons/unit

Water Demand Parameters For Claridge / Uniform Site (System Level as per Stantec's KNUEA Potable Water Assessment)

Residential Demand - Single (low density)	180.0	L/c/day
Residential Demand - Street Town (med. density)	198.0	L/c/day
Residential Demand - Multi-Unit Town (med. density)	198.0	L/c/day
Residential Demand - Apartment (high density)	219.0	L/c/day
Residential Max Day	1.3	x Avg Day
Residential Peak Hour	1.7	x Max Day
Commercial/Intitutional Demand	50000	L/Gross ha/Day
Commerical/Institutional Max Day	1.33	x Avg Day
Commerical/Institutional Peak Hour	1.7	x Max Day

Residential Fire Flow (Typical)	133	L/s
Residential Fire Flow Cap (Typical)	167	L/s

Notes:
1) Fireflows of 167L/s have been applied based on Stantec's Potable Water Assessment (March 28, 2016) and is the maximum (capped) fireflow for single/townhouse units as per City of Ottawa Technical Bulletin ISDTB-2014-02.
2) Maximum achievable fireflows have been indicated (fireflow summary) for nodes with capacity <167L/s or in High Density residential areas.
3) Fireflow values have been distributed over several hydrants as per Technical Bulletin ISTB-2018-02.

AVERAGE DAY DEMAND / HIGH PRESSURE CHECK
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi	Age hours
Resvr 1	0.00	-40.28	0.00	0.00	0.00	0.00	0.0
Junc N1	80.75	0.00	130.58	49.83	0.00	0.00	1.3
Junc N2	88.25	2.24	130.54	42.29	414.86	60.17	3.9
Junc N3	88.12	0.03	130.54	42.42	416.14	60.36	5.3
Junc N4	87.85	0.06	130.54	42.69	418.79	60.74	8.4
Junc N5	87.19	0.18	130.54	43.35	425.26	61.68	4.6
Junc N6	84.95	0.00	130.54	45.59	447.24	64.87	2.7
Junc N7	82.95	0.48	130.55	47.60	466.96	67.73	2.4
Junc N8	88.28	0.09	130.54	42.26	414.57	60.13	6.3
Junc N9	88.54	0.11	130.54	42.00	412.02	59.76	4.5
Junc N10	88.80	0.06	130.54	41.74	409.47	59.39	3.3
Junc N11	90.47	0.11	130.54	40.07	393.09	57.01	6.6
Junc N12	92.25	0.09	130.54	38.29	375.62	54.48	9.3
Junc N13	89.86	0.11	130.54	40.68	399.07	57.88	7.8
Junc N14	91.70	0.03	130.54	38.84	381.02	55.26	10.9
Junc N15	91.36	0.06	130.54	39.18	384.36	55.75	11.9
Junc N16	89.81	0.09	130.54	40.73	399.56	57.95	9.9
Junc N17	88.25	0.09	130.54	42.29	414.86	60.17	7.1
Junc N18	88.10	0.13	130.54	42.44	416.34	60.38	8.4
Junc N19	88.74	0.04	130.54	41.80	410.06	59.47	10.4
Junc N20	89.41	0.16	130.54	41.13	403.49	58.52	23.4
Junc N21	90.00	0.09	130.54	40.54	397.70	57.68	13.9
Junc N22	90.33	0.08	130.54	40.21	394.46	57.21	15.7
Junc N23	90.11	0.13	130.54	40.43	396.62	57.52	17.4
Junc N24	89.95	0.03	130.54	40.59	398.19	57.75	29.2
Junc N25	90.15	0.06	130.54	40.39	396.23	57.47	24.6
Junc N26	90.00	0.01	130.54	40.54	397.70	57.68	22.9
Junc N27	90.60	0.05	130.54	39.94	391.81	56.83	20.7
Junc N28	91.00	0.08	130.54	39.54	387.89	56.26	17.5
Junc N29	89.20	0.15	130.54	41.34	405.55	58.82	18.1
Junc N30	88.35	0.14	130.54	42.19	413.88	60.03	6.2
Junc N31	88.30	0.13	130.54	42.24	414.37	60.10	5.1
Junc N32	88.10	0.06	130.54	42.44	416.34	60.38	4.3
Junc N33	87.40	0.05	130.54	43.14	423.20	61.38	3.4
Junc N34	87.95	0.35	130.54	42.59	417.81	60.60	4.0
Junc N35	87.50	0.16	130.54	43.04	422.22	61.24	6.3
Junc N36	86.20	0.15	130.54	44.34	434.98	63.09	7.3
Junc N37	89.83	0.15	130.54	40.71	399.37	57.92	7.5
Junc N38	90.80	0.10	130.54	39.74	389.85	56.54	27.7
Junc N39	91.08	0.13	130.54	39.46	387.10	56.14	45.2
Junc N40	90.90	0.09	130.54	39.64	388.87	56.40	29.0
Junc N41	90.64	0.13	130.54	39.90	391.42	56.77	23.5
Junc N42	90.30	0.12	130.54	40.24	394.75	57.25	19.4
Junc N43	90.00	0.06	130.54	40.54	397.70	57.68	18.7
Junc N44	89.55	0.06	130.54	40.99	402.11	58.32	18.2
Junc N45	88.50	0.04	130.54	42.04	412.41	59.82	18.9
Junc N46	87.00	0.04	130.54	43.54	427.13	61.95	19.6
Junc N47	86.15	1.21	130.54	44.39	435.47	63.16	20.4
Junc N48	86.66	0.20	130.54	43.88	430.46	62.43	2.8
Junc N49	84.50	0.19	130.55	46.05	451.75	65.52	2.4
Junc N50	82.68	0.19	130.55	47.87	469.60	68.11	1.9
Junc N51	81.20	0.59	130.56	49.36	484.22	70.23	1.6
Junc N52	85.65	0.00	130.54	44.89	440.37	63.87	7.9
Junc N53	85.10	1.30	130.54	45.44	445.77	64.65	8.5
Junc N54	82.25	0.00	130.68	48.43	475.10	68.91	0.1
Junc N55	80.85	0.00	130.56	49.71	487.66	70.73	1.4
Junc KNE01,14-17	81.00	12.29	130.58	49.58	486.38	70.54	0.7
Junc KNE02,11-13,21	82.23	6.60	130.55	48.32	474.02	68.75	2.1
Junc KNE03	88.85	0.23	130.54	41.69	408.98	59.32	5.6
Junc KNE04,5-6,20	84.00	5.57	130.55	46.55	456.66	66.23	1.7
Junc KNE07	88.38	3.03	130.54	42.16	413.59	59.99	2.3
Junc KNE08	90.72	0.06	130.54	39.82	390.63	56.66	12.9
Junc KNE09	88.86	0.14	130.54	41.68	408.88	59.30	14.7
Junc KNE10	89.84	0.06	130.54	40.70	399.27	57.91	20.7
Junc KNE18	87.52	0.05	130.54	43.02	422.03	61.21	6.6
Junc KNE19	78.25	1.19	130.68	52.43	514.34	74.60	0.0
Junc KNE22	92.65	0.09	130.54	37.89	371.70	53.91	9.8
Junc KNE23	91.30	0.09	130.54	39.24	384.94	55.83	35.1
Junc KNE24	90.60	0.05	130.54	39.94	391.81	56.83	17.4
Junc KNE25	87.40	0.31	130.54	43.14	423.20	61.38	3.0
Junc KNE26	90.30	0.04	130.54	40.24	394.75	57.25	46.7

Maximum Pressure Offsite
Maximum Pressure within Claridge / Uniform Site
Maximum Age

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	40.28	0.00	-130.68	0.000
Pipe P1A	1.00	300	120	11.42	0.16	0.14	0.031
Pipe P1B	685.00	300	120	11.42	0.16	0.13	0.030
Pipe P2A	580.00	400	120	-27.67	0.22	0.17	0.028
Pipe P2B	300.00	400	120	15.38	0.12	0.06	0.030
Pipe P2C	235.00	400	120	12.42	0.10	0.04	0.031
Pipe P3	260.00	300	120	11.42	0.16	0.13	0.030
Pipe P4	175.00	300	120	5.85	0.08	0.04	0.033
Pipe P5	83.00	300	120	2.10	0.03	0.01	0.039
Pipe P6	82.00	300	120	-0.14	0.00	0.00	0.168
Pipe P7	75.00	300	120	0.78	0.01	0.00	0.042
Pipe P8	75.00	300	120	0.84	0.01	0.00	0.046
Pipe P9	90.00	300	120	-0.89	0.01	0.00	0.042
Pipe P10	90.00	300	120	-1.07	0.02	0.00	0.045
Pipe P11	85.00	300	120	-5.34	0.08	0.03	0.034
Pipe P12	85.00	300	120	-5.34	0.08	0.03	0.034
Pipe P13	85.00	300	120	-5.82	0.08	0.04	0.033
Pipe P14	84.00	300	120	2.40	0.03	0.01	0.038
Pipe P15	92.00	200	110	-0.09	0.00	0.00	0.106
Pipe P16	92.00	200	110	-0.66	0.02	0.01	0.051
Pipe P17	110.00	200	110	0.47	0.01	0.00	0.054
Pipe P18	110.00	200	110	0.36	0.01	0.00	0.057
Pipe P19	76.00	200	110	0.27	0.01	0.00	0.060
Pipe P20	110.00	300	120	-1.34	0.02	0.00	0.043
Pipe P21	110.00	300	120	-1.45	0.02	0.00	0.040
Pipe P22	84.00	300	120	1.52	0.02	0.00	0.041
Pipe P23	60.00	300	120	-1.49	0.02	0.00	0.039
Pipe P24	85.00	200	110	-0.17	0.01	0.00	0.062
Pipe P25	83.00	200	110	-0.26	0.01	0.00	0.060
Pipe P26	84.00	200	110	-0.94	0.03	0.01	0.048
Pipe P27	89.00	200	110	0.60	0.02	0.00	0.052
Pipe P28	100.00	200	110	0.43	0.01	0.00	0.056
Pipe P29	75.00	200	110	0.39	0.01	0.00	0.053
Pipe P30	110.00	200	110	-0.03	0.00	0.00	0.000
Pipe P31	99.00	200	110	0.13	0.00	0.00	0.045
Pipe P32	80.00	300	120	-1.60	0.02	0.00	0.042
Pipe P33	72.00	300	120	-1.41	0.02	0.00	0.040
Pipe P34	103.00	300	120	-1.32	0.02	0.00	0.041
Pipe P35	79.00	300	120	1.57	0.02	0.00	0.041
Pipe P36	102.00	300	120	1.13	0.02	0.00	0.044
Pipe P37	101.00	300	120	1.00	0.01	0.00	0.043
Pipe P38	40.00	250	110	0.09	0.00	0.00	0.000
Pipe P39	40.00	250	110	0.12	0.00	0.00	0.200
Pipe P40	42.00	200	110	-0.22	0.01	0.00	0.054
Pipe P41	58.00	200	110	-0.23	0.01	0.00	0.060
Pipe P42	100.00	200	110	0.28	0.01	0.00	0.061
Pipe P43	76.00	200	110	0.36	0.01	0.00	0.056
Pipe P44	65.00	250	110	-0.04	0.00	0.00	0.000
Pipe P45	125.00	300	120	1.03	0.01	0.00	0.043
Pipe P46	85.00	200	110	-0.49	0.02	0.00	0.054
Pipe P47	73.00	200	110	-0.63	0.02	0.01	0.052
Pipe P48	75.00	200	110	-0.76	0.02	0.01	0.050
Pipe P49	80.00	200	110	-0.82	0.03	0.01	0.049
Pipe P50	90.00	300	120	-3.96	0.06	0.02	0.036
Pipe P51	85.00	300	120	3.09	0.04	0.01	0.037
Pipe N52	100.00	300	120	2.74	0.04	0.01	0.037
Pipe P53	85.00	200	110	-0.13	0.00	0.00	0.047
Pipe P54	79.00	250	110	1.60	0.03	0.01	0.047
Pipe P55	70.00	250	110	1.44	0.03	0.01	0.047
Pipe P56	102.00	300	120	1.04	0.01	0.00	0.045
Pipe P57	101.00	300	120	0.89	0.01	0.00	0.044
Pipe P58	82.00	300	120	0.52	0.01	0.00	0.050
Pipe P59	110.00	300	120	-0.08	0.00	0.00	0.000
Pipe P60	110.00	300	120	-0.21	0.00	0.00	0.054
Pipe P61	95.00	300	120	0.30	0.00	0.00	0.062
Pipe P62	110.00	300	120	-0.39	0.01	0.00	0.048
Pipe P63	110.00	300	120	-0.52	0.01	0.00	0.045
Pipe P64	79.00	250	110	0.53	0.01	0.00	0.054
Pipe P65	40.00	300	120	1.18	0.02	0.00	0.044
Pipe P66	40.00	300	120	-1.24	0.02	0.00	0.040
Pipe P67	175.00	250	110	-0.01	0.00	0.00	0.000
Pipe P68	83.00	250	110	-1.36	0.03	0.01	0.047
Pipe P69	70.00	250	110	-1.30	0.03	0.01	0.048
Pipe P70	62.00	250	110	1.25	0.03	0.01	0.049
Pipe P71	75.00	250	110	1.21	0.02	0.01	0.048
Pipe P72	60.00	250	110	1.30	0.03	0.01	0.048
Pipe P73	60.00	250	110	1.30	0.03	0.01	0.049
Pipe P74	85.00	200	110	-1.79	0.06	0.04	0.044
Pipe P75	85.00	200	110	-1.99	0.06	0.04	0.044
Pipe P76	85.00	250	110	-2.18	0.04	0.02	0.044
Pipe P77	85.00	200	110	-2.37	0.08	0.06	0.043
Pipe P78	82.00	200	110	-0.72	0.02	0.01	0.051
Pipe P79	50.00	200	110	-2.96	0.09	0.09	0.041

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-91.31	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	123.41	42.66	418.49	60.70
Junc N2	88.25	5.07	123.22	34.97	343.06	49.76
Junc N3	88.12	0.06	123.22	35.10	344.33	49.94
Junc N4	87.85	0.13	123.22	35.37	346.98	50.33
Junc N5	87.19	0.41	123.22	36.03	353.45	51.26
Junc N6	84.95	0.00	123.23	38.28	375.53	54.47
Junc N7	82.95	1.09	123.25	40.30	395.34	57.34
Junc N8	88.28	0.19	123.22	34.94	342.76	49.71
Junc N9	88.54	0.25	123.22	34.68	340.21	49.34
Junc N10	88.80	0.14	123.22	34.42	337.66	48.97
Junc N11	90.47	0.26	123.22	32.75	321.28	46.60
Junc N12	92.25	0.21	123.21	30.96	303.72	44.05
Junc N13	89.86	0.26	123.22	33.36	327.26	47.47
Junc N14	91.70	0.06	123.21	31.51	309.11	44.83
Junc N15	91.36	0.14	123.21	31.85	312.45	45.32
Junc N16	89.81	0.21	123.21	33.40	327.65	47.52
Junc N17	88.25	0.20	123.21	34.96	342.96	49.74
Junc N18	88.10	0.30	123.21	35.11	344.43	49.96
Junc N19	88.74	0.09	123.21	34.47	338.15	49.04
Junc N20	89.41	0.36	123.21	33.80	331.58	48.09
Junc N21	90.00	0.21	123.21	33.21	325.79	47.25
Junc N22	90.33	0.18	123.21	32.88	322.55	46.78
Junc N23	90.11	0.29	123.21	33.10	324.71	47.10
Junc N24	89.95	0.06	123.21	33.26	326.28	47.32
Junc N25	90.15	0.13	123.21	33.06	324.32	47.04
Junc N26	90.00	0.03	123.21	33.21	325.79	47.25
Junc N27	90.60	0.11	123.21	32.61	319.90	46.40
Junc N28	91.00	0.18	123.21	32.21	315.98	45.83
Junc N29	89.20	0.15	123.21	34.01	333.64	48.39
Junc N30	88.35	0.31	123.21	34.86	341.98	49.60
Junc N31	88.30	0.29	123.21	34.91	342.47	49.67
Junc N32	88.10	0.13	123.21	35.11	344.43	49.96
Junc N33	87.40	0.11	123.21	35.81	351.30	50.95
Junc N34	87.95	0.79	123.21	35.26	345.90	50.17
Junc N35	87.50	0.16	123.20	35.70	350.22	50.79
Junc N36	86.20	0.35	123.20	37.00	362.97	52.64
Junc N37	89.83	0.34	123.21	33.38	327.46	47.49
Junc N38	90.80	0.22	123.20	32.40	317.84	46.10
Junc N39	91.08	0.30	123.21	32.13	315.20	45.72
Junc N40	90.90	0.21	123.21	32.31	316.96	45.97
Junc N41	90.64	0.30	123.21	32.57	319.51	46.34
Junc N42	90.30	0.26	123.21	32.91	322.85	46.83
Junc N43	90.00	0.13	123.21	33.21	325.79	47.25
Junc N44	89.55	0.13	123.20	33.65	330.11	47.88
Junc N45	88.50	0.10	123.20	34.70	340.41	49.37
Junc N46	87.00	0.08	123.20	36.20	355.12	51.51
Junc N47	86.15	2.75	123.20	37.05	363.46	52.72
Junc N48	86.66	0.46	123.23	36.57	358.75	52.03
Junc N49	84.50	0.44	123.25	38.75	380.14	55.13
Junc N50	82.68	0.43	123.26	40.58	398.09	57.74
Junc N51	81.20	1.34	123.28	42.08	412.80	59.87
Junc N52	85.65	0.00	123.20	37.55	368.37	53.43
Junc N53	85.10	2.94	123.20	38.10	373.76	54.21
Junc N54	82.25	0.00	123.83	41.58	407.90	59.16
Junc N55	80.85	0.00	123.30	42.45	416.43	60.40
Junc KNE01,14-17	81.00	28.07	123.38	42.38	415.75	60.30
Junc KNE02,11-13,21	82.23	15.07	123.26	41.03	402.50	58.38
Junc KNE03	88.85	0.51	123.21	34.36	337.07	48.89
Junc KNE04,5-6,20	84.00	12.72	123.25	39.25	385.04	55.85
Junc KNE07	88.38	6.91	123.22	34.84	341.78	49.57
Junc KNE08	90.72	0.13	123.21	32.49	318.73	46.23
Junc KNE09	88.86	0.31	123.21	34.35	336.97	48.87
Junc KNE10	89.84	0.13	123.21	33.37	327.36	47.48
Junc KNE18	87.52	0.11	123.22	35.70	350.22	50.79
Junc KNE19	78.25	2.72	123.83	45.58	447.14	64.85
Junc KNE22	92.65	0.19	123.21	30.56	299.79	43.48
Junc KNE23	91.30	0.19	123.21	31.91	313.04	45.40
Junc KNE24	90.60	0.12	123.20	32.60	319.81	46.38
Junc KNE25	87.40	0.71	123.22	35.82	351.39	50.97
Junc KNE26	90.30	0.08	123.21	32.91	322.85	46.83

Minimum Pressure

PEAK HOUR DEMAND
Scenario 1 - Full Buildout (System Level Demands)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	91.31	0.00	-123.83	0.000
Pipe P1A	1.00	300	120	25.89	0.37	0.61	0.027
Pipe P1B	685.00	300	120	25.89	0.37	0.61	0.027
Pipe P2A	580.00	400	120	-62.70	0.50	0.77	0.024
Pipe P2B	300.00	400	120	34.63	0.28	0.26	0.027
Pipe P2C	235.00	400	120	28.28	0.23	0.18	0.027
Pipe P3	260.00	300	120	25.89	0.37	0.61	0.027
Pipe P4	175.00	300	120	13.17	0.19	0.17	0.030
Pipe P5	83.00	300	120	4.67	0.07	0.03	0.034
Pipe P6	82.00	300	120	-0.40	0.01	0.00	0.062
Pipe P7	75.00	300	120	2.03	0.03	0.01	0.039
Pipe P8	75.00	300	120	2.16	0.03	0.01	0.038
Pipe P9	90.00	300	120	-2.27	0.03	0.01	0.038
Pipe P10	90.00	300	120	-2.68	0.04	0.01	0.038
Pipe P11	85.00	300	120	-12.12	0.17	0.15	0.030
Pipe P12	85.00	300	120	-12.12	0.17	0.15	0.030
Pipe P13	85.00	300	120	-13.21	0.19	0.18	0.030
Pipe P14	84.00	300	120	5.25	0.07	0.03	0.034
Pipe P15	92.00	200	110	-0.18	0.01	0.00	0.064
Pipe P16	92.00	200	110	-1.45	0.05	0.02	0.046
Pipe P17	110.00	200	110	1.03	0.03	0.01	0.048
Pipe P18	110.00	200	110	0.77	0.02	0.01	0.051
Pipe P19	76.00	200	110	0.56	0.02	0.00	0.053
Pipe P20	110.00	300	120	-2.92	0.04	0.01	0.037
Pipe P21	110.00	300	120	-3.18	0.05	0.01	0.037
Pipe P22	84.00	300	120	3.29	0.05	0.01	0.036
Pipe P23	60.00	300	120	-3.23	0.05	0.01	0.037
Pipe P24	85.00	200	110	-0.35	0.01	0.00	0.059
Pipe P25	83.00	200	110	-0.56	0.02	0.00	0.051
Pipe P26	84.00	200	110	-2.05	0.07	0.05	0.044
Pipe P27	89.00	200	110	1.29	0.04	0.02	0.046
Pipe P28	100.00	200	110	0.92	0.03	0.01	0.049
Pipe P29	75.00	200	110	0.83	0.03	0.01	0.049
Pipe P30	110.00	200	110	-0.07	0.00	0.00	0.067
Pipe P31	99.00	200	110	0.29	0.01	0.00	0.056
Pipe P32	80.00	300	120	-3.44	0.05	0.01	0.036
Pipe P33	72.00	300	120	-3.02	0.04	0.01	0.037
Pipe P34	103.00	300	120	-2.81	0.04	0.01	0.037
Pipe P35	79.00	300	120	3.33	0.05	0.01	0.036
Pipe P36	102.00	300	120	2.39	0.03	0.01	0.038
Pipe P37	101.00	300	120	2.10	0.03	0.01	0.039
Pipe P38	40.00	250	110	0.17	0.00	0.00	0.094
Pipe P39	40.00	250	110	0.23	0.00	0.00	0.051
Pipe P40	42.00	200	110	-0.44	0.01	0.00	0.057
Pipe P41	58.00	200	110	-0.47	0.01	0.00	0.053
Pipe P42	100.00	200	110	0.58	0.02	0.00	0.052
Pipe P43	76.00	200	110	0.76	0.02	0.01	0.051
Pipe P44	65.00	250	110	-0.08	0.00	0.00	0.000
Pipe P45	125.00	300	120	2.14	0.03	0.01	0.039
Pipe P46	85.00	200	110	-1.07	0.03	0.01	0.048
Pipe P47	73.00	200	110	-1.38	0.04	0.02	0.046
Pipe P48	75.00	200	110	-1.67	0.05	0.03	0.045
Pipe P49	80.00	200	110	-1.80	0.06	0.04	0.044
Pipe P50	90.00	300	120	-8.73	0.12	0.08	0.031
Pipe P51	85.00	300	120	6.82	0.10	0.05	0.033
Pipe N52	100.00	300	120	6.03	0.09	0.04	0.033
Pipe P53	85.00	200	110	-0.41	0.01	0.00	0.054
Pipe P54	79.00	250	110	3.50	0.07	0.04	0.041
Pipe P55	70.00	250	110	3.34	0.07	0.04	0.042
Pipe P56	102.00	300	120	2.42	0.03	0.01	0.038
Pipe P57	101.00	300	120	2.08	0.03	0.01	0.039
Pipe P58	82.00	300	120	1.05	0.01	0.00	0.043
Pipe P59	110.00	300	120	-0.41	0.01	0.00	0.059
Pipe P60	110.00	300	120	-0.71	0.01	0.00	0.044
Pipe P61	95.00	300	120	0.90	0.01	0.00	0.043
Pipe P62	110.00	300	120	-1.11	0.02	0.00	0.042
Pipe P63	110.00	300	120	-1.41	0.02	0.00	0.041
Pipe P64	79.00	200	110	0.85	0.03	0.01	0.049
Pipe P65	40.00	300	120	2.53	0.04	0.01	0.039
Pipe P66	40.00	300	120	-2.66	0.04	0.01	0.037
Pipe P67	175.00	250	110	0.05	0.00	0.00	0.256
Pipe P68	83.00	250	110	-3.01	0.06	0.03	0.042
Pipe P69	70.00	250	110	-2.88	0.06	0.03	0.043
Pipe P70	62.00	250	110	2.83	0.06	0.03	0.043
Pipe P71	75.00	250	110	2.75	0.06	0.03	0.043
Pipe P72	60.00	250	110	2.94	0.06	0.03	0.042
Pipe P73	60.00	250	110	2.94	0.06	0.03	0.042
Pipe P74	85.00	200	110	-3.68	0.12	0.14	0.040
Pipe P75	85.00	200	110	-4.14	0.13	0.17	0.039
Pipe P76	85.00	200	110	-4.58	0.15	0.21	0.039
Pipe P77	85.00	200	110	-5.01	0.16	0.25	0.038
Pipe P78	82.00	200	110	-1.59	0.05	0.03	0.045
Pipe P79	50.00	200	110	-6.35	0.20	0.38	0.037

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.55	32.80	321.77	46.67
Junc N2	88.25	2.99	111.62	23.37	229.26	33.25
Junc N3	88.12	0.04	111.62	23.50	230.54	33.44
Junc N4	87.85	0.07	111.74	23.89	234.36	33.99
Junc N5	87.19	0.24	112.01	24.82	243.48	35.31
Junc N6	84.95	0.00	112.64	27.69	271.64	39.40
Junc N7	82.95	0.64	113.11	30.16	295.87	42.91
Junc N8	88.28	0.11	111.28	23.00	225.63	32.72
Junc N9	88.54	95.15	108.86	20.32	199.34	28.91
Junc N10	88.80	36.08	109.39	20.59	201.99	29.30
Junc N11	90.47	36.15	108.89	18.42	180.70	26.21
Junc N12	92.25	0.12	110.27	18.02	176.78	25.64
Junc N13	89.86	0.15	111.25	21.39	209.84	30.43
Junc N14	91.70	0.04	111.27	19.57	191.98	27.84
Junc N15	91.36	0.08	111.31	19.95	195.71	28.39
Junc N16	89.81	0.12	111.31	21.50	210.92	30.59
Junc N17	88.25	0.12	111.31	23.06	226.22	32.81
Junc N18	88.10	0.18	111.35	23.25	228.08	33.08
Junc N19	88.74	0.05	111.41	22.67	222.39	32.26
Junc N20	89.41	0.21	111.35	21.94	215.23	31.22
Junc N21	90.00	0.13	111.39	21.39	209.84	30.43
Junc N22	90.33	0.10	111.53	21.20	207.97	30.16
Junc N23	90.11	0.17	111.59	21.48	210.72	30.56
Junc N24	89.95	0.04	111.65	21.70	212.88	30.88
Junc N25	90.15	0.08	111.65	21.50	210.92	30.59
Junc N26	90.00	0.02	111.63	21.63	212.19	30.78
Junc N27	90.60	0.07	111.60	21.00	206.01	29.88
Junc N28	91.00	0.10	111.56	20.56	201.69	29.25
Junc N29	89.20	0.20	111.79	22.59	221.61	32.14
Junc N30	88.35	0.18	111.85	23.50	230.54	33.44
Junc N31	88.30	0.17	111.91	23.61	231.61	33.59
Junc N32	88.10	0.07	111.97	23.87	234.16	33.96
Junc N33	87.40	0.07	112.04	24.64	241.72	35.06
Junc N34	87.95	0.47	111.97	24.02	235.64	34.18
Junc N35	87.50	0.22	111.87	24.37	239.07	34.67
Junc N36	86.20	0.20	111.86	25.66	251.72	36.51
Junc N37	89.83	0.20	111.87	22.04	216.21	31.36
Junc N38	90.80	0.13	111.83	21.03	206.30	29.92
Junc N39	91.08	0.18	111.83	20.75	203.56	29.52
Junc N40	90.90	0.12	111.81	20.91	205.13	29.75
Junc N41	90.64	0.18	111.81	21.17	207.68	30.12
Junc N42	90.30	0.15	111.80	21.50	210.92	30.59
Junc N43	90.00	0.07	111.79	21.79	213.76	31.00
Junc N44	89.55	0.08	111.85	22.30	218.76	31.73
Junc N45	88.50	0.06	111.85	23.35	229.06	33.22
Junc N46	87.00	0.05	111.85	24.85	243.78	35.36
Junc N47	86.15	1.62	111.85	25.70	252.12	36.57
Junc N48	86.66	0.27	112.12	25.46	249.76	36.22
Junc N49	84.50	0.26	112.62	28.12	275.86	40.01
Junc N50	82.68	0.25	113.14	30.46	298.81	43.34
Junc N51	81.20	0.79	113.66	32.46	318.43	46.18
Junc N52	85.65	0.00	111.86	26.21	257.12	37.29
Junc N53	85.10	1.73	111.86	26.76	262.52	38.07
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.99	33.14	325.10	47.15
Junc KNE01,14-17	81.00	16.35	114.81	33.81	331.68	48.11
Junc KNE02,11-13,21	82.23	8.78	113.59	31.36	307.64	44.62
Junc KNE03	88.85	0.30	111.88	23.03	225.92	32.77
Junc KNE04,5-6,20	84.00	7.41	112.31	28.31	277.72	40.28
Junc KNE07	88.38	4.03	111.62	23.24	227.98	33.07
Junc KNE08	90.72	0.08	111.35	20.63	202.38	29.35
Junc KNE09	88.86	0.18	111.45	22.59	221.61	32.14
Junc KNE10	89.84	0.08	111.66	21.82	214.05	31.05
Junc KNE18	87.52	0.07	111.87	24.35	238.87	34.65
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.22	18.57	182.17	26.42
Junc KNE23	91.30	0.11	111.82	20.52	201.30	29.20
Junc KNE24	90.60	0.07	111.85	21.25	208.46	30.23
Junc KNE25	87.40	0.42	112.16	24.76	242.90	35.23
Junc KNE26	90.30	0.05	111.65	21.35	209.44	30.38

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	78.44	1.11	4.75	0.023
Pipe P1B	685.00	300	120	78.44	1.11	4.75	0.023
Pipe P2A	580.00	400	120	-140.57	1.12	3.45	0.022
Pipe P2B	300.00	400	120	124.22	0.99	2.74	0.022
Pipe P2C	235.00	400	120	94.96	0.76	1.67	0.023
Pipe P3	260.00	300	120	78.44	1.11	4.75	0.023
Pipe P4	175.00	300	120	71.03	1.00	3.96	0.023
Pipe P5	83.00	300	120	3.52	0.05	0.02	0.036
Pipe P6	82.00	300	120	0.53	0.01	0.00	0.048
Pipe P7	75.00	300	120	44.15	0.62	1.64	0.025
Pipe P8	75.00	300	120	44.22	0.63	1.64	0.025
Pipe P9	90.00	300	120	-44.29	0.63	1.65	0.025
Pipe P10	90.00	300	120	-44.53	0.63	1.67	0.025
Pipe P11	85.00	300	120	-85.54	1.21	5.58	0.022
Pipe P12	85.00	300	120	-85.54	1.21	5.58	0.022
Pipe P13	85.00	300	120	-86.18	1.22	5.66	0.022
Pipe P14	84.00	300	120	72.33	1.02	4.09	0.023
Pipe P15	92.00	200	110	62.25	1.98	26.23	0.026
Pipe P16	92.00	200	110	-27.40	0.87	5.74	0.030
Pipe P17	110.00	200	110	-5.51	0.18	0.29	0.038
Pipe P18	110.00	200	110	-41.66	1.33	12.47	0.028
Pipe P19	76.00	200	110	-41.78	1.33	12.53	0.028
Pipe P20	110.00	300	120	-16.16	0.23	0.25	0.029
Pipe P21	110.00	300	120	-16.31	0.23	0.26	0.029
Pipe P22	84.00	300	120	-25.73	0.36	0.60	0.027
Pipe P23	60.00	300	120	25.77	0.36	0.61	0.027
Pipe P24	85.00	200	110	-0.78	0.02	0.01	0.051
Pipe P25	83.00	200	110	-0.90	0.03	0.01	0.049
Pipe P26	84.00	200	110	6.33	0.20	0.38	0.037
Pipe P27	89.00	200	110	-7.35	0.23	0.50	0.036
Pipe P28	100.00	200	110	-7.89	0.25	0.57	0.036
Pipe P29	75.00	200	110	-7.94	0.25	0.58	0.036
Pipe P30	110.00	200	110	-0.35	0.01	0.00	0.056
Pipe P31	99.00	200	110	-0.14	0.00	0.00	0.055
Pipe P32	80.00	300	120	25.07	0.35	0.58	0.027
Pipe P33	72.00	300	120	25.01	0.35	0.57	0.027
Pipe P34	103.00	300	120	25.14	0.36	0.58	0.027
Pipe P35	79.00	300	120	-33.26	0.47	0.97	0.026
Pipe P36	102.00	300	120	-26.68	0.38	0.65	0.027
Pipe P37	101.00	300	120	-26.85	0.38	0.65	0.027
Pipe P38	40.00	250	110	-7.04	0.14	0.16	0.037
Pipe P39	40.00	250	110	-7.00	0.14	0.15	0.037
Pipe P40	42.00	200	110	6.87	0.22	0.44	0.036
Pipe P41	58.00	200	110	6.85	0.22	0.44	0.036
Pipe P42	100.00	200	110	-6.78	0.22	0.43	0.036
Pipe P43	76.00	200	110	-6.68	0.21	0.42	0.036
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-33.97	0.48	1.01	0.026
Pipe P46	85.00	200	110	-9.22	0.29	0.76	0.035
Pipe P47	73.00	200	110	-9.40	0.30	0.79	0.035
Pipe P48	75.00	200	110	-9.57	0.30	0.82	0.035
Pipe P49	80.00	200	110	-9.64	0.31	0.83	0.035
Pipe P50	90.00	300	120	-40.60	0.57	1.40	0.025
Pipe P51	85.00	300	120	30.89	0.44	0.85	0.026
Pipe N52	100.00	300	120	30.42	0.43	0.82	0.026
Pipe P53	85.00	200	110	11.39	0.36	1.13	0.034
Pipe P54	79.00	250	110	6.27	0.13	0.13	0.038
Pipe P55	70.00	250	110	6.05	0.12	0.12	0.038
Pipe P56	102.00	300	120	12.46	0.18	0.16	0.030
Pipe P57	101.00	300	120	12.26	0.17	0.15	0.030
Pipe P58	82.00	300	120	-14.50	0.21	0.21	0.029
Pipe P59	110.00	300	120	7.75	0.11	0.07	0.032
Pipe P60	110.00	300	120	7.57	0.11	0.06	0.032
Pipe P61	95.00	300	120	-7.46	0.11	0.06	0.032
Pipe P62	110.00	300	120	7.34	0.10	0.06	0.032
Pipe P63	110.00	300	120	7.16	0.10	0.06	0.032
Pipe P64	79.00	200	110	-6.61	0.21	0.41	0.037
Pipe P65	40.00	300	120	-13.63	0.19	0.19	0.029
Pipe P66	40.00	300	120	13.56	0.19	0.18	0.029
Pipe P67	175.00	250	110	4.12	0.08	0.06	0.040
Pipe P68	83.00	250	110	2.31	0.05	0.02	0.044
Pipe P69	70.00	250	110	2.39	0.05	0.02	0.044
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-27.69	0.88	5.85	0.030
Pipe P75	85.00	200	110	-27.96	0.89	5.96	0.030
Pipe P76	85.00	200	110	-28.22	0.90	6.06	0.029
Pipe P77	85.00	200	110	-28.47	0.91	6.16	0.029
Pipe P78	82.00	200	110	-63.48	2.02	27.19	0.026
Pipe P79	50.00	200	110	-29.26	0.93	6.48	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.47	32.72	320.98	46.55
Junc N2	88.25	2.99	111.56	23.31	228.67	33.17
Junc N3	88.12	0.04	111.64	23.52	230.73	33.46
Junc N4	87.85	0.07	111.77	23.92	234.66	34.03
Junc N5	87.19	0.24	112.08	24.89	244.17	35.41
Junc N6	84.95	0.00	112.71	27.76	272.33	39.50
Junc N7	82.95	0.64	113.17	30.22	296.46	43.00
Junc N8	88.28	0.11	111.51	23.23	227.89	33.05
Junc N9	88.54	36.15	110.15	21.61	211.99	30.75
Junc N10	88.80	95.08	109.39	20.59	201.99	29.30
Junc N11	90.47	0.15	110.65	20.18	197.97	28.71
Junc N12	92.25	0.12	111.15	18.90	185.41	26.89
Junc N13	89.86	0.15	111.51	21.65	212.39	30.80
Junc N14	91.70	0.04	111.54	19.84	194.63	28.23
Junc N15	91.36	0.08	111.56	20.20	198.16	28.74
Junc N16	89.81	0.12	111.56	21.75	213.37	30.95
Junc N17	88.25	0.12	111.56	23.31	228.67	33.17
Junc N18	88.10	0.18	111.59	23.49	230.44	33.42
Junc N19	88.74	0.05	111.64	22.90	224.65	32.58
Junc N20	89.41	0.21	111.59	22.18	217.59	31.56
Junc N21	90.00	0.13	111.63	21.63	212.19	30.78
Junc N22	90.33	0.10	111.73	21.40	209.93	30.45
Junc N23	90.11	0.17	111.79	21.68	212.68	30.85
Junc N24	89.95	0.04	111.83	21.88	214.64	31.13
Junc N25	90.15	0.08	111.83	21.68	212.68	30.85
Junc N26	90.00	0.02	111.81	21.81	213.96	31.03
Junc N27	90.60	0.07	111.79	21.19	207.87	30.15
Junc N28	91.00	0.10	111.76	20.76	203.66	29.54
Junc N29	89.20	0.20	111.94	22.74	223.08	32.35
Junc N30	88.35	0.18	111.99	23.64	231.91	33.64
Junc N31	88.30	0.17	112.04	23.74	232.89	33.78
Junc N32	88.10	0.07	112.09	23.99	235.34	34.13
Junc N33	87.40	0.07	112.14	24.74	242.70	35.20
Junc N34	87.95	0.47	112.08	24.13	236.72	34.33
Junc N35	87.50	0.22	112.01	24.51	240.44	34.87
Junc N36	86.20	0.20	112.00	25.80	253.10	36.71
Junc N37	89.83	0.20	112.00	22.17	217.49	31.54
Junc N38	90.80	0.13	111.98	21.18	207.78	30.14
Junc N39	91.08	0.18	111.97	20.89	204.93	29.72
Junc N40	90.90	0.12	111.96	21.06	206.60	29.96
Junc N41	90.64	0.18	111.95	21.31	209.05	30.32
Junc N42	90.30	0.15	111.95	21.65	212.39	30.80
Junc N43	90.00	0.07	111.94	21.94	215.23	31.22
Junc N44	89.55	0.08	111.99	22.44	220.14	31.93
Junc N45	88.50	0.06	111.99	23.49	230.44	33.42
Junc N46	87.00	0.05	111.99	24.99	245.15	35.56
Junc N47	86.15	1.62	111.99	25.84	253.49	36.77
Junc N48	86.66	0.27	112.14	25.48	249.96	36.25
Junc N49	84.50	0.26	112.65	28.15	276.15	40.05
Junc N50	82.68	0.25	113.17	30.49	299.11	43.38
Junc N51	81.20	0.79	113.70	32.50	318.83	46.24
Junc N52	85.65	0.00	112.00	26.35	258.49	37.49
Junc N53	85.10	1.73	112.00	26.90	263.89	38.27
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	114.02	33.17	325.40	47.19
Junc KNE01,14-17	81.00	16.35	114.83	33.83	331.87	48.13
Junc KNE02,11-13,21	82.23	8.78	113.64	31.41	308.13	44.69
Junc KNE03	88.85	0.30	112.01	23.16	227.20	32.95
Junc KNE04,5-6,20	84.00	7.41	112.20	28.20	276.64	40.12
Junc KNE07	88.38	40.03	111.49	23.11	226.71	32.88
Junc KNE08	90.72	0.08	111.59	20.87	204.73	29.69
Junc KNE09	88.86	0.18	111.67	22.81	223.77	32.45
Junc KNE10	89.84	0.08	111.84	22.00	215.82	31.30
Junc KNE18	87.52	0.07	111.91	24.39	239.27	34.70
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.50	18.85	184.92	26.82
Junc KNE23	91.30	0.11	111.96	20.66	202.67	29.40
Junc KNE24	90.60	0.07	111.99	21.39	209.84	30.43
Junc KNE25	87.40	0.42	112.25	24.85	243.78	35.36
Junc KNE26	90.30	0.05	111.83	21.53	211.21	30.63

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	79.44	1.12	4.86	0.023
Pipe P1B	685.00	300	120	79.44	1.12	4.87	0.023
Pipe P2A	580.00	400	120	-139.57	1.11	3.40	0.022
Pipe P2B	300.00	400	120	123.22	0.98	2.70	0.022
Pipe P2C	235.00	400	120	93.81	0.75	1.63	0.023
Pipe P3	260.00	300	120	79.44	1.12	4.87	0.023
Pipe P4	175.00	300	120	72.03	1.02	4.06	0.023
Pipe P5	83.00	300	120	-29.56	0.42	0.78	0.026
Pipe P6	82.00	300	120	-32.55	0.46	0.93	0.026
Pipe P7	75.00	300	120	46.99	0.66	1.84	0.025
Pipe P8	75.00	300	120	47.06	0.67	1.85	0.025
Pipe P9	90.00	300	120	-47.13	0.67	1.85	0.025
Pipe P10	90.00	300	120	-47.37	0.67	1.87	0.024
Pipe P11	85.00	300	120	-84.39	1.19	5.44	0.022
Pipe P12	85.00	300	120	-84.39	1.19	5.44	0.022
Pipe P13	85.00	300	120	-85.03	1.20	5.52	0.022
Pipe P14	84.00	300	120	42.23	0.60	1.51	0.025
Pipe P15	92.00	200	110	45.58	1.45	14.73	0.027
Pipe P16	92.00	200	110	33.51	1.07	8.33	0.029
Pipe P17	110.00	200	110	-24.08	0.77	4.52	0.030
Pipe P18	110.00	200	110	-24.23	0.77	4.57	0.030
Pipe P19	76.00	200	110	-24.35	0.78	4.61	0.030
Pipe P20	110.00	300	120	-4.24	0.06	0.02	0.035
Pipe P21	110.00	300	120	-4.39	0.06	0.02	0.035
Pipe P22	84.00	300	120	-20.22	0.29	0.39	0.028
Pipe P23	60.00	300	120	20.26	0.29	0.39	0.028
Pipe P24	85.00	200	110	1.32	0.04	0.02	0.046
Pipe P25	83.00	200	110	1.20	0.04	0.02	0.047
Pipe P26	84.00	200	110	7.85	0.25	0.57	0.036
Pipe P27	89.00	200	110	-6.76	0.22	0.43	0.036
Pipe P28	100.00	200	110	-6.94	0.22	0.45	0.036
Pipe P29	75.00	200	110	-6.99	0.22	0.46	0.036
Pipe P30	110.00	200	110	0.01	0.00	0.00	0.000
Pipe P31	99.00	200	110	0.22	0.01	0.00	0.062
Pipe P32	80.00	300	120	21.67	0.31	0.44	0.027
Pipe P33	72.00	300	120	21.96	0.31	0.45	0.027
Pipe P34	103.00	300	120	22.09	0.31	0.45	0.027
Pipe P35	79.00	300	120	-29.26	0.41	0.77	0.026
Pipe P36	102.00	300	120	-23.49	0.33	0.51	0.027
Pipe P37	101.00	300	120	-23.66	0.33	0.52	0.027
Pipe P38	40.00	250	110	-6.23	0.13	0.12	0.038
Pipe P39	40.00	250	110	-6.19	0.13	0.12	0.038
Pipe P40	42.00	200	110	6.06	0.19	0.35	0.037
Pipe P41	58.00	200	110	6.04	0.19	0.35	0.037
Pipe P42	100.00	200	110	-5.97	0.19	0.34	0.037
Pipe P43	76.00	200	110	-5.87	0.19	0.33	0.037
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-29.97	0.42	0.80	0.026
Pipe P46	85.00	200	110	-8.23	0.26	0.62	0.035
Pipe P47	73.00	200	110	-8.41	0.27	0.64	0.035
Pipe P48	75.00	200	110	-8.58	0.27	0.67	0.035
Pipe P49	80.00	200	110	-8.65	0.28	0.68	0.035
Pipe P50	90.00	300	120	-36.60	0.52	1.16	0.025
Pipe P51	85.00	300	120	27.88	0.39	0.70	0.026
Pipe N52	100.00	300	120	27.41	0.39	0.68	0.027
Pipe P53	85.00	200	110	10.09	0.32	0.90	0.034
Pipe P54	79.00	250	110	5.80	0.12	0.11	0.038
Pipe P55	70.00	250	110	5.58	0.11	0.10	0.039
Pipe P56	102.00	300	120	11.22	0.16	0.13	0.030
Pipe P57	101.00	300	120	11.02	0.16	0.13	0.030
Pipe P58	82.00	300	120	-12.79	0.18	0.17	0.030
Pipe P59	110.00	300	120	6.85	0.10	0.05	0.033
Pipe P60	110.00	300	120	6.67	0.09	0.05	0.033
Pipe P61	95.00	300	120	-6.56	0.09	0.05	0.033
Pipe P62	110.00	300	120	6.44	0.09	0.05	0.033
Pipe P63	110.00	300	120	6.26	0.09	0.04	0.033
Pipe P64	79.00	200	110	-5.81	0.19	0.32	0.037
Pipe P65	40.00	300	120	-11.92	0.17	0.15	0.030
Pipe P66	40.00	300	120	11.85	0.17	0.14	0.030
Pipe P67	175.00	250	110	3.65	0.07	0.05	0.041
Pipe P68	83.00	250	110	1.84	0.04	0.01	0.045
Pipe P69	70.00	250	110	1.92	0.04	0.01	0.045
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-27.83	0.89	5.91	0.030
Pipe P75	85.00	200	110	-28.10	0.89	6.01	0.030
Pipe P76	85.00	200	110	-28.36	0.90	6.12	0.029
Pipe P77	85.00	200	110	-28.61	0.91	6.22	0.029
Pipe P78	82.00	200	110	-61.57	1.96	25.70	0.026
Pipe P79	50.00	200	110	-29.40	0.94	6.54	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.65	32.90	322.75	46.81
Junc N2	88.25	2.99	111.70	23.45	230.04	33.37
Junc N3	88.12	0.04	111.63	23.51	230.63	33.45
Junc N4	87.85	0.07	111.72	23.87	234.16	33.96
Junc N5	87.19	0.24	111.93	24.74	242.70	35.20
Junc N6	84.95	0.00	112.54	27.59	270.66	39.26
Junc N7	82.95	0.64	113.03	30.08	295.08	42.80
Junc N8	88.28	0.11	111.04	22.76	223.28	32.38
Junc N9	88.54	0.15	110.54	22.00	215.82	31.30
Junc N10	88.80	0.08	111.20	22.40	219.74	31.87
Junc N11	90.47	36.15	108.07	17.60	172.66	25.04
Junc N12	92.25	95.12	107.68	15.43	151.37	21.95
Junc N13	89.86	0.15	110.73	20.87	204.73	29.69
Junc N14	91.70	0.04	110.61	18.91	185.51	26.91
Junc N15	91.36	0.08	110.74	19.38	190.12	27.57
Junc N16	89.81	0.12	110.84	21.03	206.30	29.92
Junc N17	88.25	0.12	110.94	22.69	222.59	32.28
Junc N18	88.10	0.18	110.94	22.84	224.06	32.50
Junc N19	88.74	0.05	110.99	22.25	218.27	31.66
Junc N20	89.41	0.21	110.89	21.48	210.72	30.56
Junc N21	90.00	0.13	110.92	20.92	205.23	29.77
Junc N22	90.33	0.10	111.14	20.81	204.15	29.61
Junc N23	90.11	0.17	111.23	21.12	207.19	30.05
Junc N24	89.95	0.04	111.32	21.37	209.64	30.41
Junc N25	90.15	0.08	111.31	21.16	207.58	30.11
Junc N26	90.00	0.02	111.28	21.28	208.76	30.28
Junc N27	90.60	0.07	111.25	20.65	202.58	29.38
Junc N28	91.00	0.10	111.18	20.18	197.97	28.71
Junc N29	89.20	0.20	111.51	22.31	218.86	31.74
Junc N30	88.35	0.18	111.61	23.26	228.18	33.09
Junc N31	88.30	0.17	111.69	23.39	229.46	33.28
Junc N32	88.10	0.07	111.77	23.67	232.20	33.68
Junc N33	87.40	0.07	111.87	24.47	240.05	34.82
Junc N34	87.95	0.47	111.77	23.82	233.67	33.89
Junc N35	87.50	0.22	111.64	24.14	236.81	34.35
Junc N36	86.20	0.20	111.63	25.43	249.47	36.18
Junc N37	89.83	0.20	111.63	21.80	213.86	31.02
Junc N38	90.80	0.13	111.58	20.78	203.85	29.57
Junc N39	91.08	0.18	111.57	20.49	201.01	29.15
Junc N40	90.90	0.12	111.56	20.66	202.67	29.40
Junc N41	90.64	0.18	111.55	20.91	205.13	29.75
Junc N42	90.30	0.15	111.54	21.24	208.36	30.22
Junc N43	90.00	0.07	111.53	21.53	211.21	30.63
Junc N44	89.55	0.08	111.61	22.06	216.41	31.39
Junc N45	88.50	0.06	111.62	23.12	226.81	32.90
Junc N46	87.00	0.05	111.62	24.62	241.52	35.03
Junc N47	86.15	1.62	111.61	25.46	249.76	36.22
Junc N48	86.66	0.27	112.11	25.45	249.66	36.21
Junc N49	84.50	0.26	112.60	28.10	275.66	39.98
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.62	32.42	318.04	46.13
Junc N52	85.65	0.00	111.63	25.98	254.86	36.96
Junc N53	85.10	1.73	111.63	26.53	260.26	37.75
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.93	33.08	324.51	47.07
Junc KNE01,14-17	81.00	16.35	114.77	33.77	331.28	48.05
Junc KNE02,11-13,21	82.23	8.78	113.53	31.30	307.05	44.53
Junc KNE03	88.85	0.30	111.65	22.80	223.67	32.44
Junc KNE04,5-6,20	84.00	7.41	112.46	28.46	279.19	40.49
Junc KNE07	88.38	4.03	111.79	23.41	229.65	33.31
Junc KNE08	90.72	0.08	110.85	20.13	197.48	28.64
Junc KNE09	88.86	0.18	111.02	22.16	217.39	31.53
Junc KNE10	89.84	0.08	111.33	21.49	210.82	30.58
Junc KNE18	87.52	0.07	111.82	24.30	238.38	34.57
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	36.11	110.42	17.77	174.32	25.28
Junc KNE23	91.30	0.11	111.56	20.26	198.75	28.83
Junc KNE24	90.60	0.07	111.61	21.01	206.11	29.89
Junc KNE25	87.40	0.42	112.04	24.64	241.72	35.06
Junc KNE26	90.30	0.05	111.31	21.01	206.11	29.89

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	77.08	1.09	4.60	0.023
Pipe P1B	685.00	300	120	77.08	1.09	4.60	0.023
Pipe P2A	580.00	400	120	-141.93	1.13	3.51	0.022
Pipe P2B	300.00	400	120	125.58	1.00	2.80	0.022
Pipe P2C	235.00	400	120	96.72	0.77	1.73	0.023
Pipe P3	260.00	300	120	77.08	1.09	4.60	0.023
Pipe P4	175.00	300	120	69.67	0.99	3.82	0.023
Pipe P5	83.00	300	120	34.68	0.49	1.05	0.026
Pipe P6	82.00	300	120	31.69	0.45	0.89	0.026
Pipe P7	75.00	300	120	38.09	0.54	1.25	0.025
Pipe P8	75.00	300	120	38.16	0.54	1.25	0.025
Pipe P9	90.00	300	120	-38.23	0.54	1.26	0.025
Pipe P10	90.00	300	120	-38.47	0.54	1.27	0.025
Pipe P11	85.00	300	120	-87.30	1.24	5.80	0.022
Pipe P12	85.00	300	120	-87.30	1.24	5.80	0.022
Pipe P13	85.00	300	120	-87.94	1.24	5.87	0.022
Pipe P14	84.00	300	120	97.02	1.37	7.05	0.022
Pipe P15	92.00	200	110	26.53	0.84	5.40	0.030
Pipe P16	92.00	200	110	-30.88	0.98	7.16	0.029
Pipe P17	110.00	200	110	57.26	1.82	22.47	0.027
Pipe P18	110.00	200	110	21.11	0.67	3.54	0.031
Pipe P19	76.00	200	110	-74.01	2.36	36.14	0.026
Pipe P20	110.00	300	120	-58.60	0.83	2.77	0.024
Pipe P21	110.00	300	120	-58.75	0.83	2.78	0.024
Pipe P22	84.00	300	120	-51.52	0.73	2.18	0.024
Pipe P23	60.00	300	120	51.56	0.73	2.19	0.024
Pipe P24	85.00	200	110	-11.59	0.37	1.17	0.034
Pipe P25	83.00	200	110	-11.71	0.37	1.19	0.034
Pipe P26	84.00	200	110	-11.63	0.37	1.17	0.034
Pipe P27	89.00	200	110	-0.20	0.01	0.00	0.060
Pipe P28	100.00	200	110	-7.19	0.23	0.48	0.036
Pipe P29	75.00	200	110	-7.24	0.23	0.49	0.036
Pipe P30	110.00	200	110	-6.80	0.22	0.43	0.036
Pipe P31	99.00	200	110	-6.59	0.21	0.41	0.037
Pipe P32	80.00	300	120	40.05	0.57	1.37	0.025
Pipe P33	72.00	300	120	33.53	0.47	0.99	0.026
Pipe P34	103.00	300	120	33.66	0.48	0.99	0.026
Pipe P35	79.00	300	120	-41.08	0.58	1.43	0.025
Pipe P36	102.00	300	120	-32.91	0.47	0.95	0.026
Pipe P37	101.00	300	120	-33.08	0.47	0.96	0.026
Pipe P38	40.00	250	110	-8.62	0.18	0.23	0.036
Pipe P39	40.00	250	110	-8.58	0.17	0.23	0.036
Pipe P40	42.00	200	110	8.45	0.27	0.65	0.035
Pipe P41	58.00	200	110	8.43	0.27	0.65	0.035
Pipe P42	100.00	200	110	-8.36	0.27	0.64	0.035
Pipe P43	76.00	200	110	-8.26	0.26	0.62	0.035
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-41.79	0.59	1.48	0.025
Pipe P46	85.00	200	110	-11.15	0.35	1.09	0.034
Pipe P47	73.00	200	110	-11.33	0.36	1.12	0.034
Pipe P48	75.00	200	110	-11.50	0.37	1.15	0.034
Pipe P49	80.00	200	110	-11.57	0.37	1.16	0.034
Pipe P50	90.00	300	120	-48.42	0.68	1.94	0.024
Pipe P51	85.00	300	120	36.78	0.52	1.17	0.025
Pipe N52	100.00	300	120	36.31	0.51	1.14	0.025
Pipe P53	85.00	200	110	13.94	0.44	1.64	0.033
Pipe P54	79.00	250	110	7.18	0.15	0.16	0.037
Pipe P55	70.00	250	110	6.96	0.14	0.15	0.037
Pipe P56	102.00	300	120	14.89	0.21	0.22	0.029
Pipe P57	101.00	300	120	14.69	0.21	0.21	0.029
Pipe P58	82.00	300	120	-17.84	0.25	0.31	0.028
Pipe P59	110.00	300	120	9.52	0.13	0.10	0.031
Pipe P60	110.00	300	120	9.34	0.13	0.09	0.031
Pipe P61	95.00	300	120	-9.23	0.13	0.09	0.031
Pipe P62	110.00	300	120	9.11	0.13	0.09	0.031
Pipe P63	110.00	300	120	8.93	0.13	0.09	0.031
Pipe P64	79.00	200	110	-8.18	0.26	0.61	0.035
Pipe P65	40.00	300	120	-16.97	0.24	0.28	0.029
Pipe P66	40.00	300	120	16.90	0.24	0.28	0.029
Pipe P67	175.00	250	110	5.03	0.10	0.08	0.039
Pipe P68	83.00	250	110	3.22	0.07	0.04	0.042
Pipe P69	70.00	250	110	3.30	0.07	0.04	0.042
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-27.29	0.87	5.70	0.030
Pipe P75	85.00	200	110	-27.56	0.88	5.80	0.030
Pipe P76	85.00	200	110	-27.82	0.89	5.90	0.030
Pipe P77	85.00	200	110	-28.07	0.89	6.00	0.030
Pipe P78	82.00	200	110	-30.96	0.99	7.20	0.029
Pipe P79	50.00	200	110	-28.86	0.92	6.32	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.71	32.96	323.34	46.90
Junc N2	88.25	2.99	111.77	23.52	230.73	33.46
Junc N3	88.12	0.04	111.67	23.55	231.03	33.51
Junc N4	87.85	0.07	111.73	23.88	234.26	33.98
Junc N5	87.19	0.24	111.88	24.69	242.21	35.13
Junc N6	84.95	0.00	112.47	27.52	269.97	39.16
Junc N7	82.95	0.64	112.97	30.02	294.50	42.71
Junc N8	88.28	0.11	111.09	22.81	223.77	32.45
Junc N9	88.54	0.15	111.11	22.57	221.41	32.11
Junc N10	88.80	0.08	111.52	22.72	222.88	32.33
Junc N11	90.47	0.15	110.76	20.29	199.04	28.87
Junc N12	92.25	0.12	110.43	18.18	178.35	25.87
Junc N13	89.86	0.15	110.64	20.78	203.85	29.57
Junc N14	91.70	95.04	109.99	18.29	179.42	26.02
Junc N15	91.36	36.08	110.07	18.71	183.55	26.62
Junc N16	89.81	0.12	110.33	20.52	201.30	29.20
Junc N17	88.25	0.12	110.59	22.34	219.16	31.79
Junc N18	88.10	0.18	110.54	22.44	220.14	31.93
Junc N19	88.74	0.05	110.56	21.82	214.05	31.05
Junc N20	89.41	0.21	110.40	20.99	205.91	29.86
Junc N21	90.00	0.13	110.40	20.40	200.12	29.03
Junc N22	90.33	0.10	110.73	20.40	200.12	29.03
Junc N23	90.11	0.17	110.86	20.75	203.56	29.52
Junc N24	89.95	0.04	110.98	21.03	206.30	29.92
Junc N25	90.15	0.08	110.97	20.82	204.24	29.62
Junc N26	90.00	0.02	110.93	20.93	205.32	29.78
Junc N27	90.60	0.07	110.88	20.28	198.95	28.85
Junc N28	91.00	0.10	110.79	19.79	194.14	28.16
Junc N29	89.20	0.20	111.25	22.05	216.31	31.37
Junc N30	88.35	0.18	111.38	23.03	225.92	32.77
Junc N31	88.30	0.17	111.49	23.19	227.49	33.00
Junc N32	88.10	0.07	111.60	23.50	230.54	33.44
Junc N33	87.40	0.07	111.73	24.33	238.68	34.62
Junc N34	87.95	0.47	111.60	23.65	232.01	33.65
Junc N35	87.50	0.22	111.43	23.93	234.75	34.05
Junc N36	86.20	0.20	111.41	25.21	247.31	35.87
Junc N37	89.83	0.20	111.41	21.58	211.70	30.70
Junc N38	90.80	0.13	111.35	20.55	201.60	29.24
Junc N39	91.08	0.18	111.34	20.26	198.75	28.83
Junc N40	90.90	0.12	111.31	20.41	200.22	29.04
Junc N41	90.64	0.18	111.30	20.66	202.67	29.40
Junc N42	90.30	0.15	111.28	20.98	205.81	29.85
Junc N43	90.00	0.07	111.27	21.27	208.66	30.26
Junc N44	89.55	0.08	111.39	21.84	214.25	31.07
Junc N45	88.50	0.06	111.39	22.89	224.55	32.57
Junc N46	87.00	0.05	111.39	24.39	239.27	34.70
Junc N47	86.15	1.62	111.39	25.24	247.60	35.91
Junc N48	86.66	0.27	112.14	25.48	249.96	36.25
Junc N49	84.50	0.26	112.61	28.11	275.76	40.00
Junc N50	82.68	0.25	113.10	30.42	298.42	43.28
Junc N51	81.20	0.79	113.59	32.39	317.75	46.09
Junc N52	85.65	0.00	111.41	25.76	252.71	36.65
Junc N53	85.10	1.73	111.41	26.31	258.10	37.43
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.90	33.05	324.22	47.02
Junc KNE01,14-17	81.00	16.35	114.75	33.75	331.09	48.02
Junc KNE02,11-13,21	82.23	8.78	113.48	31.25	306.56	44.46
Junc KNE03	88.85	0.30	111.44	22.59	221.61	32.14
Junc KNE04,5-6,20	84.00	7.41	112.54	28.54	279.98	40.61
Junc KNE07	88.38	4.03	111.89	23.51	230.63	33.45
Junc KNE08	90.72	0.08	110.28	19.56	191.88	27.83
Junc KNE09	88.86	0.18	110.57	21.71	212.98	30.89
Junc KNE10	89.84	0.08	111.00	21.16	207.58	30.11
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	36.11	110.20	17.55	172.17	24.97
Junc KNE23	91.30	0.11	111.32	20.02	196.40	28.48
Junc KNE24	90.60	0.07	111.38	20.79	203.95	29.58
Junc KNE25	87.40	0.42	111.96	24.56	240.93	34.94
Junc KNE26	90.30	0.05	110.97	20.67	202.77	29.41

