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THE COMMONS PHASE 4
MEDIUM DENSITY DEVELOPMENT

Servicing and Stormwater Management Report

Engineering excellence. Planning progress. Liveable landscapes.

THE COMMONS PHASE 4
MEDIUM DENSITY DEVELOPMENT

3610 INNES ROAD

SITE SERVICING AND
STORMWATER MANAGEMENT REPORT

Prepared for:

Glenview Homes (Innes) Ltd.
190 O'Connor Street, 11th Floor
Ottawa, Ontario
K2P 2R3

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

November 1, 2024

Novatech File: 118224
Ref: R-2024-107

November 1, 2024

City of Ottawa
Planning Real Estate and Economic Development Department
Development Review - East Branch
Infrastructure Approvals Division
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

Attention: Derek Unrau, Project Manager

Reference: The Commons - Phase 4
Medium Density Development
Site Servicing and Stormwater Management Report
Novatech File No.: 118224

Enclosed is the Site Servicing and Stormwater Management Report for The Commons Phase 4 Medium Density Development. This report addresses the approach to site servicing and stormwater management for the proposed development and is submitted in support of the Site Plan Control application.

Yours truly,

NOVATECH

Miroslav Savic P. Eng.
Senior Project Manager | Land Development

cc: Melissa Pettem, Glenview Homes (Innes) Ltd.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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1.0 INTRODUCTION

Novatech has been retained by Glenview Hommes (Innes) Ltd. to complete the site servicing and stormwater management design for The Commons Phase 4 Medium Density Development. This report addresses the approach to servicing and stormwater management and is being submitted in support of the Site Plan Control application

1.1 Site Description and Location

The subject site is a part of The Commons subdivision development and consist of two blocks of land: Block 85 and Block 86. The Block 85 is located on the east side of Ventus Way and is bound by U Haul storage facility to the north, The Commons subdivision to the south, and by future development lands owned by Richcraft Homes to the east. The Block 86 is located on the west side of Ventus Way and is bound by Halo carwash to the north, The Commons subdivision to the south, and by future development lands owned by Caivan Communities to the west. The site location is show on **Figure 1.1** – Key Plan.

1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on July 3, 2024, at which time the client was advised of the general submission requirements. Refer to **Appendix A** for a summary of the pre-consultation meeting with the city.

1.3 Proposed Development

The proposed development consists of 10 back-to-back townhouse blocks having a total of 98 units, including private roads, a public park, and associated landscaped areas. Refer er to **Appendix B** for the proposed Site Plan.

The proposed development will be serviced by connecting to the existing watermain, sanitary and storm sewers in Ventus Way.

1.4 References and Supporting Documents

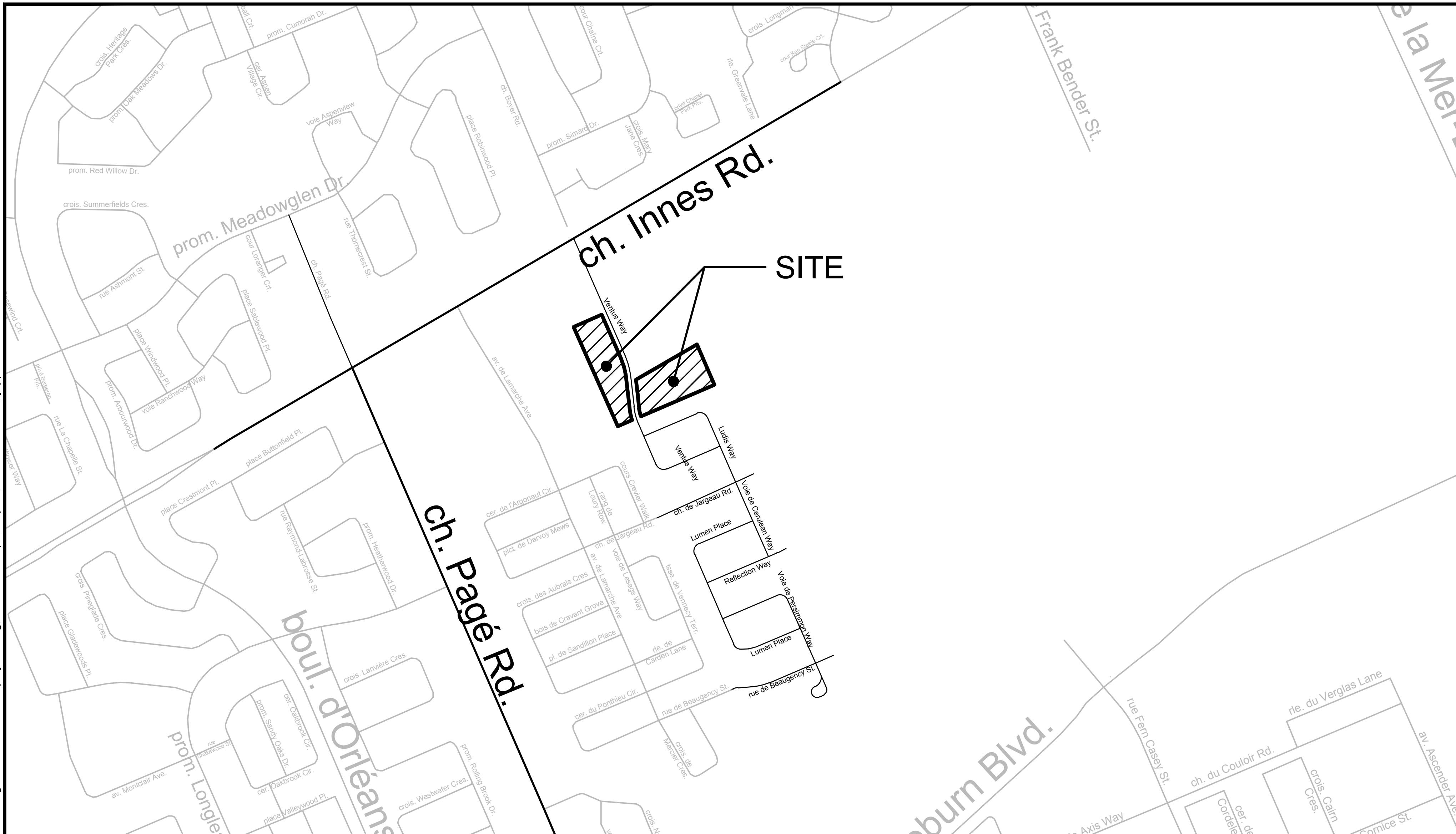
The following documents were reviewed in preparation of the report:

- The Commons (3610 Innes Road) – Phase 2&3, Site Servicing and Stormwater Management Report, Novatech, January 17, 2024.
- Geotechnical Investigation – Proposed Residential Development, The Commons -Phase 4, 3604-3646 Innes Road, Ottawa, Ontario; Report No. PG4026-3, Paterson Group Inc., July 8, 2024.
- City of Ottawa Sewer Design Guidelines (October 2012)
- Ottawa Design Guidelines – Water Distribution (July 2010)
- Stormwater Management Planning and Design Manual (MOE, March 2003)

2.0 SERVICING AND GRADING

2.1 General Servicing

The subject site will be serviced by private storm and sanitary sewers, and watermain. The storm /stormwater management, sanitary and water servicing strategy is discussed in further detail in the following sections.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

THE COMMONS (PHASE 4)

KEY PLAN

SCALE		
NOT TO SCALE		
DATE SEPT 2024	JOB 118224	FIGURE 1.1

Storm servicing for the subject site will outlet into the existing 600mm and 1050mm diameter storm sewers in Ventus Way. Sanitary servicing will connect to the 200mm sanitary sewer in Ventus Way. Water service will connect to the existing 200mm watermain in Ventus Way.

Refer to General Plan of Services (Drawings 118224-MD-GP) included in the enclosed drawing set.

2.2 General Grading

The private roadways within the subject site will be graded in a saw-toothed pattern to promote surface storage of stormwater. The grading will direct emergency overland flows from the private roads to Ventus Way.

Refer to the Grading Plan (Drawings 118224-MD-GR) included in the enclosed drawing set.

3.0 STORM SEWER SYSTEM AND STORMWATER MANAGEMENT

The post-development storm sewer and stormwater management system will adhere to the criteria outlined as a part of the MSS EUC-Phase 3. Storm runoff from the site will outlet to the Ultimate EUC Pond 1 stormwater management facility at the south end of the site.

The following sections outline the stormwater management design and analysis. J.F. Sabourin and Associates Inc. (JFSA) was retained to prepare a Stormwater Management (SWM) Plan Report (SWMR Ph1) for Phase 1 and the initial stage of the Subject Site. The findings and recommendations can be found in the SWMR Ph1 in **Appendix C.**

Novatech has previously expanded the stormwater modelling and analysis of the SWMR Ph 1, to account for Phase 2 and 3 of the Subject Site, along with preliminary stormwater allowances for future site plans as part of Phase 4. Refer to the Phase 2&3, Site Servicing and Stormwater Management Report (Novatech, January 2024) for model details.

The model for the subject site has been built into the Novatech model prepared for the above mentioned report.

Given that these upcoming phases require the EUC Pond 1 Expansion, the SWM modelling also considers the recently approved design brief in support of the pond expansion, EUC Pond 1 Expansion PDR.

3.1 Stormwater Management Criteria

The Subject Site is located within the Ottawa River East Subwatershed, and are tributary to the Ottawa River, which falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA). The following stormwater management criteria have been developed based on the criteria in the MSS EUC-Phase 3, and requirements of the RVCA and the OSDG.

Minor System (Storm Sewers)

- Storm sewers are to be designed using the Rational Method as follows:
  - 1:2-year return period for local streets;
- 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 and ensure that the 100-year + 20% (stress test) hydraulic grade line in the storm sewer is below the USF for the proposed development;

    - Note that this site consists of slab-on-grade dwellings that will not have basements.
- Inlet control devices (ICDs) are to be installed in road and rearyard catchbasins to control inflows to the storm sewers;

Major System (Overland Flow)

- Overland flows are to be confined within the right-of-ways and/ or defined drainage easements for all storms up to and including the 1:100-year event;
- Storm runoff that exceeds the capacity of the minor system will be stored within road sags;
    - Runoff that exceeds the capacity of the road sags will be conveyed overland along defined major system flow routes towards the proposed major system outlet to the Ultimate EUC Pond 1 stormwater management facility;
- Major system storage in backyards is not to be included/ accounted for in design computations;
- Maximum depth of flow (static + dynamic) on local and collector streets shall not exceed 0.35 m and shall be confined to the road right-of-way, as well as not touch any part of the building envelope and must remain below the lowest building opening during the stress test event;
- For front yards, there must be 0.15 m of vertical clearance between the spill elevation on the street and the ground elevation at the nearest building envelope that is in the proximity of the flow route or ponding area;
- For rear yards, there must be 0.30 m of vertical clearance between the rear yard spill elevation and the ground elevation at the adjacent building envelope;
- The product of the 100-year flow depth (m) on street and flow velocity (m/s) shall not exceed 0.60.

Water Quality & Quantity Control – Ultimate as part of Phase 2, 3, and 4

- An *enhanced* (80% TSS removal) level of quality control will be provided by the EUC Pond 1 SWM Facility in the ultimate as part of the pond expansion (under separate cover), which outlets to Mud Creek, and ultimately outlets to Green's Creek and then the Ottawa River.

3.2 Proposed Storm Drainage System

Storm servicing for the Subject Site will be provided using a dual drainage system: Runoff from frequent events will be conveyed by storm sewers (minor system), while runoff from larger storm events which exceed the capacity of the minor system will be conveyed overland along defined overland flow routes (major system). The EUC Pond 1 SWM facility is the outlet for both the major and minor systems.

3.2.1 Storm Sewer Design (Minor System)

The minor system has been designed using the Rational Method per the City of Ottawa's Design Guidelines. The storm sewer design sheets are provided in **Appendix C**. Refer to the Storm Drainage Area Plan (Drawings 118224-STM1 and 118224-STM2) for details. The criteria used to size the storm sewers are summarized in **Table 3.1**.

Table 3.1: Storm Sewer Design Parameters

Parameter	Design Criteria
Local Roads	2-year Return Period
Storm Sewer Design	Rational Method/Modeling
IDF Rainfall Data	OSDG
Initial Time of Concentration (T_c)	10 minutes
Minimum Velocity (1)	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	250 mm

[1]A minimum gradient of 0.65% is required for any initial sewer run with less than 10 residential connections.

Inlet control devices (ICDs) are to be installed in roadway catchbasins and rear yard catchbasin outlets to limit inflows to the minor system during larger storm events.

3.2.2 Overland Flow Path (Major System)

The Subject Site has been graded to provide an engineered overland flow route (major system) for large, infrequent storms or in the event that the storm sewer system becomes obstructed. Flows will be directed to the Ultimate EUC Pond 1 SWM facility. The major system is to be designed to conform to the design standards outlined in Section 5.5 of the OSDG.

3.2.3 Best Management Practices and Low Impact Development

As outlined within the MSS EUC-Phase 3, the results from site-specific testing found that the vertical movement of water is restricted by the low permeability of the clay soils and the perched water table. As such, implementation of stormwater best management practices (BMPs) and low impact development (LID) techniques to mitigate the reduction in groundwater infiltration / recharge resulting from the proposed development is not being proposed.

3.2.4 SWM Facility – EUC Pond 1

Water quantity control and water quality treatment will be provided by an end-of pipe stormwater management pond, 'EUC Pond 1'.

Development of Phase 2, 3, and 4 of the Subject Site, as well as lands within the EUC, will require the EUC Pond 1 expansion. Refer to the EUC Pond 1 Expansion PDR for further information.

The EUC Pond 1 expansion is now complete, and has been in service as of July 2024.

3.3 Hydrologic & Hydraulic Modeling

The OSDG requires hydrologic modeling for all dual drainage systems. The performance of the proposed storm drainage system for the Subject Site was evaluated using the PCSWMM hydrologic/hydraulic model.

The PCSWMM model schematics and 100-year model output data are provided in **Appendix C**. Digital copies of the modeling files for all storm events are provided with the digital report submission.

3.3.1 Design Storms

The hydrologic analysis was completed using the following synthetic design storms and historical storms. The IDF parameters used to generate the design storms were taken from the *Ottawa Design Guidelines - Sewer* (October 2012).

Chicago Storms:	SCS Type II Storms:
25mm 3-hour Chicago storm	2-year 24-hour SCS Type II storm
2-year 3-hour Chicago storm	5-year 24-hour SCS Type II storm
5-year 3-hour Chicago storm	100-year 24-hour SCS Type II storm
100-year 3-hour Chicago storm	

The 3-hour Chicago distribution generates the highest peak flows for both the minor and major systems and was determined to be the critical storm distribution for the design of the storm drainage system.

The proposed drainage system has also been stress tested using a 3-hour Chicago design storm that has a 20% higher intensity and total volume compared to the 100-year event.

3.3.2 Model Development

The PCSWMM model has been developed to account for both minor and major system flows from the proposed development and ensure appropriate storage is provided such that the allowable release rates to each of the outlets are not exceeded. The results of the analysis were used to:

- Determine the total major and minor system runoff from the site;
- Determine the required underground storage volume;
- Calculate the storm sewer hydraulic grade line for the 100-year storm event;
- Evaluate overland flow depths and ponding volumes during the 100-year event.

Although the site is to be developed in multiple phases, the model was built assuming full build-out of the site and includes all phases of the proposed development. This was done to determine the allowable per hectare release rate for each phase and to determine the approximate underground storage volumes for each future phase.

<u>Infiltration</u>

Infiltration losses for all catchment areas were modeled using Horton's infiltration equation, which defines the infiltration capacity of the soil over the duration of a precipitation event using a decay function that ranges from an initial maximum infiltration rate to a minimum rate as the storm progresses. The default values for the City of Ottawa were used for all catchments.

Horton's Equation:	Initial infiltration rate:	f_o = 76.2 mm/hr
$f(t) = f_c + (f_o - f_c)e^{-k(t)}$	Final infiltration rate:	f_c = 13.2 mm/hr
	Decay Coefficient:	k = 4.14/hr

<u>Depression Storage</u>

The default values for depression storage in the City of Ottawa were used for all catchments.

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

The building rooftops are flat and will provide some depression storage.

Equivalent Width

'Equivalent Width' refers to the width of the sub-catchment flow path. This parameter (Table 5.1) is calculated as described in the *Sewer Design Guidelines, October 2012, Section 5.4.5.6*.

Impervious Values

Runoff coefficients for each subcatchment area were determined based on the proposed site plan. Refer to the Storm Drainage Area Plan (**118224-MD-STM**) for details. Percent impervious values were calculated using the following formula:

$$\%imp = \frac{c - 0.2}{0.7}$$

3.3.3 Storm Drainage Areas

For modeling purposes, Phase 4 lands have been divided into subcatchments based on the drainage areas tributary to each inlet of the proposed storm sewer system. The subcatchment areas are shown on the Storm Drainage Area Plan (**118224-MD-STM**) at the back of this report.

The hydrologic parameters for each subcatchment were developed based on the proposed Site Plan and drawing **121009-MD-STM** specified above. An overview of the modeling parameters is provided in **Table 3.2**.

Table 3.2: Hydrologic Modeling Parameters

Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
A-01	0.114	0.31	16%	50%	8.74	130.43	3.0%
A-02	0.004	0.22	3%	0%	2.61	15.34	1.5%
A-03	0.013	0.79	84%	40%	16.76	7.76	1.5%
A-04	0.079	0.81	87%	40%	16.12	49.00	4.4%
A-05	0.024	0.22	3%	0%	9.58	25.05	1.5%
A-06	0.066	0.36	23%	0%	13.57	48.65	1.5%
A-07	0.120	0.80	86%	40%	18.29	65.62	3.9%
A-08	0.020	0.73	76%	40%	19.10	10.47	2.2%
A-09	0.019	0.68	69%	40%	19.00	10.00	2.0%
A-10	0.124	0.80	86%	40%	18.74	66.16	3.5%
A-11	0.036	0.22	3%	0%	8.43	42.68	1.5%
A-12	0.125	0.76	80%	40%	18.64	67.05	3.5%
A-13	0.027	0.74	77%	40%	18.68	14.45	2.5%
A-14	0.025	0.67	67%	40%	16.65	15.02	5.6%
A-15	0.096	0.78	83%	40%	16.96	56.59	5.5%
A-16	0.050	0.79	84%	40%	16.96	29.48	4.3%
A-17	0.031	0.22	3%	0%	6.46	47.99	1.5%
A-18	0.017	0.57	53%	0%	12.46	13.64	4.0%
B-01	0.021	0.20	0%	0%	8.83	23.79	1.5%
B-02	0.075	0.81	87%	40%	15.78	47.54	4.5%
B-03	0.029	0.22	3%	0%	10.51	27.58	1.5%

Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
B-04	0.061	0.83	90%	20%	15.98	38.17	3.9%
B-05	0.022	0.22	3%	0%	8.63	25.51	1.5%
B-06	0.094	0.75	79%	40%	15.97	58.85	3.0%
B-07	0.097	0.78	83%	40%	16.32	59.42	4.2%
B-08	0.015	0.22	3%	0%	2.09	71.87	1.5%
B-09	0.035	0.84	91%	0%	8.08	43.32	0.5%
B-10	0.025	0.22	3%	0%	7.48	33.43	1.5%
B-11	0.195	0.76	80%	40%	14.82	131.54	4.0%
B-12	0.041	0.84	91%	10%	13.97	29.35	1.6%
B-13	0.016	0.22	3%	0%	6.44	24.85	1.5%
B-14	0.072	0.80	86%	40%	15.92	45.22	4.1%
B-15	0.025	0.22	3%	0%	5.01	49.94	1.5%
B-16	0.045	0.79	84%	0%	7.88	57.08	1.5%
B-17	0.143	0.22	3%	0%	32.32	44.24	1.4%
B-18	0.003	0.22	3%	0%	2.17	13.81	0.5%

3.4 Minor System Design and Analysis

The following sections outline the model parameters and results of the PCSWMM model, pertaining to the minor system (storm sewers).

3.4.1 Allowable Release Rates

The allowable release rates for Phase 4 medium density blocks were determined as a part of the SWMR Ph1 (JFSA, May 2022). Refer to the report included in **Appendix C**, page 8. Allowable release rates are outlined in the table below:

Table 3.3: Allowable Release Rates (JFSA)

Block ID	Total Release Rate (cms)	Area (ha)	Release Rate (cms/ha)
B1 (Area A)	0.228	0.990	0.230
B3i (Area B)	0.245	1.014	0.242

Both Area A and Area B will have some uncontrolled overland flow directed to Ventus Way. To determine the allowable release from each of the storm sewer connections to the Ventus Way sewer, the 100-year uncontrolled flow from the PCSWMM model was subtracted from the total allowable from each block. As Area A has three connections to the Ventus Way storm sewer, the allowable release rate for each connection was calculated based on tributary area. Supporting calculations have been included in **Appendix C**.

Area A Flows

Area A01 uncontrolled 100yr flows = 0.046 cms (0.114 ha)

Remaining allowable release rate = 0.228 cms – 0.046 cms
= 0.182 cms

Remaining area (A02-A18) = 0.876 ha
Per hectare release rate = 0.182 cms / 0.876 ha
= 0.208 cms/ha

Street 1 Allowable Flow (0.326 ha) = 0.068 cms
Street 2 Allowable Flow (0.295 ha) = 0.061 cms
Street 3 Allowable Flow (0.255 ha) = 0.053 cms

Area B Flows

Area B17 uncontrolled 100yr flows = 0.026 cms (0.143 ha)
Area B18 uncontrolled 100yr flows = 0.001 cms (0.003 ha)

Remaining allowable release rate = 0.245 cms – 0.026cms – 0.001 cms
= 0.218 cms

3.4.2 Orifice Controls

Inflows to the storm sewer were modeled based on the characteristics of each inlet. Inflows to the storm sewer are based on the orifice specified for the inlet and the maximum depth of ponding. Orifices have been sized to limit the outlet peak flows. Details are outlined in **Table 3.4**.

Table 3.4: Orifice Parameters

Structure	ICD Size & Inlet Rate					Approach Flow** (L/s)
	Diameter 1 (mm)	Diameter 2* (mm)	Max Head (m)	Calculated 2-yr Capture Rate (L/s)	2-yr Capture Rate** (L/s)	
CB50-51	IPEX LMF 65	IPEX LMF 65	2.06	12.53	7.60	8.04
CB52-53	IPEX LMF 70	IPEX LMF 70	2.03	12.44	6.20	6.47
CB54-55	IPEX LMF 75	IPEX LMF 65	2.04	13.96	11.00	11.88
CB56-57	IPEX LMF 75	IPEX LMF 65	2.05	13.99	12.80	14.15
CB58-59	IPEX LMF 100	IPEX LMF 100	1.73	23.96	21.60	22.31
CB60-61	IPEX LMF 75	IPEX LMF 85	1.69	15.51	14.10	14.89
CB62-63	IPEX LMF 95	IPEX LMF 95	1.76	24.16	20.20	21.63
CB64-65	IPEX LMF 95	IPEX LMF 95	1.76	24.16	22.00	23.04
CB66-67	IPEX LMF 70	IPEX LMF 70	1.74	12.86	8.70	9.10
CB68-69	IPEX LMF 95	IPEX LMF 95	1.73	20.43	16.80	17.30
CB70-71	IPEX LMF 80	IPEX LMF 80	1.95	15.04	14.80	16.09
CB72-73	IPEX LMF 85	IPEX LMF 85	2.00	18.47	16.60	17.46
CB74-75	83	83	1.97	41.70	33.40	33.90

Structure	ICD Size & Inlet Rate					Approach Flow**
	Diameter 1 (mm)	Diameter 2* (mm)	Max Head (m)	Calculated 2-yr Capture Rate (L/s)	2-yr Capture Rate** (L/s)	(L/s)
CB78-79	83	83	1.69	38.62	8.02	8.04
CB80-81	IPEX LMF 75	IPEX LMF 75	2.04	13.92	12.30	13.42
CB82-83	83	83	1.70	38.73	2.40	23.53
CB84-85	83	83	1.66	38.27	3.20	3.28
CB86-87	83	83	1.66	38.27	2.80	2.83
CB88-89	83	83	1.68	38.50	4.40	4.49
CB90-91	83	83	1.82	40.08	3.60	3.66
CB92-93	83	83	1.72	38.96	2.00	2.00
Grassed Areas						
RYCB20	83	-	1.11	15.64	0.18	0.22
RYCB21	83	-	1.16	15.99	0.10	0.55
RYCB22	83	-	1.46	17.94	3.00	0.33
RYCB23	83	-	1.46	17.94	0.27	0.36
RYCB24	83	-	1.16	15.99	0.24	0.34
RYCB150	83	-	1.96	20.79	0.18	0.26
RYCB151	83	-	1.96	20.79	0.21	0.31
RYCB153	83	-	1.96	20.79	0.16	0.21
RYCB154	83	-	1.96	20.79	0.21	0.27
RYCB155	83	-	1.46	17.94	0.19	0.30
RYCB156	83	-	1.96	20.79	0.13	0.17
RYCB158	83	-	1.96	20.79	0.03	0.07
Manholes - Outlets from Phase 4						
MH100	178	-	2.29	103.44	40.13	40.13
MH202	152	-	2.35	76.46	43.23	43.23
MH302	127	-	4.06	70.07	28.34	28.34

**Diameter 2 only specified where catchbasins are not interconnected*

***From PCSWMM Model, 2-year 3-hour Chicago storm distribution*

Table 3.4 also includes the sizing for the orifices required in MH100, 202, and 302 to control the peak flows from Street 1, 2, and 3 to the allowable release rates discussed in the above section. The catchbasin and grassed area controls are sufficient to control the peak flows from Area B without needing an ICD in MH502. Refer to the peak flows in the following section.

3.4.3 Peak Flows

The modeled peak flows at the various outlets of the Phase 4 site for each storm event (25mm, 2-year to 100-year+20%) are summarized in **Table 3.5**.

Table 3.5: Peak Flows

Storm Distribution->		4hr Chi.	3hr Chicago			
Return Period->		**25mm**	**2yr**	**5yr**	**100yr**	**100yr+20%**
Area A Uncontrolled (A01)		0.003	0.004	0.016	0.046	0.060
Street 1	*minor flows*	0.032	0.040	0.048	0.064	0.067
	major flows	0	0	0	0	0
Street 2	*minor flows*	0.034	0.045	0.052	0.059	0.061
	major flows	0	0	0	0	0
Street 3	*minor flows*	0.023	0.028	0.037	0.053	0.055
	major flows	0	0	0	0	0
Area A TOTAL		**0.092**	**0.117**	**0.153**	**0.222**	**0.243**
Area B Uncontrolled (B17, 18)		0.001	0.001	0.005	0.027	0.041
Street 4	*minor flows*	0.090	0.118	0.150	0.185	0.216
	major flows	0	0	0	0	0
Area B TOTAL		**0.091**	**0.119**	**0.155**	**0.212**	**0.257**

The results of the PCSWMM analysis indicate that outflows from the proposed development to the Lumen Place storm sewer will not exceed allowable release rates as outlined in **Section 3.4.1**.

An expanded table with the 24hr SCS storm events has been included in **Appendix C**.

3.4.4 Hydraulic Grade Line

The results of the analysis were used to determine if there would be any surcharging from the storm sewer system during the 100-year storm event. As the proposed units are slab-on-grade construction, there are no proposed storm lateral connections required; therefore, 100-yr HGL elevations have been analyzed for clearance to the top of grates (T/G) of the storm system. USFs are shown in **Table 3.6** for reference only and will not be compared against the HGL.

The **Table 3.6** provides a summary of the 100-year HGL elevation at each storm manhole within the proposed development, as well as a summary of the HGL elevations for a 20% increase (rainfall intensity and total precipitation) in the 100-year design event.

Table 3.6: Storm Sewer Hydraulic Grade Line

Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation - 100yr4hr (m)	HGL Elevation - 100yr4hr+20% (m)	Min USF (m)	Clearance from T/G (100yr) (m)	Clearance from T/G (100yr+20%) (m)
MH100	88.48	90.86	89.68	89.76	89.98	-1.18	-1.10
MH102	88.69	91.02	89.81	89.90	90.11	-1.21	-1.12
MH104	88.78	91.12	89.83	89.92	90.13	-1.29	-1.20
MH106	88.90	91.07	89.84	89.93	90.14	-1.23	-1.14
MH108	89.00	90.99	89.85	89.94	90.15	-1.14	-1.05
MH110	89.19	90.79	89.85	89.95	90.15	-0.94	-0.84
MH202	88.25	90.68	89.84	89.97	90.14	-0.84	-0.71
MH204	88.46	90.85	89.92	90.06	90.22	-0.93	-0.79

Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation - 100yr4hr (m)	HGL Elevation - 100yr4hr+20% (m)	Min USF (m)	Clearance from T/G (100yr) (m)	Clearance from T/G (100yr+20%) (m)
MH206	88.57	91.01	89.94	90.08	90.24	-1.07	-0.93
MH208	88.69	91.08	89.96	90.10	90.26	-1.12	-0.98
MH210	88.79	90.99	89.97	90.11	90.27	-1.02	-0.88
MH212	88.98	90.96	89.97	90.12	90.27	-0.99	-0.84
MH302	86.34	90.46	89.13	89.47	89.43	-1.33	-0.99
MH304	86.46	90.60	89.16	89.49	89.46	-1.44	-1.11
MH306	86.95	90.54	89.20	89.53	89.50	-1.34	-1.01
MH308	87.15	90.55	89.28	89.62	89.58	-1.27	-0.93
MH310	87.26	90.60	89.30	89.64	89.60	-1.30	-0.96
MH312	87.44	90.38	89.30	89.64	89.60	-1.08	-0.74
MH402	86.53	90.67	87.81	88.53	88.11	-2.86	-2.14
MH404	86.64	90.54	87.51	88.57	87.81	-3.03	-1.97
MH406	86.74	90.81	88.02	88.74	88.32	-2.79	-2.07
MH408	86.90	90.87	88.09	88.82	88.39	-2.78	-2.05
MH410	87.06	90.58	88.10	88.83	88.40	-2.48	-1.75
MH412	87.18	90.62	88.11	88.84	88.41	-2.51	-1.78
MH414	87.40	90.69	88.12	88.84	88.42	-2.57	-1.85
MH502	86.27	90.20	87.42	88.14	87.72	-2.78	-2.06
MH504	86.29	90.29	87.45	88.17	87.75	-2.84	-2.12
MH506	86.33	90.64	87.54	88.26	87.84	-3.10	-2.38
MH508	86.38	90.79	87.58	88.30	87.88	-3.21	-2.49
MH510	87.11	90.62	88.07	88.79	88.37	-2.55	-1.83
MH512	86.92	90.56	88.04	88.76	88.34	-2.52	-1.80
MH602	87.00	90.69	88.11	88.83	88.41	-2.58	-1.86
MH604	87.21	90.65	88.11	88.84	88.41	-2.54	-1.81

3.5 Major System Design and Analysis

The major system network was evaluated using the PCSWMM model to ensure that the ponding depths conform to City standards. A summary of ponding depths and volumes for the 100-year event is provided in **Table 3.7**. Ponding depths for all storm events (2yr to 100yr+20%) are provided in **Appendix C**.

Table 3.7: Ponding Depths at Catchbasins (2yr Event)

Structure	T/G	Max. Static Ponding (Spill Depth)		2-yr Event (4hr)			
	(m)	Elev. (m)	Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)
CB50-51	90.42	90.74	0.32	89.12	0.00	N	0.00
CB52-53	90.46	90.75	0.29	88.94	0.00	N	0.00
CB54-55	90.50	90.77	0.27	89.73	0.00	N	0.00

Structure	T/G	Max. Static Ponding (Spill Depth)		2-yr Event (4hr)			
		Elev.	Depth	Elev.	Depth	Cascading	Cascade Depth (m)
	(m)	(m)	(m)	(m)	(m)	Flow?	
CB56-57	90.59	90.86	0.27	90.26	0.00	N	0.00
CB58-59	90.82	91.06	0.24	90.52	0.00	N	0.00
CB60-61	90.81	91.10	0.29	90.51	0.00	N	0.00
CB62-63	90.74	90.95	0.21	90.43	0.00	N	0.00
CB64-65	90.84	91.07	0.23	90.64	0.00	N	0.00
CB66-67	90.40	90.69	0.29	89.46	0.00	N	0.00
CB68-69	90.52	90.73	0.21	89.96	0.00	N	0.00
CB70-71	90.54	90.83	0.29	90.46	0.00	N	0.00
CB72-73	90.48	90.77	0.29	90.09	0.00	N	0.00
CB74-75	90.36	90.61	0.25	89.66	0.00	N	0.00
CB80-81	90.41	90.61	0.20	89.95	0.00	N	0.00

4.0 SANITARY SEWER SYSTEM

4.1 Existing Sanitary Infrastructure

The sanitary outlet for the subject site will be an existing 200mm diameter sanitary sewer located in Ventus Way, constructed as a part of Phase 2&3. Sanitary Sewer Drainage Area Plan and Sanitary Sewer Design Sheet from *The Commons (3610 Innes Road) – Phase 2&3, Site Servicing and Stormwater Management Report*, demonstrating that the subject site was accounted for in the downstream sewers, can be found in **Appendix D**.

4.2 Proposed Sanitary Infrastructure

The proposed works will require approximately 378m of 200mm diameter gravity sanitary sewer to collect wastewater flows from Block 85 located on the west side of Ventus Way and approximately 377m of 200mm diameter gravity sanitary sewer to collect wastewater flows from Block 86 located on the east side of Ventus Way. The proposed sanitary sewers from both blocks of land will direct flows to the existing 200mm diameter sanitary sewers in Ventus Way.

Refer to the General Plan of Services (118224-MD-GP) and the Sanitary Drainage Area Plan (118224-MD-SAN) included in the enclosed drawing set for details of the proposed sanitary sewer connections and layout details.

4.3 Sanitary Demand and Design Parameters

The peak design flow parameters in **Table 4.1** have been used in the sewer capacity analysis. Unit and population densities and all other design parameters are specified in the OSDG.

Table 4.1: Sanitary Sewer Design Parameters

Design Component	Design Parameter
Unit Population: Townhomes	 2.7 people/unit
Residential Flow Rate, Average Daily	280 L/cap/day
Residential Peaking Factor	Harmon Equation (min=2.0, max=4.0) Harmon Correction Factor = 0.8
Extraneous Flow Rate	0.33 L/s/ha
Minimum Pipe Size	200mm
Minimum Velocity[1]	0.6 m/s
Maximum Velocity	3.0 m/s
Minimum Pipe Cover	2.0 m (Unless frost protection provided)

[1]A minimum gradient of 0.65% is required for any initial sewer run with less than 10 residential connections.

The sanitary sewer design sheet, enclosed in **Appendix D**, confirms the combined peak sanitary flows from the subject site to the existing 200mm sewer on Ventus Way is 4.07 L/s.

5.0 WATER SUPPLY SYSTEM

5.1 Existing Water Infrastructure

There is an existing 200mm diameter watermain in Venus Way that was constructed and connected to the existing 400mm diameter watermain in Innes Road as a part of Phase 2 and 3 construction works.

5.2 Proposed Water Infrastructure

The Subject Site will be serviced by connecting to the existing 200 mm diameter watermain in Ventus Way. The proposed works will require approximately 396m of 200mm diameter watermain to service Block 85 and approximately 121m of 250mm diameter watermain and 402m of 250mm diameter watermain to service Block 86. For fire fighting purposes six on-site hydrants are being proposed, two on Block 85 and four on Block 86. Refer to the General Plan of Services (Drawings 118224-MD-GP) included in the enclosed drawing set for details of the proposed water supply system.

5.3 Watermain Design Parameters

Boundary conditions were provided by the City of Ottawa, based on the OWDG water demand criteria for the proposed development comprising of 10 back-to-back townhouse blocks. The boundary conditions are included in **Appendix E**.

The domestic demand design parameters, fire fighting demand design scenarios and system pressure criteria design parameters used to determine the size if the watermain required are outlined in **Table 5.1** below.

Table 5.1: Watermain Design Parameters and Criteria

Domestic Demand Design Parameters	Design Parameters
Unit Population: Townhomes	 2.7 people/unit
Average Day Demand (AVDY)	280 L/c/d
Maximum Day Demand (MXDY)	2.5 x Avg Day
Peak Hour Demand (PKHR)	2.2 x Max Day
FUS Fire Flow	**Design Flows**
Back-to-Back Townhomes Blocks 1 (12-units), and 5 (10-units) Blocks 2 (8-units), 3 (8-units), 4 (8-unites), 6 (8-units), 7 (8-units), and 9 (8-units)[1] Block 8, and 10 Block 6 (4 units)[1] Blocks 2 (4-units), 3 (4-units), and 4 (4 Units)[1]	 14,000 L/min 12,000 L/min 12,000 L/min 11,000 L/min 10,000 L/min
System Pressure Criteria Design Parameters	**Criteria**
Maximum Pressure (BSDY) Condition	< 80 psi
Minimum Pressure (PKHR) Condition	> 40 psi
Minimum Pressure (MXDY+FF) Condition	> 20 psi

[1] *Blocks 2, 3, 4, 6, 7, and 9 will have 2-hour fire walls. Refer to Site Plan markup enclosed in* ***Appendix E*** *showing fire wall locations.*

The firefighting water demands for the Subject Site have been estimated per OWDG which refers to the Fire Underwriters Survey (FUS, 1999).

Detailed FUS calculations can be found attached in **Appendix E**.

5.4 System Pressure Modeling and Results

The proposed watermain system pressures for the subject site were estimated using the hydraulic model EPANET. The EPANET model layout is demonstrated in Watermain Layout Plan (118224-WM). The plan depicts the junction and pipe numbers, pipe sizes, and fire flow demand scenarios used in the model.

Domestic Demand

The water demand and pressure summary for the Average Daily demand and Peak Hour Demand conditions has been provided in **Table 5.2** below. For detailed results refer to the tables provided in **Appendix E.**

Table 5.2: Domestic Demands and Pressures

Domestic Demand Condition	Demand	Allowable Pressure	Max/Min Pressure
Average Daily Demand	0.88 L/s	80 psi (Max)	58 psi
Peak Hour Demand	4.77 L/s	40 psi (Min)	51 psi

Fire Flow Demand

Furthermore, an analysis was carried out to determine the available fire flow under maximum day demand while maintaining a residual pressure of 20psi. This was completed using the hydraulic model EPANET.

It is anticipated that a multi-hydrant approach for fire fighting will be required to supply adequate FUS fire flow to the proposed townhouse blocks. Therefore, the fire flows were modeled at multiple hydrants in accordance with the City of Ottawa Technical Bulletin ISTB-2018-02, Table 1 – Maximum flow to be considered at any given hydrant.

Table 5.3 summarizes the demands and pressures under the varies fire flow demand scenarios. For detailed results refer to the tables provided in **Appendix E.**

Table 5.3: Fire Flow + Max Day Demands and Pressures

Fire Flow Demand Condition	Maximum Day Demand	Allowable Pressure	Minimum Pressure
95 L/s at J26, 46 L/s at J5, 46 L/s at J8, 46 L/s at J11	2.17 L/s	20 psi	21 psi
95 L/s at J11, 46 L/s at J8, 46 L/s at J13	2.17 L/s	20 psi	22 psi
95 L/s at J18, 52.5 L/s at J21, 52.5 L/s at J25	2.17 L/s	20 psi	25 psi
95 L/s at J24, 52.5 L/s at J21, 52.5 L/s at J25	2.17 L/s	20 psi	22 psi

The watermain hydraulic analysis demonstrates that the proposed watermain sizing meets the City of Ottawa design criteria.

6.0 EROSION AND SEDIMENT CONTROL AND DEWATERING MEASURES

Temporary 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). Details will be provided on an Erosion and Sediment Control Plan, prepared as part of detailed design. Erosion and sediment control measures may include:

- Placement of filter fabric under all catch basin and maintenance covers
- Silt fence around the area under construction placed as per OPSS 577 / OPSD 219.110
- Mud mat at construction entrances

The erosion and sediment control measures will need to be installed to the satisfaction of the engineer, the City, the Ontario Ministry of Environment, Conservation, and Parks (MECP), and the RVCA, prior to construction and will remain in place during construction until vegetation is established. The erosion and sediment control measure will also be subject to regular inspection to ensure that measures are operational.

Refer to the Erosion and Sediment Control Plan (Drawing 118224-MD-ESC) included in the enclosed drawing set.

7.0 SUMMARY AND CONCLUSIONS

This report demonstrates that the proposed development can be adequately serviced with storm sewers, sanitary sewers and watermain. The report is summarized below:

Stormwater Management

- The Subject Site will be serviced with on-site storm sewers ranging from 300 mm to 450 mm in diameter. The on-site storm sewers will ultimately outlet to the proposed expansion of the EUC Pond 1 SWM facility to the south of the Subject Site, being completed by others.
- Storm servicing for the Subject Site will be provided using a dual drainage system: Runoff from frequent events will be conveyed by storm sewers (minor system), while runoff from larger storm events which exceed the capacity of the minor system will be conveyed overland along defined overland flow routes (major system). The EUC Pond 1 SWM facility is the outlet for both the major and minor systems.
- Peak flows from the Subject Site will be controlled to the allowable release rates as determined by the SWMR Ph1 (JFSA, May 2022).
- Inlet control devices (ICDs) are to be installed in all catchbasins to limit inflows to the minor system during larger storm events.
- Road Right-of-Ways will be used for surface storage (i.e. road sags – saw-toothed grading).

Sanitary Sewer System

- The proposed development will be serviced by an on-site sanitary sewer system connected to the existing 200mm diameter sanitary sewers in Ventus Way.
- There is adequate capacity within the proposed sanitary sewers and the existing sanitary infrastructure downstream of the site to service the proposed development.

Water Supply System

- The proposed development will be serviced by an on-site watermain system connected to the existing 200mm diameter watermain in Ventus Waye Cedar Creek Drive.
- The water supply for fire protection will be provided from the seven on-site fire hydrants and the three existing hydrants in Ventus Way.
- The proposed watermain system will provide adequate water supply and pressures to the proposed development.

Erosion and Sediment Control

- Temporary erosion and sediment control measures will be implemented during construction.

8.0 CLOSURE

This report is respectfully submitted for review and subsequent approval. Please contact the undersigned should you have questions or require additional information.

NOVATECH

Prepared by:

Miroslav Savic, P.Eng.
Senior Project Manager
Land Development

Kallie Auld P.Eng.
Project Engineer
Water Resources

Reviewed By:

Bassam Bahia, M.Eng., P.Eng.
Senior Project Manager
Land Development

Appendix A
Correspondence

File No.: PC2024-0252

July 8, 2024

James Ireland
Novatech
Via email: j.ireland@novatech-eng.com

Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 3610 Innes Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on July 3, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	2 ☒	3 ☐	4 ☐	5 ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. As of June 6, 2024, planning pre-consultations are no longer mandatory as per the Province of Ontario's Bill 185. However, given staff's comments and suggestions on the provided development concept, the applicant is greatly encouraged to proceed with the phased pre-consultation process.

   If the applicant chooses to proceed with further pre-consultation, please complete a Phase 3 Pre-consultation Application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.

2. In your subsequent pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

3. Please note, if your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, it is recommended that you complete the Phase 2 pre-consultation process.

Submission Requirements and Fees

1. Fees related to planning applications can be found here.
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the below comments or issues should be addressed to ensure the effectiveness of the application submission review.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Comments:

2. The site is within the Suburban Transect of the City of Ottawa's Official Plan (2022) and is designated Mainstreet Corridor as per Area-Specific Policy 48 within Volume 2c, and is subject to the Evolving Neighbourhood Overlay. The site is zoned Arterial Mainstreet (AM).
    a. A Planning Rationale is not required for a site plan control application in this area. The applicant should still consider how the proposed development is consistent with the vision, goals, and objectives of the Official Plan, and responses that reference OP policies could strengthen the final submission.
    b. A Zoning Confirmation Report that shows conformity with the City of Ottawa's Zoning By-law (ZBL) is required for Site Plan Control applications.
    c. An Impact Assessment Study – Waste Disposal Site is required since the site is within 3km of an active waste disposal site.
3. A full Landscape Plan is required for all Site Plan Control applications. Opportunities to provide trees on the site must be explored early in the site servicing process.

General Comments on Design:

4. There may be opportunities for greater cohesion between the park spaces on this site and the adjacent site to the west. The applicant should consider moving the park block from Phase/Block 2 to the east of Ventus Way over to the west.

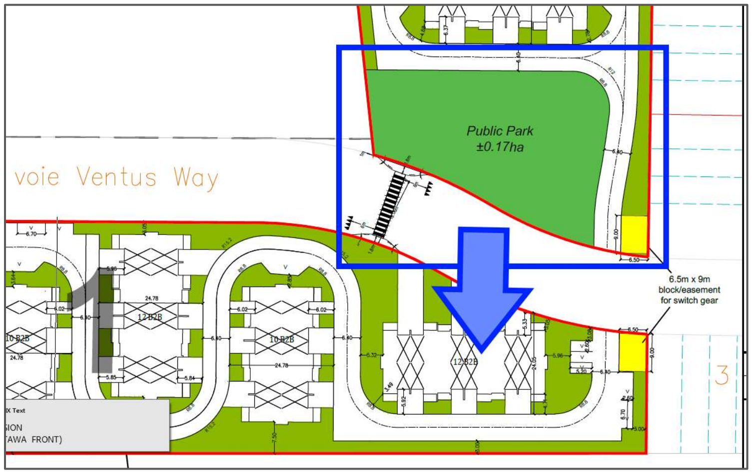


Figure 1: Clipping of the concept plan showing movement of the proposed park block.

5. The concept plan shows visitor parking spaces parallel to the street. The applicant should be aware that under section 102.4 of the Zoning By-law visitor parking is not required in the case of a planned unit development where each dwelling unit has a driveway accessing its own garage or carport. Eliminating the visitor parking spaces may be desirable if it results in more soft landscaping on the site.

   a. If the applicant would like to provide visitor parking over the By-law minimums, the width of the private way should be at least 8.5m and the parking spaces at least 6.7m in length where parallel to the street. Additional parking on the site will require some form of planning justification.

6. The applicant should consider alternate designs of the private road network to decrease hardscaping on the site. There may be opportunities to waive requirements of the Private Approach By-law if there are strong planning justifications for additional connections to Ventus Way. See Figure 2 below for one such example in Stittsville.

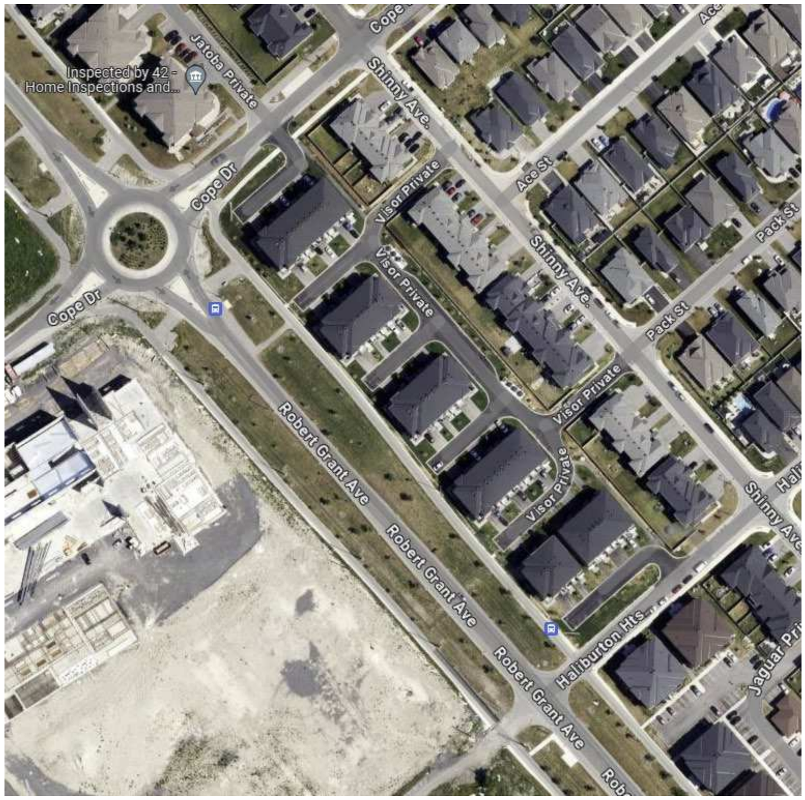


Figure 2: Example of an alternative private way network.

7. The applicant noted that the private road network would be subject to a common elements condominium. Provide a complete list of the easements required to facilitate the development and an accompanying draft reference plan showing all of the Parts subject to easements.

8. The City of Ottawa's 10-Year Housing and Homelessness Plan aims to create 5,700 to 8,500 affordable housing options throughout Ottawa through partnerships with not-for-profit and private housing providers. There may be opportunities for developing affordable units for low- and medium-income households that the developer should consider exploring.

9. The applicant should be aware of the City's Urban Design Guidelines for Greenfield Neighbourhoods as well as the City's study on Building Better and Smarter Suburbs.

Please contact Jerrica Gilbert, Planner II, for follow-up questions related to planning policy.

Urban Design

Comments:

10. Submission Requirements:

a. An Urban Design Brief is required. Please see attached customized Terms of Reference to guide the preparation of the submission.

    i. The Urban Design Brief should be structured by generally following the headings highlighted under **Section 3 – Contents of these Terms of Reference.**

b. Additional drawings and studies are required as shown on the SPIL. Please follow the terms of reference (Planning application submission information and materials | City of Ottawa) to prepare these drawings and studies. These include (ie. The UDRP drawings):

    i. Landscape Plan.

11. Comments on Preliminary Design:

a. The proposed internal road network appears to be very inefficient.

b. Staff recommend the applicant consider moving the park location to connect with a potential park block to the west.

c. Staff recommend relocating the southern access road of Block 2 to be a shorter leg to the north, adjacent to the industrial lands as opposed to its current location.

d. Staff have concerns over the sensitive relationship between private roads and rear yard private amenity spaces. It is recommended that additional protections like privacy fencing along all rear yard private amenity space adjacencies (south and west property lines).

e. A robust tree planting approach should be undertaken with a minimization of hard surfacing.

Please contact Christopher Moise, Planner II, for follow-up questions related to urban design.

Engineering

Comments:

12. The Stormwater Management Criteria, for the subject site, is to be based on the following:

    a. Application of the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.

b. For separated sewer systems built up until 2016, the design of the storm sewers were based on a 5-year storm; storm systems after such time are, generally, based on a 2-year level-of-service. Refer to The Commons subdivision for the alocated capacity for each block.

c. In separated areas, the pre-development runoff shall be the lower of the existing coefficient or a maximum equivalent ‘C’ of 0.5, whichever is less (§ 8.3.7.3).

d. For a combined sewer system, the maximum C = 0.4 or the pre-development C value, whichever is less. In the absence of other information, the allowable release rate shall be based on a 2-year storm event.

e. A calculated time of concentration (cannot be less than 10 minutes).

f. Flows to the storm sewer in excess of the 2-year storm release rate, up to and including the 100-year storm event, must be detained on site.

g. Storm sewer outlets should not be submerged.

h. Quality control criteria.

13. Deep Services (Storm, Sanitary and/or Water Supply)

a. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

b. Connections to trunk sewers and easement sewers are typically not permitted.

c. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. not in a parking area).

d. Review provision of a high-level sewer.

e. Sewer connections to be made above the springline of the sewermain as per:

i. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.

ii. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain.

iii. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain.

iv. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

14. An MECP Environmental Compliance Approval may be required for the proposed development. A Ministry contact has been provided below, but please work with City staff on the need (or not) of an application.

    a. Patrick Lalonde at (613) 521-3450 or Patrick.Lalonde@ontario.ca

15. Water

    a. For the units fronting Ventus Way, the City would like the amount of servicing to be greatly reduced and/or be services from within the property.

    b. Take effort to reduce the amount of required water meters, if possible.

    c. A Water Data Card will be a future requirement.

    d. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

        i. Location of service.

        ii. Type of development.

        iii. The amount of fire flow required (per OBC or FUS).

        iv. Average daily demand: ___ l/s.

        v. Maximum daily demand: ___l/s.

        vi. Maximum hourly daily demand: ___ l/s.

16. Sewer (sanitary and storm)

    a. Refer to The Commons subdivision for the alocated capacity for each block.

17. Stormwater

    b. The Commons subdivision for the allocated capacity for each block.

Please contact Derek Unrau, Project Manager, for follow-up questions related to Engineering.

Noise

Comments:

18. A road noise study is required.

Please contact Mike Giampa, Transportation Project Manager, for follow-up questions related to noise studies.

Transportation

Comments:

19. Ensure that the largest design vehicle can access/egress and navigate the site.

20. Right-of-way protection.

    a. See Schedule C16 of the Official Plan.

    b. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

21. A full Transportation Impact Assessment is not required. A TIA addendum to the previously approved subdivision TIA is sufficient. The signalized Innes/Ventus intersection should be reviewed for any possible queuing which may impact the private approach.

22. As these are private roads, a geometric road design drawing is not required. But if a PXO is proposed, the previously submitted GRDD (subdivision) must be updated. Or the applicant can submit a Road Modification Approval package.

Please contact Mike Giampa, Transportation Project Manager, for follow-up questions related to transportation.

Environment

Comments:

23. There are no natural heritage features or surface water features present that would trigger the need for an Environmental Impact Statement (EIS). Species-at-risk Butternut may be present on site, but that matter will be resolved through a Tree Conservation Report (see below). An EIS is not required as part of this application.

24. A Tree Conservation Report is required for this application. Of particular importance is identifying any Butternut on the property as well as noting the Critical Root Zone (CRZ) of any trees that may be on a neighbouring property. Development must be kept out of the CRZ of neighbouring trees unless the landowner has given permission.

25. The applicant is encouraged to review the City's Bird Safe Design Guidelines and implement mitigation measures from that document where relevant. Note that the guidelines are not required for low-rise residential but are highly recommended.

26. Additional tree plantings to help meet the City's forest canopy goals, as well as reducing the impacts of climate change and the urban heat island effect are recommended. The current streetscape layout may not be the most efficient use of space, leading to more impermeable surface than is necessary. Consider alternative routing for the access road that may open up the possibility of more greenspace for tree planting.

    a. Please note that the City prefers that all tree plantings be of native and non-invasive species.

Please contact Mark Elliott, Environmental Planner, for follow-up questions.

Forestry

Comments:

27. The applicant believes all trees have been removed from the site. If there are any trees 10 cm or greater on the subject site or adjacent property (with the CRZ extending onto the development site), a Tree Conservation Report (TCR) would be required. A Landscape Plan (LP) is also a submission requirement. If a TCR is triggered, it can be combined with the LP.

28. Section 4.8.2 of the Official Plan has strong direction on incorporating trees into development sites. Adequate soil volume and space for trees must be provided. Planning Forestry is concerned about the limited space available interior of the site to accommodate trees. Plan the location of driveways, services, fire hydrants, transformers, swales and other infrastructure to maximize space for trees.

29. The geotechnical investigation associated with the Plan of Subdivision identified sensitive marine clay soil in some areas. This information must be examined early on as it will heavily influence the site design as trees are incorporated on site. Identify on the LP where there are geotechnical restrictions on the site. The LP must be prepared in conjunction with the Geotechnical Report. The Landscape Plan shall include a note indicating that it has been developed as per the Geotechnical Report (date, author).

30. The Delegated Authority Report for the Plan of Subdivision (D07-16-19-0027) includes three landscape plan conditions. Review and account for these conditions in this site plan application. For single and semi-detached units, 1 tree per lot and 2 trees per corner lot are planting requirements. For stacked townhouses, 1 tree per lot may not be feasible, tree planting must be incorporated in the front yards to align with this condition.

31. The following Tree Conservation Report (TCR) requirements have been adapted from the Schedule E of the Urban Tree Protection Guidelines. For more information on these requirements, please contact hayley.murray@ottawa.ca.

    a) A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City

    b) Any tree 10cm in diameter or greater and City-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340). The permit will be based on an approved TCR and made available at or near plan approval.

    c) The TCR must contain 2 separate plans/maps:

        i. Plan/Map 1 - show existing conditions with tree cover information.

        ii. Plan/Map 2 - show proposed development with tree cover information.

    d) The TCR must list all trees on site, as well as off-site trees if the CRZ (critical root zone) extends into the developed area, by species, diameter, and health condition. Please note that averages can be used if there are forested areas.

    e) Please identify trees by ownership – private on-site, private on adjoining site, city owned, co-owned (trees on a property line).

    f) If trees are to be removed, the TCR must clearly show where the trees are and document the reason they cannot be retained.

    g) The removal of trees on a property line will require the permission of both property owners.

    h) All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca.

    i) The City encourages the retention of healthy trees. If possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.

j) Removal of a City tree is not permitted unless justified. If justified, monetary compensation for the value of the tree must be paid before a tree removal permit is issued.

32. The Landscape Plan (LP) Terms of Reference must be adhered to for all tree planting.

33. The following items are additional elements for tree planting in the Right of Way (ROW):

a) Please ensure any retained trees are shown on the Landscape Plan.

b) Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.

c) Please demonstrate, as per the Landscape Plan Terms of Reference, that the available soil volumes for new plantings will meet or exceed the minimum soil volumes requested.

d) The City requests that consideration be given to planting native species wherever there is a high probability of survival to maturity.

e) Efforts shall be made to provide as much future canopy cover as possible at a site level through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years

f) Minimum Setbacks

i. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.

ii. Maintain 2.5m from the curb.

iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.

iv. Maintain 7.5m between large growing trees and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.

v. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

g) Tree Specifications

i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.

iii. Tree planting on City property shall be in accordance with the City of Ottawa's Tree Planting Specification and shall, if possible, include watering and warranty as described in the specification.

iv. No root barriers, dead-man anchor systems, or planters are permitted.

v. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree).

h) Hard surface planting

i. If there are hard surface plantings, a planting detail must be provided.

ii. Curb style planters are highly recommended.

iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

iv. Trees are to be planted at grade.

Please contact Hayley Murray, Planning Forester, for follow-up questions related to trees.

Parkland

Comments:

34. Cash-in-lieu of parkland / parkland dedication

    a. Parkland Dedication By-law No. 2022-280

    b. Parkland dedication is requested in the form of land.

35. The applicant is strongly encouraged to coordinate the park location with the adjacent landowner to the west (Caivan) to form one larger park.

36. A park location on the west side of the street will facilitate connectivity (by way of park or pathway connection) to the adjacent neighborhood.