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	76.26	1.08	4.51	0.023
Pipe P1B	685.00	300	120	76.26	1.08	4.51	0.023
Pipe P2A	580.00	400	120	-142.75	1.14	3.55	0.022
Pipe P2B	300.00	400	120	126.40	1.01	2.83	0.022
Pipe P2C	235.00	400	120	98.02	0.78	1.77	0.023
Pipe P3	260.00	300	120	76.26	1.08	4.51	0.023
Pipe P4	175.00	300	120	68.85	0.97	3.73	0.023
Pipe P5	83.00	300	120	40.77	0.58	1.41	0.025
Pipe P6	82.00	300	120	37.78	0.53	1.23	0.025
Pipe P7	75.00	300	120	31.38	0.44	0.87	0.026
Pipe P8	75.00	300	120	31.45	0.44	0.87	0.026
Pipe P9	90.00	300	120	-31.52	0.45	0.88	0.026
Pipe P10	90.00	300	120	-31.76	0.45	0.89	0.026
Pipe P11	85.00	300	120	-88.60	1.25	5.96	0.022
Pipe P12	85.00	300	120	-88.60	1.25	5.96	0.022
Pipe P13	85.00	300	120	-89.24	1.26	6.04	0.022
Pipe P14	84.00	300	120	95.93	1.36	6.90	0.022
Pipe P15	92.00	200	110	-4.16	0.13	0.17	0.039
Pipe P16	92.00	200	110	-23.97	0.76	4.48	0.030
Pipe P17	110.00	200	110	19.66	0.63	3.10	0.031
Pipe P18	110.00	200	110	19.51	0.62	3.06	0.031
Pipe P19	76.00	200	110	19.39	0.62	3.03	0.031
Pipe P20	110.00	300	120	-71.91	1.02	4.05	0.023
Pipe P21	110.00	300	120	-72.06	1.02	4.06	0.023
Pipe P22	84.00	300	120	55.20	0.78	2.48	0.024
Pipe P23	60.00	300	120	39.84	0.56	1.36	0.025
Pipe P24	85.00	200	110	-19.58	0.62	3.08	0.031
Pipe P25	83.00	200	110	-19.70	0.63	3.11	0.031
Pipe P26	84.00	200	110	-27.91	0.89	5.94	0.030
Pipe P27	89.00	200	110	8.09	0.26	0.60	0.035
Pipe P28	100.00	200	110	-4.21	0.13	0.18	0.039
Pipe P29	75.00	200	110	-4.26	0.14	0.18	0.039
Pipe P30	110.00	200	110	-12.12	0.39	1.27	0.033
Pipe P31	99.00	200	110	-11.91	0.38	1.23	0.034
Pipe P32	80.00	300	120	56.34	0.80	2.58	0.024
Pipe P33	72.00	300	120	44.52	0.63	1.66	0.025
Pipe P34	103.00	300	120	44.65	0.63	1.67	0.025
Pipe P35	79.00	300	120	-49.08	0.69	1.99	0.024
Pipe P36	102.00	300	120	-39.29	0.56	1.32	0.025
Pipe P37	101.00	300	120	-39.46	0.56	1.33	0.025
Pipe P38	40.00	250	110	-10.25	0.21	0.31	0.035
Pipe P39	40.00	250	110	-10.21	0.21	0.31	0.035
Pipe P40	42.00	200	110	10.08	0.32	0.90	0.034
Pipe P41	58.00	200	110	10.06	0.32	0.90	0.034
Pipe P42	100.00	200	110	-9.99	0.32	0.89	0.034
Pipe P43	76.00	200	110	-9.89	0.31	0.87	0.034
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-49.79	0.70	2.05	0.024
Pipe P46	85.00	200	110	-13.13	0.42	1.47	0.033
Pipe P47	73.00	200	110	-13.31	0.42	1.51	0.033
Pipe P48	75.00	200	110	-13.48	0.43	1.54	0.033
Pipe P49	80.00	200	110	-13.55	0.43	1.56	0.033
Pipe P50	90.00	300	120	-56.42	0.80	2.58	0.024
Pipe P51	85.00	300	120	42.80	0.61	1.55	0.025
Pipe N52	100.00	300	120	42.33	0.60	1.52	0.025
Pipe P53	85.00	200	110	16.55	0.53	2.26	0.032
Pipe P54	79.00	250	110	8.10	0.16	0.20	0.037
Pipe P55	70.00	250	110	7.88	0.16	0.19	0.037
Pipe P56	102.00	300	120	17.38	0.25	0.29	0.028
Pipe P57	101.00	300	120	17.18	0.24	0.29	0.028
Pipe P58	82.00	300	120	-21.25	0.30	0.42	0.028
Pipe P59	110.00	300	120	11.33	0.16	0.13	0.030
Pipe P60	110.00	300	120	11.15	0.16	0.13	0.030
Pipe P61	95.00	300	120	-11.04	0.16	0.13	0.030
Pipe P62	110.00	300	120	10.92	0.15	0.12	0.030
Pipe P63	110.00	300	120	10.74	0.15	0.12	0.031
Pipe P64	79.00	200	110	-9.79	0.31	0.85	0.034
Pipe P65	40.00	300	120	-20.38	0.29	0.39	0.028
Pipe P66	40.00	300	120	20.31	0.29	0.39	0.028
Pipe P67	175.00	250	110	5.95	0.12	0.11	0.038
Pipe P68	83.00	250	110	4.14	0.08	0.06	0.040
Pipe P69	70.00	250	110	4.22	0.09	0.06	0.040
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-26.81	0.85	5.51	0.030
Pipe P75	85.00	200	110	-27.08	0.86	5.61	0.030
Pipe P76	85.00	200	110	-27.34	0.87	5.71	0.030
Pipe P77	85.00	200	110	-27.59	0.88	5.81	0.030
Pipe P78	82.00	200	110	-24.05	0.77	4.51	0.030
Pipe P79	50.00	200	110	-28.38	0.90	6.12	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.75	33.00	323.73	46.95
Junc N2	88.25	2.99	111.83	23.58	231.32	33.55
Junc N3	88.12	0.04	111.72	23.60	231.52	33.58
Junc N4	87.85	0.07	111.76	23.91	234.56	34.02
Junc N5	87.19	0.24	111.85	24.66	241.91	35.09
Junc N6	84.95	0.00	112.41	27.46	269.38	39.07
Junc N7	82.95	0.64	112.93	29.98	294.10	42.66
Junc N8	88.28	0.11	111.22	22.94	225.04	32.64
Junc N9	88.54	0.15	111.27	22.73	222.98	32.34
Junc N10	88.80	0.08	111.63	22.83	223.96	32.48
Junc N11	90.47	0.15	111.05	20.58	201.89	29.28
Junc N12	92.25	0.12	110.85	18.60	182.47	26.46
Junc N13	89.86	0.15	110.96	21.10	206.99	30.02
Junc N14	91.70	0.04	110.40	18.70	183.45	26.61
Junc N15	91.36	0.08	110.18	18.82	184.62	26.78
Junc N16	89.81	0.12	110.17	20.36	199.73	28.97
Junc N17	88.25	0.12	110.16	21.91	214.94	31.17
Junc N18	88.10	36.18	108.88	20.78	203.85	29.57
Junc N19	88.74	0.05	109.54	20.80	204.05	29.59
Junc N20	89.41	95.21	107.71	18.30	179.52	26.04
Junc N21	90.00	0.13	109.96	19.96	195.81	28.40
Junc N22	90.33	0.10	110.25	19.92	195.42	28.34
Junc N23	90.11	0.17	110.43	20.32	199.34	28.91
Junc N24	89.95	0.04	110.60	20.65	202.58	29.38
Junc N25	90.15	0.08	110.58	20.43	200.42	29.07
Junc N26	90.00	0.02	110.53	20.53	201.40	29.21
Junc N27	90.60	0.07	110.46	19.86	194.83	28.26
Junc N28	91.00	0.10	110.34	19.34	189.73	27.52
Junc N29	89.20	0.20	110.96	21.76	213.47	30.96
Junc N30	88.35	0.18	111.13	22.78	223.47	32.41
Junc N31	88.30	0.17	111.27	22.97	225.34	32.68
Junc N32	88.10	0.07	111.43	23.33	228.87	33.19
Junc N33	87.40	0.07	111.59	24.19	237.30	34.42
Junc N34	87.95	0.47	111.42	23.47	230.24	33.39
Junc N35	87.50	0.22	111.20	23.70	232.50	33.72
Junc N36	86.20	0.20	111.18	24.98	245.05	35.54
Junc N37	89.83	0.20	111.18	21.35	209.44	30.38
Junc N38	90.80	0.13	111.10	20.30	199.14	28.88
Junc N39	91.08	0.18	111.08	20.00	196.20	28.46
Junc N40	90.90	0.12	111.04	20.14	197.57	28.66
Junc N41	90.64	0.18	111.02	20.38	199.93	29.00
Junc N42	90.30	0.15	111.00	20.70	203.07	29.45
Junc N43	90.00	0.07	110.98	20.98	205.81	29.85
Junc N44	89.55	0.08	111.15	21.60	211.90	30.73
Junc N45	88.50	0.06	111.16	22.66	222.29	32.24
Junc N46	87.00	0.05	111.16	24.16	237.01	34.38
Junc N47	86.15	1.62	111.16	25.01	245.35	35.58
Junc N48	86.66	0.27	112.18	25.52	250.35	36.31
Junc N49	84.50	0.26	112.64	28.14	276.05	40.04
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.58	32.38	317.65	46.07
Junc N52	85.65	0.00	111.18	25.53	250.45	36.32
Junc N53	85.10	1.73	111.18	26.08	255.84	37.11
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.88	33.03	324.02	47.00
Junc KNE01,14-17	81.00	16.35	114.74	33.74	330.99	48.01
Junc KNE02,11-13,21	82.23	8.78	113.46	31.23	306.37	44.43
Junc KNE03	88.85	0.30	111.22	22.37	219.45	31.83
Junc KNE04,5-6,20	84.00	7.41	112.60	28.60	280.57	40.69
Junc KNE07	88.38	4.03	111.95	23.57	231.22	33.54
Junc KNE08	90.72	36.08	109.91	19.19	188.25	27.30
Junc KNE09	88.86	0.18	110.04	21.18	207.78	30.14
Junc KNE10	89.84	0.08	110.61	20.77	203.75	29.55
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	110.71	18.06	177.17	25.70
Junc KNE23	91.30	0.11	111.06	19.76	193.85	28.11
Junc KNE24	90.60	0.07	111.14	20.54	201.50	29.22
Junc KNE25	87.40	0.42	111.90	24.50	240.35	34.86
Junc KNE26	90.30	0.05	110.58	20.28	198.95	28.85

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	75.71	1.07	4.46	0.023
Pipe P1B	685.00	300	120	75.71	1.07	4.45	0.023
Pipe P2A	580.00	400	120	-143.30	1.14	3.57	0.022
Pipe P2B	300.00	400	120	126.95	1.01	2.86	0.022
Pipe P2C	235.00	400	120	99.08	0.79	1.80	0.023
Pipe P3	260.00	300	120	75.71	1.07	4.45	0.023
Pipe P4	175.00	300	120	68.30	0.97	3.68	0.023
Pipe P5	83.00	300	120	41.83	0.59	1.48	0.025
Pipe P6	82.00	300	120	38.84	0.55	1.29	0.025
Pipe P7	75.00	300	120	23.58	0.33	0.51	0.027
Pipe P8	75.00	300	120	23.65	0.33	0.52	0.027
Pipe P9	90.00	300	120	-23.72	0.34	0.52	0.027
Pipe P10	90.00	300	120	-23.96	0.34	0.53	0.027
Pipe P11	85.00	300	120	-89.66	1.27	6.09	0.022
Pipe P12	85.00	300	120	-89.66	1.27	6.09	0.022
Pipe P13	85.00	300	120	-90.30	1.28	6.17	0.022
Pipe P14	84.00	300	120	88.68	1.25	5.97	0.022
Pipe P15	92.00	200	110	-7.06	0.22	0.47	0.036
Pipe P16	92.00	200	110	-22.36	0.71	3.94	0.031
Pipe P17	110.00	200	110	15.16	0.48	1.92	0.032
Pipe P18	110.00	200	110	15.01	0.48	1.88	0.032
Pipe P19	76.00	200	110	14.89	0.47	1.85	0.032
Pipe P20	110.00	300	120	-53.49	0.76	2.34	0.024
Pipe P21	110.00	300	120	-53.64	0.76	2.35	0.024
Pipe P22	84.00	300	120	68.26	0.97	3.67	0.023
Pipe P23	60.00	300	120	-68.22	0.97	3.67	0.023
Pipe P24	85.00	200	110	3.22	0.10	0.11	0.041
Pipe P25	83.00	200	110	3.10	0.10	0.10	0.041
Pipe P26	84.00	200	110	-41.99	1.34	12.65	0.028
Pipe P27	89.00	200	110	44.97	1.43	14.36	0.028
Pipe P28	100.00	200	110	-29.50	0.94	6.58	0.029
Pipe P29	75.00	200	110	-29.55	0.94	6.60	0.029
Pipe P30	110.00	200	110	-38.28	1.22	10.66	0.028
Pipe P31	99.00	200	110	56.93	1.81	22.23	0.027
Pipe P32	80.00	300	120	-64.92	0.92	3.35	0.023
Pipe P33	72.00	300	120	28.08	0.40	0.71	0.026
Pipe P34	103.00	300	120	28.21	0.40	0.72	0.026
Pipe P35	79.00	300	120	-57.94	0.82	2.71	0.024
Pipe P36	102.00	300	120	-46.36	0.66	1.79	0.025
Pipe P37	101.00	300	120	-46.53	0.66	1.81	0.025
Pipe P38	40.00	250	110	-12.04	0.25	0.42	0.034
Pipe P39	40.00	250	110	-12.00	0.24	0.42	0.034
Pipe P40	42.00	200	110	11.87	0.38	1.22	0.034
Pipe P41	58.00	200	110	11.85	0.38	1.22	0.034
Pipe P42	100.00	200	110	-11.78	0.38	1.20	0.034
Pipe P43	76.00	200	110	-11.68	0.37	1.18	0.034
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-58.65	0.83	2.77	0.024
Pipe P46	85.00	200	110	-15.32	0.49	1.96	0.032
Pipe P47	73.00	200	110	-15.50	0.49	2.00	0.032
Pipe P48	75.00	200	110	-15.67	0.50	2.04	0.032
Pipe P49	80.00	200	110	-15.74	0.50	2.06	0.032
Pipe P50	90.00	300	120	-65.28	0.92	3.38	0.023
Pipe P51	85.00	300	120	49.47	0.70	2.02	0.024
Pipe N52	100.00	300	120	49.00	0.69	1.99	0.024
Pipe P53	85.00	200	110	19.45	0.62	3.04	0.031
Pipe P54	79.00	250	110	9.11	0.19	0.25	0.036
Pipe P55	70.00	250	110	8.89	0.18	0.24	0.036
Pipe P56	102.00	300	120	20.14	0.28	0.38	0.028
Pipe P57	101.00	300	120	19.94	0.28	0.38	0.028
Pipe P58	82.00	300	120	-25.02	0.35	0.57	0.027
Pipe P59	110.00	300	120	13.33	0.19	0.18	0.030
Pipe P60	110.00	300	120	13.15	0.19	0.17	0.030
Pipe P61	95.00	300	120	-13.04	0.18	0.17	0.030
Pipe P62	110.00	300	120	12.92	0.18	0.17	0.030
Pipe P63	110.00	300	120	12.74	0.18	0.16	0.030
Pipe P64	79.00	200	110	-11.56	0.37	1.16	0.034
Pipe P65	40.00	300	120	-24.15	0.34	0.54	0.027
Pipe P66	40.00	300	120	24.08	0.34	0.53	0.027
Pipe P67	175.00	250	110	6.96	0.14	0.15	0.037
Pipe P68	83.00	250	110	5.15	0.10	0.09	0.039
Pipe P69	70.00	250	110	5.23	0.11	0.09	0.039
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-26.30	0.84	5.32	0.030
Pipe P75	85.00	200	110	-26.57	0.85	5.42	0.030
Pipe P76	85.00	200	110	-26.83	0.85	5.52	0.030
Pipe P77	85.00	200	110	-27.08	0.86	5.61	0.030
Pipe P78	82.00	200	110	-22.44	0.71	3.96	0.031
Pipe P79	50.00	200	110	-27.87	0.89	5.92	0.030

MAXIMUM DAY + FIREFLOW DEMAND AT N28
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.81	33.06	324.32	47.04
Junc N2	88.25	2.99	111.92	23.67	232.20	33.68
Junc N3	88.12	0.04	111.80	23.68	232.30	33.69
Junc N4	87.85	0.07	111.80	23.95	234.95	34.08
Junc N5	87.19	0.24	111.80	24.61	241.42	35.02
Junc N6	84.95	0.00	112.34	27.39	268.70	38.97
Junc N7	82.95	0.64	112.87	29.92	293.52	42.57
Junc N8	88.28	0.11	111.48	23.20	227.59	33.01
Junc N9	88.54	0.15	111.52	22.98	225.43	32.70
Junc N10	88.80	0.08	111.80	23.00	225.63	32.72
Junc N11	90.47	0.15	111.37	20.90	205.03	29.74
Junc N12	92.25	0.12	111.22	18.97	186.10	26.99
Junc N13	89.86	0.15	111.30	21.44	210.33	30.51
Junc N14	91.70	0.04	110.90	19.20	188.35	27.32
Junc N15	91.36	0.08	110.75	19.39	190.22	27.59
Junc N16	89.81	0.12	110.80	20.99	205.91	29.86
Junc N17	88.25	0.12	110.86	22.61	221.80	32.17
Junc N18	88.10	0.18	110.49	22.39	219.65	31.86
Junc N19	88.74	0.05	110.14	21.40	209.93	30.45
Junc N20	89.41	0.21	110.48	21.07	206.70	29.98
Junc N21	90.00	0.13	110.23	20.23	198.46	28.78
Junc N22	90.33	36.10	109.42	19.09	187.27	27.16
Junc N23	90.11	0.17	109.48	19.37	190.02	27.56
Junc N24	89.95	0.04	109.26	19.31	189.43	27.47
Junc N25	90.15	0.08	108.97	18.82	184.62	26.78
Junc N26	90.00	0.02	108.08	18.08	177.36	25.72
Junc N27	90.60	36.07	106.86	16.26	159.51	23.14
Junc N28	91.00	95.10	106.56	15.56	152.64	22.14
Junc N29	89.20	0.20	110.17	20.97	205.72	29.84
Junc N30	88.35	0.18	110.47	22.12	217.00	31.47
Junc N31	88.30	0.17	110.72	22.42	219.94	31.90
Junc N32	88.10	0.07	110.99	22.89	224.55	32.57
Junc N33	87.40	0.07	111.28	23.88	234.26	33.98
Junc N34	87.95	0.47	110.98	23.03	225.92	32.77
Junc N35	87.50	0.22	110.61	23.11	226.71	32.88
Junc N36	86.20	0.20	110.58	24.38	239.17	34.69
Junc N37	89.83	0.20	110.57	20.74	203.46	29.51
Junc N38	90.80	0.13	110.42	19.62	192.47	27.92
Junc N39	91.08	0.18	110.38	19.30	189.33	27.46
Junc N40	90.90	0.12	110.32	19.42	190.51	27.63
Junc N41	90.64	0.18	110.29	19.65	192.77	27.96
Junc N42	90.30	0.15	110.25	19.95	195.71	28.39
Junc N43	90.00	0.07	110.21	20.21	198.26	28.76
Junc N44	89.55	0.08	110.52	20.97	205.72	29.84
Junc N45	88.50	0.06	110.53	22.03	216.11	31.34
Junc N46	87.00	0.05	110.53	23.53	230.83	33.48
Junc N47	86.15	1.62	110.53	24.38	239.17	34.69
Junc N48	86.66	0.27	112.23	25.57	250.84	36.38
Junc N49	84.50	0.26	112.67	28.17	276.35	40.08
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.57	32.37	317.55	46.06
Junc N52	85.65	0.00	110.58	24.93	244.56	35.47
Junc N53	85.10	1.73	110.58	25.48	249.96	36.25
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.85	33.00	323.73	46.95
Junc KNE01,14-17	81.00	16.35	114.71	33.71	330.70	47.96
Junc KNE02,11-13,21	82.23	8.78	113.41	31.18	305.88	44.36
Junc KNE03	88.85	0.30	110.64	21.79	213.76	31.00
Junc KNE04,5-6,20	84.00	7.41	112.68	28.68	281.35	40.81
Junc KNE07	88.38	4.03	112.05	23.67	232.20	33.68
Junc KNE08	90.72	0.08	110.48	19.76	193.85	28.11
Junc KNE09	88.86	0.18	109.88	21.02	206.21	29.91
Junc KNE10	89.84	0.08	109.54	19.70	193.26	28.03
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.12	18.47	181.19	26.28
Junc KNE23	91.30	0.11	110.35	19.05	186.88	27.10
Junc KNE24	90.60	0.07	110.50	19.90	195.22	28.31
Junc KNE25	87.40	0.42	111.80	24.40	239.36	34.72
Junc KNE26	90.30	0.05	108.97	18.67	183.15	26.56

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.90	1.06	4.36	0.023
Pipe P1B	685.00	300	120	74.90	1.06	4.36	0.023
Pipe P2A	580.00	400	120	-144.11	1.15	3.61	0.022
Pipe P2B	300.00	400	120	127.76	1.02	2.89	0.022
Pipe P2C	235.00	400	120	100.61	0.80	1.86	0.023
Pipe P3	260.00	300	120	74.90	1.06	4.36	0.023
Pipe P4	175.00	300	120	67.49	0.95	3.60	0.023
Pipe P5	83.00	300	120	43.94	0.62	1.63	0.025
Pipe P6	82.00	300	120	40.95	0.58	1.43	0.025
Pipe P7	75.00	300	120	2.80	0.04	0.01	0.037
Pipe P8	75.00	300	120	2.87	0.04	0.01	0.037
Pipe P9	90.00	300	120	-2.94	0.04	0.01	0.037
Pipe P10	90.00	300	120	-3.18	0.05	0.01	0.037
Pipe P11	85.00	300	120	-91.19	1.29	6.28	0.022
Pipe P12	85.00	300	120	-91.19	1.29	6.28	0.022
Pipe P13	85.00	300	120	-91.83	1.30	6.36	0.022
Pipe P14	84.00	300	120	69.29	0.98	3.78	0.023
Pipe P15	92.00	200	110	-6.63	0.21	0.41	0.037
Pipe P16	92.00	200	110	-19.45	0.62	3.04	0.031
Pipe P17	110.00	200	110	12.67	0.40	1.38	0.033
Pipe P18	110.00	200	110	12.52	0.40	1.35	0.033
Pipe P19	76.00	200	110	12.40	0.39	1.32	0.033
Pipe P20	110.00	300	120	-44.13	0.62	1.64	0.025
Pipe P21	110.00	300	120	-44.28	0.63	1.65	0.025
Pipe P22	84.00	300	120	56.42	0.80	2.58	0.024
Pipe P23	60.00	300	120	-56.38	0.80	2.58	0.024
Pipe P24	85.00	200	110	-8.35	0.27	0.64	0.035
Pipe P25	83.00	200	110	-8.47	0.27	0.65	0.035
Pipe P26	84.00	200	110	-31.52	1.00	7.44	0.029
Pipe P27	89.00	200	110	22.93	0.73	4.13	0.030
Pipe P28	100.00	200	110	20.99	0.67	3.50	0.031
Pipe P29	75.00	200	110	20.94	0.67	3.49	0.031
Pipe P30	110.00	200	110	-1.77	0.06	0.04	0.044
Pipe P31	99.00	200	110	-1.56	0.05	0.03	0.045
Pipe P32	80.00	300	120	-64.65	0.91	3.32	0.023
Pipe P33	72.00	300	120	-66.13	0.94	3.46	0.023
Pipe P34	103.00	300	120	-66.00	0.93	3.45	0.023
Pipe P35	79.00	300	120	86.75	1.23	5.73	0.022
Pipe P36	102.00	300	120	-25.13	0.36	0.58	0.027
Pipe P37	101.00	300	120	-25.30	0.36	0.58	0.027
Pipe P38	40.00	250	110	-55.58	1.13	7.17	0.027
Pipe P39	40.00	250	110	-55.54	1.13	7.16	0.027
Pipe P40	42.00	200	110	55.41	1.76	21.14	0.027
Pipe P41	58.00	200	110	55.39	1.76	21.13	0.027
Pipe P42	100.00	200	110	-19.32	0.61	3.00	0.031
Pipe P43	76.00	200	110	75.78	2.41	37.76	0.025
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-80.96	1.15	5.04	0.023
Pipe P46	85.00	200	110	-20.84	0.66	3.46	0.031
Pipe P47	73.00	200	110	-21.02	0.67	3.51	0.031
Pipe P48	75.00	200	110	-21.19	0.67	3.57	0.031
Pipe P49	80.00	200	110	-21.26	0.68	3.59	0.031
Pipe P50	90.00	300	120	-87.59	1.24	5.83	0.022
Pipe P51	85.00	300	120	66.25	0.94	3.48	0.023
Pipe N52	100.00	300	120	65.78	0.93	3.43	0.023
Pipe P53	85.00	200	110	26.74	0.85	5.48	0.030
Pipe P54	79.00	250	110	11.64	0.24	0.40	0.035
Pipe P55	70.00	250	110	11.42	0.23	0.38	0.035
Pipe P56	102.00	300	120	27.11	0.38	0.66	0.027
Pipe P57	101.00	300	120	26.91	0.38	0.66	0.027
Pipe P58	82.00	300	120	-34.52	0.49	1.04	0.026
Pipe P59	110.00	300	120	18.37	0.26	0.32	0.028
Pipe P60	110.00	300	120	18.19	0.26	0.32	0.028
Pipe P61	95.00	300	120	-18.08	0.26	0.31	0.028
Pipe P62	110.00	300	120	17.96	0.25	0.31	0.028
Pipe P63	110.00	300	120	17.78	0.25	0.30	0.028
Pipe P64	79.00	200	110	-16.02	0.51	2.12	0.032
Pipe P65	40.00	300	120	-33.65	0.48	0.99	0.026
Pipe P66	40.00	300	120	33.58	0.48	0.99	0.026
Pipe P67	175.00	250	110	9.49	0.19	0.27	0.036
Pipe P68	83.00	250	110	7.68	0.16	0.18	0.037
Pipe P69	70.00	250	110	7.76	0.16	0.19	0.037
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.045
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-25.58	0.81	5.05	0.030
Pipe P75	85.00	200	110	-25.85	0.82	5.15	0.030
Pipe P76	85.00	200	110	-26.11	0.83	5.25	0.030
Pipe P77	85.00	200	110	-26.36	0.84	5.34	0.030
Pipe P78	82.00	200	110	-19.53	0.62	3.06	0.031
Pipe P79	50.00	200	110	-27.15	0.86	5.64	0.030

MAXIMUM DAY + FIREFLOW DEMAND AT N32
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.92	33.17	325.40	47.19
Junc N2	88.25	2.99	112.06	23.81	233.58	33.88
Junc N3	88.12	0.04	111.93	23.81	233.58	33.88
Junc N4	87.85	0.07	111.86	24.01	235.54	34.16
Junc N5	87.19	0.24	111.72	24.53	240.64	34.90
Junc N6	84.95	0.00	112.20	27.25	267.32	38.77
Junc N7	82.95	0.64	112.76	29.81	292.44	42.41
Junc N8	88.28	0.11	111.83	23.55	231.03	33.51
Junc N9	88.54	0.15	111.88	23.34	228.97	33.21
Junc N10	88.80	0.08	112.05	23.25	228.08	33.08
Junc N11	90.47	0.15	111.81	21.34	209.35	30.36
Junc N12	92.25	0.12	111.75	19.50	191.30	27.74
Junc N13	89.86	0.15	111.77	21.91	214.94	31.17
Junc N14	91.70	0.04	111.63	19.93	195.51	28.36
Junc N15	91.36	0.08	111.58	20.22	198.36	28.77
Junc N16	89.81	0.12	111.59	21.78	213.66	30.99
Junc N17	88.25	0.12	111.61	23.36	229.16	33.24
Junc N18	88.10	0.18	111.48	23.38	229.36	33.27
Junc N19	88.74	0.05	111.36	22.62	221.90	32.18
Junc N20	89.41	0.21	111.48	22.07	216.51	31.40
Junc N21	90.00	0.13	111.39	21.39	209.84	30.43
Junc N22	90.33	0.10	111.11	20.78	203.85	29.57
Junc N23	90.11	0.17	110.97	20.86	204.64	29.68
Junc N24	89.95	0.04	110.85	20.90	205.03	29.74
Junc N25	90.15	0.08	110.86	20.71	203.17	29.47
Junc N26	90.00	0.02	110.90	20.90	205.03	29.74
Junc N27	90.60	0.07	110.95	20.35	199.63	28.95
Junc N28	91.00	0.10	111.04	20.04	196.59	28.51
Junc N29	89.20	0.20	110.60	21.40	209.93	30.45
Junc N30	88.35	0.18	108.95	20.60	202.09	29.31
Junc N31	88.30	36.17	107.55	19.25	188.84	27.39
Junc N32	88.10	95.07	107.39	19.29	189.23	27.45
Junc N33	87.40	36.07	110.62	23.22	227.79	33.04
Junc N34	87.95	0.47	110.61	22.66	222.29	32.24
Junc N35	87.50	0.22	110.60	23.10	226.61	32.87
Junc N36	86.20	0.20	110.60	24.40	239.36	34.72
Junc N37	89.83	0.20	110.60	20.77	203.75	29.55
Junc N38	90.80	0.13	110.60	19.80	194.24	28.17
Junc N39	91.08	0.18	110.60	19.52	191.49	27.77
Junc N40	90.90	0.12	110.60	19.70	193.26	28.03
Junc N41	90.64	0.18	110.60	19.96	195.81	28.40
Junc N42	90.30	0.15	110.60	20.30	199.14	28.88
Junc N43	90.00	0.07	110.60	20.60	202.09	29.31
Junc N44	89.55	0.08	110.60	21.05	206.50	29.95
Junc N45	88.50	0.06	110.60	22.10	216.80	31.44
Junc N46	87.00	0.05	110.60	23.60	231.52	33.58
Junc N47	86.15	1.62	110.60	24.45	239.85	34.79
Junc N48	86.66	0.27	112.32	25.66	251.72	36.51
Junc N49	84.50	0.26	112.72	28.22	276.84	40.15
Junc N50	82.68	0.25	113.12	30.44	298.62	43.31
Junc N51	81.20	0.79	113.54	32.34	317.26	46.01
Junc N52	85.65	0.00	110.60	24.95	244.76	35.50
Junc N53	85.10	1.73	110.60	25.50	250.16	36.28
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.79	32.94	323.14	46.87
Junc KNE01,14-17	81.00	16.35	114.68	33.68	330.40	47.92
Junc KNE02,11-13,21	82.23	8.78	113.33	31.10	305.09	44.25
Junc KNE03	88.85	0.30	110.60	21.75	213.37	30.95
Junc KNE04,5-6,20	84.00	7.41	112.82	28.82	282.72	41.01
Junc KNE07	88.38	4.03	112.21	23.83	233.77	33.91
Junc KNE08	90.72	0.08	111.48	20.76	203.66	29.54
Junc KNE09	88.86	0.18	111.27	22.41	219.84	31.89
Junc KNE10	89.84	0.08	110.84	21.00	206.01	29.88
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.71	19.06	186.98	27.12
Junc KNE23	91.30	0.11	110.60	19.30	189.33	27.46
Junc KNE24	90.60	0.07	110.60	20.00	196.20	28.46
Junc KNE25	87.40	0.42	111.64	24.24	237.79	34.49
Junc KNE26	90.30	0.05	110.86	20.56	201.69	29.25

Minimum Pressure

MAXIMUM DAY + FIREFLOW DEMAND AT N32
Scenario 1 - Full Buildout (System Level Demands)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	73.52	1.04	4.21	0.023
Pipe P1B	685.00	300	120	73.52	1.04	4.22	0.023
Pipe P2A	580.00	400	120	-145.49	1.16	3.68	0.022
Pipe P2B	300.00	400	120	129.14	1.03	2.95	0.022
Pipe P2C	235.00	400	120	103.31	0.82	1.95	0.023
Pipe P3	260.00	300	120	73.52	1.04	4.22	0.023
Pipe P4	175.00	300	120	66.11	0.94	3.46	0.023
Pipe P5	83.00	300	120	46.81	0.66	1.83	0.025
Pipe P6	82.00	300	120	43.82	0.62	1.62	0.025
Pipe P7	75.00	300	120	-31.91	0.45	0.90	0.026
Pipe P8	75.00	300	120	-31.84	0.45	0.89	0.026
Pipe P9	90.00	300	120	31.77	0.45	0.89	0.026
Pipe P10	90.00	300	120	31.53	0.45	0.88	0.026
Pipe P11	85.00	300	120	-93.89	1.33	6.63	0.022
Pipe P12	85.00	300	120	-93.89	1.33	6.63	0.022
Pipe P13	85.00	300	120	-94.53	1.34	6.72	0.022
Pipe P14	84.00	300	120	36.13	0.51	1.13	0.025
Pipe P15	92.00	200	110	-7.05	0.22	0.46	0.036
Pipe P16	92.00	200	110	-15.19	0.48	1.92	0.032
Pipe P17	110.00	200	110	7.99	0.25	0.59	0.036
Pipe P18	110.00	200	110	7.84	0.25	0.57	0.036
Pipe P19	76.00	200	110	7.72	0.25	0.55	0.036
Pipe P20	110.00	300	120	-24.90	0.35	0.57	0.027
Pipe P21	110.00	300	120	-25.05	0.35	0.57	0.027
Pipe P22	84.00	300	120	32.51	0.46	0.93	0.026
Pipe P23	60.00	300	120	-32.47	0.46	0.93	0.026
Pipe P24	85.00	200	110	-4.68	0.15	0.22	0.038
Pipe P25	83.00	200	110	-4.80	0.15	0.23	0.038
Pipe P26	84.00	200	110	-18.03	0.57	2.64	0.032
Pipe P27	89.00	200	110	13.11	0.42	1.46	0.033
Pipe P28	100.00	200	110	11.97	0.38	1.24	0.033
Pipe P29	75.00	200	110	11.92	0.38	1.23	0.033
Pipe P30	110.00	200	110	-0.96	0.03	0.01	0.049
Pipe P31	99.00	200	110	-0.75	0.02	0.01	0.050
Pipe P32	80.00	300	120	-37.07	0.52	1.19	0.025
Pipe P33	72.00	300	120	-37.74	0.53	1.23	0.025
Pipe P34	103.00	300	120	-37.61	0.53	1.22	0.025
Pipe P35	79.00	300	120	49.35	0.70	2.01	0.024
Pipe P36	102.00	300	120	39.19	0.55	1.31	0.025
Pipe P37	101.00	300	120	39.02	0.55	1.30	0.025
Pipe P38	40.00	250	110	9.70	0.20	0.28	0.036
Pipe P39	40.00	250	110	9.74	0.20	0.29	0.036
Pipe P40	42.00	200	110	-9.87	0.31	0.87	0.034
Pipe P41	58.00	200	110	-9.89	0.31	0.87	0.034
Pipe P42	100.00	200	110	9.96	0.32	0.88	0.034
Pipe P43	76.00	200	110	10.06	0.32	0.90	0.034
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	48.64	0.69	1.96	0.024
Pipe P46	85.00	200	110	52.77	1.68	19.32	0.027
Pipe P47	73.00	200	110	52.59	1.67	19.20	0.027
Pipe P48	75.00	200	110	16.42	0.52	2.22	0.032
Pipe P49	80.00	200	110	-78.65	2.50	40.44	0.025
Pipe P50	90.00	300	120	-124.99	1.77	11.27	0.021
Pipe P51	85.00	300	120	10.28	0.15	0.11	0.031
Pipe N52	100.00	300	120	9.81	0.14	0.10	0.031
Pipe P53	85.00	200	110	2.57	0.08	0.07	0.042
Pipe P54	79.00	250	110	2.87	0.06	0.03	0.043
Pipe P55	70.00	250	110	2.65	0.05	0.03	0.043
Pipe P56	102.00	300	120	4.06	0.06	0.02	0.035
Pipe P57	101.00	300	120	3.86	0.05	0.02	0.035
Pipe P58	82.00	300	120	-2.71	0.04	0.01	0.037
Pipe P59	110.00	300	120	1.50	0.02	0.00	0.041
Pipe P60	110.00	300	120	1.32	0.02	0.00	0.042
Pipe P61	95.00	300	120	-1.21	0.02	0.00	0.042
Pipe P62	110.00	300	120	1.09	0.02	0.00	0.044
Pipe P63	110.00	300	120	0.91	0.01	0.00	0.042
Pipe P64	79.00	200	110	-1.08	0.03	0.01	0.048
Pipe P65	40.00	300	120	-1.84	0.03	0.00	0.041
Pipe P66	40.00	300	120	1.77	0.02	0.00	0.039
Pipe P67	175.00	250	110	0.72	0.01	0.00	0.052
Pipe P68	83.00	250	110	-1.09	0.02	0.00	0.049
Pipe P69	70.00	250	110	-1.01	0.02	0.00	0.050
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.045
Pipe P74	85.00	200	110	-24.26	0.77	4.58	0.030
Pipe P75	85.00	200	110	-24.53	0.78	4.68	0.030
Pipe P76	85.00	200	110	-24.79	0.79	4.77	0.030
Pipe P77	85.00	200	110	-25.04	0.80	4.86	0.030
Pipe P78	82.00	200	110	-15.27	0.49	1.94	0.032
Pipe P79	50.00	200	110	-25.83	0.82	5.15	0.030

MAXIMUM DAY + FIREFLOW DEMAND AT N36 (Max. Achievable)
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-256.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	111.38	30.63	300.48	43.58
Junc N2	88.25	2.99	108.83	20.58	201.89	29.28
Junc N3	88.12	0.04	108.64	20.52	201.30	29.20
Junc N4	87.85	0.07	108.59	20.74	203.46	29.51
Junc N5	87.19	0.24	108.46	21.27	208.66	30.26
Junc N6	84.95	0.00	109.17	24.22	237.60	34.46
Junc N7	82.95	0.64	109.94	26.99	264.77	38.40
Junc N8	88.28	0.11	108.45	20.17	197.87	28.70
Junc N9	88.54	0.15	108.51	19.97	195.91	28.41
Junc N10	88.80	0.08	108.79	19.99	196.10	28.44
Junc N11	90.47	0.15	108.39	17.92	175.80	25.50
Junc N12	92.25	0.12	108.28	16.03	157.25	22.81
Junc N13	89.86	0.15	108.33	18.47	181.19	26.28
Junc N14	91.70	0.04	108.05	16.35	160.39	23.26
Junc N15	91.36	0.08	107.95	16.59	162.75	23.60
Junc N16	89.81	0.12	107.98	18.17	178.25	25.85
Junc N17	88.25	0.12	108.02	19.77	193.94	28.13
Junc N18	88.10	0.18	107.77	19.67	192.96	27.99
Junc N19	88.74	0.05	107.53	18.79	184.33	26.73
Junc N20	89.41	0.21	107.77	18.36	180.11	26.12
Junc N21	90.00	0.13	107.59	17.59	172.56	25.03
Junc N22	90.33	0.10	107.04	16.71	163.93	23.78
Junc N23	90.11	0.17	106.78	16.67	163.53	23.72
Junc N24	89.95	0.04	106.54	16.59	162.75	23.60
Junc N25	90.15	0.08	106.56	16.41	160.98	23.35
Junc N26	90.00	0.02	106.64	16.64	163.24	23.68
Junc N27	90.60	0.07	106.73	16.13	158.24	22.95
Junc N28	91.00	0.10	106.91	15.91	156.08	22.64
Junc N29	89.20	0.20	106.04	16.84	165.20	23.96
Junc N30	88.35	0.18	106.33	17.98	176.38	25.58
Junc N31	88.30	0.17	106.59	18.29	179.42	26.02
Junc N32	88.10	0.07	106.86	18.76	184.04	26.69
Junc N33	87.40	0.07	107.15	19.75	193.75	28.10
Junc N34	87.95	0.47	106.29	18.34	179.92	26.09
Junc N35	87.50	54.22	102.39	14.89	146.07	21.19
Junc N36	86.20	95.20	101.41	15.21	149.21	21.64
Junc N37	89.83	0.20	105.25	15.42	151.27	21.94
Junc N38	90.80	0.13	105.42	14.62	143.42	20.80
Junc N39	91.08	0.18	105.50	14.42	141.46	20.52
Junc N40	90.90	0.12	105.66	14.76	144.80	21.00
Junc N41	90.64	0.18	105.75	15.11	148.23	21.50
Junc N42	90.30	0.15	105.83	15.53	152.35	22.10
Junc N43	90.00	0.07	105.94	15.94	156.37	22.68
Junc N44	89.55	0.08	104.23	14.68	144.01	20.89
Junc N45	88.50	0.06	103.40	14.90	146.17	21.20
Junc N46	87.00	0.05	103.40	16.40	160.88	23.33
Junc N47	86.15	1.62	103.40	17.25	169.22	24.54
Junc N48	86.66	0.27	109.21	22.55	221.22	32.08
Junc N49	84.50	0.26	109.78	25.28	248.00	35.97
Junc N50	82.68	0.25	110.37	27.69	271.64	39.40
Junc N51	81.20	0.79	110.96	29.76	291.95	42.34
Junc N52	85.65	54.00	100.98	15.33	150.39	21.81
Junc N53	85.10	1.73	100.98	15.88	155.78	22.59
Junc N54	82.25	0.00	115.31	33.06	324.32	47.04
Junc N55	80.85	0.00	111.33	30.48	299.01	43.37
Junc KNE01,14-17	81.00	16.35	112.52	31.52	309.21	44.85
Junc KNE02,11-13,21	82.23	8.78	110.72	28.49	279.49	40.54
Junc KNE03	88.85	0.30	105.28	16.43	161.18	23.38
Junc KNE04,5-6,20	84.00	7.41	109.89	25.89	253.98	36.84
Junc KNE07	88.38	4.03	109.04	20.66	202.67	29.40
Junc KNE08	90.72	0.08	107.76	17.04	167.16	24.24
Junc KNE09	88.86	0.18	107.35	18.49	181.39	26.31
Junc KNE10	89.84	0.08	106.52	16.68	163.63	23.73
Junc KNE18	87.52	0.07	108.53	21.01	206.11	29.89
Junc KNE19	78.25	1.58	115.31	37.06	363.56	52.73
Junc KNE22	92.65	0.11	108.20	15.55	152.55	22.12
Junc KNE23	91.30	0.11	105.59	14.29	140.18	20.33
Junc KNE24	90.60	0.07	105.22	14.62	143.42	20.80
Junc KNE25	87.40	0.42	108.40	21.00	206.01	29.88
Junc KNE26	90.30	0.05	106.56	16.26	159.51	23.14

Minimum Pressure
Maximum Fireflow (sum)

MAXIMUM DAY + FIREFLOW DEMAND AT N36 (Max. Achievable)
Scenario 1 - Full Buildout (System Level Demands)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	256.59	0.00	-115.31	0.000
Pipe P1A	1.00	300	120	86.77	1.23	5.73	0.022
Pipe P1B	685.00	300	120	86.77	1.23	5.73	0.022
Pipe P2A	580.00	400	120	-168.24	1.34	4.81	0.021
Pipe P2B	300.00	400	120	151.89	1.21	3.98	0.021
Pipe P2C	235.00	400	120	120.64	0.96	2.60	0.022
Pipe P3	260.00	300	120	86.77	1.23	5.73	0.022
Pipe P4	175.00	300	120	79.36	1.12	4.86	0.023
Pipe P5	83.00	300	120	55.77	0.79	2.53	0.024
Pipe P6	82.00	300	120	52.78	0.75	2.28	0.024
Pipe P7	75.00	300	120	-29.17	0.41	0.76	0.026
Pipe P8	75.00	300	120	-29.10	0.41	0.76	0.026
Pipe P9	90.00	300	120	29.03	0.41	0.75	0.026
Pipe P10	90.00	300	120	28.79	0.41	0.74	0.026
Pipe P11	85.00	300	120	-111.22	1.57	9.08	0.022
Pipe P12	85.00	300	120	-111.22	1.57	9.08	0.022
Pipe P13	85.00	300	120	-111.86	1.58	9.17	0.022
Pipe P14	84.00	300	120	53.25	0.75	2.32	0.024
Pipe P15	92.00	200	110	-8.40	0.27	0.64	0.035
Pipe P16	92.00	200	110	-19.48	0.62	3.05	0.031
Pipe P17	110.00	200	110	10.93	0.35	1.05	0.034
Pipe P18	110.00	200	110	10.78	0.34	1.02	0.034
Pipe P19	76.00	200	110	10.66	0.34	1.00	0.034
Pipe P20	110.00	300	120	-35.69	0.50	1.11	0.026
Pipe P21	110.00	300	120	-35.84	0.51	1.11	0.026
Pipe P22	84.00	300	120	46.24	0.65	1.79	0.025
Pipe P23	60.00	300	120	-46.20	0.65	1.78	0.025
Pipe P24	85.00	200	110	-6.75	0.21	0.43	0.036
Pipe P25	83.00	200	110	-6.87	0.22	0.44	0.036
Pipe P26	84.00	200	110	-25.70	0.82	5.10	0.030
Pipe P27	89.00	200	110	18.71	0.60	2.83	0.031
Pipe P28	100.00	200	110	17.13	0.55	2.40	0.032
Pipe P29	75.00	200	110	17.08	0.54	2.39	0.032
Pipe P30	110.00	200	110	-1.40	0.04	0.02	0.046
Pipe P31	99.00	200	110	-1.19	0.04	0.02	0.047
Pipe P32	80.00	300	120	-52.87	0.75	2.29	0.024
Pipe P33	72.00	300	120	-53.99	0.76	2.38	0.024
Pipe P34	103.00	300	120	-53.86	0.76	2.37	0.024
Pipe P35	79.00	300	120	70.75	1.00	3.93	0.023
Pipe P36	102.00	300	120	56.25	0.80	2.57	0.024
Pipe P37	101.00	300	120	56.08	0.79	2.55	0.024
Pipe P38	40.00	250	110	14.04	0.29	0.56	0.034
Pipe P39	40.00	250	110	14.08	0.29	0.56	0.034
Pipe P40	42.00	200	110	-14.21	0.45	1.70	0.033
Pipe P41	58.00	200	110	-14.23	0.45	1.71	0.033
Pipe P42	100.00	200	110	14.30	0.46	1.72	0.033
Pipe P43	76.00	200	110	14.40	0.46	1.74	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	70.04	0.99	3.85	0.023
Pipe P46	85.00	200	110	-20.94	0.67	3.49	0.031
Pipe P47	73.00	200	110	-21.12	0.67	3.54	0.031
Pipe P48	75.00	200	110	-21.29	0.68	3.59	0.031
Pipe P49	80.00	200	110	-21.36	0.68	3.62	0.031
Pipe P50	90.00	300	120	-139.59	1.97	13.82	0.021
Pipe P51	85.00	300	120	118.16	1.67	10.15	0.021
Pipe N52	100.00	300	120	117.69	1.66	10.08	0.021
Pipe P53	85.00	200	110	-34.73	1.11	8.90	0.029
Pipe P54	79.00	250	110	133.94	2.73	36.56	0.024
Pipe P55	70.00	250	110	79.72	1.62	13.98	0.026
Pipe P56	102.00	300	120	18.19	0.26	0.32	0.028
Pipe P57	101.00	300	120	17.99	0.25	0.31	0.028
Pipe P58	82.00	300	120	55.10	0.78	2.47	0.024
Pipe P59	110.00	300	120	-29.14	0.41	0.76	0.026
Pipe P60	110.00	300	120	-29.32	0.41	0.77	0.026
Pipe P61	95.00	300	120	29.43	0.42	0.77	0.026
Pipe P62	110.00	300	120	-29.55	0.42	0.78	0.026
Pipe P63	110.00	300	120	-29.73	0.42	0.79	0.026
Pipe P64	79.00	200	110	26.09	0.83	5.24	0.030
Pipe P65	40.00	300	120	55.97	0.79	2.54	0.024
Pipe P66	40.00	300	120	-56.04	0.79	2.55	0.024
Pipe P67	175.00	250	110	-71.21	1.45	11.35	0.026
Pipe P68	83.00	250	110	-73.02	1.49	11.89	0.026
Pipe P69	70.00	250	110	-72.94	1.49	11.87	0.026
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	55.73	1.14	7.21	0.027
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-29.68	0.94	6.65	0.029
Pipe P75	85.00	200	110	-29.95	0.95	6.77	0.029
Pipe P76	85.00	200	110	-30.21	0.96	6.87	0.029
Pipe P77	85.00	200	110	-30.46	0.97	6.98	0.029
Pipe P78	82.00	200	110	-19.56	0.62	3.07	0.031
Pipe P79	50.00	200	110	-31.25	0.99	7.32	0.029

MAXIMUM DAY + FIREFLOW DEMAND AT N42
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.86	33.11	324.81	47.11
Junc N2	88.25	2.99	111.97	23.72	232.69	33.75
Junc N3	88.12	0.04	111.84	23.72	232.69	33.75
Junc N4	87.85	0.07	111.82	23.97	235.15	34.10
Junc N5	87.19	0.24	111.77	24.58	241.13	34.97
Junc N6	84.95	0.00	112.28	27.33	268.11	38.89
Junc N7	82.95	0.64	112.83	29.88	293.12	42.51
Junc N8	88.28	0.11	111.67	23.39	229.46	33.28
Junc N9	88.54	0.15	111.71	23.17	227.30	32.97
Junc N10	88.80	0.08	111.93	23.13	226.91	32.91
Junc N11	90.47	0.15	111.62	21.15	207.48	30.09
Junc N12	92.25	0.12	111.53	19.28	189.14	27.43
Junc N13	89.86	0.15	111.57	21.71	212.98	30.89
Junc N14	91.70	0.04	111.34	19.64	192.67	27.94
Junc N15	91.36	0.08	111.25	19.89	195.12	28.30
Junc N16	89.81	0.12	111.28	21.47	210.62	30.55
Junc N17	88.25	0.12	111.31	23.06	226.22	32.81
Junc N18	88.10	0.18	111.10	23.00	225.63	32.72
Junc N19	88.74	0.05	110.89	22.15	217.29	31.52
Junc N20	89.41	0.21	111.09	21.68	212.68	30.85
Junc N21	90.00	0.13	110.95	20.95	205.52	29.81
Junc N22	90.33	0.10	110.48	20.15	197.67	28.67
Junc N23	90.11	0.17	110.26	20.15	197.67	28.67
Junc N24	89.95	0.04	110.06	20.11	197.28	28.61
Junc N25	90.15	0.08	110.08	19.93	195.51	28.36
Junc N26	90.00	0.02	110.14	20.14	197.57	28.66
Junc N27	90.60	0.07	110.22	19.62	192.47	27.92
Junc N28	91.00	0.10	110.37	19.37	190.02	27.56
Junc N29	89.20	0.20	109.64	20.44	200.52	29.08
Junc N30	88.35	0.18	109.98	21.63	212.19	30.78
Junc N31	88.30	0.17	110.29	21.99	215.72	31.29
Junc N32	88.10	0.07	110.60	22.50	220.73	32.01
Junc N33	87.40	0.07	110.94	23.54	230.93	33.49
Junc N34	87.95	0.47	110.45	22.50	220.73	32.01
Junc N35	87.50	0.22	109.81	22.31	218.86	31.74
Junc N36	86.20	0.20	109.75	23.55	231.03	33.51
Junc N37	89.83	0.20	109.70	19.87	194.92	28.27
Junc N38	90.80	36.13	109.26	18.46	181.09	26.27
Junc N39	91.08	0.18	109.23	18.15	178.05	25.82
Junc N40	90.90	0.12	109.20	18.30	179.52	26.04
Junc N41	90.64	0.18	109.17	18.53	181.78	26.36
Junc N42	90.30	95.15	109.15	18.85	184.92	26.82
Junc N43	90.00	36.07	109.31	19.31	189.43	27.47
Junc N44	89.55	0.08	109.56	20.01	196.30	28.47
Junc N45	88.50	0.06	109.61	21.11	207.09	30.04
Junc N46	87.00	0.05	109.61	22.61	221.80	32.17
Junc N47	86.15	1.62	109.61	23.46	230.14	33.38
Junc N48	86.66	0.27	112.26	25.60	251.14	36.42
Junc N49	84.50	0.26	112.68	28.18	276.45	40.10
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.55	32.35	317.35	46.03
Junc N52	85.65	0.00	109.74	24.09	236.32	34.28
Junc N53	85.10	1.73	109.74	24.64	241.72	35.06
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.82	32.97	323.44	46.91
Junc KNE01,14-17	81.00	16.35	114.70	33.70	330.60	47.95
Junc KNE02,11-13,21	82.23	8.78	113.38	31.15	305.58	44.32
Junc KNE03	88.85	0.30	109.89	21.04	206.40	29.94
Junc KNE04,5-6,20	84.00	7.41	112.74	28.74	281.94	40.89
Junc KNE07	88.38	4.03	112.12	23.74	232.89	33.78
Junc KNE08	90.72	0.08	111.09	20.37	199.83	28.98
Junc KNE09	88.86	0.18	110.74	21.88	214.64	31.13
Junc KNE10	89.84	0.08	110.04	20.20	198.16	28.74
Junc KNE18	87.52	0.07	111.79	24.27	238.09	34.53
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.46	18.81	184.53	26.76
Junc KNE23	91.30	0.11	109.21	17.91	175.70	25.48
Junc KNE24	90.60	0.07	109.51	18.91	185.51	26.91
Junc KNE25	87.40	0.42	111.74	24.34	238.78	34.63
Junc KNE26	90.30	0.05	110.08	19.78	194.04	28.14

Minimum Pressure

MAXIMUM DAY + FIREFLOW DEMAND AT N42
Scenario 1 - Full Buildout (System Level Demands)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.34	1.05	4.31	0.023
Pipe P1B	685.00	300	120	74.34	1.05	4.30	0.023
Pipe P2A	580.00	400	120	-144.67	1.15	3.64	0.022
Pipe P2B	300.00	400	120	128.32	1.02	2.91	0.022
Pipe P2C	235.00	400	120	101.64	0.81	1.89	0.023
Pipe P3	260.00	300	120	74.34	1.05	4.30	0.023
Pipe P4	175.00	300	120	66.93	0.95	3.54	0.023
Pipe P5	83.00	300	120	46.00	0.65	1.77	0.025
Pipe P6	82.00	300	120	43.01	0.61	1.56	0.025
Pipe P7	75.00	300	120	-18.41	0.26	0.32	0.028
Pipe P8	75.00	300	120	-18.34	0.26	0.32	0.028
Pipe P9	90.00	300	120	18.27	0.26	0.32	0.028
Pipe P10	90.00	300	120	18.03	0.26	0.31	0.028
Pipe P11	85.00	300	120	-92.22	1.30	6.42	0.022
Pipe P12	85.00	300	120	-92.22	1.30	6.42	0.022
Pipe P13	85.00	300	120	-92.86	1.31	6.50	0.022
Pipe P14	84.00	300	120	49.67	0.70	2.04	0.024
Pipe P15	92.00	200	110	-6.83	0.22	0.44	0.036
Pipe P16	92.00	200	110	-16.82	0.54	2.32	0.032
Pipe P17	110.00	200	110	9.83	0.31	0.86	0.034
Pipe P18	110.00	200	110	9.68	0.31	0.84	0.035
Pipe P19	76.00	200	110	9.56	0.30	0.82	0.035
Pipe P20	110.00	300	120	-32.74	0.46	0.94	0.026
Pipe P21	110.00	300	120	-32.89	0.47	0.95	0.026
Pipe P22	84.00	300	120	42.19	0.60	1.51	0.025
Pipe P23	60.00	300	120	-42.15	0.60	1.50	0.025
Pipe P24	85.00	200	110	-6.18	0.20	0.36	0.037
Pipe P25	83.00	200	110	-6.30	0.20	0.38	0.037
Pipe P26	84.00	200	110	-23.51	0.75	4.32	0.030
Pipe P27	89.00	200	110	17.09	0.54	2.39	0.032
Pipe P28	100.00	200	110	15.62	0.50	2.03	0.032
Pipe P29	75.00	200	110	15.57	0.50	2.02	0.032
Pipe P30	110.00	200	110	-1.29	0.04	0.02	0.046
Pipe P31	99.00	200	110	-1.08	0.03	0.01	0.048
Pipe P32	80.00	300	120	-48.25	0.68	1.93	0.024
Pipe P33	72.00	300	120	-49.25	0.70	2.01	0.024
Pipe P34	103.00	300	120	-49.12	0.69	2.00	0.024
Pipe P35	79.00	300	120	64.51	0.91	3.31	0.023
Pipe P36	102.00	300	120	51.28	0.73	2.16	0.024
Pipe P37	101.00	300	120	51.11	0.72	2.15	0.024
Pipe P38	40.00	250	110	12.77	0.26	0.47	0.034
Pipe P39	40.00	250	110	12.81	0.26	0.47	0.034
Pipe P40	42.00	200	110	-12.94	0.41	1.43	0.033
Pipe P41	58.00	200	110	-12.96	0.41	1.44	0.033
Pipe P42	100.00	200	110	13.03	0.41	1.45	0.033
Pipe P43	76.00	200	110	13.13	0.42	1.47	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	63.80	0.90	3.24	0.023
Pipe P46	85.00	200	110	-22.80	0.73	4.08	0.030
Pipe P47	73.00	200	110	-22.98	0.73	4.14	0.030
Pipe P48	75.00	200	110	-23.15	0.74	4.20	0.030
Pipe P49	80.00	200	110	-23.22	0.74	4.22	0.030
Pipe P50	90.00	300	120	-109.83	1.55	8.87	0.022
Pipe P51	85.00	300	120	86.54	1.22	5.70	0.022
Pipe N52	100.00	300	120	86.07	1.22	5.64	0.022
Pipe P53	85.00	200	110	19.23	0.61	2.98	0.031
Pipe P54	79.00	250	110	19.00	0.39	0.98	0.032
Pipe P55	70.00	250	110	18.78	0.38	0.96	0.032
Pipe P56	102.00	300	120	47.54	0.67	1.88	0.024
Pipe P57	101.00	300	120	47.34	0.67	1.87	0.024
Pipe P58	82.00	300	120	-62.31	0.88	3.10	0.024
Pipe P59	110.00	300	120	14.01	0.20	0.20	0.029
Pipe P60	110.00	300	120	13.83	0.20	0.19	0.029
Pipe P61	95.00	300	120	-13.72	0.19	0.19	0.029
Pipe P62	110.00	300	120	13.60	0.19	0.19	0.029
Pipe P63	110.00	300	120	13.42	0.19	0.18	0.030
Pipe P64	79.00	200	110	-12.16	0.39	1.27	0.033
Pipe P65	40.00	300	120	69.56	0.98	3.81	0.023
Pipe P66	40.00	300	120	-105.63	1.49	8.25	0.022
Pipe P67	175.00	250	110	16.85	0.34	0.79	0.033
Pipe P68	83.00	250	110	15.04	0.31	0.64	0.033
Pipe P69	70.00	250	110	15.12	0.31	0.64	0.033
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-25.11	0.80	4.88	0.030
Pipe P75	85.00	200	110	-25.38	0.81	4.98	0.030
Pipe P76	85.00	200	110	-25.64	0.82	5.08	0.030
Pipe P77	85.00	200	110	-25.89	0.82	5.17	0.030
Pipe P78	82.00	200	110	-16.90	0.54	2.34	0.032
Pipe P79	50.00	200	110	-26.68	0.85	5.46	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.87	33.12	324.91	47.12
Junc N2	88.25	2.99	112.00	23.75	232.99	33.79
Junc N3	88.12	0.04	111.87	23.75	232.99	33.79
Junc N4	87.85	0.07	111.83	23.98	235.24	34.12
Junc N5	87.19	0.24	111.75	24.56	240.93	34.94
Junc N6	84.95	0.00	112.26	27.31	267.91	38.86
Junc N7	82.95	0.64	112.81	29.86	292.93	42.49
Junc N8	88.28	0.11	111.72	23.44	229.95	33.35
Junc N9	88.54	0.15	111.76	23.22	227.79	33.04
Junc N10	88.80	0.08	111.96	23.16	227.20	32.95
Junc N11	90.47	0.15	111.68	21.21	208.07	30.18
Junc N12	92.25	0.12	111.60	19.35	189.82	27.53
Junc N13	89.86	0.15	111.63	21.77	213.56	30.97
Junc N14	91.70	0.04	111.43	19.73	193.55	28.07
Junc N15	91.36	0.08	111.35	19.99	196.10	28.44
Junc N16	89.81	0.12	111.38	21.57	211.60	30.69
Junc N17	88.25	0.12	111.41	23.16	227.20	32.95
Junc N18	88.10	0.18	111.22	23.12	226.81	32.90
Junc N19	88.74	0.05	111.05	22.31	218.86	31.74
Junc N20	89.41	0.21	111.22	21.81	213.96	31.03
Junc N21	90.00	0.13	111.09	21.09	206.89	30.01
Junc N22	90.33	0.10	110.69	20.36	199.73	28.97
Junc N23	90.11	0.17	110.50	20.39	200.03	29.01
Junc N24	89.95	0.04	110.33	20.38	199.93	29.00
Junc N25	90.15	0.08	110.34	20.19	198.06	28.73
Junc N26	90.00	0.02	110.39	20.39	200.03	29.01
Junc N27	90.60	0.07	110.47	19.87	194.92	28.27
Junc N28	91.00	0.10	110.59	19.59	192.18	27.87
Junc N29	89.20	0.20	109.96	20.76	203.66	29.54
Junc N30	88.35	0.18	110.19	21.84	214.25	31.07
Junc N31	88.30	0.17	110.40	22.10	216.80	31.44
Junc N32	88.10	0.07	110.61	22.51	220.82	32.03
Junc N33	87.40	0.07	110.85	23.45	230.04	33.37
Junc N34	87.95	0.47	110.26	22.31	218.86	31.74
Junc N35	87.50	0.22	108.68	21.18	207.78	30.14
Junc N36	86.20	0.20	107.88	21.68	212.68	30.85
Junc N37	89.83	0.20	109.39	19.56	191.88	27.83
Junc N38	90.80	0.13	109.39	18.59	182.37	26.45
Junc N39	91.08	0.18	109.47	18.39	180.41	26.17
Junc N40	90.90	0.12	109.61	18.71	183.55	26.62
Junc N41	90.64	0.18	109.69	19.05	186.88	27.10
Junc N42	90.30	0.15	109.77	19.47	191.00	27.70
Junc N43	90.00	0.07	109.87	19.87	194.92	28.27
Junc N44	89.55	0.08	107.46	17.91	175.70	25.48
Junc N45	88.50	0.06	105.99	17.49	171.58	24.89
Junc N46	87.00	72.05	102.51	15.51	152.15	22.07
Junc N47	86.15	96.62	101.02	14.87	145.87	21.16
Junc N48	86.66	0.27	112.27	25.61	251.23	36.44
Junc N49	84.50	0.26	112.69	28.19	276.54	40.11
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.55	32.35	317.35	46.03
Junc N52	85.65	0.00	107.88	22.23	218.08	31.63
Junc N53	85.10	1.73	107.88	22.78	223.47	32.41
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.82	32.97	323.44	46.91
Junc KNE01,14-17	81.00	16.35	114.69	33.69	330.50	47.93
Junc KNE02,11-13,21	82.23	8.78	113.37	31.14	305.48	44.31
Junc KNE03	88.85	0.30	109.58	20.73	203.36	29.50
Junc KNE04,5-6,20	84.00	7.41	112.76	28.76	282.14	40.92
Junc KNE07	88.38	4.03	112.14	23.76	233.09	33.81
Junc KNE08	90.72	0.08	111.22	20.50	201.11	29.17
Junc KNE09	88.86	0.18	110.91	22.05	216.31	31.37
Junc KNE10	89.84	0.08	110.31	20.47	200.81	29.13
Junc KNE18	87.52	0.07	111.79	24.27	238.09	34.53
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.54	18.89	185.31	26.88
Junc KNE23	91.30	0.11	109.55	18.25	179.03	25.97
Junc KNE24	90.60	0.07	109.21	18.61	182.56	26.48
Junc KNE25	87.40	0.42	111.71	24.31	238.48	34.59
Junc KNE26	90.30	0.05	110.34	20.04	196.59	28.51