37. The park is to be located away from the adjacent industrial use.

38. Land required for the switch gear cannot be counted towards parkland dedication.

39. Pending traffic approval, a PXO crossing to the park is strongly encouraged, regardless of the location of the park.

40. A Facility Fit plan will be required for the park design. Amenities may differ depending on final park layout the status of the adjacent property. Kindly connect with the Parks Planner when this plan is being prepared.

41. A Record of Site Condition is required for the park block.

Please contact Jessica Button, Parks Planner, for follow-up questions related to parks.

Other

42. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

    a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. Please be advised that this is expected to occur in Q3 2024.

    b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
Jerrica Gilbert, Planner II

Encl. Supplementary Development Information, List of Technical Agencies, City of Ottawa Accessible Design Standards Site Plan Checklist, High Performance Development Standard Pre-application Consultation Handout & Example Checklist, Urban Design Brief Terms of Reference, Study and Plans Identification List (emailed as separate PDF)

c.c.
Kelly Livingstone, Planner III
Steve Belan, Planner II
Mike Giampa, TPM
Derek Unrau, IPM
Alex Polyak, IPM
Kris Haynes, IPM
Christopher Moise, Planner II
Mark Elliott, Planner II
Hayley Murray, Planning Forester
Jessica Button, Planner II
Melissa Pettern, Glenview Homes
Sam Bahia, Novatech
Greg Winters, Novatech
Jillian Normand, Glenview Homes
Jennifer Luong, Novatech
Bradley Reed, Novatech

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Proposed Site Plan Control Application – 3610 Innes Road – PC2024-0252

Legend: **R** = Required, the study or plan is required with application submission
A = Advised, the study or plan is advised to evaluate the application or satisfy a condition of approval/draft approval
1 - OPA, **2** - ZBA, **3** - Plan of Subdivision, **4** - Plan of Condominium, **5** - SPC

Core studies required for certain applications all the time (Remaining studies are site specific)

For information and guidance on preparing required studies and plans refer here:

ENGINEERING

R	A	Study/ Plan Name	Description	When Required 1	2	3	4	5	Applicable Study Components & Other Comments
☒	☐	1. Environmental Site Assessment (Phase 1 & Phase 2)	Ensures development only takes place on sites where the environmental conditions are suitable for the proposed use	☒	☒	☒	☒	☒	Record of Site Condition Yes ☒ No ☐
				Study Trigger Details: All cases					
☒	☐	2. Geotechnical Study	Geotechnical design requirements for the subsurface conditions	☒	☒	☒	☒	☒	
				Study Trigger Details: All cases					
☒	☐	3. Grading and Drainage Plan	Grading relationships between connecting (or abutting) properties and surface runoff control	☐	☐	☒	☐	☒	
				Study Trigger Details: All cases					
☐	☐	4. Hydrogeological and Terrain Analysis	A scientific study or evaluation that includes a description of the ground and surface hydrology, geology, terrain, affected landform and its susceptibility	☐	☐	☒	☒	☒	Reasonable Use Study Yes ☐ No ☐ Groundwater Impact Study Yes ☐ No ☐
				Study Trigger Details: When developing on private services or when urban development is in close proximity to existing private serviced development					
☒	☐	5. Noise Control Study	Potential impacts of noise on a development	☒	☒	☒	☒	☒	Vibration Study Yes ☐ No ☒
				Study Trigger Details: See Terms of Reference for full details.					

☐	☐	6. Rail Proximity Study	Development on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan, to follow rail safety and risk mitigation best practices	☐	☒	☒	☒	☒	Rail Safety Report Yes ☐ No ☐ O-Train Network Proximity Study Yes ☐ No ☐
				Study Trigger Details: Within the Development Zone of Influence for existing and future rapid transit stations and corridors, as shown on Annex 2 of the OP OR on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan					
☒	☐	7. Site Servicing Study	Provides servicing details based on proposed scale of development with an engineering overview taking into consideration surrounding developments and connections.	☐	☒	☒	☒	☒	Fluvial Geomorphological Report Yes ☐ No ☐ Assessment of Adequacy of Public Services Yes ☒ No ☐ Servicing Options Report Yes ☒ No ☐ Erosion and Sediment Control Plan / Brief Yes ☒ No ☐ Hydraulic Water Main Analysis Yes ☒ No ☐ Stormwater Management Report and Detailed Design Brief Yes ☒ No ☐
				Study Trigger Details: All cases					
☐	☐	8. Slope Stability Study	Assessment of slope stability and measures to provide safe set-back.	☐	☒	☒	☒	☒	Retrogressive Landslide Analysis Yes ☐ No ☐
				Study Trigger Details: Where the potential for Hazard Lands exists on a site.					
☒	☐	9. Transportation Impact Assessment	Identify on and off-site measures to align a development with City transportation objectives.	☐	☒	☒	☒	☒	Roadway Modification Functional Design (only if pedestrian crossing contemplated) Yes ☒ No ☐
				Study Trigger Details: If the development generates 60 person-trips or more; or if the development is located in a Location Trigger; or if the development has a Safety Trigger.					

☐	☐	10. Water Budget Assessment	Identify impact of land use changes on the hydrologic cycle and post-development mitigation targets.	☐	☒	☒	☒	☒	
				Study Trigger Details: May be required for site plan control applications for sites with private servicing and / or proximity to hydrogeologically-sensitive areas. Draft plans of subdivision are required to integrate water budget assessments into supporting stormwater management plans and analysis for the study area.					
☐	☐	11. Wellhead Protection Study	Delineate a Wellhead Protection Area (WHPA) and characterize vulnerability for new communal residential drinking water well systems, in accordance with Technical Rules under *Clean Water Act.*	☐	☒	☒	☒	☒	
				Study Trigger Details: Required for all new communal residential drinking water well systems; including new municipal wells, new private communal wells (small water works) that require a Municipal Responsibility Agreement (MRA), expansions or increased water takings from an existing municipal well or existing private communal well and new private communal wells.					

<table>
<tr><th colspan="10">PLANNING</th></tr>
<tr><th rowspan="2">R</th><th rowspan="2">A</th><th rowspan="2">Study/Plan Name</th><th rowspan="2">Description</th><th colspan="5">When Required</th><th rowspan="2">Applicable Study Components & Other Comments</th></tr>
<tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td rowspan="2">☐</td><td rowspan="2">☐</td><td rowspan="2">12. Agrology and Soil Capability Study</td><td rowspan="2">Confirm or recommend alterations to mapping of agricultural lands in the City.</td><td>☒</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
For the expansion of a settlement area or identification of a new settlement area through a comprehensive review; or where it is demonstrated that the land does not meet the requirements for an Agricultural Resource Area.</td></tr>
<tr><td rowspan="2">☐</td><td rowspan="2">☐</td><td rowspan="2">13. Archaeological Assessment</td><td rowspan="2">Discover any archaeological resources on site, evaluate cultural heritage value and conservation strategies</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
When the land has either: a known archaeological site; or the potential to have archaeological sites; or where the City's Archaeological Resource Potential Mapping Study indicates archaeological potential, outside of the historic core; or upon discovery of any archaeological resource during construction in the City's historic core area.</td></tr>
<tr><td rowspan="2">☒</td><td rowspan="2">☐</td><td rowspan="2">14. Building Elevations</td><td rowspan="2">Visual of proposed development to understand facing of building including direction of sunlight, height, doors, and windows.</td><td>☒</td><td>☒</td><td>☐</td><td>☐</td><td>☒</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
Site Plan: for residential buildings with 25 or more residential units; or for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area.

Official Plan or Zoning By-law: if staff deem it necessary to determine compliance with OP policies, the Zoning By-law or City of Ottawa Urban Design Guidelines.</td></tr>
</table>

☐	☐	15. Heritage Impact Assessment	Determine impacts of proposed development on cultural heritage resources.	☒	☒	☒	☒	☒	Conservation Plan Yes ☐ No ☐
				Study Trigger Details: Where development or an application under the Ontario Heritage Act is proposed on, adjacent to, across the street from or within 30 metres of a protected heritage property; or for any development adjacent to the Rideau Canal UNESCO World Heritage Site and its landscaped buffer.					
☐	☐	16. Heritage Act Acknowledgement Report	A submission requirement to demonstrate that the *Ontario Heritage Act* requirements have been satisfied, to ensure that multiple applications are considered currently.	☐	☒	☒	☒	☒	Heritage Permit Application Yes ☐ No ☐ Notice of Intent to Demolish Yes ☐ No ☐
				Study Trigger Details: Where the subject property is listed on the Heritage Register and the applicant must submit a Heritage Permit Application (designated heritage property listed on the Heritage Register) or provide notice of intent to demolish or remove a building (non-designated property listed on the Heritage Register).					
☐	☐	17. Impact Assessment Study – Mineral Aggregate	Mineral aggregate extraction activities; and to protect known high quality mineral aggregate resources from development and activities that would preclude or hinder their existence (ability to be extracted) or expansion.	☒	☒	☒	☒	☒	
				Study Trigger Details: New Development within 500 metres of lands within the Bedrock Overlay , or within 300 metres of lands within the Sand and Gravel Resource Area Overlay.					
☐	☐	18. Impact Assessment Study – Mining Hazards	To identify or confirm known mineral deposits or petroleum resources and significant areas of mineral potential. To protect mineral and petroleum resources from development and activities which would preclude or hinder the establishment of new operations or access to the resources.	☒	☒	☒	☒	☒	
				Study Trigger Details: For all applications in proximity to mining operations.					

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<tr><td rowspan="2">☒</td><td rowspan="2">☐</td><td rowspan="2">19. Impact Assessment Study – Waste Disposal Sites / Former Landfill Sites</td><td rowspan="2">To identify or confirm known proximity of existing or former waste disposal sites.

To ensure issues of public health, public safety and environmental impact are addressed.</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
For the establishment of any new Solid Waste Disposal Site or for a footprint expansion of an operating Solid Waste Disposal Site; or development within three kilometers of an operating or non-operating Waste Disposal Site.</td></tr>
<tr><td rowspan="2">☒</td><td rowspan="2">☐</td><td rowspan="2">20. Landscape Plan</td><td rowspan="2">A plan to demonstrate how the canopy cover, urban design, health, and climate change objectives of Official Plan will be met through tree planting and other site design elements.</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
Site Plan, Plan of Subdivision, and Plan of Condominium: always required, except where it is demonstrated that the landscape component of a project is not relevant to the review of the application.

A high-level conceptual Landscape Plan may be required to support Zoning By-law and Official Plan Amendment applications.</td></tr>
<tr><td rowspan="2">☐</td><td rowspan="2">☐</td><td rowspan="2">21. Mature Neighbourhood Streetscape Character Analysis</td><td rowspan="2">In the Mature Neighbourhoods a Streetscape Character Analysis is required to determine the applicable zoning requirements.</td><td>☐</td><td>☒</td><td>☐</td><td>☐</td><td>☐</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
Zoning By-law amendment application in areas covered by the Mature Neighbourhoods zoning overlay for applications of residential development of four storeys or less located in a R1, R2, R3, or R4 zone.</td></tr>
<tr><td rowspan="2">☐</td><td rowspan="2">☐</td><td rowspan="2">22. Minimum Distance Separation</td><td rowspan="2">Provincial land use planning tool that determines setback distances between livestock barns, manure storages or anaerobic digesters and surrounding land uses, with the objective of minimizing land use conflicts and nuisance complaints related to odour.</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td><td rowspan="2"></td></tr>
<tr><td colspan="5"><u>Study Trigger Details</u>:
Applications in the Rural Area, outside of a village.</td></tr>
</table>

☐	☐	23. Parking Plan	A tool to assess the sufficiency of on-street parking in plans of subdivision.	☐	☐	☒	☒	☐	
				<u>Study Trigger Details</u>: For new or revised plans of subdivision with public streets.					
☒	☐	24. Plan of Survey	A Plan of Survey depicts legal boundaries and is a specialized map of a parcel of land and it delineates boundary locations, building locations, physical features and other items of spatial importance.	☒	☒	☒	☒	☒	
				<u>Study Trigger Details</u>: Required for all *Planning Act* applications.					
☐	☐	25. Plan of Subdivision	Proposed subdivision layout to be used for application approval	☐	☒	☒	☐	☐	
				<u>Study Trigger Details</u>: Always required with the submission of plan of subdivision application. Only required with a Zoning By-law Amendment application, where such ZBLA is in response to enable a subdivision.					
☐	☐	26. Plan of Condominium	Proposed condominium layout to be used for application approval	☐	☐	☐	☒	☐	
				<u>Study Trigger Details</u>: With the submission of plan of condominium application.					
☐	☒	27. Planning Rationale	Provides the planning justification in support of the *Planning Act* application and to assist staff and the public in the review of the proposal.	☒	☒	☒	☐	☐	Integrated Environmental Review Summary Yes ☐ No ☐
				<u>Study Trigger Details</u>: For all Official Plan amendment, Zoning By-law amendment, or plan of subdivision applications.					
☒	☐	28. Preliminary Construction Management Plan	A checklist that shows a development proposal's anticipated impacts to all modes of transportation and all elements in the right of way during construction.	☐	☐	☒	☐	☒	
				<u>Study Trigger Details</u>: For all Site Plan and plan of subdivision applications.					

☐	☐	29. Public Consultation Strategy	Proposal to reach and collect public input as part of development application.	☒	☒	☒	☒	☒	
				Study Trigger Details: Official Plan Amendment, Zoning By-law Amendment and Subdivision: Always required. Condominium: Vacant Land only Site Plan: At the discretion of the City's file lead in consultation with the Business and Technical Support Services Manager.					
☐	☐	30. Shadow Analysis	A visual model of how the proposed development will cast its shadow.	☐	☒	☐	☐	☐	
				Study Trigger Details: When there is an increase in height or massing proposed for a residential, commercial or office use. Two triggers: 1. Inside the Greenbelt: proposed development is over 5 storeys in height (≤15 meters). If a development proposal is 5 storeys or less, but is proposing an increase in height and/or massing and is in close proximity to a shadow sensitive area, a shadow analysis may be requested. 2. Outside the Greenbelt: proposed development is over 3 storeys in height (≤9 meters) and is in close proximity to a shadow sensitive area. Where a proposed development is not in close proximity to a shadow sensitive area (e.g. industrial development) the trigger for a shadow analysis is over 5 storeys in height (≤15 meters).					
☒	☐	31. Site Plan	A Site Plan is a visual drawing that illustrates the proposed development of a site in two dimensions.	☒	☒	☒	☒	☒	Site Plan Yes ☒ No ☐ Concept Plan Yes ☐ No ☒
				Study Trigger Details: Site Plan: All Other applications: where a layout of the					

				public realm, building massing, heights, densities or massing of the proposal provides changes to the planned context; sites proposing multiple land uses; sites with multiple landowners; sites with two or more buildings, on-site park dedication, and/or a new public or private street(s); sites with proposed changes to connectivity (such as active transportation networks, vehicular circulation or access to transit); sites where the development potential on adjacent properties may be impacted by or could be integrated into the proposed site.	Facility Fit Plan Yes ☒ No ☐
☒	☐	32. Urban Design Brief	Illustrate how a development proposal represents high-quality and context sensitive design that implements policies of the Official Plan, relevant secondary plans, and Council approved plans and guidelines.	☒ ☒ ☒ ☐ ☒ Study Trigger Details: For all Official Plan amendment, Zoning By-law amendment, and plan of subdivision applications. For SPC applications: proposals for residential buildings with 25 or more residential units, or for proposals for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area where OP Policy 11.3 (3) is relevant; for non-residential and mixed-use proposals.	
☐	☐	33. Urban Design Review Panel Report	Demonstrates that a development proposal has attended an Urban Design Review Panel formal review meeting, received, and responded to the associated recommendations, if applicable	☒ ☒ ☒ ☒ ☒ Study Trigger Details: Required for all planning act applications subject to UDRP review, in accordance with the UDRP Panel Terms of Reference.	
☐	☐	34. Wind Analysis	A visual model and a written evaluation of how a proposed development will impact pedestrian-level wind conditions.	☐ ☒ ☐ ☐ ☒ Study Trigger Details: Applications seeking an increase in height and/or massing which is either: a tall building(s), 10 storeys or more or a proposed building that is more than twice the height of	

				adjacent existing buildings and is greater than five storeys in height and is adjacent to existing or planned low rise development, open spaces, water bodies and large public amenity areas.					
☒	☐	35. Zoning Confirmation Report	The purpose of the Zoning Confirmation Report (ZCR) is to identify all zoning compliance issues, if any, at the outset of a planning application.	☐	☒	☐	☐	☒	
				Study Trigger Details: Required for all SPC and ZBLA applications.					

ENVIRONMENTAL

R	A	Study / Plan Name	Description	When Required					Applicable Study Components & Other Comments
				1	2	3	4	5	
☐	☒	36. Community Energy Plan	Includes a community energy analysis, alongside mitigation measures, and other associated information. The community energy analysis refers to the overall assessment process to identify on and off-site measures to align the design of the development with City climate objectives.	☐	☐	☐	☐	☐	
				NOT IMPLEMENTED & NOT REQUIRED					
☐	☒	37. Energy Modelling Report	The Energy Modeling Report is a Site Plan Control application submission requirement to show how climate change mitigation, and energy objectives will be met through exterior building design elements.	☐	☐	☐	☐	☐	
				NOT IMPLEMENTED & NOT REQUIRED					
☐	☐	38. Environmental Impact Study	Assessment of environmental impacts of a project and documents the existing natural features, identifies the potential environmental impacts,	☒	☒	☒	☐	☒	Assessment of Landform Features Yes ☐ No ☐ Integrated Environmental Review Yes ☐ No ☐
				Study Trigger Details: Is required when development or site alteration is proposed in or within a					

			recommends ways to avoid and reduce the negative impacts, and proposes ways to enhance natural features and functions.	specified distance of environmentally designated lands, natural heritage features, the City's Natural Heritage System, or hazardous forest types for wildland fire. The EIS Decision Tool (Appendix 2 of the Environmental Impact Study Guidelines) provides a checklist of the natural heritage features and adjacent areas within which an EIS is required to support development applications under the *Planning Act.*	Protocol for Wildlife Protection during Construction Yes ☐ No ☐ Significant Woodlands Guidelines for Identification, Evaluation, and Impact Assessment Yes ☐ No ☐
☐	☐	39. Environmental Management Plan	A comprehensive environmental planning document that identifies, evaluates, and mitigates the potential impacts of proposed development on the natural environment and its ecological functions at local planning stage.	☒ ☐ ☐ ☐ ☐ <u>Study Trigger Details</u>: Official Plan amendments for local plans (area-specific policy or secondary plan, where: there is significant change in the conditions upon which the original study was based; there are proposed changes to planned infrastructure needed to service a subdivision that would have a significant impact on the infrastructure needs of another subdivision within the EMP study area, or the applicable Class Environmental Assessment approval has expired.	
☐	☒	40. High-performance Development Standard	A collection of voluntary and required standards that raise performance of new building projects to achieve sustainable and resilient design	☐ ☐ ☐ ☐ ☐ NOT IMPLEMENTED & NOT REQUIRED	
☒	☐	41. Tree Conservation Report	Demonstrates how tree cover will be retained and protected on the site, including mature trees, stands of trees, and hedgerows.	☐ ☐ ☒ ☒ ☒ <u>Study Trigger Details</u>: Where there is a tree of 10 centimeters in diameter or greater on the site and/or if there is a tree on an adjacent site that has a Critical Root Zone (CRZ) extending onto the development site.	Can be waived if proof is provided that all existing trees on site and adjacent sites, with CRZ extending into the development site, are no longer alive.

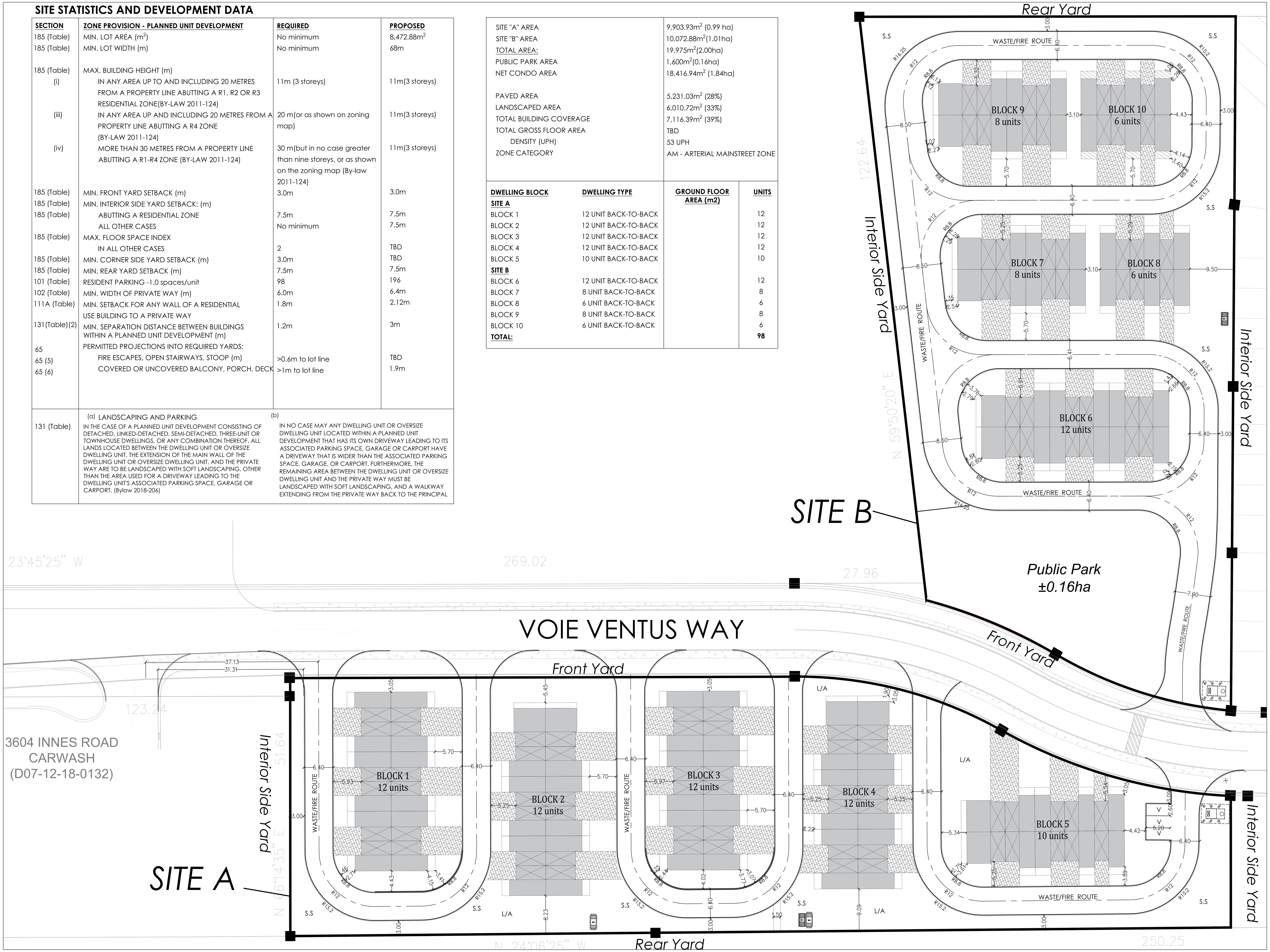
Appendix B
Site Plan

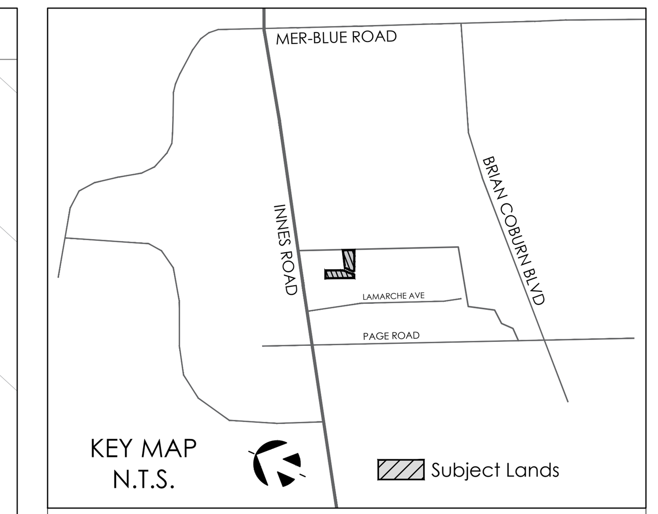
SITE STATISTICS AND DEVELOPMENT DATA

SECTION	ZONE PROVISION - PLANNED UNIT DEVELOPMENT	REQUIRED	PROPOSED
185 (Table)	MIN. LOT AREA (m^2)	No minimum	8,472.88m^2
185 (Table)	MIN. LOT WIDTH (m)	No minimum	68m
185 (Table)	MAX. BUILDING HEIGHT (m)		
(i)	IN ANY AREA UP TO AND INCLUDING 20 METRES FROM A PROPERTY LINE ABUTTING A R1, R2 OR R3 RESIDENTIAL ZONE(BY-LAW 2011-124)	11m (3 storeys)	11m(3 storeys)
(iii)	IN ANY AREA UP AND INCLUDING 20 METRES FROM A PROPERTY LINE ABUTTING A R4 ZONE (BY-LAW 2011-124)	20 m(or as shown on zoning map)	11m(3 storeys)
(iv)	MORE THAN 30 METRES FROM A PROPERTY LINE ABUTTING A R1-R4 ZONE (BY-LAW 2011-124)	30 m(but in no case greater than nine storeys, or as shown on the zoning map (By-law 2011-124)	11m(3 storeys)
185 (Table)	MIN. FRONT YARD SETBACK (m)	3.0m	3.0m
185 (Table)	MIN. INTERIOR SIDE YARD SETBACK: (m)		
185 (Table)	ABUTTING A RESIDENTIAL ZONE	7.5m	7.5m
	ALL OTHER CASES	No minimum	7.5m
185 (Table)	MAX. FLOOR SPACE INDEX		
	IN ALL OTHER CASES	2	TBD
185 (Table)	MIN. CORNER SIDE YARD SETBACK (m)	3.0m	TBD
185 (Table)	MIN. REAR YARD SETBACK (m)	7.5m	7.5m
101 (Table)	RESIDENT PARKING -1.0 spaces/unit	98	196
102 (Table)	MIN. WIDTH OF PRIVATE WAY (m)	6.0m	6.4m
111A (Table)	MIN. SETBACK FOR ANY WALL OF A RESIDENTIAL USE BUILDING TO A PRIVATE WAY	1.8m	2.12m
131(Table)(2)	MIN. SEPARATION DISTANCE BETWEEN BUILDINGS WITHIN A PLANNED UNIT DEVELOPMENT (m)	1.2m	3m
65	PERMITTED PROJECTIONS INTO REQUIRED YARDS:		
65 (5)	FIRE ESCAPES, OPEN STAIRWAYS, STOOP (m)	>0.6m to lot line	TBD
65 (6)	COVERED OR UNCOVERED BALCONY, PORCH, DECK	>1m to lot line	1.9m
131 (Table)	(a) LANDSCAPING AND PARKING IN THE CASE OF A PLANNED UNIT DEVELOPMENT CONSISTING OF DETACHED, LINKED-DETACHED, SEMI-DETACHED, THREE-UNIT OR TOWNHOUSE DWELLINGS, OR ANY COMBINATION THEREOF, ALL LANDS LOCATED BETWEEN THE DWELLING UNIT OR OVERSIZE DWELLING UNIT, THE EXTENSION OF THE MAIN WALL OF THE DWELLING UNIT OR OVERSIZE DWELLING UNIT, AND THE PRIVATE WAY ARE TO BE LANDSCAPED WITH SOFT LANDSCAPING, OTHER THAN THE AREA USED FOR A DRIVEWAY LEADING TO THE DWELLING UNIT'S ASSOCIATED PARKING SPACE, GARAGE OR CARPORT. (Bylaw 2018-206)	(b) IN NO CASE MAY ANY DWELLING UNIT OR OVERSIZE DWELLING UNIT LOCATED WITHIN A PLANNED UNIT DEVELOPMENT THAT HAS ITS OWN DRIVEWAY LEADING TO ITS ASSOCIATED PARKING SPACE, GARAGE OR CARPORT HAVE A DRIVEWAY THAT IS WIDER THAN THE ASSOCIATED PARKING SPACE, GARAGE, OR CARPORT. FURTHERMORE, THE REMAINING AREA BETWEEN THE DWELLING UNIT OR OVERSIZE DWELLING UNIT AND THE PRIVATE WAY MUST BE LANDSCAPED WITH SOFT LANDSCAPING, AND A WALKWAY EXTENDING FROM THE PRIVATE WAY BACK TO THE PRINCIPAL	

SITE "A" AREA	9,903.93m^2 (0.99 ha)
SITE "B" AREA	10,072.88m^2(1.01ha)
TOTAL AREA:	19,975m^2(2.00ha)
PUBLIC PARK AREA	1,600m^2(0.16ha)
NET CONDO AREA	18,416.94m^2 (1.84ha)
PAVED AREA	5,231.03m^2 (28%)
LANDSCAPED AREA	6,010.72m^2 (33%)
TOTAL BUILDING COVERAGE	7,116.39m^2 (39%)
TOTAL GROSS FLOOR AREA	TBD
DENSITY (UPH)	53 UPH
ZONE CATEGORY	AM - ARTERIAL MAINSTREET ZONE

DWELLING BLOCK	DWELLING TYPE	GROUND FLOOR AREA (m2)	UNITS
SITE A			
BLOCK 1	12 UNIT BACK-TO-BACK		12
BLOCK 2	12 UNIT BACK-TO-BACK		12
BLOCK 3	12 UNIT BACK-TO-BACK		12
BLOCK 4	12 UNIT BACK-TO-BACK		12
BLOCK 5	10 UNIT BACK-TO-BACK		10
SITE B			
BLOCK 6	12 UNIT BACK-TO-BACK		12
BLOCK 7	8 UNIT BACK-TO-BACK		8
BLOCK 8	6 UNIT BACK-TO-BACK		6
BLOCK 9	8 UNIT BACK-TO-BACK		8
BLOCK 10	6 UNIT BACK-TO-BACK		6
TOTAL:			98





SCALE 1:300

LEGEND

- BACK TO BACK TOWNHOUSE DWELLING
- DRIVEWAY
- PATHWAY
- CROSSWALK
- CURB (0.2m)
- DEPRESSED CURB
- PORCH
- S.S SNOW STORAGE AREA
- L/A LANDSCAPED AREA
- PROPOSED LOT BOUNDARY
- BLOCK BOUNDARY
- V VISITOR PARKING
- SWITCHBOARD
- MINI SUB
- SWITCHGEAR

DATE [D.M.Y]	REVISION	BY
12/09/24	Revision 1	JH
12/08/24	Draft for review	WS

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3. WALKWAYS AND CURBS TO BE TIED INTO PUBLIC ROW WHERE APPLICABLE.
4. REFERENCES CITY OF OTTAWA T.W.S.I. DETAIL SC7.3

PROJECT TEAM

SITE PLAN DESIGN: KORSIAK Urban Planning
LANDSCAPE ARCHITECTURE: NAK design strategies
MECHANICAL/ ELECTRICAL: LRJ Engineering | Ingénierie
PLANNING: NOVATECH Engineers, Planners & Landscape Architects
TRANSPORTATION: NOVATECH Engineers, Planners & Landscape Architects
ARCHITECTURE: Glenview homes
GEOTECHNICAL & STRUCTURAL: patersongroup consulting engineers
CIVIL ENGINEER: NOVATECH Engineers, Planners & Landscape Architects

Glenview homes

GLENVIEW
THE COMMONS SITE PLAN

PART OF LOT 4
CONCESSION 3 (OTTAWA FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
REGISTERED PLAN #
CITY OF OTTAWA

TITLE: SITE PLAN

DATE: OCTOBER 7, 2024 | DRAWN BY: JH | CHECKED BY: CR | DRAWING NO.

FILE NO.:

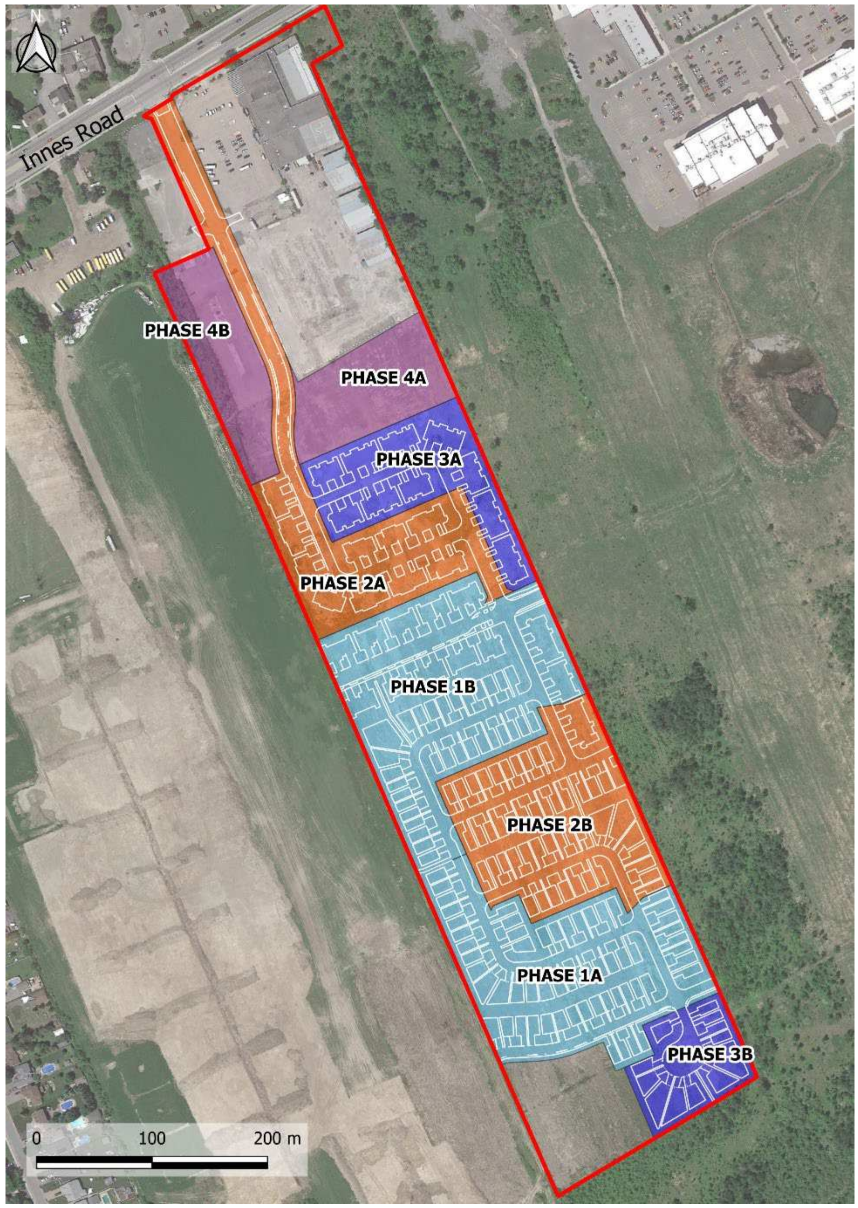
JOB NO.:

Appendix C
Stormwater Management

Stormwater Management Report
BMR The Commons

Novatech Engineering Consultants

May 2022



Prepared for: *Novatech Engineering Consultants*

JFSA Ref. No.: 2102-21

Prepared by: JFSA Water Resources and Environmental Consultants

J.F. Sabourin and Associates Inc.
www.jfsa.com

JFSA Water Resources and Environmental Consultants

J.F. Sabourin and Associates Inc.
52 Springbrook Drive, Ottawa, ON K2S 1B9
tel.: 613.836.3884, fax: 613.836.0332, www.jfsa.com

Stormwater Management Report
BMR – The Commons Subdivision

in the City of Ottawa

May 2022

Prepared for :

Novatech Engineering Consultants

Prepared by :

Tamarra Lewis, B.Eng., EIT.

LICENSED PROFESSIONAL ENGINEER
J. J. BURNETT
100227734
PROVINCE OF ONTARIO

Reviewed by :

Jonathon Burnett, B.Eng., P.Eng.

JFSA Ref. No.: 2102-21

Stormwater Management Report
BMR The Commons
in the City of Ottawa

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APPENDICES

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Background Rational for Report Update

May 2022

This report is an update of the March 2022 “Stormwater Management Report BMR The Commons”. The previous version of the report has been updated to address several City of Ottawa comments.

These updates include the addition of two columns to Table D-11 to describe the theoretically calculated ICD sizes based on design flows compared to the ICD sizes used in the model. Some sizes were larger than theoretical due to major system ponding or other similar variables.

Two subcatchments were changed due to the addition of CB-59, A42 is now split into two catchments as A42i and A42iii. Catch basin “CB-59” was added to the PCSWMM model and ICD was sized. Additional minor edits to tables and figures to address comments on Table 2, Table D-10, and RYCB’s (minor ICD sizes adjusted).

Some spot checks were addressed in the reporting and modelling, however some spot checks it was noted discrepancies between balues provided in the SWM report and those indicated by the City reviewer are due to differences between simulated maximum results and reported maximum results. Further information provided in the City of Ottawa comment responses.

It is important to note that all values presented in this report are based on the maximum reported value (at 1-minute intervals), instead of the maximum simulated values (at 1-second intervals) as this avoids the model reporting any small blips/instabilities that may occur during any model simulation as real values, the justiciation for this being that there may be simply short-term model convergence issues reflected in the maximum simulated values that are not reflective of the real result. Taking the results reported by the model every minute, instead of every second ensures that these minor model convergence issues are not reported as real results.

Stormwater Management Report BMR The Commons
in the City of Ottawa
May 2022

1 INTRODUCTION AND OBJECTIVES

J.F. Sabourin and Associates Inc. (JFSA) were retained by Novatech Engineering Consultants (Novatech) to prepare a Stormwater Management (SWM) Plan for the BMR – The Commons Subdivision, located in Orleans, within the City of Ottawa. As shown by the image provided on the cover page, the future development is located at 3610 Innes Road and is split into four phases. The Interim SWM scenario includes the development of Phase 1A and 1B only, and the Ultimate SWM scenario includes Phases 1 – 4. The proposed development will be serviced by the existing East Urban Community Stormwater Pond #1 (EUC SWM Pond 1) that is located southwest of the site. EUC SWM Pond 1 will discharge under Page Road and into Mud Creek.

The BMR – The Commons development has a total drainage area of 19.19 ha, including a 0.95 ha of park block, 13.61 ha of residential development, 1.85 ha of medium density development and a 3.43 ha existing U-Haul site. The proposed development will be treated by a wet pond, the EUC Pond 1. Figure 1 provides an overview of the location of these respective blocks within the subdivision.

The purpose of this report is to evaluate the major and minor system flows of the proposed BMR – The Commons residential development with respect to the City's stormwater management guidelines and to check the adequacy of the proposed pipe sizes to convey the 2-year (5-year on collector) and the 100-year storm flows from within the development and from external areas. Background documents that were reviewed in preparing this report include the following:

- *Stormwater Management Planning and Design Manual,* Ministry of the Environment, March 2003.
- *Erosion and Sediment Control Guidelines for Urban Construction,* Conservation Halton et al., December 2006.
- *City of Ottawa Sewer Design Guidelines,* City of Ottawa, October 2012.
- *Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines – Sewer,* City of Ottawa, February 2014.
- *City of Ottawa Technical Bulletin PIEDTB-2016-01*, City of Ottawa, September 2016.
- *City of Ottawa Technical Bulletin ISTB-2018-04*, City of Ottawa, June 2018.
- *EUC SWM Pond 1 – Original ECA and Amended ECA,* David Schaeffer Engineering Limited, April 2018
- *East Urban Community / Preliminary Hydraulic Gradeline Analysis and Pond Design Addendum,* J.F. Sabourin & Associates, August 2020
- *Design Brief 3636 Innes Road C/O Amerco Real Estate Company City of Ottawa.* IBI Group, February 2020

- *Master Servicing Study for East Urban Community Phase 3 Area Community Design Plan Richcraft Homes,* David Schaeffer Engineering Limited, December 2020
- *Novatech Conceptual Site Servicing and Stormwater Management Report for 3610 Innes Road (Former BMR Lands),* Novatech Engineering Consultants, November 2020

As per the approach formalized in the September 2016 *City of Ottawa Technical Bulletin PIEDTB-2016-01*, the proposed subdivision has been designed with a 2-year minor system level of service on local roads and a 5-year level of service on collector roads (Rue De Jargeau Road). Where possible with grading and minor system capture limitations, road ponding areas up to 35 cm deep were used to contain the 100-year major system flows.

The PCSWMM computer program was used to model the major and minor systems, to ensure that all stormwater management requirements are satisfied. The general SWM design criteria and guidelines that are to be met are described in Section 2.

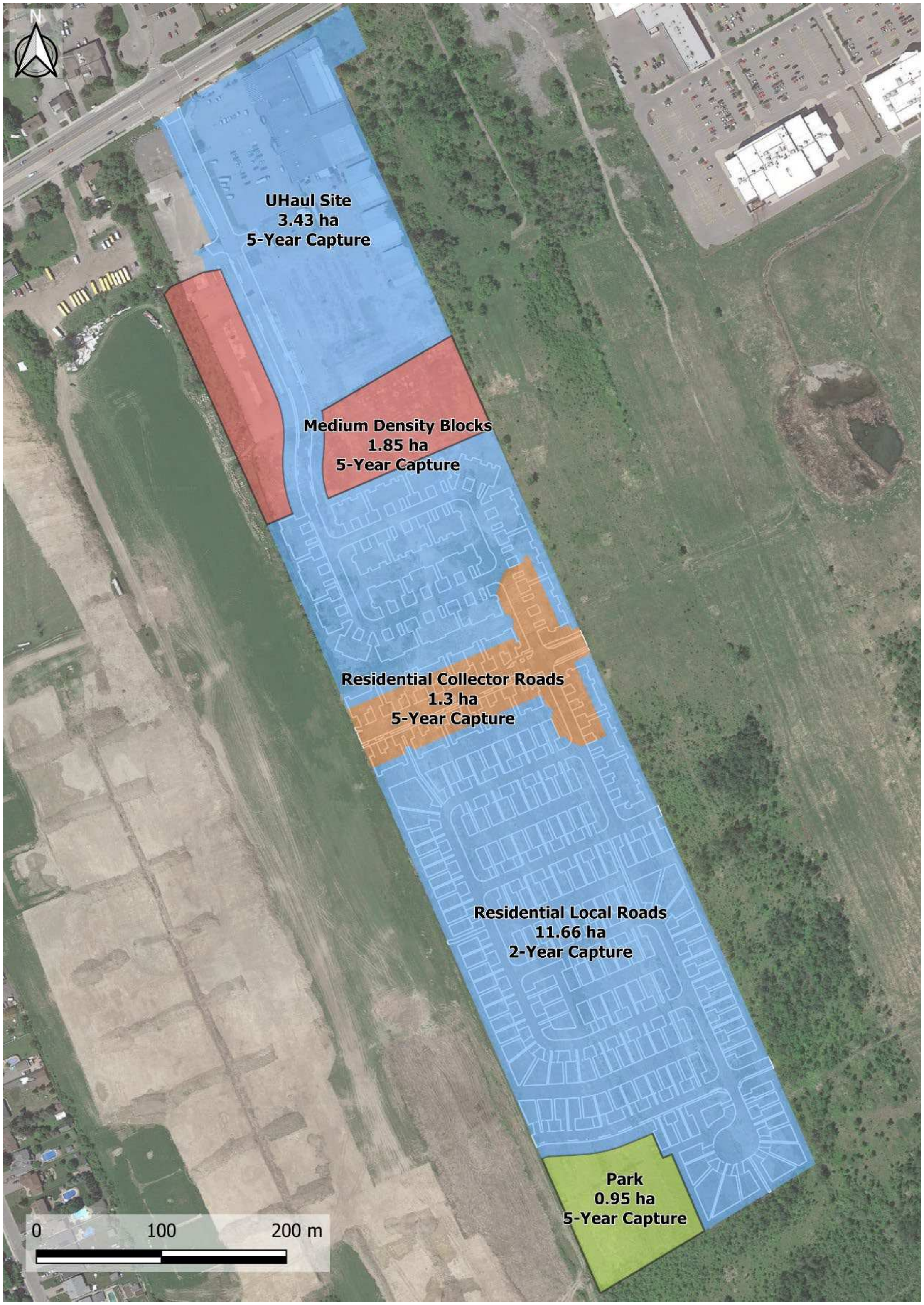

Figure 1: General Site Plan

2 DESIGN CRITERIA AND GUIDELINES

The design criteria and guidelines used for the stormwater management of the subject subdivision are those that were developed in the background documents, as well as those provided in the October 2012 *City of Ottawa Sewer Design Guidelines* and subsequent technical memorandums, and generally accepted stormwater management design guidelines.

The detailed design of the proposed BMR – The Commons development has a total drainage area of 19.19 ha with an average imperviousness of 70%. A detailed analysis of the proposed dual drainage system was required to confirm that the following general design criteria and guidelines for the minor and major systems would be met.

2.1 Minor System

a) Storm sewers are to be designed to provide a minimum 2-year level of service, plus 5-year inflows on collector roads (Rue De Jargeau Road), as seen in Figure 1 above.

b) The 100-year hydraulic grade line (HGL) within the development minor systems must be maintained at least 0.3 m below the underside of footing elevation where gravity house connections are installed.

c) For less frequent storms (i.e. larger than 1:2 year or 1:5 year on collector), the minor system shall, if required, be limited with the use of inlet control devices to prevent excessive hydraulic surcharges and to maximize the use of surface storage on the road where desired.

d) Catchbasins on the road are to be equipped with City standard type S19 (fish) grates or City standard type S22 side inlets, and grates for catchbasins in rear yards, park and open spaces with pedestrian traffic are to be City standard type S19, S30 and S31.

e) Single catchbasins are to be equipped with 200 mm minimum lead pipes, and double catchbasins are to be equipped with 250 mm minimum lead pipes.

f) Rearyard catchbasins are to be equipped with 250 mm minimum lead pipes. Catchbasins installed on the street, where rearyard catchbasins connect to the main storm sewer through the catchbasin, are to be equipped with 250 mm minimum lead pipes for both single and double catchbasins.

g) Under full flow conditions, the allowable velocity in storm sewers is to be no less than 0.80m/s and no greater than 3.0m/s. Where velocities over 3.0 m/s are proposed, provisions shall be made to protect against displacement of sewers by sudden jarring or movement. Velocities greater than 6.0 m/s are not permitted.

2.2 Major System

a) The major system shall be designed with enough road surface storage to allow the excess runoff of a 100-year storm to be retained within road ponding areas where desired.

b) Inlet control devices should be sized such that they do not create surface ponding on the road during the 2-year design storm on local roads (5-year design storm on collector and 10-year design storm on arterial roads); it should be noted that surface ponding over grates is present during rainfall under any design, as an appropriate depth of water is required for runoff to enter the grate (refer to Tables D-6 of Appendix D).

c) Roof leaders shall be installed to direct the runoff to splash pads and onto grassed areas.

d) For the 100-year storm, the maximum total depth of water (static + dynamic) on all roads shall not exceed 35 cm at the gutter.

e) During the 100-year + 20% stress test, the maximum extent of surface water on streets, rearyards, public space and parking areas shall not touch the building envelope.

f) When catchbasins are installed in rear yards, safe overland flow routes are to be provided to allow the release of excess flows from such areas.

g) The product of the maximum flow depths on streets and maximum flow velocity must be less than $0.60 m^2/s$ on all roads.

h) For the majority of the developments, the excess major system flows up to the 100-year return period are to be retained on-site in development blocks such as parks, schools, commercial, unless specified otherwise.

i) There must be at least 15 cm of vertical clearance between the spill elevation on the street and the ground elevation at the nearest building envelope that is in the proximity of the flow route or ponding area.

j) There must be at least 30 cm of vertical clearance between the rearyard spill elevation and the ground elevation at the adjacent building envelope.

3 ASSUMPTIONS AND SOURCE OF DATA USED IN THIS STUDY

Sources of information and assumptions made in this study are listed below:

- Stormwater management model: *PCSWMM (version 7.4)*
- Minor system design: *1:2 year, plus 1:5-year inflows on collector roads. See the Rational Method Calculations in Appendix A.*
- Major system design: *1:100 year*
- Max. 100-yr water depth on roads: *35cm above the gutter*
- Extent of the major system: *Shall not touch the building envelope during the 100-year + 20% stress test*
- PCSWMM model parameters: *Fo = 76.2 mm/hr, Fc = 13.2 mm/hr, DCAY = 4.14/hr, D.Stor.Imp. = 1.57 mm, D.Stor.Per. = 4.67 mm (as per 2012 City of Ottawa Sewer Design Guidelines)* *Detailed Area Imperviousness: based on development layout.*
- Design storms: *25mm 4-hour Chicago, 2-, 5-, and 100-year 3-hour Chicago and the 100-year 24-hour SCS Type II storms as per 2012 City of Ottawa Sewer Design Guidelines; peak averaged over 10 minutes.*
- Historical Events: *July 1st, 1979; August 4th, 1988; and August 8th, 1996 events as per 2012 City of Ottawa Sewer Design Guidelines.*
- Stress Test: *20% increase in the 100-year 3-hour Chicago storm.*
- Street catchbasin covers: *City Standard Type S19 (fish) or City Standard Type S22 (side inlet). Type S19 approach flow-capture curves as per MTO design charts (equivalent to OPSD 400.010). Type S22 approach flow-capture curves as per the 2004 City of Ottawa Guidelines.*
- Rearyard catchbasin covers: *City Standard Type S19, S30 and S31*
- Curb and gutter: *City Standard SC1.3 (mountable) and SC1.1 (barrier). In the absence of flow capture curves for these curbs and gutters, OPSD 600.010 curb and gutters are assumed.*
- Manning's' roughness coeff.: *0.013 for concrete and 0.013 for PVC pipes (free flow).*
- Minor system losses: *Refer to Appendix C for maintenance hole loss coefficients.*
- Underside of footing elevations: *As provided by Novatech.*
- Freeboard in HGL analysis: *0.3 m between the underside of footing elevation and 100-year hydraulic gradeline.*
- Inlet Control Devices: *Refer to Appendix B for Plas-Tech ICD details.*
- Depth of backyard swales: *As per Novatech's Grading Plan*
- Street and pipe dimensions: *As per Novatech's Plan and Profiles*
- Right-of-way characteristics: *As per Novatech's Details of Roads*
- Downstream HGL: *Boundary condition set at STM-111 as per JFSA East Urban Community/Preliminary HGL analysis and Pond Design Addendum, August 2020 (See Table D-12).*

4 ULTIMATE CONDITIONS PROPOSED MINOR AND MAJOR SYSTEM DRAINAGE

The proposed minor and major system drainage routes are shown in plan view in Figures 2 and 3. The residential areas where enough detail was available were modelled in PCSWMM.

As per City standards, the minor system has been designed to accommodate a minimum of the 2-year post-development flows from within the site and local roads, plus 5-year inflows on collector roads, the medium density areas and the U-Haul area. A Rational Method design was conducted by Novatech (refer to Appendix A) to estimate minor system flows based on the City of Ottawa IDF relationship and selected runoff coefficients. The rational method 5-year inflows were used to determine the release rates for the medium density and U-Haul lands. An additional rational method table can be seen in Appendix D, Table D-11, which compares rational method design flow to the respective CBs against that simulated in the PCSWMM model.

The minor system release rates from the 1.0 ha parklands area were assumed to be 5-year capture to the minor system with on-site storage up to the 100-year event with any excess flows to Rue De Beaugency street to the North of the park. The U-Haul land on the Northeast corner of the site was limited to the 5-year capture and 100-year storage on-site. The on-site storage volumes were determined by the IBI Group in the Pond Design Brief (Feb, 2020) and were then used in JFSA's PCSWMM model. The medium density blocks were limited to the 5-year capture, with onsite storage provided up to the 100-year event as determined in the MSS (December, 2020) and Novatech Conceptual Design (Nov, 2020). See Table 1 below for the storage requirements and release rates for the 100-year 3-Hour Chicago Storm. The collector road (Rue De Jargeau Road) was limited to the 5-year rational method as per the MSS (December, 2020) and Novatech Conceptual Design (Nov, 2020).

Table 1: Summary of Medium Density Blocks Results for the 100-Year 3-Hour Chicago Storm

Medium Density Blocks	Release Rate (m^3/s)	Storage Required (m^3)
Uhaul	0.857	540
B1	0.228	230
B3i	0.245	240

As noted earlier in this report, where possible with grading limitations, road ponding areas up to 35 cm deep were used to contain the 100-year major system flows in the development. Note that rearyard catchbasins were connected to catchbasins on the road where possible, to allow rearyard runoff access to the storage in road ponding areas at regular intervals. In a design of this type where lots are serviced by gravity house connections, inlet control devices (ICDs) can be used to limit minor system capture at each catchbasin to the appropriate level of service.

Within the development, circular orifice plate type Inlet Control Devices (ICDs) of City standard diameters 83 mm, 94 mm, 102 mm, 108 mm, 127 mm, 152 mm and 178 mm will be used to limit minor system capture to a minimum of the 2-year flow (refer to Appendix B for Plas-Tech ICD details), allowing for sub-surface storage of 0.5 m^3 in single catchbasins, 1.0 m^3 in double catch basins, and 1.9 m^3 in catchbasin manholes. Note that this subsurface catchbasin storage has not been included in the modelling to be conservative.

The street segments within the proposed development have been designed using a 'saw tooth' or 'sagged' road profile. The runoff from within these segments will be conveyed to catchbasins located at the lowest point within the street segment. Flows more than the catchbasin capture rate will be temporarily stored within the 'sagged' street segments and released slowly to the storm sewers, up to the 100-year design storm. When the storage on a specific street segment is surpassed due to blockage or an event greater than the 100-year storm, the excess water will flow towards the next downstream street sag, and eventually to the pond. It should be noted that the major system would outlet during the 100-year + 20% stress test without flooding any of the properties within the subdivision.

If the drainage system's capacity to capture surface flows is exceeded, Figures 5A-5C via Novatech present the maximum extent of static surface ponding and volume on the streets based on grading. Additionally, surface storage volumes that may exist in the rear yards have not been considered in this model, and the runoff from these areas have been directed straight to the catchbasins that the rear yard swales will discharge to. This has been completed to ensure that the peak flows and ponding volumes calculated in the model are conservative. The rear yard ponding depths for the 100-year Chicago Storm can be seen in Appendix D, Table D-10.

The PCSWMM analyses, discussed in Sections 4.1 and 4.2, have demonstrated that the proposed drainage system for the subdivision will have sufficient capacity to control the excess flow during a 100-year storm and safely capture and convey the 2-year (plus 5-year on collector roads) flow to the pond.

4.1 Ultimate Conditions Major System and SWM Analysis

The PCSWMM computer program was used to model the major and minor system flows within the proposed development.

The PCSWMM model was developed based on the information provided in Figures 2, 3, and 4. Eight (8) simulations were conducted, one for each of the following rainfall events:

i) the 2-year, 3-hour Chicago storm;
ii) the 5-year, 3-hour Chicago storm;
iii) the 100-year, 3-hour Chicago storm;
iv) the 100-year, 24-hour SCS Type II storm
v) the July 1^{st}, 1979 historical event;
vi) the August 4^{th}, 1988 historical event;

vii) the August 8th, 1996 historical event; and
viii) the 100-year, 3-hour Chicago storm + 20%.

Note that the purpose of simulating the 100-year, 3-hour Chicago storm with a 20% increase is to stress test the drainage system for potential flooding, as per the October 2012 City of Ottawa Sewer Design Guidelines. The depression storage and infiltration parameters in the PCSWMM model are as per the October 2012 City of Ottawa Sewer Design Guidelines. The percent imperviousness of the detailed drainage areas was measured based on the proposed development layout. The proposed development layouts have been established based on zoning requirements and represent the largest allowable footprint on each lot. The percent imperviousness of undetailed (lumped/external) drainage areas were calculated based on the runoff coefficient (C), where C = 0.7 x imperviousness ratio + 0.2. Figure 2 provides an overview of the subcatchments, and Table D-3 provides a full summary of all subcatchment parameters modelled in PCSWMM, respectively. Figures representing the details of the C Value calculations provided by Novatech can be found in Appendix A.

Within the model, all CB grates have been explicitly represented using orifice connections, with the opening dimensions and configuration (side/bottom inlet) reflective of each specific grate. The grate allows flows into the CB based on the individual hydraulic properties of each specific grate configuration. Where required, inflows are limited by circular orifice plate type Inlet Control Devices (ICDs) of City standard diameters 83 mm, 94 mm, 102 mm, 108 mm, 127 mm, 152 mm and 178 mm. Each of these ICDs has been explicitly represented in the model through the use of circular orifices reflective of the standard ICD dimensions. Note that 200 mm diameter lead pipes were assumed and are required between single catchbasins and the storm sewers, and 250 mm diameter lead pipes were assumed and are required between rearyard catchbasins or single catchbasin maintenance holes and the storm sewers. In locations where no ICD is required either the 200mm or 250mm lead pipe has been represented as a short tube orifice (C_o=0.82). No temporary CBs are required within the development, note that the proposed ICDs are the controlling feature into the minor system, not the lead pipe, as such only the ICD has been represented in the model. Refer to Table B-1 for ICD's control rates, D-4A & D-4B for grate capacity, and D-5C to lead pipe flows.

Within the proposed subdivision, the dynamic flow depth on the road (at the gutter) will be minimal during the 100-year storms, as the 100-year flows are mostly retained within the road ponding areas and do not accumulate as in a typical subdivision design. Furthermore, it was determined that for the 100-year storm at all major system segments, the product of the depth of water (m) at the gutter multiplied by the velocity of flow (m/s) will not exceed the maximum allowable 0.6 m^2/s (refer to Table D-8 of Appendix D, where the calculated maximum was determined to be 0.056 m^2/s). Table D-9 of Appendix D presents the stress test results for dynamic flow depth on the road based on a 20% increase in the 100-year storm, as per the October 2012 *City of Ottawa Sewer Design Guidelines*. As shown in Table D-9, the maximum dynamic flow depth under these conditions is calculated as 0.28 cm, and the product of the depth of water at the gutter multiplied by the velocity of flow is 0.07 m^2/s. To note, all cross sections have a maximum depth of 0.6 m therefore the depth/full depth values in Tables D-8 and D-9 are multiplied by 0.6 m. Table 2 below presents a summary of the major system results within the development simulated in PCSWMM during the 100-year Chicago storm. As the CB configuration in the PCSWMM model involves multiple parts, Table 2 describes the flow on the road as well as at the catch basin junction in the model to differentiate how much flow is on the road vs. flow throught the grate and into the catch basin. The captured flow in Table 2 refers to the discharge through the ICD orifice.