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.11	1.05	4.28	0.023
Pipe P1B	685.00	300	120	74.11	1.05	4.28	0.023
Pipe P2A	580.00	400	120	-144.90	1.15	3.65	0.022
Pipe P2B	300.00	400	120	128.55	1.02	2.92	0.022
Pipe P2C	235.00	400	120	102.10	0.81	1.91	0.023
Pipe P3	260.00	300	120	74.11	1.05	4.28	0.023
Pipe P4	175.00	300	120	66.70	0.94	3.52	0.023
Pipe P5	83.00	300	120	46.31	0.66	1.79	0.025
Pipe P6	82.00	300	120	43.32	0.61	1.58	0.025
Pipe P7	75.00	300	120	-22.76	0.32	0.48	0.027
Pipe P8	75.00	300	120	-22.69	0.32	0.48	0.027
Pipe P9	90.00	300	120	22.62	0.32	0.48	0.027
Pipe P10	90.00	300	120	22.38	0.32	0.47	0.027
Pipe P11	85.00	300	120	-92.68	1.31	6.47	0.022
Pipe P12	85.00	300	120	-92.68	1.31	6.47	0.022
Pipe P13	85.00	300	120	-93.32	1.32	6.56	0.022
Pipe P14	84.00	300	120	45.40	0.64	1.73	0.025
Pipe P15	92.00	200	110	-6.90	0.22	0.45	0.036
Pipe P16	92.00	200	110	-16.28	0.52	2.19	0.032
Pipe P17	110.00	200	110	9.24	0.29	0.77	0.035
Pipe P18	110.00	200	110	9.09	0.29	0.74	0.035
Pipe P19	76.00	200	110	8.97	0.29	0.72	0.035
Pipe P20	110.00	300	120	-30.26	0.43	0.81	0.026
Pipe P21	110.00	300	120	-30.41	0.43	0.82	0.026
Pipe P22	84.00	300	120	39.12	0.55	1.31	0.025
Pipe P23	60.00	300	120	-39.08	0.55	1.31	0.025
Pipe P24	85.00	200	110	-5.70	0.18	0.31	0.037
Pipe P25	83.00	200	110	-5.82	0.19	0.33	0.037
Pipe P26	84.00	200	110	-21.77	0.69	3.75	0.031
Pipe P27	89.00	200	110	15.83	0.50	2.08	0.032
Pipe P28	100.00	200	110	14.46	0.46	1.76	0.033
Pipe P29	75.00	200	110	14.41	0.46	1.75	0.033
Pipe P30	110.00	200	110	-1.19	0.04	0.02	0.047
Pipe P31	99.00	200	110	-0.98	0.03	0.01	0.049
Pipe P32	80.00	300	120	-44.70	0.63	1.68	0.025
Pipe P33	72.00	300	120	-45.60	0.65	1.74	0.025
Pipe P34	103.00	300	120	-45.47	0.64	1.73	0.025
Pipe P35	79.00	300	120	59.70	0.84	2.87	0.024
Pipe P36	102.00	300	120	47.44	0.67	1.87	0.024
Pipe P37	101.00	300	120	47.27	0.67	1.86	0.025
Pipe P38	40.00	250	110	11.80	0.24	0.41	0.035
Pipe P39	40.00	250	110	11.84	0.24	0.41	0.035
Pipe P40	42.00	200	110	-11.97	0.38	1.24	0.033
Pipe P41	58.00	200	110	-11.99	0.38	1.24	0.033
Pipe P42	100.00	200	110	12.06	0.38	1.26	0.033
Pipe P43	76.00	200	110	12.16	0.39	1.27	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	58.99	0.83	2.80	0.024
Pipe P46	85.00	200	110	-18.49	0.59	2.77	0.031
Pipe P47	73.00	200	110	-18.67	0.59	2.82	0.031
Pipe P48	75.00	200	110	-18.84	0.60	2.87	0.031
Pipe P49	80.00	200	110	-18.91	0.60	2.89	0.031
Pipe P50	90.00	300	120	-114.64	1.62	9.60	0.021
Pipe P51	85.00	300	120	95.66	1.35	6.86	0.022
Pipe N52	100.00	300	120	95.19	1.35	6.80	0.022
Pipe P53	85.00	200	110	-23.82	0.76	4.43	0.030
Pipe P54	79.00	250	110	71.54	1.46	11.45	0.026
Pipe P55	70.00	250	110	71.32	1.45	11.38	0.026
Pipe P56	102.00	300	120	47.17	0.67	1.85	0.025
Pipe P57	101.00	300	120	46.97	0.66	1.84	0.025
Pipe P58	82.00	300	120	52.52	0.74	2.26	0.024
Pipe P59	110.00	300	120	-27.77	0.39	0.69	0.027
Pipe P60	110.00	300	120	-27.95	0.40	0.70	0.026
Pipe P61	95.00	300	120	28.06	0.40	0.71	0.026
Pipe P62	110.00	300	120	-28.18	0.40	0.71	0.026
Pipe P63	110.00	300	120	-28.36	0.40	0.72	0.026
Pipe P64	79.00	200	110	24.88	0.79	4.80	0.030
Pipe P65	40.00	300	120	53.39	0.76	2.33	0.024
Pipe P66	40.00	300	120	-53.46	0.76	2.34	0.024
Pipe P67	175.00	250	110	69.39	1.41	10.82	0.027
Pipe P68	83.00	250	110	-99.42	2.03	21.05	0.025
Pipe P69	70.00	250	110	-99.34	2.02	21.02	0.025
Pipe P70	62.00	250	110	168.67	3.44	56.04	0.023
Pipe P71	75.00	250	110	96.62	1.97	19.97	0.025
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-24.88	0.79	4.80	0.030
Pipe P75	85.00	200	110	-25.15	0.80	4.90	0.030
Pipe P76	85.00	200	110	-25.41	0.81	4.99	0.030
Pipe P77	85.00	200	110	-25.66	0.82	5.08	0.030
Pipe P78	82.00	200	110	-16.36	0.52	2.21	0.032
Pipe P79	50.00	200	110	-26.45	0.84	5.38	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-275.25	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	110.03	29.28	287.24	41.66
Junc N2	88.25	2.99	107.21	18.96	186.00	26.98
Junc N3	88.12	63.37	106.96	18.84	184.82	26.81
Junc N4	87.85	0.07	107.14	19.29	189.23	27.45
Junc N5	87.19	0.24	107.52	20.33	199.44	28.93
Junc N6	84.95	0.00	108.22	23.27	228.28	33.11
Junc N7	82.95	0.64	108.71	25.76	252.71	36.65
Junc N8	88.28	0.11	107.07	18.79	184.33	26.73
Junc N9	88.54	0.15	107.17	18.63	182.76	26.51
Junc N10	88.80	0.08	107.34	18.54	181.88	26.38
Junc N11	90.47	0.15	107.16	16.69	163.73	23.75
Junc N12	92.25	0.12	107.14	14.89	146.07	21.19
Junc N13	89.86	0.15	107.10	17.24	169.12	24.53
Junc N14	91.70	0.04	107.15	15.45	151.56	21.98
Junc N15	91.36	0.08	107.17	15.81	155.10	22.49
Junc N16	89.81	0.12	107.16	17.35	170.20	24.69
Junc N17	88.25	0.12	107.15	18.90	185.41	26.89
Junc N18	88.10	0.18	107.19	19.09	187.27	27.16
Junc N19	88.74	0.05	107.23	18.49	181.39	26.31
Junc N20	89.41	0.21	107.19	17.78	174.42	25.30
Junc N21	90.00	0.13	107.22	17.22	168.93	24.50
Junc N22	90.33	0.10	107.30	16.97	166.48	24.15
Junc N23	90.11	0.17	107.35	17.24	169.12	24.53
Junc N24	89.95	0.04	107.38	17.43	170.99	24.80
Junc N25	90.15	0.08	107.38	17.23	169.03	24.52
Junc N26	90.00	0.02	107.37	17.37	170.40	24.71
Junc N27	90.60	0.07	107.35	16.75	164.32	23.83
Junc N28	91.00	0.10	107.32	16.32	160.10	23.22
Junc N29	89.20	0.20	107.47	18.27	179.23	25.99
Junc N30	88.35	0.18	107.51	19.16	187.96	27.26
Junc N31	88.30	0.17	107.55	19.25	188.84	27.39
Junc N32	88.10	0.07	107.59	19.49	191.20	27.73
Junc N33	87.40	0.07	107.64	20.24	198.55	28.80
Junc N34	87.95	0.47	107.59	19.64	192.67	27.94
Junc N35	87.50	0.22	107.52	20.02	196.40	28.48
Junc N36	86.20	0.20	107.52	21.32	209.15	30.33
Junc N37	89.83	0.20	107.52	17.69	173.54	25.17
Junc N38	90.80	0.13	107.50	16.70	163.83	23.76
Junc N39	91.08	0.18	107.49	16.41	160.98	23.35
Junc N40	90.90	0.12	107.49	16.59	162.75	23.60
Junc N41	90.64	0.18	107.48	16.84	165.20	23.96
Junc N42	90.30	0.15	107.48	17.18	168.54	24.44
Junc N43	90.00	0.07	107.47	17.47	171.38	24.86
Junc N44	89.55	0.08	107.51	17.96	176.19	25.55
Junc N45	88.50	0.06	107.51	19.01	186.49	27.05
Junc N46	87.00	0.05	107.51	20.51	201.20	29.18
Junc N47	86.15	1.62	107.51	21.36	209.54	30.39
Junc N48	86.66	95.27	102.56	15.90	155.98	22.62
Junc N49	84.50	63.59	102.58	18.08	177.36	25.72
Junc N50	82.68	0.25	105.27	22.59	221.61	32.14
Junc N51	81.20	0.79	107.99	26.79	262.81	38.12
Junc N52	85.65	0.00	107.52	21.87	214.54	31.12
Junc N53	85.10	1.73	107.52	22.42		
Junc N54	82.25	0.00	114.29	32.04	314.31	45.59
Junc N55	80.85	0.00	109.62	28.77	282.23	40.93
Junc KNE01,14-17	81.00	16.35	111.03	30.03	294.59	42.73
Junc KNE02,11-13,21	82.23	8.78	109.21	26.98	264.67	38.39
Junc KNE03	88.85	0.30	107.53	18.68	183.25	26.58
Junc KNE04,5-6,20	84.00	7.41	108.41	24.41	239.46	34.73
Junc KNE07	88.38	4.03	107.49	19.11	187.47	27.19
Junc KNE08	90.72	0.08	107.19	16.47	161.57	23.43
Junc KNE09	88.86	0.18	107.26	18.40	180.50	26.18
Junc KNE10	89.84	0.08	107.39	17.55	172.17	24.97
Junc KNE18	87.52	0.07	107.31	19.79	194.14	28.16
Junc KNE19	78.25	1.58	114.29	36.04	353.55	51.28
Junc KNE22	92.65	0.11	107.14	14.49	142.15	20.62
Junc KNE23	91.30	0.11	107.49	16.19	158.82	23.04
Junc KNE24	90.60	0.07	107.51	16.91	165.89	24.06
Junc KNE25	87.40	0.42	107.73	20.33	199.44	28.93
Junc KNE26	90.30	0.05	107.38	17.08	167.55	24.30

Minimum Pressure
Maximum Fireflow (sum)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	275.25	0.00	-114.29	0.000
Pipe P1A	1.00	300	120	90.66	1.28	6.21	0.022
Pipe P1B	685.00	300	120	90.66	1.28	6.22	0.022
Pipe P2A	580.00	400	120	-183.01	1.46	5.62	0.021
Pipe P2B	300.00	400	120	166.66	1.33	4.73	0.021
Pipe P2C	235.00	400	120	96.67	0.77	1.72	0.023
Pipe P3	260.00	300	120	90.66	1.28	6.22	0.022
Pipe P4	175.00	300	120	83.25	1.18	5.31	0.023
Pipe P5	83.00	300	120	64.47	0.91	3.31	0.023
Pipe P6	82.00	300	120	61.48	0.87	3.03	0.024
Pipe P7	75.00	300	120	53.07	0.75	2.31	0.024
Pipe P8	75.00	300	120	53.14	0.75	2.31	0.024
Pipe P9	90.00	300	120	-53.21	0.75	2.32	0.024
Pipe P10	90.00	300	120	-53.45	0.76	2.34	0.024
Pipe P11	85.00	300	120	-87.25	1.23	5.79	0.022
Pipe P12	85.00	300	120	-87.25	1.23	5.79	0.022
Pipe P13	85.00	300	120	-87.89	1.24	5.87	0.022
Pipe P14	84.00	300	120	-38.74	0.55	1.29	0.025
Pipe P15	92.00	200	110	-11.11	0.35	1.08	0.034
Pipe P16	92.00	200	110	-14.67	0.47	1.80	0.032
Pipe P17	110.00	200	110	3.41	0.11	0.12	0.040
Pipe P18	110.00	200	110	3.26	0.10	0.11	0.041
Pipe P19	76.00	200	110	3.14	0.10	0.10	0.041
Pipe P20	110.00	300	120	17.69	0.25	0.30	0.028
Pipe P21	110.00	300	120	17.54	0.25	0.30	0.028
Pipe P22	84.00	300	120	-14.66	0.21	0.21	0.029
Pipe P23	60.00	300	120	14.70	0.21	0.21	0.029
Pipe P24	85.00	200	110	3.37	0.11	0.12	0.040
Pipe P25	83.00	200	110	3.25	0.10	0.11	0.041
Pipe P26	84.00	200	110	10.20	0.32	0.92	0.034
Pipe P27	89.00	200	110	-7.07	0.23	0.47	0.036
Pipe P28	100.00	200	110	-6.28	0.20	0.37	0.037
Pipe P29	75.00	200	110	-6.33	0.20	0.38	0.037
Pipe P30	110.00	200	110	0.97	0.03	0.01	0.049
Pipe P31	99.00	200	110	1.18	0.04	0.02	0.047
Pipe P32	80.00	300	120	18.15	0.26	0.32	0.028
Pipe P33	72.00	300	120	19.41	0.27	0.36	0.028
Pipe P34	103.00	300	120	19.54	0.28	0.36	0.028
Pipe P35	79.00	300	120	-26.05	0.37	0.62	0.027
Pipe P36	102.00	300	120	-20.93	0.30	0.41	0.028
Pipe P37	101.00	300	120	-21.10	0.30	0.42	0.028
Pipe P38	40.00	250	110	-5.58	0.11	0.10	0.039
Pipe P39	40.00	250	110	-5.54	0.11	0.10	0.039
Pipe P40	42.00	200	110	5.41	0.17	0.28	0.038
Pipe P41	58.00	200	110	5.39	0.17	0.28	0.038
Pipe P42	100.00	200	110	-5.32	0.17	0.28	0.038
Pipe P43	76.00	200	110	-5.22	0.17	0.27	0.038
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-26.76	0.38	0.65	0.027
Pipe P46	85.00	200	110	-7.44	0.24	0.51	0.036
Pipe P47	73.00	200	110	-7.62	0.24	0.54	0.036
Pipe P48	75.00	200	110	-7.79	0.25	0.56	0.036
Pipe P49	80.00	200	110	-7.86	0.25	0.57	0.036
Pipe P50	90.00	300	120	-33.39	0.47	0.98	0.026
Pipe P51	85.00	300	120	25.46	0.36	0.59	0.027
Pipe N52	100.00	300	120	24.99	0.35	0.57	0.027
Pipe P53	85.00	200	110	9.04	0.29	0.74	0.035
Pipe P54	79.00	250	110	5.42	0.11	0.10	0.039
Pipe P55	70.00	250	110	5.20	0.11	0.09	0.039
Pipe P56	102.00	300	120	10.23	0.14	0.11	0.031
Pipe P57	101.00	300	120	10.03	0.14	0.11	0.031
Pipe P58	82.00	300	120	-11.42	0.16	0.13	0.030
Pipe P59	110.00	300	120	6.12	0.09	0.04	0.033
Pipe P60	110.00	300	120	5.94	0.08	0.04	0.033
Pipe P61	95.00	300	120	-5.83	0.08	0.04	0.033
Pipe P62	110.00	300	120	5.71	0.08	0.04	0.034
Pipe P63	110.00	300	120	5.53	0.08	0.03	0.034
Pipe P64	79.00	200	110	-5.17	0.16	0.26	0.038
Pipe P65	40.00	300	120	-10.55	0.15	0.12	0.031
Pipe P66	40.00	300	120	10.48	0.15	0.11	0.031
Pipe P67	175.00	250	110	3.27	0.07	0.04	0.042
Pipe P68	83.00	250	110	1.46	0.03	0.01	0.047
Pipe P69	70.00	250	110	1.54	0.03	0.01	0.047
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	89.92	2.86	51.83	0.025
Pipe P75	85.00	200	110	-5.35	0.17	0.28	0.038
Pipe P76	85.00	200	110	-68.94	2.19	31.69	0.026
Pipe P77	85.00	200	110	-69.19	2.20	31.90	0.026
Pipe P78	82.00	200	110	-14.75	0.47	1.82	0.032
Pipe P79	50.00	200	110	-69.98	2.23	32.58	0.026

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.38	33.63	329.91	47.85
Junc N2	88.25	2.99	112.83	24.58	241.13	34.97
Junc N3	88.12	0.04	112.70	24.58	241.13	34.97
Junc N4	87.85	0.07	112.75	24.90	244.27	35.43
Junc N5	87.19	0.24	112.86	25.67	251.82	36.52
Junc N6	84.95	0.00	113.07	28.12	275.86	40.01
Junc N7	82.95	0.64	113.22	30.27	296.95	43.07
Junc N8	88.28	0.11	112.74	24.46	239.95	34.80
Junc N9	88.54	0.15	112.79	24.25	237.89	34.50
Junc N10	88.80	0.08	112.88	24.08	236.22	34.26
Junc N11	90.47	0.15	112.77	22.30	218.76	31.73
Junc N12	92.25	0.12	112.76	20.51	201.20	29.18
Junc N13	89.86	0.15	112.75	22.89	224.55	32.57
Junc N14	91.70	0.04	112.76	21.06	206.60	29.96
Junc N15	91.36	0.08	112.76	21.40	209.93	30.45
Junc N16	89.81	0.12	112.76	22.95	225.14	32.65
Junc N17	88.25	0.12	112.76	24.51	240.44	34.87
Junc N18	88.10	0.18	112.77	24.67	242.01	35.10
Junc N19	88.74	0.05	112.77	24.03	235.73	34.19
Junc N20	89.41	0.21	112.77	23.36	229.16	33.24
Junc N21	90.00	0.13	112.77	22.77	223.37	32.40
Junc N22	90.33	0.10	112.79	22.46	220.33	31.96
Junc N23	90.11	0.17	112.80	22.69	222.59	32.28
Junc N24	89.95	0.04	112.81	22.86	224.26	32.53
Junc N25	90.15	0.08	112.81	22.66	222.29	32.24
Junc N26	90.00	0.02	112.81	22.81	223.77	32.45
Junc N27	90.60	0.07	112.80	22.20	217.78	31.59
Junc N28	91.00	0.10	112.80	21.80	213.86	31.02
Junc N29	89.20	0.20	112.83	23.63	231.81	33.62
Junc N30	88.35	0.18	112.84	24.49	240.25	34.84
Junc N31	88.30	0.17	112.86	24.56	240.93	34.94
Junc N32	88.10	0.07	112.87	24.77	242.99	35.24
Junc N33	87.40	0.07	112.89	25.49	250.06	36.27
Junc N34	87.95	0.47	112.87	24.92	244.47	35.46
Junc N35	87.50	0.22	112.84	25.34	248.59	36.05
Junc N36	86.20	0.20	112.84	26.64	261.34	37.90
Junc N37	89.83	0.20	112.84	23.01	225.73	32.74
Junc N38	90.80	0.13	112.84	22.04	216.21	31.36
Junc N39	91.08	0.18	112.84	21.76	213.47	30.96
Junc N40	90.90	0.12	112.83	21.93	215.13	31.20
Junc N41	90.64	0.18	112.83	22.19	217.68	31.57
Junc N42	90.30	0.15	112.83	22.53	221.02	32.06
Junc N43	90.00	0.07	112.83	22.83	223.96	32.48
Junc N44	89.55	0.08	112.84	23.29	228.47	33.14
Junc N45	88.50	0.06	112.84	24.34	238.78	34.63
Junc N46	87.00	0.05	112.84	25.84	253.49	36.77
Junc N47	86.15	1.62	112.84	26.69	261.83	37.98
Junc N48	86.66	36.27	108.43	21.77	213.56	30.97
Junc N49	84.50	95.26	106.82	22.32	218.96	31.76
Junc N50	82.68	36.25	107.94	25.26	247.80	35.94
Junc N51	81.20	0.79	111.43	30.23	296.56	43.01
Junc N52	85.65	0.00	112.84	27.19	266.73	38.69
Junc N53	85.10	1.73	112.84	27.74	272.13	39.47
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.52	32.67	320.49	46.48
Junc KNE01,14-17	81.00	16.35	114.49	33.49	328.54	47.65
Junc KNE02,11-13,21	82.23	8.78	113.38	31.15	305.58	44.32
Junc KNE03	88.85	0.30	112.85	24.00	235.44	34.15
Junc KNE04,5-6,20	84.00	7.41	113.46	29.46	289.00	41.92
Junc KNE07	88.38	4.03	112.96	24.58	241.13	34.97
Junc KNE08	90.72	0.08	112.77	22.05	216.31	31.37
Junc KNE09	88.86	0.18	112.78	23.92	234.66	34.03
Junc KNE10	89.84	0.08	112.81	22.97	225.34	32.68
Junc KNE18	87.52	0.07	112.80	25.28	248.00	35.97
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	112.76	20.11	197.28	28.61
Junc KNE23	91.30	0.11	112.83	21.53	211.21	30.63
Junc KNE24	90.60	0.07	112.84	22.24	218.17	31.64
Junc KNE25	87.40	0.42	112.92	25.52	250.35	36.31
Junc KNE26	90.30	0.05	112.81	22.51	220.82	32.03

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	66.88	0.95	3.53	0.023
Pipe P1B	685.00	300	120	66.88	0.95	3.54	0.023
Pipe P2A	580.00	400	120	-152.13	1.21	3.99	0.021
Pipe P2B	300.00	400	120	135.78	1.08	3.23	0.022
Pipe P2C	235.00	400	120	55.71	0.44	0.62	0.025
Pipe P3	260.00	300	120	66.88	0.95	3.54	0.023
Pipe P4	175.00	300	120	59.47	0.84	2.85	0.024
Pipe P5	83.00	300	120	44.58	0.63	1.67	0.025
Pipe P6	82.00	300	120	41.59	0.59	1.47	0.025
Pipe P7	75.00	300	120	26.44	0.37	0.63	0.027
Pipe P8	75.00	300	120	26.51	0.38	0.64	0.027
Pipe P9	90.00	300	120	-26.58	0.38	0.64	0.027
Pipe P10	90.00	300	120	-26.82	0.38	0.65	0.027
Pipe P11	85.00	300	120	-46.29	0.65	1.79	0.025
Pipe P12	85.00	300	120	-46.29	0.65	1.79	0.025
Pipe P13	85.00	300	120	-46.93	0.66	1.84	0.025
Pipe P14	84.00	300	120	-20.51	0.29	0.40	0.028
Pipe P15	92.00	200	110	-7.43	0.24	0.51	0.036
Pipe P16	92.00	200	110	-10.78	0.34	1.02	0.034
Pipe P17	110.00	200	110	3.20	0.10	0.11	0.041
Pipe P18	110.00	200	110	3.05	0.10	0.10	0.041
Pipe P19	76.00	200	110	2.93	0.09	0.09	0.041
Pipe P20	110.00	300	120	8.70	0.12	0.08	0.031
Pipe P21	110.00	300	120	8.55	0.12	0.08	0.032
Pipe P22	84.00	300	120	-5.89	0.08	0.04	0.033
Pipe P23	60.00	300	120	5.93	0.08	0.04	0.033
Pipe P24	85.00	200	110	1.71	0.05	0.03	0.045
Pipe P25	83.00	200	110	1.59	0.05	0.03	0.045
Pipe P26	84.00	200	110	4.63	0.15	0.21	0.039
Pipe P27	89.00	200	110	-3.16	0.10	0.11	0.041
Pipe P28	100.00	200	110	-2.81	0.09	0.08	0.041
Pipe P29	75.00	200	110	-2.86	0.09	0.09	0.041
Pipe P30	110.00	200	110	0.53	0.02	0.00	0.054
Pipe P31	99.00	200	110	0.74	0.02	0.01	0.051
Pipe P32	80.00	300	120	7.72	0.11	0.06	0.032
Pipe P33	72.00	300	120	8.54	0.12	0.08	0.032
Pipe P34	103.00	300	120	8.67	0.12	0.08	0.031
Pipe P35	79.00	300	120	-11.71	0.17	0.14	0.030
Pipe P36	102.00	300	120	-9.50	0.13	0.10	0.031
Pipe P37	101.00	300	120	-9.67	0.14	0.10	0.031
Pipe P38	40.00	250	110	-2.67	0.05	0.03	0.043
Pipe P39	40.00	250	110	-2.63	0.05	0.03	0.043
Pipe P40	42.00	200	110	2.50	0.08	0.07	0.042
Pipe P41	58.00	200	110	2.48	0.08	0.07	0.042
Pipe P42	100.00	200	110	-2.41	0.08	0.06	0.042
Pipe P43	76.00	200	110	-2.31	0.07	0.06	0.043
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-12.42	0.18	0.16	0.030
Pipe P46	85.00	200	110	-3.92	0.12	0.16	0.039
Pipe P47	73.00	200	110	-4.10	0.13	0.17	0.039
Pipe P48	75.00	200	110	-4.27	0.14	0.18	0.039
Pipe P49	80.00	200	110	-4.34	0.14	0.19	0.039
Pipe P50	90.00	300	120	-19.05	0.27	0.35	0.028
Pipe P51	85.00	300	120	14.64	0.21	0.21	0.029
Pipe N52	100.00	300	120	14.17	0.20	0.20	0.029
Pipe P53	85.00	200	110	4.41	0.14	0.19	0.039
Pipe P54	79.00	250	110	3.59	0.07	0.04	0.041
Pipe P55	70.00	250	110	3.37	0.07	0.04	0.042
Pipe P56	102.00	300	120	5.87	0.08	0.04	0.033
Pipe P57	101.00	300	120	5.67	0.08	0.04	0.033
Pipe P58	82.00	300	120	-5.23	0.07	0.03	0.034
Pipe P59	110.00	300	120	2.84	0.04	0.01	0.037
Pipe P60	110.00	300	120	2.66	0.04	0.01	0.038
Pipe P61	95.00	300	120	-2.55	0.04	0.01	0.038
Pipe P62	110.00	300	120	2.43	0.03	0.01	0.038
Pipe P63	110.00	300	120	2.25	0.03	0.01	0.038
Pipe P64	79.00	200	110	-2.26	0.07	0.06	0.043
Pipe P65	40.00	300	120	-4.36	0.06	0.02	0.035
Pipe P66	40.00	300	120	4.29	0.06	0.02	0.035
Pipe P67	175.00	250	110	1.44	0.03	0.01	0.047
Pipe P68	83.00	250	110	-0.37	0.01	0.00	0.058
Pipe P69	70.00	250	110	-0.29	0.01	0.00	0.056
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	88.49	2.82	50.32	0.025
Pipe P75	85.00	200	110	52.22	1.66	18.95	0.027
Pipe P76	85.00	200	110	-43.04	1.37	13.24	0.028
Pipe P77	85.00	200	110	-79.29	2.52	41.05	0.025
Pipe P78	82.00	200	110	-10.86	0.35	1.03	0.034
Pipe P79	50.00	200	110	-80.08	2.55	41.81	0.025

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.88	33.13	325.01	47.14
Junc N2	88.25	2.99	112.00	23.75	232.99	33.79
Junc N3	88.12	0.04	111.87	23.75	232.99	33.79
Junc N4	87.85	0.07	111.83	23.98	235.24	34.12
Junc N5	87.19	0.24	111.75	24.56	240.93	34.94
Junc N6	84.95	0.00	112.25	27.30	267.81	38.84
Junc N7	82.95	0.64	112.81	29.86	292.93	42.49
Junc N8	88.28	0.11	111.73	23.45	230.04	33.37
Junc N9	88.54	0.15	111.77	23.23	227.89	33.05
Junc N10	88.80	0.08	111.97	23.17	227.30	32.97
Junc N11	90.47	0.15	111.69	21.22	208.17	30.19
Junc N12	92.25	0.12	111.61	19.36	189.92	27.55
Junc N13	89.86	0.15	111.64	21.78	213.66	30.99
Junc N14	91.70	0.04	111.45	19.75	193.75	28.10
Junc N15	91.36	0.08	111.37	20.01	196.30	28.47
Junc N16	89.81	0.12	111.40	21.59	211.80	30.72
Junc N17	88.25	0.12	111.43	23.18	227.40	32.98
Junc N18	88.10	0.18	111.25	23.15	227.10	32.94
Junc N19	88.74	0.05	111.08	22.34	219.16	31.79
Junc N20	89.41	0.21	111.25	21.84	214.25	31.07
Junc N21	90.00	0.13	111.12	21.12	207.19	30.05
Junc N22	90.33	0.10	110.73	20.40	200.12	29.03
Junc N23	90.11	0.17	110.54	20.43	200.42	29.07
Junc N24	89.95	0.04	110.38	20.43	200.42	29.07
Junc N25	90.15	0.08	110.39	20.24	198.55	28.80
Junc N26	90.00	0.02	110.44	20.44	200.52	29.08
Junc N27	90.60	0.07	110.51	19.91	195.32	28.33
Junc N28	91.00	0.10	110.64	19.64	192.67	27.94
Junc N29	89.20	0.20	110.02	20.82	204.24	29.62
Junc N30	88.35	0.18	110.24	21.89	214.74	31.15
Junc N31	88.30	0.17	110.42	22.12	217.00	31.47
Junc N32	88.10	0.07	110.62	22.52	220.92	32.04
Junc N33	87.40	0.07	110.83	23.43	229.85	33.34
Junc N34	87.95	0.47	110.22	22.27	218.47	31.69
Junc N35	87.50	0.22	107.72	20.22	198.36	28.77
Junc N36	86.20	0.20	106.14	19.94	195.61	28.37
Junc N37	89.83	0.20	109.47	19.64	192.67	27.94
Junc N38	90.80	0.13	109.57	18.77	184.13	26.71
Junc N39	91.08	0.18	109.63	18.55	181.98	26.39
Junc N40	90.90	0.12	109.75	18.85	184.92	26.82
Junc N41	90.64	0.18	109.81	19.17	188.06	27.28
Junc N42	90.30	0.15	109.87	19.57	191.98	27.84
Junc N43	90.00	0.07	109.95	19.95	195.71	28.39
Junc N44	89.55	0.08	108.57	19.02	186.59	27.06
Junc N45	88.50	0.06	107.85	19.35	189.82	27.53
Junc N46	87.00	0.05	107.85	20.85	204.54	29.67
Junc N47	86.15	1.62	107.85	21.70	212.88	30.88
Junc N48	86.66	0.27	112.28	25.62	251.33	36.45
Junc N49	84.50	0.26	112.69	28.19	276.54	40.11
Junc N50	82.68	0.25	113.12	30.44	298.62	43.31
Junc N51	81.20	0.79	113.55	32.35	317.35	46.03
Junc N52	85.65	72.00	102.78	17.13	168.05	24.37
Junc N53	85.10	96.73	101.58	16.48	161.67	23.45
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.81	32.96	323.34	46.90
Junc KNE01,14-17	81.00	16.35	114.69	33.69	330.50	47.93
Junc KNE02,11-13,21	82.23	8.78	113.36	31.13	305.39	44.29
Junc KNE03	88.85	0.30	109.51	20.66	202.67	29.40
Junc KNE04,5-6,20	84.00	7.41	112.77	28.77	282.23	40.93
Junc KNE07	88.38	4.03	112.15	23.77	233.18	33.82
Junc KNE08	90.72	0.08	111.24	20.52	201.30	29.20
Junc KNE09	88.86	0.18	110.95	22.09	216.70	31.43
Junc KNE10	89.84	0.08	110.36	20.52	201.30	29.20
Junc KNE18	87.52	0.07	111.79	24.27	238.09	34.53
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.56	18.91	185.51	26.91
Junc KNE23	91.30	0.11	109.70	18.40	180.50	26.18
Junc KNE24	90.60	0.07	109.43	18.83	184.72	26.79
Junc KNE25	87.40	0.42	111.70	24.30	238.38	34.57
Junc KNE26	90.30	0.05	110.39	20.09	197.08	28.58

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.06	1.05	4.27	0.023
Pipe P1B	685.00	300	120	74.06	1.05	4.27	0.023
Pipe P2A	580.00	400	120	-144.95	1.15	3.65	0.022
Pipe P2B	300.00	400	120	128.60	1.02	2.92	0.022
Pipe P2C	235.00	400	120	102.20	0.81	1.91	0.023
Pipe P3	260.00	300	120	74.06	1.05	4.27	0.023
Pipe P4	175.00	300	120	66.65	0.94	3.52	0.023
Pipe P5	83.00	300	120	46.36	0.66	1.80	0.025
Pipe P6	82.00	300	120	43.37	0.61	1.59	0.025
Pipe P7	75.00	300	120	-23.65	0.33	0.52	0.027
Pipe P8	75.00	300	120	-23.58	0.33	0.51	0.027
Pipe P9	90.00	300	120	23.51	0.33	0.51	0.027
Pipe P10	90.00	300	120	23.27	0.33	0.50	0.027
Pipe P11	85.00	300	120	-92.78	1.31	6.49	0.022
Pipe P12	85.00	300	120	-92.78	1.31	6.49	0.022
Pipe P13	85.00	300	120	-93.42	1.32	6.57	0.022
Pipe P14	84.00	300	120	44.52	0.63	1.67	0.025
Pipe P15	92.00	200	110	-6.91	0.22	0.45	0.036
Pipe P16	92.00	200	110	-16.17	0.51	2.16	0.032
Pipe P17	110.00	200	110	9.12	0.29	0.75	0.035
Pipe P18	110.00	200	110	8.97	0.29	0.72	0.035
Pipe P19	76.00	200	110	8.85	0.28	0.71	0.035
Pipe P20	110.00	300	120	-29.75	0.42	0.79	0.026
Pipe P21	110.00	300	120	-29.90	0.42	0.80	0.026
Pipe P22	84.00	300	120	38.49	0.54	1.27	0.025
Pipe P23	60.00	300	120	-38.45	0.54	1.27	0.025
Pipe P24	85.00	200	110	-5.61	0.18	0.30	0.037
Pipe P25	83.00	200	110	-5.73	0.18	0.32	0.037
Pipe P26	84.00	200	110	-21.42	0.68	3.64	0.031
Pipe P27	89.00	200	110	15.57	0.50	2.01	0.032
Pipe P28	100.00	200	110	14.23	0.45	1.70	0.033
Pipe P29	75.00	200	110	14.18	0.45	1.69	0.033
Pipe P30	110.00	200	110	-1.16	0.04	0.02	0.047
Pipe P31	99.00	200	110	-0.95	0.03	0.01	0.049
Pipe P32	80.00	300	120	-43.97	0.62	1.63	0.025
Pipe P33	72.00	300	120	-44.85	0.63	1.69	0.025
Pipe P34	103.00	300	120	-44.72	0.63	1.68	0.025
Pipe P35	79.00	300	120	58.71	0.83	2.78	0.024
Pipe P36	102.00	300	120	46.65	0.66	1.82	0.025
Pipe P37	101.00	300	120	46.48	0.66	1.80	0.025
Pipe P38	40.00	250	110	11.60	0.24	0.39	0.035
Pipe P39	40.00	250	110	11.64	0.24	0.40	0.035
Pipe P40	42.00	200	110	-11.77	0.37	1.20	0.034
Pipe P41	58.00	200	110	-11.79	0.38	1.20	0.034
Pipe P42	100.00	200	110	11.86	0.38	1.22	0.034
Pipe P43	76.00	200	110	11.96	0.38	1.24	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.677
Pipe P45	125.00	300	120	58.00	0.82	2.72	0.024
Pipe P46	85.00	200	110	-17.51	0.56	2.50	0.032
Pipe P47	73.00	200	110	-17.69	0.56	2.55	0.032
Pipe P48	75.00	200	110	-17.86	0.57	2.60	0.032
Pipe P49	80.00	200	110	-17.93	0.57	2.62	0.032
Pipe P50	90.00	300	120	-115.63	1.64	9.75	0.021
Pipe P51	85.00	300	120	97.63	1.38	7.13	0.022
Pipe N52	100.00	300	120	97.16	1.37	7.07	0.022
Pipe P53	85.00	200	110	-28.06	0.89	5.99	0.030
Pipe P54	79.00	250	110	103.44	2.11	22.66	0.025
Pipe P55	70.00	250	110	103.22	2.10	22.57	0.025
Pipe P56	102.00	300	120	21.47	0.30	0.43	0.028
Pipe P57	101.00	300	120	21.27	0.30	0.42	0.028
Pipe P58	82.00	300	120	46.32	0.66	1.79	0.025
Pipe P59	110.00	300	120	-24.48	0.35	0.55	0.027
Pipe P60	110.00	300	120	-24.66	0.35	0.56	0.027
Pipe P61	95.00	300	120	24.77	0.35	0.56	0.027
Pipe P62	110.00	300	120	-24.89	0.35	0.57	0.027
Pipe P63	110.00	300	120	-25.07	0.35	0.57	0.027
Pipe P64	79.00	200	110	21.96	0.70	3.81	0.031
Pipe P65	40.00	300	120	47.19	0.67	1.85	0.025
Pipe P66	40.00	300	120	-47.26	0.67	1.86	0.025
Pipe P67	175.00	250	110	-65.71	1.34	9.78	0.027
Pipe P68	83.00	250	110	-67.52	1.38	10.28	0.027
Pipe P69	70.00	250	110	-67.44	1.37	10.26	0.027
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	168.73	3.44	56.07	0.023
Pipe P73	60.00	250	110	96.73	1.97	20.01	0.025
Pipe P74	85.00	200	110	-24.83	0.79	4.78	0.030
Pipe P75	85.00	200	110	-25.10	0.80	4.88	0.030
Pipe P76	85.00	200	110	-25.36	0.81	4.97	0.030
Pipe P77	85.00	200	110	-25.61	0.82	5.06	0.030
Pipe P78	82.00	200	110	-16.25	0.52	2.18	0.032
Pipe P79	50.00	200	110	-26.40	0.84	5.36	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.78	33.03	324.02	47.00
Junc N2	88.25	2.99	111.87	23.62	231.71	33.61
Junc N3	88.12	0.04	111.76	23.64	231.91	33.64
Junc N4	87.85	0.07	111.78	23.93	234.75	34.05
Junc N5	87.19	0.24	111.83	24.64	241.72	35.06
Junc N6	84.95	0.00	112.38	27.43	269.09	39.03
Junc N7	82.95	0.64	112.90	29.95	293.81	42.61
Junc N8	88.28	0.11	111.33	23.05	226.12	32.80
Junc N9	88.54	0.15	111.37	22.83	223.96	32.48
Junc N10	88.80	0.08	111.70	22.90	224.65	32.58
Junc N11	90.47	0.15	111.17	20.70	203.07	29.45
Junc N12	92.25	0.12	110.98	18.73	183.74	26.65
Junc N13	89.86	0.15	111.09	21.23	208.27	30.21
Junc N14	91.70	0.04	110.56	18.86	185.02	26.83
Junc N15	91.36	0.08	110.35	18.99	186.29	27.02
Junc N16	89.81	0.12	110.42	20.61	202.18	29.32
Junc N17	88.25	0.12	110.49	22.24	218.17	31.64
Junc N18	88.10	0.18	110.00	21.90	214.84	31.16
Junc N19	88.74	36.05	109.47	20.73	203.36	29.50
Junc N20	89.41	0.21	110.00	20.59	201.99	29.30
Junc N21	90.00	36.13	109.68	19.68	193.06	28.00
Junc N22	90.33	0.10	109.81	19.48	191.10	27.72
Junc N23	90.11	0.17	110.04	19.93	195.51	28.36
Junc N24	89.95	0.04	110.25	20.30	199.14	28.88
Junc N25	90.15	0.08	110.22	20.07	196.89	28.56
Junc N26	90.00	0.02	110.16	20.16	197.77	28.68
Junc N27	90.60	0.07	110.07	19.47	191.00	27.70
Junc N28	91.00	0.10	109.92	18.92	185.61	26.92
Junc N29	89.20	0.20	110.70	21.50	210.92	30.59
Junc N30	88.35	0.18	110.91	22.56	221.31	32.10
Junc N31	88.30	0.17	111.09	22.79	223.57	32.43
Junc N32	88.10	0.07	111.28	23.18	227.40	32.98
Junc N33	87.40	0.07	111.48	24.08	236.22	34.26
Junc N34	87.95	0.47	111.27	23.32	228.77	33.18
Junc N35	87.50	0.22	111.00	23.50	230.54	33.44
Junc N36	86.20	0.20	110.98	24.78	243.09	35.26
Junc N37	89.83	0.20	110.98	21.15	207.48	30.09
Junc N38	90.80	0.13	110.87	20.07	196.89	28.56
Junc N39	91.08	0.18	110.85	19.77	193.94	28.13
Junc N40	90.90	0.12	110.80	19.90	195.22	28.31
Junc N41	90.64	0.18	110.78	20.14	197.57	28.66
Junc N42	90.30	0.15	110.76	20.46	200.71	29.11
Junc N43	90.00	0.07	110.73	20.73	203.36	29.50
Junc N44	89.55	0.08	110.94	21.39	209.84	30.43
Junc N45	88.50	0.06	110.95	22.45	220.23	31.94
Junc N46	87.00	0.05	110.95	23.95	234.95	34.08
Junc N47	86.15	1.62	110.95	24.80	243.29	35.29
Junc N48	86.66	0.27	112.20	25.54	250.55	36.34
Junc N49	84.50	0.26	112.65	28.15	276.15	40.05
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.58	32.38	317.65	46.07
Junc N52	85.65	0.00	110.98	25.33	248.49	36.04
Junc N53	85.10	1.73	110.98	25.88	253.88	36.82
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.86	33.01	323.83	46.97
Junc KNE01,14-17	81.00	16.35	114.73	33.73	330.89	47.99
Junc KNE02,11-13,21	82.23	8.78	113.44	31.21	306.17	44.41
Junc KNE03	88.85	0.30	111.02	22.17	217.49	31.54
Junc KNE04,5-6,20	84.00	7.41	112.63	28.63	280.86	40.74
Junc KNE07	88.38	4.03	112.00	23.62	231.71	33.61
Junc KNE08	90.72	0.08	110.00	19.28	189.14	27.43
Junc KNE09	88.86	95.18	109.54	20.68	202.87	29.42
Junc KNE10	89.84	0.08	110.27	20.43	200.42	29.07
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	110.84	18.19	178.44	25.88
Junc KNE23	91.30	0.11	110.82	19.52	191.49	27.77
Junc KNE24	90.60	0.07	110.93	20.33	199.44	28.93
Junc KNE25	87.40	0.42	111.85	24.45	239.85	34.79
Junc KNE26	90.30	0.05	110.22	19.92	195.42	28.34

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	75.35	1.07	4.41	0.023
Pipe P1B	685.00	300	120	75.35	1.07	4.41	0.023
Pipe P2A	580.00	400	120	-143.66	1.14	3.59	0.022
Pipe P2B	300.00	400	120	127.31	1.01	2.87	0.022
Pipe P2C	235.00	400	120	99.80	0.79	1.83	0.023
Pipe P3	260.00	300	120	75.35	1.07	4.41	0.023
Pipe P4	175.00	300	120	67.94	0.96	3.64	0.023
Pipe P5	83.00	300	120	42.46	0.60	1.53	0.025
Pipe P6	82.00	300	120	39.47	0.56	1.33	0.025
Pipe P7	75.00	300	120	16.70	0.24	0.27	0.029
Pipe P8	75.00	300	120	16.77	0.24	0.27	0.029
Pipe P9	90.00	300	120	-16.84	0.24	0.28	0.029
Pipe P10	90.00	300	120	-17.08	0.24	0.28	0.028
Pipe P11	85.00	300	120	-90.38	1.28	6.18	0.022
Pipe P12	85.00	300	120	-90.38	1.28	6.18	0.022
Pipe P13	85.00	300	120	-91.02	1.29	6.26	0.022
Pipe P14	84.00	300	120	82.07	1.16	5.17	0.023
Pipe P15	92.00	200	110	-6.62	0.21	0.41	0.037
Pipe P16	92.00	200	110	-21.37	0.68	3.62	0.031
Pipe P17	110.00	200	110	14.59	0.46	1.79	0.033
Pipe P18	110.00	200	110	14.44	0.46	1.75	0.033
Pipe P19	76.00	200	110	14.32	0.46	1.73	0.033
Pipe P20	110.00	300	120	-51.59	0.73	2.19	0.024
Pipe P21	110.00	300	120	-51.74	0.73	2.20	0.024
Pipe P22	84.00	300	120	65.80	0.93	3.43	0.023
Pipe P23	60.00	300	120	-65.76	0.93	3.43	0.023
Pipe P24	85.00	200	110	-9.69	0.31	0.84	0.035
Pipe P25	83.00	200	110	-9.81	0.31	0.86	0.034
Pipe P26	84.00	200	110	-36.85	1.17	9.93	0.028
Pipe P27	89.00	200	110	26.93	0.86	5.56	0.030
Pipe P28	100.00	200	110	26.12	0.83	5.25	0.030
Pipe P29	75.00	200	110	-9.93	0.32	0.88	0.034
Pipe P30	110.00	200	110	-0.63	0.02	0.01	0.052
Pipe P31	99.00	200	110	-0.42	0.01	0.00	0.056
Pipe P32	80.00	300	120	-75.37	1.07	4.41	0.023
Pipe P33	72.00	300	120	-75.71	1.07	4.45	0.023
Pipe P34	103.00	300	120	-39.58	0.56	1.34	0.025
Pipe P35	79.00	300	120	-65.54	0.93	3.41	0.023
Pipe P36	102.00	300	120	-52.42	0.74	2.25	0.024
Pipe P37	101.00	300	120	-52.59	0.74	2.27	0.024
Pipe P38	40.00	250	110	-13.58	0.28	0.53	0.034
Pipe P39	40.00	250	110	-13.54	0.28	0.52	0.034
Pipe P40	42.00	200	110	13.41	0.43	1.53	0.033
Pipe P41	58.00	200	110	13.39	0.43	1.52	0.033
Pipe P42	100.00	200	110	-13.32	0.42	1.51	0.033
Pipe P43	76.00	200	110	-13.22	0.42	1.49	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-66.25	0.94	3.48	0.023
Pipe P46	85.00	200	110	-17.20	0.55	2.42	0.032
Pipe P47	73.00	200	110	-17.38	0.55	2.47	0.032
Pipe P48	75.00	200	110	-17.55	0.56	2.51	0.032
Pipe P49	80.00	200	110	-17.62	0.56	2.53	0.032
Pipe P50	90.00	300	120	-72.88	1.03	4.15	0.023
Pipe P51	85.00	300	120	55.19	0.78	2.48	0.024
Pipe N52	100.00	300	120	54.72	0.77	2.44	0.024
Pipe P53	85.00	200	110	21.93	0.70	3.80	0.031
Pipe P54	79.00	250	110	9.97	0.20	0.30	0.035
Pipe P55	70.00	250	110	9.75	0.20	0.29	0.036
Pipe P56	102.00	300	120	22.51	0.32	0.47	0.027
Pipe P57	101.00	300	120	22.31	0.32	0.46	0.027
Pipe P58	82.00	300	120	-28.26	0.40	0.72	0.026
Pipe P59	110.00	300	120	15.05	0.21	0.22	0.029
Pipe P60	110.00	300	120	14.87	0.21	0.22	0.029
Pipe P61	95.00	300	120	-14.76	0.21	0.22	0.029
Pipe P62	110.00	300	120	14.64	0.21	0.21	0.029
Pipe P63	110.00	300	120	14.46	0.20	0.21	0.029
Pipe P64	79.00	200	110	-13.08	0.42	1.46	0.033
Pipe P65	40.00	300	120	-27.39	0.39	0.68	0.027
Pipe P66	40.00	300	120	27.32	0.39	0.67	0.027
Pipe P67	175.00	250	110	7.82	0.16	0.19	0.037
Pipe P68	83.00	250	110	6.01	0.12	0.12	0.038
Pipe P69	70.00	250	110	6.09	0.12	0.12	0.038
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-25.95	0.83	5.19	0.030
Pipe P75	85.00	200	110	-26.22	0.83	5.29	0.030
Pipe P76	85.00	200	110	-26.48	0.84	5.39	0.030
Pipe P77	85.00	200	110	-26.73	0.85	5.48	0.030
Pipe P78	82.00	200	110	-21.45	0.68	3.65	0.031
Pipe P79	50.00	200	110	-27.52	0.88	5.78	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.70	32.95	323.24	46.88
Junc N2	88.25	2.99	111.75	23.50	230.54	33.44
Junc N3	88.12	0.04	111.65	23.53	230.83	33.48
Junc N4	87.85	0.07	111.72	23.87	234.16	33.96
Junc N5	87.19	0.24	111.89	24.70	242.31	35.14
Junc N6	84.95	0.00	112.49	27.54	270.17	39.18
Junc N7	82.95	0.64	112.99	30.04	294.69	42.74
Junc N8	88.28	0.11	111.04	22.76	223.28	32.38
Junc N9	88.54	0.15	111.04	22.50	220.73	32.01
Junc N10	88.80	0.08	111.47	22.67	222.39	32.26
Junc N11	90.47	0.15	110.50	20.03	196.49	28.50
Junc N12	92.25	36.12	109.97	17.72	173.83	25.21
Junc N13	89.86	0.15	110.55	20.69	202.97	29.44
Junc N14	91.70	36.04	110.13	18.43	180.80	26.22
Junc N15	91.36	0.08	110.34	18.98	186.19	27.01
Junc N16	89.81	0.12	110.53	20.72	203.26	29.48
Junc N17	88.25	0.12	110.72	22.47	220.43	31.97
Junc N18	88.10	0.18	110.70	22.60	221.71	32.16
Junc N19	88.74	0.05	110.73	21.99	215.72	31.29
Junc N20	89.41	0.21	110.59	21.18	207.78	30.14
Junc N21	90.00	0.13	110.60	20.60	202.09	29.31
Junc N22	90.33	0.10	110.89	20.56	201.69	29.25
Junc N23	90.11	0.17	111.01	20.90	205.03	29.74
Junc N24	89.95	0.04	111.11	21.16	207.58	30.11
Junc N25	90.15	0.08	111.10	20.95	205.52	29.81
Junc N26	90.00	0.02	111.07	21.07	206.70	29.98
Junc N27	90.60	0.07	111.02	20.42	200.32	29.05
Junc N28	91.00	0.10	110.94	19.94	195.61	28.37
Junc N29	89.20	0.20	111.35	22.15	217.29	31.52
Junc N30	88.35	0.18	111.46	23.11	226.71	32.88
Junc N31	88.30	0.17	111.56	23.26	228.18	33.09
Junc N32	88.10	0.07	111.66	23.56	231.12	33.52
Junc N33	87.40	0.07	111.78	24.38	239.17	34.69
Junc N34	87.95	0.47	111.66	23.71	232.60	33.74
Junc N35	87.50	0.22	111.51	24.01	235.54	34.16
Junc N36	86.20	0.20	111.49	25.29	248.09	35.98
Junc N37	89.83	0.20	111.49	21.66	212.48	30.82
Junc N38	90.80	0.13	111.44	20.64	202.48	29.37
Junc N39	91.08	0.18	111.43	20.35	199.63	28.95
Junc N40	90.90	0.12	111.40	20.50	201.11	29.17
Junc N41	90.64	0.18	111.39	20.75	203.56	29.52
Junc N42	90.30	0.15	111.38	21.08	206.79	29.99
Junc N43	90.00	0.07	111.36	21.36	209.54	30.39
Junc N44	89.55	0.08	111.47	21.92	215.04	31.19
Junc N45	88.50	0.06	111.48	22.98	225.43	32.70
Junc N46	87.00	0.05	111.48	24.48	240.15	34.83
Junc N47	86.15	1.62	111.48	25.33	248.49	36.04
Junc N48	86.66	0.27	112.12	25.46	249.76	36.22
Junc N49	84.50	0.26	112.61	28.11	275.76	40.00
Junc N50	82.68	0.25	113.10	30.42	298.42	43.28
Junc N51	81.20	0.79	113.60	32.40	317.84	46.10
Junc N52	85.65	0.00	111.49	25.84	253.49	36.77
Junc N53	85.10	1.73	111.49	26.39	258.89	37.55
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.91	33.06	324.32	47.04
Junc KNE01,14-17	81.00	16.35	114.76	33.76	331.19	48.03
Junc KNE02,11-13,21	82.23	8.78	113.50	31.27	306.76	44.49
Junc KNE03	88.85	0.30	111.52	22.67	222.39	32.26
Junc KNE04,5-6,20	84.00	7.41	112.52	28.52	279.78	40.58
Junc KNE07	88.38	4.03	111.86	23.48	230.34	33.41
Junc KNE08	90.72	0.08	110.51	19.79	194.14	28.16
Junc KNE09	88.86	0.18	110.75	21.89	214.74	31.15
Junc KNE10	89.84	0.08	111.12	21.28	208.76	30.28
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	95.11	110.06	17.41	170.79	24.77
Junc KNE23	91.30	0.11	111.41	20.11	197.28	28.61
Junc KNE24	90.60	0.07	111.47	20.87	204.73	29.69
Junc KNE25	87.40	0.42	111.98	24.58	241.13	34.97
Junc KNE26	90.30	0.05	111.10	20.80	204.05	29.59

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	76.48	1.08	4.54	0.023
Pipe P1B	685.00	300	120	76.48	1.08	4.54	0.023
Pipe P2A	580.00	400	120	-142.53	1.13	3.54	0.022
Pipe P2B	300.00	400	120	126.18	1.00	2.82	0.022
Pipe P2C	235.00	400	120	97.59	0.78	1.75	0.023
Pipe P3	260.00	300	120	76.48	1.08	4.54	0.023
Pipe P4	175.00	300	120	69.07	0.98	3.76	0.023
Pipe P5	83.00	300	120	40.33	0.57	1.39	0.025
Pipe P6	82.00	300	120	37.34	0.53	1.20	0.025
Pipe P7	75.00	300	120	34.11	0.48	1.02	0.026
Pipe P8	75.00	300	120	34.18	0.48	1.02	0.026
Pipe P9	90.00	300	120	-34.25	0.48	1.02	0.026
Pipe P10	90.00	300	120	-34.49	0.49	1.04	0.026
Pipe P11	85.00	300	120	-88.17	1.25	5.90	0.022
Pipe P12	85.00	300	120	-88.17	1.25	5.90	0.022
Pipe P13	85.00	300	120	-88.81	1.26	5.98	0.022
Pipe P14	84.00	300	120	98.43	1.39	7.24	0.022
Pipe P15	92.00	200	110	0.57	0.02	0.00	0.052
Pipe P16	92.00	200	110	-24.63	0.78	4.71	0.030
Pipe P17	110.00	200	110	25.06	0.80	4.86	0.030
Pipe P18	110.00	200	110	24.91	0.79	4.81	0.030
Pipe P19	76.00	200	110	-11.21	0.36	1.10	0.034
Pipe P20	110.00	300	120	-75.70	1.07	4.45	0.023
Pipe P21	110.00	300	120	-75.85	1.07	4.47	0.023
Pipe P22	84.00	300	120	-30.63	0.43	0.83	0.026
Pipe P23	60.00	300	120	66.67	0.94	3.52	0.023
Pipe P24	85.00	200	110	-16.55	0.53	2.26	0.032
Pipe P25	83.00	200	110	-16.67	0.53	2.29	0.032
Pipe P26	84.00	200	110	-21.90	0.70	3.79	0.031
Pipe P27	89.00	200	110	5.11	0.16	0.26	0.038
Pipe P28	100.00	200	110	-5.37	0.17	0.28	0.038
Pipe P29	75.00	200	110	-5.42	0.17	0.29	0.038
Pipe P30	110.00	200	110	-10.30	0.33	0.94	0.034
Pipe P31	99.00	200	110	-10.09	0.32	0.90	0.034
Pipe P32	80.00	300	120	50.20	0.71	2.08	0.024
Pipe P33	72.00	300	120	40.19	0.57	1.38	0.025
Pipe P34	103.00	300	120	40.32	0.57	1.39	0.025
Pipe P35	79.00	300	120	-45.92	0.65	1.76	0.025
Pipe P36	102.00	300	120	-36.77	0.52	1.17	0.025
Pipe P37	101.00	300	120	-36.94	0.52	1.18	0.025
Pipe P38	40.00	250	110	-9.61	0.20	0.28	0.036
Pipe P39	40.00	250	110	-9.57	0.19	0.28	0.036
Pipe P40	42.00	200	110	9.44	0.30	0.80	0.035
Pipe P41	58.00	200	110	9.42	0.30	0.79	0.035
Pipe P42	100.00	200	110	-9.35	0.30	0.78	0.035
Pipe P43	76.00	200	110	-9.25	0.29	0.77	0.035
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	-46.63	0.66	1.81	0.025
Pipe P46	85.00	200	110	-12.35	0.39	1.31	0.033
Pipe P47	73.00	200	110	-12.53	0.40	1.35	0.033
Pipe P48	75.00	200	110	-12.70	0.40	1.38	0.033
Pipe P49	80.00	200	110	-12.77	0.41	1.39	0.033
Pipe P50	90.00	300	120	-53.26	0.75	2.32	0.024
Pipe P51	85.00	300	120	40.42	0.57	1.39	0.025
Pipe N52	100.00	300	120	39.95	0.57	1.36	0.025
Pipe P53	85.00	200	110	15.52	0.49	2.00	0.032
Pipe P54	79.00	250	110	7.74	0.16	0.19	0.037
Pipe P55	70.00	250	110	7.52	0.15	0.18	0.037
Pipe P56	102.00	300	120	16.39	0.23	0.26	0.029
Pipe P57	101.00	300	120	16.19	0.23	0.26	0.029
Pipe P58	82.00	300	120	-19.90	0.28	0.37	0.028
Pipe P59	110.00	300	120	10.62	0.15	0.12	0.031
Pipe P60	110.00	300	120	10.44	0.15	0.11	0.031
Pipe P61	95.00	300	120	-10.33	0.15	0.11	0.031
Pipe P62	110.00	300	120	10.21	0.14	0.11	0.031
Pipe P63	110.00	300	120	10.03	0.14	0.11	0.031
Pipe P64	79.00	200	110	-9.15	0.29	0.75	0.035
Pipe P65	40.00	300	120	-19.03	0.27	0.34	0.028
Pipe P66	40.00	300	120	18.96	0.27	0.34	0.028
Pipe P67	175.00	250	110	5.59	0.11	0.10	0.039
Pipe P68	83.00	250	110	3.78	0.08	0.05	0.041
Pipe P69	70.00	250	110	3.86	0.08	0.05	0.041
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-27.02	0.86	5.59	0.030
Pipe P75	85.00	200	110	-27.29	0.87	5.69	0.030
Pipe P76	85.00	200	110	-27.55	0.88	5.79	0.030
Pipe P77	85.00	200	110	-27.80	0.88	5.89	0.030
Pipe P78	82.00	200	110	-24.71	0.79	4.74	0.030
Pipe P79	50.00	200	110	-28.59	0.91	6.21	0.029

MAXIMUM DAY + FIREFLOW DEMAND AT N_KNE23
Scenario 1 - Full Buildout (System Level Demands)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.86	33.11	324.81	47.11
Junc N2	88.25	2.99	111.98	23.73	232.79	33.76
Junc N3	88.12	0.04	111.85	23.73	232.79	33.76
Junc N4	87.85	0.07	111.82	23.97	235.15	34.10
Junc N5	87.19	0.24	111.76	24.57	241.03	34.96
Junc N6	84.95	0.00	112.28	27.33	268.11	38.89
Junc N7	82.95	0.64	112.82	29.87	293.02	42.50
Junc N8	88.28	0.11	111.68	23.40	229.55	33.29
Junc N9	88.54	0.15	111.72	23.18	227.40	32.98
Junc N10	88.80	0.08	111.94	23.14	227.00	32.92
Junc N11	90.47	0.15	111.63	21.16	207.58	30.11
Junc N12	92.25	0.12	111.54	19.29	189.23	27.45
Junc N13	89.86	0.15	111.58	21.72	213.07	30.90
Junc N14	91.70	0.04	111.36	19.66	192.86	27.97
Junc N15	91.36	0.08	111.27	19.91	195.32	28.33
Junc N16	89.81	0.12	111.30	21.49	210.82	30.58
Junc N17	88.25	0.12	111.33	23.08	226.41	32.84
Junc N18	88.10	0.18	111.13	23.03	225.92	32.77
Junc N19	88.74	0.05	110.93	22.19	217.68	31.57
Junc N20	89.41	0.21	111.13	21.72	213.07	30.90
Junc N21	90.00	0.13	110.99	20.99	205.91	29.86
Junc N22	90.33	0.10	110.53	20.20	198.16	28.74
Junc N23	90.11	0.17	110.32	20.21	198.26	28.76
Junc N24	89.95	0.04	110.13	20.18	197.97	28.71
Junc N25	90.15	0.08	110.15	20.00	196.20	28.46
Junc N26	90.00	0.02	110.21	20.21	198.26	28.76
Junc N27	90.60	0.07	110.29	19.69	193.16	28.02
Junc N28	91.00	0.10	110.43	19.43	190.61	27.65
Junc N29	89.20	0.20	109.72	20.52	201.30	29.20
Junc N30	88.35	0.18	110.04	21.69	212.78	30.86
Junc N31	88.30	0.17	110.32	22.02	216.02	31.33
Junc N32	88.10	0.07	110.61	22.51	220.82	32.03
Junc N33	87.40	0.07	110.92	23.52	230.73	33.46
Junc N34	87.95	0.47	110.41	22.46	220.33	31.96
Junc N35	87.50	0.22	109.71	22.21	217.88	31.60
Junc N36	86.20	0.20	109.63	23.43	229.85	33.34
Junc N37	89.83	0.20	109.56	19.73	193.55	28.07
Junc N38	90.80	0.13	108.97	18.17	178.25	25.85
Junc N39	91.08	36.18	108.29	17.21	168.83	24.49
Junc N40	90.90	36.12	108.16	17.26	169.32	24.56
Junc N41	90.64	0.18	108.67	18.03	176.87	25.65
Junc N42	90.30	0.15	109.18	18.88	185.21	26.86
Junc N43	90.00	0.07	109.45	19.45	190.80	27.67
Junc N44	89.55	0.08	109.38	19.83	194.53	28.21
Junc N45	88.50	0.06	109.45	20.95	205.52	29.81
Junc N46	87.00	0.05	109.45	22.45	220.23	31.94
Junc N47	86.15	1.62	109.44	23.29	228.47	33.14
Junc N48	86.66	0.27	112.26	25.60	251.14	36.42
Junc N49	84.50	0.26	112.68	28.18	276.45	40.10
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.55	32.35	317.35	46.03
Junc N52	85.65	0.00	109.63	23.98	235.24	34.12
Junc N53	85.10	1.73	109.63	24.53	240.64	34.90
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.82	32.97	323.44	46.91
Junc KNE01,14-17	81.00	16.35	114.70	33.70	330.60	47.95
Junc KNE02,11-13,21	82.23	8.78	113.38	31.15	305.58	44.32
Junc KNE03	88.85	0.30	109.81	20.96	205.62	29.82
Junc KNE04,5-6	84.00	7.41	112.74	28.74	281.94	40.89
Junc KNE07	88.38	4.03	112.12	23.74	232.89	33.78
Junc KNE08	90.72	0.08	111.12	20.40	200.12	29.03
Junc KNE09	88.86	0.18	110.79	21.93	215.13	31.20
Junc KNE10	89.84	0.08	110.11	20.27	198.85	28.84
Junc KNE18	87.52	0.07	111.79	24.27	238.09	34.53
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.48	18.83	184.72	26.79
Junc KNE23	91.30	95.11	108.03	16.73	164.12	23.80
Junc KNE24	90.60	0.07	109.31	18.71	183.55	26.62
Junc KNE25	87.40	0.42	111.73	24.33	238.68	34.62
Junc KNE26	90.30	0.05	110.15	19.85	194.73	28.24

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.28	1.05	4.30	0.023
Pipe P1B	685.00	300	120	74.28	1.05	4.30	0.023
Pipe P2A	580.00	400	120	-144.73	1.15	3.64	0.022
Pipe P2B	300.00	400	120	128.38	1.02	2.92	0.022
Pipe P2C	235.00	400	120	101.75	0.81	1.90	0.023
Pipe P3	260.00	300	120	74.28	1.05	4.30	0.023
Pipe P4	175.00	300	120	66.87	0.95	3.54	0.023
Pipe P5	83.00	300	120	46.08	0.65	1.78	0.025
Pipe P6	82.00	300	120	43.09	0.61	1.57	0.025
Pipe P7	75.00	300	120	-19.55	0.28	0.36	0.028
Pipe P8	75.00	300	120	-19.48	0.28	0.36	0.028
Pipe P9	90.00	300	120	19.41	0.27	0.36	0.028
Pipe P10	90.00	300	120	19.17	0.27	0.35	0.028
Pipe P11	85.00	300	120	-92.33	1.31	6.43	0.022
Pipe P12	85.00	300	120	-92.33	1.31	6.43	0.022
Pipe P13	85.00	300	120	-92.97	1.32	6.51	0.022
Pipe P14	84.00	300	120	48.57	0.69	1.96	0.024
Pipe P15	92.00	200	110	-6.85	0.22	0.44	0.036
Pipe P16	92.00	200	110	-16.68	0.53	2.29	0.032
Pipe P17	110.00	200	110	9.68	0.31	0.83	0.035
Pipe P18	110.00	200	110	9.53	0.30	0.81	0.035
Pipe P19	76.00	200	110	9.41	0.30	0.79	0.035
Pipe P20	110.00	300	120	-32.10	0.45	0.91	0.026
Pipe P21	110.00	300	120	-32.25	0.46	0.92	0.026
Pipe P22	84.00	300	120	41.39	0.59	1.45	0.025
Pipe P23	60.00	300	120	-41.35	0.59	1.45	0.025
Pipe P24	85.00	200	110	-6.05	0.19	0.35	0.037
Pipe P25	83.00	200	110	-6.17	0.20	0.36	0.037
Pipe P26	84.00	200	110	-23.06	0.73	4.17	0.030
Pipe P27	89.00	200	110	16.77	0.53	2.31	0.032
Pipe P28	100.00	200	110	15.32	0.49	1.96	0.032
Pipe P29	75.00	200	110	15.27	0.49	1.94	0.032
Pipe P30	110.00	200	110	-1.26	0.04	0.02	0.047
Pipe P31	99.00	200	110	-1.05	0.03	0.01	0.048
Pipe P32	80.00	300	120	-47.33	0.67	1.86	0.024
Pipe P33	72.00	300	120	-48.30	0.68	1.94	0.024
Pipe P34	103.00	300	120	-48.17	0.68	1.93	0.024
Pipe P35	79.00	300	120	63.26	0.89	3.19	0.023
Pipe P36	102.00	300	120	50.28	0.71	2.09	0.024
Pipe P37	101.00	300	120	50.11	0.71	2.07	0.024
Pipe P38	40.00	250	110	12.52	0.26	0.45	0.034
Pipe P39	40.00	250	110	12.56	0.26	0.46	0.034
Pipe P40	42.00	200	110	-12.69	0.40	1.38	0.033
Pipe P41	58.00	200	110	-12.71	0.40	1.38	0.033
Pipe P42	100.00	200	110	12.78	0.41	1.40	0.033
Pipe P43	76.00	200	110	12.88	0.41	1.42	0.033
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	62.55	0.88	3.13	0.024
Pipe P46	85.00	200	110	-21.74	0.69	3.74	0.031
Pipe P47	73.00	200	110	-21.92	0.70	3.80	0.031
Pipe P48	75.00	200	110	-22.09	0.70	3.85	0.031
Pipe P49	80.00	200	110	-22.16	0.71	3.87	0.031
Pipe P50	90.00	300	120	-111.08	1.57	9.05	0.022
Pipe P51	85.00	300	120	88.85	1.26	5.99	0.022
Pipe N52	100.00	300	120	88.38	1.25	5.93	0.022
Pipe P53	85.00	200	110	11.13	0.35	1.08	0.034
Pipe P54	79.00	250	110	21.74	0.44	1.26	0.032
Pipe P55	70.00	250	110	21.52	0.44	1.24	0.032
Pipe P56	102.00	300	120	55.20	0.78	2.48	0.024
Pipe P57	101.00	300	120	55.00	0.78	2.46	0.024
Pipe P58	82.00	300	120	-72.71	1.03	4.13	0.023
Pipe P59	110.00	300	120	90.40	1.28	6.18	0.022
Pipe P60	110.00	300	120	54.22	0.77	2.40	0.024
Pipe P61	95.00	300	120	40.89	0.58	1.42	0.025
Pipe P62	110.00	300	120	-77.01	1.09	4.59	0.023
Pipe P63	110.00	300	120	-77.19	1.09	4.61	0.023
Pipe P64	79.00	200	110	17.81	0.57	2.59	0.032
Pipe P65	40.00	300	120	95.16	1.35	6.80	0.022
Pipe P66	40.00	300	120	-95.23	1.35	6.81	0.022
Pipe P67	175.00	250	110	19.59	0.40	1.04	0.032
Pipe P68	83.00	250	110	17.78	0.36	0.87	0.032
Pipe P69	70.00	250	110	17.86	0.36	0.88	0.032
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P74	85.00	200	110	-25.06	0.80	4.86	0.030
Pipe P75	85.00	200	110	-25.33	0.81	4.96	0.030
Pipe P76	85.00	200	110	-25.59	0.81	5.05	0.030
Pipe P77	85.00	200	110	-25.84	0.82	5.15	0.030
Pipe P78	82.00	200	110	-16.76	0.53	2.31	0.032
Pipe P79	50.00	200	110	-26.63	0.85	5.44	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-275.25	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	109.97	29.22	286.65	41.57
Junc N2	88.25	2.99	107.13	18.88	185.21	26.86
Junc N3	88.12	0.04	106.90	18.78	184.23	26.72
Junc N4	87.85	0.07	106.63	18.78	184.23	26.72
Junc N5	87.19	63.57	106.03	18.84	184.82	26.81
Junc N6	84.95	0.00	106.98	22.03	216.11	31.34
Junc N7	82.95	0.64	107.94	24.99	245.15	35.56
Junc N8	88.28	0.11	106.86	18.58	182.27	26.44
Junc N9	88.54	0.15	106.94	18.40	180.50	26.18
Junc N10	88.80	0.08	107.18	18.38	180.31	26.15
Junc N11	90.47	0.15	106.88	16.41	160.98	23.35
Junc N12	92.25	0.12	106.83	14.58	143.03	20.74
Junc N13	89.86	0.15	106.83	16.97	166.48	24.15
Junc N14	91.70	0.04	106.74	15.04	147.54	21.40
Junc N15	91.36	0.08	106.71	15.35	150.58	21.84
Junc N16	89.81	0.12	106.72	16.91	165.89	24.06
Junc N17	88.25	0.12	106.73	18.48	181.29	26.29
Junc N18	88.10	0.18	106.65	18.55	181.98	26.39
Junc N19	88.74	0.05	106.58	17.84	175.01	25.38
Junc N20	89.41	0.21	106.65	17.24	169.12	24.53
Junc N21	90.00	0.13	106.60	16.60	162.85	23.62
Junc N22	90.33	0.10	106.43	16.10	157.94	22.91
Junc N23	90.11	0.17	106.35	16.24	159.31	23.11
Junc N24	89.95	0.04	106.28	16.33	160.20	23.23
Junc N25	90.15	0.08	106.29	16.14	158.33	22.96
Junc N26	90.00	0.02	106.31	16.31	160.00	23.21
Junc N27	90.60	0.07	106.34	15.74	154.41	22.40
Junc N28	91.00	0.10	106.39	15.39	150.98	21.90
Junc N29	89.20	0.20	106.13	16.93	166.08	24.09
Junc N30	88.35	0.18	106.07	17.72	173.83	25.21
Junc N31	88.30	0.17	106.03	17.73	173.93	25.23
Junc N32	88.10	0.07	105.99	17.89	175.50	25.45
Junc N33	87.40	63.40	105.94	18.54	181.88	26.38
Junc N34	87.95	0.47	105.98	18.03	176.87	25.65
Junc N35	87.50	0.22	106.03	18.53	181.78	26.36
Junc N36	86.20	0.20	106.03	19.83	194.53	28.21
Junc N37	89.83	0.20	106.04	16.21	159.02	23.06
Junc N38	90.80	0.13	106.07	15.27	149.80	21.73
Junc N39	91.08	0.18	106.08	15.00	147.15	21.34
Junc N40	90.90	0.12	106.09	15.19	149.01	21.61
Junc N41	90.64	0.18	106.10	15.46	151.66	22.00
Junc N42	90.30	0.15	106.11	15.81	155.10	22.49
Junc N43	90.00	0.07	106.12	16.12	158.14	22.94
Junc N44	89.55	0.08	106.04	16.49	161.77	23.46
Junc N45	88.50	0.06	106.04	17.54	172.07	24.96
Junc N46	87.00	0.05	106.03	19.03	186.68	27.08
Junc N47	86.15	1.62	106.03	19.88	195.02	28.29
Junc N48	86.66	0.27	107.48	20.82	204.24	29.62
Junc N49	84.50	0.26	108.07	23.57	231.22	33.54
Junc N50	82.68	0.25	108.67	25.99	254.96	36.98
Junc N51	81.20	0.79	109.28	28.08	275.46	39.95
Junc N52	85.65	0.00	106.03	20.38	199.93	29.00
Junc N53	85.10	1.73	106.03	20.93	205.32	29.78
Junc N54	82.25	0.00	114.29	32.04	314.31	45.59
Junc N55	80.85	0.00	109.65	28.80	282.53	40.98
Junc KNE01,14-17	81.00	16.35	111.06	30.06	294.89	42.77
Junc KNE02,11-13,21	82.23	8.78	108.91	26.68	261.73	37.96
Junc KNE03	88.85	0.30	106.03	17.18	168.54	24.44
Junc KNE04,5-6,20	84.00	7.41	108.33	24.33	238.68	34.62
Junc KNE07	88.38	4.03	107.39	19.01	186.49	27.05
Junc KNE08	90.72	0.08	106.65	15.93	156.27	22.67
Junc KNE09	88.86	0.18	106.53	17.67	173.34	25.14
Junc KNE10	89.84	0.08	106.27	16.43	161.18	23.38
Junc KNE18	87.52	0.07	106.36	18.84	184.82	26.81
Junc KNE19	78.25	1.58	114.29	36.04	353.55	51.28
Junc KNE22	92.65	0.11	106.79	14.14	138.71	20.12
Junc KNE23	91.30	0.11	106.08	14.78	144.99	21.03
Junc KNE24	90.60	0.07	106.05	15.45	151.56	21.98
Junc KNE25	87.40	95.42	106.03	18.63	182.76	26.51
Junc KNE26	90.30	0.05	106.29	15.99	156.86	22.75

Minimum Pressure
Maximum Fireflow (sum)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe P1A	1.00	300	120	91.37	1.29	6.31	0.022
Pipe P1B	685.00	300	120	91.37	1.29	6.31	0.022
Pipe P2A	580.00	400	120	-182.30	1.45	5.58	0.021
Pipe P2B	300.00	400	120	165.95	1.32	4.69	0.021
Pipe P2C	235.00	400	120	134.28	1.07	3.17	0.022
Pipe P3	260.00	300	120	91.37	1.29	6.31	0.022
Pipe P4	175.00	300	120	83.96	1.19	5.39	0.023
Pipe P5	83.00	300	120	62.21	0.88	3.09	0.024
Pipe P6	82.00	300	120	59.22	0.84	2.82	0.024
Pipe P7	75.00	300	120	-67.67	0.96	3.62	0.023
Pipe P8	75.00	300	120	-67.60	0.96	3.61	0.023
Pipe P9	90.00	300	120	67.53	0.96	3.60	0.023
Pipe P10	90.00	300	120	3.96	0.06	0.02	0.035
Pipe P11	85.00	300	120	-124.86	1.77	11.24	0.021
Pipe P12	85.00	300	120	-124.86	1.77	11.24	0.021
Pipe P13	85.00	300	120	-125.50	1.78	11.35	0.021
Pipe P14	84.00	300	120	21.61	0.31	0.44	0.028
Pipe P15	92.00	200	110	-9.99	0.32	0.89	0.034
Pipe P16	92.00	200	110	-17.64	0.56	2.54	0.032
Pipe P17	110.00	200	110	7.50	0.24	0.52	0.036
Pipe P18	110.00	200	110	7.35	0.23	0.50	0.036
Pipe P19	76.00	200	110	7.23	0.23	0.49	0.036
Pipe P20	110.00	300	120	-17.86	0.25	0.31	0.028
Pipe P21	110.00	300	120	-18.01	0.25	0.31	0.028
Pipe P22	84.00	300	120	24.98	0.35	0.57	0.027
Pipe P23	60.00	300	120	-24.94	0.35	0.57	0.027
Pipe P24	85.00	200	110	-3.37	0.11	0.12	0.040
Pipe P25	83.00	200	110	-3.49	0.11	0.13	0.040
Pipe P26	84.00	200	110	-13.48	0.43	1.54	0.033
Pipe P27	89.00	200	110	9.87	0.31	0.87	0.034
Pipe P28	100.00	200	110	9.05	0.29	0.74	0.035
Pipe P29	75.00	200	110	9.00	0.29	0.73	0.035
Pipe P30	110.00	200	110	-0.64	0.02	0.01	0.051
Pipe P31	99.00	200	110	-0.43	0.01	0.00	0.056
Pipe P32	80.00	300	120	-28.23	0.40	0.72	0.026
Pipe P33	72.00	300	120	-28.58	0.40	0.73	0.026
Pipe P34	103.00	300	120	-28.45	0.40	0.73	0.026
Pipe P35	79.00	300	120	37.27	0.53	1.20	0.025
Pipe P36	102.00	300	120	29.56	0.42	0.78	0.026
Pipe P37	101.00	300	120	29.39	0.42	0.77	0.026
Pipe P38	40.00	250	110	7.25	0.15	0.17	0.037
Pipe P39	40.00	250	110	7.29	0.15	0.17	0.037
Pipe P40	42.00	200	110	-7.42	0.24	0.51	0.036
Pipe P41	58.00	200	110	-7.44	0.24	0.51	0.036
Pipe P42	100.00	200	110	7.51	0.24	0.52	0.036
Pipe P43	76.00	200	110	7.61	0.24	0.54	0.036
Pipe P44	65.00	250	110	-0.05	0.00	0.00	0.000
Pipe P45	125.00	300	120	36.56	0.52	1.16	0.025
Pipe P46	85.00	200	110	8.32	0.26	0.63	0.035
Pipe P47	73.00	200	110	8.14	0.26	0.61	0.035
Pipe P48	75.00	200	110	7.97	0.25	0.58	0.036
Pipe P49	80.00	200	110	7.90	0.25	0.57	0.036
Pipe P50	90.00	300	120	-33.40	0.47	0.98	0.026
Pipe P51	85.00	300	120	-22.10	0.31	0.46	0.027
Pipe N52	100.00	300	120	-22.57	0.32	0.47	0.027
Pipe P53	85.00	200	110	-11.73	0.37	1.19	0.034
Pipe P54	79.00	250	110	-1.22	0.02	0.01	0.049
Pipe P55	70.00	250	110	-1.44	0.03	0.01	0.047
Pipe P56	102.00	300	120	-9.92	0.14	0.10	0.031
Pipe P57	101.00	300	120	-10.12	0.14	0.11	0.031
Pipe P58	82.00	300	120	15.37	0.22	0.23	0.029
Pipe P59	110.00	300	120	-8.08	0.11	0.07	0.032
Pipe P60	110.00	300	120	-8.26	0.12	0.07	0.032
Pipe P61	95.00	300	120	8.37	0.12	0.08	0.032
Pipe P62	110.00	300	120	-8.49	0.12	0.08	0.032
Pipe P63	110.00	300	120	-8.67	0.12	0.08	0.032
Pipe P64	79.00	200	110	7.42	0.24	0.51	0.036
Pipe P65	40.00	300	120	16.24	0.23	0.26	0.029
Pipe P66	40.00	300	120	-16.31	0.23	0.26	0.029
Pipe P67	175.00	250	110	-3.37	0.07	0.04	0.042
Pipe P68	83.00	250	110	-5.18	0.11	0.09	0.039
Pipe P69	70.00	250	110	-5.10	0.10	0.09	0.039
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.045
Pipe P74	85.00	200	110	-30.10	0.96	6.83	0.029
Pipe P75	85.00	200	110	-30.37	0.97	6.94	0.029
Pipe P76	85.00	200	110	-30.63	0.97	7.05	0.029
Pipe P77	85.00	200	110	-30.88	0.98	7.16	0.029
Pipe P78	82.00	200	110	-17.72	0.56	2.56	0.032
Pipe P79	50.00	200	110	-31.67	1.01	7.50	0.029
Pump 1	#N/A	#N/A	#N/A	275.25	0.00	-114.29	0.000

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-220.59	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	113.82	33.07	324.42	47.05
Junc N2	88.25	2.99	111.92	23.67	232.20	33.68
Junc N3	88.12	0.04	111.80	23.68	232.30	33.69
Junc N4	87.85	0.07	111.80	23.95	234.95	34.08
Junc N5	87.19	0.24	111.80	24.61	241.42	35.02
Junc N6	84.95	0.00	112.33	27.38	268.60	38.96
Junc N7	82.95	0.64	112.87	29.92	293.52	42.57
Junc N8	88.28	0.11	111.51	23.23	227.89	33.05
Junc N9	88.54	0.15	111.55	23.01	225.73	32.74
Junc N10	88.80	0.08	111.82	23.02	225.83	32.75
Junc N11	90.47	0.15	111.41	20.94	205.42	29.79
Junc N12	92.25	0.12	111.28	19.03	186.68	27.08
Junc N13	89.86	0.15	111.35	21.49	210.82	30.58
Junc N14	91.70	0.04	110.99	19.29	189.23	27.45
Junc N15	91.36	0.08	110.85	19.49	191.20	27.73
Junc N16	89.81	0.12	110.90	21.09	206.89	30.01
Junc N17	88.25	0.12	110.95	22.70	222.69	32.30
Junc N18	88.10	0.18	110.61	22.51	220.82	32.03
Junc N19	88.74	0.05	110.29	21.55	211.41	30.66
Junc N20	89.41	0.21	110.61	21.20	207.97	30.16
Junc N21	90.00	0.13	110.38	20.38	199.93	29.00
Junc N22	90.33	0.10	109.65	19.32	189.53	27.49
Junc N23	90.11	0.17	109.48	19.37	190.02	27.56
Junc N24	89.95	36.04	107.94	17.99	176.48	25.60
Junc N25	90.15	0.08	107.19	17.04	167.16	24.24
Junc N26	90.00	36.02	107.20	17.20	168.73	24.47
Junc N27	90.60	0.07	107.80	17.20	168.73	24.47
Junc N28	91.00	0.10	108.85	17.85	175.11	25.40
Junc N29	89.20	0.20	110.01	20.81	204.15	29.61
Junc N30	88.35	0.18	110.33	21.98	215.62	31.27
Junc N31	88.30	0.17	110.61	22.31	218.86	31.74
Junc N32	88.10	0.07	110.91	22.81	223.77	32.45
Junc N33	87.40	0.07	111.22	23.82	233.67	33.89
Junc N34	87.95	0.47	110.90	22.95	225.14	32.65
Junc N35	87.50	0.22	110.49	22.99	225.53	32.71
Junc N36	86.20	0.20	110.46	24.26	237.99	34.52
Junc N37	89.83	0.20	110.45	20.62	202.28	29.34
Junc N38	90.80	0.13	110.28	19.48	191.10	27.72
Junc N39	91.08	0.18	110.24	19.16	187.96	27.26
Junc N40	90.90	0.12	110.17	19.27	189.04	27.42
Junc N41	90.64	0.18	110.13	19.49	191.20	27.73
Junc N42	90.30	0.15	110.10	19.80	194.24	28.17
Junc N43	90.00	0.07	110.05	20.05	196.69	28.53
Junc N44	89.55	0.08	110.39	20.84	204.44	29.65
Junc N45	88.50	0.06	110.41	21.91	214.94	31.17
Junc N46	87.00	0.05	110.41	23.41	229.65	33.31
Junc N47	86.15	1.62	110.41	24.26	237.99	34.52
Junc N48	86.66	0.27	112.23	25.57	250.84	36.38
Junc N49	84.50	0.26	112.66	28.16	276.25	40.07
Junc N50	82.68	0.25	113.11	30.43	298.52	43.30
Junc N51	81.20	0.79	113.56	32.36	317.45	46.04
Junc N52	85.65	0.00	110.46	24.81	243.39	35.30
Junc N53	85.10	1.73	110.46	25.36	248.78	36.08
Junc N54	82.25	0.00	116.80	34.55	338.94	49.16
Junc N55	80.85	0.00	113.85	33.00	323.73	46.95
Junc KNE01,14-17	81.00	16.35	114.71	33.71	330.70	47.96
Junc KNE02,11-13,21	82.23	8.78	113.41	31.18	305.88	44.36
Junc KNE03	88.85	0.30	110.52	21.67	212.58	30.83
Junc KNE04,5-6	84.00	7.41	112.68	28.68	281.35	40.81
Junc KNE07	88.38	4.03	112.06	23.68	232.30	33.69
Junc KNE08	90.72	0.08	110.61	19.89	195.12	28.30
Junc KNE09	88.86	0.18	110.06	21.20	207.97	30.16
Junc KNE10	89.84	0.08	109.31	19.47	191.00	27.70
Junc KNE18	87.52	0.07	111.80	24.28	238.19	34.55
Junc KNE19	78.25	1.58	116.81	38.56	378.27	54.86
Junc KNE22	92.65	0.11	111.19	18.54	181.88	26.38
Junc KNE23	91.30	0.11	110.20	18.90	185.41	26.89
Junc KNE24	90.60	0.07	110.38	19.78	194.04	28.14
Junc KNE25	87.40	0.42	111.80	24.40	239.36	34.72
Junc KNE26	90.30	95.05	105.93	15.63	153.33	22.24

Minimum Pressure

MAXIMUM DAY + FIREFLOW DEMAND AT N_KNE26
Scenario 1 - Full Buildout (System Level Demands)

Pipe Report

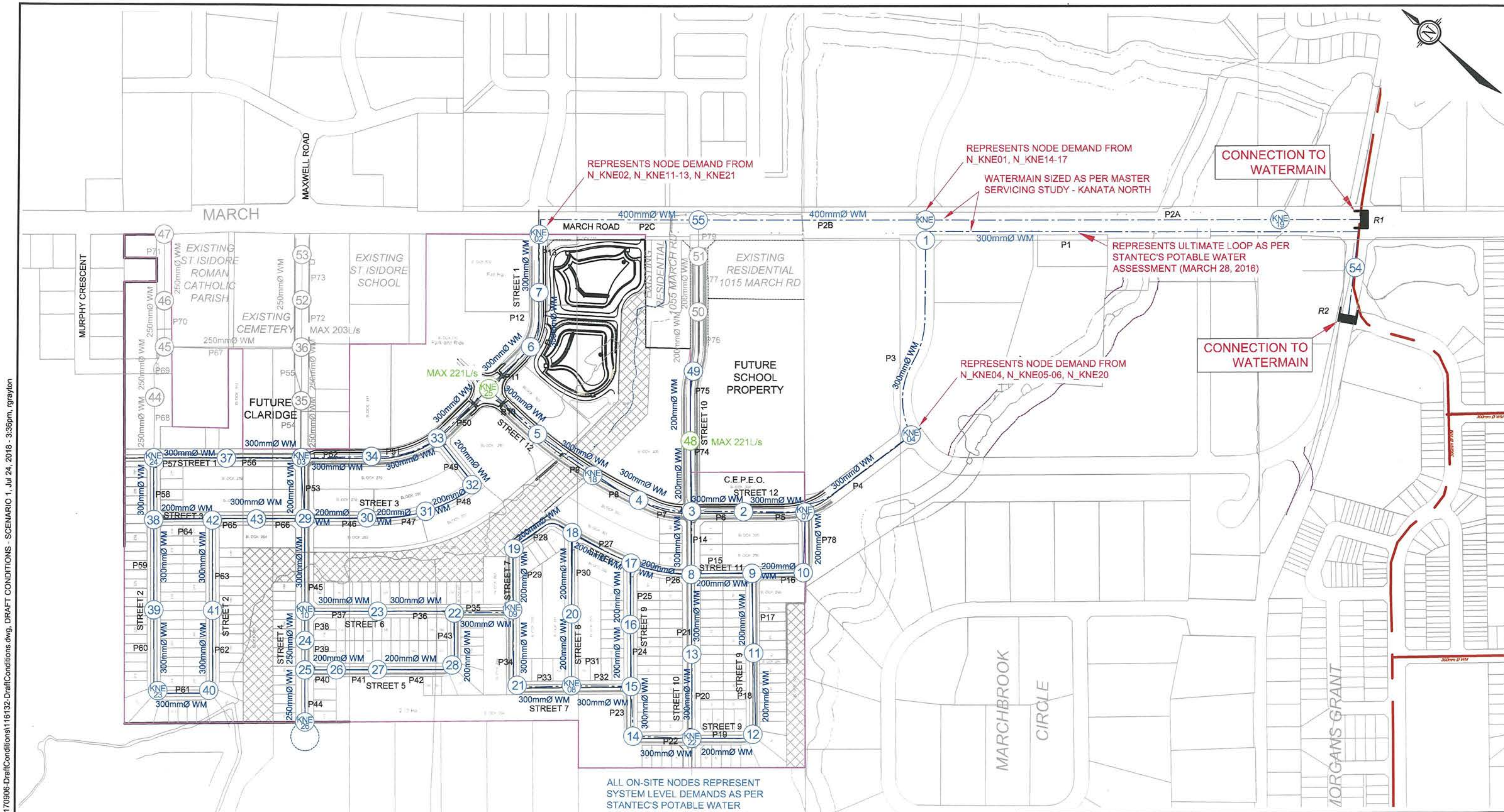
Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	220.59	0.00	-116.81	0.000
Pipe P1A	1.00	300	120	74.86	1.06	4.36	0.023
Pipe P1B	685.00	300	120	74.86	1.06	4.36	0.023
Pipe P2A	580.00	400	120	-144.15	1.15	3.61	0.022
Pipe P2B	300.00	400	120	127.80	1.02	2.89	0.022
Pipe P2C	235.00	400	120	100.67	0.80	1.86	0.023
Pipe P3	260.00	300	120	74.86	1.06	4.36	0.023
Pipe P4	175.00	300	120	67.45	0.95	3.59	0.023
Pipe P5	83.00	300	120	44.43	0.63	1.66	0.025
Pipe P6	82.00	300	120	41.44	0.59	1.46	0.025
Pipe P7	75.00	300	120	-1.57	0.02	0.00	0.040
Pipe P8	75.00	300	120	-1.50	0.02	0.00	0.041
Pipe P9	90.00	300	120	1.43	0.02	0.00	0.040
Pipe P10	90.00	300	120	1.19	0.02	0.00	0.043
Pipe P11	85.00	300	120	-91.25	1.29	6.29	0.022
Pipe P12	85.00	300	120	-91.25	1.29	6.29	0.022
Pipe P13	85.00	300	120	-91.89	1.30	6.37	0.022
Pipe P14	84.00	300	120	65.40	0.93	3.39	0.023
Pipe P15	92.00	200	110	-6.66	0.21	0.42	0.037
Pipe P16	92.00	200	110	-18.90	0.60	2.89	0.031
Pipe P17	110.00	200	110	12.10	0.39	1.26	0.033
Pipe P18	110.00	200	110	11.95	0.38	1.23	0.033
Pipe P19	76.00	200	110	11.83	0.38	1.21	0.034
Pipe P20	110.00	300	120	-41.87	0.59	1.49	0.025
Pipe P21	110.00	300	120	-42.02	0.59	1.50	0.025
Pipe P22	84.00	300	120	53.58	0.76	2.35	0.024
Pipe P23	60.00	300	120	-53.54	0.76	2.34	0.024
Pipe P24	85.00	200	110	-7.92	0.25	0.58	0.036
Pipe P25	83.00	200	110	-8.04	0.26	0.59	0.036
Pipe P26	84.00	200	110	-29.93	0.95	6.76	0.029
Pipe P27	89.00	200	110	21.77	0.69	3.75	0.031
Pipe P28	100.00	200	110	19.92	0.63	3.18	0.031
Pipe P29	75.00	200	110	19.87	0.63	3.16	0.031
Pipe P30	110.00	200	110	-1.67	0.05	0.03	0.045
Pipe P31	99.00	200	110	-1.46	0.05	0.03	0.046
Pipe P32	80.00	300	120	-61.38	0.87	3.02	0.024
Pipe P33	72.00	300	120	-62.76	0.89	3.15	0.023
Pipe P34	103.00	300	120	-62.63	0.89	3.13	0.024
Pipe P35	79.00	300	120	82.32	1.16	5.20	0.023
Pipe P36	102.00	300	120	44.22	0.63	1.64	0.025
Pipe P37	101.00	300	120	44.05	0.62	1.63	0.025
Pipe P38	40.00	250	110	-129.35	2.64	34.28	0.024
Pipe P39	40.00	250	110	-93.31	1.90	18.72	0.025
Pipe P40	42.00	200	110	-1.82	0.06	0.04	0.044
Pipe P41	58.00	200	110	-37.84	1.20	10.43	0.028
Pipe P42	100.00	200	110	37.91	1.21	10.47	0.028
Pipe P43	76.00	200	110	38.01	1.21	10.52	0.028
Pipe P44	65.00	250	110	-95.05	1.94	19.37	0.025
Pipe P45	125.00	300	120	-85.39	1.21	5.56	0.022
Pipe P46	85.00	200	110	-21.94	0.70	3.80	0.031
Pipe P47	73.00	200	110	-22.12	0.70	3.86	0.031
Pipe P48	75.00	200	110	-22.29	0.71	3.92	0.031
Pipe P49	80.00	200	110	-22.36	0.71	3.94	0.031
Pipe P50	90.00	300	120	-92.02	1.30	6.39	0.022
Pipe P51	85.00	300	120	69.59	0.98	3.81	0.023
Pipe N52	100.00	300	120	69.12	0.98	3.76	0.023
Pipe P53	85.00	200	110	28.18	0.90	6.05	0.029
Pipe P54	79.00	250	110	12.14	0.25	0.43	0.034
Pipe P55	70.00	250	110	11.92	0.24	0.41	0.034
Pipe P56	102.00	300	120	28.49	0.40	0.73	0.026
Pipe P57	101.00	300	120	28.29	0.40	0.72	0.026
Pipe P58	82.00	300	120	-36.40	0.51	1.15	0.025
Pipe P59	110.00	300	120	19.37	0.27	0.36	0.028
Pipe P60	110.00	300	120	19.19	0.27	0.35	0.028
Pipe P61	95.00	300	120	-19.08	0.27	0.35	0.028
Pipe P62	110.00	300	120	18.96	0.27	0.34	0.028
Pipe P63	110.00	300	120	18.78	0.27	0.34	0.028
Pipe P64	79.00	200	110	-16.91	0.54	2.35	0.032
Pipe P65	40.00	300	120	-35.53	0.50	1.10	0.026
Pipe P66	40.00	300	120	35.46	0.50	1.09	0.026
Pipe P67	175.00	250	110	9.99	0.20	0.30	0.035
Pipe P68	83.00	250	110	8.18	0.17	0.21	0.036
Pipe P69	70.00	250	110	8.26	0.17	0.21	0.036
Pipe P70	62.00	250	110	1.67	0.03	0.01	0.046
Pipe P71	75.00	250	110	1.62	0.03	0.01	0.046
Pipe P72	60.00	250	110	1.73	0.04	0.01	0.046
Pipe P73	60.00	250	110	1.73	0.04	0.01	0.045
Pipe P74	85.00	200	110	-25.56	0.81	5.05	0.030
Pipe P75	85.00	200	110	-25.83	0.82	5.14	0.030
Pipe P76	85.00	200	110	-26.09	0.83	5.24	0.030
Pipe P77	85.00	200	110	-26.34	0.84	5.33	0.030
Pipe P78	82.00	200	110	-18.98	0.60	2.91	0.031
Pipe P79	50.00	200	110	-27.13	0.86	5.63	0.030

MAXIMUM DAY + FIREFLOW DEMAND SUMMARY
Scenario 1 - Full Buildout (System Level Demands)

Maximum day plus fire flow demand was modeled for each node.
The following is a summary of the minimum pressures that occurred for each operating condition.

Fire at Junction	Demand (L/s) Maximum Daily	Fire Flow	Max Day + Fire	Minimum Pressure (m)	kPa	psi	Node
N9	0.11	167.00	167.11	18.02	176.78	25.64	N12
N10	0.08	167.00	167.08	18.85	184.92	26.82	N_KNE22
N12	0.12	167.00	167.12	15.43	151.37	21.95	N12
N14	0.04	167.00	167.04	17.55	172.17	24.97	N_KNE22
N20	0.21	167.00	167.21	18.06	177.17	25.70	N_KNE22
N28	0.10	167.00	167.10	15.56	152.64	22.14	N28
N32	0.07	167.00	167.07	19.06	186.98	27.12	N_KNE22
N36-max	0.20	203.00	203.20	14.29	140.18	20.33	N_KNE23
N42	0.15	167.00	167.15	17.91	175.70	25.48	N_KNE23
N47	1.62	167.00	168.62	14.87	145.87	21.16	N47
N48-max	0.27	221.00	221.27	14.49	142.15	20.62	N_KNE22
N49	0.26	167.00	167.26	20.11	197.28	28.61	N_KNE22
N53	1.73	167.00	168.73	16.48	161.67	23.45	N53
N_KNE09	0.18	167.00	167.18	18.19	178.44	25.88	N_KNE22
N_KNE22	0.11	167.00	167.11	17.41	170.79	24.77	N_KNE22
N_KNE23	0.11	167.00	167.11	16.73	164.12	23.80	N_KNE23
N_KNE25-max	0.42	221.00	221.42	14.14	138.71	20.12	N_KNE22
N_KNE26	0.05	167.00	167.05	15.63	153.33	22.24	N_KNE26

Note:
1) Fireflows of 167L/s have been applied based on Stantec's Potable Water Assessment (March 28, 2016) and is the maximum (capped) fireflow for single/townhouse units as per City of Ottawa Technical Bulletin ISDTB-2014-02.
2) Maximum achievable fireflows have been indicated (-max) in High Density residential areas.
3) Fireflow values have been distributed over several hydrants as per Technical Bulletin ISTB-2018-02.



M:\2016\116132\CAD\Design\Figures\Hydraulic\20170906-DraftConditions\116132-DraftConditions.dwg, DRAFT CONDITIONS - SCENARIO 1, Jul 24, 2018 - 3:36pm, rgrayton

LEGEND

- PROPERTY LINE
- P5 — PROPOSED BACKBONE WATERMAIN AS PER KANATA NORTH MASTER SERVICING STUDY - COMPLETED BY NOVATECH, JUNE 28, 2016 (WATER ANALYSIS BY STANTEC)
- P5 — PROPOSED LOCAL WATERMAIN AND ID NUMBER
- P5 — FUTURE CONCEPTUAL WATERMAIN AND ID NUMBER
- 1 — PROPOSED NODE AND ID NUMBER
- R1 — EXISTING RESERVOIR AND ID NUMBER
- MAX 160L/s 1 — MAXIMUM ACHIEVABLE FIREFLOW IN HIGH DENSITY AREAS
- 1 — FUTURE CONCEPTUAL NODE AND ID NUMBER

NOTES:

1) UNLESS OTHERWISE NOTED, A FIREFLOW OF 167L/s HAS BEEN ANALYSED, AS PER STANTEC'S POTABLE WATER ASSESSMENT, DATED MARCH 2016.
2) HIGH DENSITY FIREFLOWS TO BE CONFIRMED AND ANALYZED AT DETAILED DESIGN / SITE PLAN APPLICATION STAGE.

NOVATECH
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CITY OF OTTAWA
CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

WATERMAIN NETWORK NODE LOCATIONS SCENARIO 1 - FULL BUILDOUT KNUEA SYSTEM LEVEL DEMAND (AS PER STANTEC MODEL)

SCALE 1 : 5000 (0, 50, 100, 150, 200)

DATE	JOB	FIGURE
JUNE 2018	116132	FIG-WM1

Population and Consumption Rate Calculations

Node	Number of Single Units	Number of Townhouse Units	Number of Multi-Unit Townhouse Units	Number of Multi-Unit Apartment Units	Multi-Use / Commerical Area (ha)	*Institutional Area (ha)	Residential Population	Consumption Rates (L/s) Average Daily	Maximum Daily	Maximum Hourly
R1										
R2										
N_KNE07		6					16	0.07	0.16	0.36
N2		8					22	0.09	0.22	0.48
						3.78	0	1.23	1.84	3.31
N3	4						14	0.06	0.14	0.30
N4		9					24	0.10	0.25	0.54
N_KNE18		8					22	0.09	0.22	0.48
N5			17	17			77	0.31	0.77	1.70
N_KNE25			29	29			131	0.53	1.32	2.91
N6							0	0.00	0.00	0.00
N7						0.83	0	0.27	0.40	0.73
N_KNE02							0	0.00	0.00	0.00
N8	12						41	0.17	0.41	0.91
N9	5	12					49	0.20	0.50	1.10
N10		10					27	0.11	0.27	0.60
N11	16						54	0.22	0.55	1.21
N12	13						44	0.18	0.45	0.98
N_KNE22	12						41	0.17	0.41	0.91
N13	16						54	0.22	0.55	1.21
N14	4						14	0.06	0.14	0.30
N15	9						31	0.12	0.31	0.68
N16	13						44	0.18	0.45	0.98
N17	1	13					39	0.16	0.39	0.86
N18	2	19					58	0.24	0.59	1.29
N19	2	4					18	0.07	0.18	0.39
N20		26					70	0.28	0.71	1.56
N_KNE08	4	5					27	0.11	0.27	0.60
N21	2	13					42	0.17	0.42	0.93
N_KNE09		22					59	0.24	0.60	1.32
N22	11						37	0.15	0.38	0.83
N23	18						61	0.25	0.62	1.36
N_KNE10	8						27	0.11	0.28	0.61
N24	4						14	0.06	0.14	0.30
N25	8						27	0.11	0.28	0.61
N26	2						7	0.03	0.07	0.15
N_KNE26	5						17	0.07	0.17	0.38
N27	7						24	0.10	0.24	0.53
N28	11						37	0.15	0.38	0.83
N29		24					65	0.26	0.66	1.44
N30		22					59	0.24	0.60	1.32
N31		21					57	0.23	0.57	1.26
N32		9					24	0.10	0.25	0.54
N33		8					22	0.09	0.22	0.48
N34		13	25	25			148	0.60	1.49	3.29
N_KNE03****	5	17	8	8			99	0.40	1.00	2.20
N35****	5	6	9	8			72	0.29	0.73	1.60
N36****	5	5	8	8			67	0.27	0.67	1.48
N37		24					65	0.26	0.66	1.44
N_KNE24	4	4					24	0.10	0.25	0.54
N38	14						48	0.19	0.48	1.06
N39	19						65	0.26	0.65	1.44
N_KNE23	12						41	0.17	0.41	0.91
N40	13						44	0.18	0.45	0.98
N41	19						65	0.26	0.65	1.44
N42	5	13					52	0.21	0.53	1.16
N43		9					24	0.10	0.25	0.54
N44	8						27	0.11	0.28	0.61
N45	6						20	0.08	0.21	0.45
N46	5						17	0.07	0.17	0.38
N47***	3						10	0.04	0.10	0.23
						2.06	0	0.67	1.00	1.80
N48			19	19			86	0.35	0.87	1.90
N49			18	18			81	0.33	0.82	1.80
N50					0.33		0	0.11	0.16	0.29
N51					1.02		0	0.33	0.50	0.89
N52							0	0.00	0.00	0.00
N53						2.24	0	0.73	1.09	1.96
N54							0	0.00	0.00	0.00
N55							0	0.00	0.00	0.00
TOTAL ONSITE	**312**	**330**	**133**	**132**	**1.35**	**8.91**	**2549**	**13.65**	**30.80**	**65.76**

TOTAL CLARDIGE / UNIFORM	**312**	**330**	**133**	**132**	**1.35**	**8.91**	**2549**	**13.65**	**30.80**	**65.76**

*Includes Fire Halls, Schools, Existing Schools, etc.
**Values are based on Stantec report. Values represent demand from future buildouts.
***Assumes existing single lot along roadway will ultimately become 2 single units.
****Assumes north half of property is 50% towns and 50% singles at same density as CU lands (25 singles/ha, 47 towns/ha), south half of property assumed to be multi unit residential at same density as CU lands (62.8units/ha).

Notes:
1) Nodes with prefixes N_KNE## are the Same Identification and Approximate Location of Nodes within Stantec's Kanata North Urban Expansion (KNUEA) Potable Water Assessment, dated March 28, 2016

Water Demand Parameters For Claridge / Uniform Site - As per City of Ottawa Guidelines

Single Residential Units	3.4	persons/unit
Townhouse Residential Units	2.7	persons/unit
Multi-Unit Residential (Townhouse)	2.7	persons/unit
Multi-Unit Residential (Apartment)	1.8	persons/unit

Water Demand Parameters For Claridge / Uniform Site (Local Demand as per City of Ottawa Guidelines - Water Distribution Systems)

Residential Demand - Single (low density)	350.0	L/c/day
Residential Demand - Street Town (med. density)	350.0	L/c/day
Residential Demand - Multi-Unit Town (med. density)	350.0	L/c/day
Residential Demand - Apartment (high density)	350.0	L/c/day
Residential Max Day	2.5	x Avg Day
Residential Peak Hour	2.2	x Max Day
Commercial/Intitutional Demand	50000	L/Gross ha/Day
Commerical/Institutional Max Day	1.5	x Avg Day
Commerical/Institutional Peak Hour	1.8	x Max Day

Residential Fire Flow (Typical)	133	L/s
Residential Fire Flow Cap (Typical)	167	L/s

Notes:
1) Fireflows of 167L/s have been applied based on Stantec's Potable Water Assessment (March 28, 2016) and is the maximum (capped) fireflow for single/townhouse units as per City of Ottawa Technical Bulletin ISDTB-2014-02.
2) Maximum achievable fireflows have been indicated (fireflow summary) in High Density residential areas.
3) Fireflow values have been distributed over several hydrants as per Technical Bulletin ISTB-2018-02.

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi	Age hours
Resvr 1	0.00	-13.71	0.00	0.00	0.00	0.00	0.0
Junc N1	80.75	0.00	130.78	50.03	0.00	0.00	2.9
Junc N2	88.25	1.32	130.77	42.52	417.12	60.50	5.1
Junc N3	88.12	0.06	130.77	42.65	418.40	60.68	6.7
Junc N4	87.85	0.10	130.77	42.92	421.05	61.07	18.6
Junc N5	87.19	0.31	130.77	43.58	427.52	62.01	8.2
Junc N6	84.95	0.00	130.77	45.82	449.49	65.19	5.3
Junc N7	82.95	0.27	130.77	47.82	469.11	68.04	5.0
Junc N8	88.28	0.17	130.77	42.49	416.83	60.46	7.3
Junc N9	88.54	0.20	130.77	42.23	414.28	60.09	5.9
Junc N10	88.80	0.11	130.77	41.97	411.73	59.72	5.2
Junc N11	90.47	0.22	130.77	40.30	395.34	57.34	7.2
Junc N12	92.25	0.18	130.76	38.51	377.78	54.79	9.0
Junc N13	89.86	0.22	130.77	40.91	401.33	58.21	8.3
Junc N14	91.70	0.06	130.76	39.06	383.18	55.58	10.4
Junc N15	91.36	0.12	130.76	39.40	386.51	56.06	11.2
Junc N16	89.81	0.18	130.76	40.95	401.72	58.26	9.8
Junc N17	88.25	0.16	130.76	42.51	417.02	60.48	7.9
Junc N18	88.10	0.24	130.76	42.66	418.49	60.70	8.8
Junc N19	88.74	0.07	130.76	42.02	412.22	59.79	10.4
Junc N20	89.41	0.28	130.76	41.35	405.64	58.83	17.9
Junc N21	90.00	0.17	130.76	40.76	399.86	57.99	12.7
Junc N22	90.33	0.15	130.76	40.43	396.62	57.52	14.3
Junc N23	90.11	0.25	130.76	40.65	398.78	57.84	15.8
Junc N24	89.95	0.06	130.76	40.81	400.35	58.07	25.3
Junc N25	90.15	0.11	130.76	40.61	398.38	57.78	26.5
Junc N26	90.00	0.03	130.76	40.76	399.86	57.99	21.2
Junc N27	90.60	0.10	130.76	40.16	393.97	57.14	18.7
Junc N28	91.00	0.15	130.76	39.76	390.05	56.57	15.8
Junc N29	89.20	0.26	130.76	41.56	407.70	59.13	15.4
Junc N30	88.35	0.24	130.76	42.41	416.04	60.34	8.0
Junc N31	88.30	0.23	130.76	42.46	416.53	60.41	7.2
Junc N32	88.10	0.10	130.76	42.66	418.49	60.70	6.5
Junc N33	87.40	0.09	130.76	43.36	425.36	61.69	5.9
Junc N34	87.95	0.60	130.76	42.81	419.97	60.91	6.3
Junc N35	87.50	0.29	130.76	43.26	424.38	61.55	7.7
Junc N36	86.20	0.27	130.76	44.56	437.13	63.40	8.6
Junc N37	89.83	0.26	130.76	40.93	401.52	58.24	8.4
Junc N38	90.80	0.19	130.76	39.96	392.01	56.86	20.9
Junc N39	91.08	0.26	130.76	39.68	389.26	56.46	41.1
Junc N40	90.90	0.18	130.76	39.86	391.03	56.71	24.5
Junc N41	90.64	0.26	130.76	40.12	393.58	57.08	19.7
Junc N42	90.30	0.21	130.76	40.46	396.91	57.57	16.6
Junc N43	90.00	0.10	130.76	40.76	399.86	57.99	16.0
Junc N44	89.55	0.11	130.76	41.21	404.27	58.63	11.6
Junc N45	88.50	0.08	130.76	42.26	414.57	60.13	15.3
Junc N46	87.00	0.07	130.76	43.76	429.29	62.26	16.4
Junc N47	86.15	0.71	130.76	44.61	437.62	63.47	17.8
Junc N48	86.66	0.35	130.77	44.11	432.72	62.76	4.9
Junc N49	84.50	0.33	130.77	46.27	453.91	65.83	4.4
Junc N50	82.68	0.11	130.77	48.09	471.76	68.42	4.0
Junc N51	81.20	0.33	130.78	49.58	486.38	70.54	3.7
Junc N52	85.65	0.00	130.76	45.11	442.53	64.18	9.7
Junc N53	85.10	0.73	130.76	45.66	447.92	64.97	10.9
Junc N54	82.25	0.00	130.80	48.55	476.28	69.08	0.1
Junc N55	80.85	0.00	130.78	49.93	489.81	71.04	3.5
Junc KNE01,14-17	81.00	0.00	130.79	49.79	488.44	70.84	2.3
Junc KNE02,11-13,21	82.23	0.00	130.78	48.55	476.28	69.08	4.7
Junc KNE03	88.85	0.40	130.76	41.91	411.14	59.63	6.9
Junc KNE04,5-6,20	84.00	0.00	130.77	46.77	458.81	66.55	3.9
Junc KNE07	88.38	0.07	130.77	42.39	415.85	60.31	4.6
Junc KNE08	90.72	0.11	130.76	40.04	392.79	56.97	11.9
Junc KNE09	88.86	0.24	130.76	41.90	411.04	59.62	13.4
Junc KNE10	89.84	0.11	130.76	40.92	401.43	58.22	17.7
Junc KNE18	87.52	0.09	130.77	43.25	424.28	61.54	13.1
Junc KNE19	78.25	0.00	130.80	52.55	515.52	74.77	0.0
Junc KNE22	92.65	0.17	130.76	38.11	373.86	54.22	9.6
Junc KNE23	91.30	0.17	130.76	39.46	387.10	56.14	31.5
Junc KNE24	90.60	0.10	130.76	40.16	393.97	57.14	10.4
Junc KNE25	87.40	0.53	130.77	43.37	425.46	61.71	5.5
Junc KNE26	90.30	0.07	130.76	40.46	396.91	57.57	38.6

Maximum Pressure Offsite
Maximum Pressure within Claridge / Uniform Site
Maximum Age

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	13.71	0.00	-130.80	0.000
Pipe P1A	1.00	300	120	4.85	0.07	0.02	0.023
Pipe P1B	685.00	300	120	4.85	0.07	0.03	0.034
Pipe P2A	580.00	400	120	-8.86	0.07	0.02	0.033
Pipe P2B	300.00	400	120	8.86	0.07	0.02	0.033
Pipe P2C	235.00	400	120	6.52	0.05	0.01	0.034
Pipe P3	260.00	300	120	4.85	0.07	0.03	0.034
Pipe P4	175.00	300	120	4.85	0.07	0.03	0.034
Pipe P5	83.00	300	120	3.53	0.05	0.02	0.036
Pipe P6	82.00	300	120	2.21	0.03	0.01	0.038
Pipe P7	75.00	300	120	0.17	0.00	0.00	0.000
Pipe P8	75.00	300	120	0.27	0.00	0.00	0.051
Pipe P9	90.00	300	120	-0.36	0.01	0.00	0.048
Pipe P10	90.00	300	120	-0.67	0.01	0.00	0.048
Pipe P11	85.00	300	120	-6.25	0.09	0.04	0.033
Pipe P12	85.00	300	120	-6.25	0.09	0.04	0.033
Pipe P13	85.00	300	120	-6.52	0.09	0.05	0.033
Pipe P14	84.00	300	120	3.54	0.05	0.02	0.036
Pipe P15	92.00	200	110	-0.20	0.01	0.00	0.058
Pipe P16	92.00	200	110	-1.14	0.04	0.02	0.047
Pipe P17	110.00	200	110	0.74	0.02	0.01	0.050
Pipe P18	110.00	200	110	0.52	0.02	0.00	0.053
Pipe P19	76.00	200	110	0.34	0.01	0.00	0.058
Pipe P20	110.00	300	120	-1.97	0.03	0.01	0.039
Pipe P21	110.00	300	120	-2.19	0.03	0.01	0.039
Pipe P22	84.00	300	120	2.14	0.03	0.01	0.039
Pipe P23	60.00	300	120	-2.08	0.03	0.01	0.039
Pipe P24	85.00	200	110	-0.20	0.01	0.00	0.063
Pipe P25	83.00	200	110	-0.38	0.01	0.00	0.057
Pipe P26	84.00	200	110	-1.37	0.04	0.02	0.046
Pipe P27	89.00	200	110	0.83	0.03	0.01	0.050
Pipe P28	100.00	200	110	0.54	0.02	0.00	0.053
Pipe P29	75.00	200	110	0.47	0.02	0.00	0.056
Pipe P30	110.00	200	110	-0.05	0.00	0.00	0.122
Pipe P31	99.00	200	110	0.23	0.01	0.00	0.063
Pipe P32	80.00	300	120	-2.16	0.03	0.01	0.038
Pipe P33	72.00	300	120	-1.82	0.03	0.00	0.040
Pipe P34	103.00	300	120	-1.65	0.02	0.00	0.041
Pipe P35	79.00	300	120	1.89	0.03	0.00	0.039
Pipe P36	102.00	300	120	1.29	0.02	0.00	0.042
Pipe P37	101.00	300	120	1.04	0.01	0.00	0.043
Pipe P38	40.00	250	110	-0.07	0.00	0.00	0.000
Pipe P39	40.00	250	110	-0.01	0.00	0.00	0.000
Pipe P40	42.00	200	110	-0.17	0.01	0.00	0.061
Pipe P41	58.00	200	110	-0.20	0.01	0.00	0.064
Pipe P42	100.00	200	110	0.30	0.01	0.00	0.057
Pipe P43	76.00	200	110	0.45	0.01	0.00	0.054
Pipe P44	65.00	250	110	-0.07	0.00	0.00	0.000
Pipe P45	125.00	300	120	0.86	0.01	0.00	0.045
Pipe P46	85.00	200	110	-0.52	0.02	0.00	0.054
Pipe P47	73.00	200	110	-0.76	0.02	0.01	0.051
Pipe P48	75.00	200	110	-0.99	0.03	0.01	0.048
Pipe P49	80.00	200	110	-1.09	0.03	0.01	0.048
Pipe P50	90.00	300	120	-5.05	0.07	0.03	0.034
Pipe P51	85.00	300	120	3.88	0.05	0.02	0.036
Pipe N52	100.00	300	120	3.28	0.05	0.01	0.036
Pipe P53	85.00	200	110	0.24	0.01	0.00	0.058
Pipe P54	79.00	250	110	1.34	0.03	0.01	0.047
Pipe P55	70.00	250	110	1.05	0.02	0.00	0.050
Pipe P56	102.00	300	120	1.29	0.02	0.00	0.042
Pipe P57	101.00	300	120	1.03	0.01	0.00	0.043
Pipe P58	82.00	300	120	-0.01	0.00	0.00	0.000
Pipe P59	110.00	300	120	0.16	0.00	0.00	0.000
Pipe P60	110.00	300	120	-0.10	0.00	0.00	0.000
Pipe P61	95.00	300	120	0.27	0.00	0.00	0.040
Pipe P62	110.00	300	120	-0.45	0.01	0.00	0.049
Pipe P63	110.00	300	120	-0.71	0.01	0.00	0.045
Pipe P64	79.00	200	110	0.34	0.01	0.00	0.056
Pipe P65	40.00	300	120	1.26	0.02	0.00	0.043
Pipe P66	40.00	300	120	-1.36	0.02	0.00	0.041
Pipe P67	175.00	250	110	0.05	0.00	0.00	0.000
Pipe P68	83.00	250	110	-0.92	0.02	0.00	0.050
Pipe P69	70.00	250	110	-0.81	0.02	0.00	0.050
Pipe P70	62.00	250	110	0.78	0.02	0.00	0.052
Pipe P71	75.00	250	110	0.71	0.01	0.00	0.052
Pipe P72	60.00	250	110	0.73	0.01	0.00	0.052
Pipe P73	60.00	250	110	0.73	0.01	0.00	0.052
Pipe P74	85.00	200	110	-1.22	0.04	0.02	0.047
Pipe P75	85.00	200	110	-1.57	0.05	0.03	0.045
Pipe P76	85.00	200	110	-1.90	0.06	0.04	0.044
Pipe P77	85.00	200	110	-2.01	0.06	0.05	0.044
Pipe P78	82.00	200	110	-1.25	0.04	0.02	0.047
Pipe P79	50.00	200	110	-2.34	0.07	0.06	0.043