Details of the 100-year street maximum water depth and water surface elevations are provided in Table D-7 of Appendix D. Based on Novatech's grading the major system has approximately 920 m^3 of storage at these localized low points throughout the development (see Figures 6A-6C). Depths calculated by the PCSWMM model demonstrate that the total 100-year depth of water (static and dynamic) on the street at these ponding areas will not exceed the maximum depth of 35 cm.

Table D-7 of Appendix D also presents the street storage stress test results based on a 20% increase in the 100-year storm, as per the October 2012 *City of Ottawa Sewer Design Guidelines*. As shown in Table D-7, the maximum depth of water (static + dynamic overflow) at any ponding area under these conditions is calculated as 30 cm. The maximum extent of surface water during the 100-year + 20% stress test will not touch the building envelopes, refer to Novatech drawings for the flood extent of these ponding depths provided in Figures 6A-6C.

Table 2: Summary of Major System Results for the 100-Year 3-Hour Chicago Storm

Catch Basin ID	Flow Depth (m)	Approach Flow On The Road (m^3/s)	Approach Flow at Catch Basin (m^3/s)	Captured Flow Through ICD (m^3/s)
02_(CB)	0.16	0.065	0.027	0.026
03_(CB)	0.16	0.065	0.031	0.031
04_(CB)	0.15	0.067	0.027	0.027
05_(CB)	0.15	0.067	0.027	0.027
06_(CB)	0.03	0.054	0.030	0.030
08_(CB)	0.16	0.053	0.032	0.032
09_(CB)	0.16	0.053	0.027	0.027
10_(CB)	0.28	0.086	0.031	0.031
11_(CB)	0.28	0.086	0.087	0.043
12_(CB)	0.21	0.110	0.050	0.050
13_(CB)	0.21	0.110	0.048	0.048
14_(CB)	0.20	0.062	0.028	0.027
15_(CB)	0.20	0.062	0.028	0.027
16_(CB)	0.17	0.055	0.021	0.021
17_(CB)	0.17	0.055	0.027	0.027
18_(CB)	0.22	0.093	0.085	0.055
19_(CB)	0.22	0.093	0.071	0.071
20_(CB)	0.20	0.092	0.036	0.036
21_(CB)	0.20	0.092	0.035	0.035
23_(CB)	0.14	0.072	0.049	0.049
24_(CB)	0.14	0.072	0.049	0.049
25_(CB)	0.02	0.011	0.009	0.009
26_(CB)	0.02	0.011	0.004	0.004
27_(CB)	0.22	0.136	0.069	0.068
28_(CB)	0.22	0.136	0.069	0.068
30_(CB)	0.10	0.118	0.086	0.086
31_(CB)	0.10	0.119	0.100	0.100
32_(CB)	0.21	0.117	0.106	0.039
33_(CB)	0.21	0.144	0.072	0.059
34_(CB)	0.18	0.116	0.049	0.049
35_(CB)	0.18	0.116	0.049	0.049
36_(CB)	0.14	0.081	0.036	0.036
37_(CB)	0.14	0.081	0.049	0.049
40_(CB)	0.20	0.097	0.048	0.048
41_(CB)	0.20	0.097	0.050	0.050
42_(CB)	0.18	0.083	0.032	0.032
43_(CB)	0.18	0.083	0.036	0.036
44_(CB)	0.15	0.052	0.032	0.032
45_(CB)	0.15	0.052	0.021	0.021
46_(CB)	0.18	0.060	0.032	0.032
47_(CB)	0.18	0.060	0.026	0.026
48_(CB)	0.20	0.066	0.028	0.028
49_(CB)	0.20	0.066	0.027	0.027
50_(CB)	0.17	0.097	0.048	0.048
51_(CB)	0.17	0.097	0.047	0.047
52_(CB)	0.07	0.099	0.043	0.044
53_(CB)	0.19	0.107	0.050	0.050
54_(CB)	0.19	0.107	0.049	0.049
55_(CB)	0.17	0.098	0.049	0.049
57_(CB)	0.27	0.106	0.050	0.050

4.2 Ultimate Conditions Minor System and Hydraulic Gradeline Analysis

The minor system analysis was completed using the PCSWMM program based on the peak flows captured during the rainfall events. Note that the storm sewer design is as provided by Novatech, and a Manning's roughness coefficient of 0.013 was used for concrete and PVC storm sewer pipes. Refer to Appendix C for maintenance hole loss coefficients used in the PCSWMM model.

The minor system performance was analyzed using a dynamic water surface elevation time-series at STM-111 unique for each design storm based on the HGL determined in JFSA's *"East Urban Community/Preliminary HGL analysis and Pond Design Addendum, August 2020"*. Table 3 presents the peak minor system outflows obtained with the above-mentioned simulations.

Table 3: Comparison of Ultimate Minor System Flows (3-Hour Chicago Storm) to the Pond from The Commons Development

Location	**Novatech Rational Method Flow** (m^3/s)	**2-Year PCSWMM Flow** (m^3/s)	**5-Year PCSWMM Flow** (m^3/s)	**100-Year PCSWMM Flow** (m^3/s)
STM-111 to Pond	2.49	2.07	2.99	4.29

(1)The total flow is calculated as per PCSWMM model peak inflows.

Table 3 shows that the total 2-year flows simulated by the PCSWMM models are between the 2-year and 5-year PCSWMM flows. This is to be expected as the majority of the site is serviced by the 2-year storms with some locations within the development serviced by the 5-year storm.

The PCSWMM simulations have determined that for the selected 2-, 5- and 100-year 3-Hour Chicago storms, the total minor system flows from the BMR – The Commons development would be 2.07 m^3/s, 2.99 m^3/s and 4.29 m^3/s, respectively. A freeboard of 0.3 m between the 100-year hydraulic grade line and the underside of footings has been provided throughout the proposed development.

Tables C-1A and C-1E of Appendix C summarizes the pipe data and hydraulic simulation results for the 100-year 3-hour Chicago storm, 100-year 24-hour SCS Type II storm and the three historical events. Note that a minimum freeboard of 0.3 m between the hydraulic grade line and the underside of footings has been provided throughout the proposed developments for the 100-year storms, and a minimum freeboard of 0 m has been provided throughout the proposed development for the historical events. Additionally, note that the majority of the flowing full pipe velocities are no less than 0.80 m/s and no greater than 3.0m/s. If velocities are over 3.0 m/s, provisions shall be made to protect against displacement of sewers by sudden jarring or movement. Velocities greater than 6.0 m/s are not permitted.

Table C-1F of Appendix C presents the climate change stress test results for the hydraulic grade line analysis based on a 20% increase in the 100-year storm, as per the October 2012 *City of Ottawa Sewer Design Guidelines*. Under these conditions, no locations within the proposed developments have a USF freeboard less than 0 m.

Table 4 presents the Ultimate composite hydraulic grade line results for the 100-year 3-hour Chicago and 100-year 24-hour SCS Type II design storms. Note to simplify this analysis, the highest HGL and the lowest USF on a single pipe length are compared, if it is found that the freeboard between these two locations is either less than 0.3m or less than 0.0m this location is flagged yellow or red, respectively. This flag then initiates a detailed analysis for this segment, where the HGL is interpolated along the full length of the pipe and then compared with the individual USF along with the distance, to confirm whether there is an HGL issue along that segment.

Table 4: Composite Hydraulic Gradeline Results for 100-Year Design Storms

U/S MH	D/S MH	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL Length HGL (m)	Interpolated HGL Dist. From D/S MH (m)	Interpolated HGL HGL (m)
102_(STM)	100_(STM)	83.291	83.170	145	85.8	2.509			
104_(STM)	102_(STM)	83.443	83.291	139	85.7	2.257			
106_(STM)	104_(STM)	84.189	83.443	23	85.85	1.661			
108_(STM)	106_(STM)	84.196	84.189	28	86	1.804			
110_(STM)	108_(STM)	84.566	84.196	26	86.1	1.534			
112_(STM)	104_(STM)	83.814	83.443	18	85.95	2.136			
114_(STM)	112_(STM)	84.156	83.814	113	86.05	1.894			
116_(STM)	114_(STM)	84.271	84.156	108	86.5	2.229			
118_(STM)	116_(STM)	84.540	84.271	104	86.35	1.810			
120_(STM)	112_(STM)	84.664	83.814	9	86.1	1.436			
122_(STM)	120_(STM)	84.786	84.664	46	86.35	1.564			
124_(STM)	122_(STM)	84.924	84.786	49	86.5	1.576			
126_(STM)	124_(STM)	85.224	84.924	3	86.5	1.276			
128_(STM)	126_(STM)	85.520	85.224	56	86.7	1.180			
130_(STM)	128_(STM)	85.888	85.520	115	86.85	0.962			
132_(STM)	130_(STM)	86.034	85.888	122	87.3	1.266			
134_(STM)	132_(STM)	86.034	86.034	125	87.4	1.366			
136_(STM)	128_(STM)	85.726	85.520	65	86.7	0.974			
138_(STM)	136_(STM)	85.854	85.726	70	87.05	1.196			
140_(STM)	138_(STM)	86.243	85.854	76	87.05	0.807			
142_(STM)	132_(STM)	86.497	86.034	113	87.35	0.853			
142_(STM)	140_(STM)	86.497	86.243	92	87.45	0.953			
144_(STM)	140_(STM)	86.641	86.243	91	87.45	0.809			
146_(STM)	144_(STM)	86.660	86.641	94	87.8	1.140			
148_(STM)	146_(STM)	86.690	86.660	97	87.28	0.590			
150_(STM)	144_(STM)	86.889	86.641	114	87.7	0.811			
152_(STM)	150_(STM)	87.012	86.889	115	87.9	0.888			
154_(STM)	152_(STM)	87.073	87.012	117	88.3	1.227			
156_(STM)	154_(STM)	87.408	87.073	118	88.2	0.792			
158_(STM)	150_(STM)	87.637	86.889	103	88	0.363			
160_(STM)	158_(STM)	87.769	87.637	106	88.4	0.631			
162_(STM)	160_(STM)	88.278	87.769	107	88.4	0.122			
				107	88.4	0.595	106.3	11.954	87.805
				108	88.4	0.595	106.3	11.954	87.805
				109	88.4	0.595	106.3	11.954	87.805

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

5 PERFORMANCE OF INTERIM B EUC POND 1

As detailed in the March 2014 *Design Brief for the Reconstruction of the East Urban Community Stormwater Management Pond 1 for the Trails Edge Subdivision*, East Urban Community (EUC) Pond 1 has been modified for Interim B conditions to support the development of the Trails Edge subdivision south of the hydro easement, and the extension of Brian Coburn Boulevard. Undeveloped area and existing commercial areas north of the hydro easement also drain to Pond 1 under Interim B conditions.

The Orleans Village and BMR - The Commons sites north of the hydro corridor were treated as undeveloped under Interim B conditions in the March 2014 *Design Brief* and lumped in with the development of the East Urban Community lands to the north of the hydro corridor, which will trigger an "Ultimate Conditions" expansion of the north main cell and north forebay in EUC Pond 1. However, it was proposed in the July 2018 *Stormwater Management Report for the Orleans Village Subdivision* that the development of Orleans Village be allowed under Interim B conditions, with the understanding that the 100-year water level in EUC Pond 1 would increase temporarily under these conditions. A maximum 100-year pond level of 83.05 m was reported for these conditions in the July 2018 *Stormwater Management Report for the Orleans Village Subdivision*; 5 cm above the target 100-year pond level of 83.00 m. All other quality, erosion and quantity control requirements identified in the March 2014 *Design Brief* are satisfied under these conditions. The Interim B drainage area to EUC Pond 1 as proposed in the July 2018 *Stormwater Management Report for the Orleans Village Subdivision* is presented in Figure E-1 of Appendix E of the current report. Refer to the July 2018 *Stormwater Management Report for the Orleans Village Subdivision* for further details.

It is proposed as part of the current study that the development of Phase 1 of BMR - The Commons be permitted under Interim B conditions, similar to Orleans Village, in exchange for Orleans Village mixed-use block 148 and future residential block 147 remaining undeveloped until the ultimate conditions expansion of the north main cell and north forebay in EUC Pond 1. Orleans Village mixed-use block 148 is identified as area B013DV2 in Figure E-1 of Appendix E (2.535 ha at 93% imperviousness), and Orleans Village future residential block 147 is identified as area B015RE2 in Figure E-1 of Appendix E (2.165 ha at 79% imperviousness). For comparison, Phase 1 of BMR - The Commons is 5.817 ha at 59% imperviousness.

To evaluate the performance of EUC Pond 1 under these proposed conditions, the PCSWMM model of BMR - The Commons was modified to represent interim conditions wherein only Phase 1 is developed, with 100-year capture to the minor system of undeveloped future phases and the existing commercial area to the north (refer to Figure 5). Similarly, the DDSWMM / SWMHYMO / XPSWMM model of drainage to EUC Pond 1 under Interim B conditions from the July 2018 *Stormwater Management Report for the Orleans Village Subdivision* was modified to remove the area occupied by the BMR - The Commons development (to avoid double-counting this area), and to represent Orleans Village areas B013DV2 and B015RE2 as undeveloped. The simulated outflow from the interim conditions model of BMR - The Commons Phase 1 was then input to the modified XPSWMM model of the EUC Pond 1 system under Interim B conditions.

The operation of Interim B EUC Pond 1 under these proposed conditions – Interim B + Orleans Village development (areas B013DV2 and B015RE2 undeveloped) + BMR – The Commons Phase 1 development – are summarized in Table 5 below.

Table 5: Summary of SWM Pond 1 Operating Characteristics Under Interim B Conditions (+ BMR - The Commons Phase 1)

Pond Component	Total Inflow (m^3/s)	Water Level (m)				Volume Used (2) (m^3)	Allowable Outflow (3) (m^3/s)	Provided Outflow (m^3/s)
		North Forebay	North Main Cell	South Forebay	South Main Cell			
Permanent Pool (4)	N/A	81.600	80.100	81.500	80.100	36400	N/A	N/A
Quality Control	N/A	N/A	80.684	N/A	80.684	14892	N/A	0.204
Extended Detention	N/A	81.650	81.650	81.650	81.650	43988	N/A	0.383
100-Year, 24-Hour SCS (5)(6)	0.000	83.013	83.014	83.020	83.020	110017	8.000	6.909

(2) Volumes are active storage only for all SWM facility components except the permanent pool.
(3) Refer to the March 2014 Design Brief for target release rates and volumes.
(4) Bottom elevations are 79.00 m in the north main cell, 79.10 m in the south main cell, 79.50 m in the north forebay and 80.00 m in the south forebay.
(5) Maximum allowable 100-year pond level = 83.0 m in the main cell (per the April 2008 "East Urban Community Pond No. 1 Design Brief" by Stantec).
(6) 100-Year 14-Hour SCS was used for Submission 2 as the critical storm to check against the allowable outflow

The above results show that the provided release rate for the critical 100-year storm does not exceed the allowable release rates for SWM Pond 1. Note that the maximum 100-year pond level is 83.02 m; 2 cm above the target 100-year water level of 83.0 m.

Interim B EUC Pond 1 has been equipped with two sediment forebays. Calculations for the minimum dispersion length, settling length and the average velocity in the north and south forebays under these Interim B conditions are presented in Calculation Sheets E-2 and E-3 of Attachment E. Note that the south forebay is not negatively affected by the Orleans Village and BMR - The Commons Phase 1 developments, as the proposed developments discharge to the north main cell and forebay of EUC Pond 1. Dispersion, setting and average velocity criteria are satisfied by the existing north forebay under these proposed conditions.

EUC SWM Pond 1 has a permanent pool volume of 36,400 m^3, which is more than the minimum permanent pool volume the SWMP Design Manual requires for normal protection for a wet pond for the 372.298 ha drainage area at 42% imperviousness, as calculated below.

$$(97.00 - 40)\ m^3/ha \times 372.298\ ha = 21{,}221\ m^3$$

The required quality control volume of 14,892 m^3 (40 m^3/ha) for the 372.298 ha drainage area is contained within the extended detention volume at an elevation of 80.684 m. The provided extended detention volume of 43,988 m^3 exceeds the required volume of 33,922 m^3 calculated based on detention of the 25 mm storm runoff.

It may therefore be concluded that the operation of EUC SWM Pond 1 under Interim B conditions, with the Orleans Village (with areas B013DV2 and B015RE2 undeveloped) and BMR The Commons Phase 1 developments in place, is in conformance with the requirements presented in the March 2014 *Design Brief for the Reconstruction of the East Urban Community Stormwater Management Pond 1 for the Trails Edge West Subdivision*, except for the 100-year pond level, which exceeds the maximum allowable elevation by 2 cm. It is also noted the 100-year outflow of 6.909 m^3/s does not exceed the maximum allowable outflow of 8.0 m^3/s.

EROSION AND SEDIMENT CONTROL DURING AND AFTER CONSTRUCTION

Silt and erosion control strategies shall be implemented during construction activities to minimize the transfer of silt off-site. The following measures should be implemented:

i) Silt control fences shall be installed as required to prevent the movement of silt off-site during rainfall events.

ii) Construction of a mud mat shall be installed at the site entrance to promote self-cleaning of truck tires when leaving the site.

iii) All catch basins shall be equipped with a crushed stone filter to prevent the capture of silt in the storm sewer system.

iv) Regular cleaning of the adjacent roads shall be undertaken during the construction activities.

v) Regular inspection and maintenance of the silt control measures shall be undertaken until the site has been stabilized.

vi) The erosion and sediment control devices shall be removed after the site has been stabilized.

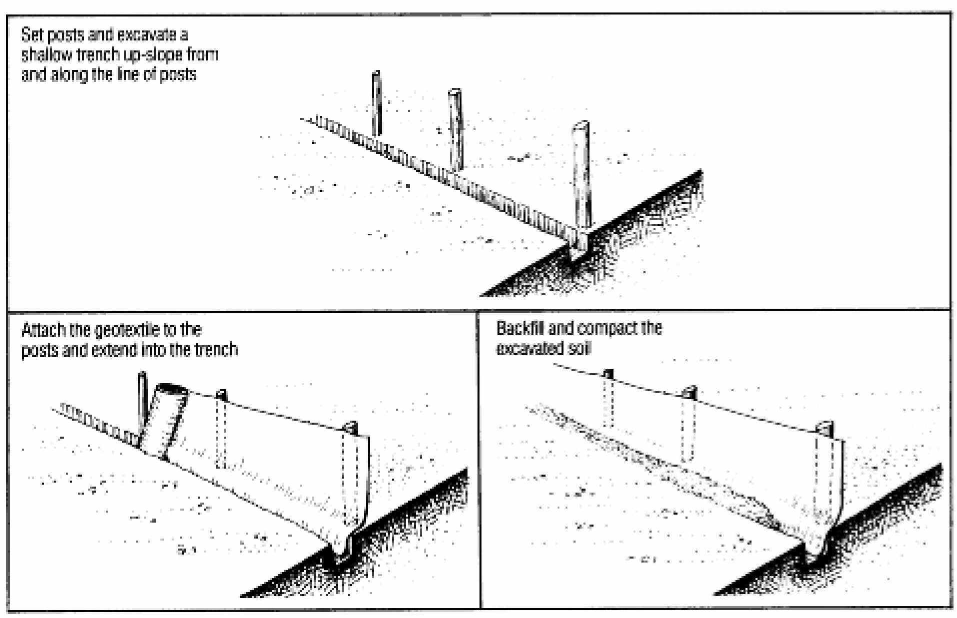

Figure 7: Typical installation of silt fences

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The BMR – The Commons development is in the City of Ottawa, on Innes Road and east of Page Road. The development has a drainage area of 19.19 ha, which will be treated by a wet SWM pond for quantity and quality control, which services a total drainage area of 372.298 ha.

Per the City of Ottawa design guidelines, the minor system has been designed to accommodate a minimum of the 2-year post-development flows from within the site and from external areas (plus 5-year flows on collector). The PCSWMM model analyses have determined that the minor system will surcharge in some parts of the system. However, with the use of Inlet Control Devices, a minimum freeboard of 0.3 m is provided between the 100-year hydraulic grade line and the underside of footings throughout the subdivision.

The PCSWMM simulations have determined that for the selected 2-, 5- and 100-year 3-Hour Chicago storms, the total minor system flows from the BMR development and associated external areas would be 2.07 m^3/s, 2.99 m^3/s and 4.29 m^3/s, respectively.

Within the subdivision, the peak water depths do not exceed the maximum allowable 35 cm depth at the gutter for the simulated 100-year storm (Table D-7 of Appendix D). Furthermore, it was determined that for the 100-year event, the product of the velocity and depth of flow does not exceed the maximum allowable 0.60 m^2/s. Also as required, the maximum extent of surface water during the 100-year + 20% stress test will not touch the building envelopes.

Table C-1A- C1F of Appendix C summarizes the hydraulic grade line analysis for the various storm. Note that the full pipe velocities are generally no less than 0.80 m/s and no greater than 3.0 m/s for the proposed pipes. Where velocities over 3.0 m/s are proposed, provisions shall be made to protect against displacement of sewers by sudden jarring or movement.

Stress test results for the major and minor drainage systems based on a 20% increase in the 100-year storm, as per the October 2012 *City of Ottawa Sewer Design Guidelines*, are summarized in Section 4.

The operation of EUC SWM Pond 1 under Interim B conditions, with the Orleans Village (with areas B013DV2 and B015RE2 undeveloped) and BMR The Commons Phase 1 developments in place, is in conformance with the requirements presented in the March 2014 *Design Brief for the Reconstruction of the East Urban Community Stormwater Management Pond 1 for the Trails Edge West Subdivision*, except for the 100-year pond level, which exceeds the maximum allowable elevation by 2 cm. It is also noted the 100-year outflow of 6.909 m^3/s does not exceed the maximum allowable outflow of 8.0 m^3/s.

Recommendations for silt and erosion control strategies to be implemented during construction are presented in Section 6.

In conclusion, the proposed design satisfies all selected design guidelines and requirements.

N

Legend

- Site Plan
- Manhole
- Catch Basins
- Rear Yard Catch Basin
- Minor System
- Rear Yard

ICD Sizing

- 0.083
- 0.094
- 0.102
- 0.108
- 0.127
- 0.152
- 0.178
- No ICD

SCALE: 1:3700

0 100 200 m

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52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
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Figure 2: Minor System Overview

PROJECT	2102-21
DRAWN	TL
DATE	11-MAY-2022

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N

Legend

Site Plan
Subcatchments

SCALE: 1:4000

0 100 200 m

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Figure 3: Subcatchment Overview

PROJECT	2102-21
DRAWN	TL
DATE	11-MAY-2022

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N

Legend

- Site Plan
- High Point
- Low Point
- Spill Points
- Major System
- Rear Yard
- Major System Spill

SCALE: 1:3750

0 50 100 150 200 m

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Figure 4: Proposed Major System

PROJECT	2102-21
DRAWN	MP/TL
DATE	03-11-2022

N

Legend

- Site Plan
- Site Area
- Developed Areas
- Undeveloped Areas

SCALE: 1:4100

0 100 200 m

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Figure 5: Interim Condition

PROJECT	2102-21
DRAWN	MP
DATE	06-24-2021

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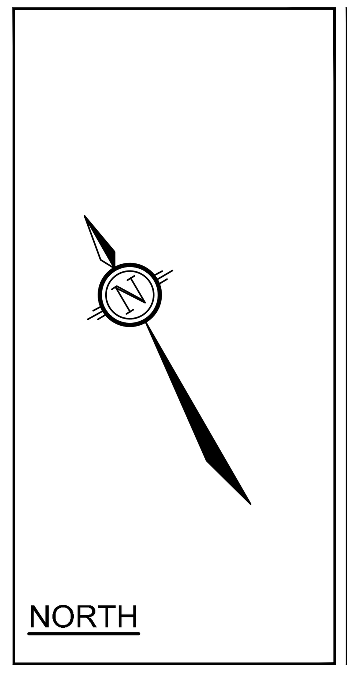
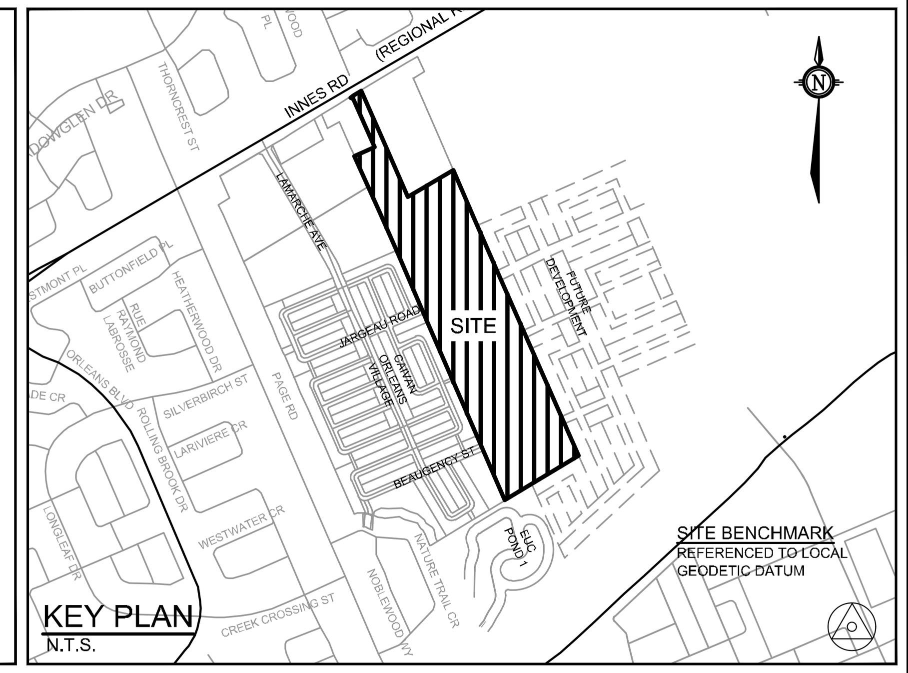
LEGEND

120.46 / 118.56	PROPOSED ELEVATION / EXISTING ELEVATION
120.46(S)	PROPOSED SWALE ELEVATION
120.46T/G	PROPOSED TOP OF GRATE ELEVATION
120.46(VPI)	PROPOSED VERTICAL POINT OF INTERSECTION ELEVATION
87.78TW / 85.98BW	PROPOSED TOP OF NOISE WALL ELEVATION / PROPOSED BOTTOM OF NOISE WALL ELEVATION
120.46	PROPOSED ELEVATION BY OTHERS (CAIVAN ORLEANS VILLAGE)
3.2%	GRADE AND DIRECTION
127.55	PROPOSED TERRACE ELEVATION
120.46 *	SPILL ELEVATION
FF=	FINISHED FLOOR ELEVATION
TF=	TOP OF FOUNDATION ELEVATION
USF=	UNDERSIDE OF FOOTING ELEVATION
C/LO/WO	UNIT BASEMENT STYLE (CONVENTIONAL / LOOKOUT / WALKOUT)
PRV	PRESSURE REDUCING VALVE
	EMERGENCY OVERLAND FLOW
	PROPOSED TERRACING
	PROPOSED SWALE
MH 100	PROPOSED STORM MH
	PROPOSED LANDSCAPE TEE CATCH BASIN
	PROPOSED LANDSCAPE ELBOW CATCH BASIN
	PROPOSED REAR YARD CATCH BASIN MANHOLE
	PROPOSED REAR YARD CATCH BASIN
	PROPOSED ROAD CATCHBASIN
	EXISTING TREE TO REMAIN IF POSSIBLE
87.65	LIMITS AND ELEVATION FOR 100 YR PONDING
87.62	LIMITS AND ELEVATION FOR 100 YR PONDING + 20%
97.84	REAR YARD STATIC PONDING LIMITS





ROADWAY CATCHBASIN TABLE (PHASE 2A)

CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
30	2+235.53	89.07	87.27	200mm	600 x 600 CB	0.086
31	2+235.52	89.07	87.27	200mm	600 x 600 CB	0.100
32	2+172.35	89.47	87.67	127mm	600 x 600 CB	0.039
33	2+172.35	89.47	87.67	152mm	600 x 600 CB	0.059
34	9+535.97	89.51	87.71	127mm	600 x 600 CB	0.049
35	9+535.97	89.51	87.71	127mm	600 x 600 CB	0.049
36	9+396.24	89.79	87.99	108mm	600 x 600 CB	0.036
37	9+395.97	89.79	87.99	127mm	600 x 600 CB	0.049
38*	9+387.20	89.86	88.06	152mm	600 x 600 CB	N/A
39*	9+351.61	90.13	88.33	152mm	600 x 600 CB	N/A
40	9+294.95	90.13	88.33	127mm	600 x 600 CB	0.048
41	9+294.96	90.13	88.33	127mm	600 x 600 CB	0.050
42	9+139.87	90.30	88.50	102mm	600 x 600 CB	0.032
43	9+140	90.29	88.49	108mm	600 x 600 CB	0.036
52	9+382.52	89.81	88.01	178mm	600 x 600 CB	0.044

* SOLID COVER
** CURB INLET

REAR YARD CATCHBASIN TABLE (PHASE 2A)

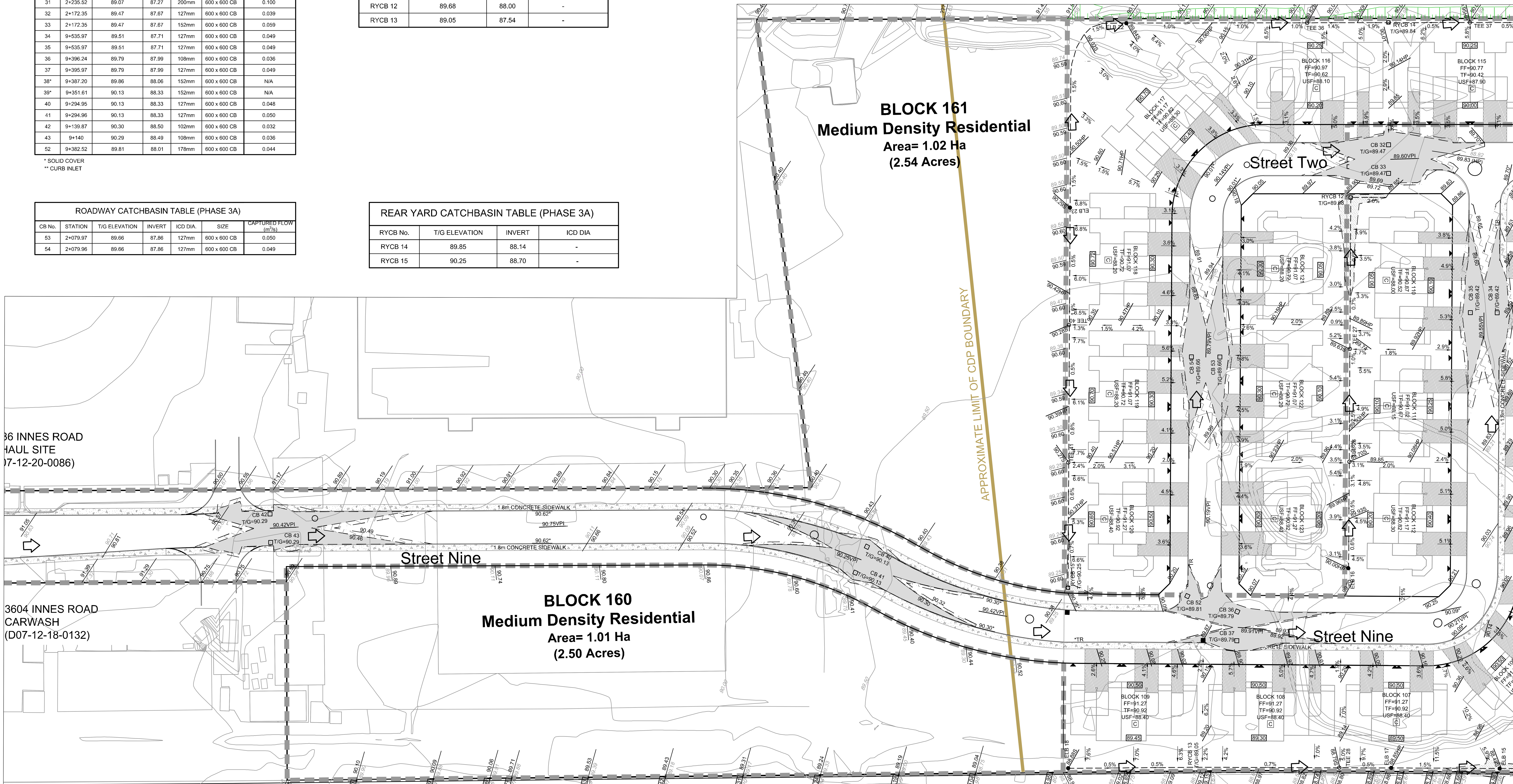
RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 12	89.68	88.00	-
RYCB 13	89.05	87.54	-

ROADWAY CATCHBASIN TABLE (PHASE 3A)

CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
53	2+079.97	89.66	87.86	127mm	600 x 600 CB	0.050
54	2+079.96	89.66	87.86	127mm	600 x 600 CB	0.049

REAR YARD CATCHBASIN TABLE (PHASE 3A)

RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 14	89.85	88.14	-
RYCB 15	90.25	88.70	-



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2.	REVISED AND REISSUED FOR REVIEW	NOV 26/21	BHB
1.	ISSUED FOR REVIEW	JUNE 18/21	BHB

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1:500 0 5 10 15 20

DESIGN DJC
CHECKED BCS
DRAWN MFD
CHECKED BCS
APPROVED BHB

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Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
THE COMMONS

DRAWING NAME
PONDING AND ICD PLAN

PROJECT No. 118224-00
REV REV # 4
DRAWING No. 118224-P-ICD1

PLANA1.DWG - 841mmx594mm

D07-16-19-0027

#18535

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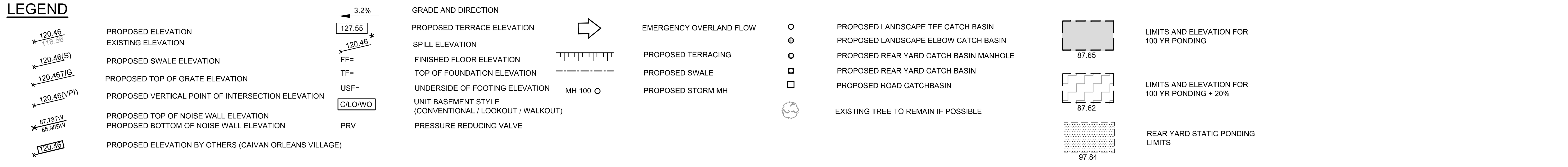

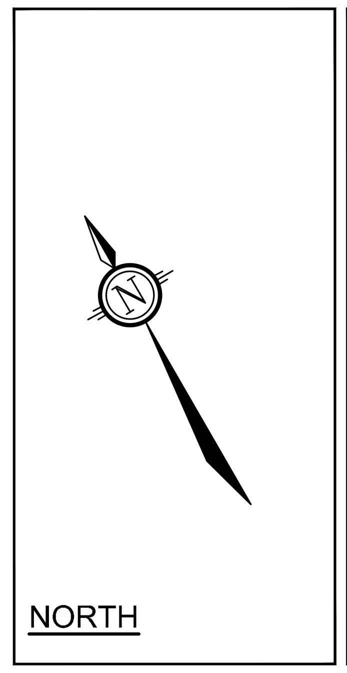

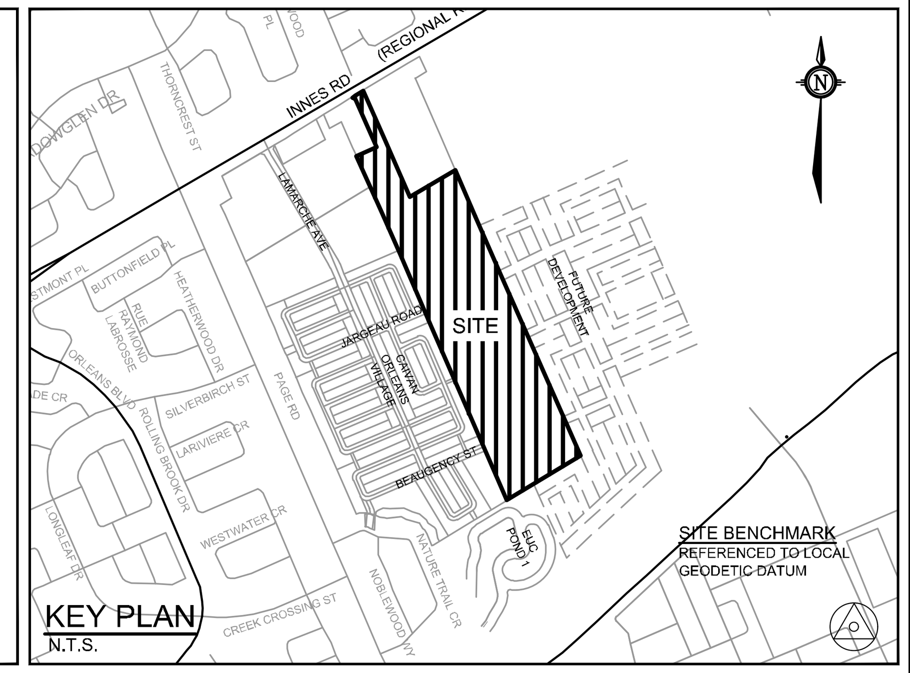

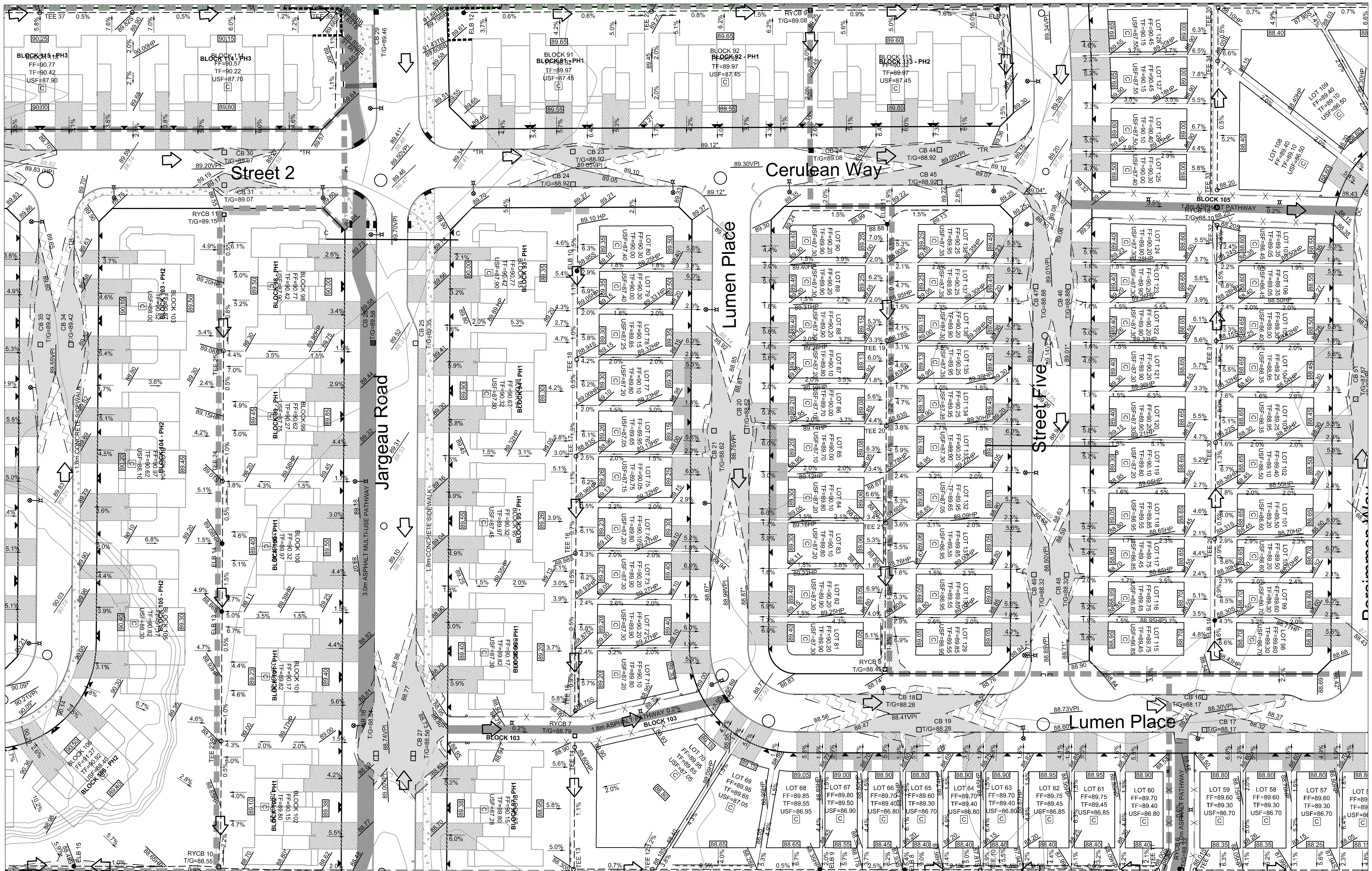

ROADWAY CATCHBASIN TABLE (PHASE 1B)						
CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
18	4+170	88.28	86.48	152mm	600 x 600 CB	0.055
19	4+170	88.28	86.48	152mm	600 x 600 CB	0.071
20	4+069	88.62	86.82	108mm	600 x 600 CB	0.036
21	4+069	88.62	86.82	108mm	600 x 600 CB	0.035
23	3+052	88.92	87.12	127mm	600 x 600 CB	0.049
24	3+052	88.92	87.12	127mm	600 x 600 CB	0.049
25	1+126.45	89.39	87.59	250mm	600 x 600 CB	0.009
26**	1+126.45	89.51	87.71	250mm	600 x 600 CB	0.004
27***	1+032.02	88.59	86.79	152mm	600 x 600 CB	0.068
28***	1+032.02	88.66	86.86	152mm	600 x 600 CB	0.068
29*	1+201.88	89.61	85.31	--	600 x 600 CB	N/A

* SOLID COVER
** CURB INLET
***DUAL CATCHBASIN

REAR YARD CATCHBASIN TABLE (PHASE 1B)			
RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 7	88.79	86.49	-
RYCB 8	88.46	86.97	-
RYCB 10	88.55	87.02	178mm
RYCB 11	89.19	87.35	-

REAR YARD CATCHBASIN TABLE (PHASE 2A)			
RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 12	89.68	88.00	-
RYCB 13	89.05	87.54	-

ROADWAY CATCHBASIN TABLE (PHASE 3B)						
CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
6*	8+042.40	87.39	85.39	83mm	600 x 600 CB	0.030
55	8+030	87.27	85.47	127mm	600 x 600 CB	0.049
56	8+030	87.27	85.47	--	600 x 600 CB	N/A
57***	8+069.55	87.40	85.60	127mm	600 x 600 CB	0.050

* SOLID COVER (CB6 TO BE INSTALLED AS A PART OF PHASE 1A)
*** DUAL CATCHBASIN

REAR YARD CATCHBASIN TABLE (PHASE 3B)			
RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 1	87.31	86.00	127mm
TEE 43	87.75	86.11	-
TEE 44	87.76	86.04	-

* RYCB1 TO BE INSTALLED AS A PART OF PHASE 1A

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1.	ISSUED FOR REVIEW	JUNE 18/21	BHB

SCALE 1:500

DESIGN BR
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LOCATION
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THE COMMONS

DRAWING NAME
PONDING AND ICD PLAN

PROJECT No. 118224-00
REV REV # 4
DRAWING No. 118224-P-ICD2

D07-16-19-0027 #18535

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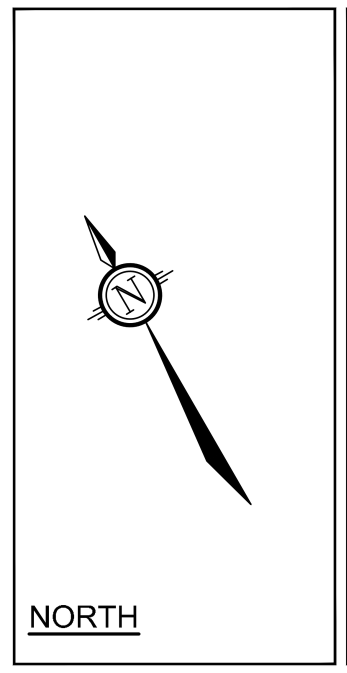
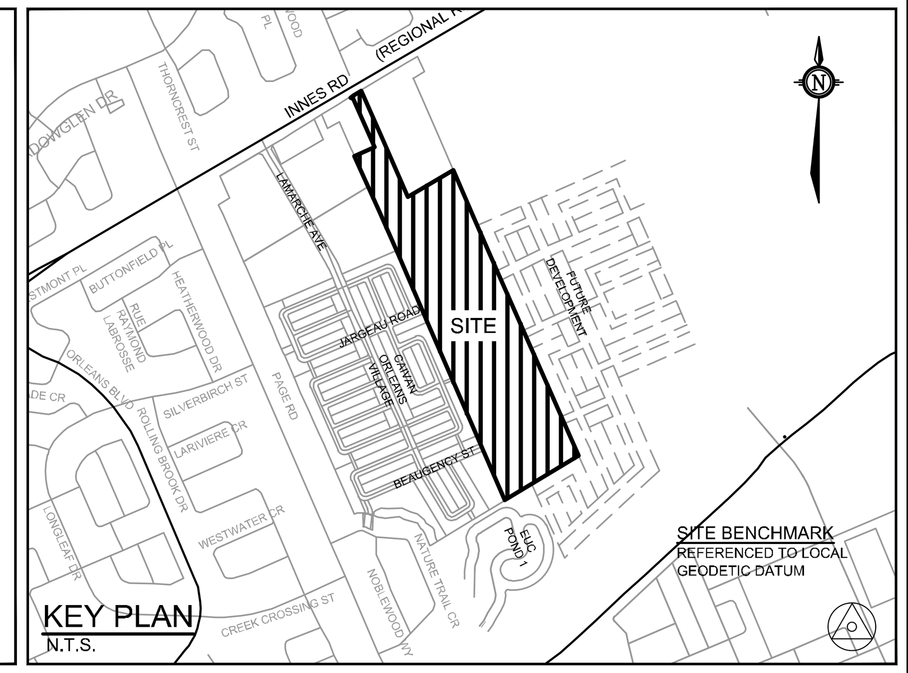
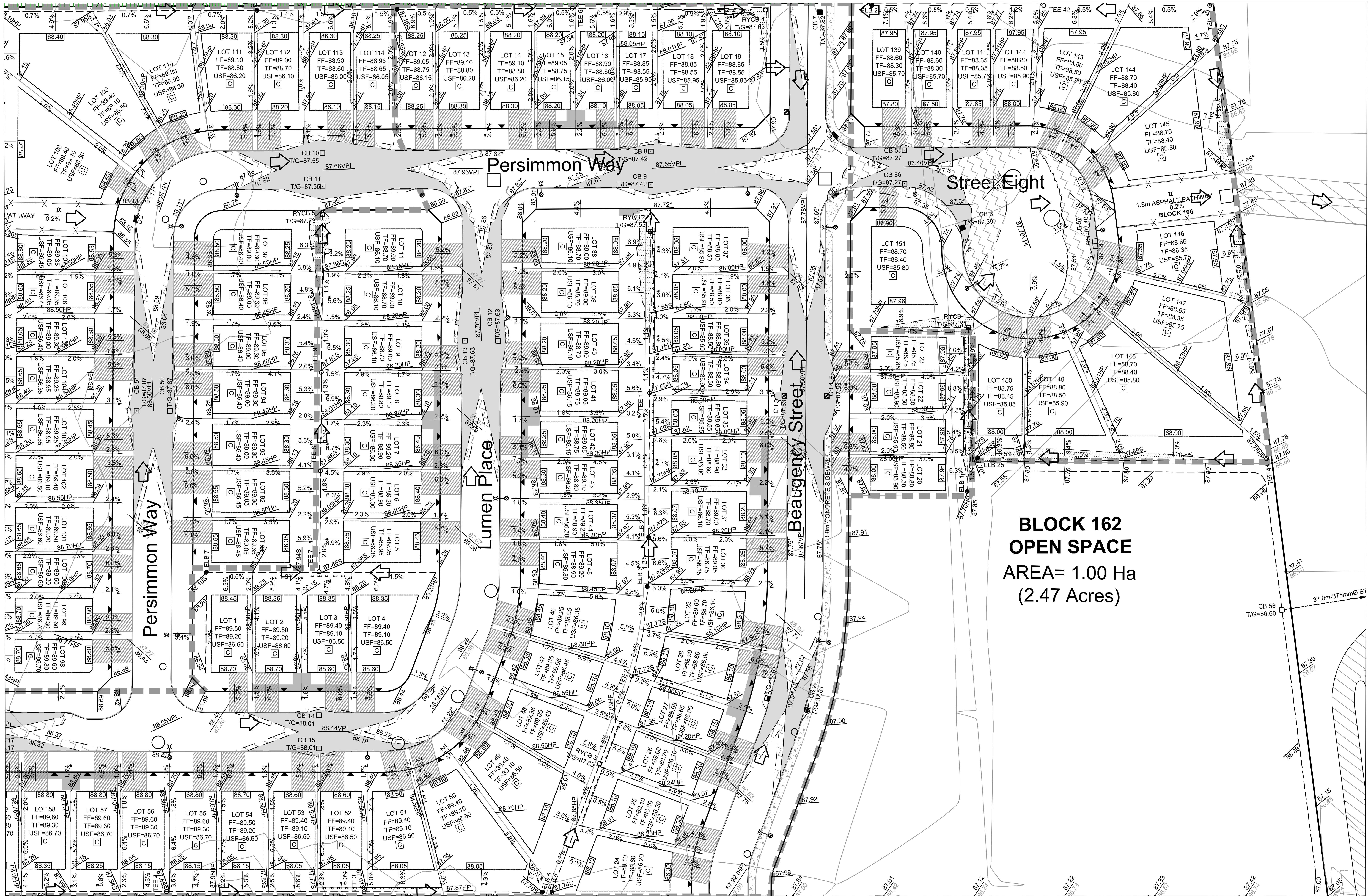
LEGEND

120.46 / 118.56	PROPOSED ELEVATION / EXISTING ELEVATION
120.46(S)	PROPOSED SWALE ELEVATION
120.46T/G	PROPOSED TOP OF GRATE ELEVATION
120.46(VPI)	PROPOSED VERTICAL POINT OF INTERSECTION ELEVATION
87.78TW / 85.98BW	PROPOSED TOP OF NOISE WALL ELEVATION / PROPOSED BOTTOM OF NOISE WALL ELEVATION
120.46	PROPOSED ELEVATION BY OTHERS (CAIVAN ORLEANS VILLAGE)
3.2%	GRADE AND DIRECTION
127.55	PROPOSED TERRACE ELEVATION
120.46*	SPILL ELEVATION
FF=	FINISHED FLOOR ELEVATION
TF=	TOP OF FOUNDATION ELEVATION
USF=	UNDERSIDE OF FOOTING ELEVATION
C/LO/WO	UNIT BASEMENT STYLE (CONVENTIONAL / LOOKOUT / WALKOUT)
PRV	PRESSURE REDUCING VALVE
	EMERGENCY OVERLAND FLOW
	PROPOSED TERRACING
	PROPOSED SWALE
MH 100	PROPOSED STORM MH
	PROPOSED LANDSCAPE TEE CATCH BASIN
	PROPOSED LANDSCAPE ELBOW CATCH BASIN
	PROPOSED REAR YARD CATCH BASIN MANHOLE
	PROPOSED REAR YARD CATCH BASIN
	PROPOSED ROAD CATCHBASIN
	EXISTING TREE TO REMAIN IF POSSIBLE
87.65	LIMITS AND ELEVATION FOR 100 YR PONDING
87.62	LIMITS AND ELEVATION FOR 100 YR PONDING + 20%
97.84	REAR YARD STATIC PONDING LIMITS







ROADWAY CATCHBASIN TABLE (PHASE 1A)

CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
1*	7+021.04	87.85	85.42	--	1,200 mm dia CBMH	N/A
2**	7+047.99	87.60	85.80	94mm	600 x 600 CB	0.026
3**	7+048.08	87.60	85.80	102mm	600 x 600 CB	0.031
4**	7+117.08	87.53	85.73	94mm	600 x 600 CB	0.027
5**	7+117.08	87.53	85.73	94mm	600 x 600 CB	0.027
7*	7+203.11	87.66	83.79	--	600 x 600 CB	N/A
8	6+238.27	87.42	85.62	102mm	600 x 600 CB	0.032
9	6+238.19	87.42	85.62	94mm	600 x 600 CB	0.027
12	4+421.50	87.63	85.83	127mm	600 x 600 CB	0.050
13	4+421.50	87.63	85.83	127mm	600 x 600 CB	0.048
14	4+310	88.01	86.21	94mm	600 x 600 CB	0.027
15	4+310	88.01	86.21	94mm	600 x 600 CB	0.027
16	4+235	88.17	86.37	83mm	600 x 600 CB	0.021
17	4+235	88.18	86.38	94mm	600 x 600 CB	0.027
59**	7+180.34	87.50	85.70	--	600 x 600 CB	N/A

* SOLID COVER
** CURB INLET

REAR YARD CATCHBASIN TABLE (PHASE 1A)

RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 2	87.56	86.01	127mm
RYCB 3	87.65	86.18	152mm
RYCB 4	87.63	86.12	152mm
RYCB 5	87.74	86.04	-
RYCB 6	88.33	85.72	-

ROADWAY CATCHBASIN TABLE (PHASE 2B)

CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
10	6+165.12	87.57	85.77	108mm	600 x 600 CB	0.031
11	6+165.12	87.56	85.77	127mm	600 x 600 CB	0.043
22*	3+106.23	89.08	87.28	152mm	600 x 600 CB	N/A
44	3+135.44	88.92	87.12	102mm	600 x 600 CB	0.032
45	3+135.44	88.92	87.12	83mm	600 x 600 CB	0.021
46	5+063.76	88.88	87.08	102mm	600 x 600 CB	0.032
47	5+063.76	88.88	87.08	94mm	600 x 600 CB	0.026
48	5+129.30	88.37	86.57	94mm	600 x 600 CB	0.028
49	5+129.29	88.37	86.57	94mm	600 x 600 CB	0.029
50	6+080.50	87.87	86.07	127mm	600 x 600 CB	0.048
51	6+080.51	87.87	86.07	127mm	600 x 600 CB	0.047

* SOLID COVER

REAR YARD CATCHBASIN TABLE (PHASE 2B)

RYCB No.	T/G ELEVATION	INVERT	ICD DIA
RYCB 9	89.09	87.54	-
RYCB 18	88.10	85.76	-

ROADWAY CATCHBASIN TABLE (PHASE 3B)

CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.	SIZE	CAPTURED FLOW (m^3/s)
6*	8+042.40	87.39	85.39	83mm	600 x 600 CB	0.030
55	8+030	87.27	85.47	127mm	600 x 600 CB	0.049
56	8+030	87.27	85.47	--	600 x 600 CB	N/A
57***	8+069.55	87.40	85.60	127mm	600 x 600 CB	0.050

* SOLID COVER (CB6 TO BE INSTALLED AS A PART OF PHASE 1A)
*** DUAL CATCHBASIN

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PROJECT No. 118224-00
REV REV # 4
DRAWING No. 118224-P-ICD3

PLANA1.DWG - 841mmx594mm

D07-16-19-0027 #18535

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APPENDIX

A

Rational Method Design Sheets
(as per Novatech)

Example Calculations of
Total Imperviousness/C Value
(as per Novatech)

JFSA Water Resources and Environmental Consultants

STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - 3610 Innes Road
Date Prepared: 10/4/2019
Date Revised: 5/11/2022
Input By: Bradley Reed
Reviewed By: Sam Bahia/ Ben Sweet
Drawing Reference: 118224-STM1, 118224-STM2 and 118224-GP

Legend:
PROJECT SPECIFIC INFO
USER DESIGN INPUT
CUMILATIVE CELL
CALCULATED DESIGN CELL OUTPUT
USER AS-BUILT INPUT

LOCATION			DEMAND																		CAPACITY								
			AREA									FLOW									PROPOSED SEWER PIPE SIZING / DESIGN								
															RAIN INTENSITY (mm/hr)						PIPE PROPERTIES								
STREET	FROM MH	TO MH	AREA ID	COMMERCIAL	HIGH DENSITY	ROAD 1	REAR YARD 1	REAR YARD 2	PARK	TOTAL AREA	WEIGHTED RUNOFF COEFFICIENT	INDIVI 2.78 AR	ACCUM 2.78 AR	TIME OF CONC	2yr	5yr	100yr	PEAK FLOW	TOTAL UNCONTROLLED PEAK FLOW (QDesign)	TOTAL RESTRICTED PEAK FLOW (Q)	LENGTH	SIZE / MATERIAL	ID ACTUAL	ROUGHNESS	DESIGN GRADE	CAPACITY	FULL FLOW VELOCITY	TIME OF FLOW	QPEAK DESIGN / QFULL
				0.90	0.80	0.70	0.55	0.50	0.40	(ha)				(min.)				(L/s)	(L/s)	(L/s)	(m)	(mm / type)	(m)		(%)	(L/s)	(m/s)	(min.)	(%)
Street 9	170	168	A1			0.36				0.36 0.00 0.00	0.70	0.70 0.00 0.00	0.70 0.00 0.00	10.00 10.00 10.00	76.81			53.81 0.00 0.00	53.8		93.9	375 PVC	0.381	0.013	0.35	108.2	0.95	1.65	49.7%
	168	166	B1		1.01					0.00 1.01 0.00	0.80	0.00 2.25 0.00	0.70 2.25 0.00	11.65 11.65 11.65	71.01	96.22		49.74 216.14 0.00	265.9		101.6	600 CONC	0.6096	0.013	0.33	368.0	1.26	1.34	72.3%
	166	164								0.00 0.00 0.00	0.90	0.00 0.00 0.00	0.70 2.25 0.00	12.99 12.99 12.99	66.95	90.66		46.90 203.65 0.00	250.6		29.2	600 CONC	0.6096	0.013	0.38	394.9	1.35	0.36	63.5%
	164	162	A2, B2, B3	3.43	1.02	0.24				0.24 4.45 0.00	0.70 0.88	0.47 10.85 0.00	1.17 13.10 0.00	13.35 13.35 13.35	65.95	89.29		77.01 1169.40 0.00	1246.4		60.1	1050 CONC	1.0668	0.013	0.40	1801.7	2.02	0.50	69.2%
	162	160	A3, A4, A5, A6			0.45		0.29		0.74 0.00 0.00	0.62	1.28 0.00 0.00	2.45 13.10 0.00	13.85 13.85 13.85	64.63	87.47		158.10 1145.58 0.00	1303.7		106.3	1050 CONC	1.0668	0.013	0.35	1685.4	1.89	0.94	77.4%
	160	158	-							0.00 0.00 0.00		0.00 0.00 0.00	2.45 13.10 0.00	14.79 14.79 14.79	62.27	84.25		152.34 1103.36 0.00	1255.7		14.3	1050 CONC	1.0668	0.013	0.50	2014.4	2.25	0.11	62.3%
	158	150	A7			0.51				0.51 0.00 0.00	0.70	0.99 0.00 0.00	3.44 13.10 0.00	14.89 14.89 14.89	62.02	83.90		213.27 1098.82 0.00	1312.1		108.0	1050 CONC	1.0668	0.013	0.35	1685.4	1.89	0.95	77.9%
Street 2	156	154	A8			0.42				0.42 0.00 0.00	0.70	0.82 0.00 0.00	0.82 0.00 0.00	10.00 10.00 10.00	76.81			62.77 0.00 0.00	62.8		100.7	375 PVC	0.381	0.013	0.35	108.2	0.95	1.77	58.0%
	154	152	-							0.00 0.00 0.00		0.00 0.00 0.00	0.82 0.00 0.00	11.77 11.77 11.77	70.62			57.72 0.00 0.00	57.7		12.6	375 PVC	0.381	0.013	0.50	129.3	1.13	0.19	44.6%
	152	150	A9, A10, A11			0.25		0.49		0.74 0.00 0.00	0.57	1.17 0.00 0.00	1.98 0.00 0.00	11.95 11.95 11.95	70.04			139.02 0.00 0.00	139.0		59.4	525 CONC	0.5334	0.013	0.35	265.4	1.19	0.83	52.4%
Street 2	150	144	A12, A13			0.29		0.23		0.52 0.00 0.00	0.61	0.88 0.00 0.00	6.31 13.10 0.00	15.85 15.85 15.85	59.83	80.91		377.43 1059.68 0.00	1437.1		76.3	1200 CONC	1.2192	0.013	0.25	2033.7	1.74	0.73	70.7%
Chemin de Jargeau Road	148	146	A14, A15			0.53		0.32		0.00 0.85 0.00	0.62	0.00 1.48 0.00	0.00 1.48 0.00	10.00 10.00 10.00		104.19		0.00 153.81 0.00	153.8		78.5	750 CONC	0.762	0.013	0.15	449.8	0.99	1.33	34.2%
	146	144	A16			0.12				0.00 0.12 0.00	0.70	0.00 0.23 0.00	0.00 1.71 0.00	11.33 11.33 11.33		97.67		0.00 166.99 0.00	167.0		78.7	750 CONC	0.762	0.013	0.15	449.8	0.99	1.33	37.1%
Voie de Cerulean Way	144	140	A17, A18			0.28		0.09		0.37 0.00 0.00	0.65	0.67 0.00 0.00	6.98 14.81 0.00	10.00 10.00 10.00	76.81	104.19		535.93 1542.71 0.00	2078.6		77.3	1350 CONC	1.3716	0.013	0.30	3049.8	2.06	0.62	68.2%
Voie De Cerulean Way	142	140	A19					0.19		0.19 0.00 0.00	0.50	0.26 0.00 0.00	0.26 0.00 0.00	10.00 10.00 10.00	76.81			20.28 0.00 0.00	20.3		20.7	250 PVC	0.254	0.013	0.65	50.0	0.99	0.35	40.6%
Lumen Place	140	138	A20			0.40				0.40 0.00 0.00	0.70	0.78 0.00 0.00	8.02 14.81 0.00	10.62 10.62 10.62	74.49	101.01		597.42 1495.55 0.00	2093.0		113.1	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	1.00	75.2%
	138	136	A21, A22, A23				0.49	0.03		0.52 0.00 0.00	0.55	0.79 0.00 0.00	8.81 14.81 0.00	11.62 11.62 11.62	71.08	96.33		626.33 1426.28 0.00	2052.6		14.8	1350 CONC	1.3716	0.013	0.50	3937.3	2.66	0.09	52.1%
	136	128	A24, A25			0.35	0.29			0.64 0.00 0.00	0.63	1.12 0.00 0.00	9.94 14.81 0.00	11.72 11.72 11.72	70.79	95.92		703.31 1420.23 0.00	2123.5		62.5	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	0.55	76.3%
Voie de Cerulean Way	142	132	A26			0.23				0.23 0.00 0.00	0.70	0.45 0.00 0.00	0.45 0.00 0.00	10.00 10.00 10.00	76.81			34.38 0.00 0.00	34.4		53.4	250 PVC	0.254	0.013	0.65	50.0	0.99	0.90	68.7%
Street 5	134	132	-							0.00 0.00 0.00		0.00 0.00 0.00	0.00 0.00 0.00	10.00 10.00 10.00				0.00 0.00 0.00	0.0		36.0	250 PVC	0.254	0.013	0.65	50.0	0.99	0.61	0.0%
	132	130	A27			0.27				0.27 0.00 0.00	0.70	0.53 0.00 0.00	0.97 0.00 0.00	10.61 10.61 10.61	74.55			72.53 0.00 0.00	72.5		37.4	375 PVC	0.381	0.013	0.25	91.5	0.80	0.78	79.3%
	130	128	A28			0.28				0.28 0.00 0.00	0.70	0.54 0.00 0.00	1.52 0.00 0.00	11.38 11.38 11.38	71.87			109.09 0.00 0.00	109.1		88.3	450 PVC	0.4572	0.013	0.20	133.0	0.81	1.82	82.0%

STORM SEWER DESIGN SHEET

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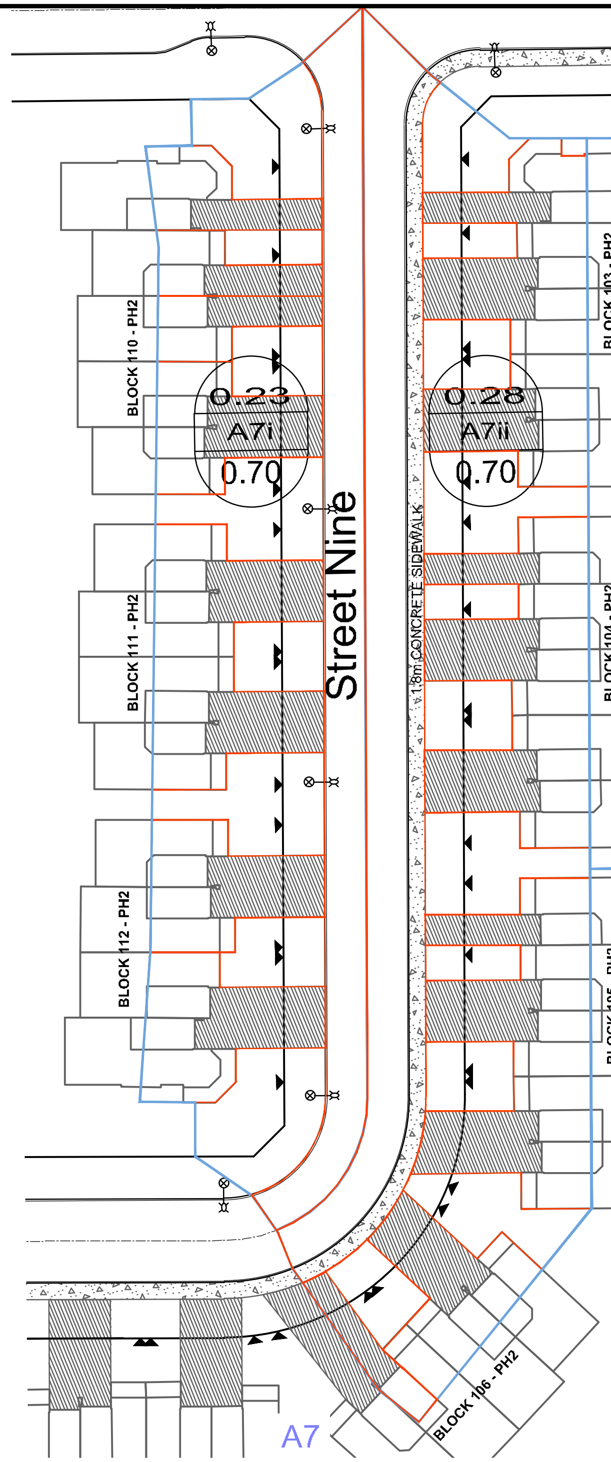
LOCATION: STREET	FROM MH	TO MH	DEMAND – AREA: AREA ID	COMMERCIAL	HIGH DENSITY	ROAD 1	REAR YARD 1	REAR YARD 2	PARK	TOTAL AREA	WEIGHTED RUNOFF COEFFICIENT	DEMAND – FLOW: INDIVI 2.78 AR	ACCUM 2.78 AR	TIME OF CONC	RAIN INTENSITY (mm/hr) 2yr	5yr	100yr	PEAK FLOW	TOTAL UNCONTROLLED PEAK FLOW (QDesign)	TOTAL RESTRICTED PEAK FLOW (Q)	CAPACITY – PROPOSED SEWER PIPE SIZING / DESIGN – PIPE PROPERTIES: LENGTH	SIZE / MATERIAL	ID ACTUAL	ROUGHNESS	DESIGN GRADE	CAPACITY	FULL FLOW VELOCITY	TIME OF FLOW	QPEAK DESIGN / QFULL
				0.90	0.80	0.70	0.55	0.50	0.40	(ha)				(min.)				(L/s)	(L/s)	(L/s)	(m)	(mm / type)	(m)		(%)	(L/s)	(m/s)	(min.)	(%)
Lumen Place	128	126	A29, A30, A31, A32			0.24	0.31	0.01		0.56 0.00 0.00	0.61	0.95 0.00 0.00	12.41 14.81 0.00	13.20 13.20 13.20	66.37	89.86		823.51 1330.46 0.00	2154.0		76.0	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	0.67	77.4%
	126	124	A33			0.27				0.27 0.00 0.00	0.70	0.53 0.00 0.00	12.93 14.81 0.00	13.87 13.87 13.87	64.56	87.38		835.02 1293.81 0.00	2128.8		53.4	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	0.47	76.5%
	124	122	-							0.00 0.00 0.00		0.00 0.00 0.00	12.93 14.81 0.00	14.35 14.35 14.35	63.36	85.73		819.44 1269.37 0.00	2088.8		16.9	1350 CONC	1.3716	0.013	0.50	3937.3	2.66	0.11	53.1%
	122	120	-							0.00 0.00 0.00		0.00 0.00 0.00	12.93 14.81 0.00	14.45 14.45 14.45	63.09	85.37		816.04 1264.04 0.00	2080.1		24.6	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	0.22	74.7%
	120	112	A34			0.49				0.49 0.00 0.00	0.70	0.95 0.00 0.00	13.89 14.81 0.00	14.67 14.67 14.67	62.56	84.64		868.79 1253.23 0.00	2122.0		91.6	1350 CONC	1.3716	0.013	0.25	2784.1	1.88	0.81	76.2%
Voie de Persimmon Way	118	116	A35			0.43				0.43 0.00 0.00	0.70	0.84 0.00 0.00	0.84 0.00 0.00	10.00 10.00 10.00	76.81			64.27 0.00 0.00	64.3		99.6	375 PVC	0.381	0.013	0.30	100.2	0.88	1.89	64.2%
	116	114	A36, A37, A38				0.53	0.03		0.56 0.00 0.00	0.55	0.85 0.00 0.00	1.69 0.00 0.00	11.89 11.89 11.89	70.24			118.63 0.00 0.00	118.6		11.9	450 PVC	0.4572	0.013	0.50	210.3	1.28	0.15	56.4%
	114	112	A39, A40, A41			0.29	0.30			0.59 0.00 0.00	0.62	1.02 0.00 0.00	2.71 0.00 0.00	12.04 12.04 12.04	69.76			189.17 0.00 0.00	189.2		64.6	525 CONC	0.5334	0.013	0.35	265.4	1.19	0.91	71.3%
Voie de Persimmon Way	112	104	A42, A43			0.25	0.24			0.49 0.00 0.00	0.63	0.85 0.00 0.00	17.45 14.81 0.00	15.48 15.48 15.48	60.66	82.04		1058.67 1214.70 0.00	2273.4		73.8	1350 CONC	1.3716	0.013	0.30	3049.8	2.06	0.60	74.5%
Rue de Beaugency Street	110	108	A44, B4ii				0.20			0.20 0.00 0.00	0.55	0.31 0.00 0.00	0.31 0.00 0.00	10.00 10.00 10.00	76.81			23.49 0.00 0.00	23.5		29.1	250 PVC	0.254	0.013	0.65	50.0	0.99	0.49	47.0%
	108	106	A45, B4ii			0.23			 0.04	0.23 0.04 0.00	0.70 0.40	0.45 0.04 0.00	0.75 0.04 0.00	10.49 10.49 10.49	74.97	101.67		56.48 4.52 0.00	61.0		26.2	450 PVC	0.4572	0.013	0.25	148.7	0.91	0.48	41.0%
	106	104	A46, B4iii			0.29			 0.01	0.29 0.01 0.00	0.70 0.40	0.56 0.01 0.00	1.32 0.06 0.00	10.97 10.97 10.97	73.26	99.32		96.54 5.52 0.00	102.1		97.8	450 PVC	0.4572	0.013	0.25	148.7	0.91	1.80	68.6%
Street 8	104	102	A47, A48, A49, A50			0.28	0.21			0.49 0.00 0.00	0.64	0.87 0.00 0.00	19.64 14.86 0.00	16.08 16.08 16.08	59.34	80.24		1165.25 1192.47 0.00	2357.7		41.9	1650 CONC	1.6764	0.013	0.10	3006.9	1.36	0.51	78.4%
	102	100	-							0.00 0.00 0.00		0.00 0.00 0.00	19.64 14.86 0.00	16.59 16.59 16.59	58.26	78.75		1143.97 1170.45 0.00	2314.4		12.1	1650 CONC	1.6764	0.013	0.10	3006.9	1.36	0.15	77.0%
	100	98	A51, A52, A53, A54			0.10	0.34	0.02		0.46 0.00 0.00	0.58	0.74 0.00 0.00	20.38 14.86 0.00	16.74 16.74 16.74	57.95	78.34		1181.00 1164.25 0.00	2345.3		39.5	1650 CONC	1.6764	0.013	0.10	3006.9	1.36	0.48	78.0%
	98	2121								0.00 0.00 0.00		0.00 0.00 0.00	20.38 14.86 0.00	17.22 17.22 17.22	56.98	77.01		1161.22 1144.54 0.00	2305.8		40.0	1650 CONC	1.6764	0.013	0.10	3006.9	1.36	0.49	76.7%
Park	CB 57	STM Outlet	B4i						 0.95	0.00 0.95 0.00	 0.40	0.00 1.06 0.00	0.00 1.06 0.00	10.00 10.00 10.00		104.19		0.00 110.07 0.00	110.1		37.0	375 PVC	0.381	0.013	0.50	129.3	1.13	0.54	85.1%
STM Easement (Richcraft Lands)	2121	2142	EXT1			1.13				1.13 0.00 0.00	0.70	2.20 0.00 0.00	22.58 15.92 0.00	17.71 17.71 17.71	56.04	75.72		1265.15 1205.30 0.00	2470.5		84.0	1650 CONC	1.6764	0.013	0.15	3682.6	1.67	0.84	67.1%
	2142	2143	EXT2			0.37				0.37 0.00 0.00	0.70	0.72 0.00 0.00	23.30 16.97 0.00	18.55 18.55 18.55	54.49	73.61		1269.53 1249.49 0.00	2519.0		17.2	1650 CONC	1.6764	0.013	0.15	3682.6	1.67	0.17	68.4%
	2143	2144	-							0.00 0.00 0.00		0.00 0.00 0.00	23.30 16.97 0.00	18.72 18.72 18.72	54.19	73.19		1262.43 1242.43 0.00	2504.9		20.1	1800 CONC	1.8288	0.013	0.10	3792.1	1.44	0.23	66.1%
	2144	HW	-							0.00 0.00 0.00		0.00 0.00 0.00	23.30 16.97 0.00	18.95 18.95 18.95	53.78	72.64		1252.99 1233.04 0.00	2486.0		17.2	1800 CONC	1.8288	0.013	0.10	3792.1	1.44	0.20	65.6%
TO TRUNK STORM SEWER																													

DEMAND EQUATION
Q = 2.78 AIR

Where : Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
R = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)
Rainfall Intensity (I) is based on City of Ottawa IDF data presented in the City of Ottawa Sewer Design Guidelines (Oct. 2012)

CAPACITY EQUATION
Q full= (1/n) A R^(2/3)So^(1/2)

Where : Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A = Flow area (m²)
R = Wetter perimenter (m)
So = Pipe Slope/gradient



FRONTYARD AREA = 5095.452m²

AREA OF IMPERVIOUSNESS = 3636.917m²

TOTAL IMPERVIOUSNESS = 71.38%

C-VALUE = 0.70

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

THE COMMONS

STORM DRAINAGE AREA

SCALE	DATE	JOB	FIGURE
1 : 750	FEB 2022	118224	1

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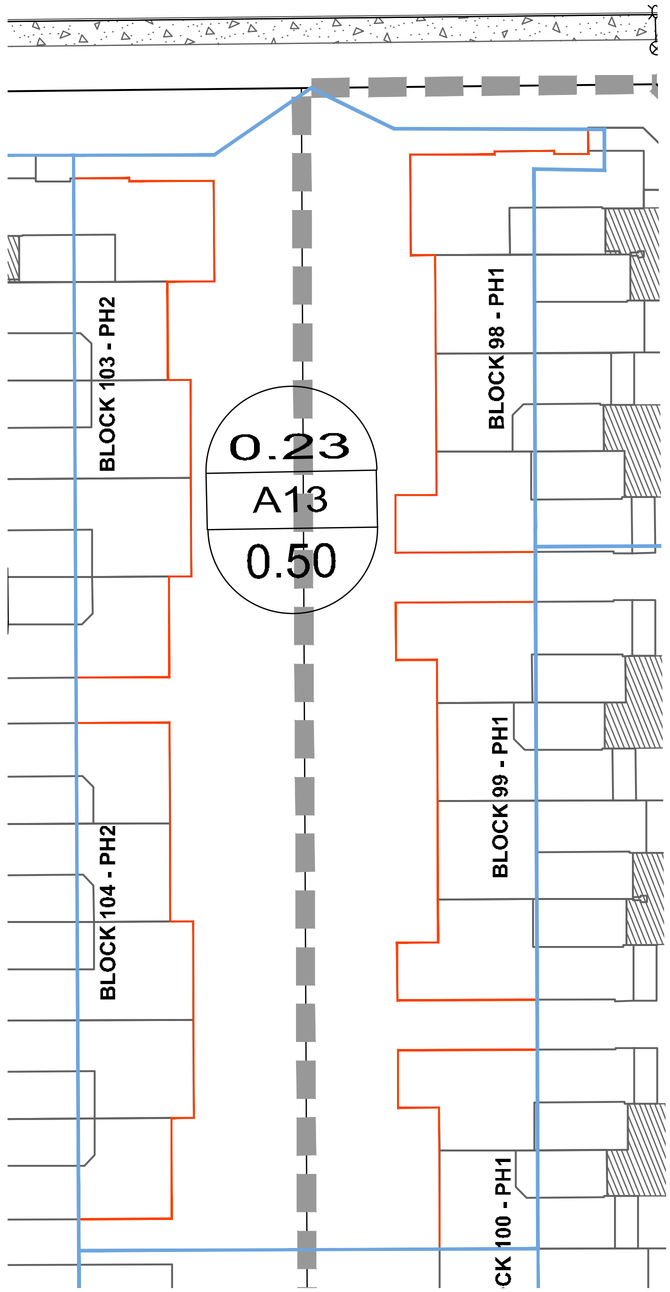

A13
AREA = 2259.340m²
AREA OF IMPERVIOUSNESS = 953.445m²
TOTAL IMPERVIOUSNESS = 42.20%
C-VALUE = 0.50

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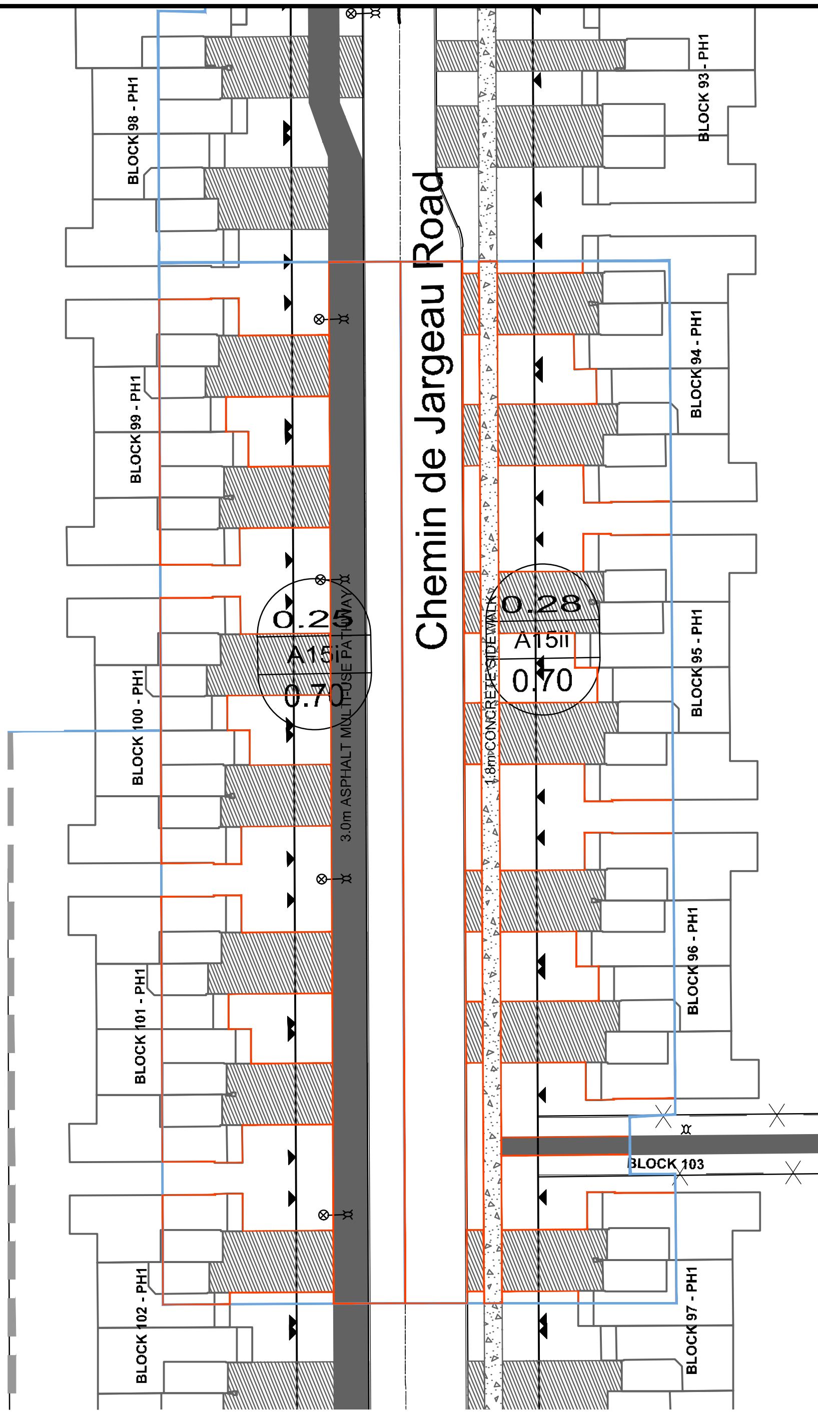
STORM DRAINAGE AREA

SCALE	DATE	JOB	FIGURE
1 : 500 (0, 5m, 10m, 20m)	FEB 2022	118224	2



A15
FRONTYARD AREA = 5217.667m²
AREA OF IMPERVIOUSNESS = 3858.626m²
TOTAL IMPERVIOUSNESS = 73.95%
C-VALUE = 0.72

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STORM DRAINAGE AREA

SCALE	1 : 750
DATE	FEB 2022
JOB	118224
FIGURE	3

A20

FRONTYARD AREA = 4028.217m²

AREA OF IMPERVIOUSNESS = 2779.381m²

TOTAL IMPERVIOUSNESS = 69.00%

C-VALUE = 0.68

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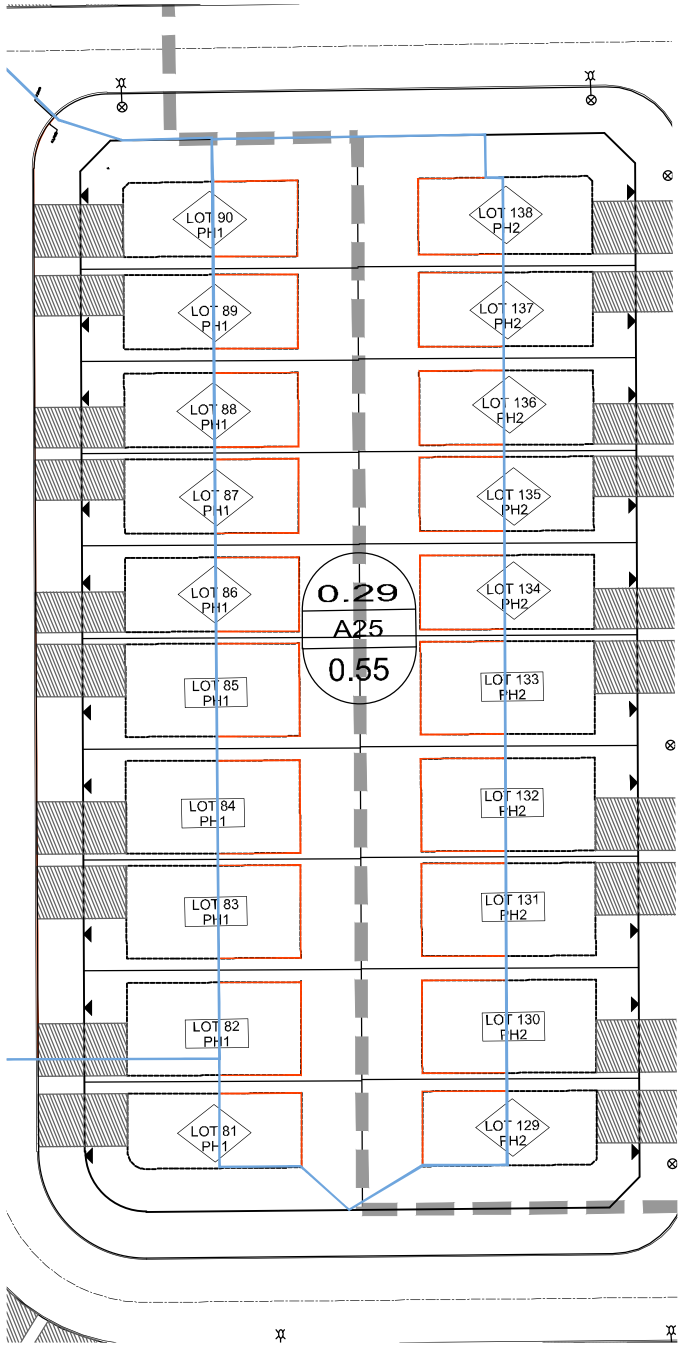
STORM DRAINAGE AREA

SCALE	DATE	JOB	FIGURE
1 : 750	FEB 2022	118224	4



A25

FRONTYARD AREA = 2937.971m²

AREA OF IMPERVIOUSNESS = 1346.687m²

TOTAL IMPERVIOUSNESS = 45.84%

C-VALUE = 0.52

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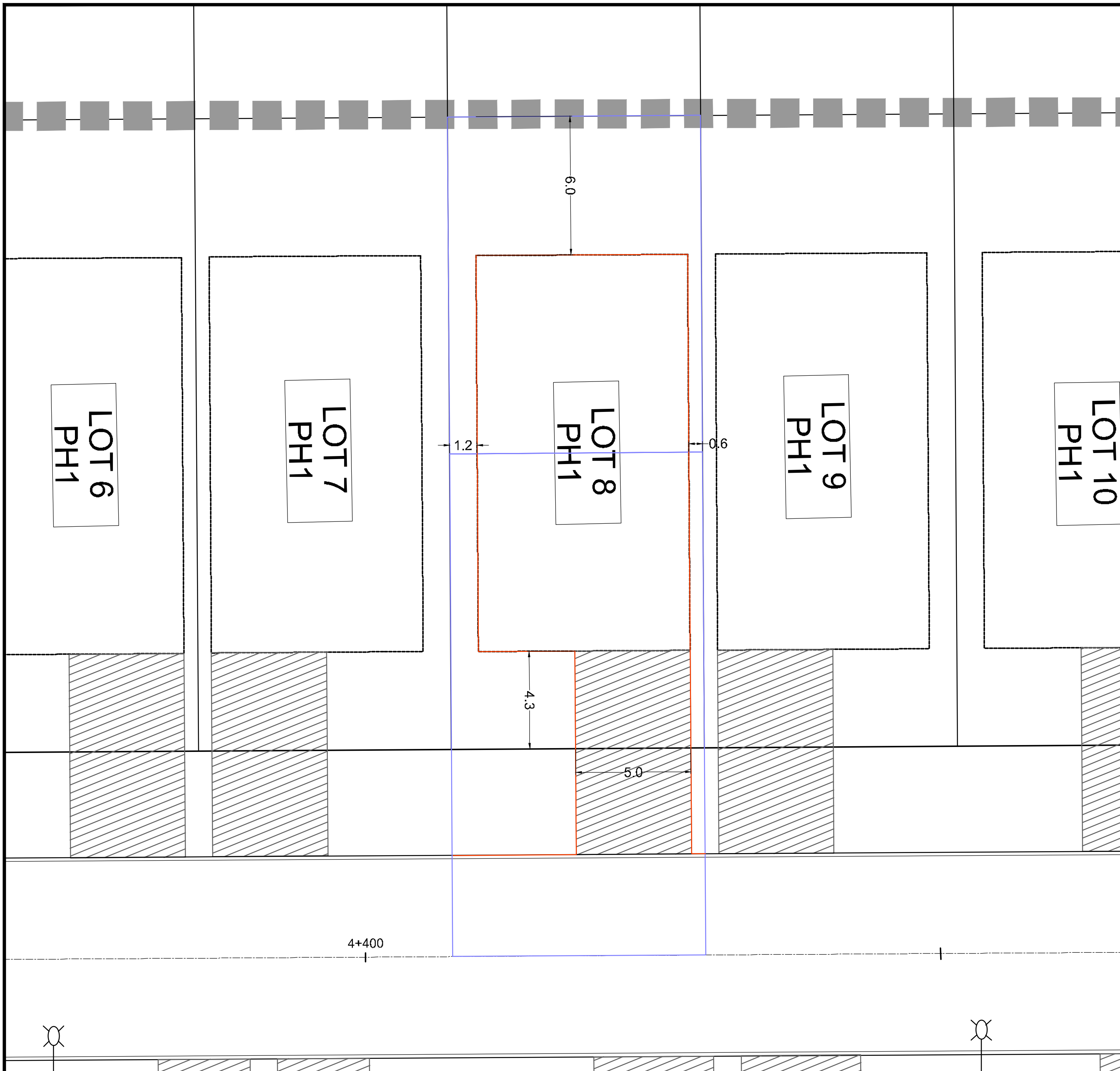
STORM DRAINAGE AREA

SCALE	DATE	JOB	FIGURE
1 : 750 (0 10 20 30)	FEB 2022	118224	5



REARYARD AREA = 161.01m²
AREA OF IMPERVIOUSNESS = 79.11m²
TOTAL IMPERVIOUSNESS = 49.13%
C-VALUE=0.54

FRONTYARD AREA = 240.49m²
AREA OF IMPERVIOUSNESS = 171.96m²
TOTAL IMPERVIOUSNESS = 71.50%
C-VALUE = 0.70

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EXAMPLE LOT 6
36' SINGLE

DATE	JOB	FIGURE
FEB 2022	118224	SINGLE1

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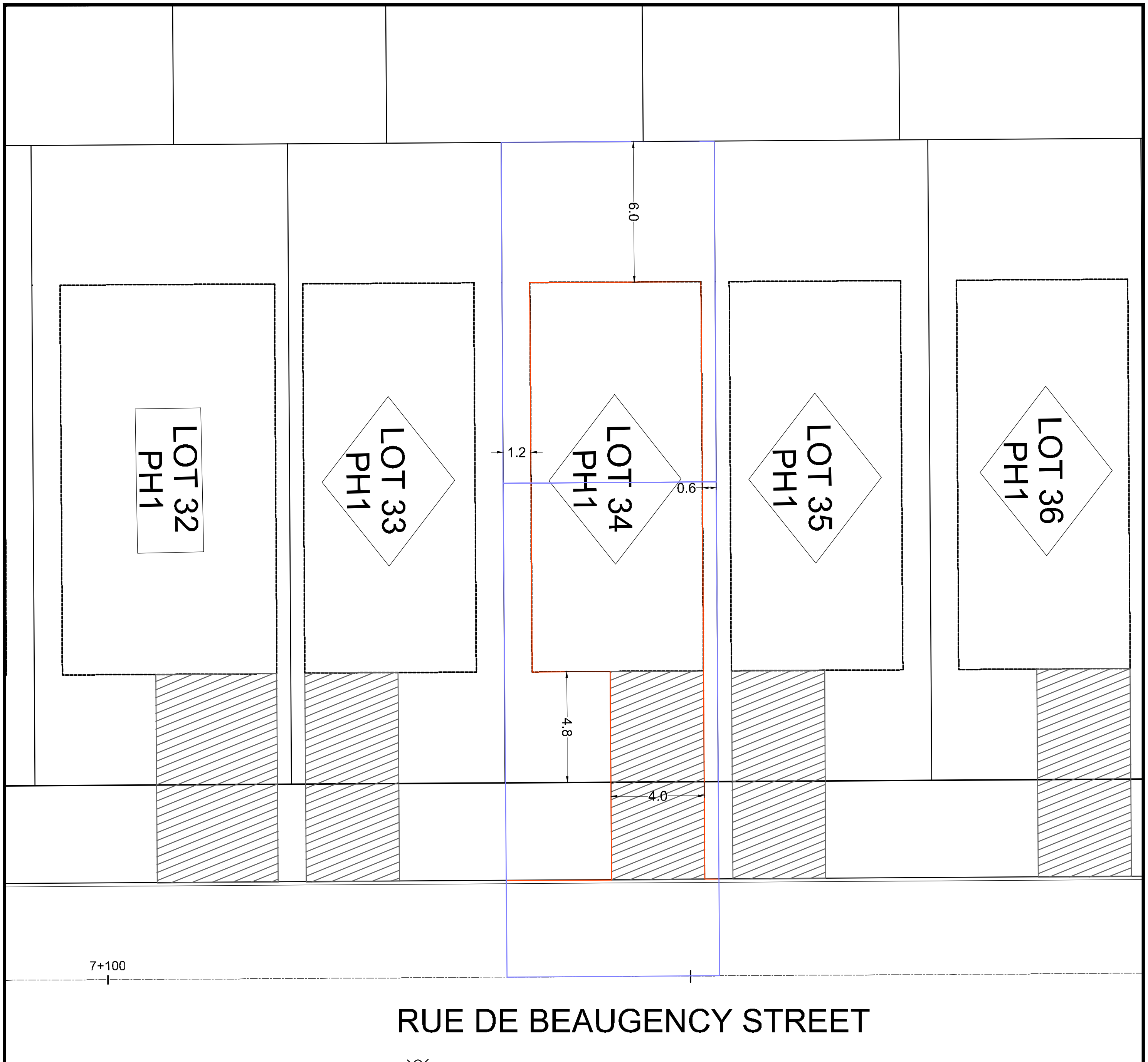

REARYARD AREA = 133.94m²
AREA OF IMPERVIOUSNESS = 63.26m²
TOTAL IMPERVIOUSNESS = 47.23%
C-VALUE = 0.53

FRONTYARD AREA = 190.73m²
AREA OF IMPERVIOUSNESS = 133.31m²
TOTAL IMPERVIOUSNESS = 69.89%
C-VALUE = 0.69

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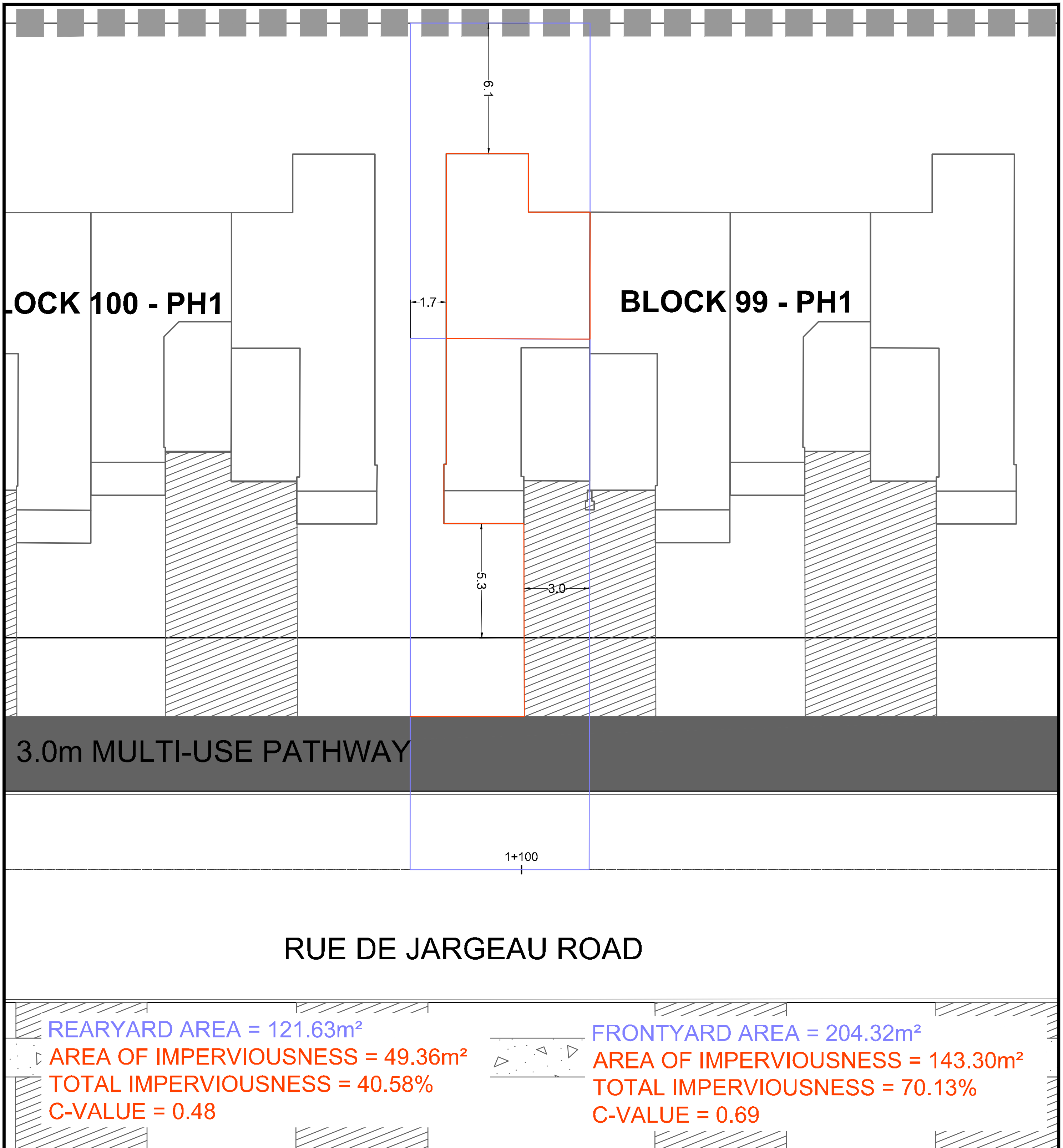
EXAMPLE LOT 7
30' SINGLE

DATE	JOB	FIGURE
FEB 2022	118224	SINGLE2



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Engineers, Planners & Landscape Architects
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Ottawa, Ontario, Canada K2M 1P6

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EXAMPLE LOT 1
EXTERNAL TOWN

DATE	JOB	FIGURE
FEB 2022	118224	TOWN1

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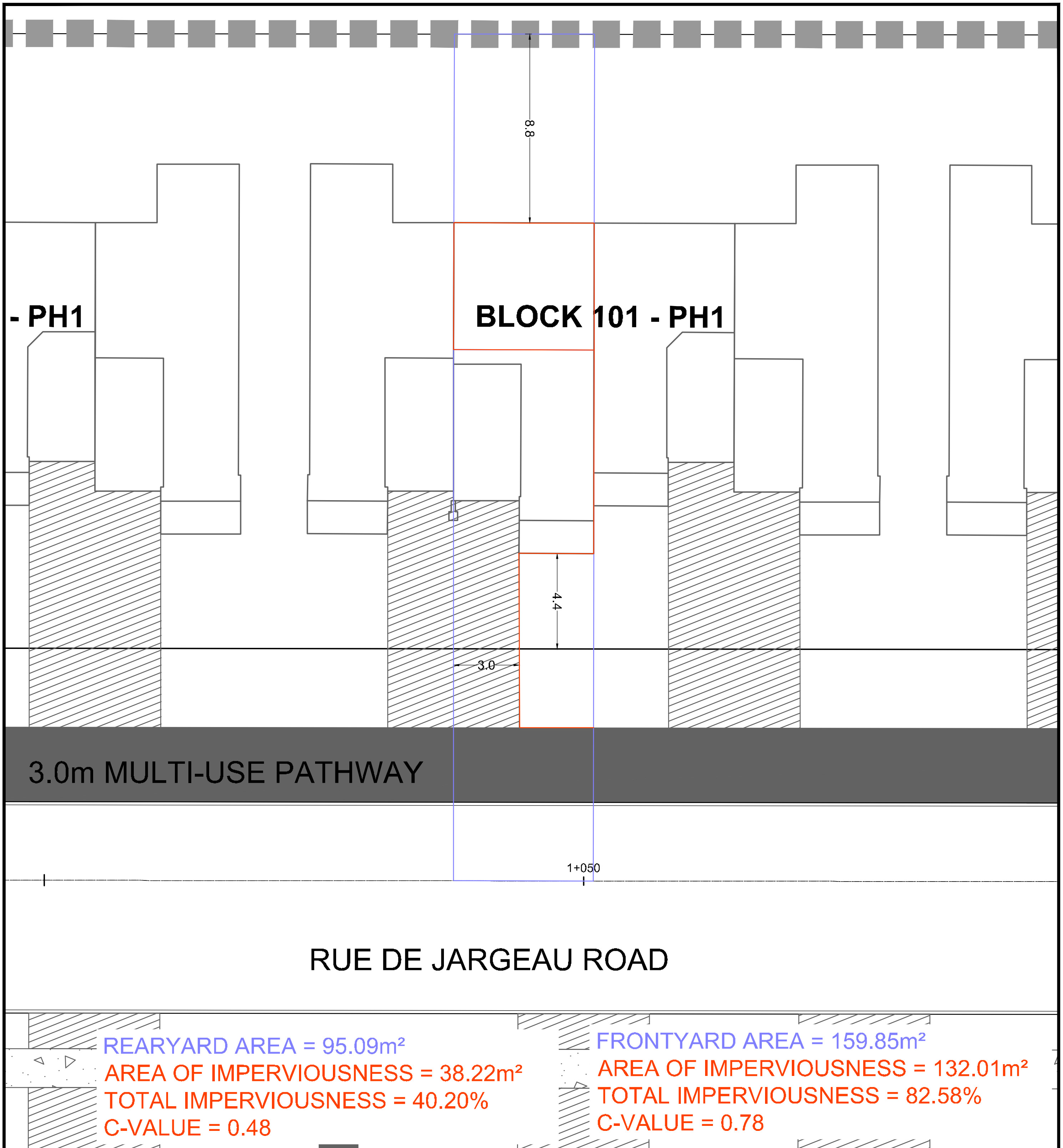

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Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone	(613) 254-9643
Facsimile	(613) 254-5867
Website	www.novatech-eng.com

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EXAMPLE LOT 2
INTERNAL TOWN

DATE	JOB	FIGURE
FEB 2022	118224	TOWN2

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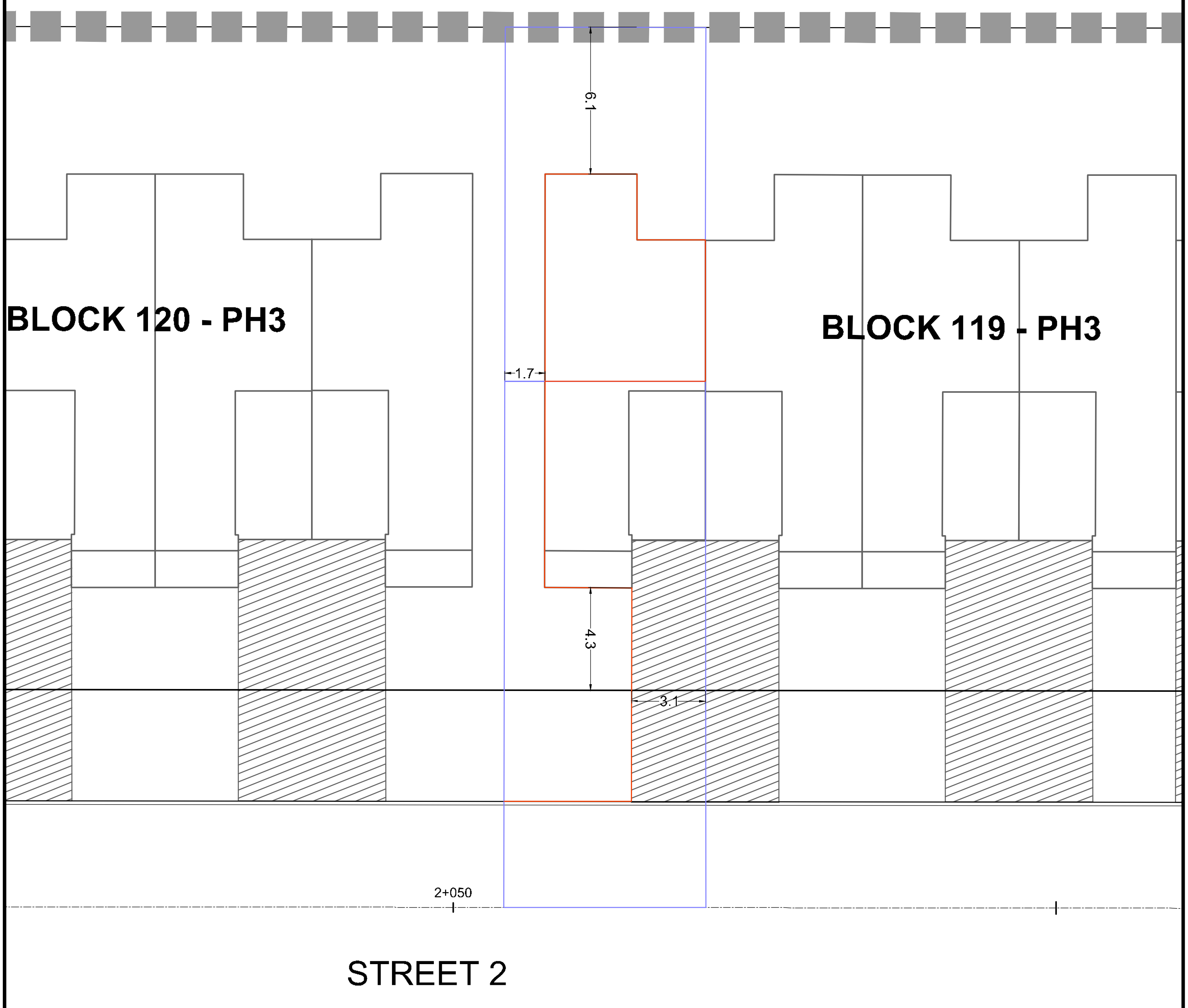

REARYARD AREA = 121.12m²
AREA OF IMPERVIOUSNESS = 49.38m²
TOTAL IMPERVIOUSNESS = 40.77%
C-VALUE = 0.49

FRONTYARD AREA = 182.00m²
AREA OF IMPERVIOUSNESS = 120.90m²
TOTAL IMPERVIOUSNESS = 66.43%
C-VALUE = 0.66

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EXAMPLE LOT 3
EXTERNAL TOWN

DATE	JOB	FIGURE
FEB 2022	118224	TOWN3

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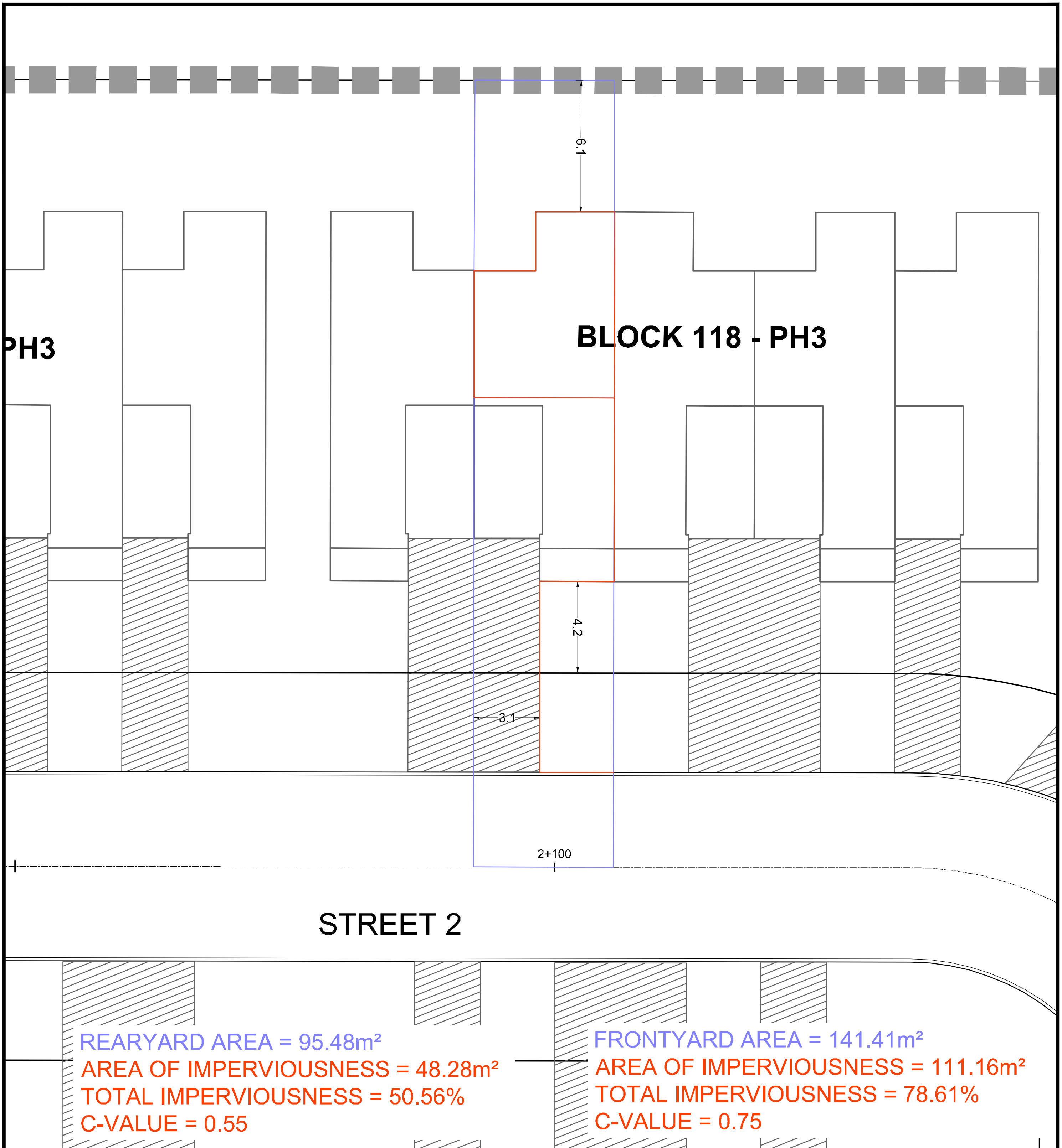

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Engineers, Planners & Landscape Architects
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Ottawa, Ontario, Canada K2M 1P6

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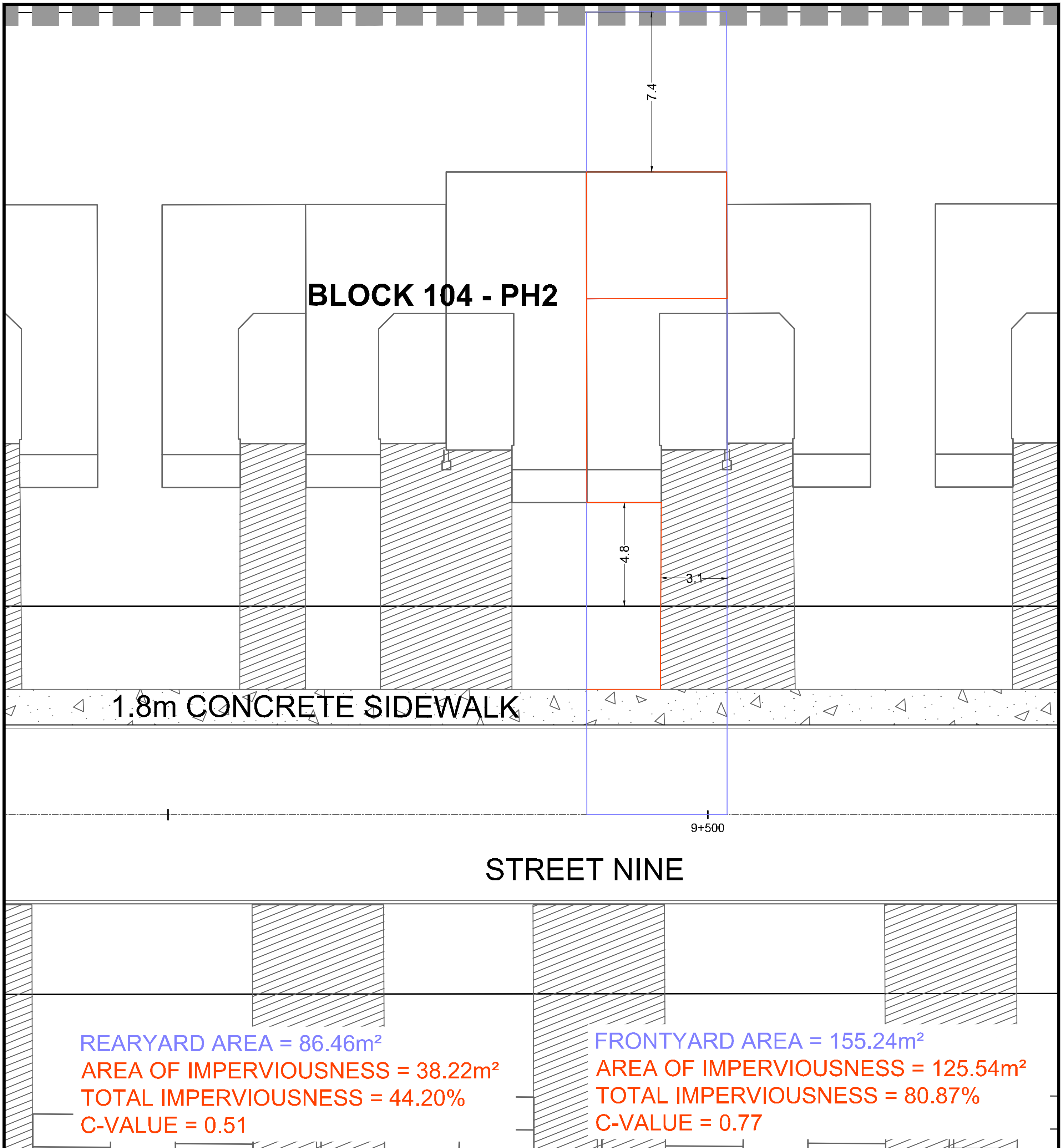
EXAMPLE LOT 4
INTERNAL TOWN

DATE	JOB	FIGURE
FEB 2022	118224	TOWN4



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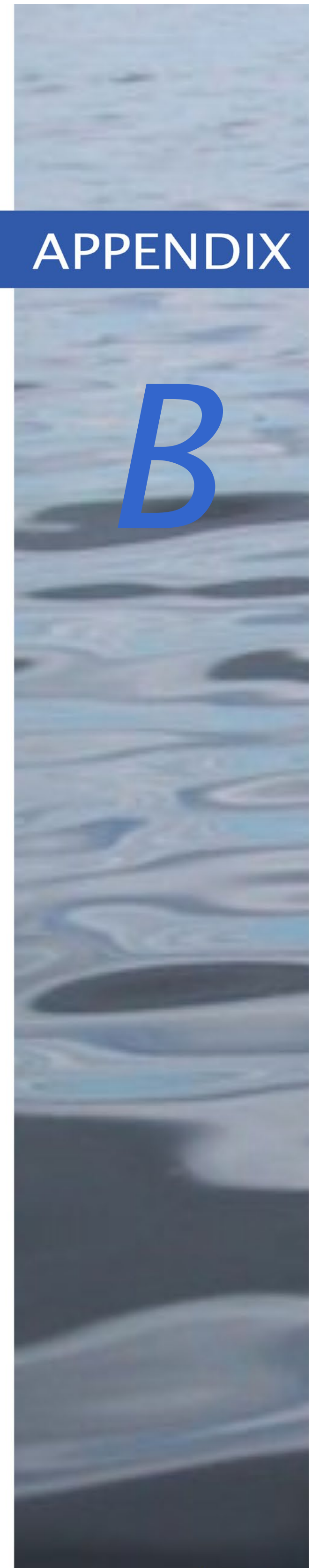
EXAMPLE LOT 5
INTERNAL TOWN

DATE	JOB	FIGURE
FEB 2022	118224	TOWN5

M:\2018\118224\CAD\Design\Figures\STM\118224-IMPdetail.dwg, TOWN5, Jan 25, 2022 - 1:44pm, mghauri

SHT8X11.DWG - 216mmx279mm



APPENDIX

B

Inlet Control Devices

PCSWMM Input Files

JFSA Water Resources and Environmental Consultants

Products – StormTech Orifice Plate

Our StormTech Orifice Plate uses a calibrated orifice to control the outflow at a specific rate at a specific head in the catch basin. This is our simplest and most economical Inlet Control Device (ICD), and can be sometimes used by municipalities as a starting point for storm water management until more information is gathered. As with all our products, it can be swapped out with another StormTech ICD once more is known about the system.