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-65.67	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	126.92	46.17	452.93	65.69
Junc N2	88.25	3.79	126.68	38.43	377.00	54.68
Junc N3	88.12	0.30	126.67	38.55	378.18	54.85
Junc N4	87.85	0.54	126.67	38.82	380.82	55.23
Junc N5	87.19	1.70	126.67	39.48	387.30	56.17
Junc N6	84.95	0.00	126.74	41.79	409.96	59.46
Junc N7	82.95	0.73	126.81	43.86	430.27	62.40
Junc N8	88.28	0.91	126.64	38.36	376.31	54.58
Junc N9	88.54	1.10	126.64	38.10	373.76	54.21
Junc N10	88.80	0.60	126.67	37.87	371.50	53.88
Junc N11	90.47	1.21	126.63	36.16	354.73	51.45
Junc N12	92.25	0.98	126.62	34.37	337.17	48.90
Junc N13	89.86	1.21	126.63	36.77	360.71	52.32
Junc N14	91.70	0.30	126.61	34.91	342.47	49.67
Junc N15	91.36	0.68	126.60	35.24	345.70	50.14
Junc N16	89.81	0.98	126.60	36.79	360.91	52.35
Junc N17	88.25	0.86	126.60	38.35	376.21	54.57
Junc N18	88.10	1.29	126.59	38.49	377.59	54.76
Junc N19	88.74	0.39	126.58	37.84	371.21	53.84
Junc N20	89.41	1.56	126.59	37.18	364.74	52.90
Junc N21	90.00	0.93	126.58	36.58	358.85	52.05
Junc N22	90.33	0.83	126.57	36.24	355.51	51.56
Junc N23	90.11	1.36	126.57	36.46	357.67	51.88
Junc N24	89.95	0.30	126.56	36.61	359.14	52.09
Junc N25	90.15	0.61	126.56	36.41	357.18	51.80
Junc N26	90.00	0.15	126.56	36.56	358.65	52.02
Junc N27	90.60	0.53	126.56	35.96	352.77	51.16
Junc N28	91.00	0.83	126.57	35.57	348.94	50.61
Junc N29	89.20	1.44	126.56	37.36	366.50	53.16
Junc N30	88.35	1.32	126.57	38.22	374.94	54.38
Junc N31	88.30	1.26	126.58	38.28	375.53	54.47
Junc N32	88.10	0.54	126.60	38.50	377.69	54.78
Junc N33	87.40	0.48	126.62	39.22	384.75	55.80
Junc N34	87.95	3.29	126.59	38.64	379.06	54.98
Junc N35	87.50	1.60	126.56	39.06	383.18	55.58
Junc N36	86.20	1.48	126.55	40.35	395.83	57.41
Junc N37	89.83	1.44	126.56	36.73	360.32	52.26
Junc N38	90.80	1.06	126.56	35.76	350.81	50.88
Junc N39	91.08	1.44	126.56	35.48	348.06	50.48
Junc N40	90.90	0.98	126.56	35.66	349.82	50.74
Junc N41	90.64	1.44	126.56	35.92	352.38	51.11
Junc N42	90.30	1.16	126.56	36.26	355.71	51.59
Junc N43	90.00	0.54	126.56	36.56	358.65	52.02
Junc N44	89.55	0.61	126.55	37.00	362.97	52.64
Junc N45	88.50	0.45	126.55	38.05	373.27	54.14
Junc N46	87.00	0.38	126.55	39.55	387.99	56.27
Junc N47	86.15	2.03	126.55	40.40	396.32	57.48
Junc N48	86.66	1.90	126.70	40.04	392.79	56.97
Junc N49	84.50	1.80	126.75	42.25	414.47	60.11
Junc N50	82.68	0.29	126.82	44.14	433.01	62.80
Junc N51	81.20	0.89	126.89	45.69	448.22	65.01
Junc N52	85.65	0.00	126.55	40.90	401.23	58.19
Junc N53	85.10	1.96	126.55	41.45	406.62	58.98
Junc N54	82.25	0.00	127.27	45.02	441.65	64.06
Junc N55	80.85	0.00	126.94	46.09	452.14	65.58
Junc KNE01,14-17	81.00	0.00	127.05	46.05	451.75	65.52
Junc KNE02,11-13,21	82.23	0.00	126.89	44.66	438.11	63.54
Junc KNE03	88.85	2.20	126.56	37.71	369.94	53.65
Junc KNE04,5-6,20	84.00	0.00	126.79	42.79	419.77	60.88
Junc KNE07	88.38	0.36	126.71	38.33	376.02	54.54
Junc KNE08	90.72	0.60	126.59	35.87	351.88	51.04
Junc KNE09	88.86	1.32	126.58	37.72	370.03	53.67
Junc KNE10	89.84	0.61	126.56	36.72	360.22	52.25
Junc KNE18	87.52	0.48	126.67	39.15	384.06	55.70
Junc KNE19	78.25	0.00	127.27	49.02	480.89	69.75
Junc KNE22	92.65	0.91	126.62	33.97	333.25	48.33
Junc KNE23	91.30	0.91	126.56	35.26	345.90	50.17
Junc KNE24	90.60	0.54	126.56	35.96	352.77	51.16
Junc KNE25	87.40	2.91	126.67	39.27	385.24	55.87
Junc KNE26	90.30	0.38	126.56	36.26	355.71	51.59

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	65.67	0.00	-127.27	0.000
Pipe P1A	1.00	300	120	23.32	0.33	0.50	0.027
Pipe P1B	685.00	300	120	23.32	0.33	0.50	0.027
Pipe P2A	580.00	400	120	-42.35	0.34	0.37	0.026
Pipe P2B	300.00	400	120	42.35	0.34	0.37	0.026
Pipe P2C	235.00	400	120	31.57	0.25	0.22	0.027
Pipe P3	260.00	300	120	23.32	0.33	0.50	0.027
Pipe P4	175.00	300	120	23.32	0.33	0.50	0.027
Pipe P5	83.00	300	120	16.55	0.23	0.27	0.029
Pipe P6	82.00	300	120	12.76	0.18	0.16	0.030
Pipe P7	75.00	300	120	0.03	0.00	0.00	0.000
Pipe P8	75.00	300	120	0.57	0.01	0.00	0.057
Pipe P9	90.00	300	120	-1.05	0.01	0.00	0.042
Pipe P10	90.00	300	120	-2.75	0.04	0.01	0.038
Pipe P11	85.00	300	120	-30.84	0.44	0.84	0.026
Pipe P12	85.00	300	120	-30.84	0.44	0.84	0.026
Pipe P13	85.00	300	120	-31.57	0.45	0.88	0.026
Pipe P14	84.00	300	120	18.38	0.26	0.32	0.028
Pipe P15	92.00	200	110	-0.88	0.03	0.01	0.050
Pipe P16	92.00	200	110	-5.81	0.19	0.32	0.037
Pipe P17	110.00	200	110	3.84	0.12	0.15	0.040
Pipe P18	110.00	200	110	2.63	0.08	0.07	0.042
Pipe P19	76.00	200	110	1.65	0.05	0.03	0.045
Pipe P20	110.00	300	120	-10.10	0.14	0.11	0.031
Pipe P21	110.00	300	120	-11.31	0.16	0.13	0.030
Pipe P22	84.00	300	120	10.84	0.15	0.12	0.030
Pipe P23	60.00	300	120	-10.54	0.15	0.12	0.031
Pipe P24	85.00	200	110	-0.97	0.03	0.01	0.048
Pipe P25	83.00	200	110	-1.95	0.06	0.04	0.044
Pipe P26	84.00	200	110	-7.03	0.22	0.46	0.036
Pipe P27	89.00	200	110	4.22	0.13	0.18	0.039
Pipe P28	100.00	200	110	2.63	0.08	0.07	0.042
Pipe P29	75.00	200	110	2.24	0.07	0.06	0.043
Pipe P30	110.00	200	110	-0.30	0.01	0.00	0.057
Pipe P31	99.00	200	110	1.26	0.04	0.02	0.047
Pipe P32	80.00	300	120	-10.83	0.15	0.12	0.030
Pipe P33	72.00	300	120	-8.97	0.13	0.09	0.031
Pipe P34	103.00	300	120	-8.04	0.11	0.07	0.032
Pipe P35	79.00	300	120	8.96	0.13	0.09	0.031
Pipe P36	102.00	300	120	5.98	0.08	0.04	0.033
Pipe P37	101.00	300	120	4.62	0.07	0.03	0.035
Pipe P38	40.00	250	110	-0.64	0.01	0.00	0.053
Pipe P39	40.00	250	110	-0.34	0.01	0.00	0.070
Pipe P40	42.00	200	110	-0.65	0.02	0.01	0.051
Pipe P41	58.00	200	110	-0.80	0.03	0.01	0.050
Pipe P42	100.00	200	110	1.33	0.04	0.02	0.046
Pipe P43	76.00	200	110	2.16	0.07	0.05	0.043
Pipe P44	65.00	250	110	-0.38	0.01	0.00	0.059
Pipe P45	125.00	300	120	3.36	0.05	0.01	0.036
Pipe P46	85.00	200	110	-2.40	0.08	0.06	0.042
Pipe P47	73.00	200	110	-3.72	0.12	0.14	0.040
Pipe P48	75.00	200	110	-4.98	0.16	0.24	0.038
Pipe P49	80.00	200	110	-5.52	0.18	0.30	0.038
Pipe P50	90.00	300	120	-25.19	0.36	0.58	0.027
Pipe P51	85.00	300	120	19.19	0.27	0.35	0.028
Pipe N52	100.00	300	120	15.90	0.22	0.25	0.029
Pipe P53	85.00	200	110	1.80	0.06	0.04	0.044
Pipe P54	79.00	250	110	5.51	0.11	0.10	0.039
Pipe P55	70.00	250	110	3.91	0.08	0.05	0.041
Pipe P56	102.00	300	120	6.39	0.09	0.05	0.033
Pipe P57	101.00	300	120	4.95	0.07	0.03	0.034
Pipe P58	82.00	300	120	-1.41	0.02	0.00	0.042
Pipe P59	110.00	300	120	1.60	0.02	0.00	0.041
Pipe P60	110.00	300	120	0.16	0.00	0.00	0.000
Pipe P61	95.00	300	120	0.75	0.01	0.00	0.047
Pipe P62	110.00	300	120	-1.73	0.02	0.00	0.040
Pipe P63	110.00	300	120	-3.17	0.04	0.01	0.036
Pipe P64	79.00	200	110	1.26	0.04	0.02	0.047
Pipe P65	40.00	300	120	5.58	0.08	0.04	0.034
Pipe P66	40.00	300	120	-6.12	0.09	0.04	0.033
Pipe P67	175.00	250	110	0.47	0.01	0.00	0.057
Pipe P68	83.00	250	110	-3.00	0.06	0.03	0.042
Pipe P69	70.00	250	110	-2.39	0.05	0.02	0.044
Pipe P70	62.00	250	110	2.41	0.05	0.02	0.044
Pipe P71	75.00	250	110	2.03	0.04	0.02	0.045
Pipe P72	60.00	250	110	1.96	0.04	0.01	0.045
Pipe P73	60.00	250	110	1.96	0.04	0.01	0.045
Pipe P74	85.00	200	110	-5.89	0.19	0.33	0.037
Pipe P75	85.00	200	110	-7.79	0.25	0.56	0.036
Pipe P76	85.00	200	110	-9.59	0.31	0.82	0.035
Pipe P77	85.00	200	110	-9.88	0.31	0.87	0.034
Pipe P78	82.00	200	110	-6.41	0.20	0.39	0.037
Pipe P79	50.00	200	110	-10.77	0.34	1.02	0.034

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.31	33.56	329.22	47.75
Junc N2	88.25	2.06	112.41	24.16	237.01	34.38
Junc N3	88.12	0.14	112.40	24.28	238.19	34.55
Junc N4	87.85	0.25	112.52	24.67	242.01	35.10
Junc N5	87.19	0.77	112.77	25.58	250.94	36.40
Junc N6	84.95	0.00	113.46	28.51	279.68	40.56
Junc N7	82.95	0.40	114.01	31.06	304.70	44.19
Junc N8	88.28	0.41	112.00	23.72	232.69	33.75
Junc N9	88.54	95.50	109.58	21.04	206.40	29.94
Junc N10	88.80	36.27	110.13	21.33	209.25	30.35
Junc N11	90.47	36.55	109.61	19.14	187.76	27.23
Junc N12	92.25	0.45	110.97	18.72	183.64	26.64
Junc N13	89.86	0.55	111.97	22.11	216.90	31.46
Junc N14	91.70	0.14	111.97	20.27	198.85	28.84
Junc N15	91.36	0.31	112.01	20.65	202.58	29.38
Junc N16	89.81	0.45	112.01	22.20	217.78	31.59
Junc N17	88.25	0.39	112.01	23.76	233.09	33.81
Junc N18	88.10	0.59	112.04	23.94	234.85	34.06
Junc N19	88.74	0.18	112.09	23.35	229.06	33.22
Junc N20	89.41	0.71	112.04	22.63	222.00	32.20
Junc N21	90.00	0.42	112.08	22.08	216.60	31.42
Junc N22	90.33	0.38	112.20	21.87	214.54	31.12
Junc N23	90.11	0.62	112.26	22.15	217.29	31.52
Junc N24	89.95	0.14	112.32	22.37	219.45	31.83
Junc N25	90.15	0.28	112.31	22.16	217.39	31.53
Junc N26	90.00	0.07	112.29	22.29	218.66	31.71
Junc N27	90.60	0.24	112.27	21.67	212.58	30.83
Junc N28	91.00	0.38	112.23	21.23	208.27	30.21
Junc N29	89.20	0.66	112.45	23.25	228.08	33.08
Junc N30	88.35	0.60	112.52	24.17	237.11	34.39
Junc N31	88.30	0.57	112.59	24.29	238.28	34.56
Junc N32	88.10	0.25	112.67	24.57	241.03	34.96
Junc N33	87.40	0.22	112.75	25.35	248.68	36.07
Junc N34	87.95	1.49	112.66	24.71	242.41	35.16
Junc N35	87.50	0.73	112.54	25.04	245.64	35.63
Junc N36	86.20	0.67	112.53	26.33	258.30	37.46
Junc N37	89.83	0.66	112.53	22.70	222.69	32.30
Junc N38	90.80	0.48	112.50	21.70	212.88	30.88
Junc N39	91.08	0.65	112.49	21.41	210.03	30.46
Junc N40	90.90	0.45	112.47	21.57	211.60	30.69
Junc N41	90.64	0.65	112.47	21.83	214.15	31.06
Junc N42	90.30	0.53	112.46	22.16	217.39	31.53
Junc N43	90.00	0.25	112.45	22.45	220.23	31.94
Junc N44	89.55	0.28	112.52	22.97	225.34	32.68
Junc N45	88.50	0.21	112.52	24.02	235.64	34.18
Junc N46	87.00	0.17	112.52	25.52	250.35	36.31
Junc N47	86.15	1.10	112.52	26.37	258.69	37.52
Junc N48	86.66	0.87	112.91	26.25	257.51	37.35
Junc N49	84.50	0.82	113.45	28.95	284.00	41.19
Junc N50	82.68	0.16	114.02	31.34	307.45	44.59
Junc N51	81.20	0.50	114.59	33.39	327.56	47.51
Junc N52	85.65	0.00	112.53	26.88	263.69	38.25
Junc N53	85.10	1.09	112.53	27.43	269.09	39.03
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.93	34.08	334.32	48.49
Junc KNE01,14-17	81.00	0.00	115.74	34.74	340.80	49.43
Junc KNE02,11-13,21	82.23	0.00	114.56	32.33	317.16	46.00
Junc KNE03	88.85	1.00	112.55	23.70	232.50	33.72
Junc KNE04,5-6,20	84.00	0.00	113.18	29.18	286.26	41.52
Junc KNE07	88.38	0.16	112.42	24.04	235.83	34.20
Junc KNE08	90.72	0.27	112.04	21.32	209.15	30.33
Junc KNE09	88.86	0.60	112.13	23.27	228.28	33.11
Junc KNE10	89.84	0.28	112.32	22.48	220.53	31.98
Junc KNE18	87.52	0.22	112.63	25.11	246.33	35.73
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	111.93	19.28	189.14	27.43
Junc KNE23	91.30	0.41	112.48	21.18	207.78	30.14
Junc KNE24	90.60	0.25	112.52	21.92	215.04	31.19
Junc KNE25	87.40	1.32	112.92	25.52	250.35	36.31
Junc KNE26	90.30	0.17	112.31	22.01	215.92	31.32

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	74.83	1.06	4.35	0.023
Pipe P1B	685.00	300	120	74.83	1.06	4.36	0.023
Pipe P2A	580.00	400	120	-122.97	0.98	2.69	0.022
Pipe P2B	300.00	400	120	122.97	0.98	2.69	0.022
Pipe P2C	235.00	400	120	92.62	0.74	1.59	0.023
Pipe P3	260.00	300	120	74.83	1.06	4.36	0.023
Pipe P4	175.00	300	120	74.83	1.06	4.36	0.023
Pipe P5	83.00	300	120	10.30	0.15	0.11	0.031
Pipe P6	82.00	300	120	8.24	0.12	0.07	0.032
Pipe P7	75.00	300	120	42.46	0.60	1.53	0.025
Pipe P8	75.00	300	120	42.71	0.60	1.54	0.025
Pipe P9	90.00	300	120	-42.93	0.61	1.56	0.025
Pipe P10	90.00	300	120	-43.70	0.62	1.61	0.025
Pipe P11	85.00	300	120	-92.22	1.30	6.41	0.022
Pipe P12	85.00	300	120	-92.22	1.30	6.42	0.022
Pipe P13	85.00	300	120	-92.62	1.31	6.47	0.022
Pipe P14	84.00	300	120	78.56	1.11	4.77	0.023
Pipe P15	92.00	200	110	62.42	1.99	26.37	0.026
Pipe P16	92.00	200	110	-28.10	0.89	6.01	0.030
Pipe P17	110.00	200	110	-4.98	0.16	0.24	0.038
Pipe P18	110.00	200	110	-41.53	1.32	12.40	0.028
Pipe P19	76.00	200	110	-41.98	1.34	12.65	0.028
Pipe P20	110.00	300	120	-18.51	0.26	0.33	0.028
Pipe P21	110.00	300	120	-19.06	0.27	0.35	0.028
Pipe P22	84.00	300	120	-23.88	0.34	0.53	0.027
Pipe P23	60.00	300	120	24.02	0.34	0.53	0.027
Pipe P24	85.00	200	110	-1.81	0.06	0.04	0.044
Pipe P25	83.00	200	110	-2.26	0.07	0.06	0.043
Pipe P26	84.00	200	110	3.33	0.11	0.12	0.040
Pipe P27	89.00	200	110	-5.98	0.19	0.34	0.037
Pipe P28	100.00	200	110	-7.19	0.23	0.48	0.036
Pipe P29	75.00	200	110	-7.37	0.23	0.50	0.036
Pipe P30	110.00	200	110	-0.63	0.02	0.01	0.052
Pipe P31	99.00	200	110	0.08	0.00	0.00	0.053
Pipe P32	80.00	300	120	22.52	0.32	0.47	0.027
Pipe P33	72.00	300	120	22.88	0.32	0.49	0.027
Pipe P34	103.00	300	120	23.30	0.33	0.50	0.027
Pipe P35	79.00	300	120	-31.27	0.44	0.87	0.026
Pipe P36	102.00	300	120	-25.54	0.36	0.59	0.027
Pipe P37	101.00	300	120	-26.16	0.37	0.62	0.027
Pipe P38	40.00	250	110	-7.39	0.15	0.17	0.037
Pipe P39	40.00	250	110	-7.25	0.15	0.17	0.037
Pipe P40	42.00	200	110	6.80	0.22	0.43	0.036
Pipe P41	58.00	200	110	6.73	0.21	0.43	0.036
Pipe P42	100.00	200	110	-6.49	0.21	0.40	0.037
Pipe P43	76.00	200	110	-6.11	0.19	0.36	0.037
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-33.83	0.48	1.00	0.026
Pipe P46	85.00	200	110	-9.72	0.31	0.84	0.035
Pipe P47	73.00	200	110	-10.32	0.33	0.94	0.034
Pipe P48	75.00	200	110	-10.89	0.35	1.04	0.034
Pipe P49	80.00	200	110	-11.14	0.35	1.08	0.034
Pipe P50	90.00	300	120	-47.20	0.67	1.86	0.025
Pipe P51	85.00	300	120	35.84	0.51	1.11	0.026
Pipe N52	100.00	300	120	34.35	0.49	1.03	0.026
Pipe P53	85.00	200	110	12.10	0.39	1.26	0.033
Pipe P54	79.00	250	110	7.09	0.14	0.16	0.037
Pipe P55	70.00	250	110	6.36	0.13	0.13	0.038
Pipe P56	102.00	300	120	14.16	0.20	0.20	0.029
Pipe P57	101.00	300	120	13.50	0.19	0.18	0.030
Pipe P58	82.00	300	120	-16.08	0.23	0.25	0.029
Pipe P59	110.00	300	120	8.76	0.12	0.08	0.031
Pipe P60	110.00	300	120	8.11	0.11	0.07	0.032
Pipe P61	95.00	300	120	-7.70	0.11	0.06	0.032
Pipe P62	110.00	300	120	7.25	0.10	0.06	0.032
Pipe P63	110.00	300	120	6.60	0.09	0.05	0.033
Pipe P64	79.00	200	110	-6.84	0.22	0.44	0.036
Pipe P65	40.00	300	120	-12.91	0.18	0.17	0.030
Pipe P66	40.00	300	120	12.66	0.18	0.16	0.030
Pipe P67	175.00	250	110	4.60	0.09	0.07	0.040
Pipe P68	83.00	250	110	2.84	0.06	0.03	0.043
Pipe P69	70.00	250	110	3.12	0.06	0.03	0.042
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-28.00	0.89	5.97	0.030
Pipe P75	85.00	200	110	-28.87	0.92	6.32	0.029
Pipe P76	85.00	200	110	-29.69	0.95	6.66	0.029
Pipe P77	85.00	200	110	-29.85	0.95	6.72	0.029
Pipe P78	82.00	200	110	-64.37	2.05	27.91	0.026
Pipe P79	50.00	200	110	-30.35	0.97	6.94	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-233.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	112.38	31.63	310.29	45.00
Junc N2	88.25	2.06	109.78	21.53	211.21	30.63
Junc N3	88.12	0.14	109.81	21.69	212.78	30.86
Junc N4	87.85	0.25	109.99	22.14	217.19	31.50
Junc N5	87.19	0.77	110.40	23.21	227.69	33.02
Junc N6	84.95	0.00	111.36	26.41	259.08	37.58
Junc N7	82.95	0.40	112.09	29.14	285.86	41.46
Junc N8	88.28	0.41	109.51	21.23	208.27	30.21
Junc N9	88.54	36.50	107.39	18.85	184.92	26.82
Junc N10	88.80	95.27	106.98	18.18	178.35	25.87
Junc N11	90.47	36.55	107.39	16.92	165.99	24.07
Junc N12	92.25	0.45	108.60	16.35	160.39	23.26
Junc N13	89.86	0.55	109.48	19.62	192.47	27.92
Junc N14	91.70	0.14	109.50	17.80	174.62	25.33
Junc N15	91.36	0.31	109.54	18.18	178.35	25.87
Junc N16	89.81	0.45	109.54	19.73	193.55	28.07
Junc N17	88.25	0.39	109.54	21.29	208.85	30.29
Junc N18	88.10	0.59	109.58	21.48	210.72	30.56
Junc N19	88.74	0.18	109.64	20.90	205.03	29.74
Junc N20	89.41	0.71	109.58	20.17	197.87	28.70
Junc N21	90.00	0.42	109.62	19.62	192.47	27.92
Junc N22	90.33	0.38	109.77	19.44	190.71	27.66
Junc N23	90.11	0.62	109.85	19.74	193.65	28.09
Junc N24	89.95	0.14	109.92	19.97	195.91	28.41
Junc N25	90.15	0.28	109.91	19.76	193.85	28.11
Junc N26	90.00	0.07	109.89	19.89	195.12	28.30
Junc N27	90.60	0.24	109.86	19.26	188.94	27.40
Junc N28	91.00	0.38	109.81	18.81	184.53	26.76
Junc N29	89.20	0.66	110.08	20.88	204.83	29.71
Junc N30	88.35	0.60	110.16	21.81	213.96	31.03
Junc N31	88.30	0.57	110.24	21.94	215.23	31.22
Junc N32	88.10	0.25	110.33	22.23	218.08	31.63
Junc N33	87.40	0.22	110.43	23.03	225.92	32.77
Junc N34	87.95	1.49	110.32	22.37	219.45	31.83
Junc N35	87.50	0.73	110.19	22.69	222.59	32.28
Junc N36	86.20	0.67	110.18	23.98	235.24	34.12
Junc N37	89.83	0.66	110.18	20.35	199.63	28.95
Junc N38	90.80	0.48	110.14	19.34	189.73	27.52
Junc N39	91.08	0.65	110.12	19.04	186.78	27.09
Junc N40	90.90	0.45	110.11	19.21	188.45	27.33
Junc N41	90.64	0.65	110.10	19.46	190.90	27.69
Junc N42	90.30	0.53	110.09	19.79	194.14	28.16
Junc N43	90.00	0.25	110.08	20.08	196.98	28.57
Junc N44	89.55	0.28	110.16	20.61	202.18	29.32
Junc N45	88.50	0.21	110.17	21.67	212.58	30.83
Junc N46	87.00	0.17	110.17	23.17	227.30	32.97
Junc N47	86.15	1.10	110.17	24.02	235.64	34.18
Junc N48	86.66	0.87	110.53	23.87	234.16	33.96
Junc N49	84.50	0.82	111.28	26.78	262.71	38.10
Junc N50	82.68	0.16	112.06	29.38	288.22	41.80
Junc N51	81.20	0.50	112.85	31.65	310.49	45.03
Junc N52	85.65	0.00	110.18	24.53	240.64	34.90
Junc N53	85.10	1.09	110.18	25.08	246.03	35.68
Junc N54	82.25	0.00	116.52	34.27	336.19	48.76
Junc N55	80.85	0.00	113.33	32.48	318.63	46.21
Junc KNE01,14-17	81.00	0.00	114.42	33.42	327.85	47.55
Junc KNE02,11-13,21	82.23	0.00	112.83	30.60	300.19	43.54
Junc KNE03	88.85	1.00	110.20	21.35	209.44	30.38
Junc KNE04,5-6,20	84.00	0.00	110.81	26.81	263.01	38.15
Junc KNE07	88.38	36.16	109.75	21.37	209.64	30.41
Junc KNE08	90.72	0.27	109.58	18.86	185.02	26.83
Junc KNE09	88.86	0.60	109.69	20.83	204.34	29.64
Junc KNE10	89.84	0.28	109.92	20.08	196.98	28.57
Junc KNE18	87.52	0.22	110.18	22.66	222.29	32.24
Junc KNE19	78.25	0.00	116.52	38.27	375.43	54.45
Junc KNE22	92.65	0.41	109.45	16.80	164.81	23.90
Junc KNE23	91.30	0.41	110.11	18.81	184.53	26.76
Junc KNE24	90.60	0.25	110.16	19.56	191.88	27.83
Junc KNE25	87.40	1.32	110.63	23.23	227.89	33.05
Junc KNE26	90.30	0.17	109.91	19.61	192.37	27.90

Minimum Pressure

MAXIMUM DAY + FIREFLOW DEMAND AT N10
Scenario 2 - Full Buildout (Local Demand)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	233.80	0.00	-116.52	0.000
Pipe P1A	1.00	300	120	89.27	1.26	6.05	0.022
Pipe P1B	685.00	300	120	89.27	1.26	6.04	0.022
Pipe P2A	580.00	400	120	-144.53	1.15	3.63	0.022
Pipe P2B	300.00	400	120	144.53	1.15	3.63	0.022
Pipe P2C	235.00	400	120	108.48	0.86	2.13	0.022
Pipe P3	260.00	300	120	89.27	1.26	6.04	0.022
Pipe P4	175.00	300	120	89.27	1.26	6.04	0.022
Pipe P5	83.00	300	120	-18.29	0.26	0.32	0.028
Pipe P6	82.00	300	120	-20.35	0.29	0.39	0.028
Pipe P7	75.00	300	120	54.56	0.77	2.43	0.024
Pipe P8	75.00	300	120	54.81	0.78	2.45	0.024
Pipe P9	90.00	300	120	-55.03	0.78	2.47	0.024
Pipe P10	90.00	300	120	-55.80	0.79	2.53	0.024
Pipe P11	85.00	300	120	-108.08	1.53	8.61	0.022
Pipe P12	85.00	300	120	-108.08	1.53	8.61	0.022
Pipe P13	85.00	300	120	-108.48	1.53	8.67	0.022
Pipe P14	84.00	300	120	67.77	0.96	3.63	0.023
Pipe P15	92.00	200	110	58.02	1.85	23.02	0.027
Pipe P16	92.00	200	110	23.87	0.76	4.44	0.030
Pipe P17	110.00	200	110	-2.35	0.07	0.06	0.043
Pipe P18	110.00	200	110	-38.90	1.24	10.98	0.028
Pipe P19	76.00	200	110	-39.35	1.25	11.22	0.028
Pipe P20	110.00	300	120	-15.03	0.21	0.22	0.029
Pipe P21	110.00	300	120	-15.58	0.22	0.24	0.029
Pipe P22	84.00	300	120	-24.73	0.35	0.56	0.027
Pipe P23	60.00	300	120	24.87	0.35	0.57	0.027
Pipe P24	85.00	200	110	-0.27	0.01	0.00	0.053
Pipe P25	83.00	200	110	-0.72	0.02	0.01	0.051
Pipe P26	84.00	200	110	6.23	0.20	0.37	0.037
Pipe P27	89.00	200	110	-7.34	0.23	0.50	0.036
Pipe P28	100.00	200	110	-8.12	0.26	0.60	0.035
Pipe P29	75.00	200	110	-8.30	0.26	0.63	0.035
Pipe P30	110.00	200	110	-0.19	0.01	0.00	0.061
Pipe P31	99.00	200	110	0.52	0.02	0.00	0.053
Pipe P32	80.00	300	120	24.92	0.35	0.57	0.027
Pipe P33	72.00	300	120	25.70	0.36	0.60	0.027
Pipe P34	103.00	300	120	26.12	0.37	0.62	0.027
Pipe P35	79.00	300	120	-35.03	0.50	1.07	0.026
Pipe P36	102.00	300	120	-28.53	0.40	0.73	0.026
Pipe P37	101.00	300	120	-29.15	0.41	0.76	0.026
Pipe P38	40.00	250	110	-8.16	0.17	0.21	0.036
Pipe P39	40.00	250	110	-8.02	0.16	0.20	0.037
Pipe P40	42.00	200	110	7.57	0.24	0.53	0.036
Pipe P41	58.00	200	110	7.50	0.24	0.52	0.036
Pipe P42	100.00	200	110	-7.26	0.23	0.49	0.036
Pipe P43	76.00	200	110	-6.88	0.22	0.44	0.036
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-37.59	0.53	1.22	0.025
Pipe P46	85.00	200	110	-10.65	0.34	1.00	0.034
Pipe P47	73.00	200	110	-11.25	0.36	1.10	0.034
Pipe P48	75.00	200	110	-11.82	0.38	1.21	0.034
Pipe P49	80.00	200	110	-12.07	0.38	1.26	0.033
Pipe P50	90.00	300	120	-50.96	0.72	2.14	0.024
Pipe P51	85.00	300	120	38.67	0.55	1.28	0.025
Pipe N52	100.00	300	120	37.18	0.53	1.19	0.025
Pipe P53	85.00	200	110	13.33	0.42	1.51	0.033
Pipe P54	79.00	250	110	7.52	0.15	0.18	0.037
Pipe P55	70.00	250	110	6.79	0.14	0.15	0.037
Pipe P56	102.00	300	120	15.33	0.22	0.23	0.029
Pipe P57	101.00	300	120	14.67	0.21	0.21	0.029
Pipe P58	82.00	300	120	-17.69	0.25	0.30	0.028
Pipe P59	110.00	300	120	9.62	0.14	0.10	0.031
Pipe P60	110.00	300	120	8.97	0.13	0.09	0.031
Pipe P61	95.00	300	120	-8.56	0.12	0.08	0.032
Pipe P62	110.00	300	120	8.11	0.11	0.07	0.032
Pipe P63	110.00	300	120	7.46	0.11	0.06	0.032
Pipe P64	79.00	200	110	-7.59	0.24	0.53	0.036
Pipe P65	40.00	300	120	-14.52	0.21	0.21	0.029
Pipe P66	40.00	300	120	14.27	0.20	0.20	0.029
Pipe P67	175.00	250	110	5.03	0.10	0.08	0.039
Pipe P68	83.00	250	110	3.27	0.07	0.04	0.042
Pipe P69	70.00	250	110	3.55	0.07	0.04	0.041
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.048
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-33.70	1.07	8.42	0.029
Pipe P75	85.00	200	110	-34.57	1.10	8.83	0.029
Pipe P76	85.00	200	110	-35.39	1.13	9.22	0.029
Pipe P77	85.00	200	110	-35.55	1.13	9.30	0.028
Pipe P78	82.00	200	110	-71.40	2.27	33.82	0.026
Pipe P79	50.00	200	110	-36.05	1.15	9.54	0.028

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.43	33.68	330.40	47.92
Junc N2	88.25	2.06	112.50	24.25	237.89	34.50
Junc N3	88.12	0.14	112.40	24.28	238.19	34.55
Junc N4	87.85	0.25	112.48	24.63	241.62	35.04
Junc N5	87.19	0.77	112.67	25.48	249.96	36.25
Junc N6	84.95	0.00	113.35	28.40	278.60	40.41
Junc N7	82.95	0.40	113.91	30.96	303.72	44.05
Junc N8	88.28	0.41	111.74	23.46	230.14	33.38
Junc N9	88.54	0.50	111.26	22.72	222.88	32.33
Junc N10	88.80	0.27	111.97	23.17	227.30	32.97
Junc N11	90.47	36.55	108.74	18.27	179.23	25.99
Junc N12	92.25	95.45	108.34	16.09	157.84	22.89
Junc N13	89.86	0.55	111.41	21.55	211.41	30.66
Junc N14	91.70	0.14	111.26	19.56	191.88	27.83
Junc N15	91.36	0.31	111.39	20.03	196.49	28.50
Junc N16	89.81	0.45	111.49	21.68	212.68	30.85
Junc N17	88.25	0.39	111.59	23.34	228.97	33.21
Junc N18	88.10	0.59	111.59	23.49	230.44	33.42
Junc N19	88.74	0.18	111.63	22.89	224.55	32.57
Junc N20	89.41	0.71	111.53	22.12	217.00	31.47
Junc N21	90.00	0.42	111.56	21.56	211.50	30.68
Junc N22	90.33	0.38	111.76	21.43	210.23	30.49
Junc N23	90.11	0.62	111.85	21.74	213.27	30.93
Junc N24	89.95	0.14	111.94	21.99	215.72	31.29
Junc N25	90.15	0.28	111.93	21.78	213.66	30.99
Junc N26	90.00	0.07	111.90	21.90	214.84	31.16
Junc N27	90.60	0.24	111.86	21.26	208.56	30.25
Junc N28	91.00	0.38	111.80	20.80	204.05	29.59
Junc N29	89.20	0.66	112.13	22.93	224.94	32.63
Junc N30	88.35	0.60	112.24	23.89	234.36	33.99
Junc N31	88.30	0.57	112.33	24.03	235.73	34.19
Junc N32	88.10	0.25	112.44	24.34	238.78	34.63
Junc N33	87.40	0.22	112.56	25.16	246.82	35.80
Junc N34	87.95	1.49	112.43	24.48	240.15	34.83
Junc N35	87.50	0.73	112.27	24.77	242.99	35.24
Junc N36	86.20	0.67	112.26	26.06	255.65	37.08
Junc N37	89.83	0.66	112.26	22.43	220.04	31.91
Junc N38	90.80	0.48	112.21	21.41	210.03	30.46
Junc N39	91.08	0.65	112.19	21.11	207.09	30.04
Junc N40	90.90	0.45	112.17	21.27	208.66	30.26
Junc N41	90.64	0.65	112.16	21.52	211.11	30.62
Junc N42	90.30	0.53	112.15	21.85	214.35	31.09
Junc N43	90.00	0.25	112.14	22.14	217.19	31.50
Junc N44	89.55	0.28	112.24	22.69	222.59	32.28
Junc N45	88.50	0.21	112.24	23.74	232.89	33.78
Junc N46	87.00	0.17	112.24	25.24	247.60	35.91
Junc N47	86.15	1.10	112.24	26.09	255.94	37.12
Junc N48	86.66	0.87	112.89	26.23	257.32	37.32
Junc N49	84.50	0.82	113.42	28.92	283.71	41.15
Junc N50	82.68	0.16	113.97	31.29	306.95	44.52
Junc N51	81.20	0.50	114.54	33.34	327.07	47.44
Junc N52	85.65	0.00	112.26	26.61	261.04	37.86
Junc N53	85.10	1.09	112.26	27.16	266.44	38.64
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.88	34.03	333.83	48.42
Junc KNE01,14-17	81.00	0.00	115.70	34.70	340.41	49.37
Junc KNE02,11-13,21	82.23	0.00	114.49	32.26	316.47	45.90
Junc KNE03	88.85	1.00	112.29	23.44	229.95	33.35
Junc KNE04,5-6,20	84.00	0.00	113.35	29.35	287.92	41.76
Junc KNE07	88.38	0.16	112.62	24.24	237.79	34.49
Junc KNE08	90.72	0.27	111.49	20.77	203.75	29.55
Junc KNE09	88.86	0.60	111.65	22.79	223.57	32.43
Junc KNE10	89.84	0.28	111.95	22.11	216.90	31.46
Junc KNE18	87.52	0.22	112.57	25.05	245.74	35.64
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	36.41	111.09	18.44	180.90	26.24
Junc KNE23	91.30	0.41	112.18	20.88	204.83	29.71
Junc KNE24	90.60	0.25	112.24	21.64	212.29	30.79
Junc KNE25	87.40	1.32	112.78	25.38	248.98	36.11
Junc KNE26	90.30	0.17	111.93	21.63	212.19	30.78

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	73.19	1.04	4.19	0.023
Pipe P1B	685.00	300	120	73.19	1.04	4.18	0.023
Pipe P2A	580.00	400	120	-124.61	0.99	2.76	0.022
Pipe P2B	300.00	400	120	124.61	0.99	2.76	0.022
Pipe P2C	235.00	400	120	94.58	0.75	1.66	0.023
Pipe P3	260.00	300	120	73.19	1.04	4.18	0.023
Pipe P4	175.00	300	120	73.19	1.04	4.18	0.023
Pipe P5	83.00	300	120	40.54	0.57	1.40	0.025
Pipe P6	82.00	300	120	38.48	0.54	1.27	0.025
Pipe P7	75.00	300	120	36.21	0.51	1.14	0.025
Pipe P8	75.00	300	120	36.46	0.52	1.15	0.025
Pipe P9	90.00	300	120	-36.68	0.52	1.16	0.025
Pipe P10	90.00	300	120	-37.45	0.53	1.21	0.025
Pipe P11	85.00	300	120	-94.18	1.33	6.67	0.022
Pipe P12	85.00	300	120	-94.18	1.33	6.67	0.022
Pipe P13	85.00	300	120	-94.58	1.34	6.72	0.022
Pipe P14	84.00	300	120	102.23	1.45	7.76	0.022
Pipe P15	92.00	200	110	26.18	0.83	5.27	0.030
Pipe P16	92.00	200	110	-32.22	1.03	7.75	0.029
Pipe P17	110.00	200	110	57.90	1.84	22.94	0.027
Pipe P18	110.00	200	110	21.35	0.68	3.61	0.031
Pipe P19	76.00	200	110	-74.10	2.36	36.22	0.026
Pipe P20	110.00	300	120	-60.55	0.86	2.94	0.024
Pipe P21	110.00	300	120	-61.10	0.86	2.99	0.024
Pipe P22	84.00	300	120	-49.96	0.71	2.06	0.024
Pipe P23	60.00	300	120	50.10	0.71	2.07	0.024
Pipe P24	85.00	200	110	-11.70	0.37	1.19	0.034
Pipe P25	83.00	200	110	-12.15	0.39	1.27	0.033
Pipe P26	84.00	200	110	-14.54	0.46	1.77	0.033
Pipe P27	89.00	200	110	2.00	0.06	0.05	0.044
Pipe P28	100.00	200	110	-6.06	0.19	0.35	0.037
Pipe P29	75.00	200	110	-6.24	0.20	0.37	0.037
Pipe P30	110.00	200	110	-7.47	0.24	0.52	0.036
Pipe P31	99.00	200	110	-6.76	0.22	0.43	0.036
Pipe P32	80.00	300	120	38.71	0.55	1.29	0.025
Pipe P33	72.00	300	120	32.22	0.46	0.91	0.026
Pipe P34	103.00	300	120	32.64	0.46	0.94	0.026
Pipe P35	79.00	300	120	-39.48	0.56	1.33	0.025
Pipe P36	102.00	300	120	-32.08	0.45	0.91	0.026
Pipe P37	101.00	300	120	-32.70	0.46	0.94	0.026
Pipe P38	40.00	250	110	-9.06	0.18	0.25	0.036
Pipe P39	40.00	250	110	-8.92	0.18	0.24	0.036
Pipe P40	42.00	200	110	8.47	0.27	0.65	0.035
Pipe P41	58.00	200	110	8.40	0.27	0.64	0.035
Pipe P42	100.00	200	110	-8.16	0.26	0.61	0.035
Pipe P43	76.00	200	110	-7.78	0.25	0.56	0.036
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-42.04	0.59	1.50	0.025
Pipe P46	85.00	200	110	-11.75	0.37	1.20	0.034
Pipe P47	73.00	200	110	-12.35	0.39	1.31	0.033
Pipe P48	75.00	200	110	-12.92	0.41	1.43	0.033
Pipe P49	80.00	200	110	-13.17	0.42	1.48	0.033
Pipe P50	90.00	300	120	-55.41	0.78	2.50	0.024
Pipe P51	85.00	300	120	42.02	0.59	1.50	0.025
Pipe N52	100.00	300	120	40.53	0.57	1.40	0.025
Pipe P53	85.00	200	110	14.78	0.47	1.83	0.032
Pipe P54	79.00	250	110	8.04	0.16	0.20	0.037
Pipe P55	70.00	250	110	7.31	0.15	0.17	0.037
Pipe P56	102.00	300	120	16.72	0.24	0.27	0.029
Pipe P57	101.00	300	120	16.06	0.23	0.25	0.029
Pipe P58	82.00	300	120	-19.59	0.28	0.36	0.028
Pipe P59	110.00	300	120	10.63	0.15	0.12	0.031
Pipe P60	110.00	300	120	9.98	0.14	0.10	0.031
Pipe P61	95.00	300	120	-9.57	0.14	0.10	0.031
Pipe P62	110.00	300	120	9.12	0.13	0.09	0.031
Pipe P63	110.00	300	120	8.47	0.12	0.08	0.032
Pipe P64	79.00	200	110	-8.49	0.27	0.65	0.035
Pipe P65	40.00	300	120	-16.42	0.23	0.26	0.029
Pipe P66	40.00	300	120	16.17	0.23	0.26	0.029
Pipe P67	175.00	250	110	5.55	0.11	0.10	0.039
Pipe P68	83.00	250	110	3.79	0.08	0.05	0.041
Pipe P69	70.00	250	110	4.07	0.08	0.06	0.040
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.048
Pipe P74	85.00	200	110	-27.69	0.88	5.85	0.030
Pipe P75	85.00	200	110	-28.56	0.91	6.19	0.029
Pipe P76	85.00	200	110	-29.38	0.94	6.53	0.029
Pipe P77	85.00	200	110	-29.54	0.94	6.59	0.029
Pipe P78	82.00	200	110	-32.49	1.03	7.87	0.029
Pipe P79	50.00	200	110	-30.04	0.96	6.80	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.50	33.75	331.09	48.02
Junc N2	88.25	2.06	112.57	24.32	238.58	34.60
Junc N3	88.12	0.14	112.43	24.31	238.48	34.59
Junc N4	87.85	0.25	112.49	24.64	241.72	35.06
Junc N5	87.19	0.77	112.62	25.43	249.47	36.18
Junc N6	84.95	0.00	113.28	28.33	277.92	40.31
Junc N7	82.95	0.40	113.86	30.91	303.23	43.98
Junc N8	88.28	0.41	111.80	23.52	230.73	33.46
Junc N9	88.54	0.50	111.82	23.28	228.38	33.12
Junc N10	88.80	0.27	112.29	23.49	230.44	33.42
Junc N11	90.47	0.55	111.45	20.98	205.81	29.85
Junc N12	92.25	0.45	111.09	18.84	184.82	26.81
Junc N13	89.86	0.55	111.32	21.46	210.52	30.53
Junc N14	91.70	95.14	110.63	18.93	185.70	26.93
Junc N15	91.36	36.31	110.70	19.34	189.73	27.52
Junc N16	89.81	0.45	110.97	21.16	207.58	30.11
Junc N17	88.25	0.39	111.23	22.98	225.43	32.70
Junc N18	88.10	0.59	111.16	23.06	226.22	32.81
Junc N19	88.74	0.18	111.17	22.43	220.04	31.91
Junc N20	89.41	0.71	111.01	21.60	211.90	30.73
Junc N21	90.00	0.42	111.01	21.01	206.11	29.89
Junc N22	90.33	0.38	111.33	21.00	206.01	29.88
Junc N23	90.11	0.62	111.46	21.35	209.44	30.38
Junc N24	89.95	0.14	111.58	21.63	212.19	30.78
Junc N25	90.15	0.28	111.56	21.41	210.03	30.46
Junc N26	90.00	0.07	111.52	21.52	211.11	30.62
Junc N27	90.60	0.24	111.47	20.87	204.73	29.69
Junc N28	91.00	0.38	111.39	20.39	200.03	29.01
Junc N29	89.20	0.66	111.85	22.65	222.20	32.23
Junc N30	88.35	0.60	111.99	23.64	231.91	33.64
Junc N31	88.30	0.57	112.11	23.81	233.58	33.88
Junc N32	88.10	0.25	112.25	24.15	236.91	34.36
Junc N33	87.40	0.22	112.41	25.01	245.35	35.58
Junc N34	87.95	1.49	112.24	24.29	238.28	34.56
Junc N35	87.50	0.73	112.04	24.54	240.74	34.92
Junc N36	86.20	0.67	112.03	25.83	253.39	36.75
Junc N37	89.83	0.66	112.02	22.19	217.68	31.57
Junc N38	90.80	0.48	111.95	21.15	207.48	30.09
Junc N39	91.08	0.65	111.93	20.85	204.54	29.67
Junc N40	90.90	0.45	111.91	21.01	206.11	29.89
Junc N41	90.64	0.65	111.89	21.25	208.46	30.23
Junc N42	90.30	0.53	111.88	21.58	211.70	30.70
Junc N43	90.00	0.25	111.86	21.86	214.45	31.10
Junc N44	89.55	0.28	112.00	22.45	220.23	31.94
Junc N45	88.50	0.21	112.00	23.50	230.54	33.44
Junc N46	87.00	0.17	112.00	25.00	245.25	35.57
Junc N47	86.15	1.10	112.00	25.85	253.59	36.78
Junc N48	86.66	0.87	112.92	26.26	257.61	37.36
Junc N49	84.50	0.82	113.43	28.93	283.80	41.16
Junc N50	82.68	0.16	113.97	31.29	306.95	44.52
Junc N51	81.20	0.50	114.51	33.31	326.77	47.39
Junc N52	85.65	0.00	112.03	26.38	258.79	37.53
Junc N53	85.10	1.09	112.03	26.93	264.18	38.32
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.84	33.99	333.44	48.36
Junc KNE01,14-17	81.00	0.00	115.68	34.68	340.21	49.34
Junc KNE02,11-13,21	82.23	0.00	114.45	32.22	316.08	45.84
Junc KNE03	88.85	1.00	112.06	23.21	227.69	33.02
Junc KNE04,5-6,20	84.00	0.00	113.43	29.43	288.71	41.87
Junc KNE07	88.38	0.16	112.72	24.34	238.78	34.63
Junc KNE08	90.72	0.27	110.90	20.18	197.97	28.71
Junc KNE09	88.86	0.60	111.18	22.32	218.96	31.76
Junc KNE10	89.84	0.28	111.59	21.75	213.37	30.95
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	36.41	110.85	18.20	178.54	25.90
Junc KNE23	91.30	0.41	111.92	20.62	202.28	29.34
Junc KNE24	90.60	0.25	111.99	21.39	209.84	30.43
Junc KNE25	87.40	1.32	112.70	25.30	248.19	36.00
Junc KNE26	90.30	0.17	111.56	21.26	208.56	30.25

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	72.33	1.02	4.08	0.023
Pipe P1B	685.00	300	120	72.33	1.02	4.09	0.023
Pipe P2A	580.00	400	120	-125.47	1.00	2.79	0.022
Pipe P2B	300.00	400	120	125.47	1.00	2.79	0.022
Pipe P2C	235.00	400	120	95.87	0.76	1.70	0.023
Pipe P3	260.00	300	120	72.33	1.02	4.09	0.023
Pipe P4	175.00	300	120	72.33	1.02	4.09	0.023
Pipe P5	83.00	300	120	46.19	0.65	1.78	0.025
Pipe P6	82.00	300	120	44.13	0.62	1.64	0.025
Pipe P7	75.00	300	120	29.32	0.41	0.77	0.026
Pipe P8	75.00	300	120	29.57	0.42	0.78	0.026
Pipe P9	90.00	300	120	-29.79	0.42	0.79	0.026
Pipe P10	90.00	300	120	-30.56	0.43	0.83	0.026
Pipe P11	85.00	300	120	-95.47	1.35	6.84	0.022
Pipe P12	85.00	300	120	-95.47	1.35	6.84	0.022
Pipe P13	85.00	300	120	-95.87	1.36	6.89	0.022
Pipe P14	84.00	300	120	100.56	1.42	7.53	0.022
Pipe P15	92.00	200	110	-4.55	0.14	0.21	0.039
Pipe P16	92.00	200	110	-25.72	0.82	5.10	0.030
Pipe P17	110.00	200	110	20.67	0.66	3.40	0.031
Pipe P18	110.00	200	110	20.12	0.64	3.24	0.031
Pipe P19	76.00	200	110	19.67	0.63	3.11	0.031
Pipe P20	110.00	300	120	-74.11	1.05	4.28	0.023
Pipe P21	110.00	300	120	-74.66	1.06	4.34	0.023
Pipe P22	84.00	300	120	57.37	0.81	2.66	0.024
Pipe P23	60.00	300	120	37.77	0.53	1.23	0.025
Pipe P24	85.00	200	110	-19.54	0.62	3.07	0.031
Pipe P25	83.00	200	110	-19.99	0.64	3.20	0.031
Pipe P26	84.00	200	110	-30.03	0.96	6.80	0.029
Pipe P27	89.00	200	110	9.65	0.31	0.83	0.035
Pipe P28	100.00	200	110	-3.24	0.10	0.11	0.041
Pipe P29	75.00	200	110	-3.42	0.11	0.12	0.040
Pipe P30	110.00	200	110	-12.30	0.39	1.30	0.033
Pipe P31	99.00	200	110	-11.59	0.37	1.17	0.034
Pipe P32	80.00	300	120	54.54	0.77	2.42	0.024
Pipe P33	72.00	300	120	43.22	0.61	1.58	0.025
Pipe P34	103.00	300	120	43.64	0.62	1.60	0.025
Pipe P35	79.00	300	120	-47.66	0.67	1.89	0.024
Pipe P36	102.00	300	120	-38.60	0.55	1.28	0.025
Pipe P37	101.00	300	120	-39.22	0.55	1.32	0.025
Pipe P38	40.00	250	110	-10.72	0.22	0.34	0.035
Pipe P39	40.00	250	110	-10.58	0.22	0.33	0.035
Pipe P40	42.00	200	110	10.13	0.32	0.91	0.034
Pipe P41	58.00	200	110	10.06	0.32	0.90	0.034
Pipe P42	100.00	200	110	-9.82	0.31	0.86	0.034
Pipe P43	76.00	200	110	-9.44	0.30	0.80	0.035
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-50.22	0.71	2.08	0.024
Pipe P46	85.00	200	110	-13.77	0.44	1.60	0.033
Pipe P47	73.00	200	110	-14.37	0.46	1.74	0.033
Pipe P48	75.00	200	110	-14.94	0.48	1.87	0.032
Pipe P49	80.00	200	110	-15.19	0.48	1.92	0.032
Pipe P50	90.00	300	120	-63.59	0.90	3.22	0.023
Pipe P51	85.00	300	120	48.18	0.68	1.93	0.024
Pipe N52	100.00	300	120	46.69	0.66	1.82	0.025
Pipe P53	85.00	200	110	17.44	0.56	2.49	0.032
Pipe P54	79.00	250	110	8.97	0.18	0.24	0.036
Pipe P55	70.00	250	110	8.24	0.17	0.21	0.036
Pipe P56	102.00	300	120	19.27	0.27	0.35	0.028
Pipe P57	101.00	300	120	18.61	0.26	0.33	0.028
Pipe P58	82.00	300	120	-23.08	0.33	0.49	0.027
Pipe P59	110.00	300	120	12.48	0.18	0.16	0.030
Pipe P60	110.00	300	120	11.83	0.17	0.14	0.030
Pipe P61	95.00	300	120	-11.42	0.16	0.13	0.030
Pipe P62	110.00	300	120	10.97	0.16	0.12	0.030
Pipe P63	110.00	300	120	10.32	0.15	0.11	0.031
Pipe P64	79.00	200	110	-10.13	0.32	0.91	0.034
Pipe P65	40.00	300	120	-19.91	0.28	0.38	0.028
Pipe P66	40.00	300	120	19.66	0.28	0.37	0.028
Pipe P67	175.00	250	110	6.48	0.13	0.13	0.038
Pipe P68	83.00	250	110	4.72	0.10	0.07	0.040
Pipe P69	70.00	250	110	5.00	0.10	0.08	0.039
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-27.24	0.87	5.68	0.030
Pipe P75	85.00	200	110	-28.11	0.89	6.02	0.030
Pipe P76	85.00	200	110	-28.93	0.92	6.35	0.029
Pipe P77	85.00	200	110	-29.09	0.93	6.41	0.029
Pipe P78	82.00	200	110	-25.99	0.83	5.20	0.030
Pipe P79	50.00	200	110	-29.59	0.94	6.62	0.029

MAXIMUM DAY + FIREFLOW DEMAND AT N20
Scenario 2 - Full Buildout (Local Demand)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.54	33.79	331.48	48.08
Junc N2	88.25	2.06	112.63	24.38	239.17	34.69
Junc N3	88.12	0.14	112.49	24.37	239.07	34.67
Junc N4	87.85	0.25	112.52	24.67	242.01	35.10
Junc N5	87.19	0.77	112.59	25.40	249.17	36.14
Junc N6	84.95	0.00	113.23	28.28	277.43	40.24
Junc N7	82.95	0.40	113.82	30.87	302.83	43.92
Junc N8	88.28	0.41	111.94	23.66	232.10	33.66
Junc N9	88.54	0.50	111.98	23.44	229.95	33.35
Junc N10	88.80	0.27	112.40	23.60	231.52	33.58
Junc N11	90.47	0.55	111.74	21.27	208.66	30.26
Junc N12	92.25	0.45	111.52	19.27	189.04	27.42
Junc N13	89.86	0.55	111.65	21.79	213.76	31.00
Junc N14	91.70	0.14	111.04	19.34	189.73	27.52
Junc N15	91.36	0.31	110.81	19.45	190.80	27.67
Junc N16	89.81	0.45	110.80	20.99	205.91	29.86
Junc N17	88.25	0.39	110.79	22.54	221.12	32.07
Junc N18	88.10	36.59	109.48	21.38	209.74	30.42
Junc N19	88.74	0.18	110.13	21.39	209.84	30.43
Junc N20	89.41	95.71	108.29	18.88	185.21	26.86
Junc N21	90.00	0.42	110.56	20.56	201.69	29.25
Junc N22	90.33	0.38	110.83	20.50	201.11	29.17
Junc N23	90.11	0.62	111.01	20.90	205.03	29.74
Junc N24	89.95	0.14	111.17	21.22	208.17	30.19
Junc N25	90.15	0.28	111.15	21.00	206.01	29.88
Junc N26	90.00	0.07	111.10	21.10	206.99	30.02
Junc N27	90.60	0.24	111.03	20.43	200.42	29.07
Junc N28	91.00	0.38	110.92	19.92	195.42	28.34
Junc N29	89.20	0.66	111.54	22.34	219.16	31.79
Junc N30	88.35	0.60	111.72	23.37	229.26	33.25
Junc N31	88.30	0.57	111.89	23.59	231.42	33.56
Junc N32	88.10	0.25	112.07	23.97	235.15	34.10
Junc N33	87.40	0.22	112.27	24.87	243.97	35.39
Junc N34	87.95	1.49	112.06	24.11	236.52	34.30
Junc N35	87.50	0.73	111.80	24.30	238.38	34.57
Junc N36	86.20	0.67	111.78	25.58	250.94	36.40
Junc N37	89.83	0.66	111.78	21.95	215.33	31.23
Junc N38	90.80	0.48	111.68	20.88	204.83	29.71
Junc N39	91.08	0.65	111.66	20.58	201.89	29.28
Junc N40	90.90	0.45	111.62	20.72	203.26	29.48
Junc N41	90.64	0.65	111.60	20.96	205.62	29.82
Junc N42	90.30	0.53	111.58	21.28	208.76	30.28
Junc N43	90.00	0.25	111.56	21.56	211.50	30.68
Junc N44	89.55	0.28	111.74	22.19	217.68	31.57
Junc N45	88.50	0.21	111.75	23.25	228.08	33.08
Junc N46	87.00	0.17	111.75	24.75	242.80	35.21
Junc N47	86.15	1.10	111.75	25.60	251.14	36.42
Junc N48	86.66	0.87	112.95	26.29	257.90	37.41
Junc N49	84.50	0.82	113.45	28.95	284.00	41.19
Junc N50	82.68	0.16	113.97	31.29	306.95	44.52
Junc N51	81.20	0.50	114.50	33.30	326.67	47.38
Junc N52	85.65	0.00	111.78	26.13	256.34	37.18
Junc N53	85.10	1.09	111.78	26.68	261.73	37.96
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.82	33.97	333.25	48.33
Junc KNE01,14-17	81.00	0.00	115.67	34.67	340.11	49.33
Junc KNE02,11-13,21	82.23	0.00	114.42	32.19	315.78	45.80
Junc KNE03	88.85	1.00	111.82	22.97	225.34	32.68
Junc KNE04,5-6,20	84.00	0.00	113.49	29.49	289.30	41.96
Junc KNE07	88.38	0.16	112.78	24.40	239.36	34.72
Junc KNE08	90.72	36.27	110.52	19.80	194.24	28.17
Junc KNE09	88.86	0.60	110.63	21.77	213.56	30.97
Junc KNE10	89.84	0.28	111.19	21.35	209.44	30.38
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	111.37	18.72	183.64	26.64
Junc KNE23	91.30	0.41	111.64	20.34	199.54	28.94
Junc KNE24	90.60	0.25	111.73	21.13	207.29	30.06
Junc KNE25	87.40	1.32	112.63	25.23	247.51	35.90
Junc KNE26	90.30	0.17	111.15	20.85	204.54	29.67