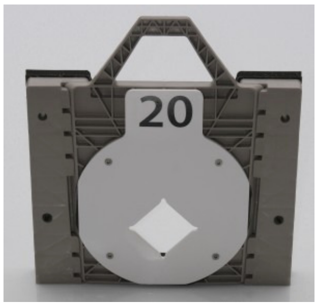
Orifice Plate units can have any shape or size of orifice customized to meet your needs. Standard designs include Round, Diamond, Keyhole and Diamond Keyhole shaped orifices. Keyholes help create a torsional flow pattern through the orifice that can help unblock some debris.

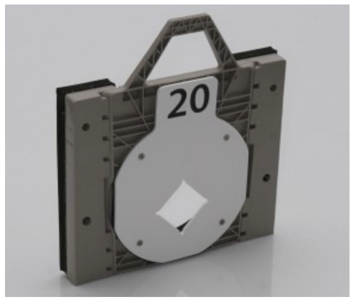
Orifice plate ICD's do not form water traps to prevent odours and are also prone to blockage by floatables like leaves, twigs, bottles and cans, especially during higher rainfall periods. Monitoring of these types of installs is recommended and sometimes leads to recommendations to upgrade to water trap devices, such as Odour Traps and Sumps, to prevent blockage and odours. But in locations where they work properly they are an economical alternative solution.

Primary Function(s):	Flow Control for Medium to High Flow Rates (15 to 100 l/s | 237 to 1585 GPM).
Other Functions(s):	None.
Outflow Pipe Diameter:	150 mm to 300 mm | 6 inch to 12 inch. Special orders can be made for larger sizes.
Catch Basin Types:	All – with or without sumps. Rectangular or Round Catch Basins (Round requires built-in adapter that can be provided). Standard Round is 600 mm, but larger sizes available (900 mm, 1200 mm, 1600 mm …etc.). Fits through even small Catch Basin openings (300 mm x 450 mm).
Specifications:	**Orifice Plate:** HDPE Thermoplastic with UV resistant additives. **Handle Plate (common):** HDPE Thermoplastic. **Handle Plate (common):** HDPE Thermoplastic. **Mounting Plate (common):** HDPE Thermoplastic. **Hardware (common):** Stainless Steel Wedge Bolts with Nut and Washer (4). **Welds:** None. **Inner Ring Seal:** Rubber Bulb Seal EPDM. Held in place and reusable. No need to replace. **Wall Seal:** 3/8 or 5/8 inch Neoprene closed cell sponge gasket attached to Mounting Plate. **Identifier:** 50 mm high numeric's on top of unit. Peel and stick. Note: Not visible from street surface. **Special Tools:** None required. **Weight:** Removable Unit: 0.5 kg / 1 lb. Maximum Total Assembly: 2.3 kg / 5 lb.

Products – StormTech Orifice Plate (continued)

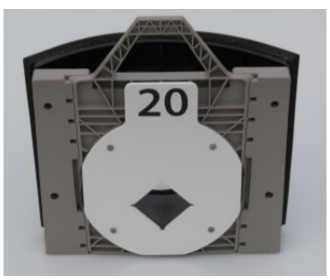
Orifice Plate – Square Adapter (with Diamond Orifice pictured)

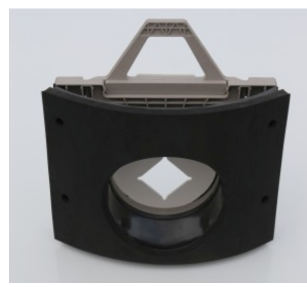




Front **Left Angle** **Back – View from Wall**

Orifice Plate – Round Adapter





Front **Left Angle** **Back – View from Wall**

Installation:

1. If necessary, cut protruding out-flowing pipe back flush to Catch Basin wall.
2. Use Mounting Plate as template to mark four hole pattern on Catch Basin wall.
3. Install four Stainless Steel Wedge Bolts (provided) perpendicular to Mounting Plate.
4. Install Mounting Plate and hand secure with four washers and nuts (provided).
5. Torque nuts to 40 N-·m or 30 lbf·ft. Do not over-tighten.
6. Snap unit into place by pushing Handle Plate into dove-tail slot of Mounting Plate.
7. Record Unit Identifier along with Catch Basin Location according to municipal requirements.
8. Note – Unit Identifier with this model is NOT easily seen from street level.

Table B-1: Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD) Capacities [1]

ICD Diameter (mm)	Capture (L/s)							
	CB (1.38 m lead pipe invert depth)				CBMH (1.74 m lead pipe invert depth)			
Water Depth:	*0 cm*	*Average*	*30 cm*	*35 cm*	*0 cm*	*Average*	*30 cm*	*35 cm*
Head:	*1.28 m*	*1.4 m*	*1.58 m*	*1.63 m*	*1.64 m*	*1.76 m*	*1.94 m*	*1.99 m*
83	17.6	18.4	19.6	19.9	19.9	20.7	21.7	22.0
94	22.6	23.6	25.1	25.5	25.6	26.5	27.8	28.2
102	26.6	27.8	29.6	30.0	30.1	31.2	32.8	33.2
108	29.8	31.2	33.2	33.7	33.8	35.0	36.7	37.2
127	41.3	43.2	45.8	46.6	46.7	48.4	50.8	51.5
152	59.1	61.8	65.7	66.7	66.9	69.3	72.8	73.7
178	81.1	84.8	90.1	91.5	91.8	95.0	99.8	101.1

[1] For circular orifices plate type with diameters as specified by City of Ottawa standards.

[BMR The Commons Ultimate Conditions Input File]
;;Project Title/Notes
Base_Model_v1.5 from the Model Build (GIS) folder.
20220413 - Additional CB added, minor changes to drainage areas

[OPTIONS]
;;Option Value
FLOW_UNITS CMS
INFILTRATION HORTON
FLOW_ROUTING DYNWAVE
LINK_OFFSETS ELEVATION
MIN_SLOPE 0
ALLOW_PONDING YES
SKIP_STEADY_STATE NO

START_DATE 01/01/2019
START_TIME 00:00:00
REPORT_START_DATE 01/01/2019
REPORT_START_TIME 00:00:00
END_DATE 01/02/2019
END_TIME 00:00:00
SWEEP_START 01/01
SWEEP_END 12/31
DRY_DAYS 0
REPORT_STEP 00:01:00
WET_STEP 00:05:00
DRY_STEP 00:05:00
ROUTING_STEP 0.5
RULE_STEP 00:00:00

INERTIAL_DAMPING PARTIAL
NORMAL_FLOW_LIMITED BOTH
FORCE_MAIN_EQUATION H-W
VARIABLE_STEP 0.75
LENGTHENING_STEP 0
MIN_SURFAREA 1.167
MAX_TRIALS 21
HEAD_TOLERANCE 0.0001
SYS_FLOW_TOL 5
LAT_FLOW_TOL 5
MINIMUM_STEP 0.5
THREADS 6

[EVAPORATION]
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DRY_ONLY NO

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002YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 002YrSCS24
005yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 005yrChicago3hr
005YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 005YrSCS24
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010YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 010YrSCS24
025yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 025yrChicago3hr
025YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 025YrSCS24
050yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 050yrChicago3hr
050YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 050YrSCS24
100yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 100yrChicago3hr
100yrChicago3hr+20% INTENSITY 0:10 1.0 TIMESERIES 100yrChicago3hr+20%
100YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 100YrSCS12hr
100YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 100YrSCS24
100YrSCS24+20% INTENSITY 0:10 1.0 TIMESERIES 100YrSCS24+20%
1979July01 INTENSITY 0:05 1.0 TIMESERIES 1979July01
1988Aug04 INTENSITY 0:05 1.0 TIMESERIES 1988Aug04
1996Aug08 INTENSITY 0:05 1.0 TIMESERIES 1996Aug08
25mmChicago4Hr INTENSITY 0:10 1.0 TIMESERIES 25mmChicago4Hr
2YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 2YrSCS12hr
5YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 5YrSCS12hr
No_Rain INTENSITY 0:01 1.0 TIMESERIES No_Rain

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;ELB_13_(RYCB)
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A35i 1996Aug08 Maj-42 0.228 71.4
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;52_(CB)
A4 1996Aug08 Maj-09 0.092 71.4
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;Maj-22
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----
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A12ii 0.013 0.25 1.57 4.67 0
OUTLET
A13 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A14 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A15i 0.013 0.25 1.57 4.67 0
OUTLET
A15ii 0.013 0.25 1.57 4.67 0
OUTLET
A16i 0.013 0.25 1.57 4.67 0
OUTLET
A16ii 0.013 0.25 1.57 4.67 0
OUTLET
A17 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A17ii 0.013 0.25 1.57 4.67 0
OUTLET
A18i 0.013 0.25 1.57 4.67 0
OUTLET
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OUTLET
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OUTLET
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PERVIOUS 100
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OUTLET
A24ii 0.013 0.25 1.57 4.67 0
OUTLET

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PERVIOUS 100
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
A3 0.013 0.25 1.57 4.67 0
PERVIOUS 100
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OUTLET
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PERVIOUS 100
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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PERVIOUS 100
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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OUTLET
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PERVIOUS 100
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OUTLET
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OUTLET
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OUTLET
A46ii 0.013 0.25 1.57 4.67 0
OUTLET
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OUTLET
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PERVIOUS 100
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OUTLET
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OUTLET
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OUTLET
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PERVIOUS 100
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OUTLET
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OUTLET
A6 0.013 0.25 1.57 4.67 0
PERVIOUS 100
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OUTLET
A7ii 0.013 0.25 1.57 4.67 0
OUTLET
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OUTLET
A8ii 0.013 0.25 1.57 4.67 0
OUTLET
A9i 0.013 0.25 1.57 4.67 0
OUTLET
A9ii 0.013 0.25 1.57 4.67 0
OUTLET
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OUTLET
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OUTLET
B2 0.013 0.25 1.57 4.67 0
OUTLET
B3i 0.013 0.25 1.57 4.67 0
OUTLET
B3ii 0.013 0.25 1.57 4.67 0
OUTLET
B4i 0.013 0.25 1.57 4.67 0
OUTLET
B4ii 0.013 0.25 1.57 4.67 0
OUTLET
B4iii 0.013 0.25 1.57 4.67 0
OUTLET
C1 0.013 0.25 1.57 4.67 0
OUTLET
C2 0.013 0.25 1.57 4.67 0
OUTLET

[INFILTRATION]
;;Subcatchment Param1 Param2 Param3 Param4
Param5
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A11 76.2 13.2 4.14 7 0
A12i 76.2 13.2 4.14 7 0
A12ii 76.2 13.2 4.14 7 0
A13 76.2 13.2 4.14 7 0

```
A14 76.2 13.2 4.14 7 0
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A17 76.2 13.2 4.14 7 0
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A1ii 76.2 13.2 4.14 7 0
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A24i 76.2 13.2 4.14 7 0
A24ii 76.2 13.2 4.14 7 0
A25 76.2 13.2 4.14 7 0
A26i 76.2 13.2 4.14 7 0
A26ii 76.2 13.2 4.14 7 0
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A27ii 76.2 13.2 4.14 7 0
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A29 76.2 13.2 4.14 7 0
A2i 76.2 13.2 4.14 7 0
A2ii 76.2 13.2 4.14 7 0
A3 76.2 13.2 4.14 7 0
A30 76.2 13.2 4.14 7 0
A31 76.2 13.2 4.14 7 0
A32i 76.2 13.2 4.14 7 0
A32ii 76.2 13.2 4.14 7 0
A33i 76.2 13.2 4.14 7 0
A33ii 76.2 13.2 4.14 7 0
A34i 76.2 13.2 4.14 7 0
A34ii 76.2 13.2 4.14 7 0
A35i 76.2 13.2 4.14 7 0
A35ii 76.2 13.2 4.14 7 0
A36 76.2 13.2 4.14 7 0
A37 76.2 13.2 4.14 7 0
A38 76.2 13.2 4.14 7 0
A39i 76.2 13.2 4.14 7 0
A39ii 76.2 13.2 4.14 7 0
A4 76.2 13.2 4.14 7 0
A40 76.2 13.2 4.14 7 0
A41 76.2 13.2 4.14 7 0
A42i 76.2 13.2 4.14 7 0
A42ii 76.2 13.2 4.14 7 0
A42iii 76.2 13.2 4.14 7 0
A43 76.2 13.2 4.14 7 0
A44 76.2 13.2 4.14 7 0
A45i 76.2 13.2 4.14 7 0
A45ii 76.2 13.2 4.14 7 0
A46i 76.2 13.2 4.14 7 0
A46ii 76.2 13.2 4.14 7 0
A47 76.2 13.2 4.14 7 0
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A5ii 76.2 13.2 4.14 7 0
A6 76.2 13.2 4.14 7 0
A7i 76.2 13.2 4.14 7 0
A7ii 76.2 13.2 4.14 7 0
A8i 76.2 13.2 4.14 7 0
A8ii 76.2 13.2 4.14 7 0
A9i 76.2 13.2 4.14 7 0
A9ii 76.2 13.2 4.14 7 0
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B1ii 76.2 13.2 4.14 7 0
B2 76.2 13.2 4.14 7 0
B3i 76.2 13.2 4.14 7 0
B3ii 76.2 13.2 4.14 7 0
B4i 76.2 13.2 4.14 7 0
B4ii 76.2 13.2 4.14 7 0
B4iii 76.2 13.2 4.14 7 0
C1 76.2 13.2 4.14 7 0
C2 76.2 13.2 4.14 7 0

[JUNCTIONS]
;;Name Elevation MaxDepth InitDepth SurDepth
Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
;T/G 87.6 m
02_(CB) 85.6 2.6 0 0 0
;T/G 87.6 m
03_(CB) 85.6 2.6 0 0 0
;T/G 87.53 m
04_(CB) 85.53 2.6 0 0 0
;T/G 87.531 m
05_(CB) 85.531 2.6 0 0 0
;T/G 87.39 m
06_(CB) 85.39 2.6 0 0 0
;T/G 87.436 m
08_(CB) 85.436 2.6 0 0 0
;T/G 87.425 m
09_(CB) 85.425 2.6 0 0 0
;Mcon-CBMH
1_(RYCB) 85.42 2.993 0 0 1
;T/G 87.565 m
10_(CB) 86.17 1.995 0 0 0
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100_(STM) 81.27 6.31 0 0 0
;Mcon MH - Concentric
102_(STM) 81.341 6.229 0 0 0
;Mcon MH - Concentric
104_(STM) 81.383 6.234 0 0 0
;Mcon MH - Concentric
106_(STM) 83.539 4.124 0 0 0
;Mcon MH - Concentric
108_(STM) 83.616 3.887 0 0 0
;T/G 87.555 m
11_(CB) 86.021 2.134 0 0 0
;Mcon MH - Concentric
110_(STM) 83.936 3.813 0 0 0
;Mcon MH - Concentric
112_(STM) 81.904 6.011 0 0 0
;Mcon MH - Concentric
114_(STM) 83.366 4.634 0 0 0
;Mcon MH - Concentric
116_(STM) 83.501 4.673 0 0 0
;Mcon MH - Concentric
118_(STM) 83.88 4.482 0 0 0
;T/G 87.643 m
12_(CB) 85.643 2.6 0 0 0
;Mcon MH - Concentric
120_(STM) 82.664 5.412 0 0 0
;Mcon MH - Concentric
122_(STM) 82.736 5.495 0 0 0
;Mcon MH - Concentric
124_(STM) 82.834 5.361 0 0 0
;Mcon MH - Concentric
126_(STM) 82.974 5.491 0 0 0
;Mcon MH - Concentric
128_(STM) 83.17 5.461 0 0 0
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;T/G 87.63 m
13_(CB) 85.793 2.437 0 0 0
;Mcon MH - Concentric
130_(STM) 84.268 4.777 0 0 0
;Mcon MH - Concentric
132_(STM) 84.484 4.697 0 0 0
;Mcon MH - Concentric
134_(STM) 84.804 4.516 0 0 1
;Mcon MH - Concentric
136_(STM) 83.336 5.31 0 0 0
;Mcon MH - Concentric
138_(STM) 83.424 5.349 0 0 0
;T/G 88.012 m
14_(CB) 86.012 2.6 0 0 0
;Mcon MH - Concentric
140_(STM) 83.713 5.538 0 0 0
;Mcon MH - Concentric
142_(STM) 84.907 4.253 0 0 0
;Mcon MH - Concentric
144_(STM) 84.131 5.323 0 0 0
;Mcon MH - Concentric
146_(STM) 85 4.123 0 0 0
;Mcon MH - Concentric
148_(STM) 85.14 4.07 0 0 1
;T/G 88.016 m
15_(CB) 86.016 2.6 0 0 0
15_RYCB 86.595 2.178 0 0 1
;Mcon MH - Concentric
150_(STM) 84.379 5.419 0 0 0
;Mcon MH - Concentric
152_(STM) 85.262 4.738 0 0 0
;Mcon MH - Concentric
154_(STM) 85.353 4.738 0 0 0
;Mcon MH - Concentric
156_(STM) 85.728 4.211 0 0 0
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158_(STM) 84.907 5.159 0 0 0
;T/G 88.173 m
16_(CB) 86.173 2.6 0 0 0
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160_(STM) 84.989 5.173 0 0 0
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162_(STM) 85.348 4.955 0 0 0
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164_(STM) 85.603 4.674 0 0 0
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166_(STM) 86.165 4.259 0 0 0
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168_(STM) 86.504 3.886 0 0 1
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17_(CB) 86.176 2.6 0 0 0
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170_(STM) 87.058 3.997 0 0 0
;T/G 88.277 m
18_(CB) 86.97 1.907 0 0 0
;T/G 88.281 m
19_(CB) 86.281 2.6 0 0 0
;T/G 88.623 m
20_(CB) 86.623 2.6 0 0 0
;T/G 88.62 m
21_(CB) 86.773 2.447 0 0 0
;Mcon MH - Concentric
2121_(STM) 80.231 7.259 0 0 0
;Mcon MH - Concentric
2142_(STM) 80.104 7.267 0 0 0
;Mcon MH - Concentric
2143_(STM) 79.93 6.39 0 0 0
;Mcon MH - Concentric
2144_(STM) 79.854 6.146 0 0 0
;Mcon-CB
22_(RYCB) 87.076 2.824 0 0 1
;T/G 88.923 m
23_(CB) 86.923 2.6 0 0 0
;T/G 88.923 m
24_(CB) 86.923 2.6 0 0 0
;T/G 89.381 m
25_(CB) 86.775 3.206 0 0 0
;T/G 89.5 m
26_(CB) 86.775 3.325 0 0 0
;T/G 88.56 m
27_(CB) 86.775 2.385 0 0 0
;T/G 88.64 m
28_(CB) 86.775 2.465 0 0 0
;Mcon-CBMH
29_(RYCB) 85.31 5.13 0 0 1
;T/G 89.073 m
30_(CB) 86.93 2.743 0 0 0
;T/G 89.07 m
31_(CB) 86.9 2.77 0 0 0
;T/G 89.47 m
32_(CB) 88.283 1.917 0 0 0
;T/G 89.473 m
33_(CB) 87.473 2.6 0 0 0
;T/G 89.507 m
34_(CB) 87.507 2.6 0 0 0
;T/G 89.507 m
35_(CB) 87.507 2.6 0 0 0
;T/G 89.79 m
36_(CB) 87.79 2.6 0 0 0
;T/G 89.792 m
37_(CB) 87.792 2.6 0 0 0
;Mcon-CB
38_(RYCB) 87.378 3.081 0 0 1
;Mcon-CB
39_(RYCB) 88.671 2.279 0 0 1
;T/G 90.13 m
40_(CB) 88.226 2.504 0 0 0
;T/G 90.125 m
41_(CB) 88.125 2.6 0 0 0
;T/G 90.299 m
42_(CB) 88.299 2.6 0 0 0
;T/G 90.294 m
43_(CB) 88.294 2.6 0 0 0
;T/G 88.921 m
44_(CB) 86.921 2.6 0 0 0
;T/G 88.921 m
45_(CB) 86.921 2.6 0 0 0
;T/G 88.884 m
46_(CB) 86.884 2.6 0 0 0
;T/G 88.88 m
47_(CB) 87.034 2.446 0 0 0
;T/G 88.373 m
48_(CB) 86.373 2.6 0 0 0
;T/G 88.37 m
49_(CB) 86.523 2.447 0 0 0
;T/G 87.874 m
50_(CB) 86.03 2.444 0 0 0
;T/G 87.87 m
51_(CB) 86.06 2.41 0 0 0
;T/G 89.807 m
52_(CB) 85.21 5.197 0 0 0
;T/G 89.662 m
53_(CB) 87.662 2.6 0 0 0
;T/G 89.66 m
54_(CB) 87.708 2.552 0 0 0
;T/G 87.27 m
55_(CB) 85.27 2.6 0 0 0
;T/G 87.4 m
57_(CB) 85.21 2.79 0 0 0
;T/G 86.71

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58_(CB)          85.4       2.6        0          0          0
;T/G 87.65
59_(CB)          85.85      2.4        0          0          0
;Mcon MH - Concentric
98_(STM)         81.17      6.333      0          0          0
;CB-LANDSCAPE
ELB_1_(RYCB)     86.51      1.14       0          0          1
;Mcon-CBMH
ELB_10_(RYCB)    87.65      1.311      0          0          1
;Mcon-CBMH
ELB_11_(RYCB)    87.6       1.302      0          0          1
;Mcon-CBMH
ELB_12_(RYCB)    88         1.45       0          0          1
;Mcon-CBMH
ELB_13_(RYCB)    87.56      1.301      0          0          1
;Mcon-CBMH
ELB_14_(RYCB)    87.78      1.3        0          0          1
;Mcon-CBMH
ELB_15_(RYCB)    87.2       1.256      0          0          1
;Mcon-CBMH
ELB_16_(RYCB)    88.68      1.304      0          0          1
;Mcon-CBMH
ELB_17_(RYCB)    87.55      1.305      0          0          1
;Mcon-CBMH
ELB_18_(RYCB)    87.58      1.301      0          0          1
;Mcon-CBMH
ELB_19_(RYCB)    86.97      1.332      0          0          1
;Mcon-CBMH
ELB_2_(RYCB)     86.265     1.412      0          0          1
;Mcon-CBMH
ELB_20_(RYCB)    86.384     1.302      0          0          1
;T/G 89.00
ELB_21_(RYCB)    88.06      1.54       0          0          1
;Mcon-CBMH
ELB_22_(RYCB)    88.54      1.302      0          0          1
;Mcon-CBMH
ELB_23_(RYCB)    88.99      1.309      0          0          1
;CB-LANDSCAPE
ELB_24_(RYCB)    86.55      1          0          0          1
;CB-LANDSCAPE
ELB_25_(RYCB)    86.43      1          0          0          1
;Mcon-CBMH
ELB_3_(RYCB)     86.48      1.324      0          0          1
;Mcon-CBMH
ELB_4_(RYCB)     86.53      1.22       0          0          1
;Mcon-CBMH
ELB_5_(RYCB)     86.53      1.17       0          0          1
;Mcon-CBMH
ELB_6_(RYCB)     86.55      1.312      0          0          1
;Mcon-CBMH
ELB_7_(RYCB)     86.8       1.309      0          0          1
;Mcon-CBMH
ELB_8_(RYCB)     86.93      1          0          0          1
;Mcon-CBMH
ELB_9_(RYCB)     87.05      1.298      0          0          1
;Major Spill Point
J1               88.48      0.6        0          0          0
Maj-01_2         90.899     0.622      0          0          0
Maj-02           90.668     0.612      0          0          0
Maj-02_2         90.416     0.624      0          0          0
;LP
Maj-03           90.272     0.618      0          0          0
;HP
Maj-04           90.61      0.61       0          0          0
Maj-04_2         90.507     0.623      0          0          0
Maj-05           90.398     0.612      0          0          0
Maj-05_2         90.369     0.621      0          0          0
Maj-06           90.227     0.613      0          0          0
;LP
Maj-06_2         90.095     0.625      0          0          0
```

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;HP
Maj-07           90.275     0.615      0          0          0
;LP
Maj-08           90.15      0.6        0          0          0
Maj-09           89.846     0.6        0          0          0
;LP
Maj-10           89.777     0.603      0          0          0
;HP
Maj-11           89.819     0.901      0          0          0
;LP
Maj-12           89.664     0.596      0          0          0
;HP
Maj-13           89.973     0.637      0          0          0
;LP
Maj-14           89.484     0.586      0          0          0
;HP
Maj-15           89.666     0.704      0          0          0
Maj-15_2         89.36      0.654      0          0          0
;LP
Maj-16           89.419     0.601      0          0          0
;HP
Maj-17           90.064     0.616      0          0          0
Maj-18_2         89.51      0.64       0          0          0
Maj-19           89.388     0.602      0          0          0
;HP
Maj-19_2         89.527     0.693      0          0          0
Maj-20           89.169     0.601      0          0          0
;LP
Maj-21           88.595     0.615      0          0          0
Maj-23           89.24      0.58       0          0          0
;LP
Maj-24           88.904     0.616      0          0          0
;HP
Maj-25           89.152     0.618      0          0          0
;LP
Maj-26           88.605     0.615      0          0          0
;HP
Maj-27           88.848     0.632      0          0          0
;LP
Maj-28           88.251     0.689      0          0          0
;HP
Maj-29           88.595     0.615      0          0          0
;LP
Maj-30           88.398     0.522      0          0          0
;HP
Maj-31           89.025     0.605      0          0          0
;LP
Maj-32           88.874     0.616      0          0          0
;LP
Maj-33           88.918     0.582      0          0          0
Maj-34           89.067     0.583      0          0          0
;HP
Maj-34_2         89.16      0.64       0          0          0
;LP
Maj-35           88.149     0.581      0          0          0
;HP
Maj-36           88.408     0.672      0          0          0
;LP
Maj-37           87.993     0.617      0          0          0
;HP
Maj-38           88.19      0.62       0          0          0
;LP
Maj-39           88.071     0.329      0          0          0
;HP
Maj-40           87.97      0.63       0          0          0
Maj-41           87.62      0.62       0          0          0
;LP
Maj-42           87.881     0.619      0          0          0
;HP
Maj-43           88.074     0.636      0          0          0
```

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;LP
Maj-44	87.539	0.611	0	0	0
;HP
Maj-45	87.812	0.688	0	0	0
;LP
Maj-46	87.407	0.613	0	0	0
Maj-48_2	87.744	0.636	0	0	0
Maj-48_3	87.647	0.621	0	0	0
;LP
Maj-50	87.425	0.615	0	0	0
;HP
Maj-51	87.71	0.63	0	0	0
;LP
Maj-52	87.472	0.498	0	0	0
Maj-53	87.588	0.612	0	0	0
;LP
Maj-54	87.251	0.609	0	0	0
;HP
Maj-55	87.494	0.626	0	0	0
;Overland Major Spill Point
Maj-56	88.8	0.6	0	0	0
;LP
Maj-58	87.162	0.608	0	0	0
Maj-59	87.53	0.72	0	0	0
;Spill Point
Maj-60	88.618	0.679	0	0	0
;Overland Major Spill Point
Maj-61	88.7	0.6	0	0	0
;Major System Spill Point
Maj-62	89.85	0.6	0	0	0
;Major System Spill Point
Maj-63	87.72	1.091	0	0	0
;Major System Spill Point
Maj-64	88.8	0.6	0	0	0
;Major System Spill Point
Maj-65	87.8	1.182	0	0	0
;Major System Spill Point
Maj-66	87.65	0.6	0	0	0
Maj-67	87.95	0.6	0	0	0
Maj-Park	86.5	0.6	0	0	0
;Mcon-CBMH (T/G 87.31 m)
RYCB_1_(RYCB)	86	2.1	0	0	1
;Mcon-CBMH (T/G 88.55 m)
RYCB_10_(RYCB)	87.02	2.38	0	0	1
;Mcon-CBMH (T/G 89.3 m)
RYCB_11_(RYCB)	87.35	2.55	0	0	1
;Mcon-CBMH (T/G 89.68 m)
RYCB_12_(RYCB)	88	2.28	0	0	1
;CB-LANDSCAPE
RYCB_13_(RYCB)	87.54	2.11	0	0	1
;Mcon-CBMH
RYCB_14_(RYCB)	88.14	2.31	0	0	1
;CB-LANDSCAPE
RYCB_15_(RYCB)	88.7	2.15	0	0	1
;Mcon-CBMH
RYCB_18_(RYCB)	85.764	2.339	0	0	1
;TEE (T/G 87.55 m)
RYCB_2_(RYCB)	86.01	3.14	0	0	1
;Mcon-CBMH
RYCB_3_(RYCB)	86.18	2.27	0	0	1
;Mcon-CBMH (T/G 87.63 m)
RYCB_4_(RYCB)	86.12	3.11	0	0	1
;Mcon-CBMH
RYCB_5_(RYCB)	86.044	2.295	0	0	1
;Mcon-CBMH
RYCB_6_(RYCB)	85.72	3.209	0	0	1
;T/G 88.79m
RYCB_7_(RYCB)	86.49	2.9	0	0	1
;Mcon-CBMH (T/G 88.45 m)
RYCB_8_(RYCB)	86.97	2.23	0	0	1
;T/G 89.08
RYCB_9_(RYCB)	87.54	1.54	0	0	1
Slope1	89.066	1.098	0	0	0
;Dummy Null Structure for LandXML purposes
StartNullStruct2 86.62	1.4	0	0	1
;Dummy Null Structure for LandXML purposes
StartNullStruct3 84.091	3.709	0	0	0
;Null Structure
STM-251_(STM)	85.31	4.327	0	0	0
;Mcon-CBMH
Structure_-_(18)_(RYCB) 85.579 3.211	0	0	1
;Mcon-CBMH
TEE_1_(RYCB)	86.21	1.444	0	0	1
;Mcon-CBMH
TEE_10_(RYCB)	86.8	1.01	0	0	1
;CB-LANDSCAPE
TEE_11_(RYCB)	86.59	1.457	0	0	1
;Mcon-CBMH
TEE_12_(RYCB)	86.85	1.334	0	0	1
;CB-LANDSCAPE
TEE_13_(RYCB)	87	1.291	0	0	1
;CB-LANDSCAPE
TEE_14_(RYCB)	86.861	2.639	0	0	1
;CB-LANDSCAPE
TEE_15_(RYCB)	87.38	1.98	0	0	1
;Mcon-CBMH
TEE_16_(RYCB)	87.27	1.61	0	0	1
;Mcon-CBMH
TEE_17_(RYCB)	87.39	1.45	0	0	1
;Mcon-CBMH
TEE_18_(RYCB)	87.54	1.41	0	0	1
;Mcon-CBMH
TEE_19_(RYCB)	87.44	1.34	0	0	1
;Mcon-CBMH
TEE_2_(RYCB)	86.35	1.365	0	0	1
;Mcon-CBMH
TEE_20_(RYCB)	87.29	1.331	0	0	1
;Mcon-CBMH
TEE_21_(RYCB)	87.17	1.438	0	0	1
;Mcon-CBMH
TEE_22_(RYCB)	87.78	1.42	0	0	1
;Mcon-CBMH
TEE_23_(RYCB)	87.4	1.38	0	0	1
;Mcon-CBMH
TEE_24_(RYCB)	87.69	1.32	0	0	1
;Mcon-CBMH
TEE_25_(RYCB)	87.53	1.546	0	0	1
;Mcon-CBMH
TEE_26_(RYCB)	88.39	1.319	0	0	1
;Mcon-CBMH
TEE_27_(RYCB)	88.23	1.399	0	0	1
;Mcon-CBMH
TEE_28_(RYCB)	87.47	1.318	0	0	1
;Mcon-CBMH
TEE_29_(RYCB)	86.87	1.442	0	0	1
;Mcon-CBMH
TEE_3_(RYCB)	86.25	1.37	0	0	1
;Mcon-CBMH
TEE_30_(RYCB)	86.75	1.477	0	0	1
;Mcon-CBMH
TEE_31_(RYCB)	86.62	1.531	0	0	1
;CB-LANDSCAPE
TEE_32_(RYCB)	86.78	1.447	0	0	1
;CB-LANDSCAPE
TEE_33_(RYCB)	86.134	2.093	0	0	1
;Mcon-CBMH
TEE_34_(RYCB)	85.98	2.077	0	0	1
;Mcon-CBMH
TEE_35_(RYCB)	86.044	2.101	0	0	1
;Mcon-CBMH
```

TEE_36_(RYCB) 88.3 1.519 0 0 1
;Mcon-CBMH
TEE_37_(RYCB) 88.65 1.301 0 0 1
;Mcon-CBMH
TEE_38_(RYCB) 88.52 1.302 0 0 1
;Mcon-CBMH
TEE_39_(RYCB) 88.28 1.384 0 0 1
;Mcon-CBMH
TEE_4_(RYCB) 86.02 1.86 0 0 1
;Mcon-CBMH
TEE_40_(RYCB) 88.83 1.486 0 0 1
;Mcon-CBMH
TEE_41_(RYCB) 88.64 1.665 0 0 1
;CB-LANDSCAPE
TEE_42_(RYCB) 86.35 1.4 0 0 1
;CB-LANDSCAPE
TEE_43_(RYCB) 86.11 1.64 0 0 1
;CB-LANDSCAPE
TEE_44_(RYCB) 86.04 1.71 0 0 1
;CB-LANDSCAPE
TEE_5_(RYCB) 86.09 1.934 0 0 1
;Mcon-CBMH
TEE_6_(RYCB) 86.35 1.525 0 0 1
;Mcon-CBMH
TEE_7_(RYCB) 86.46 1.427 0 0 1
;Mcon-CBMH
TEE_8_(RYCB) 86.34 1.523 0 0 1
;Mcon-CBMH
TEE_9_(RYCB) 86.22 1.66 0 0 1

[OUTFALLS]
;;Name Elevation Type Stage Data Gated
Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Maj-01 91.06 FREE NO
;HP
Maj-18 89.547 FREE NO
Maj-22 88.834 FREE NO
;HP
Maj-48 87.75 FREE NO
;HP
Maj-49 87.673 FREE NO
Maj-57 89.055 FREE NO
OF1 85 FREE NO
;Rectangular Headwall Variable Height SI
STM-111_(STM) 80.137 TIMESERIES MH-111-
August_8_1996 NO

[STORAGE]
;;Name Elev. MaxDepth InitDepth Shape Curve
Name/Params N/A Fevap Psi Ksat IMD
;;-------------- -------- ---------- ---------- ---------- ----------------------
----- -------- -------- -------- --------
B1_Stor 90.5 1.5 0 FUNCTIONAL 383
0 0 0 0
B2_Stor 90.5 1.5 0 TABULAR
UHAL_Onsite 0 0
B3_Stor 90.5 1.5 0 FUNCTIONAL 368
0 0 0 0

[CONDUITS]
;;Name From Node To Node Length
Roughness InOffset OutOffset InitFlow MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------
- ---------- ---------- ----------
;Mcon Circular Conc. Pipe
1_(STM) 156_(STM) 154_(STM) 100.708
0.013 86.028 85.68 0 0
;Mcon Circular Conc. Pipe
10_(STM) 124_(STM) 122_(STM) 16.861
0.013 83.134 83.05 0 0
;Mcon Circular Conc. Pipe
11_(STM) 122_(STM) 120_(STM) 24.629
0.013 83.036 82.974 0 0
;Mcon Circular Conc. Pipe
12_(STM) 120_(STM) 112_(STM) 91.574
0.013 82.964 82.735 0 0
;Mcon Circular Conc. Pipe
13_(STM) 112_(STM) 104_(STM) 73.804
0.013 82.204 81.983 0 0
;Mcon Circular Conc. Pipe
14_(STM) 104_(STM) 102_(STM) 41.856
0.013 81.683 81.641 0 0
;Mcon Circular Conc. Pipe
15_(10)_(STM) 138_(STM) 136_(STM) 14.785
0.013 83.724 83.65 0 0
;Mcon Circular Conc. Pipe
15_(11)_(STM) 136_(STM) 128_(STM) 62.501
0.013 83.636 83.48 0 0
;Mcon Circular Conc. Pipe
15_(12)_(STM) 148_(STM) 146_(STM) 78.542
0.013 85.33 85.21 0 0
;Mcon Circular Conc. Pipe
15_(13)_(STM) 146_(STM) 144_(STM) 78.665
0.013 85.15 85.03 0 0
;Mcon Circular Conc. Pipe
15_(14)_(STM) 162_(STM) 160_(STM) 106.278
0.013 85.648 85.299 0 0
;Mcon Circular Conc. Pipe
15_(15)_(STM) 160_(STM) 158_(STM) 14.296
0.013 85.289 85.217 0 0
;Mcon Circular Conc. Pipe
15_(16)_(STM) 158_(STM) 150_(STM) 108.023
0.013 85.207 84.829 0 0
;Mcon Circular Conc. Pipe
15_(19)_(STM) 170_(STM) 168_(STM) 93.892
0.013 87.358 87.029 0 0
;Mcon Circular Conc. Pipe
15_(20)_(STM) 168_(STM) 166_(STM) 101.148
0.013 86.804 86.475 0 0
;Mcon Circular Conc. Pipe
15_(21)_(STM) 166_(STM) 164_(STM) 29.241
0.013 86.465 86.353 0 0
;Mcon Circular Conc. Pipe
15_(22)_(STM) 164_(STM) 162_(STM) 60.14
0.013 85.903 85.658 0 0
;Ipex PVC DR 35
15_(3)_(STM) 118_(STM) 116_(STM) 99.63
0.013 84.18 83.873 0 0
;Mcon Circular Conc. Pipe
15_(4)_(STM) 116_(STM) 114_(STM) 11.937
0.013 83.801 83.741 0 0
;Mcon Circular Conc. Pipe
15_(5)_(STM) 114_(STM) 112_(STM) 64.641
0.013 83.666 83.44 0 0
;Mcon Circular Conc. Pipe
15_(9)_(STM) 140_(STM) 138_(STM) 113.118
0.013 84.013 83.73 0 0
;Mcon Circular Conc. Pipe
2_(STM) 154_(STM) 152_(STM) 12.573
0.013 85.653 85.59 0 0
;Mcon Circular Conc. Pipe
3_(STM) 152_(STM) 150_(STM) 59.352
0.013 85.562 85.354 0 0
;Mcon Circular Conc. Pipe
4_(STM) 150_(STM) 144_(STM) 76.294
0.013 84.679 84.49 0 0
;Mcon Circular Conc. Pipe

5_(STM) 144_(STM) 140_(STM) 77.327
0.013 84.36 84.13 0 0
;Ipex PVC DR 35
6_(STM) 142_(STM) 132_(STM) 53.44
0.013 85.197 84.85 0 0
;Mcon Circular Conc. Pipe
7_(1)_(STM) 130_(STM) 128_(STM) 88.337
0.013 84.55 84.37 0 0
;Mcon Circular Conc. Pipe
7_(STM) 132_(STM) 130_(STM) 37.406
0.013 84.72 84.642 0 0
;Mcon Circular Conc. Pipe
8_(STM) 128_(STM) 126_(STM) 75.98
0.013 83.47 83.28 0 0
;Mcon Circular Conc. Pipe
9_(STM) 126_(STM) 124_(STM) 53.402
0.013 83.274 83.14 0 0
C1 Maj-55 Maj-58 15.736 0.013
87.494 87.162 0 0
C1_1 Maj-01 Maj-01_2 15.296 0.013
91.06 90.899 0 0
C1_2 Maj-01_2 Maj-02 24.816 0.013
90.899 90.668 0 0
C10 Maj-17 Maj-10 54.682 0.013
90.064 89.777 0 0
C11 Maj-17 Maj-16 86.734 0.013
90.064 89.419 0 0
C12 Maj-11 Maj-09 10.987 0.013
89.819 89.846 0 0
C13 Maj-11 Maj-12 60.306 0.013
89.819 89.664 0 0
C14 Maj-13 Maj-12 46.489 0.013
89.973 89.664 0 0
C15 Maj-15 Maj-16 38.838 0.013
89.666 89.419 0 0
C16 Maj-13 Maj-14 44.234 0.013
89.973 89.484 0 0
C17 Maj-15 Maj-14 29.277 0.013
89.666 89.484 0 0
;Maj RY Spill Point
C18 29_(RYCB) Maj-18_2 4.776 0.035
89.84 89.55 0 0
C18_2 Maj-34_2 Maj-57 7.803 0.013
89.16 89.055 0 0
C18_3 Maj-15 Slope1 36.415 0.013
89.666 89.066 0 0
C18_4 Slope1 Maj-15_2 37.347 0.013
89.066 89.36 0 0
C18_5 Maj-19_2 Maj-15_2 13.813 0.013
89.527 89.36 0 0
C18_6 Maj-19_2 Maj-19 27.25 0.013
89.527 89.388 0 0
C18_7 Maj-34_2 Maj-34 28.133 0.013
89.16 89.067 0 0
C18_8 Maj-18 Maj-18_2 5 0.013
89.547 89.51 0 0
C18_9 Maj-18_2 Maj-15_2 31.942 0.013
89.51 89.36 0 0
C19 Maj-15_2 Maj-23 11.274 0.013
89.36 89.24 0 0
C2 Maj-59 Maj-58 9.133 0.013
87.5 87.162 0 0
C2_1 Maj-02 Maj-02_2 25.364 0.013
90.668 90.416 0 0
C2_2 Maj-02_2 Maj-03 14.602 0.013
90.416 90.272 0 0
C20 Maj-19 Maj-20 24.9 0.013
89.388 89.169 0 0
C21 Maj-20 Maj-21 64.337 0.013
89.169 88.595 0 0
C22 Maj-22 Maj-21 13.47 0.013
88.834 88.595 0 0
C23 Maj-23 Maj-24 31.267 0.013
89.24 88.904 0 0
C24 Maj-25 Maj-24 35.922 0.013
89.152 88.904 0 0
C25 Maj-25 Maj-26 59.92 0.013
89.152 88.605 0 0
C26 Maj-27 Maj-26 40.459 0.013
88.848 88.605 0 0
;Maj RY Spill Point
C27 22_(RYCB) Maj-25 17.828 0.035
89.3 89.152 0 0
C27_1 Maj-27 Maj-60 20.292 0.013
88.848 88.618 0 0
C27_2 Maj-60 Maj-28 39.649 0.013
88.618 88.251 0 0
C28 Maj-29 Maj-28 31.279 0.013
88.595 88.251 0 0
C29 Maj-25 Maj-33 47.188 0.013
89.152 88.918 0 0
C3 Maj-04 Maj-03 70.051 0.013
90.61 90.272 0 0
C30 Maj-34 Maj-33 24.584 0.013
89.067 88.918 0 0
C31 Maj-Park OF1 47.652 0.035
86.5 85 0 0
;Maj RY Spill Point
C31_1 RYCB_8_(RYCB) Maj-61 1.758
0.035 88.6 88.7 0 0
;Maj RY Spill Point
C31_2 Maj-61 Maj-28 17.384 0.035
88.7 88.251 0 0
C32 Maj-34 Maj-32 25.871 0.013
89.067 88.874 0 0
C33 Maj-31 Maj-32 22.994 0.013
89.025 88.874 0 0
C34 Maj-31 Maj-30 47.52 0.013
89.025 88.398 0 0
C35 Maj-29 Maj-30 27.889 0.013
88.595 88.398 0 0
C36 Maj-29 Maj-35 35.198 0.013
88.595 88.149 0 0
C37 Maj-36 Maj-35 37.341 0.013
88.408 88.149 0 0
C38 Maj-36 Maj-42 75.802 0.013
88.408 87.881 0 0
C39 Maj-43 Maj-42 39.792 0.013
88.074 87.881 0 0
C4 Maj-59 Maj-Park 148.118 0.035
87.53 86.5 0 0
C4_1 Maj-04 Maj-04_2 15.06 0.013
90.61 90.507 0 0
C4_2 Maj-04_2 Maj-05 20.639 0.013
90.507 90.398 0 0
;Maj RY Spill Point
C4_3 RYCB_12_(RYCB) Maj-62 9.605
0.035 89.581 89.85 0 0
;Maj RY Spill Point
C4_4 Maj-62 Maj-14 10.914 0.035
89.85 89.484 0 0
C40 Maj-43 Maj-44 41.644 0.013
88.074 87.539 0 0
C41 Maj-45 Maj-44 34.02 0.013
87.812 87.539 0 0
C42 Maj-45 Maj-41 33.014 0.013
87.812 87.62 0 0
C43 Maj-40 Maj-41 55.256 0.013
87.97 87.62 0 0

C44 Maj-40 Maj-39 14.403 0.013
87.97 88.071 0 0
C45 Maj-38 Maj-39 19.588 0.013
88.19 88.071 0 0
C46 Maj-36 Maj-37 37.582 0.013
88.408 87.993 0 0
C47 Maj-38 Maj-37 23.672 0.013
88.19 87.993 0 0
C48 Maj-45 Maj-46 39.529 0.013
87.812 87.407 0 0
C49 Maj-53 Maj-46 33.614 0.013
87.588 87.407 0 0
C5 58_(CB) Maj-Park 30 0.035
86.71 86.5 0 0
C5_1 Maj-05 Maj-05_2 4.665 0.013
90.398 90.369 0 0
C5_2 Maj-05_2 Maj-06 24.629 0.013
90.369 90.227 0 0
;RY Maj System Spill Point
C50 ELB_20_(RYCB) ELB_6_(RYCB) 31.256
0.013 87.694 87.862 0 0
C50_1 Maj-48 Maj-48_2 5 0.013
87.75 87.744 0 0
C50_3 Maj-48_2 Maj-48_3 19.501 0.013
87.744 87.647 0 0
C50_4 Maj-48_3 Maj-53 11.933 0.013
87.647 87.588 0 0
C51 Maj-53 Maj-52 33.988 0.013
87.588 87.472 0 0
C52 Maj-51 Maj-52 53.407 0.013
87.71 87.472 0 0
C53 Maj-51 Maj-50 33.561 0.013
87.71 87.425 0 0
C54 Maj-49 Maj-50 43.76 0.013
87.673 87.425 0 0
C55 Maj-53 Maj-54 22.82 0.013
87.588 87.251 0 0
C56 Maj-21 Maj-56 22.042 0.035
88.595 88.8 0 0
C57 Maj-55 Maj-54 42.124 0.013
87.494 87.251 0 0
;Major System Spill Point
C58 TEE_14_(RYCB) Maj-60 42.957
0.035 88.9 88.618 0 0
;Maj RY Spill Point
C58_1 RYCB_2_(RYCB) Maj-63 5.09
0.035 87.58 87.72 0 0
;Maj RY Spill Point
C58_2 Maj-63 Maj-46 12.116 0.035
87.72 87.407 0 0
;Maj RY Spill Point
C59_1 RYCB_4_(RYCB) Maj-65 3.487
0.035 87.79 87.8 0 0
;Maj RY Spill Point
C59_2 Maj-65 Maj-48_2 8.163 0.035
87.8 87.744 0 0
;Maj RY Spill Point
C6 39_(RYCB) Maj-08 6.432 0.035
90.35 90.15 0 0
C6_1 Maj-07 Maj-06_2 34.136 0.013
90.275 90.095 0 0
C6_2 Maj-06 Maj-06_2 20.238 0.013
90.227 90.095 0 0
;Major System Overland Spillway
C60 Maj-56 TEE_14_(RYCB) 23.631
0.035 88.8 88.9 0 0
C61_1 RYCB_1_(RYCB) Maj-66 2.392
0.035 87.5 87.65 0 0
C61_2 Maj-66 Maj-55 19.877 0.035
87.65 87.494 0 0
C62 1_(RYCB) Maj-50 27.046 0.035
87.813 87.425 0 0
C63_1 RYCB_5_(RYCB) Maj-67 3.561
0.035 87.739 87.95 0 0
C63_2 Maj-67 Maj-44 7.188 0.035
87.95 87.539 0 0
C64 Structure_-_(18)_(RYCB) Maj-43 5
0.035 88.19 88.074 0 0
C65_1 RYCB_6_(RYCB) J1 22.199
0.035 88.329 88.48 0 0
C65_2 J1 Maj-35 15.658 0.035
88.48 88.149 0 0
C66_1 RYCB_10_(RYCB) Maj-64 14.534
0.035 88.729 88.8 0 0
C66_2 Maj-64 Maj-21 36.889 0.035
88.8 88.595 0 0
C67 RYCB_11_(RYCB) Slope1 10.418
0.035 89.123 89.066 0 0
C68 38_(RYCB) Maj-09 5 0.035
89.859 89.846 0 0
C69 32_(CB) Maj-14 5 0.035
89.6 89.484 0 0
C7 Maj-07 Maj-08 17.171 0.013
90.275 90.15 0 0
C8 Maj-08 Maj-09 40.633 0.013
90.15 89.846 0 0
C9 Maj-09 Maj-10 8.974 0.013
89.846 89.777 0 0
;HDPE Pipe SI
Pipe_-_(1)_(RYCB)_1 TEE_43_(RYCB) 98_(STM) 40.7
0.013 86.11 85.703 0 0
;HDPE Pipe SI
Pipe_-_(10)_(RYCB) TEE_32_(RYCB) RYCB_18_(RYCB)
4.029 0.013 86.78 86.76 0 0
;HDPE Pipe SI
Pipe_-_(100)_(RYCB) TEE_6_(RYCB) RYCB_4_(RYCB)
43.106 0.013 86.65 86.434 0 0
;HDPE Pipe SI
Pipe_-_(101)_(RYCB) ELB_20_(RYCB) TEE_35_(RYCB)
58.134 0.013 86.684 86.393 0 0
;HDPE Pipe SI
Pipe_-_(103)_(1)_(RYCB) TEE_33_(RYCB)
RYCB_18_(RYCB) 3.988 0.013 86.134 86.114 0
0
;HDPE Pipe SI
Pipe_-_(103)_(RYCB) TEE_34_(RYCB) TEE_33_(RYCB)
29.299 0.013 86.28 86.134 0 0
;HDPE Pipe SI
Pipe_-_(109)_(RYCB) ELB_21_(RYCB) RYCB_9_(RYCB)
42.607 0.013 88.36 88.147 0 0
;HDPE Pipe SI
Pipe_-_(11)_(RYCB) RYCB_18_(RYCB) Structure_-
_(18)_(RYCB) 37.013 0.013 86.064 85.879 0 0
;HDPE Pipe SI
Pipe_-_(110)_(RYCB) ELB_12_(RYCB) TEE_22_(RYCB)
42.796 0.013 88.3 88.086 0 0
;HDPE Pipe SI
Pipe_-_(111)_(RYCB) TEE_22_(RYCB) RYCB_9_(RYCB)
36.137 0.013 88.08 87.899 0 0
;HDPE Pipe SI
Pipe_-_(114)_(RYCB) ELB_10_(RYCB) TEE_18_(RYCB)
20.158 0.013 87.95 87.849 0 0
;HDPE Pipe SI
Pipe_-_(117)_(RYCB) ELB_14_(RYCB) TEE_24_(RYCB)
14.18 0.013 88.08 88.009 0 0
;HDPE Pipe SI
Pipe_-_(118)_(RYCB) TEE_24_(RYCB) TEE_25_(RYCB)
29.666 0.013 87.99 87.842 0 0
;HDPE Pipe SI

Pipe_-_(119)_(RYCB) ELB_13_(RYCB) TEE_23_(RYCB)
29.54 0.013 87.86 87.712 0 0
;HDPE Pipe SI
Pipe_-_(120)_(RYCB) ELB_17_(RYCB) TEE_28_(RYCB)
13.487 0.013 87.85 87.783 0 0
;HDPE Pipe SI
Pipe_-_(121)_(RYCB) TEE_28_(RYCB) RYCB_13_(RYCB)
35.693 0.013 87.77 87.592 0 0
;HDPE Pipe SI
Pipe_-_(122)_(RYCB) ELB_18_(RYCB) RYCB_13_(RYCB)
34.873 0.013 87.88 87.706 0 0
;HDPE Pipe SI
Pipe_-_(123)_(RYCB) ELB_16_(RYCB) TEE_26_(RYCB)
27.685 0.013 88.98 88.703 0 0
;HDPE Pipe SI
Pipe_-_(124)_(RYCB) TEE_26_(RYCB) TEE_27_(RYCB)
29.406 0.013 88.69 88.543 0 0
;HDPE Pipe SI
Pipe_-_(125)_(RYCB) TEE_27_(RYCB) RYCB_12_(RYCB)
39.4 0.013 88.53 88.333 0 0
;HDPE Pipe SI
Pipe_-_(126)_(RYCB) ELB_23_(RYCB) TEE_40_(RYCB)
30.531 0.013 89.29 89.137 0 0
;HDPE Pipe SI
Pipe_-_(127)_(RYCB) TEE_40_(RYCB) TEE_41_(RYCB)
35.765 0.013 89.13 88.951 0 0
;HDPE Pipe SI
Pipe_-_(128)_(RYCB) TEE_41_(RYCB) RYCB_15_(RYCB)
32.603 0.013 88.94 88.777 0 0
;HDPE Pipe SI
Pipe_-_(129)_(RYCB) ELB_22_(RYCB) TEE_36_(RYCB)
47.076 0.013 88.84 88.605 0 0
;HDPE Pipe SI
Pipe_-_(130)_(RYCB) TEE_36_(RYCB) RYCB_14_(RYCB)
21.116 0.013 88.6 88.494 0 0
;HDPE Pipe SI
Pipe_-_(131)_(RYCB) TEE_37_(RYCB) RYCB_14_(RYCB)
21.231 0.013 88.95 88.844 0 0
;HDPE Pipe SI
Pipe_-_(132)_(RYCB) TEE_37_(RYCB) TEE_38_(RYCB)
21.029 0.013 88.95 88.845 0 0
;HDPE Pipe SI
Pipe_-_(133)_(RYCB) TEE_38_(RYCB) TEE_39_(RYCB)
46.6 0.013 88.82 88.587 0 0
;HDPE Pipe SI
Pipe_-_(134)_(RYCB) TEE_10_(RYCB) TEE_11_(RYCB)
40.369 0.013 86.81 86.6 0 0
;HDPE Pipe SI
Pipe_-_(137)_(RYCB) TEE_7_(RYCB) TEE_8_(RYCB)
22.479 0.013 86.76 86.648 0 0
;HDPE Pipe SI
Pipe_-_(138)_(RYCB) TEE_8_(RYCB) TEE_9_(RYCB)
21.988 0.013 86.64 86.53 0 0
;HDPE Pipe SI
Pipe_-_(139)_(RYCB) ELB_3_(RYCB) TEE_2_(RYCB)
20.228 0.013 86.78 86.681 0 0
;HDPE Pipe SI
Pipe_-_(14)_(RYCB) TEE_15_(RYCB) RYCB_7_(RYCB)
4.757 0.013 87.38 87.356 0 0
;HDPE Pipe SI
Pipe_-_(140)_(RYCB) TEE_2_(RYCB) RYCB_3_(RYCB)
20.776 0.013 86.65 86.544 0 0
;HDPE Pipe SI
Pipe_-_(141)_(RYCB) ELB_11_(RYCB) TEE_19_(RYCB)
18.513 0.013 87.9 87.752 0 0
;HDPE Pipe SI
Pipe_-_(142)_(RYCB) TEE_19_(RYCB) TEE_20_(RYCB)
27.38 0.013 87.74 87.603 0 0
;HDPE Pipe SI
Pipe_-_(143)_(RYCB) TEE_20_(RYCB) TEE_21_(RYCB)
22.082 0.013 87.59 87.48 0 0
;HDPE Pipe SI
Pipe_-_(144)_(RYCB) TEE_21_(RYCB) RYCB_8_(RYCB)
33.251 0.013 87.47 87.304 0 0
;HDPE Pipe SI
Pipe_-_(145)_(RYCB) ELB_19_(RYCB) TEE_29_(RYCB)
18.496 0.013 87.27 87.178 0 0
;HDPE Pipe SI
Pipe_-_(146)_(RYCB) TEE_29_(RYCB) TEE_30_(RYCB)
21.926 0.013 87.17 87.06 0 0
;HDPE Pipe SI
Pipe_-_(147)_(RYCB) TEE_30_(RYCB) TEE_31_(RYCB)
23.15 0.013 87.05 86.934 0 0
;HDPE Pipe SI
Pipe_-_(148)_(RYCB) TEE_31_(RYCB) TEE_32_(RYCB)
26.341 0.013 86.92 86.788 0 0
;HDPE Pipe SI
Pipe_-_(149)_(RYCB) TEE_35_(RYCB) TEE_34_(RYCB)
12.115 0.013 86.344 86.284 0 0
;HDPE Pipe SI
Pipe_-_(15)_(RYCB) RYCB_7_(RYCB) 15_RYCB
39.009 0.013 86.79 86.595 0 0
;HDPE Pipe SI
Pipe_-_(150)_(RYCB) TEE_18_(RYCB) TEE_17_(RYCB)
21.983 0.013 87.84 87.73 0 0
;HDPE Pipe SI
Pipe_-_(151)_(RYCB) TEE_17_(RYCB) TEE_16_(RYCB)
22.116 0.013 87.69 87.579 0 0
;HDPE Pipe SI
Pipe_-_(152)_(RYCB) TEE_16_(RYCB) TEE_15_(RYCB)
36.027 0.013 87.57 87.39 0 0
;HDPE Pipe SI
Pipe_-_(153)_(RYCB) ELB_8_(RYCB) TEE_10_(RYCB)
17.189 0.013 86.93 86.8 0 0
;HDPE Pipe SI
Pipe_-_(154)_(RYCB) ELB_9_(RYCB) TEE_12_(RYCB)
38.096 0.013 87.35 87.16 0 0
;HDPE Pipe SI
Pipe_-_(155)_(RYCB) TEE_12_(RYCB) TEE_13_(RYCB)
17.927 0.013 87.15 87.06 0 0
;HDPE Pipe SI
Pipe_-_(156)_(1)_(RYCB) TEE_14_(RYCB)
RYCB_7_(RYCB) 3.241 0.013 86.861 86.845 0
0
;HDPE Pipe SI
Pipe_-_(156)_(RYCB) TEE_13_(RYCB) TEE_14_(RYCB)
27.79 0.013 87 86.861 0 0
;HDPE Pipe SI
Pipe_-_(157)_(RYCB) ELB_25_(RYCB) TEE_44_(RYCB)
64.5 0.013 86.43 86.108 0 0
;HDPE Pipe SI
Pipe_-_(159)_(RYCB) ELB_24_(RYCB) TEE_42_(RYCB)
38.3 0.013 86.55 86.359 0 0
;HDPE Pipe SI
Pipe_-_(16)_(RYCB) TEE_5_(RYCB) RYCB_6_(RYCB)
3.09 0.013 86.09 86.075 0 0
;HDPE Pipe SI
Pipe_-_(160)_(RYCB) TEE_42_(RYCB) TEE_43_(RYCB)
36.9 0.013 86.35 86.165 0 0
;HDPE Pipe SI
Pipe_-_(161)_(RYCB) ELB_1_(RYCB) RYCB_1_(RYCB)
36.543 0.013 86.51 86.327 0 0
;HDPE Pipe SI
Pipe_-_(162)_(RYCB) ELB_15_(RYCB) RYCB_10_(RYCB)
33.014 0.013 87.5 87.33 0 0
;HDPE Pipe SI
Pipe_-_(164)_(RYCB) TEE_23_(RYCB) RYCB_10_(RYCB)
28.561 0.013 87.7 87.557 0 0
;HDPE Pipe SI

Pipe_-_(165)_(RYCB) TEE_25_(RYCB) RYCB_11_(RYCB)
30.956 0.013 87.83 87.675 0 0
;HDPE Pipe SI
Pipe_-_(17)_(RYCB) TEE_11_(RYCB) RYCB_6_(RYCB)
5.41 0.013 86.59 86.56 0 0
;HDPE Pipe SI
Pipe_-_(19)_(RYCB) RYCB_9_(RYCB) 22_(RYCB)
31.338 0.013 87.84 87.683 0 0
;HDPE Pipe SI
Pipe_-_(2)_(RYCB) TEE_44_(RYCB) 98_(STM) 58.2
0.013 86.04 85.458 0 0
;HDPE Pipe SI
Pipe_-_(22)_(RYCB) RYCB_14_(RYCB) 32_(CB)
31.316 0.013 88.44 88.283 0 0
;HDPE Pipe SI
Pipe_-_(23)_(RYCB) RYCB_12_(RYCB) 33_(CB)
11.395 0.013 88.3 88.243 0 0
;HDPE Pipe SI
Pipe_-_(24)_(RYCB) TEE_39_(RYCB) 29_(RYCB)
8.187 0.013 88.58 88.539 0 0
;HDPE Pipe SI
Pipe_-_(25)_(RYCB) RYCB_11_(RYCB) 31_(CB) 6.05
0.013 87.65 87.62 0 0
;HDPE Pipe SI
Pipe_-_(27)_(RYCB) RYCB_3_(RYCB) 1_(RYCB) 30.6
0.013 86.48 86.327 0 0
;HDPE Pipe SI
Pipe_-_(73)_(RYCB) RYCB_8_(RYCB) 18_(CB) 9.658
0.013 87.27 87.222 0 0
;HDPE Pipe SI
Pipe_-_(74)_(RYCB) RYCB_15_(RYCB) 39_(RYCB)
5.744 0.013 88.7 88.671 0 0
;HDPE Pipe SI
Pipe_-_(77)_(RYCB) RYCB_13_(RYCB) 38_(RYCB)
32.433 0.013 87.54 87.378 0 0
;HDPE Pipe SI
Pipe_-_(87)_(RYCB) StartNullStruct2 TEE_1_(RYCB)
21.137 0.013 86.62 86.515 0 0
;HDPE Pipe SI
Pipe_-_(88)_(RYCB) TEE_1_(RYCB) RYCB_2_(RYCB)
36.065 0.013 86.51 86.33 0 0
;HDPE Pipe SI
Pipe_-_(89)_(RYCB) ELB_4_(RYCB) RYCB_3_(RYCB)
30.528 0.013 86.75 86.6 0 0
;HDPE Pipe SI
Pipe_-_(9)_(RYCB) RYCB_5_(RYCB) 11_(CB) 5.75
0.013 86.35 86.321 0 0
;HDPE Pipe SI
Pipe_-_(90)_(RYCB) StartNullStruct2 ELB_2_(RYCB)
11.016 0.013 86.62 86.565 0 0
;HDPE Pipe SI
Pipe_-_(93)_(RYCB) ELB_5_(RYCB) TEE_3_(RYCB)
39.684 0.013 86.75 86.56 0 0
;HDPE Pipe SI
Pipe_-_(94)_(RYCB) TEE_3_(RYCB) TEE_4_(RYCB)
43.993 0.013 86.55 86.33 0 0
;HDPE Pipe SI
Pipe_-_(95)_(RYCB) TEE_4_(RYCB) TEE_5_(RYCB)
43.248 0.013 86.32 86.104 0 0
;HDPE Pipe SI
Pipe_-_(96)_(RYCB) ELB_7_(RYCB) TEE_7_(RYCB)
25.116 0.013 87.1 86.82 0 0
;HDPE Pipe SI
Pipe_-_(98)_(RYCB) TEE_9_(RYCB) RYCB_5_(RYCB)
35.118 0.013 86.52 86.344 0 0
;HDPE Pipe SI
Pipe_-_(99)_(RYCB) ELB_6_(RYCB) TEE_6_(RYCB)
38.969 0.013 86.85 86.655 0 0
;Mcon Circular Conc. Pipe
STM-23_(STM) 106_(STM) 104_(STM) 97.6
0.013 83.839 83.595 0 0
;Mcon Circular Conc. Pipe
STM-24_(STM) 108_(STM) 106_(STM) 26.241
0.013 83.916 83.85 0 0
;Ipex PVC DR 35
STM-27_(STM) 134_(STM) 132_(STM) 36.012
0.013 85.14 84.906 0 0
;Ipex PVC DR 35
STM-28_(STM) 110_(STM) 108_(STM) 29.106
0.013 84.236 84.114 0 0
;Mcon Circular Conc. Pipe
STM-34_(1)_(1)_(STM) 98_(STM) 2121_(STM) 40.5
0.013 81.46 81.42 0 0
;Mcon Circular Conc. Pipe
STM-34_(1)_(STM) 100_(STM) 98_(STM) 39.5
0.013 81.56 81.52 0 0
;Mcon Circular Conc. Pipe
STM-34_(STM) 102_(STM) 100_(STM) 12.1
0.013 81.61 81.598 0 0
;Mcon Circular Conc. Pipe
STM-35_(STM) 2121_(STM) 2142_(STM) 83.9
0.013 80.72 80.59 0 0
;Mcon Circular Conc. Pipe
STM-36_(STM) 2142_(STM) 2143_(STM) 17.7
0.013 80.43 80.4 0 0
;Mcon Circular Conc. Pipe
STM-37_(STM) 2143_(STM) 2144_(STM) 20.119
0.013 80.23 80.21 0 0
;Mcon Circular Conc. Pipe
STM-38_(STM) 2144_(STM) STM-111_(STM)
17.179 0.013 80.154 80.137 0 0
;HDPE Pipe SI
STM-81_(STM) 142_(STM) 140_(STM) 20.687
0.013 85.244 85.11 0 0
;HDPE Pipe SI
STM-82_(STM) StartNullStruct3 104_(STM) 37.594
0.013 84.091 83.903 0 0
;HDPE Pipe SI
STM-83_(STM) STM-251_(STM) 144_(STM) 37.8
0.013 85.609 85.225 0 0

[ORIFICES]
;;Name From Node To Node Type
Offset Qcoeff Gated CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- ----------
--- -------- ----------
CB-02 02_(CB) 106_(STM) SIDE 85.6
0.62 NO 0
CB-03 03_(CB) 106_(STM) SIDE 85.6
0.62 NO 0
CB-04 04_(CB) 104_(STM) SIDE
85.53 0.62 NO 0
CB-05 05_(CB) 104_(STM) SIDE
85.531 0.62 NO 0
CB-06 06_(CB) 104_(STM) SIDE
86.19 0.62 NO 0
CB-08 08_(CB) 112_(STM) SIDE
85.436 0.62 NO 0
CB-09 09_(CB) 112_(STM) SIDE
85.425 0.62 NO 0
CB-10 10_(CB) 114_(STM) SIDE
86.17 0.62 NO 0
CB-11 11_(CB) 114_(STM) SIDE
86.321 0.62 NO 0
CB-12 12_(CB) 120_(STM) SIDE
85.643 0.62 NO 0
CB-13 13_(CB) 120_(STM) SIDE
85.793 0.62 NO 0

CB-14 14_(CB) 126_(STM) SIDE
86.012 0.62 NO 0
CB-15 15_(CB) 126_(STM) SIDE
86.016 0.62 NO 0
CB-16 16_(CB) 128_(STM) SIDE
86.173 0.62 NO 0
CB-17 17_(CB) 128_(STM) SIDE
86.176 0.62 NO 0
CB-18 18_(CB) 136_(STM) SIDE
87.222 0.62 NO 0
CB-19 19_(CB) 136_(STM) SIDE
86.281 0.62 NO 0
CB-20 20_(CB) 140_(STM) SIDE
86.623 0.62 NO 0
CB-21 21_(CB) 140_(STM) SIDE
86.773 0.62 NO 0
CB-23 23_(CB) 144_(STM) SIDE
86.923 0.62 NO 0
CB-24 24_(CB) 144_(STM) SIDE
86.923 0.62 NO 0
CB-25 25_(CB) 146_(STM) SIDE
86.775 0.82 NO 0
CB-26 26_(CB) 146_(STM) SIDE
86.775 0.82 NO 0
CB-27 27_(CB) 148_(STM) SIDE
86.775 0.62 NO 0
CB-28 28_(CB) 148_(STM) SIDE
86.775 0.62 NO 0
;On Slope
CB-30 30_(CB) 150_(STM) SIDE
86.93 0.82 NO 0
;On Slope
CB-31 31_(CB) 150_(STM) SIDE
87.62 0.82 NO 0
CB-32 32_(CB) 152_(STM) SIDE
88.283 0.62 NO 0
CB-33 33_(CB) 152_(STM) SIDE
88.243 0.62 NO 0
CB-34 34_(CB) 158_(STM) SIDE
87.507 0.62 NO 0
CB-35 35_(CB) 158_(STM) SIDE
87.507 0.62 NO 0
CB-36 36_(CB) 162_(STM) SIDE
87.79 0.62 NO 0
CB-37 37_(CB) 162_(STM) SIDE
87.792 0.62 NO 0
CB-40 40_(CB) 164_(STM) SIDE
88.226 0.62 NO 0
CB-41 41_(CB) 164_(STM) SIDE
88.125 0.62 NO 0
CB-42 42_(CB) 170_(STM) SIDE
88.299 0.62 NO 0
CB-43 43_(CB) 170_(STM) SIDE
88.294 0.62 NO 0
CB-44 44_(CB) 142_(STM) SIDE
86.921 0.62 NO 0
CB-45 45_(CB) 142_(STM) SIDE
86.921 0.62 NO 0
CB-46 46_(CB) 132_(STM) SIDE
86.884 0.62 NO 0
CB-47 47_(CB) 132_(STM) SIDE
87.034 0.62 NO 0
CB-48 48_(CB) 130_(STM) SIDE
86.373 0.62 NO 0
CB-49 49_(CB) 130_(STM) SIDE
86.523 0.62 NO 0
CB-50 50_(CB) 118_(STM) SIDE
86.03 0.62 NO 0
CB-51 51_(CB) 118_(STM) SIDE
86.06 0.62 NO 0
CB-52 52_(CB) 162_(STM) SIDE
85.348 0.62 NO 0
CB-53 53_(CB) 156_(STM) SIDE
87.662 0.62 NO 0
CB-54 54_(CB) 156_(STM) SIDE
87.708 0.62 NO 0
CB-55 55_(CB) 104_(STM) SIDE
85.27 0.62 NO 0
CB-57 57_(CB) 100_(STM) SIDE
85.21 0.62 NO 0
;CICB
OR-02 Maj-50 02_(CB) SIDE 87.425
0.62 NO 0
;CICB
OR-03 Maj-50 03_(CB) SIDE 87.425
0.62 NO 0
;CICB
OR-04 Maj-52 04_(CB) SIDE 87.472
0.62 NO 0
;CICB
OR-05 Maj-52 05_(CB) SIDE 87.472
0.62 NO 0
;CICB
OR-06 Maj-55 06_(CB) SIDE 87.494
0.62 NO 0
OR-08 Maj-46 08_(CB) BOTTOM
87.407 0.62 NO 0
OR-09 Maj-46 09_(CB) BOTTOM
87.407 0.62 NO 0
OR1 59_(CB) 112_(STM) SIDE
85.85 0.62 NO 0
OR-10 Maj-44 10_(CB) BOTTOM
87.539 0.62 NO 0
OR-11 Maj-44 11_(CB) BOTTOM
87.539 0.62 NO 0
OR-12 Maj-41 12_(CB) BOTTOM
87.62 0.62 NO 0
OR-13 Maj-41 13_(CB) BOTTOM
87.62 0.62 NO 0
OR-14 Maj-37 14_(CB) BOTTOM
87.993 0.62 NO 0
OR-15 Maj-37 15_(CB) BOTTOM
87.993 0.62 NO 0
OR-16 Maj-35 16_(CB) BOTTOM
88.149 0.62 NO 0
OR-17 Maj-35 17_(CB) BOTTOM
88.149 0.62 NO 0
OR-18 Maj-28 18_(CB) BOTTOM
88.251 0.62 NO 0
OR-19 Maj-28 19_(CB) BOTTOM
88.251 0.62 NO 0
;CICB
OR2 Maj-48_3 59_(CB) SIDE
87.647 0.62 NO 0
OR-20 Maj-26 20_(CB) BOTTOM
88.605 0.62 NO 0
OR-21 Maj-26 21_(CB) BOTTOM
88.605 0.62 NO 0
OR-23 Maj-24 23_(CB) BOTTOM
88.904 0.62 NO 0
OR-24 Maj-24 24_(CB) BOTTOM
88.904 0.62 NO 0
OR-25 Maj-19 25_(CB) BOTTOM
89.388 0.62 NO 0
;CICB
OR-26 Maj-19 26_(CB) SIDE 89.388
0.62 NO 0
;Double CB
OR-27 Maj-21 27_(CB) BOTTOM
88.595 0.62 NO 0

```
;Double CB
OR-28        Maj-21       28_(CB)       BOTTOM
88.595    0.62    NO     0
OR-30        Slope1       30_(CB)       BOTTOM
89.066    0.62    NO     0
;CICB
OR-31        Slope1       31_(CB)       SIDE       89.066
0.62     NO     0
OR-32        Maj-14       32_(CB)       BOTTOM
89.484    0.62    NO     0
OR-33        Maj-14       33_(CB)       BOTTOM
89.484    0.62    NO     0
OR-34        Maj-16       34_(CB)       BOTTOM
89.419    0.62    NO     0
OR-35        Maj-16       35_(CB)       BOTTOM
89.419    0.62    NO     0
OR-36        Maj-10       36_(CB)       BOTTOM
89.777    0.62    NO     0
OR-37        Maj-10       37_(CB)       BOTTOM
89.777    0.62    NO     0
OR-40        Maj-06_2     40_(CB)       BOTTOM
90.095    0.62    NO     0
OR-41        Maj-06_2     41_(CB)       BOTTOM
90.095    0.62    NO     0
OR-42        Maj-03       42_(CB)       BOTTOM
90.272    0.62    NO     0
OR-43        Maj-03       43_(CB)       BOTTOM
90.272    0.62    NO     0
OR-44        Maj-33       44_(CB)       BOTTOM
88.918    0.62    NO     0
OR-45        Maj-33       45_(CB)       BOTTOM
88.918    0.62    NO     0
OR-46        Maj-32       46_(CB)       BOTTOM
88.874    0.62    NO     0
OR-47        Maj-32       47_(CB)       BOTTOM
88.874    0.62    NO     0
OR-48        Maj-30       48_(CB)       BOTTOM
88.398    0.62    NO     0
OR-49        Maj-30       49_(CB)       BOTTOM
88.398    0.62    NO     0
OR-50        Maj-42       50_(CB)       BOTTOM
87.881    0.62    NO     0
OR-51        Maj-42       51_(CB)       BOTTOM
87.881    0.62    NO     0
OR-52        Maj-09       52_(CB)       BOTTOM
89.819    0.62    NO     0
OR-53        Maj-12       53_(CB)       BOTTOM
89.664    0.62    NO     0
OR-54        Maj-12       54_(CB)       BOTTOM
89.664    0.62    NO     0
OR-55        Maj-54       55_(CB)       BOTTOM
87.251    0.62    NO     0
;Double CB Grate
OR-57        Maj-58       57_(CB)       BOTTOM
87.162    0.62    NO     0
RYCB-01      RYCB_1_(RYCB)    06_(CB)       SIDE
86.3     0.62     NO     0
RYCB-02      RYCB_2_(RYCB)    112_(STM)     SIDE
86.01    0.62     NO     0
RYCB-03      1_(RYCB)      110_(STM)     SIDE
86.327    0.62    NO     0
RYCB-04      RYCB_4_(RYCB)    StartNullStruct3 SIDE
86.42    0.62     NO     0
RYCB-06      RYCB_6_(RYCB)    128_(STM)     SIDE
86.075    0.82    NO     0
;Direct Connection
RYCB-07      15_RYCB       138_(STM)     SIDE
86.595    0.82    NO     0
RYCB-10      RYCB_10_(RYCB)   148_(STM)     SIDE
87.33    0.62     NO     0
RYCB-18      Structure_-_(18)_(RYCB) 116_(STM) SIDE
85.879    0.82    NO     0
RYCB-22      22_(RYCB)     142_(STM)     SIDE
87.683    0.62    NO     0
RYCB-29      29_(RYCB)     STM-251_(STM)    SIDE
88.539    0.62    NO     0
RYCB-38      38_(RYCB)     162_(STM)     SIDE
87.378    0.62    NO     0
RYCB-39      39_(RYCB)     162_(STM)     SIDE
88.671    0.62    NO     0

[OUTLETS]
;;Name        From Node      To Node       Offset    Type
QTable/Qcoeff    Qexpon    Gated
;;-------------- ---------------- ---------------- ---------- ---------------- ---
------------- ---------- --------
B1-Out       B1_Stor       164_(STM)     90.5
TABULAR/HEAD    B1-Out                NO
B2-Out       B2_Stor       164_(STM)     90.5
TABULAR/HEAD    B2-Out                NO
B3-Out       B3_Stor       164_(STM)     90.5
TABULAR/HEAD    B3-Out                NO
B4-Out       58_(CB)       2142_(STM)    85.4
TABULAR/HEAD    B4-Out                NO

[XSECTIONS]
;;Link        Shape       Geom1        Geom2     Geom3
Geom4     Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- --
-------- ----------
1_(STM)       CIRCULAR     0.375       0      0      0
1
10_(STM)      CIRCULAR     1.35        0      0      0
1
11_(STM)      CIRCULAR     1.35        0      0      0
1
12_(STM)      CIRCULAR     1.35        0      0      0
1
13_(STM)      CIRCULAR     1.35        0      0      0
1
14_(STM)      CIRCULAR     1.65        0      0      0
1
15_(10)_(STM)    CIRCULAR    1.35       0      0
0     1
15_(11)_(STM)    CIRCULAR    1.35       0      0
0     1
15_(12)_(STM)    CIRCULAR    0.75       0      0
0     1
15_(13)_(STM)    CIRCULAR    0.75       0      0
0     1
15_(14)_(STM)    CIRCULAR    1.05       0      0
0     1
15_(15)_(STM)    CIRCULAR    1.05       0      0
0     1
15_(16)_(STM)    CIRCULAR    1.05       0      0
0     1
15_(19)_(STM)    CIRCULAR    0.375      0      0
0     1
15_(20)_(STM)    CIRCULAR    0.6      0      0      0
1
15_(21)_(STM)    CIRCULAR    0.6      0      0      0
1
15_(22)_(STM)    CIRCULAR    1.05       0      0
0     1
15_(3)_(STM)     CIRCULAR    0.375      0      0
0     1
15_(4)_(STM)     CIRCULAR    0.45     0      0      0
1
15_(5)_(STM)     CIRCULAR    0.525      0      0
0     1
```

15_(9)_(STM) CIRCULAR 1.35 0 0 0
1
2_(STM) CIRCULAR 0.375 0 0 0
1
3_(STM) CIRCULAR 0.525 0 0 0
1
4_(STM) CIRCULAR 1.2 0 0 0
1
5_(STM) CIRCULAR 1.35 0 0 0
1
6_(STM) CIRCULAR 0.25 0 0 0
1
7_(1)_(STM) CIRCULAR 0.45 0 0 0
1
7_(STM) CIRCULAR 0.375 0 0 0
1
8_(STM) CIRCULAR 1.35 0 0 0
1
9_(STM) CIRCULAR 1.35 0 0 0
1
C1 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C1_1 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C1_2 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C10 IRREGULAR 18mROWwSidewalk 0 0
0 1
C11 IRREGULAR 18mROWwSidewalk 0 0
0 1
C12 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C13 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C14 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C15 IRREGULAR 18mROWwSidewalk 0 0
0 1
C16 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C17 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C18 TRIANGULAR 0.6 3.6 0 0
1
C18_2 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C18_3 IRREGULAR 18mROWwSidewalk 0 0
0 1
C18_4 IRREGULAR 18mROWwSidewalk 0 0
0 1
C18_5 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_6 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_7 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C18_8 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_9 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C19 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C2 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C2_1 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C2_2 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C20 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C21 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C22 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C23 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C24 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C25 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C26 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C27 TRIANGULAR 0.6 3.6 0 0
1
C27_1 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C27_2 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C28 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C29 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C3 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C30 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C31 TRIANGULAR 0.6 3.6 0 0
1
C31_1 TRIANGULAR 0.6 3.6 0 0
1
C31_2 TRIANGULAR 0.6 3.6 0 0
1
C32 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C33 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C34 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C35 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C36 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C37 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C38 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C39 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C4 TRIANGULAR 0.6 3.6 0 0
1
C4_1 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C4_2 IRREGULAR 18mROW-Dbl-Sidewalk 0 0
0 1
C4_3 TRIANGULAR 0.6 3.6 0 0
1
C4_4 TRIANGULAR 0.6 3.6 0 0
1
C40 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C41 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C42 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C43 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C44 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C45 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1

C46 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C47 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C48 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C49 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C5 TRIANGULAR 0.6 3.6 0 0 1
C5_1 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C5_2 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C50 TRIANGULAR 0.6 3.6 0 0 1
C50_1 IRREGULAR 18mROWwSidewalk 0 0 0 1
C50_3 IRREGULAR 18mROWwSidewalk 0 0 0 1
C50_4 IRREGULAR 18mROWwSidewalk 0 0 0 1
C51 IRREGULAR 18mROWwSidewalk 0 0 0 1
C52 IRREGULAR 18mROWwSidewalk 0 0 0 1
C53 IRREGULAR 18mROWwSidewalk 0 0 0 1
C54 IRREGULAR 18mROWwSidewalk 0 0 0 1
C55 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C56 TRIANGULAR 0.6 3.6 0 0 1
C57 IRREGULAR 18mROW-No-Sidewalk 0 0 0 1
C58 TRIANGULAR 0.6 3.6 0 0 1
C58_1 TRIANGULAR 0.6 3.6 0 0 1
C58_2 TRIANGULAR 0.6 3.6 0 0 1
C59_1 TRIANGULAR 0.6 3.6 0 0 1
C59_2 TRIANGULAR 0.6 3.6 0 0 1
C6 TRIANGULAR 0.6 3.6 0 0 1
C6_1 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C6_2 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C60 TRIANGULAR 0.6 3.6 0 0 1
C61_1 TRIANGULAR 0.6 3.6 0 0 1
C61_2 TRIANGULAR 0.6 3.6 0 0 1
C62 TRIANGULAR 0.6 3.6 0 0 1
C63_1 TRIANGULAR 0.6 3.6 0 0 1
C63_2 TRIANGULAR 0.6 3.6 0 0 1
C64 TRIANGULAR 0.6 3.6 0 0 1
C65_1 TRIANGULAR 0.6 3.6 0 0 1
C65_2 TRIANGULAR 0.6 3.6 0 0 1
C66_1 TRIANGULAR 0.6 3.6 0 0 1
C66_2 TRIANGULAR 0.6 3.6 0 0 1
C67 TRIANGULAR 0.6 3.6 0 0 1
C68 TRIANGULAR 0.6 3.6 0 0 1
C69 TRIANGULAR 0.6 3.6 0 0 1
C7 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C8 IRREGULAR 18mROW-Dbl-Sidewalk 0 0 0 1
C9 IRREGULAR 18mROWwSidewalk 0 0 0 1
Pipe_-_(1)_(RYCB)_1 CIRCULAR 0.25 0 0 0 1
Pipe_-_(10)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(100)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(101)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(103)_(1)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(103)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(109)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(11)_(RYCB) CIRCULAR 0.3 0 0 0 1
Pipe_-_(110)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(111)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(114)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(117)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(118)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(119)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(120)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(121)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(122)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(123)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(124)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(125)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(126)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(127)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(128)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(129)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(130)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(131)_(RYCB) CIRCULAR 0.25 0 0 0 1
Pipe_-_(132)_(RYCB) CIRCULAR 0.25 0 0 0 1

Pipe_-_(133)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(134)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(137)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(138)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(139)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(14)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(140)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(141)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(142)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(143)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(144)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(145)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(146)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(147)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(148)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(149)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(15)_(RYCB) CIRCULAR 0.3 0 0
0 1
Pipe_-_(150)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(151)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(152)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(153)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(154)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(155)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(156)_(1)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(156)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(157)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(159)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(16)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(160)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(161)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(162)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(164)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(165)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(17)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(19)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(2)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(22)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(23)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(24)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(25)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(27)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(73)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(74)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(77)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(87)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(88)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(89)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(9)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(90)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(93)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(94)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(95)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(96)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(98)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(99)_(RYCB) CIRCULAR 0.25 0 0
0 1
STM-23_(STM) CIRCULAR 0.45 0 0
0 1
STM-24_(STM) CIRCULAR 0.45 0 0
0 1
STM-27_(STM) CIRCULAR 0.25 0 0
0 1
STM-28_(STM) CIRCULAR 0.25 0 0
0 1
STM-34_(1)_(1)_(STM) CIRCULAR 1.65 0 0
0 1
STM-34_(1)_(STM) CIRCULAR 1.65 0 0
0 1
STM-34_(STM) CIRCULAR 1.65 0 0
0 1
STM-35_(STM) CIRCULAR 1.65 0 0
0 1
STM-36_(STM) CIRCULAR 1.65 0 0
0 1
STM-37_(STM) CIRCULAR 1.8 0 0
0 1
STM-38_(STM) CIRCULAR 1.8 0 0
0 1
STM-81_(STM) CIRCULAR 0.25 0 0
0 1
STM-82_(STM) CIRCULAR 0.25 0 0
0 1
STM-83_(STM) CIRCULAR 0.25 0 0
0 1
CB-02 CIRCULAR 0.094 0 0 0
CB-03 CIRCULAR 0.102 0 0 0

CB-04	CIRCULAR	0.094	0	0	0
CB-05	CIRCULAR	0.094	0	0	0
CB-06	CIRCULAR	0.127	0	0	0
CB-08	CIRCULAR	0.102	0	0	0
CB-09	CIRCULAR	0.094	0	0	0
CB-10	CIRCULAR	0.108	0	0	0
CB-11	CIRCULAR	0.127	0	0	0
CB-12	CIRCULAR	0.127	0	0	0
CB-13	CIRCULAR	0.127	0	0	0
CB-14	CIRCULAR	0.094	0	0	0
CB-15	CIRCULAR	0.094	0	0	0
CB-16	CIRCULAR	0.083	0	0	0
CB-17	CIRCULAR	0.094	0	0	0
CB-18	CIRCULAR	0.152	0	0	0
CB-19	CIRCULAR	0.152	0	0	0
CB-20	CIRCULAR	0.108	0	0	0
CB-21	CIRCULAR	0.108	0	0	0
CB-23	CIRCULAR	0.127	0	0	0
CB-24	CIRCULAR	0.127	0	0	0
CB-25	CIRCULAR	0.25	0	0	0
CB-26	CIRCULAR	0.25	0	0	0
CB-27	CIRCULAR	0.152	0	0	0
CB-28	CIRCULAR	0.152	0	0	0
CB-30	CIRCULAR	0.2	0	0	0
CB-31	CIRCULAR	0.2	0	0	0
CB-32	CIRCULAR	0.127	0	0	0
CB-33	CIRCULAR	0.152	0	0	0
CB-34	CIRCULAR	0.127	0	0	0
CB-35	CIRCULAR	0.127	0	0	0
CB-36	CIRCULAR	0.108	0	0	0
CB-37	CIRCULAR	0.127	0	0	0
CB-40	CIRCULAR	0.127	0	0	0
CB-41	CIRCULAR	0.127	0	0	0
CB-42	CIRCULAR	0.102	0	0	0
CB-43	CIRCULAR	0.108	0	0	0
CB-44	CIRCULAR	0.102	0	0	0
CB-45	CIRCULAR	0.083	0	0	0
CB-46	CIRCULAR	0.102	0	0	0
CB-47	CIRCULAR	0.094	0	0	0
CB-48	CIRCULAR	0.094	0	0	0
CB-49	CIRCULAR	0.094	0	0	0
CB-50	CIRCULAR	0.127	0	0	0
CB-51	CIRCULAR	0.127	0	0	0
CB-52	CIRCULAR	0.178	0	0	0
CB-53	CIRCULAR	0.127	0	0	0
CB-54	CIRCULAR	0.127	0	0	0
CB-55	CIRCULAR	0.127	0	0	0
CB-57	CIRCULAR	0.127	0	0	0
OR-02	RECT_CLOSED	0.13	0.65	0	0
OR-03	RECT_CLOSED	0.13	0.65	0	0
OR-04	RECT_CLOSED	0.13	0.65	0	0
OR-05	RECT_CLOSED	0.13	0.65	0	0
OR-06	RECT_CLOSED	0.13	0.65	0	0
OR-08	RECT_CLOSED	0.35	0.35	0	0
OR-09	RECT_CLOSED	0.35	0.35	0	0
OR1	CIRCULAR	0.083	0	0	0
OR-10	RECT_CLOSED	0.35	0.35	0	0
OR-11	RECT_CLOSED	0.35	0.35	0	0
OR-12	RECT_CLOSED	0.35	0.35	0	0
OR-13	RECT_CLOSED	0.35	0.35	0	0
OR-14	RECT_CLOSED	0.35	0.35	0	0
OR-15	RECT_CLOSED	0.35	0.35	0	0
OR-16	RECT_CLOSED	0.35	0.35	0	0
OR-17	RECT_CLOSED	0.35	0.35	0	0
OR-18	RECT_CLOSED	0.35	0.35	0	0
OR-19	RECT_CLOSED	0.35	0.35	0	0
OR2	RECT_CLOSED	0.13	0.65	0	0
OR-20	RECT_CLOSED	0.35	0.35	0	0
OR-21	RECT_CLOSED	0.35	0.35	0	0
OR-23	RECT_CLOSED	0.35	0.35	0	0
OR-24	RECT_CLOSED	0.35	0.35	0	0
OR-25	RECT_CLOSED	0.35	0.35	0	0
OR-26	RECT_CLOSED	0.13	0.65	0	0
OR-27	RECT_CLOSED	0.35	0.7	0	0
OR-28	RECT_CLOSED	0.35	0.7	0	0
OR-30	RECT_CLOSED	0.35	0.35	0	0
OR-31	RECT_CLOSED	0.13	0.65	0	0
OR-32	RECT_CLOSED	0.35	0.35	0	0
OR-33	RECT_CLOSED	0.35	0.35	0	0
OR-34	RECT_CLOSED	0.35	0.35	0	0
OR-35	RECT_CLOSED	0.35	0.35	0	0
OR-36	RECT_CLOSED	0.35	0.35	0	0
OR-37	RECT_CLOSED	0.35	0.35	0	0
OR-40	RECT_CLOSED	0.35	0.35	0	0
OR-41	RECT_CLOSED	0.35	0.35	0	0
OR-42	RECT_CLOSED	0.35	0.35	0	0
OR-43	RECT_CLOSED	0.35	0.35	0	0
OR-44	RECT_CLOSED	0.35	0.35	0	0
OR-45	RECT_CLOSED	0.35	0.35	0	0
OR-46	RECT_CLOSED	0.35	0.35	0	0
OR-47	RECT_CLOSED	0.35	0.35	0	0
OR-48	RECT_CLOSED	0.35	0.35	0	0
OR-49	RECT_CLOSED	0.35	0.35	0	0
OR-50	RECT_CLOSED	0.35	0.35	0	0

```
OR-51           RECT_CLOSED  0.35           0.35      0
0
OR-52           RECT_CLOSED  0.35           0.35      0
0
OR-53           RECT_CLOSED  0.35           0.35      0
0
OR-54           RECT_CLOSED  0.35           0.35      0
0
OR-55           RECT_CLOSED  0.35           0.35      0
0
OR-57           RECT_CLOSED  0.7            0.35      0
0
RYCB-01          CIRCULAR     0.127          0         0         0
RYCB-02          CIRCULAR     0.127          0         0         0
RYCB-03          CIRCULAR     0.152          0         0         0
RYCB-04          CIRCULAR     0.152          0         0         0
RYCB-06          CIRCULAR     0.2            0         0         0
RYCB-07          CIRCULAR     0.25           0         0         0
RYCB-10          CIRCULAR     0.178          0         0         0
RYCB-18          CIRCULAR     0.2            0         0         0
RYCB-22          CIRCULAR     0.152          0         0         0
RYCB-29          CIRCULAR     0.152          0         0         0
RYCB-38          CIRCULAR     0.152          0         0         0
RYCB-39          CIRCULAR     0.152          0         0         0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.035    0.035    0.013
X1 16.5mROW-Dbl-Sidewalk  9        2        14.5     0.0      0.0
0.0      0.0      0.0
GR 0.6      -10.9    0.15     2        0.15     4        0        4.01
0.13     8.25
GR 0        12.49    0.15     12.5     0.15     14.5     0.6      25.6
;
NC 0.035    0.035    0.013
X1 16.5mROW-No-Sidewalk  9        3.8      12.7     0.0      0.0
0.0      0.0      0.0
GR 0.6      -9.1     0.15     3.8      0.15     4        0        4.01
0.13     8.25
GR 0        12.49    0.15     12.5     0.15     12.7     0.6      25.6
;
NC 0.035    0.035    0.013
X1 16.5mROWwSidewalk  9        2        12.7     0.0      0.0
0.0      0.0      0.0
GR 0.6      -10.9    0.15     2        0.15     4        0        4.01
0.13     8.25
GR 0        12.49    0.15     12.5     0.15     12.7     0.6      25.6
;
NC 0.035    0.035    0.013
X1 18mROW-Dbl-Sidewalk  9        5.5      18       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.09     5.5      0.08     7.5      0        7.5
0.13     11.75
GR 0        16       0.08     16       0.09     18       0.6      29.25
;
NC 0.035    0.035    0.013
X1 18mROW-No-Sidewalk  7        7.5      16       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.08     7.5      0        7.5      0.13     11.75
0        16
GR 0.08     16       0.6      29.25
;
NC 0.035    0.035    0.013
X1 18mROWwSidewalk  8        2.75     16       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.09     2.75     0.08     7.5      0        7.5
0.13     11.75
GR 0        16       0.08     16       0.6      29.25
;
NC 0.035    0.035    0.013
X1 18mROWwSidewalk-Half  5        2.75     16       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.09     2.75     0.08     7.5      0        7.5
0.13     11.75
;
NC 0.035    0.035    0.013
X1 24mROW-Dbl-Sidewalk  9        3.6      20.4     0.0      0.0
0.0      0.0      0.0
GR 0.6      -9.3     0.15     3.6      0.15     7.5      0        7.51
0.13     12
GR 0        16.49    0.15     16.5     0.15     20.4     0.6      33.3

[LOSSES]
;;Link           Kentry     Kexit      Kavg       Flap Gate  Seepage
;;-------------- ---------- ---------- ---------- ---------- ----------
1_(STM)          0          0.47       0          NO         0
10_(STM)         0          0.26       0          NO         0
11_(STM)         0          0.11       0          NO         0
12_(STM)         0          1.33       0          NO         0
13_(STM)         0          0.02       0          NO         0
14_(STM)         0          0.47       0          NO         0
15_(10)_(STM)    0          0.39       0          NO         0
15_(11)_(STM)    0          0.035      0          NO         0
15_(12)_(STM)    0          0.035      0          NO         0
15_(13)_(STM)    0          1.33       0          NO         0
15_(14)_(STM)    0          0.47       0          NO         0
15_(15)_(STM)    0          0.39       0          NO         0
15_(16)_(STM)    0          1.33       0          NO         0
15_(19)_(STM)    0          0.02       0          NO         0
15_(20)_(STM)    0          0.055      0          NO         0
15_(21)_(STM)    0          0.08       0          NO         0
15_(22)_(STM)    0          0.16       0          NO         0
15_(3)_(STM)     0          0.39       0          NO         0
15_(4)_(STM)     0          0.39       0          NO         0
15_(5)_(STM)     0          0.02       0          NO         0
15_(9)_(STM)     0          0.47       0          NO         0
2_(STM)          0          0.47       0          NO         0
3_(STM)          0          0.035      0          NO         0
4_(STM)          0          0.035      0          NO         0
5_(STM)          0          1.33       0          NO         0
6_(STM)          0          1.33       0          NO         0
7_(1)_(STM)      0          1.33       0          NO         0
7_(STM)          0          0.02       0          NO         0
8_(STM)          0          0.035      0          NO         0
9_(STM)          0          0.32       0          NO         0
Pipe_-_(1)_(RYCB)_1 0       0.02       0          NO         0
Pipe_-_(10)_(RYCB) 0        1.33       0          NO         0
Pipe_-_(101)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(103)_(1)_(RYCB) 0   1.33       0          NO         0
Pipe_-_(103)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(109)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(110)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(111)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(114)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(117)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(118)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(119)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(120)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(121)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(122)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(123)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(124)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(125)_(RYCB) 0       0.635      0          NO         0
Pipe_-_(126)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(127)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(128)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(129)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(130)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(131)_(RYCB) 0       1.33       0          NO         0
```

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Pipe_-_(132)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(133)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(134)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(137)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(138)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(139)_(RYCB) 0      0.08      0        NO        0
Pipe_-_(14)_(RYCB) 0      1.33      0        NO        0
Pipe_-_(140)_(RYCB) 0      1.33      0        NO        0
Pipe_-_(141)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(142)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(143)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(144)_(RYCB) 0      0.54      0        NO        0
Pipe_-_(145)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(146)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(147)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(148)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(149)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(15)_(RYCB) 0      0.84      0        NO        0
Pipe_-_(150)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(151)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(152)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(153)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(154)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(155)_(RYCB) 0      1.33      0        NO        0
Pipe_-_(156)_(1)_(RYCB) 0   0.84      0        NO        0
Pipe_-_(156)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(157)_(RYCB) 0      1.33      0        NO        0
Pipe_-_(159)_(RYCB) 0      0.02      0        NO        0
Pipe_-_(160)_(RYCB) 0      1.33      0        NO        0
Pipe_-_(161)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(165)_(RYCB) 0      0.035     0        NO        0
Pipe_-_(2)_(RYCB) 0        0.02      0        NO        0
Pipe_-_(87)_(RYCB) 0       0.02      0        NO        0
Pipe_-_(89)_(RYCB) 0       1.33      0        NO        0
Pipe_-_(93)_(RYCB) 0       0.02      0        NO        0
Pipe_-_(94)_(RYCB) 0       0.02      0        NO        0
Pipe_-_(95)_(RYCB) 0       0.035     0        NO        0
Pipe_-_(96)_(RYCB) 0       1.33      0        NO        0
Pipe_-_(98)_(RYCB) 0       0.035     0        NO        0
Pipe_-_(99)_(RYCB) 0       0.035     0        NO        0
STM-23_(STM)     0         1.33      0        NO        0
STM-24_(STM)     0         0.08      0        NO        0
STM-27_(STM)     0         0.035     0        NO        0
STM-28_(STM)     0         0.055     0        NO        0
STM-34_(1)_(1)_(STM) 0     1.07      0        NO        0
STM-34_(1)_(STM) 0         0.08      0        NO        0
STM-34_(STM)     0         0.54      0        NO        0
STM-35_(STM)     0         0.32      0        NO        0
STM-36_(STM)     0         0.39      0        NO        0
STM-37_(STM)     0         0.73      0        NO        0
STM-81_(STM)     0         1.33      0        NO        0
STM-82_(STM)     0         1.33      0        NO        0
STM-83_(STM)     0         1.33      0        NO        0

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
;100% capture of flow to this CB
100%_Capture     Rating     0          0
100%_Capture                0.01       0.001
100%_Capture                0.1        1
100%_Capture                0.3        5

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
102mm-ICD        Rating     0          0
102mm-ICD                   0.01       0.0266
102mm-ICD                   0.15       0.0278
102mm-ICD                   0.3        0.0296
102mm-ICD                   0.35       0.03

102mm-ICD-RLCB   Rating     0          0
102mm-ICD-RLCB              0.01       0.0301
102mm-ICD-RLCB              0.15       0.0312
102mm-ICD-RLCB              0.3        0.0328
102mm-ICD-RLCB              0.35       0.0332

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
108mm-ICD        Rating     0          0
108mm-ICD                   0.01       0.0298
108mm-ICD                   0.15       0.0312
108mm-ICD                   0.3        0.0332
108mm-ICD                   0.35       0.0337

108mm-ICD-RLCB   Rating     0          0
108mm-ICD-RLCB              0.01       0.0338
108mm-ICD-RLCB              0.15       0.035
108mm-ICD-RLCB              0.3        0.0367
108mm-ICD-RLCB              0.35       0.0372

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
127mm-ICD        Rating     0          0
127mm-ICD                   0.01       0.0413
127mm-ICD                   0.15       0.0432
127mm-ICD                   0.3        0.0458
127mm-ICD                   0.35       0.0466

127mm-ICD-RLCB   Rating     0          0
127mm-ICD-RLCB              0.01       0.047
127mm-ICD-RLCB              0.15       0.048
127mm-ICD-RLCB              0.3        0.051
127mm-ICD-RLCB              0.35       0.052

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
152mm-ICD        Rating     0          0
152mm-ICD                   0.01       0.0591
152mm-ICD                   0.15       0.0618
152mm-ICD                   0.3        0.0657
152mm-ICD                   0.35       0.0667

152mm-ICD-RLCB   Rating     0          0
152mm-ICD-RLCB              0.01       0.067
152mm-ICD-RLCB              0.15       0.069
152mm-ICD-RLCB              0.3        0.073
152mm-ICD-RLCB              0.35       0.074