Minimum Pressure

MAXIMUM DAY + FIREFLOW DEMAND AT N20
Scenario 2 - Full Buildout (Local Demand)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	71.79	1.02	4.04	0.023
Pipe P1B	685.00	300	120	71.79	1.02	4.03	0.023
Pipe P2A	580.00	400	120	-126.01	1.00	2.82	0.022
Pipe P2B	300.00	400	120	126.01	1.00	2.82	0.022
Pipe P2C	235.00	400	120	96.88	0.77	1.73	0.023
Pipe P3	260.00	300	120	71.79	1.02	4.03	0.023
Pipe P4	175.00	300	120	71.79	1.02	4.03	0.023
Pipe P5	83.00	300	120	47.22	0.67	1.86	0.025
Pipe P6	82.00	300	120	45.16	0.64	1.71	0.025
Pipe P7	75.00	300	120	21.43	0.30	0.43	0.028
Pipe P8	75.00	300	120	21.68	0.31	0.44	0.027
Pipe P9	90.00	300	120	-21.90	0.31	0.45	0.027
Pipe P10	90.00	300	120	-22.67	0.32	0.48	0.027
Pipe P11	85.00	300	120	-96.48	1.36	6.97	0.022
Pipe P12	85.00	300	120	-96.48	1.36	6.97	0.022
Pipe P13	85.00	300	120	-96.88	1.37	7.03	0.022
Pipe P14	84.00	300	120	93.23	1.32	6.55	0.022
Pipe P15	92.00	200	110	-7.40	0.24	0.51	0.036
Pipe P16	92.00	200	110	-24.14	0.77	4.54	0.030
Pipe P17	110.00	200	110	16.25	0.52	2.18	0.032
Pipe P18	110.00	200	110	15.70	0.50	2.04	0.032
Pipe P19	76.00	200	110	15.25	0.49	1.94	0.032
Pipe P20	110.00	300	120	-55.99	0.79	2.55	0.024
Pipe P21	110.00	300	120	-56.54	0.80	2.59	0.024
Pipe P22	84.00	300	120	70.82	1.00	3.93	0.023
Pipe P23	60.00	300	120	-70.68	1.00	3.92	0.023
Pipe P24	85.00	200	110	2.83	0.09	0.09	0.041
Pipe P25	83.00	200	110	2.38	0.08	0.06	0.043
Pipe P26	84.00	200	110	-43.68	1.39	13.61	0.028
Pipe P27	89.00	200	110	45.67	1.45	14.78	0.027
Pipe P28	100.00	200	110	-29.39	0.94	6.53	0.029
Pipe P29	75.00	200	110	-29.57	0.94	6.61	0.029
Pipe P30	110.00	200	110	-38.47	1.22	10.76	0.028
Pipe P31	99.00	200	110	57.24	1.82	22.45	0.027
Pipe P32	80.00	300	120	-67.54	0.96	3.60	0.023
Pipe P33	72.00	300	120	25.96	0.37	0.61	0.027
Pipe P34	103.00	300	120	26.38	0.37	0.63	0.027
Pipe P35	79.00	300	120	-56.55	0.80	2.59	0.024
Pipe P36	102.00	300	120	-45.69	0.65	1.75	0.025
Pipe P37	101.00	300	120	-46.31	0.66	1.79	0.025
Pipe P38	40.00	250	110	-12.52	0.26	0.45	0.034
Pipe P39	40.00	250	110	-12.38	0.25	0.44	0.034
Pipe P40	42.00	200	110	11.93	0.38	1.23	0.033
Pipe P41	58.00	200	110	11.86	0.38	1.22	0.034
Pipe P42	100.00	200	110	-11.62	0.37	1.17	0.034
Pipe P43	76.00	200	110	-11.24	0.36	1.10	0.034
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-59.11	0.84	2.82	0.024
Pipe P46	85.00	200	110	-15.97	0.51	2.11	0.032
Pipe P47	73.00	200	110	-16.57	0.53	2.26	0.032
Pipe P48	75.00	200	110	-17.14	0.55	2.41	0.032
Pipe P49	80.00	200	110	-17.39	0.55	2.47	0.032
Pipe P50	90.00	300	120	-72.48	1.03	4.11	0.023
Pipe P51	85.00	300	120	54.88	0.78	2.45	0.024
Pipe N52	100.00	300	120	53.39	0.76	2.33	0.024
Pipe P53	85.00	200	110	20.35	0.65	3.31	0.031
Pipe P54	79.00	250	110	9.99	0.20	0.30	0.035
Pipe P55	70.00	250	110	9.26	0.19	0.26	0.036
Pipe P56	102.00	300	120	22.05	0.31	0.45	0.027
Pipe P57	101.00	300	120	21.39	0.30	0.43	0.028
Pipe P58	82.00	300	120	-26.88	0.38	0.65	0.027
Pipe P59	110.00	300	120	14.49	0.21	0.21	0.029
Pipe P60	110.00	300	120	13.84	0.20	0.19	0.029
Pipe P61	95.00	300	120	-13.43	0.19	0.18	0.030
Pipe P62	110.00	300	120	12.98	0.18	0.17	0.030
Pipe P63	110.00	300	120	12.33	0.17	0.15	0.030
Pipe P64	79.00	200	110	-11.91	0.38	1.23	0.033
Pipe P65	40.00	300	120	-23.71	0.34	0.52	0.027
Pipe P66	40.00	300	120	23.46	0.33	0.51	0.027
Pipe P67	175.00	250	110	7.50	0.15	0.18	0.037
Pipe P68	83.00	250	110	5.74	0.12	0.11	0.038
Pipe P69	70.00	250	110	6.02	0.12	0.12	0.038
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-26.78	0.85	5.50	0.030
Pipe P75	85.00	200	110	-27.65	0.88	5.84	0.030
Pipe P76	85.00	200	110	-28.47	0.91	6.16	0.029
Pipe P77	85.00	200	110	-28.63	0.91	6.23	0.029
Pipe P78	82.00	200	110	-24.41	0.78	4.63	0.030
Pipe P79	50.00	200	110	-29.13	0.93	6.43	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.59	33.84	331.97	48.15
Junc N2	88.25	2.06	112.70	24.45	239.85	34.79
Junc N3	88.12	0.14	112.55	24.43	239.66	34.76
Junc N4	87.85	0.25	112.55	24.70	242.31	35.14
Junc N5	87.19	0.77	112.55	25.36	248.78	36.08
Junc N6	84.95	0.00	113.16	28.21	276.74	40.14
Junc N7	82.95	0.40	113.77	30.82	302.34	43.85
Junc N8	88.28	0.41	112.19	23.91	234.56	34.02
Junc N9	88.54	0.50	112.23	23.69	232.40	33.71
Junc N10	88.80	0.27	112.57	23.77	233.18	33.82
Junc N11	90.47	0.55	112.06	21.59	211.80	30.72
Junc N12	92.25	0.45	111.89	19.64	192.67	27.94
Junc N13	89.86	0.55	111.99	22.13	217.10	31.49
Junc N14	91.70	0.14	111.55	19.85	194.73	28.24
Junc N15	91.36	0.31	111.38	20.02	196.40	28.48
Junc N16	89.81	0.45	111.44	21.63	212.19	30.78
Junc N17	88.25	0.39	111.50	23.25	228.08	33.08
Junc N18	88.10	0.59	111.10	23.00	225.63	32.72
Junc N19	88.74	0.18	110.73	21.99	215.72	31.29
Junc N20	89.41	0.71	111.09	21.68	212.68	30.85
Junc N21	90.00	0.42	110.83	20.83	204.34	29.64
Junc N22	90.33	36.38	109.99	19.66	192.86	27.97
Junc N23	90.11	0.62	110.04	19.93	195.51	28.36
Junc N24	89.95	0.14	109.81	19.86	194.83	28.26
Junc N25	90.15	0.28	109.52	19.37	190.02	27.56
Junc N26	90.00	0.07	108.62	18.62	182.66	26.49
Junc N27	90.60	36.24	107.39	16.79	164.71	23.89
Junc N28	91.00	95.38	107.09	16.09	157.84	22.89
Junc N29	89.20	0.66	110.73	21.53	211.21	30.63
Junc N30	88.35	0.60	111.04	22.69	222.59	32.28
Junc N31	88.30	0.57	111.32	23.02	225.83	32.75
Junc N32	88.10	0.25	111.62	23.52	230.73	33.46
Junc N33	87.40	0.22	111.95	24.55	240.84	34.93
Junc N34	87.95	1.49	111.61	23.66	232.10	33.66
Junc N35	87.50	0.73	111.19	23.69	232.40	33.71
Junc N36	86.20	0.67	111.16	24.96	244.86	35.51
Junc N37	89.83	0.66	111.15	21.32	209.15	30.33
Junc N38	90.80	0.48	110.98	20.18	197.97	28.71
Junc N39	91.08	0.65	110.94	19.86	194.83	28.26
Junc N40	90.90	0.45	110.87	19.97	195.91	28.41
Junc N41	90.64	0.65	110.84	20.20	198.16	28.74
Junc N42	90.30	0.53	110.81	20.51	201.20	29.18
Junc N43	90.00	0.25	110.77	20.77	203.75	29.55
Junc N44	89.55	0.28	111.09	21.54	211.31	30.65
Junc N45	88.50	0.21	111.11	22.61	221.80	32.17
Junc N46	87.00	0.17	111.11	24.11	236.52	34.30
Junc N47	86.15	1.10	111.11	24.96	244.86	35.51
Junc N48	86.66	0.87	113.00	26.34	258.40	37.48
Junc N49	84.50	0.82	113.47	28.97	284.20	41.22
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.49	33.29	326.57	47.37
Junc N52	85.65	0.00	111.16	25.51	250.25	36.30
Junc N53	85.10	1.09	111.16	26.06	255.65	37.08
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.80	33.95	333.05	48.30
Junc KNE01,14-17	81.00	0.00	115.65	34.65	339.92	49.30
Junc KNE02,11-13,21	82.23	0.00	114.38	32.15	315.39	45.74
Junc KNE03	88.85	1.00	111.22	22.37	219.45	31.83
Junc KNE04,5-6,20	84.00	0.00	113.56	29.56	289.98	42.06
Junc KNE07	88.38	0.16	112.87	24.49	240.25	34.84
Junc KNE08	90.72	0.27	111.09	20.37	199.83	28.98
Junc KNE09	88.86	0.60	110.46	21.60	211.90	30.73
Junc KNE10	89.84	0.28	110.10	20.26	198.75	28.83
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	111.78	19.13	187.67	27.22
Junc KNE23	91.30	0.41	110.90	19.60	192.28	27.89
Junc KNE24	90.60	0.25	111.07	20.47	200.81	29.13
Junc KNE25	87.40	1.32	112.55	25.15	246.72	35.78
Junc KNE26	90.30	0.17	109.52	19.22	188.55	27.35

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	71.03	1.00	3.95	0.023
Pipe P1B	685.00	300	120	71.03	1.00	3.96	0.023
Pipe P2A	580.00	400	120	-126.77	1.01	2.85	0.022
Pipe P2B	300.00	400	120	126.77	1.01	2.85	0.022
Pipe P2C	235.00	400	120	98.22	0.78	1.78	0.023
Pipe P3	260.00	300	120	71.03	1.00	3.96	0.023
Pipe P4	175.00	300	120	71.03	1.00	3.96	0.023
Pipe P5	83.00	300	120	49.27	0.70	2.01	0.024
Pipe P6	82.00	300	120	47.21	0.67	1.86	0.025
Pipe P7	75.00	300	120	0.80	0.01	0.00	0.046
Pipe P8	75.00	300	120	1.05	0.01	0.00	0.043
Pipe P9	90.00	300	120	-1.27	0.02	0.00	0.042
Pipe P10	90.00	300	120	-2.04	0.03	0.01	0.039
Pipe P11	85.00	300	120	-97.82	1.38	7.16	0.022
Pipe P12	85.00	300	120	-97.82	1.38	7.16	0.022
Pipe P13	85.00	300	120	-98.22	1.39	7.21	0.022
Pipe P14	84.00	300	120	74.06	1.05	4.27	0.023
Pipe P15	92.00	200	110	-7.03	0.22	0.46	0.036
Pipe P16	92.00	200	110	-21.34	0.68	3.61	0.031
Pipe P17	110.00	200	110	13.80	0.44	1.61	0.033
Pipe P18	110.00	200	110	13.25	0.42	1.50	0.033
Pipe P19	76.00	200	110	12.80	0.41	1.40	0.033
Pipe P20	110.00	300	120	-46.77	0.66	1.82	0.025
Pipe P21	110.00	300	120	-47.32	0.67	1.86	0.024
Pipe P22	84.00	300	120	59.17	0.84	2.82	0.024
Pipe P23	60.00	300	120	-59.03	0.84	2.81	0.024
Pipe P24	85.00	200	110	-8.56	0.27	0.67	0.035
Pipe P25	83.00	200	110	-9.01	0.29	0.73	0.035
Pipe P26	84.00	200	110	-33.36	1.06	8.26	0.029
Pipe P27	89.00	200	110	23.95	0.76	4.47	0.030
Pipe P28	100.00	200	110	21.58	0.69	3.69	0.031
Pipe P29	75.00	200	110	21.40	0.68	3.63	0.031
Pipe P30	110.00	200	110	-1.78	0.06	0.04	0.044
Pipe P31	99.00	200	110	-1.07	0.03	0.01	0.048
Pipe P32	80.00	300	120	-67.28	0.95	3.58	0.023
Pipe P33	72.00	300	120	-68.08	0.96	3.66	0.023
Pipe P34	103.00	300	120	-67.66	0.96	3.62	0.023
Pipe P35	79.00	300	120	88.46	1.25	5.94	0.022
Pipe P36	102.00	300	120	-24.04	0.34	0.53	0.027
Pipe P37	101.00	300	120	-24.66	0.35	0.56	0.027
Pipe P38	40.00	250	110	-56.15	1.14	7.31	0.027
Pipe P39	40.00	250	110	-56.01	1.14	7.28	0.027
Pipe P40	42.00	200	110	55.56	1.77	21.25	0.027
Pipe P41	58.00	200	110	55.49	1.77	21.20	0.027
Pipe P42	100.00	200	110	-19.25	0.61	2.99	0.031
Pipe P43	76.00	200	110	76.13	2.42	38.08	0.025
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-81.10	1.15	5.06	0.023
Pipe P46	85.00	200	110	-21.41	0.68	3.63	0.031
Pipe P47	73.00	200	110	-22.01	0.70	3.82	0.031
Pipe P48	75.00	200	110	-22.58	0.72	4.01	0.030
Pipe P49	80.00	200	110	-22.83	0.73	4.09	0.030
Pipe P50	90.00	300	120	-94.47	1.34	6.71	0.022
Pipe P51	85.00	300	120	71.42	1.01	4.00	0.023
Pipe N52	100.00	300	120	69.93	0.99	3.84	0.023
Pipe P53	85.00	200	110	27.53	0.88	5.79	0.030
Pipe P54	79.00	250	110	12.48	0.25	0.45	0.034
Pipe P55	70.00	250	110	11.75	0.24	0.40	0.035
Pipe P56	102.00	300	120	28.93	0.41	0.75	0.026
Pipe P57	101.00	300	120	28.27	0.40	0.72	0.026
Pipe P58	82.00	300	120	-36.25	0.51	1.14	0.025
Pipe P59	110.00	300	120	19.46	0.28	0.36	0.028
Pipe P60	110.00	300	120	18.81	0.27	0.34	0.028
Pipe P61	95.00	300	120	-18.40	0.26	0.32	0.028
Pipe P62	110.00	300	120	17.95	0.25	0.31	0.028
Pipe P63	110.00	300	120	17.30	0.24	0.29	0.028
Pipe P64	79.00	200	110	-16.31	0.52	2.19	0.032
Pipe P65	40.00	300	120	-33.08	0.47	0.96	0.026
Pipe P66	40.00	300	120	32.83	0.46	0.95	0.026
Pipe P67	175.00	250	110	9.99	0.20	0.30	0.035
Pipe P68	83.00	250	110	8.23	0.17	0.21	0.036
Pipe P69	70.00	250	110	8.51	0.17	0.22	0.036
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-26.19	0.83	5.28	0.030
Pipe P75	85.00	200	110	-27.06	0.86	5.61	0.030
Pipe P76	85.00	200	110	-27.88	0.89	5.93	0.030
Pipe P77	85.00	200	110	-28.04	0.89	5.99	0.030
Pipe P78	82.00	200	110	-21.61	0.69	3.70	0.031
Pipe P79	50.00	200	110	-28.54	0.91	6.19	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.69	33.94	332.95	48.29
Junc N2	88.25	2.06	112.86	24.61	241.42	35.02
Junc N3	88.12	0.14	112.69	24.57	241.03	34.96
Junc N4	87.85	0.25	112.61	24.76	242.90	35.23
Junc N5	87.19	0.77	112.46	25.27	247.90	35.95
Junc N6	84.95	0.00	113.02	28.07	275.37	39.94
Junc N7	82.95	0.40	113.66	30.71	301.27	43.69
Junc N8	88.28	0.41	112.57	24.29	238.28	34.56
Junc N9	88.54	0.50	112.61	24.07	236.13	34.25
Junc N10	88.80	0.27	112.84	24.04	235.83	34.20
Junc N11	90.47	0.55	112.53	22.06	216.41	31.39
Junc N12	92.25	0.45	112.46	20.21	198.26	28.76
Junc N13	89.86	0.55	112.49	22.63	222.00	32.20
Junc N14	91.70	0.14	112.32	20.62	202.28	29.34
Junc N15	91.36	0.31	112.25	20.89	204.93	29.72
Junc N16	89.81	0.45	112.27	22.46	220.33	31.96
Junc N17	88.25	0.39	112.30	24.05	235.93	34.22
Junc N18	88.10	0.59	112.15	24.05	235.93	34.22
Junc N19	88.74	0.18	112.01	23.27	228.28	33.11
Junc N20	89.41	0.71	112.14	22.73	222.98	32.34
Junc N21	90.00	0.42	112.05	22.05	216.31	31.37
Junc N22	90.33	0.38	111.73	21.40	209.93	30.45
Junc N23	90.11	0.62	111.59	21.48	210.72	30.56
Junc N24	89.95	0.14	111.47	21.52	211.11	30.62
Junc N25	90.15	0.28	111.48	21.33	209.25	30.35
Junc N26	90.00	0.07	111.51	21.51	211.01	30.60
Junc N27	90.60	0.24	111.57	20.97	205.72	29.84
Junc N28	91.00	0.38	111.66	20.66	202.67	29.40
Junc N29	89.20	0.66	111.21	22.01	215.92	31.32
Junc N30	88.35	0.60	109.54	21.19	207.87	30.15
Junc N31	88.30	36.57	108.14	19.84	194.63	28.23
Junc N32	88.10	95.25	107.98	19.88	195.02	28.29
Junc N33	87.40	36.22	111.26	23.86	234.07	33.95
Junc N34	87.95	1.49	111.24	23.29	228.47	33.14
Junc N35	87.50	0.73	111.22	23.72	232.69	33.75
Junc N36	86.20	0.67	111.21	25.01	245.35	35.58
Junc N37	89.83	0.66	111.22	21.39	209.84	30.43
Junc N38	90.80	0.48	111.21	20.41	200.22	29.04
Junc N39	91.08	0.65	111.21	20.13	197.48	28.64
Junc N40	90.90	0.45	111.21	20.31	199.24	28.90
Junc N41	90.64	0.65	111.21	20.57	201.79	29.27
Junc N42	90.30	0.53	111.21	20.91	205.13	29.75
Junc N43	90.00	0.25	111.21	21.21	208.07	30.18
Junc N44	89.55	0.28	111.21	21.66	212.48	30.82
Junc N45	88.50	0.21	111.21	22.71	222.79	32.31
Junc N46	87.00	0.17	111.21	24.21	237.50	34.45
Junc N47	86.15	1.10	111.21	25.06	245.84	35.66
Junc N48	86.66	0.87	113.10	26.44	259.38	37.62
Junc N49	84.50	0.82	113.53	29.03	284.78	41.30
Junc N50	82.68	0.16	113.99	31.31	307.15	44.55
Junc N51	81.20	0.50	114.46	33.26	326.28	47.32
Junc N52	85.65	0.00	111.21	25.56	250.74	36.37
Junc N53	85.10	1.09	111.21	26.11	256.14	37.15
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.74	33.89	332.46	48.22
Junc KNE01,14-17	81.00	0.00	115.61	34.61	339.52	49.24
Junc KNE02,11-13,21	82.23	0.00	114.30	32.07	314.61	45.63
Junc KNE03	88.85	1.00	111.22	22.37	219.45	31.83
Junc KNE04,5-6,20	84.00	0.00	113.71	29.71	291.46	42.27
Junc KNE07	88.38	0.16	113.04	24.66	241.91	35.09
Junc KNE08	90.72	0.27	112.14	21.42	210.13	30.48
Junc KNE09	88.86	0.60	111.91	23.05	226.12	32.80
Junc KNE10	89.84	0.28	111.46	21.62	212.09	30.76
Junc KNE18	87.52	0.22	112.54	25.02	245.45	35.60
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	112.41	19.76	193.85	28.11
Junc KNE23	91.30	0.41	111.21	19.91	195.32	28.33
Junc KNE24	90.60	0.25	111.21	20.61	202.18	29.32
Junc KNE25	87.40	1.32	112.37	24.97	244.96	35.53
Junc KNE26	90.30	0.17	111.48	21.18	207.78	30.14

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	69.54	0.98	3.80	0.023
Pipe P1B	685.00	300	120	69.54	0.98	3.80	0.023
Pipe P2A	580.00	400	120	-128.26	1.02	2.91	0.022
Pipe P2B	300.00	400	120	128.26	1.02	2.91	0.022
Pipe P2C	235.00	400	120	101.03	0.80	1.87	0.023
Pipe P3	260.00	300	120	69.54	0.98	3.80	0.023
Pipe P4	175.00	300	120	69.54	0.98	3.80	0.023
Pipe P5	83.00	300	120	51.94	0.73	2.22	0.024
Pipe P6	82.00	300	120	49.88	0.71	2.06	0.024
Pipe P7	75.00	300	120	-33.37	0.47	0.98	0.026
Pipe P8	75.00	300	120	-33.12	0.47	0.96	0.026
Pipe P9	90.00	300	120	32.90	0.47	0.95	0.026
Pipe P10	90.00	300	120	32.13	0.45	0.91	0.026
Pipe P11	85.00	300	120	-100.63	1.42	7.54	0.022
Pipe P12	85.00	300	120	-100.63	1.42	7.54	0.022
Pipe P13	85.00	300	120	-101.03	1.43	7.60	0.022
Pipe P14	84.00	300	120	41.25	0.58	1.45	0.025
Pipe P15	92.00	200	110	-7.50	0.24	0.52	0.036
Pipe P16	92.00	200	110	-17.17	0.55	2.41	0.032
Pipe P17	110.00	200	110	9.17	0.29	0.76	0.035
Pipe P18	110.00	200	110	8.62	0.27	0.67	0.035
Pipe P19	76.00	200	110	8.17	0.26	0.61	0.035
Pipe P20	110.00	300	120	-27.78	0.39	0.70	0.027
Pipe P21	110.00	300	120	-28.33	0.40	0.72	0.026
Pipe P22	84.00	300	120	35.54	0.50	1.10	0.026
Pipe P23	60.00	300	120	-35.40	0.50	1.09	0.026
Pipe P24	85.00	200	110	-4.94	0.16	0.24	0.038
Pipe P25	83.00	200	110	-5.39	0.17	0.28	0.038
Pipe P26	84.00	200	110	-20.01	0.64	3.21	0.031
Pipe P27	89.00	200	110	14.23	0.45	1.71	0.033
Pipe P28	100.00	200	110	12.67	0.40	1.37	0.033
Pipe P29	75.00	200	110	12.49	0.40	1.34	0.033
Pipe P30	110.00	200	110	-0.98	0.03	0.01	0.049
Pipe P31	99.00	200	110	-0.27	0.01	0.00	0.057
Pipe P32	80.00	300	120	-40.03	0.57	1.37	0.025
Pipe P33	72.00	300	120	-40.02	0.57	1.37	0.025
Pipe P34	103.00	300	120	-39.60	0.56	1.34	0.025
Pipe P35	79.00	300	120	51.49	0.73	2.18	0.024
Pipe P36	102.00	300	120	40.46	0.57	1.39	0.025
Pipe P37	101.00	300	120	39.84	0.56	1.36	0.025
Pipe P38	40.00	250	110	9.37	0.19	0.27	0.036
Pipe P39	40.00	250	110	9.51	0.19	0.27	0.036
Pipe P40	42.00	200	110	-9.96	0.32	0.88	0.034
Pipe P41	58.00	200	110	-10.03	0.32	0.89	0.034
Pipe P42	100.00	200	110	10.27	0.33	0.93	0.034
Pipe P43	76.00	200	110	10.65	0.34	1.00	0.034
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	48.93	0.69	1.98	0.024
Pipe P46	85.00	200	110	53.19	1.69	19.60	0.027
Pipe P47	73.00	200	110	52.59	1.67	19.19	0.027
Pipe P48	75.00	200	110	16.02	0.51	2.12	0.032
Pipe P49	80.00	200	110	-79.23	2.52	41.00	0.025
Pipe P50	90.00	300	120	-131.44	1.86	12.37	0.021
Pipe P51	85.00	300	120	15.99	0.23	0.25	0.029
Pipe N52	100.00	300	120	14.50	0.21	0.21	0.029
Pipe P53	85.00	200	110	3.69	0.12	0.14	0.040
Pipe P54	79.00	250	110	3.81	0.08	0.05	0.041
Pipe P55	70.00	250	110	3.08	0.06	0.03	0.042
Pipe P56	102.00	300	120	6.00	0.08	0.04	0.033
Pipe P57	101.00	300	120	5.34	0.08	0.03	0.034
Pipe P58	82.00	300	120	-4.65	0.07	0.03	0.034
Pipe P59	110.00	300	120	2.65	0.04	0.01	0.038
Pipe P60	110.00	300	120	2.00	0.03	0.01	0.039
Pipe P61	95.00	300	120	-1.59	0.02	0.00	0.040
Pipe P62	110.00	300	120	1.14	0.02	0.00	0.042
Pipe P63	110.00	300	120	0.49	0.01	0.00	0.052
Pipe P64	79.00	200	110	-1.52	0.05	0.03	0.046
Pipe P65	40.00	300	120	-1.48	0.02	0.00	0.041
Pipe P66	40.00	300	120	1.23	0.02	0.00	0.041
Pipe P67	175.00	250	110	1.32	0.03	0.01	0.048
Pipe P68	83.00	250	110	-0.44	0.01	0.00	0.054
Pipe P69	70.00	250	110	-0.16	0.00	0.00	0.061
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-24.89	0.79	4.80	0.030
Pipe P75	85.00	200	110	-25.76	0.82	5.12	0.030
Pipe P76	85.00	200	110	-26.58	0.85	5.42	0.030
Pipe P77	85.00	200	110	-26.74	0.85	5.48	0.030
Pipe P78	82.00	200	110	-17.44	0.56	2.49	0.032
Pipe P79	50.00	200	110	-27.24	0.87	5.68	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-243.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	112.11	31.36	307.64	44.62
Junc N2	88.25	2.06	109.37	21.12	207.19	30.05
Junc N3	88.12	0.14	109.12	21.00	206.01	29.88
Junc N4	87.85	0.25	109.06	21.21	208.07	30.18
Junc N5	87.19	0.77	108.91	21.72	213.07	30.90
Junc N6	84.95	0.00	109.77	24.82	243.48	35.31
Junc N7	82.95	0.40	110.70	27.75	272.23	39.48
Junc N8	88.28	0.41	108.87	20.59	201.99	29.30
Junc N9	88.54	0.50	108.94	20.40	200.12	29.03
Junc N10	88.80	0.27	109.30	20.50	201.11	29.17
Junc N11	90.47	0.55	108.79	18.32	179.72	26.07
Junc N12	92.25	0.45	108.65	16.40	160.88	23.33
Junc N13	89.86	0.55	108.71	18.85	184.92	26.82
Junc N14	91.70	0.14	108.37	16.67	163.53	23.72
Junc N15	91.36	0.31	108.24	16.88	165.59	24.02
Junc N16	89.81	0.45	108.29	18.48	181.29	26.29
Junc N17	88.25	0.39	108.33	20.08	196.98	28.57
Junc N18	88.10	0.59	108.02	19.92	195.42	28.34
Junc N19	88.74	0.18	107.74	19.00	186.39	27.03
Junc N20	89.41	0.71	108.02	18.61	182.56	26.48
Junc N21	90.00	0.42	107.82	17.82	174.81	25.35
Junc N22	90.33	0.38	107.17	16.84	165.20	23.96
Junc N23	90.11	0.62	106.87	16.76	164.42	23.85
Junc N24	89.95	0.14	106.60	16.65	163.34	23.69
Junc N25	90.15	0.28	106.62	16.47	161.57	23.43
Junc N26	90.00	0.07	106.70	16.70	163.83	23.76
Junc N27	90.60	0.24	106.82	16.22	159.12	23.08
Junc N28	91.00	0.38	107.01	16.01	157.06	22.78
Junc N29	89.20	0.66	106.04	16.84	165.20	23.96
Junc N30	88.35	0.60	106.38	18.03	176.87	25.65
Junc N31	88.30	0.57	106.69	18.39	180.41	26.17
Junc N32	88.10	0.25	107.02	18.92	185.61	26.92
Junc N33	87.40	0.22	107.38	19.98	196.00	28.43
Junc N34	87.95	1.49	106.38	18.43	180.80	26.22
Junc N35	87.50	59.73	102.05	14.55	142.74	20.70
Junc N36	86.20	95.67	101.03	14.83	145.48	21.10
Junc N37	89.83	0.66	105.19	15.36	150.68	21.85
Junc N38	90.80	0.48	105.36	14.56	142.83	20.72
Junc N39	91.08	0.65	105.45	14.37	140.97	20.45
Junc N40	90.90	0.45	105.62	14.72	144.40	20.94
Junc N41	90.64	0.65	105.71	15.07	147.84	21.44
Junc N42	90.30	0.53	105.81	15.51	152.15	22.07
Junc N43	90.00	0.25	105.92	15.92	156.18	22.65
Junc N44	89.55	0.28	104.08	14.53	142.54	20.67
Junc N45	88.50	0.21	103.19	14.69	144.11	20.90
Junc N46	87.00	0.17	103.19	16.19	158.82	23.04
Junc N47	86.15	1.10	103.18	17.03	167.06	24.23
Junc N48	86.66	0.87	109.76	23.10	226.61	32.87
Junc N49	84.50	0.82	110.43	25.93	254.37	36.89
Junc N50	82.68	0.16	111.13	28.45	279.09	40.48
Junc N51	81.20	0.50	111.84	30.64	300.58	43.60
Junc N52	85.65	59.00	100.53	14.88	145.97	21.17
Junc N53	85.10	1.09	100.53	15.43	151.37	21.95
Junc N54	82.25	0.00	116.00	33.75	331.09	48.02
Junc N55	80.85	0.00	112.27	31.42	308.23	44.70
Junc KNE01,14-17	81.00	0.00	113.54	32.54	319.22	46.30
Junc KNE02,11-13,21	82.23	0.00	111.63	29.40	288.41	41.83
Junc KNE03	88.85	1.00	105.23	16.38	160.69	23.31
Junc KNE04,5-6,20	84.00	0.00	110.63	26.63	261.24	37.89
Junc KNE07	88.38	0.16	109.64	21.26	208.56	30.25
Junc KNE08	90.72	0.27	108.02	17.30	169.71	24.61
Junc KNE09	88.86	0.60	107.53	18.67	183.15	26.56
Junc KNE10	89.84	0.28	106.58	16.74	164.22	23.82
Junc KNE18	87.52	0.22	108.99	21.47	210.62	30.55
Junc KNE19	78.25	0.00	116.01	37.76	370.43	53.73
Junc KNE22	92.65	0.41	108.56	15.91	156.08	22.64
Junc KNE23	91.30	0.41	105.54	14.24	139.69	20.26
Junc KNE24	90.60	0.25	105.15	14.55	142.74	20.70
Junc KNE25	87.40	1.32	108.84	21.44	210.33	30.51
Junc KNE26	90.30	0.17	106.62	16.32	160.10	23.22

	Minimum Pressure
	Maximum Fireflow (sum)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	243.80	0.00	-116.01	0.000
Pipe P1A	1.00	300	120	86.40	1.22	5.68	0.022
Pipe P1B	685.00	300	120	86.40	1.22	5.68	0.022
Pipe P2A	580.00	400	120	-157.40	1.25	4.25	0.021
Pipe P2B	300.00	400	120	157.40	1.25	4.25	0.021
Pipe P2C	235.00	400	120	123.39	0.98	2.71	0.022
Pipe P3	260.00	300	120	86.40	1.22	5.68	0.022
Pipe P4	175.00	300	120	86.40	1.22	5.68	0.022
Pipe P5	83.00	300	120	63.53	0.90	3.22	0.023
Pipe P6	82.00	300	120	61.47	0.87	3.03	0.024
Pipe P7	75.00	300	120	-31.74	0.45	0.89	0.026
Pipe P8	75.00	300	120	-31.49	0.45	0.88	0.026
Pipe P9	90.00	300	120	31.27	0.44	0.87	0.026
Pipe P10	90.00	300	120	30.50	0.43	0.83	0.026
Pipe P11	85.00	300	120	-122.99	1.74	10.93	0.021
Pipe P12	85.00	300	120	-122.99	1.74	10.93	0.021
Pipe P13	85.00	300	120	-123.39	1.75	11.00	0.021
Pipe P14	84.00	300	120	61.24	0.87	3.01	0.024
Pipe P15	92.00	200	110	-9.25	0.29	0.77	0.035
Pipe P16	92.00	200	110	-22.44	0.71	3.96	0.031
Pipe P17	110.00	200	110	12.69	0.40	1.38	0.033
Pipe P18	110.00	200	110	12.14	0.39	1.27	0.033
Pipe P19	76.00	200	110	11.69	0.37	1.18	0.034
Pipe P20	110.00	300	120	-40.47	0.57	1.40	0.025
Pipe P21	110.00	300	120	-41.02	0.58	1.43	0.025
Pipe P22	84.00	300	120	51.75	0.73	2.20	0.024
Pipe P23	60.00	300	120	-51.61	0.73	2.19	0.024
Pipe P24	85.00	200	110	-7.37	0.23	0.50	0.036
Pipe P25	83.00	200	110	-7.82	0.25	0.56	0.036
Pipe P26	84.00	200	110	-29.06	0.93	6.40	0.029
Pipe P27	89.00	200	110	20.85	0.66	3.46	0.031
Pipe P28	100.00	200	110	18.76	0.60	2.84	0.031
Pipe P29	75.00	200	110	18.58	0.59	2.79	0.031
Pipe P30	110.00	200	110	-1.51	0.05	0.03	0.045
Pipe P31	99.00	200	110	-0.80	0.03	0.01	0.050
Pipe P32	80.00	300	120	-58.67	0.83	2.78	0.024
Pipe P33	72.00	300	120	-59.20	0.84	2.82	0.024
Pipe P34	103.00	300	120	-58.78	0.83	2.79	0.024
Pipe P35	79.00	300	120	76.75	1.09	4.57	0.023
Pipe P36	102.00	300	120	60.60	0.86	2.95	0.024
Pipe P37	101.00	300	120	59.98	0.85	2.89	0.024
Pipe P38	40.00	250	110	14.49	0.30	0.59	0.033
Pipe P39	40.00	250	110	14.63	0.30	0.61	0.033
Pipe P40	42.00	200	110	-15.08	0.48	1.90	0.032
Pipe P41	58.00	200	110	-15.15	0.48	1.92	0.032
Pipe P42	100.00	200	110	15.39	0.49	1.97	0.032
Pipe P43	76.00	200	110	15.77	0.50	2.06	0.032
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	74.19	1.05	4.29	0.023
Pipe P46	85.00	200	110	-22.57	0.72	4.01	0.030
Pipe P47	73.00	200	110	-23.17	0.74	4.21	0.030
Pipe P48	75.00	200	110	-23.74	0.76	4.40	0.030
Pipe P49	80.00	200	110	-23.99	0.76	4.49	0.030
Pipe P50	90.00	300	120	-152.18	2.15	16.22	0.021
Pipe P51	85.00	300	120	127.96	1.81	11.77	0.021
Pipe N52	100.00	300	120	126.47	1.79	11.51	0.021
Pipe P53	85.00	200	110	-36.15	1.15	9.59	0.028
Pipe P54	79.00	250	110	141.06	2.87	40.24	0.024
Pipe P55	70.00	250	110	81.33	1.66	14.51	0.026
Pipe P56	102.00	300	120	20.56	0.29	0.40	0.028
Pipe P57	101.00	300	120	19.90	0.28	0.37	0.028
Pipe P58	82.00	300	120	56.54	0.80	2.59	0.024
Pipe P59	110.00	300	120	-29.72	0.42	0.79	0.026
Pipe P60	110.00	300	120	-30.37	0.43	0.82	0.026
Pipe P61	95.00	300	120	30.78	0.44	0.84	0.026
Pipe P62	110.00	300	120	-31.23	0.44	0.86	0.026
Pipe P63	110.00	300	120	-31.88	0.45	0.90	0.026
Pipe P64	79.00	200	110	27.30	0.87	5.70	0.030
Pipe P65	40.00	300	120	59.71	0.84	2.87	0.024
Pipe P66	40.00	300	120	-59.96	0.85	2.89	0.024
Pipe P67	175.00	250	110	-74.43	1.52	12.32	0.026
Pipe P68	83.00	250	110	-76.19	1.55	12.86	0.026
Pipe P69	70.00	250	110	-75.91	1.55	12.77	0.026
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	60.09	1.22	8.29	0.027
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-31.66	1.01	7.50	0.029
Pipe P75	85.00	200	110	-32.53	1.04	7.89	0.029
Pipe P76	85.00	200	110	-33.35	1.06	8.26	0.029
Pipe P77	85.00	200	110	-33.51	1.07	8.33	0.029
Pipe P78	82.00	200	110	-22.71	0.72	4.05	0.030
Pipe P79	50.00	200	110	-34.01	1.08	8.56	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.63	33.88	332.36	48.21
Junc N2	88.25	2.06	112.76	24.51	240.44	34.87
Junc N3	88.12	0.14	112.60	24.48	240.15	34.83
Junc N4	87.85	0.25	112.57	24.72	242.50	35.17
Junc N5	87.19	0.77	112.51	25.32	248.39	36.03
Junc N6	84.95	0.00	113.10	28.15	276.15	40.05
Junc N7	82.95	0.40	113.72	30.77	301.85	43.78
Junc N8	88.28	0.41	112.39	24.11	236.52	34.30
Junc N9	88.54	0.50	112.43	23.89	234.36	33.99
Junc N10	88.80	0.27	112.70	23.90	234.46	34.01
Junc N11	90.47	0.55	112.32	21.85	214.35	31.09
Junc N12	92.25	0.45	112.21	19.96	195.81	28.40
Junc N13	89.86	0.55	112.26	22.40	219.74	31.87
Junc N14	91.70	0.14	112.00	20.30	199.14	28.88
Junc N15	91.36	0.31	111.89	20.53	201.40	29.21
Junc N16	89.81	0.45	111.93	22.12	217.00	31.47
Junc N17	88.25	0.39	111.96	23.71	232.60	33.74
Junc N18	88.10	0.59	111.72	23.62	231.71	33.61
Junc N19	88.74	0.18	111.50	22.76	223.28	32.38
Junc N20	89.41	0.71	111.72	22.31	218.86	31.74
Junc N21	90.00	0.42	111.56	21.56	211.50	30.68
Junc N22	90.33	0.38	111.06	20.73	203.36	29.50
Junc N23	90.11	0.62	110.83	20.72	203.26	29.48
Junc N24	89.95	0.14	110.62	20.67	202.77	29.41
Junc N25	90.15	0.28	110.64	20.49	201.01	29.15
Junc N26	90.00	0.07	110.70	20.70	203.07	29.45
Junc N27	90.60	0.24	110.78	20.18	197.97	28.71
Junc N28	91.00	0.38	110.94	19.94	195.61	28.37
Junc N29	89.20	0.66	110.19	20.99	205.91	29.86
Junc N30	88.35	0.60	110.55	22.20	217.78	31.59
Junc N31	88.30	0.57	110.87	22.57	221.41	32.11
Junc N32	88.10	0.25	111.22	23.12	226.81	32.90
Junc N33	87.40	0.22	111.60	24.20	237.40	34.43
Junc N34	87.95	1.49	111.07	23.12	226.81	32.90
Junc N35	87.50	0.73	110.37	22.87	224.35	32.54
Junc N36	86.20	0.67	110.31	24.11	236.52	34.30
Junc N37	89.83	0.66	110.26	20.43	200.42	29.07
Junc N38	90.80	36.48	109.80	19.00	186.39	27.03
Junc N39	91.08	0.65	109.77	18.69	183.35	26.59
Junc N40	90.90	0.45	109.73	18.83	184.72	26.79
Junc N41	90.64	0.65	109.71	19.07	187.08	27.13
Junc N42	90.30	95.53	109.69	19.39	190.22	27.59
Junc N43	90.00	36.25	109.85	19.85	194.73	28.24
Junc N44	89.55	0.28	110.11	20.56	201.69	29.25
Junc N45	88.50	0.21	110.16	21.66	212.48	30.82
Junc N46	87.00	0.17	110.16	23.16	227.20	32.95
Junc N47	86.15	1.10	110.16	24.01	235.54	34.16
Junc N48	86.66	0.87	113.03	26.37	258.69	37.52
Junc N49	84.50	0.82	113.49	28.99	284.39	41.25
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.47	33.27	326.38	47.34
Junc N52	85.65	0.00	110.31	24.66	241.91	35.09
Junc N53	85.10	1.09	110.31	25.21	247.31	35.87
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.77	33.92	332.76	48.26
Junc KNE01,14-17	81.00	0.00	115.64	34.64	339.82	49.29
Junc KNE02,11-13,21	82.23	0.00	114.35	32.12	315.10	45.70
Junc KNE03	88.85	1.00	110.46	21.61	211.99	30.75
Junc KNE04,5-6,20	84.00	0.00	113.62	29.62	290.57	42.14
Junc KNE07	88.38	0.16	112.94	24.56	240.93	34.94
Junc KNE08	90.72	0.27	111.72	21.00	206.01	29.88
Junc KNE09	88.86	0.60	111.34	22.48	220.53	31.98
Junc KNE10	89.84	0.28	110.60	20.76	203.66	29.54
Junc KNE18	87.52	0.22	112.54	25.02	245.45	35.60
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	112.14	19.49	191.20	27.73
Junc KNE23	91.30	0.41	109.75	18.45	180.99	26.25
Junc KNE24	90.60	0.25	110.06	19.46	190.90	27.69
Junc KNE25	87.40	1.32	112.48	25.08	246.03	35.68
Junc KNE26	90.30	0.17	110.64	20.34	199.54	28.94

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	70.42	1.00	3.89	0.023
Pipe P1B	685.00	300	120	70.42	1.00	3.89	0.023
Pipe P2A	580.00	400	120	-127.38	1.01	2.87	0.022
Pipe P2B	300.00	400	120	127.38	1.01	2.87	0.022
Pipe P2C	235.00	400	120	99.30	0.79	1.81	0.023
Pipe P3	260.00	300	120	70.42	1.00	3.89	0.023
Pipe P4	175.00	300	120	70.42	1.00	3.89	0.023
Pipe P5	83.00	300	120	51.16	0.72	2.15	0.024
Pipe P6	82.00	300	120	49.10	0.69	2.00	0.024
Pipe P7	75.00	300	120	-19.65	0.28	0.37	0.028
Pipe P8	75.00	300	120	-19.40	0.27	0.36	0.028
Pipe P9	90.00	300	120	19.18	0.27	0.35	0.028
Pipe P10	90.00	300	120	18.41	0.26	0.32	0.028
Pipe P11	85.00	300	120	-98.90	1.40	7.30	0.022
Pipe P12	85.00	300	120	-98.90	1.40	7.30	0.022
Pipe P13	85.00	300	120	-99.30	1.40	7.36	0.022
Pipe P14	84.00	300	120	55.04	0.78	2.47	0.024
Pipe P15	92.00	200	110	-7.27	0.23	0.49	0.036
Pipe P16	92.00	200	110	-18.83	0.60	2.86	0.031
Pipe P17	110.00	200	110	11.06	0.35	1.07	0.034
Pipe P18	110.00	200	110	10.51	0.33	0.97	0.034
Pipe P19	76.00	200	110	10.06	0.32	0.90	0.034
Pipe P20	110.00	300	120	-35.75	0.51	1.11	0.026
Pipe P21	110.00	300	120	-36.30	0.51	1.14	0.025
Pipe P22	84.00	300	120	45.40	0.64	1.73	0.025
Pipe P23	60.00	300	120	-45.26	0.64	1.72	0.025
Pipe P24	85.00	200	110	-6.46	0.21	0.39	0.037
Pipe P25	83.00	200	110	-6.91	0.22	0.45	0.036
Pipe P26	84.00	200	110	-25.60	0.81	5.06	0.030
Pipe P27	89.00	200	110	18.30	0.58	2.72	0.031
Pipe P28	100.00	200	110	16.39	0.52	2.22	0.032
Pipe P29	75.00	200	110	16.21	0.52	2.17	0.032
Pipe P30	110.00	200	110	-1.32	0.04	0.02	0.046
Pipe P31	99.00	200	110	-0.61	0.02	0.00	0.051
Pipe P32	80.00	300	120	-51.41	0.73	2.17	0.024
Pipe P33	72.00	300	120	-51.75	0.73	2.20	0.024
Pipe P34	103.00	300	120	-51.33	0.73	2.17	0.024
Pipe P35	79.00	300	120	66.94	0.95	3.54	0.023
Pipe P36	102.00	300	120	52.78	0.75	2.28	0.024
Pipe P37	101.00	300	120	52.16	0.74	2.23	0.024
Pipe P38	40.00	250	110	12.50	0.25	0.45	0.034
Pipe P39	40.00	250	110	12.64	0.26	0.46	0.034
Pipe P40	42.00	200	110	-13.09	0.42	1.46	0.033
Pipe P41	58.00	200	110	-13.16	0.42	1.48	0.033
Pipe P42	100.00	200	110	13.40	0.43	1.53	0.033
Pipe P43	76.00	200	110	13.78	0.44	1.61	0.033
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	64.38	0.91	3.30	0.023
Pipe P46	85.00	200	110	-23.26	0.74	4.24	0.030
Pipe P47	73.00	200	110	-23.86	0.76	4.44	0.030
Pipe P48	75.00	200	110	-24.43	0.78	4.64	0.030
Pipe P49	80.00	200	110	-24.68	0.79	4.73	0.030
Pipe P50	90.00	300	120	-115.99	1.64	9.81	0.021
Pipe P51	85.00	300	120	91.09	1.29	6.27	0.022
Pipe N52	100.00	300	120	89.60	1.27	6.08	0.022
Pipe P53	85.00	200	110	19.91	0.63	3.18	0.031
Pipe P54	79.00	250	110	19.70	0.40	1.05	0.032
Pipe P55	70.00	250	110	18.97	0.39	0.98	0.032
Pipe P56	102.00	300	120	48.99	0.69	1.99	0.024
Pipe P57	101.00	300	120	48.33	0.68	1.94	0.024
Pipe P58	82.00	300	120	-63.53	0.90	3.22	0.023
Pipe P59	110.00	300	120	14.84	0.21	0.22	0.029
Pipe P60	110.00	300	120	14.19	0.20	0.20	0.029
Pipe P61	95.00	300	120	-13.78	0.19	0.19	0.029
Pipe P62	110.00	300	120	13.33	0.19	0.18	0.030
Pipe P63	110.00	300	120	12.68	0.18	0.16	0.030
Pipe P64	79.00	200	110	-12.21	0.39	1.28	0.033
Pipe P65	40.00	300	120	70.64	1.00	3.92	0.023
Pipe P66	40.00	300	120	-106.89	1.51	8.43	0.022
Pipe P67	175.00	250	110	17.21	0.35	0.82	0.033
Pipe P68	83.00	250	110	15.45	0.31	0.67	0.033
Pipe P69	70.00	250	110	15.73	0.32	0.69	0.033
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-25.73	0.82	5.11	0.030
Pipe P75	85.00	200	110	-26.60	0.85	5.43	0.030
Pipe P76	85.00	200	110	-27.42	0.87	5.74	0.030
Pipe P77	85.00	200	110	-27.58	0.88	5.81	0.030
Pipe P78	82.00	200	110	-19.10	0.61	2.94	0.031
Pipe P79	50.00	200	110	-28.08	0.89	6.00	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.65	33.90	332.56	48.23
Junc N2	88.25	2.06	112.79	24.54	240.74	34.92
Junc N3	88.12	0.14	112.62	24.50	240.35	34.86
Junc N4	87.85	0.25	112.58	24.73	242.60	35.19
Junc N5	87.19	0.77	112.50	25.31	248.29	36.01
Junc N6	84.95	0.00	113.08	28.13	275.96	40.02
Junc N7	82.95	0.40	113.71	30.76	301.76	43.77
Junc N8	88.28	0.41	112.44	24.16	237.01	34.38
Junc N9	88.54	0.50	112.49	23.95	234.95	34.08
Junc N10	88.80	0.27	112.74	23.94	234.85	34.06
Junc N11	90.47	0.55	112.38	21.91	214.94	31.17
Junc N12	92.25	0.45	112.28	20.03	196.49	28.50
Junc N13	89.86	0.55	112.33	22.47	220.43	31.97
Junc N14	91.70	0.14	112.09	20.39	200.03	29.01
Junc N15	91.36	0.31	112.00	20.64	202.48	29.37
Junc N16	89.81	0.45	112.03	22.22	217.98	31.62
Junc N17	88.25	0.39	112.07	23.82	233.67	33.89
Junc N18	88.10	0.59	111.85	23.75	232.99	33.79
Junc N19	88.74	0.18	111.66	22.92	224.85	32.61
Junc N20	89.41	0.71	111.85	22.44	220.14	31.93
Junc N21	90.00	0.42	111.71	21.71	212.98	30.89
Junc N22	90.33	0.38	111.27	20.94	205.42	29.79
Junc N23	90.11	0.62	111.07	20.96	205.62	29.82
Junc N24	89.95	0.14	110.89	20.94	205.42	29.79
Junc N25	90.15	0.28	110.90	20.75	203.56	29.52
Junc N26	90.00	0.07	110.95	20.95	205.52	29.81
Junc N27	90.60	0.24	111.03	20.43	200.42	29.07
Junc N28	91.00	0.38	111.16	20.16	197.77	28.68
Junc N29	89.20	0.66	110.51	21.31	209.05	30.32
Junc N30	88.35	0.60	110.76	22.41	219.84	31.89
Junc N31	88.30	0.57	110.99	22.69	222.59	32.28
Junc N32	88.10	0.25	111.24	23.14	227.00	32.92
Junc N33	87.40	0.22	111.50	24.10	236.42	34.29
Junc N34	87.95	1.49	110.87	22.92	224.85	32.61
Junc N35	87.50	0.73	109.24	21.74	213.27	30.93
Junc N36	86.20	0.67	108.44	22.24	218.17	31.64
Junc N37	89.83	0.66	109.95	20.12	197.38	28.63
Junc N38	90.80	0.48	109.93	19.13	187.67	27.22
Junc N39	91.08	0.65	110.01	18.93	185.70	26.93
Junc N40	90.90	0.45	110.15	19.25	188.84	27.39
Junc N41	90.64	0.65	110.23	19.59	192.18	27.87
Junc N42	90.30	0.53	110.32	20.02	196.40	28.48
Junc N43	90.00	0.25	110.41	20.41	200.22	29.04
Junc N44	89.55	0.28	108.01	18.46	181.09	26.27
Junc N45	88.50	0.21	106.55	18.05	177.07	25.68
Junc N46	87.00	72.17	103.09	16.09	157.84	22.89
Junc N47	86.15	96.10	101.61	15.46	151.66	22.00
Junc N48	86.66	0.87	113.05	26.39	258.89	37.55
Junc N49	84.50	0.82	113.50	29.00	284.49	41.26
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.47	33.27	326.38	47.34
Junc N52	85.65	0.00	108.44	22.79	223.57	32.43
Junc N53	85.10	1.09	108.44	23.34	228.97	33.21
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.77	33.92	332.76	48.26
Junc KNE01,14-17	81.00	0.00	115.63	34.63	339.72	49.27
Junc KNE02,11-13,21	82.23	0.00	114.34	32.11	315.00	45.69
Junc KNE03	88.85	1.00	110.15	21.30	208.95	30.31
Junc KNE04,5-6,20	84.00	0.00	113.64	29.64	290.77	42.17
Junc KNE07	88.38	0.16	112.97	24.59	241.23	34.99
Junc KNE08	90.72	0.27	111.85	21.13	207.29	30.06
Junc KNE09	88.86	0.60	111.52	22.66	222.29	32.24
Junc KNE10	89.84	0.28	110.87	21.03	206.30	29.92
Junc KNE18	87.52	0.22	112.54	25.02	245.45	35.60
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	112.22	19.57	191.98	27.84
Junc KNE23	91.30	0.41	110.08	18.78	184.23	26.72
Junc KNE24	90.60	0.25	109.76	19.16	187.96	27.26
Junc KNE25	87.40	1.32	112.45	25.05	245.74	35.64
Junc KNE26	90.30	0.17	110.90	20.60	202.09	29.31

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	70.19	0.99	3.86	0.023
Pipe P1B	685.00	300	120	70.19	0.99	3.87	0.023
Pipe P2A	580.00	400	120	-127.61	1.02	2.88	0.022
Pipe P2B	300.00	400	120	127.61	1.02	2.88	0.022
Pipe P2C	235.00	400	120	99.75	0.79	1.83	0.023
Pipe P3	260.00	300	120	70.19	0.99	3.87	0.023
Pipe P4	175.00	300	120	70.19	0.99	3.87	0.023
Pipe P5	83.00	300	120	51.44	0.73	2.18	0.024
Pipe P6	82.00	300	120	49.38	0.70	2.02	0.024
Pipe P7	75.00	300	120	-23.83	0.34	0.52	0.027
Pipe P8	75.00	300	120	-23.58	0.33	0.51	0.027
Pipe P9	90.00	300	120	23.36	0.33	0.50	0.027
Pipe P10	90.00	300	120	22.59	0.32	0.47	0.027
Pipe P11	85.00	300	120	-99.35	1.41	7.36	0.022
Pipe P12	85.00	300	120	-99.35	1.41	7.36	0.022
Pipe P13	85.00	300	120	-99.75	1.41	7.42	0.022
Pipe P14	84.00	300	120	50.93	0.72	2.14	0.024
Pipe P15	92.00	200	110	-7.33	0.23	0.50	0.036
Pipe P16	92.00	200	110	-18.31	0.58	2.72	0.031
Pipe P17	110.00	200	110	10.48	0.33	0.97	0.034
Pipe P18	110.00	200	110	9.93	0.32	0.88	0.034
Pipe P19	76.00	200	110	9.48	0.30	0.80	0.035
Pipe P20	110.00	300	120	-33.37	0.47	0.98	0.026
Pipe P21	110.00	300	120	-33.92	0.48	1.01	0.026
Pipe P22	84.00	300	120	42.45	0.60	1.52	0.025
Pipe P23	60.00	300	120	-42.31	0.60	1.51	0.025
Pipe P24	85.00	200	110	-6.00	0.19	0.34	0.037
Pipe P25	83.00	200	110	-6.45	0.21	0.39	0.037
Pipe P26	84.00	200	110	-23.93	0.76	4.46	0.030
Pipe P27	89.00	200	110	17.08	0.54	2.39	0.032
Pipe P28	100.00	200	110	15.28	0.49	1.94	0.032
Pipe P29	75.00	200	110	15.10	0.48	1.90	0.032
Pipe P30	110.00	200	110	-1.22	0.04	0.02	0.047
Pipe P31	99.00	200	110	-0.51	0.02	0.00	0.053
Pipe P32	80.00	300	120	-48.00	0.68	1.91	0.024
Pipe P33	72.00	300	120	-48.24	0.68	1.93	0.024
Pipe P34	103.00	300	120	-47.82	0.68	1.90	0.024
Pipe P35	79.00	300	120	62.31	0.88	3.10	0.024
Pipe P36	102.00	300	120	49.09	0.69	2.00	0.024
Pipe P37	101.00	300	120	48.47	0.69	1.95	0.024
Pipe P38	40.00	250	110	11.56	0.24	0.39	0.035
Pipe P39	40.00	250	110	11.70	0.24	0.40	0.035
Pipe P40	42.00	200	110	-12.15	0.39	1.27	0.033
Pipe P41	58.00	200	110	-12.22	0.39	1.29	0.033
Pipe P42	100.00	200	110	12.46	0.40	1.33	0.033
Pipe P43	76.00	200	110	12.84	0.41	1.41	0.033
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	59.75	0.85	2.87	0.024
Pipe P46	85.00	200	110	-19.12	0.61	2.95	0.031
Pipe P47	73.00	200	110	-19.72	0.63	3.12	0.031
Pipe P48	75.00	200	110	-20.29	0.65	3.29	0.031
Pipe P49	80.00	200	110	-20.54	0.65	3.36	0.031
Pipe P50	90.00	300	120	-120.62	1.71	10.55	0.021
Pipe P51	85.00	300	120	99.86	1.41	7.43	0.022
Pipe N52	100.00	300	120	98.37	1.39	7.23	0.022
Pipe P53	85.00	200	110	-23.28	0.74	4.24	0.030
Pipe P54	79.00	250	110	71.93	1.47	11.56	0.026
Pipe P55	70.00	250	110	71.20	1.45	11.34	0.026
Pipe P56	102.00	300	120	48.73	0.69	1.97	0.024
Pipe P57	101.00	300	120	48.07	0.68	1.92	0.024
Pipe P58	82.00	300	120	51.51	0.73	2.18	0.024
Pipe P59	110.00	300	120	-27.05	0.38	0.66	0.027
Pipe P60	110.00	300	120	-27.70	0.39	0.69	0.027
Pipe P61	95.00	300	120	28.11	0.40	0.71	0.026
Pipe P62	110.00	300	120	-28.56	0.40	0.73	0.026
Pipe P63	110.00	300	120	-29.21	0.41	0.76	0.026
Pipe P64	79.00	200	110	24.94	0.79	4.82	0.030
Pipe P65	40.00	300	120	54.68	0.77	2.44	0.024
Pipe P66	40.00	300	120	-54.93	0.78	2.46	0.024
Pipe P67	175.00	250	110	69.44	1.41	10.83	0.027
Pipe P68	83.00	250	110	-99.32	2.02	21.02	0.025
Pipe P69	70.00	250	110	-99.04	2.02	20.91	0.025
Pipe P70	62.00	250	110	168.27	3.43	55.79	0.023
Pipe P71	75.00	250	110	96.10	1.96	19.77	0.025
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-25.51	0.81	5.03	0.030
Pipe P75	85.00	200	110	-26.38	0.84	5.35	0.030
Pipe P76	85.00	200	110	-27.20	0.87	5.66	0.030
Pipe P77	85.00	200	110	-27.36	0.87	5.72	0.030
Pipe P78	82.00	200	110	-18.58	0.59	2.80	0.031
Pipe P79	50.00	200	110	-27.86	0.89	5.92	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-252.46	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	111.63	30.88	302.93	43.94
Junc N2	88.25	2.06	108.83	20.58	201.89	29.28
Junc N3	88.12	63.47	108.54	20.42	200.32	29.05
Junc N4	87.85	0.25	108.71	20.86	204.64	29.68
Junc N5	87.19	0.77	109.08	21.89	214.74	31.15
Junc N6	84.95	0.00	109.87	24.92	244.47	35.46
Junc N7	82.95	0.40	110.44	27.49	269.68	39.11
Junc N8	88.28	0.41	108.62	20.34	199.54	28.94
Junc N9	88.54	0.50	108.73	20.19	198.06	28.73
Junc N10	88.80	0.27	108.95	20.15	197.67	28.67
Junc N11	90.47	0.55	108.71	18.24	178.93	25.95
Junc N12	92.25	0.45	108.68	16.43	161.18	23.38
Junc N13	89.86	0.55	108.65	18.79	184.33	26.73
Junc N14	91.70	0.14		16.98	166.57	24.16
Junc N15	91.36	0.31	108.69	17.33	170.01	24.66
Junc N16	89.81	0.45	108.68	18.87	185.11	26.85
Junc N17	88.25	0.39	108.68	20.43	200.42	29.07
Junc N18	88.10	0.59	108.71	20.61	202.18	29.32
Junc N19	88.74	0.18	108.74	20.00	196.20	28.46
Junc N20	89.41	0.71	108.71	19.30	189.33	27.46
Junc N21	90.00	0.42	108.73	18.73	183.74	26.65
Junc N22	90.33	0.38	108.80	18.47	181.19	26.28
Junc N23	90.11	0.62	108.84	18.73	183.74	26.65
Junc N24	89.95	0.14	108.88	18.93	185.70	26.93
Junc N25	90.15	0.28	108.87	18.72	183.64	26.64
Junc N26	90.00	0.07	108.86	18.86	185.02	26.83
Junc N27	90.60	0.24	108.84	18.24	178.93	25.95
Junc N28	91.00	0.38	108.82	17.82	174.81	25.35
Junc N29	89.20	0.66	108.96	19.76	193.85	28.11
Junc N30	88.35	0.60	109.01	20.66	202.67	29.40
Junc N31	88.30	0.57	109.06	20.76	203.66	29.54
Junc N32	88.10	0.25	109.11	21.01	206.11	29.89
Junc N33	87.40	0.22	109.17	21.77	213.56	30.97
Junc N34	87.95	1.49	109.10	21.15	207.48	30.09
Junc N35	87.50	0.73	109.02	21.52	211.11	30.62
Junc N36	86.20	0.67	109.01	22.81	223.77	32.45
Junc N37	89.83	0.66	109.02	19.19	188.25	27.30
Junc N38	90.80	0.48	108.99	18.19	178.44	25.88
Junc N39	91.08	0.65	108.98	17.90	175.60	25.47
Junc N40	90.90	0.45	108.97	18.07	177.27	25.71
Junc N41	90.64	0.65	108.97	18.33	179.82	26.08
Junc N42	90.30	0.53	108.97	18.67	183.15	26.56
Junc N43	90.00	0.25	108.96	18.96	186.00	26.98
Junc N44	89.55	0.28	109.00	19.45	190.80	27.67
Junc N45	88.50	0.21	109.01	20.51	201.20	29.18
Junc N46	87.00	0.17	109.00	22.00	215.82	31.30
Junc N47	86.15	1.10	109.00	22.85	224.16	32.51
Junc N48	86.66	95.87	104.14	17.48	171.48	24.87
Junc N49	84.50	64.15	104.17	19.67	192.96	27.99
Junc N50	82.68	0.16	106.95	24.27	238.09	34.53
Junc N51	81.20	0.50	109.75	28.55	280.08	40.62
Junc N52	85.65	0.00	109.01	23.36	229.16	33.24
Junc N53	85.10	1.09	109.01	23.91		
Junc N54	82.25	0.00	115.53	33.28	326.48	47.35
Junc N55	80.85	0.00	111.41	30.56	299.79	43.48
Junc KNE01,14-17	81.00	0.00	112.82	31.82	312.15	45.27
Junc KNE02,11-13,21	82.23	0.00	111.02	28.79	282.43	40.96
Junc KNE03	88.85	1.00	109.03	20.18	197.97	28.71
Junc KNE04,5-6,20	84.00	0.00	110.14	26.14	256.43	37.19
Junc KNE07	88.38	0.16	109.15	20.77	203.75	29.55
Junc KNE08	90.72	0.27	108.71	17.99	176.48	25.60
Junc KNE09	88.86	0.60	108.76	19.90	195.22	28.31
Junc KNE10	89.84	0.28	108.88	19.04	186.78	27.09
Junc KNE18	87.52	0.22	108.88	21.36	209.54	30.39
Junc KNE19	78.25	0.00	115.54	37.29	365.81	53.06
Junc KNE22	92.65	0.41	108.67	16.02	157.16	22.79
Junc KNE23	91.30	0.41	108.98	17.68	173.44	25.16
Junc KNE24	90.60	0.25	109.00	18.40	180.50	26.18
Junc KNE25	87.40	1.32	109.30	21.90	214.84	31.16
Junc KNE26	90.30	0.17	108.87	18.57	182.17	26.42