;Sx0.03
16ROW_1CB_So0.005 Rating    0          0
16ROW_1CB_So0.005           0.01       0.0003
16ROW_1CB_So0.005           0.02       0.0011
16ROW_1CB_So0.005           0.03       0.0037
16ROW_1CB_So0.005           0.04       0.0072
16ROW_1CB_So0.005           0.05       0.0132
16ROW_1CB_So0.005           0.06       0.0168
16ROW_1CB_So0.005           0.07       0.0214
16ROW_1CB_So0.005           0.08       0.0253
16ROW_1CB_So0.005           0.09       0.0286
16ROW_1CB_So0.005           0.1        0.0331
16ROW_1CB_So0.005           0.11       0.0367
16ROW_1CB_So0.005           0.12       0.0409
16ROW_1CB_So0.005           0.13       0.0446
16ROW_1CB_So0.005           0.14       0.048
16ROW_1CB_So0.005           0.15       0.049
```

16ROW_1CB_So0.005 0.16 0.049
16ROW_1CB_So0.005 0.17 0.049
16ROW_1CB_So0.005 0.18 0.049
16ROW_1CB_So0.005 0.19 0.049
16ROW_1CB_So0.005 0.2 0.049
16ROW_1CB_So0.005 0.21 0.049
16ROW_1CB_So0.005 0.22 0.049
16ROW_1CB_So0.005 0.23 0.049
16ROW_1CB_So0.005 0.24 0.049
16ROW_1CB_So0.005 0.25 0.049
16ROW_1CB_So0.005 0.26 0.049
16ROW_1CB_So0.005 0.27 0.049
16ROW_1CB_So0.005 0.28 0.049
16ROW_1CB_So0.005 0.29 0.049
16ROW_1CB_So0.005 0.3 0.049
16ROW_1CB_So0.005 0.31 0.049
16ROW_1CB_So0.005 0.32 0.049
16ROW_1CB_So0.005 0.33 0.049
16ROW_1CB_So0.005 0.34 0.049
16ROW_1CB_So0.005 0.35 0.049
16ROW_1CB_So0.005 0.36 0.049
16ROW_1CB_So0.005 0.37 0.049
16ROW_1CB_So0.005 0.38 0.049
16ROW_1CB_So0.005 0.39 0.049
16ROW_1CB_So0.005 0.4 0.049

;Sx0.03
16ROW_1CB_So0.01 Rating 0 0
16ROW_1CB_So0.01 0.01 0.0005
16ROW_1CB_So0.01 0.02 0.0016
16ROW_1CB_So0.01 0.03 0.0052
16ROW_1CB_So0.01 0.04 0.0101
16ROW_1CB_So0.01 0.05 0.0158
16ROW_1CB_So0.01 0.06 0.0206
16ROW_1CB_So0.01 0.07 0.0254
16ROW_1CB_So0.01 0.08 0.029
16ROW_1CB_So0.01 0.09 0.0343
16ROW_1CB_So0.01 0.1 0.0382
16ROW_1CB_So0.01 0.11 0.043
16ROW_1CB_So0.01 0.12 0.0463
16ROW_1CB_So0.01 0.13 0.049
16ROW_1CB_So0.01 0.14 0.049
16ROW_1CB_So0.01 0.15 0.049
16ROW_1CB_So0.01 0.16 0.049
16ROW_1CB_So0.01 0.17 0.049
16ROW_1CB_So0.01 0.18 0.049
16ROW_1CB_So0.01 0.19 0.049
16ROW_1CB_So0.01 0.2 0.049
16ROW_1CB_So0.01 0.21 0.049
16ROW_1CB_So0.01 0.22 0.049
16ROW_1CB_So0.01 0.23 0.049
16ROW_1CB_So0.01 0.24 0.049
16ROW_1CB_So0.01 0.25 0.049
16ROW_1CB_So0.01 0.26 0.049
16ROW_1CB_So0.01 0.27 0.049
16ROW_1CB_So0.01 0.28 0.049
16ROW_1CB_So0.01 0.29 0.049
16ROW_1CB_So0.01 0.3 0.049
16ROW_1CB_So0.01 0.31 0.049
16ROW_1CB_So0.01 0.32 0.049
16ROW_1CB_So0.01 0.33 0.049
16ROW_1CB_So0.01 0.34 0.049
16ROW_1CB_So0.01 0.35 0.049
16ROW_1CB_So0.01 0.36 0.049
16ROW_1CB_So0.01 0.37 0.049

;Sx0.03
16ROW_1CB_So0.02 Rating 0 0
16ROW_1CB_So0.02 0.01 0.0006
16ROW_1CB_So0.02 0.02 0.0019
16ROW_1CB_So0.02 0.03 0.0062
16ROW_1CB_So0.02 0.04 0.012
16ROW_1CB_So0.02 0.05 0.0154
16ROW_1CB_So0.02 0.06 0.0192
16ROW_1CB_So0.02 0.07 0.0236
16ROW_1CB_So0.02 0.08 0.0275
16ROW_1CB_So0.02 0.09 0.0316
16ROW_1CB_So0.02 0.1 0.0363
16ROW_1CB_So0.02 0.11 0.041
16ROW_1CB_So0.02 0.12 0.045
16ROW_1CB_So0.02 0.13 0.045
16ROW_1CB_So0.02 0.14 0.045
16ROW_1CB_So0.02 0.15 0.045
16ROW_1CB_So0.02 0.16 0.045
16ROW_1CB_So0.02 0.17 0.045
16ROW_1CB_So0.02 0.18 0.045
16ROW_1CB_So0.02 0.19 0.045
16ROW_1CB_So0.02 0.2 0.045
16ROW_1CB_So0.02 0.21 0.045
16ROW_1CB_So0.02 0.22 0.045
16ROW_1CB_So0.02 0.23 0.045
16ROW_1CB_So0.02 0.24 0.045
16ROW_1CB_So0.02 0.25 0.045
16ROW_1CB_So0.02 0.26 0.045
16ROW_1CB_So0.02 0.27 0.045
16ROW_1CB_So0.02 0.28 0.045
16ROW_1CB_So0.02 0.29 0.045
16ROW_1CB_So0.02 0.3 0.045
16ROW_1CB_So0.02 0.31 0.045
16ROW_1CB_So0.02 0.32 0.045

;Sx0.03
16ROW_1CB_So0.03 Rating 0 0
16ROW_1CB_So0.03 0.01 0.0005
16ROW_1CB_So0.03 0.02 0.0017
16ROW_1CB_So0.03 0.03 0.0057
16ROW_1CB_So0.03 0.04 0.011
16ROW_1CB_So0.03 0.05 0.0146
16ROW_1CB_So0.03 0.06 0.0179
16ROW_1CB_So0.03 0.07 0.0216
16ROW_1CB_So0.03 0.08 0.0256
16ROW_1CB_So0.03 0.09 0.0298
16ROW_1CB_So0.03 0.1 0.0335
16ROW_1CB_So0.03 0.11 0.038
16ROW_1CB_So0.03 0.12 0.039
16ROW_1CB_So0.03 0.13 0.039
16ROW_1CB_So0.03 0.14 0.039
16ROW_1CB_So0.03 0.15 0.039
16ROW_1CB_So0.03 0.16 0.039
16ROW_1CB_So0.03 0.17 0.039
16ROW_1CB_So0.03 0.18 0.039
16ROW_1CB_So0.03 0.19 0.039
16ROW_1CB_So0.03 0.2 0.039
16ROW_1CB_So0.03 0.21 0.039
16ROW_1CB_So0.03 0.22 0.039
16ROW_1CB_So0.03 0.23 0.039
16ROW_1CB_So0.03 0.24 0.039
16ROW_1CB_So0.03 0.25 0.039
16ROW_1CB_So0.03 0.26 0.039
16ROW_1CB_So0.03 0.27 0.039
16ROW_1CB_So0.03 0.28 0.039
16ROW_1CB_So0.03 0.29 0.039
16ROW_1CB_So0.03 0.3 0.039

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
178mm-ICD Rating 0 0
178mm-ICD 0.01 0.0811
178mm-ICD 0.15 0.0848

178mm-ICD 0.3 0.0901
178mm-ICD 0.35 0.0915

178mm-ICD-RLCB Rating 0 0
178mm-ICD-RLCB 0.01 0.092
178mm-ICD-RLCB 0.15 0.095
178mm-ICD-RLCB 0.3 0.1
178mm-ICD-RLCB 0.35 0.101

;1 Single CB on single lead pipe. Single CB is limited by 250mm Lead pipe at 1.2m head. Q=195.3 L/s
1-CB Rating 0 0
1-CB 0.05 0.1953
1-CB 1 0.1954

;1 DCB on single lead pipe. DCB is limited by 300mm Lead pipe at 1.2m head. Q=281.2 L/s
1-DCB Rating 0 0
1-DCB 0.05 0.2812
1-DCB 1 0.2813

;Sx0.03
24ROW_1CB_So0.005 Rating 0 0
24ROW_1CB_So0.005 0.01 0.0004
24ROW_1CB_So0.005 0.02 0.0012
24ROW_1CB_So0.005 0.03 0.0039
24ROW_1CB_So0.005 0.04 0.0076
24ROW_1CB_So0.005 0.05 0.0136
24ROW_1CB_So0.005 0.06 0.0174
24ROW_1CB_So0.005 0.07 0.022
24ROW_1CB_So0.005 0.08 0.0258
24ROW_1CB_So0.005 0.09 0.0296
24ROW_1CB_So0.005 0.1 0.034
24ROW_1CB_So0.005 0.11 0.0378
24ROW_1CB_So0.005 0.12 0.0418
24ROW_1CB_So0.005 0.13 0.0453
24ROW_1CB_So0.005 0.14 0.0486
24ROW_1CB_So0.005 0.15 0.049
24ROW_1CB_So0.005 0.16 0.049
24ROW_1CB_So0.005 0.17 0.049
24ROW_1CB_So0.005 0.18 0.049
24ROW_1CB_So0.005 0.19 0.049
24ROW_1CB_So0.005 0.2 0.049
24ROW_1CB_So0.005 0.21 0.049
24ROW_1CB_So0.005 0.22 0.049
24ROW_1CB_So0.005 0.23 0.049
24ROW_1CB_So0.005 0.24 0.049
24ROW_1CB_So0.005 0.25 0.049
24ROW_1CB_So0.005 0.26 0.049
24ROW_1CB_So0.005 0.27 0.049
24ROW_1CB_So0.005 0.28 0.049
24ROW_1CB_So0.005 0.29 0.049
24ROW_1CB_So0.005 0.3 0.049
24ROW_1CB_So0.005 0.31 0.049
24ROW_1CB_So0.005 0.32 0.049
24ROW_1CB_So0.005 0.33 0.049
24ROW_1CB_So0.005 0.34 0.049
24ROW_1CB_So0.005 0.35 0.049
24ROW_1CB_So0.005 0.36 0.049
24ROW_1CB_So0.005 0.37 0.049
24ROW_1CB_So0.005 0.38 0.049
24ROW_1CB_So0.005 0.39 0.049
24ROW_1CB_So0.005 0.4 0.049

;Sx0.03
24ROW_1CB_So0.01 Rating 0 0
24ROW_1CB_So0.01 0.01 0.0005
24ROW_1CB_So0.01 0.02 0.0017
24ROW_1CB_So0.01 0.03 0.0055
24ROW_1CB_So0.01 0.04 0.0107
24ROW_1CB_So0.01 0.05 0.0164
24ROW_1CB_So0.01 0.06 0.0212
24ROW_1CB_So0.01 0.07 0.0259
24ROW_1CB_So0.01 0.08 0.03
24ROW_1CB_So0.01 0.09 0.0351
24ROW_1CB_So0.01 0.1 0.0396
24ROW_1CB_So0.01 0.11 0.044
24ROW_1CB_So0.01 0.12 0.0473
24ROW_1CB_So0.01 0.13 0.049
24ROW_1CB_So0.01 0.14 0.049
24ROW_1CB_So0.01 0.15 0.049
24ROW_1CB_So0.01 0.16 0.049
24ROW_1CB_So0.01 0.17 0.049
24ROW_1CB_So0.01 0.18 0.049
24ROW_1CB_So0.01 0.19 0.049
24ROW_1CB_So0.01 0.2 0.049
24ROW_1CB_So0.01 0.21 0.049
24ROW_1CB_So0.01 0.22 0.049
24ROW_1CB_So0.01 0.23 0.049
24ROW_1CB_So0.01 0.24 0.049
24ROW_1CB_So0.01 0.25 0.049
24ROW_1CB_So0.01 0.26 0.049
24ROW_1CB_So0.01 0.27 0.049
24ROW_1CB_So0.01 0.28 0.049
24ROW_1CB_So0.01 0.29 0.049
24ROW_1CB_So0.01 0.3 0.049
24ROW_1CB_So0.01 0.31 0.049
24ROW_1CB_So0.01 0.32 0.049
24ROW_1CB_So0.01 0.33 0.049
24ROW_1CB_So0.01 0.34 0.049
24ROW_1CB_So0.01 0.35 0.049
24ROW_1CB_So0.01 0.36 0.049
24ROW_1CB_So0.01 0.37 0.049

;Sx0.03
24ROW_1CB_So0.02 Rating 0 0
24ROW_1CB_So0.02 0.01 0.0006
24ROW_1CB_So0.02 0.02 0.002
24ROW_1CB_So0.02 0.03 0.0066
24ROW_1CB_So0.02 0.04 0.0123
24ROW_1CB_So0.02 0.05 0.0158
24ROW_1CB_So0.02 0.06 0.0198
24ROW_1CB_So0.02 0.07 0.0243
24ROW_1CB_So0.02 0.08 0.0281
24ROW_1CB_So0.02 0.09 0.0325
24ROW_1CB_So0.02 0.1 0.0373
24ROW_1CB_So0.02 0.11 0.0418
24ROW_1CB_So0.02 0.12 0.045
24ROW_1CB_So0.02 0.13 0.045
24ROW_1CB_So0.02 0.14 0.045
24ROW_1CB_So0.02 0.15 0.045
24ROW_1CB_So0.02 0.16 0.045
24ROW_1CB_So0.02 0.17 0.045
24ROW_1CB_So0.02 0.18 0.045
24ROW_1CB_So0.02 0.19 0.045
24ROW_1CB_So0.02 0.2 0.045
24ROW_1CB_So0.02 0.21 0.045
24ROW_1CB_So0.02 0.22 0.045
24ROW_1CB_So0.02 0.23 0.045
24ROW_1CB_So0.02 0.24 0.045
24ROW_1CB_So0.02 0.25 0.045
24ROW_1CB_So0.02 0.26 0.045
24ROW_1CB_So0.02 0.27 0.045
24ROW_1CB_So0.02 0.28 0.045
24ROW_1CB_So0.02 0.29 0.045
24ROW_1CB_So0.02 0.3 0.045
24ROW_1CB_So0.02 0.31 0.045
24ROW_1CB_So0.02 0.32 0.045

;Sx0.03

24ROW_1CB_So0.03 Rating 0 0
24ROW_1CB_So0.03 0.01 0.0006
24ROW_1CB_So0.03 0.02 0.0018
24ROW_1CB_So0.03 0.03 0.006
24ROW_1CB_So0.03 0.04 0.0113
24ROW_1CB_So0.03 0.05 0.015
24ROW_1CB_So0.03 0.06 0.0183
24ROW_1CB_So0.03 0.07 0.0225
24ROW_1CB_So0.03 0.08 0.0264
24ROW_1CB_So0.03 0.09 0.0306
24ROW_1CB_So0.03 0.1 0.0343
24ROW_1CB_So0.03 0.11 0.0388
24ROW_1CB_So0.03 0.12 0.039
24ROW_1CB_So0.03 0.13 0.039
24ROW_1CB_So0.03 0.14 0.039
24ROW_1CB_So0.03 0.15 0.039
24ROW_1CB_So0.03 0.16 0.039
24ROW_1CB_So0.03 0.17 0.039
24ROW_1CB_So0.03 0.18 0.039
24ROW_1CB_So0.03 0.19 0.039
24ROW_1CB_So0.03 0.2 0.039
24ROW_1CB_So0.03 0.21 0.039
24ROW_1CB_So0.03 0.22 0.039
24ROW_1CB_So0.03 0.23 0.039
24ROW_1CB_So0.03 0.24 0.039
24ROW_1CB_So0.03 0.25 0.039
24ROW_1CB_So0.03 0.26 0.039
24ROW_1CB_So0.03 0.27 0.039
24ROW_1CB_So0.03 0.28 0.039
24ROW_1CB_So0.03 0.29 0.039
24ROW_1CB_So0.03 0.3 0.039

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
;Assumes 2 CB's with individual ICD's
2x102mm-ICD Rating 0 0
2x102mm-ICD 0.005 0.0532
2x102mm-ICD 0.15 0.0556
2x102mm-ICD 0.3 0.0592
2x102mm-ICD 0.35 0.06

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
;Assumes 2 CB's with individual ICD's
2x152mm-ICD Rating 0 0
2x152mm-ICD 0.005 0.1182
2x152mm-ICD 0.15 0.1236
2x152mm-ICD 0.3 0.1314
2x152mm-ICD 0.35 0.1334

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
83mm-ICD Rating 0 0
83mm-ICD 0.01 0.0176
83mm-ICD 0.15 0.0184
83mm-ICD 0.3 0.0196
83mm-ICD 0.35 0.0199

83mm-ICD-RLCB Rating 0 0
83mm-ICD-RLCB 0.01 0.0199
83mm-ICD-RLCB 0.15 0.0207
83mm-ICD-RLCB 0.3 0.0217
83mm-ICD-RLCB 0.35 0.022

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB

94mm-ICD Rating 0 0
94mm-ICD 0.01 0.0226
94mm-ICD 0.15 0.0236
94mm-ICD 0.3 0.0251
94mm-ICD 0.35 0.0255

94mm-ICD-RLCB Rating 0 0
94mm-ICD-RLCB 0.01 0.0256
94mm-ICD-RLCB 0.15 0.0265
94mm-ICD-RLCB 0.3 0.0278
94mm-ICD-RLCB 0.35 0.0282

;Block 160 - Medium Density Residential
;0.883 ha C=0.80 tc= 10 min
;5 Year Rational = 205 L/s
B1-Out Rating 0 0
B1-Out 0.01 0.205
B1-Out 0.3 0.234

;Existing UHAUL site
;3.43 ha R=0.90 tc= 12 min
;5 Year Rational (via Novatech)= 786.6 L/s
B2-Out Rating 0 0
B2-Out 0.01 0.787
B2-Out 0.3 0.897

;Block 161 - Medium Density Residential
;0.965 ha C=0.80 tc= 10 min
;5 Year Rational = 224 L/s
B3-Out Rating 0 0
B3-Out 0.01 0.224
B3-Out 0.3 0.255

;Park Lands
;1.00 ha R=0.25 tc= 10 min
;5 Year Rational (via Novatech) = 129 L/s
B4-Out Rating 0 0
B4-Out 0.01 0.1297
B4-Out 0.3 0.1479

;540 m³ of storage assumed for site based on MArch 2020 UHAUL site Design Breif
UHAL_Onsite Storage 0 1800
UHAL_Onsite 0.3 1800
UHAL_Onsite 0.31 1
UHAL_Onsite 2 1

[TIMESERIES]
;;Name Date Time Value
;;-------------- ---------- ---------- ----------
;Rainfall (mm/hr)
002yrChicago3hr 01-01-2019 00:00:00 0
002yrChicago3hr 01-01-2019 00:10:00 2.81459
002yrChicago3hr 01-01-2019 00:20:00 3.49824
002yrChicago3hr 01-01-2019 00:30:00 4.68718
002yrChicago3hr 01-01-2019 00:40:00 7.30485
002yrChicago3hr 01-01-2019 00:50:00 18.20881
002yrChicago3hr 01-01-2019 01:00:00 76.805
002yrChicago3hr 01-01-2019 01:10:00 24.07906
002yrChicago3hr 01-01-2019 01:20:00 12.36376
002yrChicago3hr 01-01-2019 01:30:00 8.32403
002yrChicago3hr 01-01-2019 01:40:00 6.30341
002yrChicago3hr 01-01-2019 01:50:00 5.09498
002yrChicago3hr 01-01-2019 02:00:00 4.29133
002yrChicago3hr 01-01-2019 02:10:00 3.71786
002yrChicago3hr 01-01-2019 02:20:00 3.28762
002yrChicago3hr 01-01-2019 02:30:00 2.95254
002yrChicago3hr 01-01-2019 02:40:00 2.68388
002yrChicago3hr 01-01-2019 02:50:00 2.46348
002yrChicago3hr 01-01-2019 03:00:00 2.27921

;Rainfall (mm/hr)

002YrSCS24	01-01-2019 00:00:00	0.53
002YrSCS24	01-01-2019 00:10:00	0.53
002YrSCS24	01-01-2019 00:20:00	0.53
002YrSCS24	01-01-2019 00:30:00	0.53
002YrSCS24	01-01-2019 00:40:00	0.53
002YrSCS24	01-01-2019 00:50:00	0.53
002YrSCS24	01-01-2019 01:00:00	0.53
002YrSCS24	01-01-2019 01:10:00	0.53
002YrSCS24	01-01-2019 01:20:00	0.53
002YrSCS24	01-01-2019 01:30:00	0.53
002YrSCS24	01-01-2019 01:40:00	0.53
002YrSCS24	01-01-2019 01:50:00	0.53
002YrSCS24	01-01-2019 02:00:00	0.63
002YrSCS24	01-01-2019 02:10:00	0.63
002YrSCS24	01-01-2019 02:20:00	0.63
002YrSCS24	01-01-2019 02:30:00	0.63
002YrSCS24	01-01-2019 02:40:00	0.63
002YrSCS24	01-01-2019 02:50:00	0.63
002YrSCS24	01-01-2019 03:00:00	0.63
002YrSCS24	01-01-2019 03:10:00	0.63
002YrSCS24	01-01-2019 03:20:00	0.63
002YrSCS24	01-01-2019 03:30:00	0.63
002YrSCS24	01-01-2019 03:40:00	0.63
002YrSCS24	01-01-2019 03:50:00	0.63
002YrSCS24	01-01-2019 04:00:00	0.78
002YrSCS24	01-01-2019 04:10:00	0.78
002YrSCS24	01-01-2019 04:20:00	0.78
002YrSCS24	01-01-2019 04:30:00	0.78
002YrSCS24	01-01-2019 04:40:00	0.78
002YrSCS24	01-01-2019 04:50:00	0.78
002YrSCS24	01-01-2019 05:00:00	0.78
002YrSCS24	01-01-2019 05:10:00	0.78
002YrSCS24	01-01-2019 05:20:00	0.78
002YrSCS24	01-01-2019 05:30:00	0.78
002YrSCS24	01-01-2019 05:40:00	0.78
002YrSCS24	01-01-2019 05:50:00	0.78
002YrSCS24	01-01-2019 06:00:00	0.87
002YrSCS24	01-01-2019 06:10:00	0.87
002YrSCS24	01-01-2019 06:20:00	0.87
002YrSCS24	01-01-2019 06:30:00	0.87
002YrSCS24	01-01-2019 06:40:00	0.87
002YrSCS24	01-01-2019 06:50:00	0.87
002YrSCS24	01-01-2019 07:00:00	1.07
002YrSCS24	01-01-2019 07:10:00	1.07
002YrSCS24	01-01-2019 07:20:00	1.07
002YrSCS24	01-01-2019 07:30:00	1.07
002YrSCS24	01-01-2019 07:40:00	1.07
002YrSCS24	01-01-2019 07:50:00	1.07
002YrSCS24	01-01-2019 08:00:00	1.26
002YrSCS24	01-01-2019 08:10:00	1.26
002YrSCS24	01-01-2019 08:20:00	1.26
002YrSCS24	01-01-2019 08:30:00	1.36
002YrSCS24	01-01-2019 08:40:00	1.36
002YrSCS24	01-01-2019 08:50:00	1.36
002YrSCS24	01-01-2019 09:00:00	1.55
002YrSCS24	01-01-2019 09:10:00	1.55
002YrSCS24	01-01-2019 09:20:00	1.55
002YrSCS24	01-01-2019 09:30:00	1.74
002YrSCS24	01-01-2019 09:40:00	1.74
002YrSCS24	01-01-2019 09:50:00	1.74
002YrSCS24	01-01-2019 10:00:00	2.23
002YrSCS24	01-01-2019 10:10:00	2.23
002YrSCS24	01-01-2019 10:20:00	2.23
002YrSCS24	01-01-2019 10:30:00	3.01
002YrSCS24	01-01-2019 10:40:00	3.01
002YrSCS24	01-01-2019 10:50:00	3.01
002YrSCS24	01-01-2019 11:00:00	4.65
002YrSCS24	01-01-2019 11:10:00	4.65
002YrSCS24	01-01-2019 11:20:00	4.65
002YrSCS24	01-01-2019 11:30:00	14.35
002YrSCS24	01-01-2019 11:40:00	36.84
002YrSCS24	01-01-2019 11:50:00	59.33
002YrSCS24	01-01-2019 12:00:00	6.98
002YrSCS24	01-01-2019 12:10:00	6.98
002YrSCS24	01-01-2019 12:20:00	6.98
002YrSCS24	01-01-2019 12:30:00	3.59
002YrSCS24	01-01-2019 12:40:00	3.59
002YrSCS24	01-01-2019 12:50:00	3.59
002YrSCS24	01-01-2019 13:00:00	2.62
002YrSCS24	01-01-2019 13:10:00	2.62
002YrSCS24	01-01-2019 13:20:00	2.62
002YrSCS24	01-01-2019 13:30:00	2.04
002YrSCS24	01-01-2019 13:40:00	2.04
002YrSCS24	01-01-2019 13:50:00	2.04
002YrSCS24	01-01-2019 14:00:00	1.45
002YrSCS24	01-01-2019 14:10:00	1.45
002YrSCS24	01-01-2019 14:20:00	1.45
002YrSCS24	01-01-2019 14:30:00	1.45
002YrSCS24	01-01-2019 14:40:00	1.45
002YrSCS24	01-01-2019 14:50:00	1.45
002YrSCS24	01-01-2019 15:00:00	1.45
002YrSCS24	01-01-2019 15:10:00	1.45
002YrSCS24	01-01-2019 15:20:00	1.45
002YrSCS24	01-01-2019 15:30:00	1.45
002YrSCS24	01-01-2019 15:40:00	1.45
002YrSCS24	01-01-2019 15:50:00	1.45
002YrSCS24	01-01-2019 16:00:00	0.87
002YrSCS24	01-01-2019 16:10:00	0.87
002YrSCS24	01-01-2019 16:20:00	0.87
002YrSCS24	01-01-2019 16:30:00	0.87
002YrSCS24	01-01-2019 16:40:00	0.87
002YrSCS24	01-01-2019 16:50:00	0.87
002YrSCS24	01-01-2019 17:00:00	0.87
002YrSCS24	01-01-2019 17:10:00	0.87
002YrSCS24	01-01-2019 17:20:00	0.87
002YrSCS24	01-01-2019 17:30:00	0.87
002YrSCS24	01-01-2019 17:40:00	0.87
002YrSCS24	01-01-2019 17:50:00	0.87
002YrSCS24	01-01-2019 18:00:00	0.87
002YrSCS24	01-01-2019 18:10:00	0.87
002YrSCS24	01-01-2019 18:20:00	0.87
002YrSCS24	01-01-2019 18:30:00	0.87
002YrSCS24	01-01-2019 18:40:00	0.87
002YrSCS24	01-01-2019 18:50:00	0.87
002YrSCS24	01-01-2019 19:00:00	0.87
002YrSCS24	01-01-2019 19:10:00	0.87
002YrSCS24	01-01-2019 19:20:00	0.87
002YrSCS24	01-01-2019 19:30:00	0.87
002YrSCS24	01-01-2019 19:40:00	0.87
002YrSCS24	01-01-2019 19:50:00	0.87
002YrSCS24	01-01-2019 20:00:00	0.58
002YrSCS24	01-01-2019 20:10:00	0.58
002YrSCS24	01-01-2019 20:20:00	0.58
002YrSCS24	01-01-2019 20:30:00	0.58
002YrSCS24	01-01-2019 20:40:00	0.58
002YrSCS24	01-01-2019 20:50:00	0.58
002YrSCS24	01-01-2019 21:00:00	0.58
002YrSCS24	01-01-2019 21:10:00	0.58
002YrSCS24	01-01-2019 21:20:00	0.58
002YrSCS24	01-01-2019 21:30:00	0.58
002YrSCS24	01-01-2019 21:40:00	0.58
002YrSCS24	01-01-2019 21:50:00	0.58
002YrSCS24	01-01-2019 22:00:00	0.58
002YrSCS24	01-01-2019 22:10:00	0.58
002YrSCS24	01-01-2019 22:20:00	0.58
002YrSCS24	01-01-2019 22:30:00	0.58
002YrSCS24	01-01-2019 22:40:00	0.58
002YrSCS24	01-01-2019 22:50:00	0.58

002YrSCS24	01-01-2019 23:00:00	0.58
002YrSCS24	01-01-2019 23:10:00	0.58
002YrSCS24	01-01-2019 23:20:00	0.58
002YrSCS24	01-01-2019 23:30:00	0.58
002YrSCS24	01-01-2019 23:40:00	0.58
002YrSCS24	01-01-2019 23:50:00	0.58

;Rainfall (mm/hr)

005yrChicago3hr	01-01-2019 00:00:00	0
005yrChicago3hr	01-01-2019 00:10:00	3.68223
005yrChicago3hr	01-01-2019 00:20:00	4.58232
005yrChicago3hr	01-01-2019 00:30:00	6.15055
005yrChicago3hr	01-01-2019 00:40:00	9.6141
005yrChicago3hr	01-01-2019 00:50:00	24.17035
005yrChicago3hr	01-01-2019 01:00:00	104.193
005yrChicago3hr	01-01-2019 01:10:00	32.03692
005yrChicago3hr	01-01-2019 01:20:00	16.3375
005yrChicago3hr	01-01-2019 01:30:00	10.96479
005yrChicago3hr	01-01-2019 01:40:00	8.28693
005yrChicago3hr	01-01-2019 01:50:00	6.68897
005yrChicago3hr	01-01-2019 02:00:00	5.6279
005yrChicago3hr	01-01-2019 02:10:00	4.87167
005yrChicago3hr	01-01-2019 02:20:00	4.30483
005yrChicago3hr	01-01-2019 02:30:00	3.8637
005yrChicago3hr	01-01-2019 02:40:00	3.51028
005yrChicago3hr	01-01-2019 02:50:00	3.22046
005yrChicago3hr	01-01-2019 03:00:00	2.97831

;Rainfall (mm/hr)

005YrSCS24	01-01-2019 00:00:00	0.71
005YrSCS24	01-01-2019 00:10:00	0.71
005YrSCS24	01-01-2019 00:20:00	0.71
005YrSCS24	01-01-2019 00:30:00	0.71
005YrSCS24	01-01-2019 00:40:00	0.71
005YrSCS24	01-01-2019 00:50:00	0.71
005YrSCS24	01-01-2019 01:00:00	0.71
005YrSCS24	01-01-2019 01:10:00	0.71
005YrSCS24	01-01-2019 01:20:00	0.71
005YrSCS24	01-01-2019 01:30:00	0.71
005YrSCS24	01-01-2019 01:40:00	0.71
005YrSCS24	01-01-2019 01:50:00	0.71
005YrSCS24	01-01-2019 02:00:00	0.83
005YrSCS24	01-01-2019 02:10:00	0.83
005YrSCS24	01-01-2019 02:20:00	0.83
005YrSCS24	01-01-2019 02:30:00	0.83
005YrSCS24	01-01-2019 02:40:00	0.83
005YrSCS24	01-01-2019 02:50:00	0.83
005YrSCS24	01-01-2019 03:00:00	0.83
005YrSCS24	01-01-2019 03:10:00	0.83
005YrSCS24	01-01-2019 03:20:00	0.83
005YrSCS24	01-01-2019 03:30:00	0.83
005YrSCS24	01-01-2019 03:40:00	0.83
005YrSCS24	01-01-2019 03:50:00	0.83
005YrSCS24	01-01-2019 04:00:00	1.03
005YrSCS24	01-01-2019 04:10:00	1.03
005YrSCS24	01-01-2019 04:20:00	1.03
005YrSCS24	01-01-2019 04:30:00	1.03
005YrSCS24	01-01-2019 04:40:00	1.03
005YrSCS24	01-01-2019 04:50:00	1.03
005YrSCS24	01-01-2019 05:00:00	1.03
005YrSCS24	01-01-2019 05:10:00	1.03
005YrSCS24	01-01-2019 05:20:00	1.03
005YrSCS24	01-01-2019 05:30:00	1.03
005YrSCS24	01-01-2019 05:40:00	1.03
005YrSCS24	01-01-2019 05:50:00	1.03
005YrSCS24	01-01-2019 06:00:00	1.15
005YrSCS24	01-01-2019 06:10:00	1.15
005YrSCS24	01-01-2019 06:20:00	1.15
005YrSCS24	01-01-2019 06:30:00	1.15
005YrSCS24	01-01-2019 06:40:00	1.15
005YrSCS24	01-01-2019 06:50:00	1.15
005YrSCS24	01-01-2019 07:00:00	1.41
005YrSCS24	01-01-2019 07:10:00	1.41
005YrSCS24	01-01-2019 07:20:00	1.41
005YrSCS24	01-01-2019 07:30:00	1.41
005YrSCS24	01-01-2019 07:40:00	1.41
005YrSCS24	01-01-2019 07:50:00	1.41
005YrSCS24	01-01-2019 08:00:00	1.67
005YrSCS24	01-01-2019 08:10:00	1.67
005YrSCS24	01-01-2019 08:20:00	1.67
005YrSCS24	01-01-2019 08:30:00	1.8
005YrSCS24	01-01-2019 08:40:00	1.8
005YrSCS24	01-01-2019 08:50:00	1.8
005YrSCS24	01-01-2019 09:00:00	2.05
005YrSCS24	01-01-2019 09:10:00	2.05
005YrSCS24	01-01-2019 09:20:00	2.05
005YrSCS24	01-01-2019 09:30:00	2.31
005YrSCS24	01-01-2019 09:40:00	2.31
005YrSCS24	01-01-2019 09:50:00	2.31
005YrSCS24	01-01-2019 10:00:00	2.95
005YrSCS24	01-01-2019 10:10:00	2.95
005YrSCS24	01-01-2019 10:20:00	2.95
005YrSCS24	01-01-2019 10:30:00	3.98
005YrSCS24	01-01-2019 10:40:00	3.98
005YrSCS24	01-01-2019 10:50:00	3.98
005YrSCS24	01-01-2019 11:00:00	6.16
005YrSCS24	01-01-2019 11:10:00	6.16
005YrSCS24	01-01-2019 11:20:00	6.16
005YrSCS24	01-01-2019 11:30:00	18.98
005YrSCS24	01-01-2019 11:40:00	48.73
005YrSCS24	01-01-2019 11:50:00	78.48
005YrSCS24	01-01-2019 12:00:00	9.23
005YrSCS24	01-01-2019 12:10:00	9.23
005YrSCS24	01-01-2019 12:20:00	9.23
005YrSCS24	01-01-2019 12:30:00	4.74
005YrSCS24	01-01-2019 12:40:00	4.74
005YrSCS24	01-01-2019 12:50:00	4.74
005YrSCS24	01-01-2019 13:00:00	3.46
005YrSCS24	01-01-2019 13:10:00	3.46
005YrSCS24	01-01-2019 13:20:00	3.46
005YrSCS24	01-01-2019 13:30:00	2.69
005YrSCS24	01-01-2019 13:40:00	2.69
005YrSCS24	01-01-2019 13:50:00	2.69
005YrSCS24	01-01-2019 14:00:00	1.92
005YrSCS24	01-01-2019 14:10:00	1.92
005YrSCS24	01-01-2019 14:20:00	1.92
005YrSCS24	01-01-2019 14:30:00	1.92
005YrSCS24	01-01-2019 14:40:00	1.92
005YrSCS24	01-01-2019 14:50:00	1.92
005YrSCS24	01-01-2019 15:00:00	1.92
005YrSCS24	01-01-2019 15:10:00	1.92
005YrSCS24	01-01-2019 15:20:00	1.92
005YrSCS24	01-01-2019 15:30:00	1.92
005YrSCS24	01-01-2019 15:40:00	1.92
005YrSCS24	01-01-2019 15:50:00	1.92
005YrSCS24	01-01-2019 16:00:00	1.15
005YrSCS24	01-01-2019 16:10:00	1.15
005YrSCS24	01-01-2019 16:20:00	1.15
005YrSCS24	01-01-2019 16:30:00	1.15
005YrSCS24	01-01-2019 16:40:00	1.15
005YrSCS24	01-01-2019 16:50:00	1.15
005YrSCS24	01-01-2019 17:00:00	1.15
005YrSCS24	01-01-2019 17:10:00	1.15
005YrSCS24	01-01-2019 17:20:00	1.15
005YrSCS24	01-01-2019 17:30:00	1.15
005YrSCS24	01-01-2019 17:40:00	1.15
005YrSCS24	01-01-2019 17:50:00	1.15
005YrSCS24	01-01-2019 18:00:00	1.15
005YrSCS24	01-01-2019 18:10:00	1.15
005YrSCS24	01-01-2019 18:20:00	1.15

005YrSCS24	01-01-2019 18:30:00	1.15
005YrSCS24	01-01-2019 18:40:00	1.15
005YrSCS24	01-01-2019 18:50:00	1.15
005YrSCS24	01-01-2019 19:00:00	1.15
005YrSCS24	01-01-2019 19:10:00	1.15
005YrSCS24	01-01-2019 19:20:00	1.15
005YrSCS24	01-01-2019 19:30:00	1.15
005YrSCS24	01-01-2019 19:40:00	1.15
005YrSCS24	01-01-2019 19:50:00	1.15
005YrSCS24	01-01-2019 20:00:00	0.77
005YrSCS24	01-01-2019 20:10:00	0.77
005YrSCS24	01-01-2019 20:20:00	0.77
005YrSCS24	01-01-2019 20:30:00	0.77
005YrSCS24	01-01-2019 20:40:00	0.77
005YrSCS24	01-01-2019 20:50:00	0.77
005YrSCS24	01-01-2019 21:00:00	0.77
005YrSCS24	01-01-2019 21:10:00	0.77
005YrSCS24	01-01-2019 21:20:00	0.77
005YrSCS24	01-01-2019 21:30:00	0.77
005YrSCS24	01-01-2019 21:40:00	0.77
005YrSCS24	01-01-2019 21:50:00	0.77
005YrSCS24	01-01-2019 22:00:00	0.77
005YrSCS24	01-01-2019 22:10:00	0.77
005YrSCS24	01-01-2019 22:20:00	0.77
005YrSCS24	01-01-2019 22:30:00	0.77
005YrSCS24	01-01-2019 22:40:00	0.77
005YrSCS24	01-01-2019 22:50:00	0.77
005YrSCS24	01-01-2019 23:00:00	0.77
005YrSCS24	01-01-2019 23:10:00	0.77
005YrSCS24	01-01-2019 23:20:00	0.77
005YrSCS24	01-01-2019 23:30:00	0.77
005YrSCS24	01-01-2019 23:40:00	0.77
005YrSCS24	01-01-2019 23:50:00	0.77

;Rainfall (mm/hr)

010yrChicago3hr	01-01-2019 00:00:00	0
010yrChicago3hr	01-01-2019 00:10:00	4.24804
010yrChicago3hr	01-01-2019 00:20:00	5.29032
010yrChicago3hr	01-01-2019 00:30:00	7.10821
010yrChicago3hr	01-01-2019 00:40:00	11.12994
010yrChicago3hr	01-01-2019 00:50:00	28.09961
010yrChicago3hr	01-01-2019 01:00:00	122.1418
010yrChicago3hr	01-01-2019 01:10:00	37.28489
010yrChicago3hr	01-01-2019 01:20:00	18.95368
010yrChicago3hr	01-01-2019 01:30:00	12.69959
010yrChicago3hr	01-01-2019 01:40:00	9.58762
010yrChicago3hr	01-01-2019 01:50:00	7.7327
010yrChicago3hr	01-01-2019 02:00:00	6.50203
010yrChicago3hr	01-01-2019 02:10:00	5.6255
010yrChicago3hr	01-01-2019 02:20:00	4.96886
010yrChicago3hr	01-01-2019 02:30:00	4.45808
010yrChicago3hr	01-01-2019 02:40:00	4.04902
010yrChicago3hr	01-01-2019 02:50:00	3.71371
010yrChicago3hr	01-01-2019 03:00:00	3.4336

;Rainfall (mm/hr)

010YrSCS24	01-01-2019 00:00:00	0.82
010YrSCS24	01-01-2019 00:10:00	0.82
010YrSCS24	01-01-2019 00:20:00	0.82
010YrSCS24	01-01-2019 00:30:00	0.82
010YrSCS24	01-01-2019 00:40:00	0.82
010YrSCS24	01-01-2019 00:50:00	0.82
010YrSCS24	01-01-2019 01:00:00	0.82
010YrSCS24	01-01-2019 01:10:00	0.82
010YrSCS24	01-01-2019 01:20:00	0.82
010YrSCS24	01-01-2019 01:30:00	0.82
010YrSCS24	01-01-2019 01:40:00	0.82
010YrSCS24	01-01-2019 01:50:00	0.82
010YrSCS24	01-01-2019 02:00:00	0.97
010YrSCS24	01-01-2019 02:10:00	0.97
010YrSCS24	01-01-2019 02:20:00	0.97
010YrSCS24	01-01-2019 02:30:00	0.97
010YrSCS24	01-01-2019 02:40:00	0.97
010YrSCS24	01-01-2019 02:50:00	0.97
010YrSCS24	01-01-2019 03:00:00	0.97
010YrSCS24	01-01-2019 03:10:00	0.97
010YrSCS24	01-01-2019 03:20:00	0.97
010YrSCS24	01-01-2019 03:30:00	0.97
010YrSCS24	01-01-2019 03:40:00	0.97
010YrSCS24	01-01-2019 03:50:00	0.97
010YrSCS24	01-01-2019 04:00:00	1.19
010YrSCS24	01-01-2019 04:10:00	1.19
010YrSCS24	01-01-2019 04:20:00	1.19
010YrSCS24	01-01-2019 04:30:00	1.19
010YrSCS24	01-01-2019 04:40:00	1.19
010YrSCS24	01-01-2019 04:50:00	1.19
010YrSCS24	01-01-2019 05:00:00	1.19
010YrSCS24	01-01-2019 05:10:00	1.19
010YrSCS24	01-01-2019 05:20:00	1.19
010YrSCS24	01-01-2019 05:30:00	1.19
010YrSCS24	01-01-2019 05:40:00	1.19
010YrSCS24	01-01-2019 05:50:00	1.19
010YrSCS24	01-01-2019 06:00:00	1.34
010YrSCS24	01-01-2019 06:10:00	1.34
010YrSCS24	01-01-2019 06:20:00	1.34
010YrSCS24	01-01-2019 06:30:00	1.34
010YrSCS24	01-01-2019 06:40:00	1.34
010YrSCS24	01-01-2019 06:50:00	1.34
010YrSCS24	01-01-2019 07:00:00	1.64
010YrSCS24	01-01-2019 07:10:00	1.64
010YrSCS24	01-01-2019 07:20:00	1.64
010YrSCS24	01-01-2019 07:30:00	1.64
010YrSCS24	01-01-2019 07:40:00	1.64
010YrSCS24	01-01-2019 07:50:00	1.64
010YrSCS24	01-01-2019 08:00:00	1.93
010YrSCS24	01-01-2019 08:10:00	1.93
010YrSCS24	01-01-2019 08:20:00	1.93
010YrSCS24	01-01-2019 08:30:00	2.08
010YrSCS24	01-01-2019 08:40:00	2.08
010YrSCS24	01-01-2019 08:50:00	2.08
010YrSCS24	01-01-2019 09:00:00	2.38
010YrSCS24	01-01-2019 09:10:00	2.38
010YrSCS24	01-01-2019 09:20:00	2.38
010YrSCS24	01-01-2019 09:30:00	2.68
010YrSCS24	01-01-2019 09:40:00	2.68
010YrSCS24	01-01-2019 09:50:00	2.68
010YrSCS24	01-01-2019 10:00:00	3.42
010YrSCS24	01-01-2019 10:10:00	3.42
010YrSCS24	01-01-2019 10:20:00	3.42
010YrSCS24	01-01-2019 10:30:00	4.61
010YrSCS24	01-01-2019 10:40:00	4.61
010YrSCS24	01-01-2019 10:50:00	4.61
010YrSCS24	01-01-2019 11:00:00	7.14
010YrSCS24	01-01-2019 11:10:00	7.14
010YrSCS24	01-01-2019 11:20:00	7.14
010YrSCS24	01-01-2019 11:30:00	22
010YrSCS24	01-01-2019 11:40:00	56.5
010YrSCS24	01-01-2019 11:50:00	90.99
010YrSCS24	01-01-2019 12:00:00	10.7
010YrSCS24	01-01-2019 12:10:00	10.7
010YrSCS24	01-01-2019 12:20:00	10.7
010YrSCS24	01-01-2019 12:30:00	5.5
010YrSCS24	01-01-2019 12:40:00	5.5
010YrSCS24	01-01-2019 12:50:00	5.5
010YrSCS24	01-01-2019 13:00:00	4.01
010YrSCS24	01-01-2019 13:10:00	4.01
010YrSCS24	01-01-2019 13:20:00	4.01
010YrSCS24	01-01-2019 13:30:00	3.12
010YrSCS24	01-01-2019 13:40:00	3.12
010YrSCS24	01-01-2019 13:50:00	3.12

010YrSCS24 01-01-2019 14:00:00 2.23
010YrSCS24 01-01-2019 14:10:00 2.23
010YrSCS24 01-01-2019 14:20:00 2.23
010YrSCS24 01-01-2019 14:30:00 2.23
010YrSCS24 01-01-2019 14:40:00 2.23
010YrSCS24 01-01-2019 14:50:00 2.23
010YrSCS24 01-01-2019 15:00:00 2.23
010YrSCS24 01-01-2019 15:10:00 2.23
010YrSCS24 01-01-2019 15:20:00 2.23
010YrSCS24 01-01-2019 15:30:00 2.23
010YrSCS24 01-01-2019 15:40:00 2.23
010YrSCS24 01-01-2019 15:50:00 2.23
010YrSCS24 01-01-2019 16:00:00 1.34
010YrSCS24 01-01-2019 16:10:00 1.34
010YrSCS24 01-01-2019 16:20:00 1.34
010YrSCS24 01-01-2019 16:30:00 1.34
010YrSCS24 01-01-2019 16:40:00 1.34
010YrSCS24 01-01-2019 16:50:00 1.34
010YrSCS24 01-01-2019 17:00:00 1.34
010YrSCS24 01-01-2019 17:10:00 1.34
010YrSCS24 01-01-2019 17:20:00 1.34
010YrSCS24 01-01-2019 17:30:00 1.34
010YrSCS24 01-01-2019 17:40:00 1.34
010YrSCS24 01-01-2019 17:50:00 1.34
010YrSCS24 01-01-2019 18:00:00 1.34
010YrSCS24 01-01-2019 18:10:00 1.34
010YrSCS24 01-01-2019 18:20:00 1.34
010YrSCS24 01-01-2019 18:30:00 1.34
010YrSCS24 01-01-2019 18:40:00 1.34
010YrSCS24 01-01-2019 18:50:00 1.34
010YrSCS24 01-01-2019 19:00:00 1.34
010YrSCS24 01-01-2019 19:10:00 1.34
010YrSCS24 01-01-2019 19:20:00 1.34
010YrSCS24 01-01-2019 19:30:00 1.34
010YrSCS24 01-01-2019 19:40:00 1.34
010YrSCS24 01-01-2019 19:50:00 1.34
010YrSCS24 01-01-2019 20:00:00 0.89
010YrSCS24 01-01-2019 20:10:00 0.89
010YrSCS24 01-01-2019 20:20:00 0.89
010YrSCS24 01-01-2019 20:30:00 0.89
010YrSCS24 01-01-2019 20:40:00 0.89
010YrSCS24 01-01-2019 20:50:00 0.89
010YrSCS24 01-01-2019 21:00:00 0.89
010YrSCS24 01-01-2019 21:10:00 0.89
010YrSCS24 01-01-2019 21:20:00 0.89
010YrSCS24 01-01-2019 21:30:00 0.89
010YrSCS24 01-01-2019 21:40:00 0.89
010YrSCS24 01-01-2019 21:50:00 0.89
010YrSCS24 01-01-2019 22:00:00 0.89
010YrSCS24 01-01-2019 22:10:00 0.89
010YrSCS24 01-01-2019 22:20:00 0.89
010YrSCS24 01-01-2019 22:30:00 0.89
010YrSCS24 01-01-2019 22:40:00 0.89
010YrSCS24 01-01-2019 22:50:00 0.89
010YrSCS24 01-01-2019 23:00:00 0.89
010YrSCS24 01-01-2019 23:10:00 0.89
010YrSCS24 01-01-2019 23:20:00 0.89
010YrSCS24 01-01-2019 23:30:00 0.89
010YrSCS24 01-01-2019 23:40:00 0.89
010YrSCS24 01-01-2019 23:50:00 0.89

;Rainfall (mm/hr)
025yrChicago3hr 01-01-2019 00:00:00 0
025yrChicago3hr 01-01-2019 00:10:00 4.9336
025yrChicago3hr 01-01-2019 00:20:00 6.15217
025yrChicago3hr 01-01-2019 00:30:00 8.28157
025yrChicago3hr 01-01-2019 00:40:00 13.00553
025yrChicago3hr 01-01-2019 00:50:00 33.04079
025yrChicago3hr 01-01-2019 01:00:00 144.693
025yrChicago3hr 01-01-2019 01:10:00 43.90416
025yrChicago3hr 01-01-2019 01:20:00 22.22391
025yrChicago3hr 01-01-2019 01:30:00 14.85162
025yrChicago3hr 01-01-2019 01:40:00 11.19158
025yrChicago3hr 01-01-2019 01:50:00 9.01374
025yrChicago3hr 01-01-2019 02:00:00 7.57085
025yrChicago3hr 01-01-2019 02:10:00 6.54433
025yrChicago3hr 01-01-2019 02:20:00 5.77608
025yrChicago3hr 01-01-2019 02:30:00 5.17898
025yrChicago3hr 01-01-2019 02:40:00 4.7011
025yrChicago3hr 01-01-2019 02:50:00 4.30965
025yrChicago3hr 01-01-2019 03:00:00 3.98283

;Rainfall (mm/hr)
025YrSCS24 01-01-2019 00:00:00 0.96
025YrSCS24 01-01-2019 00:10:00 0.96
025YrSCS24 01-01-2019 00:20:00 0.96
025YrSCS24 01-01-2019 00:30:00 0.96
025YrSCS24 01-01-2019 00:40:00 0.96
025YrSCS24 01-01-2019 00:50:00 0.96
025YrSCS24 01-01-2019 01:00:00 0.96
025YrSCS24 01-01-2019 01:10:00 0.96
025YrSCS24 01-01-2019 01:20:00 0.96
025YrSCS24 01-01-2019 01:30:00 0.96
025YrSCS24 01-01-2019 01:40:00 0.96
025YrSCS24 01-01-2019 01:50:00 0.96
025YrSCS24 01-01-2019 02:00:00 1.13
025YrSCS24 01-01-2019 02:10:00 1.13
025YrSCS24 01-01-2019 02:20:00 1.13
025YrSCS24 01-01-2019 02:30:00 1.13
025YrSCS24 01-01-2019 02:40:00 1.13
025YrSCS24 01-01-2019 02:50:00 1.13
025YrSCS24 01-01-2019 03:00:00 1.13
025YrSCS24 01-01-2019 03:10:00 1.13
025YrSCS24 01-01-2019 03:20:00 1.13
025YrSCS24 01-01-2019 03:30:00 1.13
025YrSCS24 01-01-2019 03:40:00 1.13
025YrSCS24 01-01-2019 03:50:00 1.13
025YrSCS24 01-01-2019 04:00:00 1.39
025YrSCS24 01-01-2019 04:10:00 1.39
025YrSCS24 01-01-2019 04:20:00 1.39
025YrSCS24 01-01-2019 04:30:00 1.39
025YrSCS24 01-01-2019 04:40:00 1.39
025YrSCS24 01-01-2019 04:50:00 1.39
025YrSCS24 01-01-2019 05:00:00 1.39
025YrSCS24 01-01-2019 05:10:00 1.39
025YrSCS24 01-01-2019 05:20:00 1.39
025YrSCS24 01-01-2019 05:30:00 1.39
025YrSCS24 01-01-2019 05:40:00 1.39
025YrSCS24 01-01-2019 05:50:00 1.39
025YrSCS24 01-01-2019 06:00:00 1.56
025YrSCS24 01-01-2019 06:10:00 1.56
025YrSCS24 01-01-2019 06:20:00 1.56
025YrSCS24 01-01-2019 06:30:00 1.56
025YrSCS24 01-01-2019 06:40:00 1.56
025YrSCS24 01-01-2019 06:50:00 1.56
025YrSCS24 01-01-2019 07:00:00 1.91
025YrSCS24 01-01-2019 07:10:00 1.91
025YrSCS24 01-01-2019 07:20:00 1.91
025YrSCS24 01-01-2019 07:30:00 1.91
025YrSCS24 01-01-2019 07:40:00 1.91
025YrSCS24 01-01-2019 07:50:00 1.91
025YrSCS24 01-01-2019 08:00:00 2.26
025YrSCS24 01-01-2019 08:10:00 2.26
025YrSCS24 01-01-2019 08:20:00 2.26
025YrSCS24 01-01-2019 08:30:00 2.43
025YrSCS24 01-01-2019 08:40:00 2.43
025YrSCS24 01-01-2019 08:50:00 2.43
025YrSCS24 01-01-2019 09:00:00 2.78
025YrSCS24 01-01-2019 09:10:00 2.78
025YrSCS24 01-01-2019 09:20:00 2.78

025YrSCS24 01-01-2019 09:30:00 3.13
025YrSCS24 01-01-2019 09:40:00 3.13
025YrSCS24 01-01-2019 09:50:00 3.13
025YrSCS24 01-01-2019 10:00:00 4
025YrSCS24 01-01-2019 10:10:00 4
025YrSCS24 01-01-2019 10:20:00 4
025YrSCS24 01-01-2019 10:30:00 5.39
025YrSCS24 01-01-2019 10:40:00 5.39
025YrSCS24 01-01-2019 10:50:00 5.39
025YrSCS24 01-01-2019 11:00:00 8.34
025YrSCS24 01-01-2019 11:10:00 8.34
025YrSCS24 01-01-2019 11:20:00 8.34
025YrSCS24 01-01-2019 11:30:00 25.73
025YrSCS24 01-01-2019 11:40:00 66.05
025YrSCS24 01-01-2019 11:50:00 106.38
025YrSCS24 01-01-2019 12:00:00 12.52
025YrSCS24 01-01-2019 12:10:00 12.52
025YrSCS24 01-01-2019 12:20:00 12.52
025YrSCS24 01-01-2019 12:30:00 6.43
025YrSCS24 01-01-2019 12:40:00 6.43
025YrSCS24 01-01-2019 12:50:00 6.43
025YrSCS24 01-01-2019 13:00:00 4.69
025YrSCS24 01-01-2019 13:10:00 4.69
025YrSCS24 01-01-2019 13:20:00 4.69
025YrSCS24 01-01-2019 13:30:00 3.65
025YrSCS24 01-01-2019 13:40:00 3.65
025YrSCS24 01-01-2019 13:50:00 3.65
025YrSCS24 01-01-2019 14:00:00 2.61
025YrSCS24 01-01-2019 14:10:00 2.61
025YrSCS24 01-01-2019 14:20:00 2.61
025YrSCS24 01-01-2019 14:30:00 2.61
025YrSCS24 01-01-2019 14:40:00 2.61
025YrSCS24 01-01-2019 14:50:00 2.61
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025YrSCS24 01-01-2019 15:20:00 2.61
025YrSCS24 01-01-2019 15:30:00 2.61
025YrSCS24 01-01-2019 15:40:00 2.61
025YrSCS24 01-01-2019 15:50:00 2.61
025YrSCS24 01-01-2019 16:00:00 1.56
025YrSCS24 01-01-2019 16:10:00 1.56
025YrSCS24 01-01-2019 16:20:00 1.56
025YrSCS24 01-01-2019 16:30:00 1.56
025YrSCS24 01-01-2019 16:40:00 1.56
025YrSCS24 01-01-2019 16:50:00 1.56
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025YrSCS24 01-01-2019 17:10:00 1.56
025YrSCS24 01-01-2019 17:20:00 1.56
025YrSCS24 01-01-2019 17:30:00 1.56
025YrSCS24 01-01-2019 17:40:00 1.56
025YrSCS24 01-01-2019 17:50:00 1.56
025YrSCS24 01-01-2019 18:00:00 1.56
025YrSCS24 01-01-2019 18:10:00 1.56
025YrSCS24 01-01-2019 18:20:00 1.56
025YrSCS24 01-01-2019 18:30:00 1.56
025YrSCS24 01-01-2019 18:40:00 1.56
025YrSCS24 01-01-2019 18:50:00 1.56
025YrSCS24 01-01-2019 19:00:00 1.56
025YrSCS24 01-01-2019 19:10:00 1.56
025YrSCS24 01-01-2019 19:20:00 1.56
025YrSCS24 01-01-2019 19:30:00 1.56
025YrSCS24 01-01-2019 19:40:00 1.56
025YrSCS24 01-01-2019 19:50:00 1.56
025YrSCS24 01-01-2019 20:00:00 1.04
025YrSCS24 01-01-2019 20:10:00 1.04
025YrSCS24 01-01-2019 20:20:00 1.04
025YrSCS24 01-01-2019 20:30:00 1.04
025YrSCS24 01-01-2019 20:40:00 1.04
025YrSCS24 01-01-2019 20:50:00 1.04
025YrSCS24 01-01-2019 21:00:00 1.04
025YrSCS24 01-01-2019 21:10:00 1.04
025YrSCS24 01-01-2019 21:20:00 1.04
025YrSCS24 01-01-2019 21:30:00 1.04
025YrSCS24 01-01-2019 21:40:00 1.04
025YrSCS24 01-01-2019 21:50:00 1.04
025YrSCS24 01-01-2019 22:00:00 1.04
025YrSCS24 01-01-2019 22:10:00 1.04
025YrSCS24 01-01-2019 22:20:00 1.04
025YrSCS24 01-01-2019 22:30:00 1.04
025YrSCS24 01-01-2019 22:40:00 1.04
025YrSCS24 01-01-2019 22:50:00 1.04
025YrSCS24 01-01-2019 23:00:00 1.04
025YrSCS24 01-01-2019 23:10:00 1.04
025YrSCS24 01-01-2019 23:20:00 1.04
025YrSCS24 01-01-2019 23:30:00 1.04
025YrSCS24 01-01-2019 23:40:00 1.04
025YrSCS24 01-01-2019 23:50:00 1.04

;Rainfall (mm/hr)
050yrChicago3hr 01-01-2019 00:00:00 0
050yrChicago3hr 01-01-2019 00:10:00 5.46715
050yrChicago3hr 01-01-2019 00:20:00 6.8204
050yrChicago3hr 01-01-2019 00:30:00 9.18659
050yrChicago3hr 01-01-2019 00:40:00 14.44064
050yrChicago3hr 01-01-2019 00:50:00 36.76423
050yrChicago3hr 01-01-2019 01:00:00 161.4707
050yrChicago3hr 01-01-2019 01:10:00 48.876
050yrChicago3hr 01-01-2019 01:20:00 24.70426
050yrChicago3hr 01-01-2019 01:30:00 16.49475
050yrChicago3hr 01-01-2019 01:40:00 12.42227
050yrChicago3hr 01-01-2019 01:50:00 10.00043
050yrChicago3hr 01-01-2019 02:00:00 8.39661
050yrChicago3hr 01-01-2019 02:10:00 7.256
050yrChicago3hr 01-01-2019 02:20:00 6.40264
050yrChicago3hr 01-01-2019 02:30:00 5.73956
050yrChicago3hr 01-01-2019 02:40:00 5.20902
050yrChicago3hr 01-01-2019 02:50:00 4.77451
050yrChicago3hr 01-01-2019 03:00:00 4.41182

;Rainfall (mm/hr)
050YrSCS24 01-01-2019 00:00:00 1.06
050YrSCS24 01-01-2019 00:10:00 1.06
050YrSCS24 01-01-2019 00:20:00 1.06
050YrSCS24 01-01-2019 00:30:00 1.06
050YrSCS24 01-01-2019 00:40:00 1.06
050YrSCS24 01-01-2019 00:50:00 1.06
050YrSCS24 01-01-2019 01:00:00 1.06
050YrSCS24 01-01-2019 01:10:00 1.06
050YrSCS24 01-01-2019 01:20:00 1.06
050YrSCS24 01-01-2019 01:30:00 1.06
050YrSCS24 01-01-2019 01:40:00 1.06
050YrSCS24 01-01-2019 01:50:00 1.06
050YrSCS24 01-01-2019 02:00:00 1.25
050YrSCS24 01-01-2019 02:10:00 1.25
050YrSCS24 01-01-2019 02:20:00 1.25
050YrSCS24 01-01-2019 02:30:00 1.25
050YrSCS24 01-01-2019 02:40:00 1.25
050YrSCS24 01-01-2019 02:50:00 1.25
050YrSCS24 01-01-2019 03:00:00 1.25
050YrSCS24 01-01-2019 03:10:00 1.25
050YrSCS24 01-01-2019 03:20:00 1.25
050YrSCS24 01-01-2019 03:30:00 1.25
050YrSCS24 01-01-2019 03:40:00 1.25
050YrSCS24 01-01-2019 03:50:00 1.25
050YrSCS24 01-01-2019 04:00:00 1.54
050YrSCS24 01-01-2019 04:10:00 1.54
050YrSCS24 01-01-2019 04:20:00 1.54
050YrSCS24 01-01-2019 04:30:00 1.54
050YrSCS24 01-01-2019 04:40:00 1.54
050YrSCS24 01-01-2019 04:50:00 1.54

050YrSCS24	01-01-2019 05:00:00	1.54
050YrSCS24	01-01-2019 05:10:00	1.54
050YrSCS24	01-01-2019 05:20:00	1.54
050YrSCS24	01-01-2019 05:30:00	1.54
050YrSCS24	01-01-2019 05:40:00	1.54
050YrSCS24	01-01-2019 05:50:00	1.54
050YrSCS24	01-01-2019 06:00:00	1.74
050YrSCS24	01-01-2019 06:10:00	1.74
050YrSCS24	01-01-2019 06:20:00	1.74
050YrSCS24	01-01-2019 06:30:00	1.74
050YrSCS24	01-01-2019 06:40:00	1.74
050YrSCS24	01-01-2019 06:50:00	1.74
050YrSCS24	01-01-2019 07:00:00	2.12
050YrSCS24	01-01-2019 07:10:00	2.12
050YrSCS24	01-01-2019 07:20:00	2.12
050YrSCS24	01-01-2019 07:30:00	2.12
050YrSCS24	01-01-2019 07:40:00	2.12
050YrSCS24	01-01-2019 07:50:00	2.12
050YrSCS24	01-01-2019 08:00:00	2.51
050YrSCS24	01-01-2019 08:10:00	2.51
050YrSCS24	01-01-2019 08:20:00	2.51
050YrSCS24	01-01-2019 08:30:00	2.7
050YrSCS24	01-01-2019 08:40:00	2.7
050YrSCS24	01-01-2019 08:50:00	2.7
050YrSCS24	01-01-2019 09:00:00	3.09
050YrSCS24	01-01-2019 09:10:00	3.09
050YrSCS24	01-01-2019 09:20:00	3.09
050YrSCS24	01-01-2019 09:30:00	3.48
050YrSCS24	01-01-2019 09:40:00	3.48
050YrSCS24	01-01-2019 09:50:00	3.48
050YrSCS24	01-01-2019 10:00:00	4.44
050YrSCS24	01-01-2019 10:10:00	4.44
050YrSCS24	01-01-2019 10:20:00	4.44
050YrSCS24	01-01-2019 10:30:00	5.98
050YrSCS24	01-01-2019 10:40:00	5.98
050YrSCS24	01-01-2019 10:50:00	5.98
050YrSCS24	01-01-2019 11:00:00	9.27
050YrSCS24	01-01-2019 11:10:00	9.27
050YrSCS24	01-01-2019 11:20:00	9.27
050YrSCS24	01-01-2019 11:30:00	28.57
050YrSCS24	01-01-2019 11:40:00	73.36
050YrSCS24	01-01-2019 11:50:00	118.15
050YrSCS24	01-01-2019 12:00:00	13.9
050YrSCS24	01-01-2019 12:10:00	13.9
050YrSCS24	01-01-2019 12:20:00	13.9
050YrSCS24	01-01-2019 12:30:00	7.14
050YrSCS24	01-01-2019 12:40:00	7.14
050YrSCS24	01-01-2019 12:50:00	7.14
050YrSCS24	01-01-2019 13:00:00	5.21
050YrSCS24	01-01-2019 13:10:00	5.21
050YrSCS24	01-01-2019 13:20:00	5.21
050YrSCS24	01-01-2019 13:30:00	4.05
050YrSCS24	01-01-2019 13:40:00	4.05
050YrSCS24	01-01-2019 13:50:00	4.05
050YrSCS24	01-01-2019 14:00:00	2.9
050YrSCS24	01-01-2019 14:10:00	2.9
050YrSCS24	01-01-2019 14:20:00	2.9
050YrSCS24	01-01-2019 14:30:00	2.9
050YrSCS24	01-01-2019 14:40:00	2.9
050YrSCS24	01-01-2019 14:50:00	2.9
050YrSCS24	01-01-2019 15:00:00	2.9
050YrSCS24	01-01-2019 15:10:00	2.9
050YrSCS24	01-01-2019 15:20:00	2.9
050YrSCS24	01-01-2019 15:30:00	2.9
050YrSCS24	01-01-2019 15:40:00	2.9
050YrSCS24	01-01-2019 15:50:00	2.9
050YrSCS24	01-01-2019 16:00:00	1.74
050YrSCS24	01-01-2019 16:10:00	1.74
050YrSCS24	01-01-2019 16:20:00	1.74
050YrSCS24	01-01-2019 16:30:00	1.74
050YrSCS24	01-01-2019 16:40:00	1.74
050YrSCS24	01-01-2019 16:50:00	1.74
050YrSCS24	01-01-2019 17:00:00	1.74
050YrSCS24	01-01-2019 17:10:00	1.74
050YrSCS24	01-01-2019 17:20:00	1.74
050YrSCS24	01-01-2019 17:30:00	1.74
050YrSCS24	01-01-2019 17:40:00	1.74
050YrSCS24	01-01-2019 17:50:00	1.74
050YrSCS24	01-01-2019 18:00:00	1.74