Minimum Pressure
Maximum Fireflow (sum)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	252.46	0.00	-115.54	0.000
Pipe P1A	1.00	300	120	86.54	1.22	5.70	0.022
Pipe P1B	685.00	300	120	86.54	1.22	5.70	0.022
Pipe P2A	580.00	400	120	-165.92	1.32	4.69	0.021
Pipe P2B	300.00	400	120	165.92	1.32	4.69	0.021
Pipe P2C	235.00	400	120	95.10	0.76	1.67	0.023
Pipe P3	260.00	300	120	86.54	1.22	5.70	0.022
Pipe P4	175.00	300	120	86.54	1.22	5.70	0.022
Pipe P5	83.00	300	120	69.19	0.98	3.77	0.023
Pipe P6	82.00	300	120	67.13	0.95	3.56	0.023
Pipe P7	75.00	300	120	52.33	0.74	2.25	0.024
Pipe P8	75.00	300	120	52.58	0.74	2.27	0.024
Pipe P9	90.00	300	120	-52.80	0.75	2.28	0.024
Pipe P10	90.00	300	120	-53.57	0.76	2.35	0.024
Pipe P11	85.00	300	120	-94.70	1.34	6.74	0.022
Pipe P12	85.00	300	120	-94.70	1.34	6.74	0.022
Pipe P13	85.00	300	120	-95.10	1.35	6.79	0.022
Pipe P14	84.00	300	120	-33.87	0.48	1.00	0.026
Pipe P15	92.00	200	110	-11.52	0.37	1.15	0.034
Pipe P16	92.00	200	110	-16.92	0.54	2.35	0.032
Pipe P17	110.00	200	110	4.89	0.16	0.24	0.038
Pipe P18	110.00	200	110	4.34	0.14	0.19	0.039
Pipe P19	76.00	200	110	3.89	0.12	0.15	0.040
Pipe P20	110.00	300	120	15.07	0.21	0.22	0.029
Pipe P21	110.00	300	120	14.52	0.21	0.21	0.029
Pipe P22	84.00	300	120	-11.59	0.16	0.14	0.030
Pipe P23	60.00	300	120	11.73	0.17	0.14	0.030
Pipe P24	85.00	200	110	3.17	0.10	0.11	0.041
Pipe P25	83.00	200	110	2.72	0.09	0.08	0.042
Pipe P26	84.00	200	110	8.24	0.26	0.62	0.035
Pipe P27	89.00	200	110	-5.91	0.19	0.33	0.037
Pipe P28	100.00	200	110	-5.62	0.18	0.30	0.037
Pipe P29	75.00	200	110	-5.80	0.18	0.32	0.037
Pipe P30	110.00	200	110	0.88	0.03	0.01	0.049
Pipe P31	99.00	200	110	1.59	0.05	0.03	0.045
Pipe P32	80.00	300	120	15.21	0.22	0.23	0.029
Pipe P33	72.00	300	120	17.07	0.24	0.28	0.028
Pipe P34	103.00	300	120	17.49	0.25	0.30	0.028
Pipe P35	79.00	300	120	-23.89	0.34	0.53	0.027
Pipe P36	102.00	300	120	-19.65	0.28	0.37	0.028
Pipe P37	101.00	300	120	-20.27	0.29	0.39	0.028
Pipe P38	40.00	250	110	-5.90	0.12	0.11	0.038
Pipe P39	40.00	250	110	-5.76	0.12	0.11	0.038
Pipe P40	42.00	200	110	5.31	0.17	0.27	0.038
Pipe P41	58.00	200	110	5.24	0.17	0.27	0.038
Pipe P42	100.00	200	110	-5.00	0.16	0.25	0.038
Pipe P43	76.00	200	110	-4.62	0.15	0.21	0.039
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-26.45	0.37	0.63	0.027
Pipe P46	85.00	200	110	-7.91	0.25	0.57	0.036
Pipe P47	73.00	200	110	-8.51	0.27	0.66	0.035
Pipe P48	75.00	200	110	-9.08	0.29	0.74	0.035
Pipe P49	80.00	200	110	-9.33	0.30	0.78	0.035
Pipe P50	90.00	300	120	-39.82	0.56	1.35	0.025
Pipe P51	85.00	300	120	30.27	0.43	0.82	0.026
Pipe N52	100.00	300	120	28.78	0.41	0.74	0.026
Pipe P53	85.00	200	110	9.71	0.31	0.84	0.035
Pipe P54	79.00	250	110	6.22	0.13	0.12	0.038
Pipe P55	70.00	250	110	5.49	0.11	0.10	0.039
Pipe P56	102.00	300	120	11.85	0.17	0.14	0.030
Pipe P57	101.00	300	120	11.19	0.16	0.13	0.030
Pipe P58	82.00	300	120	-12.92	0.18	0.17	0.030
Pipe P59	110.00	300	120	7.08	0.10	0.06	0.032
Pipe P60	110.00	300	120	6.43	0.09	0.05	0.033
Pipe P61	95.00	300	120	-6.02	0.09	0.04	0.033
Pipe P62	110.00	300	120	5.57	0.08	0.04	0.034
Pipe P63	110.00	300	120	4.92	0.07	0.03	0.034
Pipe P64	79.00	200	110	-5.36	0.17	0.28	0.038
Pipe P65	40.00	300	120	-9.75	0.14	0.10	0.031
Pipe P66	40.00	300	120	9.50	0.13	0.10	0.031
Pipe P67	175.00	250	110	3.73	0.08	0.05	0.041
Pipe P68	83.00	250	110	1.97	0.04	0.01	0.045
Pipe P69	70.00	250	110	2.25	0.05	0.02	0.044
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	89.86	2.86	51.77	0.025
Pipe P75	85.00	200	110	-6.01	0.19	0.35	0.037
Pipe P76	85.00	200	110	-70.16	2.23	32.73	0.026
Pipe P77	85.00	200	110	-70.32	2.24	32.87	0.026
Pipe P78	82.00	200	110	-17.19	0.55	2.42	0.032
Pipe P79	50.00	200	110	-70.82	2.25	33.31	0.026

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	115.17	34.42	337.66	48.97
Junc N2	88.25	2.06	113.65	25.40	249.17	36.14
Junc N3	88.12	0.14	113.50	25.38	248.98	36.11
Junc N4	87.85	0.25	113.54	25.69	252.02	36.55
Junc N5	87.19	0.77	113.65	26.46	259.57	37.65
Junc N6	84.95	0.00	113.92	28.97	284.20	41.22
Junc N7	82.95	0.40	114.12	31.17	305.78	44.35
Junc N8	88.28	0.41	113.52	25.24	247.60	35.91
Junc N9	88.54	0.50	113.57	25.03	245.54	35.61
Junc N10	88.80	0.27	113.70	24.90	244.27	35.43
Junc N11	90.47	0.55	113.55	23.08	226.41	32.84
Junc N12	92.25	0.45	113.53	21.28	208.76	30.28
Junc N13	89.86	0.55	113.52	23.66	232.10	33.66
Junc N14	91.70	0.14	113.52	21.82	214.05	31.05
Junc N15	91.36	0.31	113.53	22.17	217.49	31.54
Junc N16	89.81	0.45	113.52	23.71	232.60	33.74
Junc N17	88.25	0.39	113.52	25.27	247.90	35.95
Junc N18	88.10	0.59	113.53	25.43	249.47	36.18
Junc N19	88.74	0.18	113.53	24.79	243.19	35.27
Junc N20	89.41	0.71	113.53	24.12	236.62	34.32
Junc N21	90.00	0.42	113.53	23.53	230.83	33.48
Junc N22	90.33	0.38	113.54	23.21	227.69	33.02
Junc N23	90.11	0.62	113.55	23.44	229.95	33.35
Junc N24	89.95	0.14	113.56	23.61	231.61	33.59
Junc N25	90.15	0.28	113.56	23.41	229.65	33.31
Junc N26	90.00	0.07	113.55	23.55	231.03	33.51
Junc N27	90.60	0.24	113.55	22.95	225.14	32.65
Junc N28	91.00	0.38	113.55	22.55	221.22	32.08
Junc N29	89.20	0.66	113.58	24.38	239.17	34.69
Junc N30	88.35	0.60	113.59	25.24	247.60	35.91
Junc N31	88.30	0.57	113.61	25.31	248.29	36.01
Junc N32	88.10	0.25	113.63	25.53	250.45	36.32
Junc N33	87.40	0.22	113.66	26.26	257.61	37.36
Junc N34	87.95	1.49	113.63	25.68	251.92	36.54
Junc N35	87.50	0.73	113.59	26.09	255.94	37.12
Junc N36	86.20	0.67	113.59	27.39	268.70	38.97
Junc N37	89.83	0.66	113.59	23.76	233.09	33.81
Junc N38	90.80	0.48	113.58	22.78	223.47	32.41
Junc N39	91.08	0.65	113.58	22.50	220.73	32.01
Junc N40	90.90	0.45	113.58	22.68	222.49	32.27
Junc N41	90.64	0.65	113.58	22.94	225.04	32.64
Junc N42	90.30	0.53	113.58	23.28	228.38	33.12
Junc N43	90.00	0.25	113.58	23.58	231.32	33.55
Junc N44	89.55	0.28	113.59	24.04	235.83	34.20
Junc N45	88.50	0.21	113.59	25.09	246.13	35.70
Junc N46	87.00	0.17	113.59	26.59	260.85	37.83
Junc N47	86.15	1.10	113.59	27.44	269.19	39.04
Junc N48	86.66	36.87	109.20	22.54	221.12	32.07
Junc N49	84.50	95.82	107.62	23.12	226.81	32.90
Junc N50	82.68	36.16	108.79	26.11	256.14	37.15
Junc N51	81.20	0.50	112.35	31.15	305.58	44.32
Junc N52	85.65	0.00	113.59	27.94	274.09	39.75
Junc N53	85.10	1.09	113.59	28.49	279.49	40.54
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.47	33.62	329.81	47.84
Junc KNE01,14-17	81.00	0.00	115.44	34.44	337.86	49.00
Junc KNE02,11-13,21	82.23	0.00	114.33	32.10	314.90	45.67
Junc KNE03	88.85	1.00	113.60	24.75	242.80	35.21
Junc KNE04,5-6,20	84.00	0.00	114.36	30.36	297.83	43.20
Junc KNE07	88.38	0.16	113.82	25.44	249.57	36.20
Junc KNE08	90.72	0.27	113.53	22.81	223.77	32.45
Junc KNE09	88.86	0.60	113.54	24.68	242.11	35.12
Junc KNE10	89.84	0.28	113.56	23.72	232.69	33.75
Junc KNE18	87.52	0.22	113.59	26.07	255.75	37.09
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	113.52	20.87	204.73	29.69
Junc KNE23	91.30	0.41	113.58	22.28	218.57	31.70
Junc KNE24	90.60	0.25	113.59	22.99	225.53	32.71
Junc KNE25	87.40	1.32	113.71	26.31	258.10	37.43
Junc KNE26	90.30	0.17	113.56	23.26	228.18	33.09

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	62.39	0.88	3.11	0.023
Pipe P1B	685.00	300	120	62.39	0.88	3.11	0.024
Pipe P2A	580.00	400	120	-135.41	1.08	3.22	0.022
Pipe P2B	300.00	400	120	135.41	1.08	3.22	0.022
Pipe P2C	235.00	400	120	54.74	0.44	0.60	0.025
Pipe P3	260.00	300	120	62.39	0.88	3.11	0.024
Pipe P4	175.00	300	120	62.39	0.88	3.11	0.024
Pipe P5	83.00	300	120	49.23	0.70	2.01	0.024
Pipe P6	82.00	300	120	47.17	0.67	1.85	0.025
Pipe P7	75.00	300	120	26.36	0.37	0.63	0.027
Pipe P8	75.00	300	120	26.61	0.38	0.64	0.027
Pipe P9	90.00	300	120	-26.83	0.38	0.65	0.027
Pipe P10	90.00	300	120	-27.60	0.39	0.69	0.027
Pipe P11	85.00	300	120	-54.34	0.77	2.41	0.024
Pipe P12	85.00	300	120	-54.34	0.77	2.41	0.024
Pipe P13	85.00	300	120	-54.74	0.77	2.44	0.024
Pipe P14	84.00	300	120	-15.29	0.22	0.23	0.029
Pipe P15	92.00	200	110	-7.92	0.25	0.58	0.036
Pipe P16	92.00	200	110	-12.74	0.41	1.39	0.033
Pipe P17	110.00	200	110	4.32	0.14	0.19	0.039
Pipe P18	110.00	200	110	3.77	0.12	0.15	0.040
Pipe P19	76.00	200	110	3.32	0.11	0.12	0.041
Pipe P20	110.00	300	120	5.78	0.08	0.04	0.033
Pipe P21	110.00	300	120	5.23	0.07	0.03	0.034
Pipe P22	84.00	300	120	-2.87	0.04	0.01	0.037
Pipe P23	60.00	300	120	3.01	0.04	0.01	0.037
Pipe P24	85.00	200	110	1.47	0.05	0.03	0.046
Pipe P25	83.00	200	110	1.02	0.03	0.01	0.048
Pipe P26	84.00	200	110	2.56	0.08	0.07	0.042
Pipe P27	89.00	200	110	-1.93	0.06	0.04	0.044
Pipe P28	100.00	200	110	-2.15	0.07	0.05	0.043
Pipe P29	75.00	200	110	-2.33	0.07	0.06	0.043
Pipe P30	110.00	200	110	0.37	0.01	0.00	0.056
Pipe P31	99.00	200	110	1.08	0.03	0.01	0.048
Pipe P32	80.00	300	120	4.79	0.07	0.03	0.034
Pipe P33	72.00	300	120	6.13	0.09	0.04	0.033
Pipe P34	103.00	300	120	6.55	0.09	0.05	0.033
Pipe P35	79.00	300	120	-9.48	0.13	0.10	0.031
Pipe P36	102.00	300	120	-8.18	0.12	0.07	0.032
Pipe P37	101.00	300	120	-8.80	0.12	0.08	0.031
Pipe P38	40.00	250	110	-2.97	0.06	0.03	0.042
Pipe P39	40.00	250	110	-2.83	0.06	0.03	0.043
Pipe P40	42.00	200	110	2.38	0.08	0.06	0.043
Pipe P41	58.00	200	110	2.31	0.07	0.06	0.043
Pipe P42	100.00	200	110	-2.07	0.07	0.05	0.043
Pipe P43	76.00	200	110	-1.69	0.05	0.03	0.045
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-12.04	0.17	0.15	0.030
Pipe P46	85.00	200	110	-4.39	0.14	0.19	0.039
Pipe P47	73.00	200	110	-4.99	0.16	0.24	0.038
Pipe P48	75.00	200	110	-5.56	0.18	0.30	0.037
Pipe P49	80.00	200	110	-5.81	0.18	0.32	0.037
Pipe P50	90.00	300	120	-25.41	0.36	0.59	0.027
Pipe P51	85.00	300	120	19.39	0.27	0.36	0.028
Pipe N52	100.00	300	120	17.90	0.25	0.31	0.028
Pipe P53	85.00	200	110	5.08	0.16	0.25	0.038
Pipe P54	79.00	250	110	4.43	0.09	0.07	0.040
Pipe P55	70.00	250	110	3.70	0.08	0.05	0.041
Pipe P56	102.00	300	120	7.39	0.10	0.06	0.032
Pipe P57	101.00	300	120	6.73	0.10	0.05	0.033
Pipe P58	82.00	300	120	-6.66	0.09	0.05	0.033
Pipe P59	110.00	300	120	3.74	0.05	0.02	0.036
Pipe P60	110.00	300	120	3.09	0.04	0.01	0.037
Pipe P61	95.00	300	120	-2.68	0.04	0.01	0.037
Pipe P62	110.00	300	120	2.23	0.03	0.01	0.039
Pipe P63	110.00	300	120	1.58	0.02	0.00	0.041
Pipe P64	79.00	200	110	-2.44	0.08	0.07	0.042
Pipe P65	40.00	300	120	-3.49	0.05	0.01	0.036
Pipe P66	40.00	300	120	3.24	0.05	0.01	0.037
Pipe P67	175.00	250	110	1.94	0.04	0.01	0.045
Pipe P68	83.00	250	110	0.18	0.00	0.00	0.079
Pipe P69	70.00	250	110	0.46	0.01	0.00	0.051
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.048
Pipe P74	85.00	200	110	88.68	2.82	50.51	0.025
Pipe P75	85.00	200	110	51.81	1.65	18.67	0.027
Pipe P76	85.00	200	110	-44.01	1.40	13.80	0.028
Pipe P77	85.00	200	110	-80.17	2.55	41.91	0.025
Pipe P78	82.00	200	110	-13.01	0.41	1.44	0.033
Pipe P79	50.00	200	110	-80.67	2.57	42.39	0.025

MAXIMUM DAY + FIREFLOW DEMAND AT N53
Scenario 2 - Full Buildout (Local Demand)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.65	33.90	332.56	48.23
Junc N2	88.25	2.06	112.79	24.54	240.74	34.92
Junc N3	88.12	0.14	112.63	24.51	240.44	34.87
Junc N4	87.85	0.25	112.58	24.73	242.60	35.19
Junc N5	87.19	0.77	112.49	25.30	248.19	36.00
Junc N6	84.95	0.00	113.07	28.12	275.86	40.01
Junc N7	82.95	0.40	113.70	30.75	301.66	43.75
Junc N8	88.28	0.41	112.45	24.17	237.11	34.39
Junc N9	88.54	0.50	112.50	23.96	235.05	34.09
Junc N10	88.80	0.27	112.75	23.95	234.95	34.08
Junc N11	90.47	0.55	112.39	21.92	215.04	31.19
Junc N12	92.25	0.45	112.30	20.05	196.69	28.53
Junc N13	89.86	0.55	112.34	22.48	220.53	31.98
Junc N14	91.70	0.14	112.11	20.41	200.22	29.04
Junc N15	91.36	0.31	112.03	20.67	202.77	29.41
Junc N16	89.81	0.45	112.05	22.24	218.17	31.64
Junc N17	88.25	0.39	112.09	23.84	233.87	33.92
Junc N18	88.10	0.59	111.88	23.78	233.28	33.83
Junc N19	88.74	0.18	111.69	22.95	225.14	32.65
Junc N20	89.41	0.71	111.88	22.47	220.43	31.97
Junc N21	90.00	0.42	111.74	21.74	213.27	30.93
Junc N22	90.33	0.38	111.31	20.98	205.81	29.85
Junc N23	90.11	0.62	111.12	21.01	206.11	29.89
Junc N24	89.95	0.14	110.94	20.99	205.91	29.86
Junc N25	90.15	0.28	110.96	20.81	204.15	29.61
Junc N26	90.00	0.07	111.01	21.01	206.11	29.89
Junc N27	90.60	0.24	111.08	20.48	200.91	29.14
Junc N28	91.00	0.38	111.21	20.21	198.26	28.76
Junc N29	89.20	0.66	110.58	21.38	209.74	30.42
Junc N30	88.35	0.60	110.80	22.45	220.23	31.94
Junc N31	88.30	0.57	111.01	22.71	222.79	32.31
Junc N32	88.10	0.25	111.24	23.14	227.00	32.92
Junc N33	87.40	0.22	111.48	24.08	236.22	34.26
Junc N34	87.95	1.49	110.83	22.88	224.45	32.55
Junc N35	87.50	0.73	108.28	20.78	203.85	29.57
Junc N36	86.20	0.67	106.70	20.50	201.11	29.17
Junc N37	89.83	0.66	110.03	20.20	198.16	28.74
Junc N38	90.80	0.48	110.12	19.32	189.53	27.49
Junc N39	91.08	0.65	110.18	19.10	187.37	27.18
Junc N40	90.90	0.45	110.29	19.39	190.22	27.59
Junc N41	90.64	0.65	110.35	19.71	193.36	28.04
Junc N42	90.30	0.53	110.42	20.12	197.38	28.63
Junc N43	90.00	0.25	110.50	20.50	201.11	29.17
Junc N44	89.55	0.28	109.13	19.58	192.08	27.86
Junc N45	88.50	0.21	108.42	19.92	195.42	28.34
Junc N46	87.00	0.17	108.41	21.41	210.03	30.46
Junc N47	86.15	1.10	108.41	22.26	218.37	31.67
Junc N48	86.66	0.87	113.05	26.39	258.89	37.55
Junc N49	84.50	0.82	113.50	29.00	284.49	41.26
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.47	33.27	326.38	47.34
Junc N52	85.65	72.00	103.36	17.71	173.74	25.20
Junc N53	85.10	96.09	102.18	17.08	167.55	24.30
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.76	33.91	332.66	48.25
Junc KNE01,14-17	81.00	0.00	115.63	34.63	339.72	49.27
Junc KNE02,11-13,21	82.23	0.00	114.33	32.10	314.90	45.67
Junc KNE03	88.85	1.00	110.08	21.23	208.27	30.21
Junc KNE04,5-6,20	84.00	0.00	113.65	29.65	290.87	42.19
Junc KNE07	88.38	0.16	112.97	24.59	241.23	34.99
Junc KNE08	90.72	0.27	111.88	21.16	207.58	30.11
Junc KNE09	88.86	0.60	111.55	22.69	222.59	32.28
Junc KNE10	89.84	0.28	110.93	21.09	206.89	30.01
Junc KNE18	87.52	0.22	112.54	25.02	245.45	35.60
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	112.24	19.59	192.18	27.87
Junc KNE23	91.30	0.41	110.24	18.94	185.80	26.95
Junc KNE24	90.60	0.25	109.98	19.38	190.12	27.57
Junc KNE25	87.40	1.32	112.45	25.05	245.74	35.64
Junc KNE26	90.30	0.17	110.96	20.66	202.67	29.40

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	70.13	0.99	3.86	0.023
Pipe P1B	685.00	300	120	70.13	0.99	3.86	0.023
Pipe P2A	580.00	400	120	-127.67	1.02	2.89	0.022
Pipe P2B	300.00	400	120	127.67	1.02	2.89	0.022
Pipe P2C	235.00	400	120	99.85	0.79	1.83	0.023
Pipe P3	260.00	300	120	70.13	0.99	3.86	0.023
Pipe P4	175.00	300	120	70.13	0.99	3.86	0.023
Pipe P5	83.00	300	120	51.50	0.73	2.18	0.024
Pipe P6	82.00	300	120	49.44	0.70	2.02	0.024
Pipe P7	75.00	300	120	-24.71	0.35	0.56	0.027
Pipe P8	75.00	300	120	-24.46	0.35	0.55	0.027
Pipe P9	90.00	300	120	24.24	0.34	0.54	0.027
Pipe P10	90.00	300	120	23.47	0.33	0.51	0.027
Pipe P11	85.00	300	120	-99.45	1.41	7.38	0.022
Pipe P12	85.00	300	120	-99.45	1.41	7.38	0.022
Pipe P13	85.00	300	120	-99.85	1.41	7.43	0.022
Pipe P14	84.00	300	120	50.05	0.71	2.07	0.024
Pipe P15	92.00	200	110	-7.34	0.23	0.50	0.036
Pipe P16	92.00	200	110	-18.21	0.58	2.69	0.031
Pipe P17	110.00	200	110	10.36	0.33	0.95	0.034
Pipe P18	110.00	200	110	9.81	0.31	0.86	0.034
Pipe P19	76.00	200	110	9.36	0.30	0.79	0.035
Pipe P20	110.00	300	120	-32.87	0.46	0.95	0.026
Pipe P21	110.00	300	120	-33.42	0.47	0.98	0.026
Pipe P22	84.00	300	120	41.82	0.59	1.48	0.025
Pipe P23	60.00	300	120	-41.68	0.59	1.47	0.025
Pipe P24	85.00	200	110	-5.91	0.19	0.33	0.037
Pipe P25	83.00	200	110	-6.36	0.20	0.38	0.037
Pipe P26	84.00	200	110	-23.57	0.75	4.34	0.030
Pipe P27	89.00	200	110	16.82	0.54	2.33	0.032
Pipe P28	100.00	200	110	15.04	0.48	1.89	0.032
Pipe P29	75.00	200	110	14.86	0.47	1.85	0.032
Pipe P30	110.00	200	110	-1.19	0.04	0.02	0.047
Pipe P31	99.00	200	110	-0.48	0.02	0.00	0.053
Pipe P32	80.00	300	120	-47.28	0.67	1.86	0.025
Pipe P33	72.00	300	120	-47.49	0.67	1.88	0.024
Pipe P34	103.00	300	120	-47.07	0.67	1.85	0.025
Pipe P35	79.00	300	120	61.33	0.87	3.01	0.024
Pipe P36	102.00	300	120	48.31	0.68	1.94	0.024
Pipe P37	101.00	300	120	47.69	0.67	1.89	0.024
Pipe P38	40.00	250	110	11.36	0.23	0.38	0.035
Pipe P39	40.00	250	110	11.50	0.23	0.39	0.035
Pipe P40	42.00	200	110	-11.95	0.38	1.23	0.033
Pipe P41	58.00	200	110	-12.02	0.38	1.25	0.033
Pipe P42	100.00	200	110	12.26	0.39	1.29	0.033
Pipe P43	76.00	200	110	12.64	0.40	1.37	0.033
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	58.77	0.83	2.78	0.024
Pipe P46	85.00	200	110	-18.15	0.58	2.68	0.031
Pipe P47	73.00	200	110	-18.75	0.60	2.84	0.031
Pipe P48	75.00	200	110	-19.32	0.62	3.01	0.031
Pipe P49	80.00	200	110	-19.57	0.62	3.08	0.031
Pipe P50	90.00	300	120	-121.60	1.72	10.71	0.021
Pipe P51	85.00	300	120	101.80	1.44	7.70	0.022
Pipe N52	100.00	300	120	100.31	1.42	7.50	0.022
Pipe P53	85.00	200	110	-27.70	0.88	5.86	0.030
Pipe P54	79.00	250	110	103.78	2.11	22.79	0.025
Pipe P55	70.00	250	110	103.05	2.10	22.50	0.025
Pipe P56	102.00	300	120	23.24	0.33	0.50	0.027
Pipe P57	101.00	300	120	22.58	0.32	0.47	0.027
Pipe P58	82.00	300	120	45.15	0.64	1.71	0.025
Pipe P59	110.00	300	120	-23.68	0.33	0.52	0.027
Pipe P60	110.00	300	120	-24.33	0.34	0.54	0.027
Pipe P61	95.00	300	120	24.74	0.35	0.56	0.027
Pipe P62	110.00	300	120	-25.19	0.36	0.58	0.027
Pipe P63	110.00	300	120	-25.84	0.37	0.61	0.027
Pipe P64	79.00	200	110	21.95	0.70	3.81	0.031
Pipe P65	40.00	300	120	48.32	0.68	1.94	0.024
Pipe P66	40.00	300	120	-48.57	0.69	1.96	0.024
Pipe P67	175.00	250	110	-65.71	1.34	9.78	0.027
Pipe P68	83.00	250	110	-67.47	1.37	10.27	0.027
Pipe P69	70.00	250	110	-67.19	1.37	10.19	0.027
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	168.09	3.42	55.68	0.023
Pipe P73	60.00	250	110	96.09	1.96	19.77	0.025
Pipe P74	85.00	200	110	-25.46	0.81	5.01	0.030
Pipe P75	85.00	200	110	-26.33	0.84	5.33	0.030
Pipe P76	85.00	200	110	-27.15	0.86	5.64	0.030
Pipe P77	85.00	200	110	-27.31	0.87	5.70	0.030
Pipe P78	82.00	200	110	-18.48	0.59	2.77	0.031
Pipe P79	50.00	200	110	-27.81	0.89	5.90	0.030

MAXIMUM DAY + FIREFLOW DEMAND AT N_KNE09
Scenario 2 - Full Buildout (Local Demand)

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.56	33.81	331.68	48.11
Junc N2	88.25	2.06	112.66	24.41	239.46	34.73
Junc N3	88.12	0.14	112.52	24.40	239.36	34.72
Junc N4	87.85	0.25	112.54	24.69	242.21	35.13
Junc N5	87.19	0.77	112.57	25.38	248.98	36.11
Junc N6	84.95	0.00	113.19	28.24	277.03	40.18
Junc N7	82.95	0.40	113.79	30.84	302.54	43.88
Junc N8	88.28	0.41	112.04	23.76	233.09	33.81
Junc N9	88.54	0.50	112.08	23.54	230.93	33.49
Junc N10	88.80	0.27	112.47	23.67	232.20	33.68
Junc N11	90.47	0.55	111.86	21.39	209.84	30.43
Junc N12	92.25	0.45	111.65	19.40	190.31	27.60
Junc N13	89.86	0.55	111.77	21.91	214.94	31.17
Junc N14	91.70	0.14	111.20	19.50	191.30	27.74
Junc N15	91.36	0.31	110.98	19.62	192.47	27.92
Junc N16	89.81	0.45	111.05	21.24	208.36	30.22
Junc N17	88.25	0.39	111.13	22.88	224.45	32.55
Junc N18	88.10	0.59	110.61	22.51	220.82	32.03
Junc N19	88.74	36.18	110.06	21.32	209.15	30.33
Junc N20	89.41	0.71	110.60	21.19	207.87	30.15
Junc N21	90.00	36.42	110.27	20.27	198.85	28.84
Junc N22	90.33	0.38	110.38	20.05	196.69	28.53
Junc N23	90.11	0.62	110.61	20.50	201.11	29.17
Junc N24	89.95	0.14	110.81	20.86	204.64	29.68
Junc N25	90.15	0.28	110.79	20.64	202.48	29.37
Junc N26	90.00	0.07	110.72	20.72	203.26	29.48
Junc N27	90.60	0.24	110.63	20.03	196.49	28.50
Junc N28	91.00	0.38	110.49	19.49	191.20	27.73
Junc N29	89.20	0.66	111.27	22.07	216.51	31.40
Junc N30	88.35	0.60	111.49	23.14	227.00	32.92
Junc N31	88.30	0.57	111.69	23.39	229.46	33.28
Junc N32	88.10	0.25	111.91	23.81	233.58	33.88
Junc N33	87.40	0.22	112.15	24.75	242.80	35.21
Junc N34	87.95	1.49	111.90	23.95	234.95	34.08
Junc N35	87.50	0.73	111.59	24.09	236.32	34.28
Junc N36	86.20	0.67	111.57	25.37	248.88	36.10
Junc N37	89.83	0.66	111.56	21.73	213.17	30.92
Junc N38	90.80	0.48	111.44	20.64	202.48	29.37
Junc N39	91.08	0.65	111.42	20.34	199.54	28.94
Junc N40	90.90	0.45	111.37	20.47	200.81	29.13
Junc N41	90.64	0.65	111.35	20.71	203.17	29.47
Junc N42	90.30	0.53	111.32	21.02	206.21	29.91
Junc N43	90.00	0.25	111.30	21.30	208.95	30.31
Junc N44	89.55	0.28	111.52	21.97	215.53	31.26
Junc N45	88.50	0.21	111.53	23.03	225.92	32.77
Junc N46	87.00	0.17	111.53	24.53	240.64	34.90
Junc N47	86.15	1.10	111.53	25.38	248.98	36.11
Junc N48	86.66	0.87	112.98	26.32	258.20	37.45
Junc N49	84.50	0.82	113.46	28.96	284.10	41.20
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.50	33.30	326.67	47.38
Junc N52	85.65	0.00	111.57	25.92	254.28	36.88
Junc N53	85.10	1.09	111.57	26.47	259.67	37.66
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.81	33.96	333.15	48.32
Junc KNE01,14-17	81.00	0.00	115.66	34.66	340.01	49.31
Junc KNE02,11-13,21	82.23	0.00	114.40	32.17	315.59	45.77
Junc KNE03	88.85	1.00	111.62	22.77	223.37	32.40
Junc KNE04,5-6,20	84.00	0.00	113.52	29.52	289.59	42.00
Junc KNE07	88.38	0.16	112.82	24.44	239.76	34.77
Junc KNE08	90.72	0.27	110.60	19.88	195.02	28.29
Junc KNE09	88.86	95.60	110.12	21.26	208.56	30.25
Junc KNE10	89.84	0.28	110.83	20.99	205.91	29.86
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	111.51	18.86	185.02	26.83
Junc KNE23	91.30	0.41	111.39	20.09	197.08	28.58
Junc KNE24	90.60	0.25	111.51	20.91	205.13	29.75
Junc KNE25	87.40	1.32	112.59	25.19	247.11	35.84
Junc KNE26	90.30	0.17	110.79	20.49	201.01	29.15

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	71.44	1.01	3.99	0.023
Pipe P1B	685.00	300	120	71.44	1.01	4.00	0.023
Pipe P2A	580.00	400	120	-126.36	1.01	2.83	0.022
Pipe P2B	300.00	400	120	126.36	1.01	2.83	0.022
Pipe P2C	235.00	400	120	97.54	0.78	1.75	0.023
Pipe P3	260.00	300	120	71.44	1.01	4.00	0.023
Pipe P4	175.00	300	120	71.44	1.01	4.00	0.023
Pipe P5	83.00	300	120	47.83	0.68	1.90	0.024
Pipe P6	82.00	300	120	45.77	0.65	1.75	0.025
Pipe P7	75.00	300	120	14.54	0.21	0.21	0.029
Pipe P8	75.00	300	120	14.79	0.21	0.22	0.029
Pipe P9	90.00	300	120	-15.01	0.21	0.22	0.029
Pipe P10	90.00	300	120	-15.78	0.22	0.24	0.029
Pipe P11	85.00	300	120	-97.14	1.37	7.06	0.022
Pipe P12	85.00	300	120	-97.14	1.37	7.06	0.022
Pipe P13	85.00	300	120	-97.54	1.38	7.12	0.022
Pipe P14	84.00	300	120	86.65	1.23	5.72	0.022
Pipe P15	92.00	200	110	-6.99	0.22	0.46	0.036
Pipe P16	92.00	200	110	-23.18	0.74	4.21	0.030
Pipe P17	110.00	200	110	15.69	0.50	2.04	0.032
Pipe P18	110.00	200	110	15.14	0.48	1.91	0.032
Pipe P19	76.00	200	110	14.69	0.47	1.81	0.032
Pipe P20	110.00	300	120	-54.10	0.77	2.39	0.024
Pipe P21	110.00	300	120	-54.65	0.77	2.43	0.024
Pipe P22	84.00	300	120	68.38	0.97	3.69	0.023
Pipe P23	60.00	300	120	-68.24	0.97	3.67	0.023
Pipe P24	85.00	200	110	-9.89	0.31	0.87	0.034
Pipe P25	83.00	200	110	-10.34	0.33	0.94	0.034
Pipe P26	84.00	200	110	-38.58	1.23	10.81	0.028
Pipe P27	89.00	200	110	27.85	0.89	5.91	0.030
Pipe P28	100.00	200	110	26.62	0.85	5.44	0.030
Pipe P29	75.00	200	110	-9.56	0.30	0.82	0.035
Pipe P30	110.00	200	110	-0.64	0.02	0.01	0.051
Pipe P31	99.00	200	110	0.07	0.00	0.00	0.073
Pipe P32	80.00	300	120	-77.82	1.10	4.68	0.023
Pipe P33	72.00	300	120	-77.48	1.10	4.65	0.023
Pipe P34	103.00	300	120	-41.06	0.58	1.43	0.025
Pipe P35	79.00	300	120	-64.10	0.91	3.27	0.023
Pipe P36	102.00	300	120	-51.71	0.73	2.20	0.024
Pipe P37	101.00	300	120	-52.33	0.74	2.25	0.024
Pipe P38	40.00	250	110	-14.05	0.29	0.56	0.034
Pipe P39	40.00	250	110	-13.91	0.28	0.55	0.034
Pipe P40	42.00	200	110	13.46	0.43	1.54	0.033
Pipe P41	58.00	200	110	13.39	0.43	1.52	0.033
Pipe P42	100.00	200	110	-13.15	0.42	1.47	0.033
Pipe P43	76.00	200	110	-12.77	0.41	1.40	0.033
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-66.66	0.94	3.52	0.023
Pipe P46	85.00	200	110	-17.83	0.57	2.59	0.032
Pipe P47	73.00	200	110	-18.43	0.59	2.75	0.031
Pipe P48	75.00	200	110	-19.00	0.60	2.91	0.031
Pipe P49	80.00	200	110	-19.25	0.61	2.99	0.031
Pipe P50	90.00	300	120	-80.03	1.13	4.93	0.023
Pipe P51	85.00	300	120	60.56	0.86	2.94	0.024
Pipe N52	100.00	300	120	59.07	0.84	2.81	0.024
Pipe P53	85.00	200	110	22.81	0.73	4.09	0.030
Pipe P54	79.00	250	110	10.84	0.22	0.35	0.035
Pipe P55	70.00	250	110	10.11	0.21	0.31	0.035
Pipe P56	102.00	300	120	24.41	0.35	0.55	0.027
Pipe P57	101.00	300	120	23.75	0.34	0.52	0.027
Pipe P58	82.00	300	120	-30.10	0.43	0.81	0.026
Pipe P59	110.00	300	120	16.20	0.23	0.26	0.029
Pipe P60	110.00	300	120	15.55	0.22	0.24	0.029
Pipe P61	95.00	300	120	-15.14	0.21	0.23	0.029
Pipe P62	110.00	300	120	14.69	0.21	0.21	0.029
Pipe P63	110.00	300	120	14.04	0.20	0.20	0.029
Pipe P64	79.00	200	110	-13.42	0.43	1.53	0.033
Pipe P65	40.00	300	120	-26.93	0.38	0.66	0.027
Pipe P66	40.00	300	120	26.68	0.38	0.64	0.027
Pipe P67	175.00	250	110	8.35	0.17	0.21	0.036
Pipe P68	83.00	250	110	6.59	0.13	0.14	0.038
Pipe P69	70.00	250	110	6.87	0.14	0.15	0.037
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-26.48	0.84	5.39	0.030
Pipe P75	85.00	200	110	-27.35	0.87	5.72	0.030
Pipe P76	85.00	200	110	-28.17	0.90	6.04	0.029
Pipe P77	85.00	200	110	-28.33	0.90	6.10	0.029
Pipe P78	82.00	200	110	-23.45	0.75	4.30	0.030
Pipe P79	50.00	200	110	-28.83	0.92	6.30	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.48	33.73	330.89	47.99
Junc N2	88.25	2.06	112.54	24.29	238.28	34.56
Junc N3	88.12	0.14	112.41	24.29	238.28	34.56
Junc N4	87.85	0.25	112.48	24.63	241.62	35.04
Junc N5	87.19	0.77	112.63	25.44	249.57	36.20
Junc N6	84.95	0.00	113.30	28.35	278.11	40.34
Junc N7	82.95	0.40	113.88	30.93	303.42	44.01
Junc N8	88.28	0.41	111.75	23.47	230.24	33.39
Junc N9	88.54	0.50	111.75	23.21	227.69	33.02
Junc N10	88.80	0.27	112.24	23.44	229.95	33.35
Junc N11	90.47	0.55	111.18	20.71	203.17	29.47
Junc N12	92.25	36.45	110.63	18.38	180.31	26.15
Junc N13	89.86	0.55	111.23	21.37	209.64	30.41
Junc N14	91.70	36.14	110.78	19.08	187.17	27.15
Junc N15	91.36	0.31	110.98	19.62	192.47	27.92
Junc N16	89.81	0.45	111.17	21.36	209.54	30.39
Junc N17	88.25	0.39	111.37	23.12	226.81	32.90
Junc N18	88.10	0.59	111.33	23.23	227.89	33.05
Junc N19	88.74	0.18	111.35	22.61	221.80	32.17
Junc N20	89.41	0.71	111.22	21.81	213.96	31.03
Junc N21	90.00	0.42	111.23	21.23	208.27	30.21
Junc N22	90.33	0.38	111.49	21.16	207.58	30.11
Junc N23	90.11	0.62	111.61	21.50	210.92	30.59
Junc N24	89.95	0.14	111.71	21.76	213.47	30.96
Junc N25	90.15	0.28	111.70	21.55	211.41	30.66
Junc N26	90.00	0.07	111.67	21.67	212.58	30.83
Junc N27	90.60	0.24	111.62	21.02	206.21	29.91
Junc N28	91.00	0.38	111.55	20.55	201.60	29.24
Junc N29	89.20	0.66	111.96	22.76	223.28	32.38
Junc N30	88.35	0.60	112.08	23.73	232.79	33.76
Junc N31	88.30	0.57	112.19	23.89	234.36	33.99
Junc N32	88.10	0.25	112.32	24.22	237.60	34.46
Junc N33	87.40	0.22	112.46	25.06	245.84	35.66
Junc N34	87.95	1.49	112.31	24.36	238.97	34.66
Junc N35	87.50	0.73	112.13	24.63	241.62	35.04
Junc N36	86.20	0.67	112.11	25.91	254.18	36.87
Junc N37	89.83	0.66	112.11	22.28	218.57	31.70
Junc N38	90.80	0.48	112.05	21.25	208.46	30.23
Junc N39	91.08	0.65	112.03	20.95	205.52	29.81
Junc N40	90.90	0.45	112.00	21.10	206.99	30.02
Junc N41	90.64	0.65	111.99	21.35	209.44	30.38
Junc N42	90.30	0.53	111.98	21.68	212.68	30.85
Junc N43	90.00	0.25	111.97	21.97	215.53	31.26
Junc N44	89.55	0.28	112.09	22.54	221.12	32.07
Junc N45	88.50	0.21	112.09	23.59	231.42	33.56
Junc N46	87.00	0.17	112.09	25.09	246.13	35.70
Junc N47	86.15	1.10	112.09	25.94	254.47	36.91
Junc N48	86.66	0.87	112.90	26.24	257.41	37.33
Junc N49	84.50	0.82	113.42	28.92	283.71	41.15
Junc N50	82.68	0.16	113.97	31.29	306.95	44.52
Junc N51	81.20	0.50	114.52	33.32	326.87	47.41
Junc N52	85.65	0.00	112.11	26.46	259.57	37.65
Junc N53	85.10	1.09	112.11	27.01	264.97	38.43
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.85	34.00	333.54	48.38
Junc KNE01,14-17	81.00	0.00	115.69	34.69	340.31	49.36
Junc KNE02,11-13,21	82.23	0.00	114.46	32.23	316.18	45.86
Junc KNE03	88.85	1.00	112.14	23.29	228.47	33.14
Junc KNE04,5-6,20	84.00	0.00	113.41	29.41	288.51	41.85
Junc KNE07	88.38	0.16	112.69	24.31	238.48	34.59
Junc KNE08	90.72	0.27	111.13	20.41	200.22	29.04
Junc KNE09	88.86	0.60	111.36	22.50	220.73	32.01
Junc KNE10	89.84	0.28	111.73	21.89	214.74	31.15
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	95.41	110.71	18.06	177.17	25.70
Junc KNE23	91.30	0.41	112.02	20.72	203.26	29.48
Junc KNE24	90.60	0.25	112.08	21.48	210.72	30.56
Junc KNE25	87.40	1.32	112.72	25.32	248.39	36.03
Junc KNE26	90.30	0.17	111.70	21.40	209.93	30.45

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	72.56	1.03	4.12	0.023
Pipe P1B	685.00	300	120	72.56	1.03	4.11	0.023
Pipe P2A	580.00	400	120	-125.24	1.00	2.78	0.022
Pipe P2B	300.00	400	120	125.24	1.00	2.78	0.022
Pipe P2C	235.00	400	120	95.46	0.76	1.68	0.023
Pipe P3	260.00	300	120	72.56	1.03	4.11	0.023
Pipe P4	175.00	300	120	72.56	1.03	4.11	0.023
Pipe P5	83.00	300	120	45.75	0.65	1.75	0.025
Pipe P6	82.00	300	120	43.69	0.62	1.61	0.025
Pipe P7	75.00	300	120	32.10	0.45	0.91	0.026
Pipe P8	75.00	300	120	32.35	0.46	0.92	0.026
Pipe P9	90.00	300	120	-32.57	0.46	0.93	0.026
Pipe P10	90.00	300	120	-33.34	0.47	0.97	0.026
Pipe P11	85.00	300	120	-95.06	1.34	6.78	0.022
Pipe P12	85.00	300	120	-95.06	1.34	6.78	0.022
Pipe P13	85.00	300	120	-95.46	1.35	6.84	0.022
Pipe P14	84.00	300	120	103.08	1.46	7.88	0.022
Pipe P15	92.00	200	110	0.05	0.00	0.00	0.000
Pipe P16	92.00	200	110	-26.39	0.84	5.35	0.030
Pipe P17	110.00	200	110	25.94	0.83	5.18	0.030
Pipe P18	110.00	200	110	25.39	0.81	4.98	0.030
Pipe P19	76.00	200	110	-11.06	0.35	1.07	0.034
Pipe P20	110.00	300	120	-77.81	1.10	4.68	0.023
Pipe P21	110.00	300	120	-78.36	1.11	4.74	0.023
Pipe P22	84.00	300	120	-28.66	0.41	0.74	0.026
Pipe P23	60.00	300	120	64.80	0.92	3.34	0.023
Pipe P24	85.00	200	110	-16.59	0.53	2.27	0.032
Pipe P25	83.00	200	110	-17.04	0.54	2.38	0.032
Pipe P26	84.00	200	110	-24.26	0.77	4.58	0.030
Pipe P27	89.00	200	110	6.83	0.22	0.44	0.036
Pipe P28	100.00	200	110	-4.37	0.14	0.19	0.039
Pipe P29	75.00	200	110	-4.55	0.14	0.21	0.039
Pipe P30	110.00	200	110	-10.61	0.34	0.99	0.034
Pipe P31	99.00	200	110	-9.90	0.32	0.87	0.034
Pipe P32	80.00	300	120	48.52	0.69	1.95	0.024
Pipe P33	72.00	300	120	38.90	0.55	1.30	0.025
Pipe P34	103.00	300	120	39.32	0.56	1.32	0.025
Pipe P35	79.00	300	120	-44.47	0.63	1.66	0.025
Pipe P36	102.00	300	120	-36.06	0.51	1.13	0.026
Pipe P37	101.00	300	120	-36.68	0.52	1.16	0.025
Pipe P38	40.00	250	110	-10.07	0.21	0.30	0.035
Pipe P39	40.00	250	110	-9.93	0.20	0.30	0.035
Pipe P40	42.00	200	110	9.48	0.30	0.80	0.035
Pipe P41	58.00	200	110	9.41	0.30	0.79	0.035
Pipe P42	100.00	200	110	-9.17	0.29	0.76	0.035
Pipe P43	76.00	200	110	-8.79	0.28	0.70	0.035
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	-47.03	0.67	1.84	0.025
Pipe P46	85.00	200	110	-12.98	0.41	1.44	0.033
Pipe P47	73.00	200	110	-13.58	0.43	1.56	0.033
Pipe P48	75.00	200	110	-14.15	0.45	1.69	0.033
Pipe P49	80.00	200	110	-14.40	0.46	1.74	0.033
Pipe P50	90.00	300	120	-60.40	0.85	2.93	0.024
Pipe P51	85.00	300	120	45.78	0.65	1.75	0.025
Pipe N52	100.00	300	120	44.29	0.63	1.65	0.025
Pipe P53	85.00	200	110	16.40	0.52	2.22	0.032
Pipe P54	79.00	250	110	8.61	0.18	0.23	0.036
Pipe P55	70.00	250	110	7.88	0.16	0.19	0.037
Pipe P56	102.00	300	120	18.27	0.26	0.32	0.028
Pipe P57	101.00	300	120	17.61	0.25	0.30	0.028
Pipe P58	82.00	300	120	-21.72	0.31	0.44	0.027
Pipe P59	110.00	300	120	11.76	0.17	0.14	0.030
Pipe P60	110.00	300	120	11.11	0.16	0.13	0.030
Pipe P61	95.00	300	120	-10.70	0.15	0.12	0.031
Pipe P62	110.00	300	120	10.25	0.14	0.11	0.031
Pipe P63	110.00	300	120	9.60	0.14	0.10	0.031
Pipe P64	79.00	200	110	-9.49	0.30	0.80	0.035
Pipe P65	40.00	300	120	-18.55	0.26	0.33	0.028
Pipe P66	40.00	300	120	18.30	0.26	0.32	0.028
Pipe P67	175.00	250	110	6.12	0.12	0.12	0.038
Pipe P68	83.00	250	110	4.36	0.09	0.06	0.040
Pipe P69	70.00	250	110	4.64	0.09	0.07	0.040
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-27.43	0.87	5.75	0.030
Pipe P75	85.00	200	110	-28.30	0.90	6.09	0.029
Pipe P76	85.00	200	110	-29.12	0.93	6.42	0.029
Pipe P77	85.00	200	110	-29.28	0.93	6.49	0.029
Pipe P78	82.00	200	110	-26.66	0.85	5.45	0.030
Pipe P79	50.00	200	110	-29.78	0.95	6.70	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.64	33.89	332.46	48.22
Junc N2	88.25	2.06	112.77	24.52	240.54	34.89
Junc N3	88.12	0.14	112.60	24.48	240.15	34.83
Junc N4	87.85	0.25	112.57	24.72	242.50	35.17
Junc N5	87.19	0.77	112.51	25.32	248.39	36.03
Junc N6	84.95	0.00	113.10	28.15	276.15	40.05
Junc N7	82.95	0.40	113.72	30.77	301.85	43.78
Junc N8	88.28	0.41	112.40	24.12	236.62	34.32
Junc N9	88.54	0.50	112.45	23.91	234.56	34.02
Junc N10	88.80	0.27	112.71	23.91	234.56	34.02
Junc N11	90.47	0.55	112.33	21.86	214.45	31.10
Junc N12	92.25	0.45	112.23	19.98	196.00	28.43
Junc N13	89.86	0.55	112.28	22.42	219.94	31.90
Junc N14	91.70	0.14	112.02	20.32	199.34	28.91
Junc N15	91.36	0.31	111.92	20.56	201.69	29.25
Junc N16	89.81	0.45	111.96	22.15	217.29	31.52
Junc N17	88.25	0.39	111.99	23.74	232.89	33.78
Junc N18	88.10	0.59	111.76	23.66	232.10	33.66
Junc N19	88.74	0.18	111.54	22.80	223.67	32.44
Junc N20	89.41	0.71	111.76	22.35	219.25	31.80
Junc N21	90.00	0.42	111.60	21.60	211.90	30.73
Junc N22	90.33	0.38	111.12	20.79	203.95	29.58
Junc N23	90.11	0.62	110.89	20.78	203.85	29.57
Junc N24	89.95	0.14	110.69	20.74	203.46	29.51
Junc N25	90.15	0.28	110.71	20.56	201.69	29.25
Junc N26	90.00	0.07	110.77	20.77	203.75	29.55
Junc N27	90.60	0.24	110.85	20.25	198.65	28.81
Junc N28	91.00	0.38	111.00	20.00	196.20	28.46
Junc N29	89.20	0.66	110.28	21.08	206.79	29.99
Junc N30	88.35	0.60	110.61	22.26	218.37	31.67
Junc N31	88.30	0.57	110.90	22.60	221.71	32.16
Junc N32	88.10	0.25	111.23	23.13	226.91	32.91
Junc N33	87.40	0.22	111.57	24.17	237.11	34.39
Junc N34	87.95	1.49	111.02	23.07	226.32	32.82
Junc N35	87.50	0.73	110.27	22.77	223.37	32.40
Junc N36	86.20	0.67	110.19	23.99	235.34	34.13
Junc N37	89.83	0.66	110.12	20.29	199.04	28.87
Junc N38	90.80	0.48	109.51	18.71	183.55	26.62
Junc N39	91.08	36.65	108.82	17.74	174.03	25.24
Junc N40	90.90	36.45	108.69	17.79	174.52	25.31
Junc N41	90.64	0.65	109.20	18.56	182.07	26.41
Junc N42	90.30	0.53	109.72	19.42	190.51	27.63
Junc N43	90.00	0.25	110.00	20.00	196.20	28.46
Junc N44	89.55	0.28	109.93	20.38	199.93	29.00
Junc N45	88.50	0.21	110.00	21.50	210.92	30.59
Junc N46	87.00	0.17	110.00	23.00	225.63	32.72
Junc N47	86.15	1.10	110.00	23.85	233.97	33.93
Junc N48	86.66	0.87	113.03	26.37	258.69	37.52
Junc N49	84.50	0.82	113.49	28.99	284.39	41.25
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.47	33.27	326.38	47.34
Junc N52	85.65	0.00	110.19	24.54	240.74	34.92
Junc N53	85.10	1.09	110.19	25.09	246.13	35.70
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.77	33.92	332.76	48.26
Junc KNE01,14-17	81.00	0.00	115.63	34.63	339.72	49.27
Junc KNE02,11-13,21	82.23	0.00	114.35	32.12	315.10	45.70
Junc KNE03	88.85	1.00	110.38	21.53	211.21	30.63
Junc KNE04,5-6	84.00	0.00	113.63	29.63	290.67	42.16
Junc KNE07	88.38	0.16	112.95	24.57	241.03	34.96
Junc KNE08	90.72	0.27	111.75	21.03	206.30	29.92
Junc KNE09	88.86	0.60	111.39	22.53	221.02	32.06
Junc KNE10	89.84	0.28	110.67	20.83	204.34	29.64
Junc KNE18	87.52	0.22	112.54	25.02	245.45	35.60
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	112.16	19.51	191.39	27.76
Junc KNE23	91.30	95.41	108.55	17.25	169.22	24.54
Junc KNE24	90.60	0.25	109.86	19.26	188.94	27.40
Junc KNE25	87.40	1.32	112.47	25.07	245.94	35.67
Junc KNE26	90.30	0.17	110.71	20.41	200.22	29.04

Minimum Pressure

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	70.36	1.00	3.88	0.023
Pipe P1B	685.00	300	120	70.36	1.00	3.89	0.023
Pipe P2A	580.00	400	120	-127.44	1.01	2.88	0.022
Pipe P2B	300.00	400	120	127.44	1.01	2.88	0.022
Pipe P2C	235.00	400	120	99.42	0.79	1.82	0.023
Pipe P3	260.00	300	120	70.36	1.00	3.89	0.023
Pipe P4	175.00	300	120	70.36	1.00	3.89	0.023
Pipe P5	83.00	300	120	51.24	0.72	2.16	0.024
Pipe P6	82.00	300	120	49.18	0.70	2.00	0.024
Pipe P7	75.00	300	120	-20.76	0.29	0.41	0.028
Pipe P8	75.00	300	120	-20.51	0.29	0.40	0.028
Pipe P9	90.00	300	120	20.29	0.29	0.39	0.028
Pipe P10	90.00	300	120	19.52	0.28	0.36	0.028
Pipe P11	85.00	300	120	-99.02	1.40	7.32	0.022
Pipe P12	85.00	300	120	-99.02	1.40	7.32	0.022
Pipe P13	85.00	300	120	-99.42	1.41	7.37	0.022
Pipe P14	84.00	300	120	53.95	0.76	2.38	0.024
Pipe P15	92.00	200	110	-7.28	0.23	0.49	0.036
Pipe P16	92.00	200	110	-18.69	0.59	2.83	0.031
Pipe P17	110.00	200	110	10.91	0.35	1.04	0.034
Pipe P18	110.00	200	110	10.36	0.33	0.95	0.034
Pipe P19	76.00	200	110	9.91	0.32	0.87	0.034
Pipe P20	110.00	300	120	-35.12	0.50	1.07	0.026
Pipe P21	110.00	300	120	-35.67	0.50	1.10	0.026
Pipe P22	84.00	300	120	44.62	0.63	1.67	0.025
Pipe P23	60.00	300	120	-44.48	0.63	1.66	0.025
Pipe P24	85.00	200	110	-6.34	0.20	0.38	0.037
Pipe P25	83.00	200	110	-6.79	0.22	0.43	0.036
Pipe P26	84.00	200	110	-25.15	0.80	4.90	0.030
Pipe P27	89.00	200	110	17.98	0.57	2.63	0.032
Pipe P28	100.00	200	110	16.10	0.51	2.14	0.032
Pipe P29	75.00	200	110	15.92	0.51	2.10	0.032
Pipe P30	110.00	200	110	-1.29	0.04	0.02	0.047
Pipe P31	99.00	200	110	-0.58	0.02	0.00	0.052
Pipe P32	80.00	300	120	-50.51	0.71	2.10	0.024
Pipe P33	72.00	300	120	-50.82	0.72	2.13	0.024
Pipe P34	103.00	300	120	-50.40	0.71	2.09	0.024
Pipe P35	79.00	300	120	65.71	0.93	3.42	0.023
Pipe P36	102.00	300	120	51.80	0.73	2.20	0.024
Pipe P37	101.00	300	120	51.18	0.72	2.16	0.024
Pipe P38	40.00	250	110	12.25	0.25	0.44	0.034
Pipe P39	40.00	250	110	12.39	0.25	0.45	0.034
Pipe P40	42.00	200	110	-12.84	0.41	1.41	0.033
Pipe P41	58.00	200	110	-12.91	0.41	1.42	0.033
Pipe P42	100.00	200	110	13.15	0.42	1.47	0.033
Pipe P43	76.00	200	110	13.53	0.43	1.55	0.033
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	63.15	0.89	3.18	0.023
Pipe P46	85.00	200	110	-22.22	0.71	3.89	0.031
Pipe P47	73.00	200	110	-22.82	0.73	4.09	0.030
Pipe P48	75.00	200	110	-23.39	0.74	4.28	0.030
Pipe P49	80.00	200	110	-23.64	0.75	4.37	0.030
Pipe P50	90.00	300	120	-117.22	1.66	10.00	0.021
Pipe P51	85.00	300	120	93.36	1.32	6.56	0.022
Pipe N52	100.00	300	120	91.87	1.30	6.37	0.022
Pipe P53	85.00	200	110	11.94	0.38	1.23	0.033
Pipe P54	79.00	250	110	22.40	0.46	1.33	0.031
Pipe P55	70.00	250	110	21.67	0.44	1.25	0.032
Pipe P56	102.00	300	120	56.53	0.80	2.59	0.024
Pipe P57	101.00	300	120	55.87	0.79	2.54	0.024
Pipe P58	82.00	300	120	-73.77	1.04	4.24	0.023
Pipe P59	110.00	300	120	91.16	1.29	6.28	0.022
Pipe P60	110.00	300	120	54.51	0.77	2.42	0.024
Pipe P61	95.00	300	120	40.90	0.58	1.42	0.025
Pipe P62	110.00	300	120	-77.35	1.09	4.63	0.023
Pipe P63	110.00	300	120	-78.00	1.10	4.70	0.023
Pipe P64	79.00	200	110	17.86	0.57	2.60	0.032
Pipe P65	40.00	300	120	96.40	1.36	6.96	0.022
Pipe P66	40.00	300	120	-96.65	1.37	7.00	0.022
Pipe P67	175.00	250	110	19.91	0.41	1.07	0.032
Pipe P68	83.00	250	110	18.15	0.37	0.90	0.032
Pipe P69	70.00	250	110	18.43	0.38	0.93	0.032
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.047
Pipe P71	75.00	250	110	1.10	0.02	0.01	0.050
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P74	85.00	200	110	-25.67	0.82	5.09	0.030
Pipe P75	85.00	200	110	-26.54	0.84	5.41	0.030
Pipe P76	85.00	200	110	-27.36	0.87	5.72	0.030
Pipe P77	85.00	200	110	-27.52	0.88	5.79	0.030
Pipe P78	82.00	200	110	-18.96	0.60	2.90	0.031
Pipe P79	50.00	200	110	-28.02	0.89	5.98	0.030

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-267.46	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	110.35	29.60	290.38	42.12
Junc N2	88.25	2.06	107.25	19.00	186.39	27.03
Junc N3	88.12	0.14	106.95	18.83	184.72	26.79
Junc N4	87.85	0.25	106.64	18.79	184.33	26.73
Junc N5	87.19	64.10	105.95	18.76	184.04	26.69
Junc N6	84.95	15.00	106.92	21.97	215.53	31.26
Junc N7	82.95	0.40	108.11	25.16	246.82	35.80
Junc N8	88.28	0.41	106.89	18.61	182.56	26.48
Junc N9	88.54	0.50	106.99	18.45	180.99	26.25
Junc N10	88.80	0.27	107.30	18.50	181.49	26.32
Junc N11	90.47	0.55	106.91	16.44	161.28	23.39
Junc N12	92.25	0.45	106.84	14.59	143.13	20.76
Junc N13	89.86	0.55	106.84	16.98	166.57	24.16
Junc N14	91.70	0.14	106.73	15.03	147.44	21.38
Junc N15	91.36	0.31	106.68	15.32	150.29	21.80
Junc N16	89.81	0.45	106.70	16.89	165.69	24.03
Junc N17	88.25	0.39	106.71	18.46	181.09	26.27
Junc N18	88.10	0.59	106.61	18.51	181.58	26.34
Junc N19	88.74	0.18	106.52	17.78	174.42	25.30
Junc N20	89.41	0.71	106.61	17.20	168.73	24.47
Junc N21	90.00	0.42	106.55	16.55	162.36	23.55
Junc N22	90.33	0.38	106.34	16.01	157.06	22.78
Junc N23	90.11	0.62	106.25	16.14	158.33	22.96
Junc N24	89.95	0.14	106.17	16.22	159.12	23.08
Junc N25	90.15	0.28	106.17	16.02	157.16	22.79
Junc N26	90.00	0.07	106.20	16.20	158.92	23.05
Junc N27	90.60	0.24	106.23	15.63	153.33	22.24
Junc N28	91.00	0.38	106.29	15.29	149.99	21.75
Junc N29	89.20	0.66	106.00	16.80	164.81	23.90
Junc N30	88.35	0.60	105.95	17.60	172.66	25.04
Junc N31	88.30	0.57	105.91	17.61	172.75	25.06
Junc N32	88.10	0.25	105.87	17.77	174.32	25.28
Junc N33	87.40	63.55	105.83	18.43	180.80	26.22
Junc N34	87.95	1.49	105.86	17.91	175.70	25.48
Junc N35	87.50	0.73	105.90	18.40	180.50	26.18
Junc N36	86.20	0.67	105.90	19.70	193.26	28.03
Junc N37	89.83	0.66	105.91	16.08	157.74	22.88
Junc N38	90.80	0.48	105.93	15.13	148.43	21.53
Junc N39	91.08	0.65	105.94	14.86	145.78	21.14
Junc N40	90.90	0.45	105.96	15.06	147.74	21.43
Junc N41	90.64	0.65	105.96	15.32	150.29	21.80
Junc N42	90.30	0.53	105.98	15.68	153.82	22.31
Junc N43	90.00	0.25	105.99	15.99	156.86	22.75
Junc N44	89.55	0.28	105.91	16.36	160.49	23.28
Junc N45	88.50	0.21	105.91	17.41	170.79	24.77
Junc N46	87.00	0.17	105.91	18.91	185.51	26.91
Junc N47	86.15	1.10	105.90	19.75	193.75	28.10
Junc N48	86.66	0.87	107.59	20.93	205.32	29.78
Junc N49	84.50	0.82	108.27	23.77	233.18	33.82
Junc N50	82.68	0.16	108.99	26.31	258.10	37.43
Junc N51	81.20	0.50	109.70	28.50	279.59	40.55
Junc N52	85.65	0.00	105.90	20.25	198.65	28.81
Junc N53	85.10	1.09	105.90	20.80	204.05	29.59
Junc N54	82.25	0.00	114.71	32.46	318.43	46.18
Junc N55	80.85	0.00	110.14	29.29	287.33	41.67
Junc KNE01,14-17	81.00	0.00	111.70	30.70	301.17	43.68
Junc KNE02,11-13,21	82.23	0.00	109.32	27.09	265.75	38.54
Junc KNE03	88.85	1.00	105.90	17.05	167.26	24.26
Junc KNE04,5-6,20	84.00	0.00	108.70	24.70	242.31	35.14
Junc KNE07	88.38	0.16	107.58	19.20	188.35	27.32
Junc KNE08	90.72	0.27	106.61	15.89	155.88	22.61
Junc KNE09	88.86	0.60	106.45	17.59	172.56	25.03
Junc KNE10	89.84	0.28	106.16	16.32	160.10	23.22
Junc KNE18	87.52	0.22	106.32	18.80	184.43	26.75
Junc KNE19	78.25	0.00	114.72	36.47	357.77	51.89
Junc KNE22	92.65	0.41	106.79	14.14	138.71	20.12
Junc KNE23	91.30	0.41	105.95	14.65	143.72	20.84
Junc KNE24	90.60	0.25	105.92	15.32	150.29	21.80
Junc KNE25	87.40	96.32	105.95	18.55	181.98	26.39
Junc KNE26	90.30	0.17	106.17	15.87	155.68	22.58

	Minimum Pressure
	Maximum Fireflow (sum)

Pipe Report

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	267.46	0.00	-114.72	0.000
Pipe P1A	1.00	300	120	91.85	1.30	6.36	0.022
Pipe P1B	685.00	300	120	91.85	1.30	6.37	0.022
Pipe P2A	580.00	400	120	-175.61	1.40	5.21	0.021
Pipe P2B	300.00	400	120	175.61	1.40	5.21	0.021
Pipe P2C	235.00	400	120	141.36	1.12	3.48	0.022
Pipe P3	260.00	300	120	91.85	1.30	6.37	0.022
Pipe P4	175.00	300	120	91.85	1.30	6.37	0.022
Pipe P5	83.00	300	120	70.88	1.00	3.94	0.023
Pipe P6	82.00	300	120	68.82	0.97	3.73	0.023
Pipe P7	75.00	300	120	-73.11	1.03	4.17	0.023
Pipe P8	75.00	300	120	-72.86	1.03	4.15	0.023
Pipe P9	90.00	300	120	72.64	1.03	4.12	0.023
Pipe P10	90.00	300	120	8.54	0.12	0.08	0.032
Pipe P11	85.00	300	120	-125.96	1.78	11.43	0.021
Pipe P12	85.00	300	120	-140.96	1.99	14.08	0.021
Pipe P13	85.00	300	120	-141.36	2.00	14.15	0.021
Pipe P14	84.00	300	120	27.48	0.39	0.68	0.027
Pipe P15	92.00	200	110	-11.05	0.35	1.07	0.034
Pipe P16	92.00	200	110	-20.54	0.65	3.36	0.031
Pipe P17	110.00	200	110	8.99	0.29	0.73	0.035
Pipe P18	110.00	200	110	8.44	0.27	0.65	0.035
Pipe P19	76.00	200	110	7.99	0.25	0.59	0.036
Pipe P20	110.00	300	120	-21.52	0.30	0.43	0.028
Pipe P21	110.00	300	120	-22.07	0.31	0.45	0.027
Pipe P22	84.00	300	120	29.10	0.41	0.76	0.026
Pipe P23	60.00	300	120	-28.96	0.41	0.75	0.026
Pipe P24	85.00	200	110	-3.78	0.12	0.15	0.040
Pipe P25	83.00	200	110	-4.23	0.13	0.18	0.039
Pipe P26	84.00	200	110	-16.04	0.51	2.13	0.032
Pipe P27	89.00	200	110	11.42	0.36	1.13	0.034
Pipe P28	100.00	200	110	10.16	0.32	0.91	0.034
Pipe P29	75.00	200	110	9.98	0.32	0.88	0.034
Pipe P30	110.00	200	110	-0.67	0.02	0.01	0.051
Pipe P31	99.00	200	110	0.04	0.00	0.00	0.213
Pipe P32	80.00	300	120	-32.43	0.46	0.93	0.026
Pipe P33	72.00	300	120	-32.12	0.45	0.91	0.026
Pipe P34	103.00	300	120	-31.70	0.45	0.89	0.026
Pipe P35	79.00	300	120	41.08	0.58	1.43	0.025
Pipe P36	102.00	300	120	32.16	0.45	0.91	0.026
Pipe P37	101.00	300	120	31.54	0.45	0.88	0.026
Pipe P38	40.00	250	110	7.26	0.15	0.17	0.037
Pipe P39	40.00	250	110	7.40	0.15	0.17	0.037
Pipe P40	42.00	200	110	-7.85	0.25	0.57	0.036
Pipe P41	58.00	200	110	-7.92	0.25	0.58	0.036
Pipe P42	100.00	200	110	8.16	0.26	0.61	0.035
Pipe P43	76.00	200	110	8.54	0.27	0.66	0.035
Pipe P44	65.00	250	110	-0.17	0.00	0.00	0.059
Pipe P45	125.00	300	120	38.52	0.54	1.27	0.025
Pipe P46	85.00	200	110	8.33	0.27	0.63	0.035
Pipe P47	73.00	200	110	7.73	0.25	0.55	0.036
Pipe P48	75.00	200	110	7.16	0.23	0.48	0.036
Pipe P49	80.00	200	110	6.91	0.22	0.45	0.036
Pipe P50	90.00	300	120	-38.18	0.54	1.25	0.025
Pipe P51	85.00	300	120	-18.46	0.26	0.33	0.028
Pipe N52	100.00	300	120	-19.95	0.28	0.38	0.028
Pipe P53	85.00	200	110	-11.67	0.37	1.18	0.034
Pipe P54	79.00	250	110	-0.57	0.01	0.00	0.052
Pipe P55	70.00	250	110	-1.30	0.03	0.01	0.048
Pipe P56	102.00	300	120	-8.72	0.12	0.08	0.031
Pipe P57	101.00	300	120	-9.38	0.13	0.09	0.031
Pipe P58	82.00	300	120	14.44	0.20	0.21	0.029
Pipe P59	110.00	300	120	-7.39	0.10	0.06	0.032
Pipe P60	110.00	300	120	-8.04	0.11	0.07	0.032
Pipe P61	95.00	300	120	8.45	0.12	0.08	0.032
Pipe P62	110.00	300	120	-8.90	0.13	0.08	0.031
Pipe P63	110.00	300	120	-9.55	0.14	0.10	0.031
Pipe P64	79.00	200	110	7.53	0.24	0.52	0.036
Pipe P65	40.00	300	120	17.61	0.25	0.30	0.028
Pipe P66	40.00	300	120	-17.86	0.25	0.31	0.028
Pipe P67	175.00	250	110	-3.06	0.06	0.03	0.042
Pipe P68	83.00	250	110	-4.82	0.10	0.08	0.039
Pipe P69	70.00	250	110	-4.54	0.09	0.07	0.040
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.048
Pipe P74	85.00	200	110	-31.90	1.02	7.60	0.029
Pipe P75	85.00	200	110	-32.77	1.04	7.99	0.029
Pipe P76	85.00	200	110	-33.59	1.07	8.37	0.029
Pipe P77	85.00	200	110	-33.75	1.07	8.44	0.029
Pipe P78	82.00	200	110	-20.81	0.66	3.45	0.031
Pipe P79	50.00	200	110	-34.25	1.09	8.67	0.029

Junction Report

Node ID	Elevation m	Demand LPS	Total Head m	Pressure m	Pressure kPa	Pressure psi
Resvr 1	0.00	-197.80	0.00	0.00	0.00	0.00
Junc N1	80.75	0.00	114.59	33.84	331.97	48.15
Junc N2	88.25	2.06	112.70	24.45	239.85	34.79
Junc N3	88.12	0.14	112.55	24.43	239.66	34.76
Junc N4	87.85	0.25	112.55	24.70	242.31	35.14
Junc N5	87.19	0.77	112.55	25.36	248.78	36.08
Junc N6	84.95	0.00	113.15	28.20	276.64	40.12
Junc N7	82.95	0.40	113.76	30.81	302.25	43.84
Junc N8	88.28	0.41	112.22	23.94	234.85	34.06
Junc N9	88.54	0.50	112.27	23.73	232.79	33.76
Junc N10	88.80	0.27	112.58	23.78	233.28	33.83
Junc N11	90.47	0.55	112.10	21.63	212.19	30.78
Junc N12	92.25	0.45	111.95	19.70	193.26	28.03
Junc N13	89.86	0.55	112.04	22.18	217.59	31.56
Junc N14	91.70	0.14	111.64	19.94	195.61	28.37
Junc N15	91.36	0.31	111.48	20.12	197.38	28.63
Junc N16	89.81	0.45	111.53	21.72	213.07	30.90
Junc N17	88.25	0.39	111.59	23.34	228.97	33.21
Junc N18	88.10	0.59	111.22	23.12	226.81	32.90
Junc N19	88.74	0.18	110.89	22.15	217.29	31.52
Junc N20	89.41	0.71	111.22	21.81	213.96	31.03
Junc N21	90.00	0.42	110.98	20.98	205.81	29.85
Junc N22	90.33	0.38	110.21	19.88	195.02	28.29
Junc N23	90.11	0.62	110.04	19.93	195.51	28.36
Junc N24	89.95	36.14	108.49	18.54	181.88	26.38
Junc N25	90.15	0.28	107.73	17.58	172.46	25.01
Junc N26	90.00	36.07	107.73	17.73	173.93	25.23
Junc N27	90.60	0.24	108.34	17.74	174.03	25.24
Junc N28	91.00	0.38	109.40	18.40	180.50	26.18
Junc N29	89.20	0.66	110.56	21.36	209.54	30.39
Junc N30	88.35	0.60	110.90	22.55	221.22	32.08
Junc N31	88.30	0.57	111.21	22.91	224.75	32.60
Junc N32	88.10	0.25	111.53	23.43	229.85	33.34
Junc N33	87.40	0.22	111.89	24.49	240.25	34.84
Junc N34	87.95	1.49	111.52	23.57	231.22	33.54
Junc N35	87.50	0.73	111.06	23.56	231.12	33.52
Junc N36	86.20	0.67	111.03	24.83	243.58	35.33
Junc N37	89.83	0.66	111.02	21.19	207.87	30.15
Junc N38	90.80	0.48	110.84	20.04	196.59	28.51
Junc N39	91.08	0.65	110.80	19.72	193.45	28.06
Junc N40	90.90	0.45	110.72	19.82	194.43	28.20
Junc N41	90.64	0.65	110.68	20.04	196.59	28.51
Junc N42	90.30	0.53	110.65	20.35	199.63	28.95
Junc N43	90.00	0.25	110.61	20.61	202.18	29.32
Junc N44	89.55	0.28	110.96	21.41	210.03	30.46
Junc N45	88.50	0.21	110.98	22.48	220.53	31.98
Junc N46	87.00	0.17	110.98	23.98	235.24	34.12
Junc N47	86.15	1.10	110.98	24.83	243.58	35.33
Junc N48	86.66	0.87	113.00	26.34	258.40	37.48
Junc N49	84.50	0.82	113.47	28.97	284.20	41.22
Junc N50	82.68	0.16	113.98	31.30	307.05	44.53
Junc N51	81.20	0.50	114.49	33.29	326.57	47.37
Junc N52	85.65	0.00	111.03	25.38	248.98	36.11
Junc N53	85.10	1.09	111.03	25.93	254.37	36.89
Junc N54	82.25	0.00	117.30	35.05	343.84	49.87
Junc N55	80.85	0.00	114.80	33.95	333.05	48.30
Junc KNE01,14-17	81.00	0.00	115.65	34.65	339.92	49.30
Junc KNE02,11-13,21	82.23	0.00	114.38	32.15	315.39	45.74
Junc KNE03	88.85	1.00	111.10	22.25	218.27	31.66
Junc KNE04,5-6	84.00	0.00	113.57	29.57	290.08	42.07
Junc KNE07	88.38	0.16	112.87	24.49	240.25	34.84
Junc KNE08	90.72	0.27	111.22	20.50	201.11	29.17
Junc KNE09	88.86	0.60	110.64	21.78	213.66	30.99
Junc KNE10	89.84	0.28	109.87	20.03	196.49	28.50
Junc KNE18	87.52	0.22	112.55	25.03	245.54	35.61
Junc KNE19	78.25	0.00	117.30	39.05	383.08	55.56
Junc KNE22	92.65	0.41	111.85	19.20	188.35	27.32
Junc KNE23	91.30	0.41	110.75	19.45	190.80	27.67
Junc KNE24	90.60	0.25	110.94	20.34	199.54	28.94
Junc KNE25	87.40	1.32	112.55	25.15	246.72	35.78
Junc KNE26	90.30	95.17	106.47	16.17	158.63	23.01

Minimum Pressure

Pipe Report

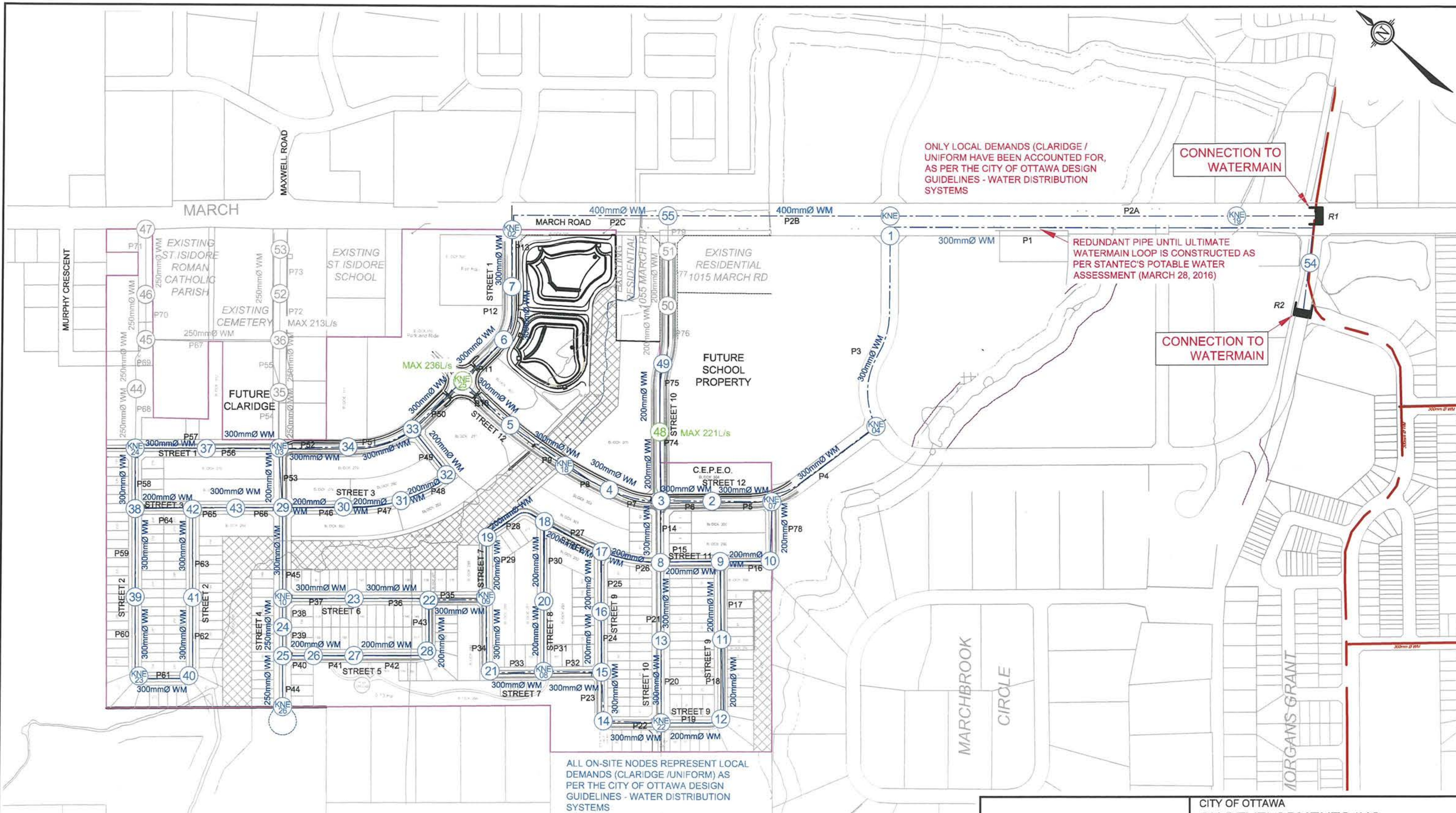
Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pump 1	#N/A	#N/A	#N/A	197.80	0.00	-117.30	0.000
Pipe P1A	1.00	300	120	70.98	1.00	3.95	0.023
Pipe P1B	685.00	300	120	70.98	1.00	3.95	0.023
Pipe P2A	580.00	400	120	-126.82	1.01	2.85	0.022
Pipe P2B	300.00	400	120	126.82	1.01	2.85	0.022
Pipe P2C	235.00	400	120	98.29	0.78	1.78	0.023
Pipe P3	260.00	300	120	70.98	1.00	3.95	0.023
Pipe P4	175.00	300	120	70.98	1.00	3.95	0.023
Pipe P5	83.00	300	120	49.73	0.70	2.04	0.024
Pipe P6	82.00	300	120	47.67	0.67	1.89	0.024
Pipe P7	75.00	300	120	-3.46	0.05	0.01	0.036
Pipe P8	75.00	300	120	-3.21	0.05	0.01	0.036
Pipe P9	90.00	300	120	2.99	0.04	0.01	0.037
Pipe P10	90.00	300	120	2.22	0.03	0.01	0.039
Pipe P11	85.00	300	120	-97.89	1.38	7.16	0.022
Pipe P12	85.00	300	120	-97.89	1.38	7.16	0.022
Pipe P13	85.00	300	120	-98.29	1.39	7.22	0.022
Pipe P14	84.00	300	120	70.25	0.99	3.88	0.023
Pipe P15	92.00	200	110	-7.07	0.23	0.47	0.036
Pipe P16	92.00	200	110	-20.82	0.66	3.45	0.031
Pipe P17	110.00	200	110	13.25	0.42	1.49	0.033
Pipe P18	110.00	200	110	12.70	0.40	1.38	0.033
Pipe P19	76.00	200	110	12.25	0.39	1.29	0.033
Pipe P20	110.00	300	120	-44.57	0.63	1.67	0.025
Pipe P21	110.00	300	120	-45.12	0.64	1.71	0.025
Pipe P22	84.00	300	120	56.40	0.80	2.58	0.024
Pipe P23	60.00	300	120	-56.26	0.80	2.57	0.024
Pipe P24	85.00	200	110	-8.14	0.26	0.61	0.035
Pipe P25	83.00	200	110	-8.59	0.27	0.67	0.035
Pipe P26	84.00	200	110	-31.80	1.01	7.56	0.029
Pipe P27	89.00	200	110	22.82	0.73	4.09	0.030
Pipe P28	100.00	200	110	20.54	0.65	3.36	0.031
Pipe P29	75.00	200	110	20.36	0.65	3.31	0.031
Pipe P30	110.00	200	110	-1.69	0.05	0.03	0.045
Pipe P31	99.00	200	110	-0.98	0.03	0.01	0.048
Pipe P32	80.00	300	120	-64.09	0.91	3.27	0.023
Pipe P33	72.00	300	120	-64.80	0.92	3.34	0.023
Pipe P34	103.00	300	120	-64.38	0.91	3.30	0.023
Pipe P35	79.00	300	120	84.14	1.19	5.41	0.022
Pipe P36	102.00	300	120	45.30	0.64	1.72	0.025
Pipe P37	101.00	300	120	44.68	0.63	1.68	0.025
Pipe P38	40.00	250	110	-129.82	2.64	34.51	0.024
Pipe P39	40.00	250	110	-93.68	1.91	18.86	0.025
Pipe P40	42.00	200	110	-1.77	0.06	0.04	0.044
Pipe P41	58.00	200	110	-37.84	1.20	10.43	0.028
Pipe P42	100.00	200	110	38.08	1.21	10.56	0.028
Pipe P43	76.00	200	110	38.46	1.22	10.75	0.028
Pipe P44	65.00	250	110	-95.17	1.94	19.42	0.025
Pipe P45	125.00	300	120	-85.42	1.21	5.57	0.022
Pipe P46	85.00	200	110	-22.48	0.72	3.98	0.030
Pipe P47	73.00	200	110	-23.08	0.73	4.17	0.030
Pipe P48	75.00	200	110	-23.65	0.75	4.37	0.030
Pipe P49	80.00	200	110	-23.90	0.76	4.45	0.030
Pipe P50	90.00	300	120	-98.79	1.40	7.29	0.022
Pipe P51	85.00	300	120	74.67	1.06	4.34	0.023
Pipe N52	100.00	300	120	73.18	1.04	4.18	0.023
Pipe P53	85.00	200	110	28.94	0.92	6.35	0.029
Pipe P54	79.00	250	110	12.97	0.26	0.48	0.034
Pipe P55	70.00	250	110	12.24	0.25	0.43	0.034
Pipe P56	102.00	300	120	30.28	0.43	0.82	0.026
Pipe P57	101.00	300	120	29.62	0.42	0.78	0.026
Pipe P58	82.00	300	120	-38.08	0.54	1.25	0.025
Pipe P59	110.00	300	120	20.43	0.29	0.39	0.028
Pipe P60	110.00	300	120	19.78	0.28	0.37	0.028
Pipe P61	95.00	300	120	-19.37	0.27	0.36	0.028
Pipe P62	110.00	300	120	18.92	0.27	0.34	0.028
Pipe P63	110.00	300	120	18.27	0.26	0.32	0.028
Pipe P64	79.00	200	110	-17.17	0.55	2.41	0.032
Pipe P65	40.00	300	120	-34.91	0.49	1.06	0.026
Pipe P66	40.00	300	120	34.66	0.49	1.05	0.026
Pipe P67	175.00	250	110	10.48	0.21	0.33	0.035
Pipe P68	83.00	250	110	8.72	0.18	0.23	0.036
Pipe P69	70.00	250	110	9.00	0.18	0.25	0.036
Pipe P70	62.00	250	110	1.27	0.03	0.01	0.048
Pipe P71	75.00	250	110	1.10	0.02	0.00	0.048
Pipe P72	60.00	250	110	1.09	0.02	0.00	0.049
Pipe P73	60.00	250	110	1.09	0.02	0.00	0.048
Pipe P74	85.00	200	110	-26.18	0.83	5.27	0.030
Pipe P75	85.00	200	110	-27.05	0.86	5.60	0.030
Pipe P76	85.00	200	110	-27.87	0.89	5.92	0.030
Pipe P77	85.00	200	110	-28.03	0.89	5.98	0.030
Pipe P78	82.00	200	110	-21.09	0.67	3.53	0.031
Pipe P79	50.00	200	110	-28.53	0.91	6.18	0.029

MAXIMUM DAY + FIREFLOW DEMAND SUMMARY
Scenario 2 - Full Buildout (Local Demand)

Maximum day plus fire flow demand was modeled for each node.
The following is a summary of the minimum pressures that occurred for each operating condition.

	Demand (L/s)						
Fire at Junction	Maximum Daily	Fire Flow	Max Day + Fire	Minimum Pressure (m)	kPa	psi	Node
N9	0.50	167.00	167.50	19.28	189.14	27.43	N_KNE22
N10	0.27	167.00	167.27	16.80	164.81	23.90	N_KNE22
N12	0.45	167.00	167.45	16.09	157.84	22.89	N12
N14	0.14	167.00	167.14	18.12	177.76	25.78	N_KNE22
N20	0.71	167.00	167.71	18.72	183.64	26.64	N_KNE22
N28	0.38	167.00	167.38	16.09	157.84	22.89	N28
N32	0.25	167.00	167.25	19.76	193.85	28.11	N_KNE22
N36-max	0.67	213.00	213.67	14.24	139.69	20.26	N_KNE23
N42	0.53	167.00	167.53	18.45	180.99	26.25	N_KNE23
N47	1.10	167.00	168.10	15.46	151.66	22.00	N47
N48-max	0.87	221.00	221.87	16.02	157.16	22.79	N_KNE22
N49	0.82	167.00	167.82	20.87	204.73	29.69	N_KNE22
N53	1.09	167.00	168.09	17.08	167.55	24.30	N53
N_KNE09	0.60	167.00	167.60	18.86	185.02	26.83	N_KNE22
N_KNE22	0.41	167.00	167.41	18.06	177.17	25.70	N_KNE22
N_KNE23	0.41	167.00	167.41	17.25	169.22	24.54	N_KNE23
N_KNE25-max	1.32	236.00	237.32	14.14	138.71	20.12	N_KNE22
N_KNE26	0.17	167.00	167.17	16.17	158.63	23.01	N_KNE26

Note:
1) Fireflows of 167L/s have been applied based on Stantec's Potable Water Assessment (March 28, 2016) and is the maximum (capped) fireflow for single/townhouse units as per City of Ottawa Technical Bulletin ISDTB-2014-02.
2) Maximum achievable fireflows have been indicated (-max) in High Density residential areas.
3) Fireflow values have been distributed over several hydrants as per Technical Bulletin ISTB-2018-02.



LEGEND

P5 (property line symbol)	PROPERTY LINE
P5	PROPOSED BACKBONE WATERMAIN AS PER KANATA NORTH MASTER SERVICING STUDY - COMPLETED BY NOVATECH, JUNE 28, 2016 (WATER ANALYSIS BY STANTEC)
P5	PROPOSED LOCAL WATERMAIN AND ID NUMBER
P5	FUTURE CONCEPTUAL WATERMAIN AND ID NUMBER
1	PROPOSED NODE AND ID NUMBER
R1	EXISTING RESERVOIR AND ID NUMBER
MAX 160L/s 1	MAXIMUM ACHIEVABLE FIREFLOW IN HIGH DENSITY AREAS
1	FUTURE CONCEPTUAL NODE AND ID NUMBER

NOTES:

1) UNLESS OTHERWISE NOTED, A FIREFLOW OF 167L/s HAS BEEN ANALYSED, AS PER STANTEC'S POTABLE WATER ASSESSMENT, DATED MARCH 2016.
2) HIGH DENSITY FIREFLOWS TO BE CONFIRMED AND ANALYZED AT DETAILED DESIGN / SITE PLAN APPLICATION STAGE.

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CITY OF OTTAWA

CU DEVELOPMENTS INC.
1053, 1075 and 1145 MARCH ROAD

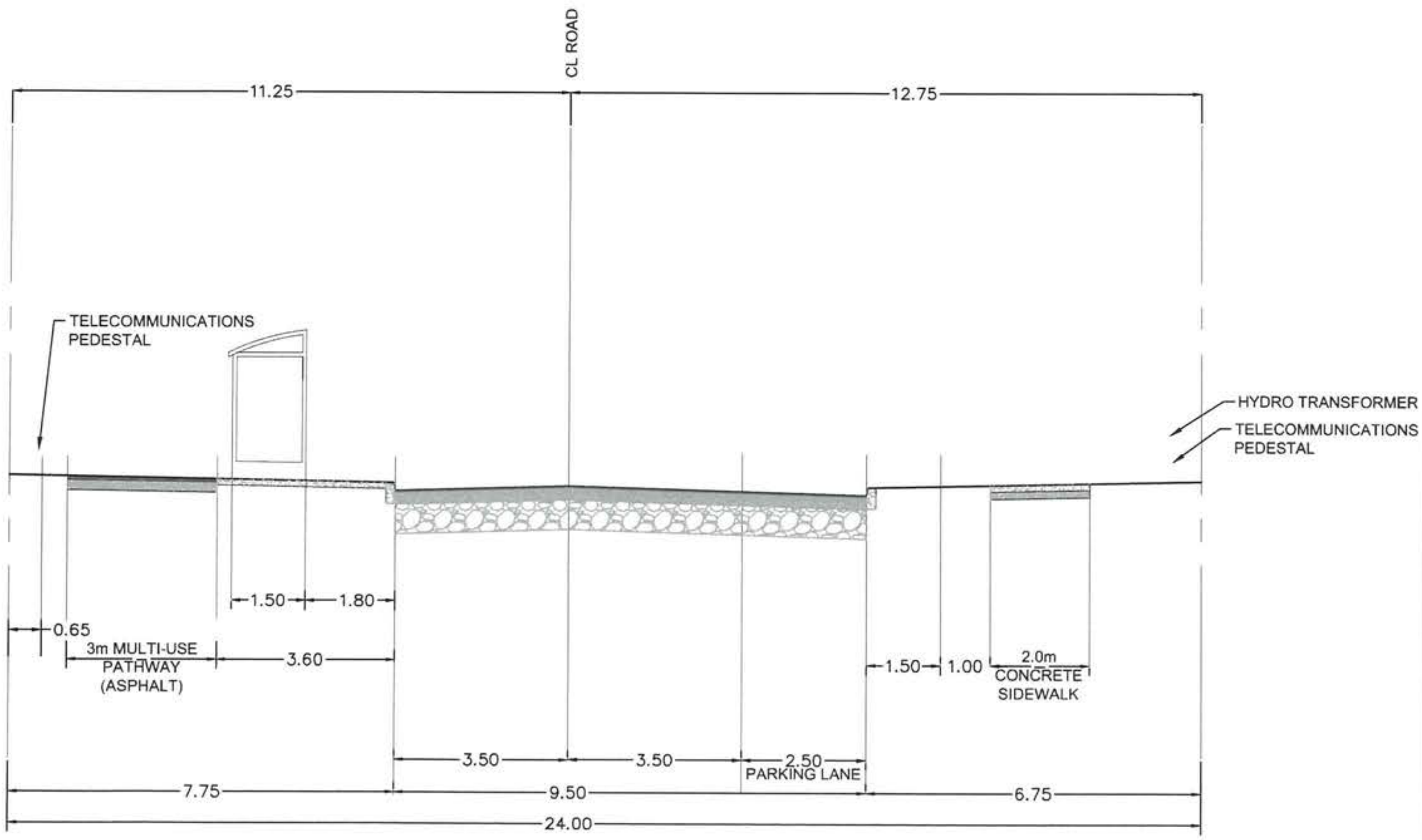
WATERMAIN NETWORK NODE LOCATIONS - SCENARIO 2 FULL BUILDOUT CLARIDGE / UNIFORM (LOCAL) DEMAND ONLY

SCALE	DATE	JOB	FIGURE
1 : 5000	JUNE 2018	116132	FIG-WM2

M:\2016\116132\CAD\Design\Figures\Hydraulic\20170906-Draft Conditions\116132-DraftConditions.dwg, DRAFT CONDITIONS - SCENARIO 2, Jul 24, 2018 - 3:36pm, rgrayton
SHT11X17.DWG - 279mmX432mm

APPENDIX E
Figures

- Figures List
    - Figure 23 – March Road – Interim Cross Section (from TMP)
    - Figure 24 – March Road – Ultimate Cross Section (from TMP)
    - Figure 25 – Collector Road – Typical Cross Section 1 (from TMP)
    - Figure 26 – Collector Road – Typical Cross Section 1 (with bus stop) (from TMP)
    - Figure 27 – Collector Road – Typical Cross Section 2 (from TMP)
    - Figure 30 – Local Road – Typical 18m ROW Cross Section (from TMP)
    - Figure 31 – Local Road – Typical 18m ROW Cross Section with Sidewalk (from TMP)
    - Figure 32 – Local Road – Typical 16.5m ROW Cross Section (from TMP)



NOTES:

AT THE TIME OF PLAN OF SUBDIVISION OR SITE PLAN CONTROL WHEN BUS STOPS ARE IDENTIFIED, AT THESE LOCATIONS ON THE SIDEWALK SIDE OF THE STREET, THE SIDEWALK SHOULD BE RELOCATED TO BE ADJACENT TO THE CURB AND A BUS PAD (1.55m IN WIDTH), IF DETERMINED TO BE IMPLEMENTED, SHALL BE TO THE REAR OF THE SIDEWALK.

KANATA NORTH
COMMUNITY DESIGN PLAN

DATE FEB 2016 JOB 112117
SCALE 1:150

FIGURE NO. 26
COLLECTOR ROAD -
TYPICAL CROSS SECTION 1
(WITH BUS STOP)

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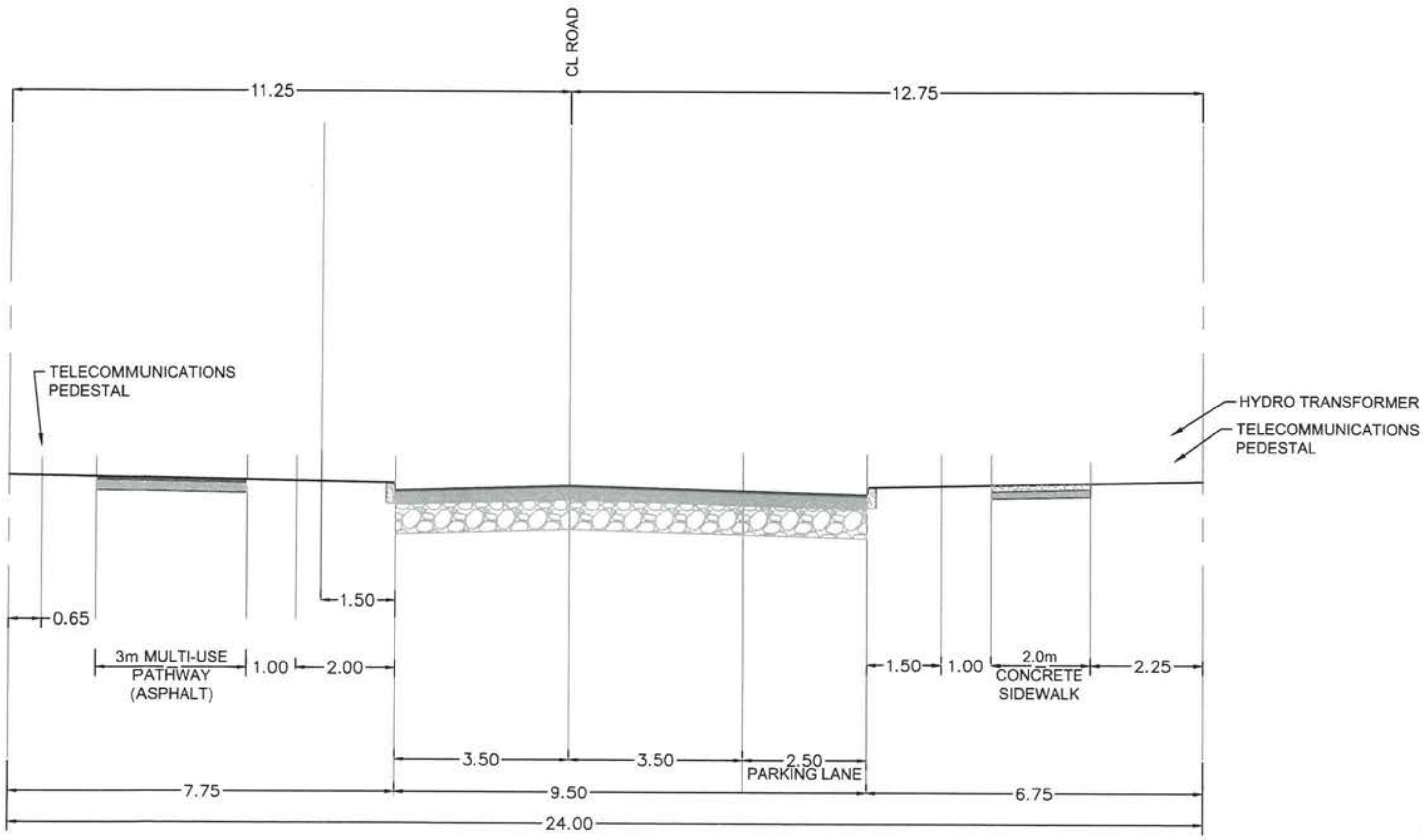
M:\2012\112117\CAD\Design\Figures\Traffic\TMP\FINAL\112117 - FIG-24mROW-MUP (1-150).dwg, TYPICAL 1 BUS (CDP), Feb 26, 2016 - 8:47am, tbrooks

SHT8x11.DWG - 216mmx279mm



KANATA NORTH

COMMUNITY DESIGN PLAN

FIGURE NO. 25

COLLECTOR ROAD - TYPICAL CROSS SECTION 1

DATE FEB 2016

JOB 112117

SCALE 1:150

0 1m 2m 4m

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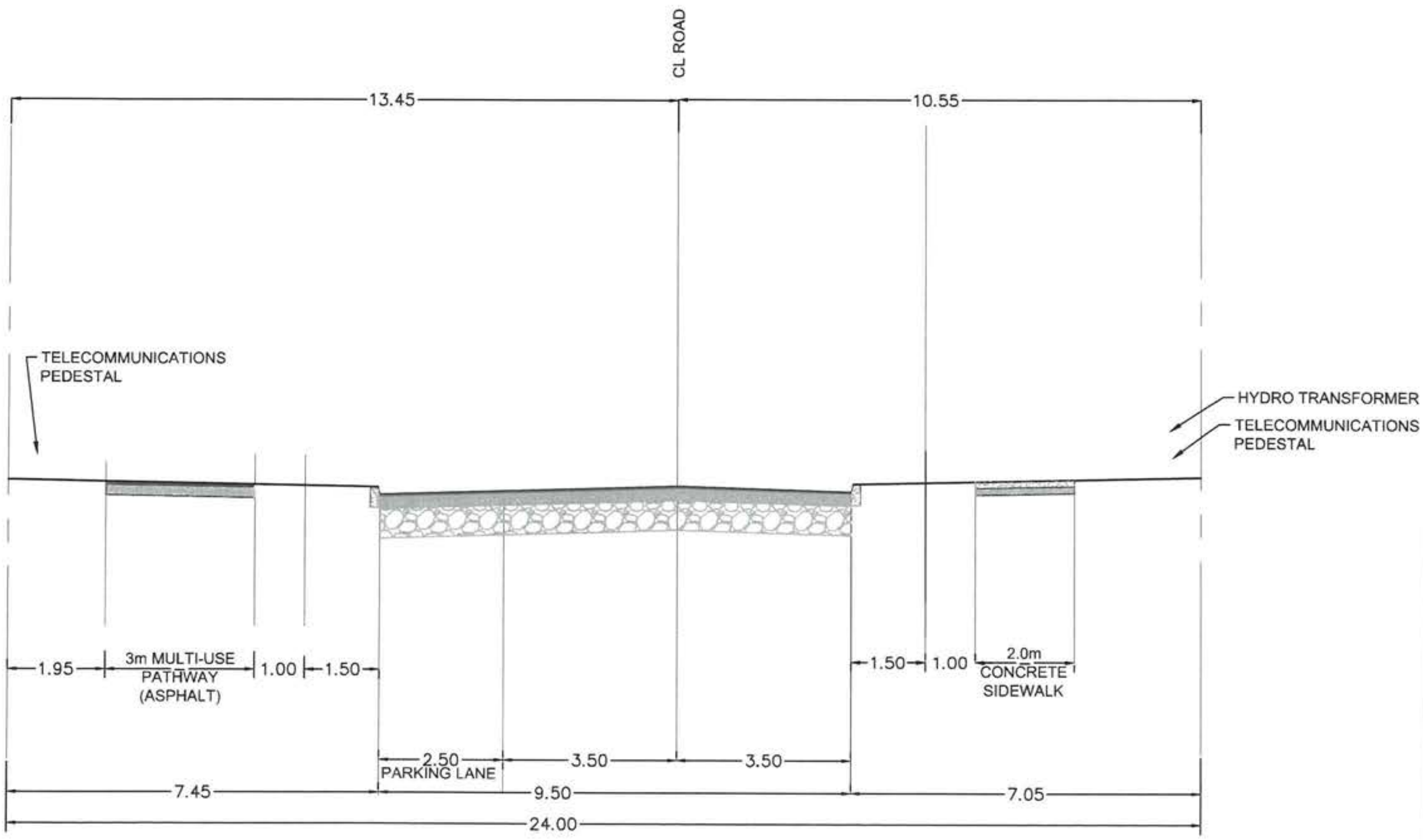

KN

KANATA NORTH
COMMUNITY DESIGN PLAN

FIGURE NO. 27
COLLECTOR ROAD -
TYPICAL CROSS SECTION 2

DATE
FEB 2016

JOB
112117

SCALE
1:150

0 1m 2m 4m

NOVATECH
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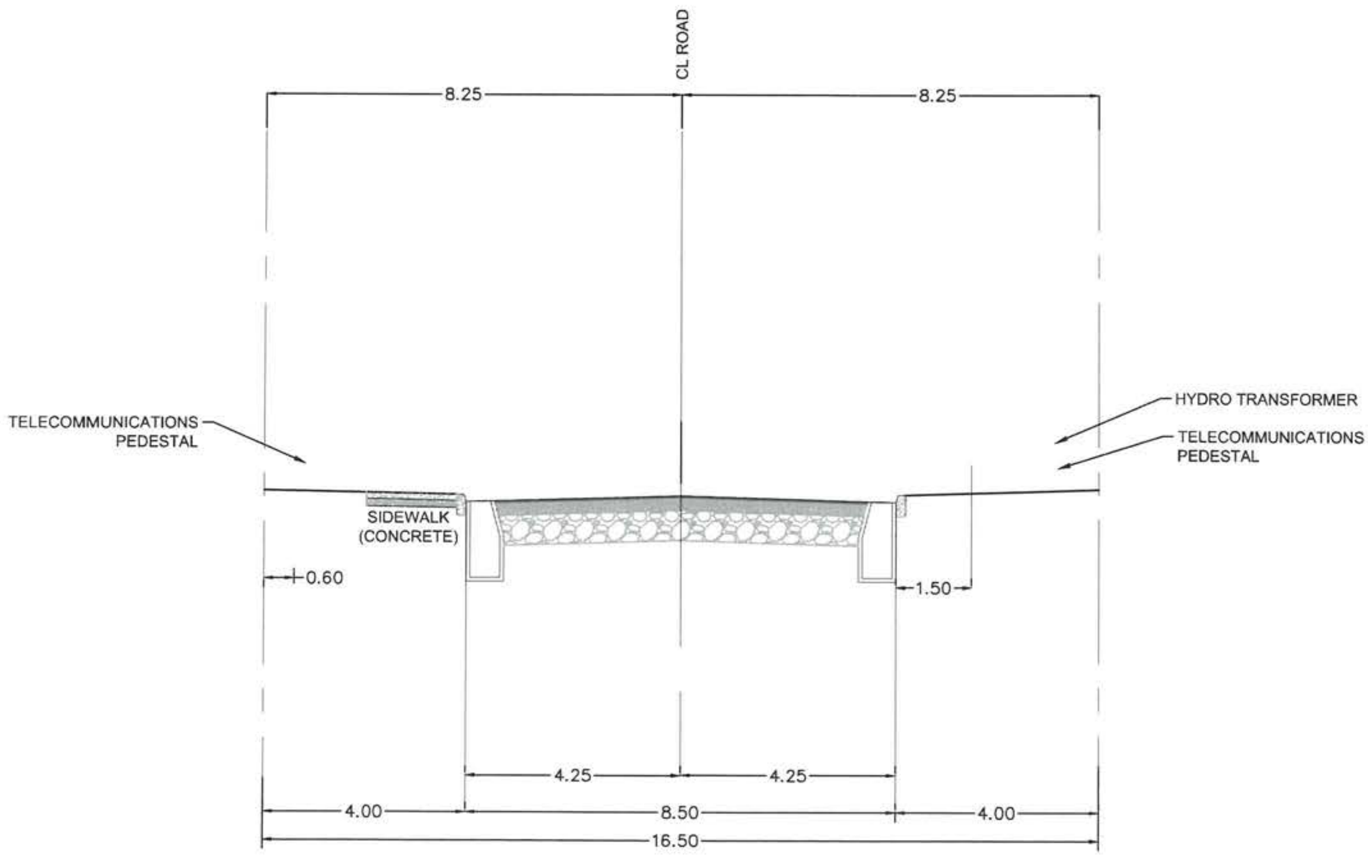

NOTES:

FOR SINGLE LOADED ROAD, BOULEVARD WITH NO HOUSING MAY BE REDUCED TO A MINIMUM OF 1.5m.

KANATA NORTH

COMMUNITY DESIGN PLAN

DATE
FEB 2016

JOB
112117

SCALE
1:150

0 1m 2m 4m

FIGURE NO. 31

LOCAL ROAD
- TYPICAL 16.5m ROW
CROSS SECTION

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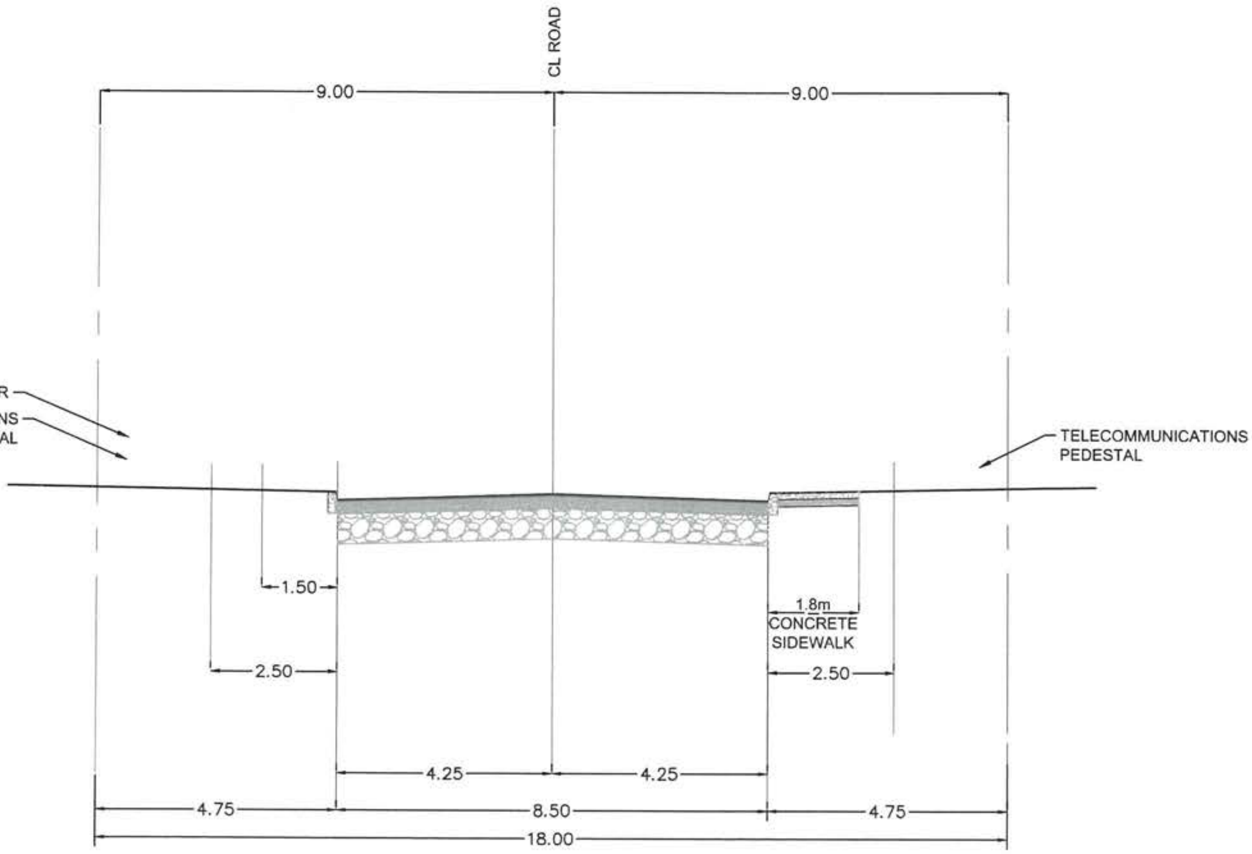

KN

KANATA NORTH

COMMUNITY DESIGN PLAN

DATE
FEB 2016

JOB
112117

SCALE
1:150

0 1m 2m 4m

FIGURE NO. 30

LOCAL ROAD
- TYPICAL 18m ROW CROSS SECTION WITH SIDEWALK

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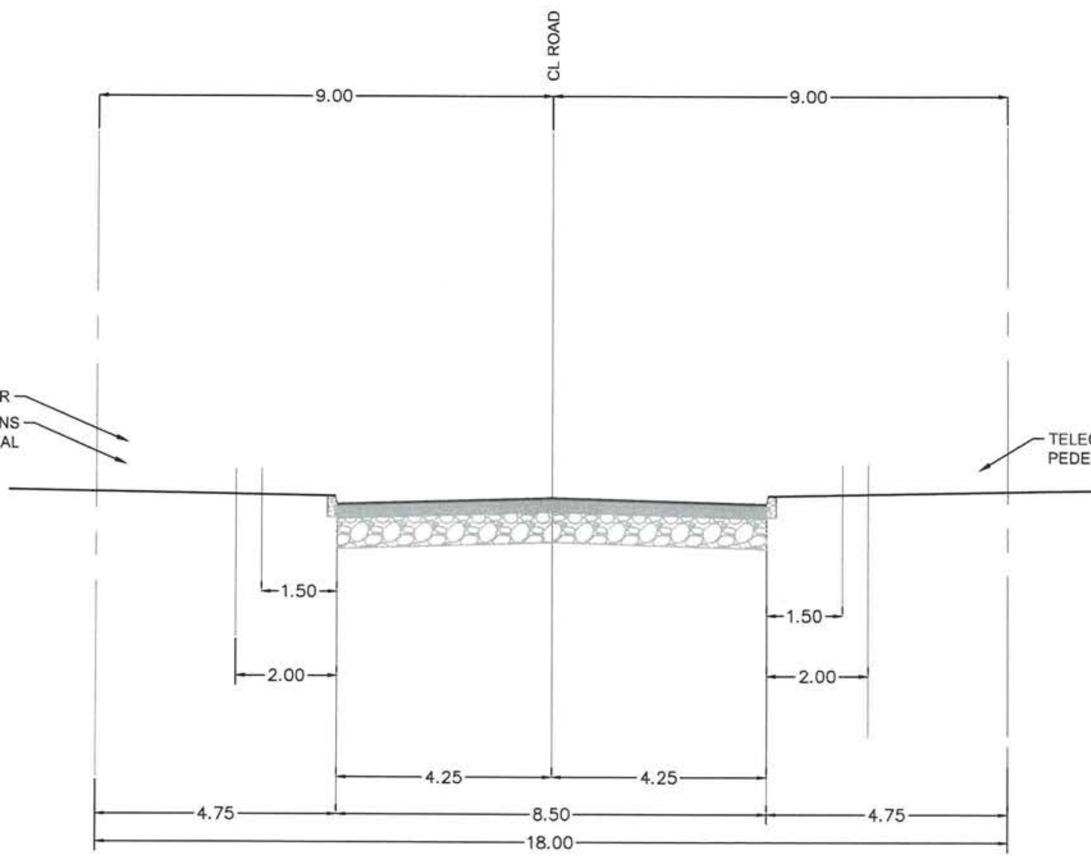
M:\2012\112117\CAD\Design\Figures\Traffic\TMP\FINAL\112117 - FIG-18m-LOCAL (1-150).dwg, LOCAL SW (CDP), Feb 26, 2016 - 9:50am, tbrooks

SHT8x11.DWG - 216mmx279mm



M:\2012\112117\CAD\Design\Figures\Traffic\TMP\FINAL\112117 - FIG-18m-LOCAL (1-150).dwg, LOCAL (CDP), Feb 26, 2016 - 9:50am, tbrooks

KN

KANATA NORTH
COMMUNITY DESIGN PLAN

DATE
FEB 2016

JOB
112117

SCALE
1:150

0 1m 2m 4m

FIGURE NO. 29
LOCAL ROAD
- TYPICAL 18m ROW
CROSS SECTION

NOVATECH
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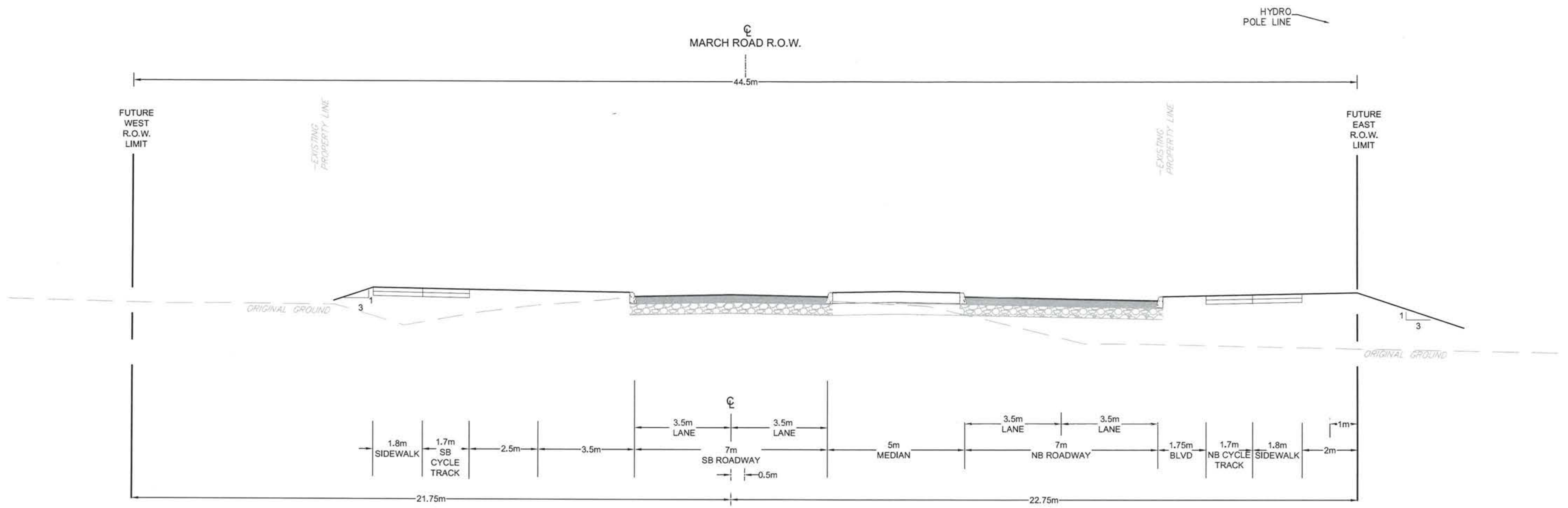
SHT8x11.DWG - 216mmx279mm



KANATA NORTH
COMMUNITY DESIGN PLAN

FIGURE NO. 23

MARCH ROAD - INTERIM CROSS SECTION

DATE FEB 2016

JOB 112117

SCALE 1:150

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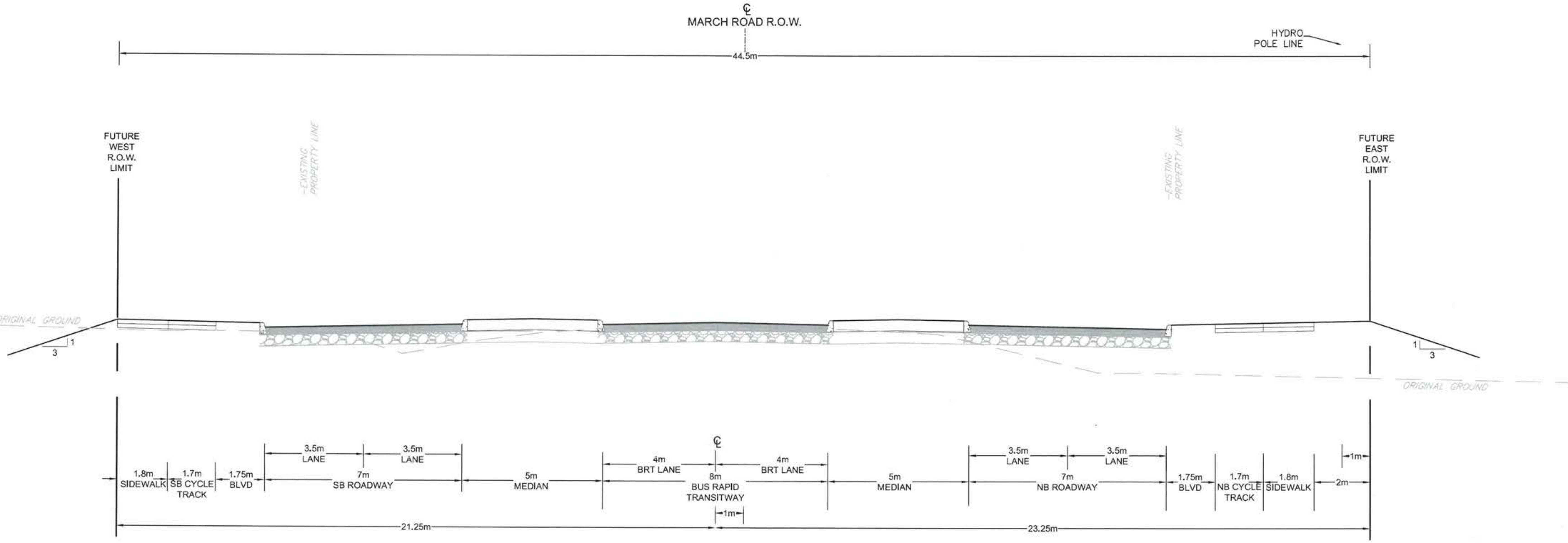
M:\2012\112117\CAD\Design\Figures\Traffic\TMP\FINAL\112117 - March sections - 20160212.dwg, INTERIM (CDP), Feb 26, 2016 - 9:45am, tbrooks



KANATA NORTH
COMMUNITY DESIGN PLAN

FIGURE NO. 24
MARCH ROAD - ULTIMATE
CROSS SECTION

DATE
FEB 2016

JOB
112117

SCALE
1:150

0 1m 2m 4m

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APPENDIX F (VOLUME 2)
DRAWINGS

- Drawing List
    - 116132-GR1-4-DRAFT Grading Plans
    - 116132-SAN Sanitary Drainage Area Plan
    - 116132-STM Storm Drainage Area Plan
    - 116132-SWM1 Stormwater Management Pond – Plan and Profile
    - 116132-SWM2 Stormwater Management Pond – Cross Sections
    - 116132-SWML1 Stormwater Management Pond – Landscape Plan
    - 116132-CRK2-DRAFT Creek Plan and Profile, Sta. 50+300 to 50+600
    - 116132-CRK3-DRAFT Creek Plan and Profile, Sta. 50+600 to 50+850