050YrSCS24	01-01-2019 18:10:00	1.74
050YrSCS24	01-01-2019 18:20:00	1.74
050YrSCS24	01-01-2019 18:30:00	1.74
050YrSCS24	01-01-2019 18:40:00	1.74
050YrSCS24	01-01-2019 18:50:00	1.74
050YrSCS24	01-01-2019 19:00:00	1.74
050YrSCS24	01-01-2019 19:10:00	1.74
050YrSCS24	01-01-2019 19:20:00	1.74
050YrSCS24	01-01-2019 19:30:00	1.74
050YrSCS24	01-01-2019 19:40:00	1.74
050YrSCS24	01-01-2019 19:50:00	1.74
050YrSCS24	01-01-2019 20:00:00	1.16
050YrSCS24	01-01-2019 20:10:00	1.16
050YrSCS24	01-01-2019 20:20:00	1.16
050YrSCS24	01-01-2019 20:30:00	1.16
050YrSCS24	01-01-2019 20:40:00	1.16
050YrSCS24	01-01-2019 20:50:00	1.16
050YrSCS24	01-01-2019 21:00:00	1.16
050YrSCS24	01-01-2019 21:10:00	1.16
050YrSCS24	01-01-2019 21:20:00	1.16
050YrSCS24	01-01-2019 21:30:00	1.16
050YrSCS24	01-01-2019 21:40:00	1.16
050YrSCS24	01-01-2019 21:50:00	1.16
050YrSCS24	01-01-2019 22:00:00	1.16
050YrSCS24	01-01-2019 22:10:00	1.16
050YrSCS24	01-01-2019 22:20:00	1.16
050YrSCS24	01-01-2019 22:30:00	1.16
050YrSCS24	01-01-2019 22:40:00	1.16
050YrSCS24	01-01-2019 22:50:00	1.16
050YrSCS24	01-01-2019 23:00:00	1.16
050YrSCS24	01-01-2019 23:10:00	1.16
050YrSCS24	01-01-2019 23:20:00	1.16
050YrSCS24	01-01-2019 23:30:00	1.16
050YrSCS24	01-01-2019 23:40:00	1.16
050YrSCS24	01-01-2019 23:50:00	1.16

;Rainfall (mm/hr)

100yrChicago3hr	01-01-2019 00:00:00	0
100yrChicago3hr	01-01-2019 00:10:00	6.04573
100yrChicago3hr	01-01-2019 00:20:00	7.54219
100yrChicago3hr	01-01-2019 00:30:00	10.1588
100yrChicago3hr	01-01-2019 00:40:00	15.96889
100yrChicago3hr	01-01-2019 00:50:00	40.65497
100yrChicago3hr	01-01-2019 01:00:00	178.559
100yrChicago3hr	01-01-2019 01:10:00	54.04853
100yrChicago3hr	01-01-2019 01:20:00	27.3187
100yrChicago3hr	01-01-2019 01:30:00	18.24039
100yrChicago3hr	01-01-2019 01:40:00	13.73692
100yrChicago3hr	01-01-2019 01:50:00	11.05876
100yrChicago3hr	01-01-2019 02:00:00	9.28521
100yrChicago3hr	01-01-2019 02:10:00	8.02389
100yrChicago3hr	01-01-2019 02:20:00	7.08022
100yrChicago3hr	01-01-2019 02:30:00	6.34698
100yrChicago3hr	01-01-2019 02:40:00	5.76029
100yrChicago3hr	01-01-2019 02:50:00	5.27978
100yrChicago3hr	01-01-2019 03:00:00	4.87871

;Rainfall (mm/hr)

100yrChicago3hr+20%	01-01-2019 00:00:00	0
100yrChicago3hr+20%	01-01-2019 00:10:00	7.25488
100yrChicago3hr+20%	01-01-2019 00:20:00	9.05063

100yrChicago3hr+20%	01-01-2019 00:30:00	12.19056
100yrChicago3hr+20%	01-01-2019 00:40:00	19.16267
100yrChicago3hr+20%	01-01-2019 00:50:00	48.78596
100yrChicago3hr+20%	01-01-2019 01:00:00	214.2708
100yrChicago3hr+20%	01-01-2019 01:10:00	64.85824
100yrChicago3hr+20%	01-01-2019 01:20:00	32.78244
100yrChicago3hr+20%	01-01-2019 01:30:00	21.88847
100yrChicago3hr+20%	01-01-2019 01:40:00	16.4843
100yrChicago3hr+20%	01-01-2019 01:50:00	13.27051
100yrChicago3hr+20%	01-01-2019 02:00:00	11.14225
100yrChicago3hr+20%	01-01-2019 02:10:00	9.62867
100yrChicago3hr+20%	01-01-2019 02:20:00	8.49626
100yrChicago3hr+20%	01-01-2019 02:30:00	7.61638
100yrChicago3hr+20%	01-01-2019 02:40:00	6.91235
100yrChicago3hr+20%	01-01-2019 02:50:00	6.33574
100yrChicago3hr+20%	01-01-2019 03:00:00	5.85445

;Rainfall (mm/hr)

100YrSCS12hr	01-01-2019 0:00:00	2.4
100YrSCS12hr	01-01-2019 0:15:00	2.4
100YrSCS12hr	01-01-2019 0:30:00	2.4
100YrSCS12hr	01-01-2019 0:45:00	2.4
100YrSCS12hr	01-01-2019 1:00:00	2.4
100YrSCS12hr	01-01-2019 1:15:00	2.4
100YrSCS12hr	01-01-2019 1:30:00	2.4
100YrSCS12hr	01-01-2019 1:45:00	2.4
100YrSCS12hr	01-01-2019 2:00:00	2.88
100YrSCS12hr	01-01-2019 2:15:00	2.88
100YrSCS12hr	01-01-2019 2:30:00	2.88
100YrSCS12hr	01-01-2019 2:45:00	2.88
100YrSCS12hr	01-01-2019 3:00:00	3.84
100YrSCS12hr	01-01-2019 3:15:00	3.84
100YrSCS12hr	01-01-2019 3:30:00	3.84
100YrSCS12hr	01-01-2019 3:45:00	3.84
100YrSCS12hr	01-01-2019 4:00:00	5.76
100YrSCS12hr	01-01-2019 4:15:00	5.76
100YrSCS12hr	01-01-2019 4:30:00	7.68
100YrSCS12hr	01-01-2019 4:45:00	7.68
100YrSCS12hr	01-01-2019 5:00:00	11.52
100YrSCS12hr	01-01-2019 5:15:00	11.52
100YrSCS12hr	01-01-2019 5:30:00	46.08
100YrSCS12hr	01-01-2019 5:45:00	126.72
100YrSCS12hr	01-01-2019 6:00:00	17.28
100YrSCS12hr	01-01-2019 6:15:00	17.28
100YrSCS12hr	01-01-2019 6:30:00	7.68
100YrSCS12hr	01-01-2019 6:45:00	7.68
100YrSCS12hr	01-01-2019 7:00:00	5.76
100YrSCS12hr	01-01-2019 7:15:00	5.76
100YrSCS12hr	01-01-2019 7:30:00	5.76
100YrSCS12hr	01-01-2019 7:45:00	5.76
100YrSCS12hr	01-01-2019 8:00:00	3.36
100YrSCS12hr	01-01-2019 8:15:00	3.36
100YrSCS12hr	01-01-2019 8:30:00	3.36
100YrSCS12hr	01-01-2019 8:45:00	3.36
100YrSCS12hr	01-01-2019 9:00:00	3.36
100YrSCS12hr	01-01-2019 9:15:00	3.36
100YrSCS12hr	01-01-2019 9:30:00	3.36
100YrSCS12hr	01-01-2019 9:45:00	3.36
100YrSCS12hr	01-01-2019 10:00:00	1.92
100YrSCS12hr	01-01-2019 10:15:00	1.92
100YrSCS12hr	01-01-2019 10:30:00	1.92
100YrSCS12hr	01-01-2019 10:45:00	1.92
100YrSCS12hr	01-01-2019 11:00:00	1.92
100YrSCS12hr	01-01-2019 11:15:00	1.92
100YrSCS12hr	01-01-2019 11:30:00	1.92
100YrSCS12hr	01-01-2019 11:45:00	1.92
100YrSCS12hr	01-01-2019 12:00:00	0

;Rainfall (mm/hr)

100YrSCS24	01/01/2019 00:00:00	1.17
100YrSCS24	01/01/2019 00:10:00	1.17
100YrSCS24	01/01/2019 00:20:00	1.17
100YrSCS24	01/01/2019 00:30:00	1.17
100YrSCS24	01/01/2019 00:40:00	1.17
100YrSCS24	01/01/2019 00:50:00	1.17
100YrSCS24	01/01/2019 01:00:00	1.17
100YrSCS24	01/01/2019 01:10:00	1.17
100YrSCS24	01/01/2019 01:20:00	1.17
100YrSCS24	01/01/2019 01:30:00	1.17
100YrSCS24	01/01/2019 01:40:00	1.17
100YrSCS24	01/01/2019 01:50:00	1.17
100YrSCS24	01/01/2019 02:00:00	1.39
100YrSCS24	01/01/2019 02:10:00	1.39
100YrSCS24	01/01/2019 02:20:00	1.39
100YrSCS24	01/01/2019 02:30:00	1.39
100YrSCS24	01/01/2019 02:40:00	1.39
100YrSCS24	01/01/2019 02:50:00	1.39
100YrSCS24	01/01/2019 03:00:00	1.39
100YrSCS24	01/01/2019 03:10:00	1.39
100YrSCS24	01/01/2019 03:20:00	1.39
100YrSCS24	01/01/2019 03:30:00	1.39
100YrSCS24	01/01/2019 03:40:00	1.39
100YrSCS24	01/01/2019 03:50:00	1.39
100YrSCS24	01/01/2019 04:00:00	1.71
100YrSCS24	01/01/2019 04:10:00	1.71
100YrSCS24	01/01/2019 04:20:00	1.71
100YrSCS24	01/01/2019 04:30:00	1.71
100YrSCS24	01/01/2019 04:40:00	1.71
100YrSCS24	01/01/2019 04:50:00	1.71
100YrSCS24	01/01/2019 05:00:00	1.71
100YrSCS24	01/01/2019 05:10:00	1.71
100YrSCS24	01/01/2019 05:20:00	1.71
100YrSCS24	01/01/2019 05:30:00	1.71
100YrSCS24	01/01/2019 05:40:00	1.71
100YrSCS24	01/01/2019 05:50:00	1.71
100YrSCS24	01/01/2019 06:00:00	1.92
100YrSCS24	01/01/2019 06:10:00	1.92
100YrSCS24	01/01/2019 06:20:00	1.92
100YrSCS24	01/01/2019 06:30:00	1.92
100YrSCS24	01/01/2019 06:40:00	1.92
100YrSCS24	01/01/2019 06:50:00	1.92
100YrSCS24	01/01/2019 07:00:00	2.35
100YrSCS24	01/01/2019 07:10:00	2.35
100YrSCS24	01/01/2019 07:20:00	2.35
100YrSCS24	01/01/2019 07:30:00	2.35
100YrSCS24	01/01/2019 07:40:00	2.35
100YrSCS24	01/01/2019 07:50:00	2.35
100YrSCS24	01/01/2019 08:00:00	2.78
100YrSCS24	01/01/2019 08:10:00	2.78
100YrSCS24	01/01/2019 08:20:00	2.78
100YrSCS24	01/01/2019 08:30:00	2.99
100YrSCS24	01/01/2019 08:40:00	2.99
100YrSCS24	01/01/2019 08:50:00	2.99
100YrSCS24	01/01/2019 09:00:00	3.42
100YrSCS24	01/01/2019 09:10:00	3.42
100YrSCS24	01/01/2019 09:20:00	3.42
100YrSCS24	01/01/2019 09:30:00	3.84
100YrSCS24	01/01/2019 09:40:00	3.84
100YrSCS24	01/01/2019 09:50:00	3.84
100YrSCS24	01/01/2019 10:00:00	4.91
100YrSCS24	01/01/2019 10:10:00	4.91
100YrSCS24	01/01/2019 10:20:00	4.91
100YrSCS24	01/01/2019 10:30:00	6.62
100YrSCS24	01/01/2019 10:40:00	6.62
100YrSCS24	01/01/2019 10:50:00	6.62
100YrSCS24	01/01/2019 11:00:00	10.25
100YrSCS24	01/01/2019 11:10:00	10.25
100YrSCS24	01/01/2019 11:20:00	10.25
100YrSCS24	01/01/2019 11:30:00	31.6
100YrSCS24	01/01/2019 11:40:00	81.12

100YrSCS24	01/01/2019 11:50:00	130.65
100YrSCS24	01/01/2019 12:00:00	15.37
100YrSCS24	01/01/2019 12:10:00	15.37
100YrSCS24	01/01/2019 12:20:00	15.37
100YrSCS24	01/01/2019 12:30:00	7.9
100YrSCS24	01/01/2019 12:40:00	7.9
100YrSCS24	01/01/2019 12:50:00	7.9
100YrSCS24	01/01/2019 13:00:00	5.76
100YrSCS24	01/01/2019 13:10:00	5.76
100YrSCS24	01/01/2019 13:20:00	5.76
100YrSCS24	01/01/2019 13:30:00	4.48
100YrSCS24	01/01/2019 13:40:00	4.48
100YrSCS24	01/01/2019 13:50:00	4.48
100YrSCS24	01/01/2019 14:00:00	3.2
100YrSCS24	01/01/2019 14:10:00	3.2
100YrSCS24	01/01/2019 14:20:00	3.2
100YrSCS24	01/01/2019 14:30:00	3.2
100YrSCS24	01/01/2019 14:40:00	3.2
100YrSCS24	01/01/2019 14:50:00	3.2
100YrSCS24	01/01/2019 15:00:00	3.2
100YrSCS24	01/01/2019 15:10:00	3.2
100YrSCS24	01/01/2019 15:20:00	3.2
100YrSCS24	01/01/2019 15:30:00	3.2
100YrSCS24	01/01/2019 15:40:00	3.2
100YrSCS24	01/01/2019 15:50:00	3.2
100YrSCS24	01/01/2019 16:00:00	1.92
100YrSCS24	01/01/2019 16:10:00	1.92
100YrSCS24	01/01/2019 16:20:00	1.92
100YrSCS24	01/01/2019 16:30:00	1.92
100YrSCS24	01/01/2019 16:40:00	1.92
100YrSCS24	01/01/2019 16:50:00	1.92
100YrSCS24	01/01/2019 17:00:00	1.92
100YrSCS24	01/01/2019 17:10:00	1.92
100YrSCS24	01/01/2019 17:20:00	1.92
100YrSCS24	01/01/2019 17:30:00	1.92
100YrSCS24	01/01/2019 17:40:00	1.92
100YrSCS24	01/01/2019 17:50:00	1.92
100YrSCS24	01/01/2019 18:00:00	1.92
100YrSCS24	01/01/2019 18:10:00	1.92
100YrSCS24	01/01/2019 18:20:00	1.92
100YrSCS24	01/01/2019 18:30:00	1.92
100YrSCS24	01/01/2019 18:40:00	1.92
100YrSCS24	01/01/2019 18:50:00	1.92
100YrSCS24	01/01/2019 19:00:00	1.92
100YrSCS24	01/01/2019 19:10:00	1.92
100YrSCS24	01/01/2019 19:20:00	1.92
100YrSCS24	01/01/2019 19:30:00	1.92
100YrSCS24	01/01/2019 19:40:00	1.92
100YrSCS24	01/01/2019 19:50:00	1.92
100YrSCS24	01/01/2019 20:00:00	1.28
100YrSCS24	01/01/2019 20:10:00	1.28
100YrSCS24	01/01/2019 20:20:00	1.28
100YrSCS24	01/01/2019 20:30:00	1.28
100YrSCS24	01/01/2019 20:40:00	1.28
100YrSCS24	01/01/2019 20:50:00	1.28
100YrSCS24	01/01/2019 21:00:00	1.28
100YrSCS24	01/01/2019 21:10:00	1.28
100YrSCS24	01/01/2019 21:20:00	1.28
100YrSCS24	01/01/2019 21:30:00	1.28
100YrSCS24	01/01/2019 21:40:00	1.28
100YrSCS24	01/01/2019 21:50:00	1.28
100YrSCS24	01/01/2019 22:00:00	1.28
100YrSCS24	01/01/2019 22:10:00	1.28
100YrSCS24	01/01/2019 22:20:00	1.28
100YrSCS24	01/01/2019 22:30:00	1.28
100YrSCS24	01/01/2019 22:40:00	1.28
100YrSCS24	01/01/2019 22:50:00	1.28
100YrSCS24	01/01/2019 23:00:00	1.28
100YrSCS24	01/01/2019 23:10:00	1.28
100YrSCS24	01/01/2019 23:20:00	1.28
100YrSCS24	01/01/2019 23:30:00	1.28
100YrSCS24	01/01/2019 23:40:00	1.28
100YrSCS24	01/01/2019 23:50:00	1.28

;Rainfall (mm/hr)

100YrSCS24+20%	01-01-2019 00:00:00	1.404
100YrSCS24+20%	01-01-2019 00:10:00	1.404
100YrSCS24+20%	01-01-2019 00:20:00	1.404
100YrSCS24+20%	01-01-2019 00:30:00	1.404
100YrSCS24+20%	01-01-2019 00:40:00	1.404
100YrSCS24+20%	01-01-2019 00:50:00	1.404
100YrSCS24+20%	01-01-2019 01:00:00	1.404
100YrSCS24+20%	01-01-2019 01:10:00	1.404
100YrSCS24+20%	01-01-2019 01:20:00	1.404
100YrSCS24+20%	01-01-2019 01:30:00	1.404
100YrSCS24+20%	01-01-2019 01:40:00	1.404
100YrSCS24+20%	01-01-2019 01:50:00	1.404
100YrSCS24+20%	01-01-2019 02:00:00	1.668
100YrSCS24+20%	01-01-2019 02:10:00	1.668
100YrSCS24+20%	01-01-2019 02:20:00	1.668
100YrSCS24+20%	01-01-2019 02:30:00	1.668
100YrSCS24+20%	01-01-2019 02:40:00	1.668
100YrSCS24+20%	01-01-2019 02:50:00	1.668
100YrSCS24+20%	01-01-2019 03:00:00	1.668
100YrSCS24+20%	01-01-2019 03:10:00	1.668
100YrSCS24+20%	01-01-2019 03:20:00	1.668
100YrSCS24+20%	01-01-2019 03:30:00	1.668
100YrSCS24+20%	01-01-2019 03:40:00	1.668
100YrSCS24+20%	01-01-2019 03:50:00	1.668
100YrSCS24+20%	01-01-2019 04:00:00	2.052
100YrSCS24+20%	01-01-2019 04:10:00	2.052
100YrSCS24+20%	01-01-2019 04:20:00	2.052
100YrSCS24+20%	01-01-2019 04:30:00	2.052
100YrSCS24+20%	01-01-2019 04:40:00	2.052
100YrSCS24+20%	01-01-2019 04:50:00	2.052
100YrSCS24+20%	01-01-2019 05:00:00	2.052
100YrSCS24+20%	01-01-2019 05:10:00	2.052
100YrSCS24+20%	01-01-2019 05:20:00	2.052
100YrSCS24+20%	01-01-2019 05:30:00	2.052
100YrSCS24+20%	01-01-2019 05:40:00	2.052
100YrSCS24+20%	01-01-2019 05:50:00	2.052
100YrSCS24+20%	01-01-2019 06:00:00	2.304
100YrSCS24+20%	01-01-2019 06:10:00	2.304
100YrSCS24+20%	01-01-2019 06:20:00	2.304
100YrSCS24+20%	01-01-2019 06:30:00	2.304
100YrSCS24+20%	01-01-2019 06:40:00	2.304
100YrSCS24+20%	01-01-2019 06:50:00	2.304
100YrSCS24+20%	01-01-2019 07:00:00	2.82
100YrSCS24+20%	01-01-2019 07:10:00	2.82
100YrSCS24+20%	01-01-2019 07:20:00	2.82
100YrSCS24+20%	01-01-2019 07:30:00	2.82
100YrSCS24+20%	01-01-2019 07:40:00	2.82
100YrSCS24+20%	01-01-2019 07:50:00	2.82
100YrSCS24+20%	01-01-2019 08:00:00	3.336
100YrSCS24+20%	01-01-2019 08:10:00	3.336
100YrSCS24+20%	01-01-2019 08:20:00	3.336
100YrSCS24+20%	01-01-2019 08:30:00	3.588
100YrSCS24+20%	01-01-2019 08:40:00	3.588
100YrSCS24+20%	01-01-2019 08:50:00	3.588
100YrSCS24+20%	01-01-2019 09:00:00	4.104
100YrSCS24+20%	01-01-2019 09:10:00	4.104
100YrSCS24+20%	01-01-2019 09:20:00	4.104
100YrSCS24+20%	01-01-2019 09:30:00	4.608
100YrSCS24+20%	01-01-2019 09:40:00	4.608
100YrSCS24+20%	01-01-2019 09:50:00	4.608
100YrSCS24+20%	01-01-2019 10:00:00	5.892
100YrSCS24+20%	01-01-2019 10:10:00	5.892
100YrSCS24+20%	01-01-2019 10:20:00	5.892
100YrSCS24+20%	01-01-2019 10:30:00	7.944
100YrSCS24+20%	01-01-2019 10:40:00	7.944

100YrSCS24+20%   01-01-2019 10:50:00   7.944
100YrSCS24+20%   01-01-2019 11:00:00   12.3
100YrSCS24+20%   01-01-2019 11:10:00   12.3
100YrSCS24+20%   01-01-2019 11:20:00   12.3
100YrSCS24+20%   01-01-2019 11:30:00   37.92
100YrSCS24+20%   01-01-2019 11:40:00   97.344
100YrSCS24+20%   01-01-2019 11:50:00   156.78
100YrSCS24+20%   01-01-2019 12:00:00   18.444
100YrSCS24+20%   01-01-2019 12:10:00   18.444
100YrSCS24+20%   01-01-2019 12:20:00   18.444
100YrSCS24+20%   01-01-2019 12:30:00   9.48
100YrSCS24+20%   01-01-2019 12:40:00   9.48
100YrSCS24+20%   01-01-2019 12:50:00   9.48
100YrSCS24+20%   01-01-2019 13:00:00   6.912
100YrSCS24+20%   01-01-2019 13:10:00   6.912
100YrSCS24+20%   01-01-2019 13:20:00   6.912
100YrSCS24+20%   01-01-2019 13:30:00   5.376
100YrSCS24+20%   01-01-2019 13:40:00   5.376
100YrSCS24+20%   01-01-2019 13:50:00   5.376
100YrSCS24+20%   01-01-2019 14:00:00   3.84
100YrSCS24+20%   01-01-2019 14:10:00   3.84
100YrSCS24+20%   01-01-2019 14:20:00   3.84
100YrSCS24+20%   01-01-2019 14:30:00   3.84
100YrSCS24+20%   01-01-2019 14:40:00   3.84
100YrSCS24+20%   01-01-2019 14:50:00   3.84
100YrSCS24+20%   01-01-2019 15:00:00   3.84
100YrSCS24+20%   01-01-2019 15:10:00   3.84
100YrSCS24+20%   01-01-2019 15:20:00   3.84
100YrSCS24+20%   01-01-2019 15:30:00   3.84
100YrSCS24+20%   01-01-2019 15:40:00   3.84
100YrSCS24+20%   01-01-2019 15:50:00   3.84
100YrSCS24+20%   01-01-2019 16:00:00   2.304
100YrSCS24+20%   01-01-2019 16:10:00   2.304
100YrSCS24+20%   01-01-2019 16:20:00   2.304
100YrSCS24+20%   01-01-2019 16:30:00   2.304
100YrSCS24+20%   01-01-2019 16:40:00   2.304
100YrSCS24+20%   01-01-2019 16:50:00   2.304
100YrSCS24+20%   01-01-2019 17:00:00   2.304
100YrSCS24+20%   01-01-2019 17:10:00   2.304
100YrSCS24+20%   01-01-2019 17:20:00   2.304
100YrSCS24+20%   01-01-2019 17:30:00   2.304
100YrSCS24+20%   01-01-2019 17:40:00   2.304
100YrSCS24+20%   01-01-2019 17:50:00   2.304
100YrSCS24+20%   01-01-2019 18:00:00   2.304
100YrSCS24+20%   01-01-2019 18:10:00   2.304
100YrSCS24+20%   01-01-2019 18:20:00   2.304
100YrSCS24+20%   01-01-2019 18:30:00   2.304
100YrSCS24+20%   01-01-2019 18:40:00   2.304
100YrSCS24+20%   01-01-2019 18:50:00   2.304
100YrSCS24+20%   01-01-2019 19:00:00   2.304
100YrSCS24+20%   01-01-2019 19:10:00   2.304
100YrSCS24+20%   01-01-2019 19:20:00   2.304
100YrSCS24+20%   01-01-2019 19:30:00   2.304
100YrSCS24+20%   01-01-2019 19:40:00   2.304
100YrSCS24+20%   01-01-2019 19:50:00   2.304
100YrSCS24+20%   01-01-2019 20:00:00   1.536
100YrSCS24+20%   01-01-2019 20:10:00   1.536
100YrSCS24+20%   01-01-2019 20:20:00   1.536
100YrSCS24+20%   01-01-2019 20:30:00   1.536
100YrSCS24+20%   01-01-2019 20:40:00   1.536
100YrSCS24+20%   01-01-2019 20:50:00   1.536
100YrSCS24+20%   01-01-2019 21:00:00   1.536
100YrSCS24+20%   01-01-2019 21:10:00   1.536
100YrSCS24+20%   01-01-2019 21:20:00   1.536
100YrSCS24+20%   01-01-2019 21:30:00   1.536
100YrSCS24+20%   01-01-2019 21:40:00   1.536
100YrSCS24+20%   01-01-2019 21:50:00   1.536
100YrSCS24+20%   01-01-2019 22:00:00   1.536
100YrSCS24+20%   01-01-2019 22:10:00   1.536
100YrSCS24+20%   01-01-2019 22:20:00   1.536
100YrSCS24+20%   01-01-2019 22:30:00   1.536
100YrSCS24+20%   01-01-2019 22:40:00   1.536
100YrSCS24+20%   01-01-2019 22:50:00   1.536
100YrSCS24+20%   01-01-2019 23:00:00   1.536
100YrSCS24+20%   01-01-2019 23:10:00   1.536
100YrSCS24+20%   01-01-2019 23:20:00   1.536
100YrSCS24+20%   01-01-2019 23:30:00   1.536
100YrSCS24+20%   01-01-2019 23:40:00   1.536
100YrSCS24+20%   01-01-2019 23:50:00   1.536

;Rainfall (mm/hr)
1979July01   01-01-2019 00:00:00   2.3
1979July01   01-01-2019 00:05:00   2.3
1979July01   01-01-2019 00:10:00   8.89
1979July01   01-01-2019 00:15:00   8.89
1979July01   01-01-2019 00:20:00   8.89
1979July01   01-01-2019 00:25:00   8.89
1979July01   01-01-2019 00:30:00   38.1
1979July01   01-01-2019 00:35:00   38.1
1979July01   01-01-2019 00:40:00   38.1
1979July01   01-01-2019 00:45:00   38.1
1979July01   01-01-2019 00:50:00   38.1
1979July01   01-01-2019 00:55:00   38.1
1979July01   01-01-2019 01:00:00   38.1
1979July01   01-01-2019 01:05:00   50.8
1979July01   01-01-2019 01:10:00   50.8
1979July01   01-01-2019 01:15:00   76.2
1979July01   01-01-2019 01:20:00   106.7
1979July01   01-01-2019 01:25:00   106.7
1979July01   01-01-2019 01:30:00   71.1
1979July01   01-01-2019 01:35:00   71.1
1979July01   01-01-2019 01:40:00   30.5
1979July01   01-01-2019 01:45:00   30.5
1979July01   01-01-2019 01:50:00   30.5
1979July01   01-01-2019 01:55:00   30.5
1979July01   01-01-2019 02:00:00   3.8
1979July01   01-01-2019 02:05:00   3.8
1979July01   01-01-2019 02:10:00   3.8
1979July01   01-01-2019 02:15:00   3.8
1979July01   01-01-2019 02:20:00   3.8
1979July01   01-01-2019 02:25:00   3.8
1979July01   01-01-2019 02:30:00   3.8
1979July01   01-01-2019 02:35:00   3.8
1979July01   01-01-2019 02:40:00   3.8
1979July01   01-01-2019 02:45:00   3.8
1979July01   01-01-2019 02:50:00   3.8
1979July01   01-01-2019 02:55:00   3.8

;Rainfall (mm/hr)
1988Aug04   01-01-2019 00:00:00   0.1
1988Aug04   01-01-2019 00:05:00   0.1
1988Aug04   01-01-2019 00:10:00   0
1988Aug04   01-01-2019 00:15:00   3.7
1988Aug04   01-01-2019 00:20:00   6.2
1988Aug04   01-01-2019 00:25:00   101.5
1988Aug04   01-01-2019 00:30:00   15.5
1988Aug04   01-01-2019 00:35:00   29.3
1988Aug04   01-01-2019 00:40:00   19.8
1988Aug04   01-01-2019 00:45:00   1.5
1988Aug04   01-01-2019 00:50:00   1.7
1988Aug04   01-01-2019 00:55:00   5.4
1988Aug04   01-01-2019 01:00:00   24.6
1988Aug04   01-01-2019 01:05:00   26.5
1988Aug04   01-01-2019 01:10:00   34.9
1988Aug04   01-01-2019 01:15:00   10.2
1988Aug04   01-01-2019 01:20:00   27.1
1988Aug04   01-01-2019 01:25:00   104.4
1988Aug04   01-01-2019 01:30:00   27.5
1988Aug04   01-01-2019 01:35:00   62.5
1988Aug04   01-01-2019 01:40:00   31.8

1988Aug04	01-01-2019 01:45:00	79.8
1988Aug04	01-01-2019 01:50:00	67.5
1988Aug04	01-01-2019 01:55:00	156.2
1988Aug04	01-01-2019 02:00:00	5.1
1988Aug04	01-01-2019 02:05:00	0.2
1988Aug04	01-01-2019 02:10:00	0.2
1988Aug04	01-01-2019 02:15:00	0.2
1988Aug04	01-01-2019 02:20:00	0.2
1988Aug04	01-01-2019 02:25:00	0.2
1988Aug04	01-01-2019 02:30:00	0.2
1988Aug04	01-01-2019 02:35:00	0.2
1988Aug04	01-01-2019 02:40:00	0.2
1988Aug04	01-01-2019 02:45:00	0.2
1988Aug04	01-01-2019 02:50:00	0.2
1988Aug04	01-01-2019 02:55:00	12.8
1988Aug04	01-01-2019 03:00:00	14
1988Aug04	01-01-2019 03:05:00	22.2
1988Aug04	01-01-2019 03:10:00	21.8
1988Aug04	01-01-2019 03:15:00	1.4
1988Aug04	01-01-2019 03:20:00	0.2
1988Aug04	01-01-2019 03:25:00	0.2
1988Aug04	01-01-2019 03:30:00	0.2
1988Aug04	01-01-2019 03:35:00	0.2
1988Aug04	01-01-2019 03:40:00	0.2
1988Aug04	01-01-2019 03:45:00	0.2
1988Aug04	01-01-2019 03:50:00	0.2
1988Aug04	01-01-2019 03:55:00	0.2
1988Aug04	01-01-2019 04:00:00	0.2
1988Aug04	01-01-2019 04:05:00	0.2
1988Aug04	01-01-2019 04:10:00	0.2
1988Aug04	01-01-2019 04:15:00	0.2
1988Aug04	01-01-2019 04:20:00	0.2
1988Aug04	01-01-2019 04:25:00	0.2
1988Aug04	01-01-2019 04:30:00	0.2
1988Aug04	01-01-2019 04:35:00	0.2
1988Aug04	01-01-2019 04:40:00	0.2
1988Aug04	01-01-2019 04:45:00	0.2
1988Aug04	01-01-2019 04:50:00	0.2
1988Aug04	01-01-2019 04:55:00	2.9
1988Aug04	01-01-2019 05:00:00	7.8
1988Aug04	01-01-2019 05:05:00	10
1988Aug04	01-01-2019 05:10:00	6.3
1988Aug04	01-01-2019 05:15:00	5.1
1988Aug04	01-01-2019 05:20:00	9.8
1988Aug04	01-01-2019 05:25:00	2.6
1988Aug04	01-01-2019 05:30:00	1.7

;Rainfall (mm/hr)

1996Aug08	01-01-2019 00:00:00	4
1996Aug08	01-01-2019 00:05:00	11.9
1996Aug08	01-01-2019 00:10:00	26.5
1996Aug08	01-01-2019 00:15:00	13.3
1996Aug08	01-01-2019 00:20:00	0
1996Aug08	01-01-2019 00:25:00	2.7
1996Aug08	01-01-2019 00:30:00	0
1996Aug08	01-01-2019 00:35:00	8
1996Aug08	01-01-2019 00:40:00	18.6
1996Aug08	01-01-2019 00:45:00	10.6
1996Aug08	01-01-2019 00:50:00	21.2
1996Aug08	01-01-2019 00:55:00	2.7
1996Aug08	01-01-2019 01:00:00	2.7
1996Aug08	01-01-2019 01:05:00	15.9
1996Aug08	01-01-2019 01:10:00	66.3
1996Aug08	01-01-2019 01:15:00	55.7
1996Aug08	01-01-2019 01:20:00	122
1996Aug08	01-01-2019 01:25:00	88.9
1996Aug08	01-01-2019 01:30:00	9.3
1996Aug08	01-01-2019 01:35:00	8
1996Aug08	01-01-2019 01:40:00	4
1996Aug08	01-01-2019 01:45:00	0
1996Aug08	01-01-2019 01:50:00	2.7
1996Aug08	01-01-2019 01:55:00	0
1996Aug08	01-01-2019 02:00:00	0
1996Aug08	01-01-2019 02:05:00	0
1996Aug08	01-01-2019 02:10:00	5.3
1996Aug08	01-01-2019 02:15:00	0
1996Aug08	01-01-2019 02:20:00	0
1996Aug08	01-01-2019 02:25:00	0
1996Aug08	01-01-2019 02:30:00	0
1996Aug08	01-01-2019 02:35:00	0
1996Aug08	01-01-2019 02:40:00	0
1996Aug08	01-01-2019 02:45:00	4
1996Aug08	01-01-2019 02:50:00	53.1
1996Aug08	01-01-2019 02:55:00	69
1996Aug08	01-01-2019 03:00:00	63.7
1996Aug08	01-01-2019 03:05:00	58.4
1996Aug08	01-01-2019 03:10:00	47.8
1996Aug08	01-01-2019 03:15:00	15.9
1996Aug08	01-01-2019 03:20:00	13.3
1996Aug08	01-01-2019 03:25:00	8
1996Aug08	01-01-2019 03:30:00	5.3
1996Aug08	01-01-2019 03:35:00	6.6
1996Aug08	01-01-2019 03:40:00	2.7
1996Aug08	01-01-2019 03:45:00	4
1996Aug08	01-01-2019 03:50:00	2.7
1996Aug08	01-01-2019 03:55:00	4
1996Aug08	01-01-2019 04:00:00	2.7
1996Aug08	01-01-2019 04:05:00	5.3
1996Aug08	01-01-2019 04:10:00	4
1996Aug08	01-01-2019 04:15:00	2.7
1996Aug08	01-01-2019 04:20:00	4
1996Aug08	01-01-2019 04:25:00	2.7
1996Aug08	01-01-2019 04:30:00	1.3
1996Aug08	01-01-2019 04:35:00	1.3
1996Aug08	01-01-2019 04:40:00	0
1996Aug08	01-01-2019 04:45:00	0
1996Aug08	01-01-2019 04:50:00	0
1996Aug08	01-01-2019 04:55:00	0
1996Aug08	01-01-2019 05:00:00	2.7
1996Aug08	01-01-2019 05:05:00	0
1996Aug08	01-01-2019 05:10:00	0
1996Aug08	01-01-2019 05:15:00	0
1996Aug08	01-01-2019 05:20:00	0
1996Aug08	01-01-2019 05:25:00	0
1996Aug08	01-01-2019 05:30:00	0
1996Aug08	01-01-2019 05:35:00	0
1996Aug08	01-01-2019 05:40:00	1.3

;Rainfall (mm/hr)

25mmChicago4Hr	01-01-2019 00:00:00	0
25mmChicago4Hr	01-01-2019 00:10:00	1.5122
25mmChicago4Hr	01-01-2019 00:20:00	1.7483
25mmChicago4Hr	01-01-2019 00:30:00	2.0803
25mmChicago4Hr	01-01-2019 00:40:00	2.5819
25mmChicago4Hr	01-01-2019 00:50:00	3.4597
25mmChicago4Hr	01-01-2019 01:00:00	5.3924
25mmChicago4Hr	01-01-2019 01:10:00	13.4405
25mmChicago4Hr	01-01-2019 01:20:00	56.6613
25mmChicago4Hr	01-01-2019 01:30:00	17.7634
25mmChicago4Hr	01-01-2019 01:40:00	9.1177
25mmChicago4Hr	01-01-2019 01:50:00	6.1375
25mmChicago4Hr	01-01-2019 02:00:00	4.6474
25mmChicago4Hr	01-01-2019 02:10:00	3.7548
25mmChicago4Hr	01-01-2019 02:20:00	3.1647
25mmChicago4Hr	01-01-2019 02:30:00	2.7442
25mmChicago4Hr	01-01-2019 02:40:00	2.427
25mmChicago4Hr	01-01-2019 02:50:00	2.1762
25mmChicago4Hr	01-01-2019 03:00:00	1.977
25mmChicago4Hr	01-01-2019 03:10:00	1.8147
25mmChicago4Hr	01-01-2019 03:20:00	1.6819

25mmChicago4Hr 01-01-2019 03:30:00 1.5639
25mmChicago4Hr 01-01-2019 03:40:00 1.468
25mmChicago4Hr 01-01-2019 03:50:00 1.3795
25mmChicago4Hr 01-01-2019 04:00:00 1.3057

;Rainfall (mm/hr)
2YrSCS12hr 01-01-2019 0:00:00 1.08
2YrSCS12hr 01-01-2019 0:15:00 1.08
2YrSCS12hr 01-01-2019 0:30:00 1.08
2YrSCS12hr 01-01-2019 0:45:00 1.08
2YrSCS12hr 01-01-2019 1:00:00 1.08
2YrSCS12hr 01-01-2019 1:15:00 1.08
2YrSCS12hr 01-01-2019 1:30:00 1.08
2YrSCS12hr 01-01-2019 1:45:00 1.08
2YrSCS12hr 01-01-2019 2:00:00 1.296
2YrSCS12hr 01-01-2019 2:15:00 1.296
2YrSCS12hr 01-01-2019 2:30:00 1.296
2YrSCS12hr 01-01-2019 2:45:00 1.296
2YrSCS12hr 01-01-2019 3:00:00 1.728
2YrSCS12hr 01-01-2019 3:15:00 1.728
2YrSCS12hr 01-01-2019 3:30:00 1.728
2YrSCS12hr 01-01-2019 3:45:00 1.728
2YrSCS12hr 01-01-2019 4:00:00 2.592
2YrSCS12hr 01-01-2019 4:15:00 2.592
2YrSCS12hr 01-01-2019 4:30:00 3.456
2YrSCS12hr 01-01-2019 4:45:00 3.456
2YrSCS12hr 01-01-2019 5:00:00 5.184
2YrSCS12hr 01-01-2019 5:15:00 5.184
2YrSCS12hr 01-01-2019 5:30:00 20.736
2YrSCS12hr 01-01-2019 5:45:00 57.024
2YrSCS12hr 01-01-2019 6:00:00 7.776
2YrSCS12hr 01-01-2019 6:15:00 7.776
2YrSCS12hr 01-01-2019 6:30:00 3.456
2YrSCS12hr 01-01-2019 6:45:00 3.456
2YrSCS12hr 01-01-2019 7:00:00 2.592
2YrSCS12hr 01-01-2019 7:15:00 2.592
2YrSCS12hr 01-01-2019 7:30:00 2.592
2YrSCS12hr 01-01-2019 7:45:00 2.592
2YrSCS12hr 01-01-2019 8:00:00 1.512
2YrSCS12hr 01-01-2019 8:15:00 1.512
2YrSCS12hr 01-01-2019 8:30:00 1.512
2YrSCS12hr 01-01-2019 8:45:00 1.512
2YrSCS12hr 01-01-2019 9:00:00 1.512
2YrSCS12hr 01-01-2019 9:15:00 1.512
2YrSCS12hr 01-01-2019 9:30:00 1.512
2YrSCS12hr 01-01-2019 9:45:00 1.512
2YrSCS12hr 01-01-2019 10:00:00 0.864
2YrSCS12hr 01-01-2019 10:15:00 0.864
2YrSCS12hr 01-01-2019 10:30:00 0.864
2YrSCS12hr 01-01-2019 10:45:00 0.864
2YrSCS12hr 01-01-2019 11:00:00 0.864
2YrSCS12hr 01-01-2019 11:15:00 0.864
2YrSCS12hr 01-01-2019 11:30:00 0.864
2YrSCS12hr 01-01-2019 12:00:00 0

;Rainfall (mm/hr)
5YrSCS12hr 01-01-2019 0:00:00 1.44
5YrSCS12hr 01-01-2019 0:15:00 1.44
5YrSCS12hr 01-01-2019 0:30:00 1.44
5YrSCS12hr 01-01-2019 0:45:00 1.44
5YrSCS12hr 01-01-2019 1:00:00 1.44
5YrSCS12hr 01-01-2019 1:15:00 1.44
5YrSCS12hr 01-01-2019 1:30:00 1.44
5YrSCS12hr 01-01-2019 1:45:00 1.44
5YrSCS12hr 01-01-2019 2:00:00 1.728
5YrSCS12hr 01-01-2019 2:15:00 1.728
5YrSCS12hr 01-01-2019 2:30:00 1.728
5YrSCS12hr 01-01-2019 2:45:00 1.728
5YrSCS12hr 01-01-2019 3:00:00 2.304
5YrSCS12hr 01-01-2019 3:15:00 2.304
5YrSCS12hr 01-01-2019 3:30:00 2.304
5YrSCS12hr 01-01-2019 3:45:00 2.304
5YrSCS12hr 01-01-2019 4:00:00 3.456
5YrSCS12hr 01-01-2019 4:15:00 3.456
5YrSCS12hr 01-01-2019 4:30:00 4.608
5YrSCS12hr 01-01-2019 4:45:00 4.608
5YrSCS12hr 01-01-2019 5:00:00 6.912
5YrSCS12hr 01-01-2019 5:15:00 6.912
5YrSCS12hr 01-01-2019 5:30:00 27.648
5YrSCS12hr 01-01-2019 5:45:00 76.032
5YrSCS12hr 01-01-2019 6:00:00 10.368
5YrSCS12hr 01-01-2019 6:15:00 10.368
5YrSCS12hr 01-01-2019 6:30:00 4.608
5YrSCS12hr 01-01-2019 6:45:00 4.608
5YrSCS12hr 01-01-2019 7:00:00 3.456
5YrSCS12hr 01-01-2019 7:15:00 3.456
5YrSCS12hr 01-01-2019 7:30:00 3.456
5YrSCS12hr 01-01-2019 7:45:00 3.456
5YrSCS12hr 01-01-2019 8:00:00 2.016
5YrSCS12hr 01-01-2019 8:15:00 2.016
5YrSCS12hr 01-01-2019 8:30:00 2.016
5YrSCS12hr 01-01-2019 8:45:00 2.016
5YrSCS12hr 01-01-2019 9:00:00 2.016
5YrSCS12hr 01-01-2019 9:15:00 2.016
5YrSCS12hr 01-01-2019 9:30:00 2.016
5YrSCS12hr 01-01-2019 9:45:00 2.016
5YrSCS12hr 01-01-2019 10:00:00 1.152
5YrSCS12hr 01-01-2019 10:15:00 1.152
5YrSCS12hr 01-01-2019 10:30:00 1.152
5YrSCS12hr 01-01-2019 10:45:00 1.152
5YrSCS12hr 01-01-2019 11:00:00 1.152
5YrSCS12hr 01-01-2019 11:15:00 1.152
5YrSCS12hr 01-01-2019 11:30:00 1.152
5YrSCS12hr 01-01-2019 11:45:00 1.152
5YrSCS12hr 01-01-2019 12:00:00 0

;Depth (m)
MH-111-100YrCHI3Hr 01/01/2019 00:00:00 80.571
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MH-111-100YrCHI3Hr 01/01/2019 23:50:00 82.18
MH-111-100YrCHI3Hr 01/01/2019 23:55:00 82.179
MH-111-100YrCHI3Hr 01/02/2019 00:00:00 82.178

;Depth (m)
MH-111-100YrCHI3Hr+20% 01/01/2019 00:00:00 80.571
MH-111-100YrCHI3Hr+20% 01/01/2019 00:05:00 80.571
MH-111-100YrCHI3Hr+20% 01/01/2019 00:10:00 80.572
MH-111-100YrCHI3Hr+20% 01/01/2019 00:15:00 80.584
MH-111-100YrCHI3Hr+20% 01/01/2019 00:20:00 80.633
MH-111-100YrCHI3Hr+20% 01/01/2019 00:25:00 80.701
MH-111-100YrCHI3Hr+20% 01/01/2019 00:30:00 80.783
MH-111-100YrCHI3Hr+20% 01/01/2019 00:35:00 80.942
MH-111-100YrCHI3Hr+20% 01/01/2019 00:40:00 81.051
MH-111-100YrCHI3Hr+20% 01/01/2019 00:45:00 81.152
MH-111-100YrCHI3Hr+20% 01/01/2019 00:50:00 81.292
MH-111-100YrCHI3Hr+20% 01/01/2019 00:55:00 81.521
MH-111-100YrCHI3Hr+20% 01/01/2019 01:00:00 81.797
MH-111-100YrCHI3Hr+20% 01/01/2019 01:05:00 82.06
MH-111-100YrCHI3Hr+20% 01/01/2019 01:10:00 82.255
MH-111-100YrCHI3Hr+20% 01/01/2019 01:15:00 82.29
MH-111-100YrCHI3Hr+20% 01/01/2019 01:20:00 82.423
MH-111-100YrCHI3Hr+20% 01/01/2019 01:25:00 82.534
MH-111-100YrCHI3Hr+20% 01/01/2019 01:30:00 82.624
MH-111-100YrCHI3Hr+20% 01/01/2019 01:35:00 82.838
MH-111-100YrCHI3Hr+20% 01/01/2019 01:40:00 82.924
MH-111-100YrCHI3Hr+20% 01/01/2019 01:45:00 83.069

MH-111-100YrCHI3Hr+20%	01/01/2019 01:50:00	83.063
MH-111-100YrCHI3Hr+20%	01/01/2019 01:55:00	83.09
MH-111-100YrCHI3Hr+20%	01/01/2019 02:00:00	83.096
MH-111-100YrCHI3Hr+20%	01/01/2019 02:05:00	83.154
MH-111-100YrCHI3Hr+20%	01/01/2019 02:10:00	83.147
MH-111-100YrCHI3Hr+20%	01/01/2019 02:15:00	83.173
MH-111-100YrCHI3Hr+20%	01/01/2019 02:20:00	83.16
MH-111-100YrCHI3Hr+20%	01/01/2019 02:25:00	83.179
MH-111-100YrCHI3Hr+20%	01/01/2019 02:30:00	83.161
MH-111-100YrCHI3Hr+20%	01/01/2019 02:35:00	83.168
MH-111-100YrCHI3Hr+20%	01/01/2019 02:40:00	83.15
MH-111-100YrCHI3Hr+20%	01/01/2019 02:45:00	83.157
MH-111-100YrCHI3Hr+20%	01/01/2019 02:50:00	83.137
MH-111-100YrCHI3Hr+20%	01/01/2019 02:55:00	83.142
MH-111-100YrCHI3Hr+20%	01/01/2019 03:00:00	83.122
MH-111-100YrCHI3Hr+20%	01/01/2019 03:05:00	83.123
MH-111-100YrCHI3Hr+20%	01/01/2019 03:10:00	83.1
MH-111-100YrCHI3Hr+20%	01/01/2019 03:15:00	83.091
MH-111-100YrCHI3Hr+20%	01/01/2019 03:20:00	83.085
MH-111-100YrCHI3Hr+20%	01/01/2019 03:25:00	83.069
MH-111-100YrCHI3Hr+20%	01/01/2019 03:30:00	83.047
MH-111-100YrCHI3Hr+20%	01/01/2019 03:35:00	83.039
MH-111-100YrCHI3Hr+20%	01/01/2019 03:40:00	83.029
MH-111-100YrCHI3Hr+20%	01/01/2019 03:45:00	83.012
MH-111-100YrCHI3Hr+20%	01/01/2019 03:50:00	82.994
MH-111-100YrCHI3Hr+20%	01/01/2019 03:55:00	82.983
MH-111-100YrCHI3Hr+20%	01/01/2019 04:00:00	82.972
MH-111-100YrCHI3Hr+20%	01/01/2019 04:05:00	82.959
MH-111-100YrCHI3Hr+20%	01/01/2019 04:10:00	82.942
MH-111-100YrCHI3Hr+20%	01/01/2019 04:15:00	82.933
MH-111-100YrCHI3Hr+20%	01/01/2019 04:20:00	82.923
MH-111-100YrCHI3Hr+20%	01/01/2019 04:25:00	82.911
MH-111-100YrCHI3Hr+20%	01/01/2019 04:30:00	82.896
MH-111-100YrCHI3Hr+20%	01/01/2019 04:35:00	82.887
MH-111-100YrCHI3Hr+20%	01/01/2019 04:40:00	82.878
MH-111-100YrCHI3Hr+20%	01/01/2019 04:45:00	82.867
MH-111-100YrCHI3Hr+20%	01/01/2019 04:50:00	82.853
MH-111-100YrCHI3Hr+20%	01/01/2019 04:55:00	82.845
MH-111-100YrCHI3Hr+20%	01/01/2019 05:00:00	82.836
MH-111-100YrCHI3Hr+20%	01/01/2019 05:05:00	82.827
MH-111-100YrCHI3Hr+20%	01/01/2019 05:10:00	82.815
MH-111-100YrCHI3Hr+20%	01/01/2019 05:15:00	82.806
MH-111-100YrCHI3Hr+20%	01/01/2019 05:20:00	82.799
MH-111-100YrCHI3Hr+20%	01/01/2019 05:25:00	82.791
MH-111-100YrCHI3Hr+20%	01/01/2019 05:30:00	82.78
MH-111-100YrCHI3Hr+20%	01/01/2019 05:35:00	82.772
MH-111-100YrCHI3Hr+20%	01/01/2019 05:40:00	82.765
MH-111-100YrCHI3Hr+20%	01/01/2019 05:45:00	82.758
MH-111-100YrCHI3Hr+20%	01/01/2019 05:50:00	82.748
MH-111-100YrCHI3Hr+20%	01/01/2019 05:55:00	82.741
MH-111-100YrCHI3Hr+20%	01/01/2019 06:00:00	82.735
MH-111-100YrCHI3Hr+20%	01/01/2019 06:05:00	82.729
MH-111-100YrCHI3Hr+20%	01/01/2019 06:10:00	82.72
MH-111-100YrCHI3Hr+20%	01/01/2019 06:15:00	82.713
MH-111-100YrCHI3Hr+20%	01/01/2019 06:20:00	82.707
MH-111-100YrCHI3Hr+20%	01/01/2019 06:25:00	82.702
MH-111-100YrCHI3Hr+20%	01/01/2019 06:30:00	82.694
MH-111-100YrCHI3Hr+20%	01/01/2019 06:35:00	82.687
MH-111-100YrCHI3Hr+20%	01/01/2019 06:40:00	82.681
MH-111-100YrCHI3Hr+20%	01/01/2019 06:45:00	82.677
MH-111-100YrCHI3Hr+20%	01/01/2019 06:50:00	82.67
MH-111-100YrCHI3Hr+20%	01/01/2019 06:55:00	82.664
MH-111-100YrCHI3Hr+20%	01/01/2019 07:00:00	82.658
MH-111-100YrCHI3Hr+20%	01/01/2019 07:05:00	82.654
MH-111-100YrCHI3Hr+20%	01/01/2019 07:10:00	82.648
MH-111-100YrCHI3Hr+20%	01/01/2019 07:15:00	82.643
MH-111-100YrCHI3Hr+20%	01/01/2019 07:20:00	82.637
MH-111-100YrCHI3Hr+20%	01/01/2019 07:25:00	82.634
MH-111-100YrCHI3Hr+20%	01/01/2019 07:30:00	82.628
MH-111-100YrCHI3Hr+20%	01/01/2019 07:35:00	82.624
MH-111-100YrCHI3Hr+20%	01/01/2019 07:40:00	82.618
MH-111-100YrCHI3Hr+20%	01/01/2019 07:45:00	82.615
MH-111-100YrCHI3Hr+20%	01/01/2019 07:50:00	82.61
MH-111-100YrCHI3Hr+20%	01/01/2019 07:55:00	82.606
MH-111-100YrCHI3Hr+20%	01/01/2019 08:00:00	82.601
MH-111-100YrCHI3Hr+20%	01/01/2019 08:05:00	82.597
MH-111-100YrCHI3Hr+20%	01/01/2019 08:10:00	82.593
MH-111-100YrCHI3Hr+20%	01/01/2019 08:15:00	82.589
MH-111-100YrCHI3Hr+20%	01/01/2019 08:20:00	82.584
MH-111-100YrCHI3Hr+20%	01/01/2019 08:25:00	82.581
MH-111-100YrCHI3Hr+20%	01/01/2019 08:30:00	82.577
MH-111-100YrCHI3Hr+20%	01/01/2019 08:35:00	82.574
MH-111-100YrCHI3Hr+20%	01/01/2019 08:40:00	82.569
MH-111-100YrCHI3Hr+20%	01/01/2019 08:45:00	82.566
MH-111-100YrCHI3Hr+20%	01/01/2019 08:50:00	82.563
MH-111-100YrCHI3Hr+20%	01/01/2019 08:55:00	82.56
MH-111-100YrCHI3Hr+20%	01/01/2019 09:00:00	82.555
MH-111-100YrCHI3Hr+20%	01/01/2019 09:05:00	82.552
MH-111-100YrCHI3Hr+20%	01/01/2019 09:10:00	82.549
MH-111-100YrCHI3Hr+20%	01/01/2019 09:15:00	82.546
MH-111-100YrCHI3Hr+20%	01/01/2019 09:20:00	82.543
MH-111-100YrCHI3Hr+20%	01/01/2019 09:25:00	82.539
MH-111-100YrCHI3Hr+20%	01/01/2019 09:30:00	82.536
MH-111-100YrCHI3Hr+20%	01/01/2019 09:35:00	82.534
MH-111-100YrCHI3Hr+20%	01/01/2019 09:40:00	82.53
MH-111-100YrCHI3Hr+20%	01/01/2019 09:45:00	82.527
MH-111-100YrCHI3Hr+20%	01/01/2019 09:50:00	82.524
MH-111-100YrCHI3Hr+20%	01/01/2019 09:55:00	82.522
MH-111-100YrCHI3Hr+20%	01/01/2019 10:00:00	82.519
MH-111-100YrCHI3Hr+20%	01/01/2019 10:05:00	82.516
MH-111-100YrCHI3Hr+20%	01/01/2019 10:10:00	82.513
MH-111-100YrCHI3Hr+20%	01/01/2019 10:15:00	82.511
MH-111-100YrCHI3Hr+20%	01/01/2019 10:20:00	82.508
MH-111-100YrCHI3Hr+20%	01/01/2019 10:25:00	82.506
MH-111-100YrCHI3Hr+20%	01/01/2019 10:30:00	82.503
MH-111-100YrCHI3Hr+20%	01/01/2019 10:35:00	82.5
MH-111-100YrCHI3Hr+20%	01/01/2019 10:40:00	82.499
MH-111-100YrCHI3Hr+20%	01/01/2019 10:45:00	82.496
MH-111-100YrCHI3Hr+20%	01/01/2019 10:50:00	82.493
MH-111-100YrCHI3Hr+20%	01/01/2019 10:55:00	82.491
MH-111-100YrCHI3Hr+20%	01/01/2019 11:00:00	82.489
MH-111-100YrCHI3Hr+20%	01/01/2019 11:05:00	82.486
MH-111-100YrCHI3Hr+20%	01/01/2019 11:10:00	82.484
MH-111-100YrCHI3Hr+20%	01/01/2019 11:15:00	82.481
MH-111-100YrCHI3Hr+20%	01/01/2019 11:20:00	82.48
MH-111-100YrCHI3Hr+20%	01/01/2019 11:25:00	82.477
MH-111-100YrCHI3Hr+20%	01/01/2019 11:30:00	82.476
MH-111-100YrCHI3Hr+20%	01/01/2019 11:35:00	82.473
MH-111-100YrCHI3Hr+20%	01/01/2019 11:40:00	82.472
MH-111-100YrCHI3Hr+20%	01/01/2019 11:45:00	82.469
MH-111-100YrCHI3Hr+20%	01/01/2019 11:50:00	82.468
MH-111-100YrCHI3Hr+20%	01/01/2019 11:55:00	82.464
MH-111-100YrCHI3Hr+20%	01/01/2019 12:00:00	82.464
MH-111-100YrCHI3Hr+20%	01/01/2019 12:05:00	82.46
MH-111-100YrCHI3Hr+20%	01/01/2019 12:10:00	82.46
MH-111-100YrCHI3Hr+20%	01/01/2019 12:15:00	82.456
MH-111-100YrCHI3Hr+20%	01/01/2019 12:20:00	82.456
MH-111-100YrCHI3Hr+20%	01/01/2019 12:25:00	82.452
MH-111-100YrCHI3Hr+20%	01/01/2019 12:30:00	82.453
MH-111-100YrCHI3Hr+20%	01/01/2019 12:35:00	82.449
MH-111-100YrCHI3Hr+20%	01/01/2019 12:40:00	82.45
MH-111-100YrCHI3Hr+20%	01/01/2019 12:45:00	82.445
MH-111-100YrCHI3Hr+20%	01/01/2019 12:50:00	82.447
MH-111-100YrCHI3Hr+20%	01/01/2019 12:55:00	82.442
MH-111-100YrCHI3Hr+20%	01/01/2019 13:00:00	82.443
MH-111-100YrCHI3Hr+20%	01/01/2019 13:05:00	82.438
MH-111-100YrCHI3Hr+20%	01/01/2019 13:10:00	82.44
MH-111-100YrCHI3Hr+20%	01/01/2019 13:15:00	82.435
MH-111-100YrCHI3Hr+20%	01/01/2019 13:20:00	82.436
MH-111-100YrCHI3Hr+20%	01/01/2019 13:25:00	82.432

MH-111-100YrCHI3Hr+20% 01/01/2019 13:30:00 82.433
MH-111-100YrCHI3Hr+20% 01/01/2019 13:35:00 82.428
MH-111-100YrCHI3Hr+20% 01/01/2019 13:40:00 82.43
MH-111-100YrCHI3Hr+20% 01/01/2019 13:45:00 82.425
MH-111-100YrCHI3Hr+20% 01/01/2019 13:50:00 82.426
MH-111-100YrCHI3Hr+20% 01/01/2019 13:55:00 82.422
MH-111-100YrCHI3Hr+20% 01/01/2019 14:00:00 82.423
MH-111-100YrCHI3Hr+20% 01/01/2019 14:05:00 82.419
MH-111-100YrCHI3Hr+20% 01/01/2019 14:10:00 82.419
MH-111-100YrCHI3Hr+20% 01/01/2019 14:15:00 82.415
MH-111-100YrCHI3Hr+20% 01/01/2019 14:20:00 82.416
MH-111-100YrCHI3Hr+20% 01/01/2019 14:25:00 82.412
MH-111-100YrCHI3Hr+20% 01/01/2019 14:30:00 82.414
MH-111-100YrCHI3Hr+20% 01/01/2019 14:35:00 82.41
MH-111-100YrCHI3Hr+20% 01/01/2019 14:40:00 82.411
MH-111-100YrCHI3Hr+20% 01/01/2019 14:45:00 82.406
MH-111-100YrCHI3Hr+20% 01/01/2019 14:50:00 82.408
MH-111-100YrCHI3Hr+20% 01/01/2019 14:55:00 82.403
MH-111-100YrCHI3Hr+20% 01/01/2019 15:00:00 82.405
MH-111-100YrCHI3Hr+20% 01/01/2019 15:05:00 82.4
MH-111-100YrCHI3Hr+20% 01/01/2019 15:10:00 82.402
MH-111-100YrCHI3Hr+20% 01/01/2019 15:15:00 82.398
MH-111-100YrCHI3Hr+20% 01/01/2019 15:20:00 82.399
MH-111-100YrCHI3Hr+20% 01/01/2019 15:25:00 82.396
MH-111-100YrCHI3Hr+20% 01/01/2019 15:30:00 82.396
MH-111-100YrCHI3Hr+20% 01/01/2019 15:35:00 82.394
MH-111-100YrCHI3Hr+20% 01/01/2019 15:40:00 82.394
MH-111-100YrCHI3Hr+20% 01/01/2019 15:45:00 82.393
MH-111-100YrCHI3Hr+20% 01/01/2019 15:50:00 82.392
MH-111-100YrCHI3Hr+20% 01/01/2019 15:55:00 82.391
MH-111-100YrCHI3Hr+20% 01/01/2019 16:00:00 82.389
MH-111-100YrCHI3Hr+20% 01/01/2019 16:05:00 82.387
MH-111-100YrCHI3Hr+20% 01/01/2019 16:10:00 82.385
MH-111-100YrCHI3Hr+20% 01/01/2019 16:15:00 82.384
MH-111-100YrCHI3Hr+20% 01/01/2019 16:20:00 82.383
MH-111-100YrCHI3Hr+20% 01/01/2019 16:25:00 82.382
MH-111-100YrCHI3Hr+20% 01/01/2019 16:30:00 82.38
MH-111-100YrCHI3Hr+20% 01/01/2019 16:35:00 82.377
MH-111-100YrCHI3Hr+20% 01/01/2019 16:40:00 82.377
MH-111-100YrCHI3Hr+20% 01/01/2019 16:45:00 82.376
MH-111-100YrCHI3Hr+20% 01/01/2019 16:50:00 82.376
MH-111-100YrCHI3Hr+20% 01/01/2019 16:55:00 82.374
MH-111-100YrCHI3Hr+20% 01/01/2019 17:00:00 82.373
MH-111-100YrCHI3Hr+20% 01/01/2019 17:05:00 82.372
MH-111-100YrCHI3Hr+20% 01/01/2019 17:10:00 82.371
MH-111-100YrCHI3Hr+20% 01/01/2019 17:15:00 82.368
MH-111-100YrCHI3Hr+20% 01/01/2019 17:20:00 82.367
MH-111-100YrCHI3Hr+20% 01/01/2019 17:25:00 82.366
MH-111-100YrCHI3Hr+20% 01/01/2019 17:30:00 82.365
MH-111-100YrCHI3Hr+20% 01/01/2019 17:35:00 82.363
MH-111-100YrCHI3Hr+20% 01/01/2019 17:40:00 82.363
MH-111-100YrCHI3Hr+20% 01/01/2019 17:45:00 82.361
MH-111-100YrCHI3Hr+20% 01/01/2019 17:50:00 82.36
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MH-111-100YrCHI3Hr+20% 01/01/2019 18:00:00 82.358
MH-111-100YrCHI3Hr+20% 01/01/2019 18:05:00 82.356
MH-111-100YrCHI3Hr+20% 01/01/2019 18:10:00 82.356
MH-111-100YrCHI3Hr+20% 01/01/2019 18:15:00 82.354
MH-111-100YrCHI3Hr+20% 01/01/2019 18:20:00 82.353
MH-111-100YrCHI3Hr+20% 01/01/2019 18:25:00 82.351
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MH-111-100YrCHI3Hr+20% 01/01/2019 18:35:00 82.348
MH-111-100YrCHI3Hr+20% 01/01/2019 18:40:00 82.348
MH-111-100YrCHI3Hr+20% 01/01/2019 18:45:00 82.347
MH-111-100YrCHI3Hr+20% 01/01/2019 18:50:00 82.347
MH-111-100YrCHI3Hr+20% 01/01/2019 18:55:00 82.344
MH-111-100YrCHI3Hr+20% 01/01/2019 19:00:00 82.344
MH-111-100YrCHI3Hr+20% 01/01/2019 19:05:00 82.341
MH-111-100YrCHI3Hr+20% 01/01/2019 19:10:00 82.341
MH-111-100YrCHI3Hr+20% 01/01/2019 19:15:00 82.339
MH-111-100YrCHI3Hr+20% 01/01/2019 19:20:00 82.34
MH-111-100YrCHI3Hr+20% 01/01/2019 19:25:00 82.336
MH-111-100YrCHI3Hr+20% 01/01/2019 19:30:00 82.337
MH-111-100YrCHI3Hr+20% 01/01/2019 19:35:00 82.334
MH-111-100YrCHI3Hr+20% 01/01/2019 19:40:00 82.334
MH-111-100YrCHI3Hr+20% 01/01/2019 19:45:00 82.332
MH-111-100YrCHI3Hr+20% 01/01/2019 19:50:00 82.332
MH-111-100YrCHI3Hr+20% 01/01/2019 19:55:00 82.329
MH-111-100YrCHI3Hr+20% 01/01/2019 20:00:00 82.33
MH-111-100YrCHI3Hr+20% 01/01/2019 20:05:00 82.326
MH-111-100YrCHI3Hr+20% 01/01/2019 20:10:00 82.327
MH-111-100YrCHI3Hr+20% 01/01/2019 20:15:00 82.325
MH-111-100YrCHI3Hr+20% 01/01/2019 20:20:00 82.324
MH-111-100YrCHI3Hr+20% 01/01/2019 20:25:00 82.323
MH-111-100YrCHI3Hr+20% 01/01/2019 20:30:00 82.321
MH-111-100YrCHI3Hr+20% 01/01/2019 20:35:00 82.32
MH-111-100YrCHI3Hr+20% 01/01/2019 20:40:00 82.319
MH-111-100YrCHI3Hr+20% 01/01/2019 20:45:00 82.318
MH-111-100YrCHI3Hr+20% 01/01/2019 20:50:00 82.317
MH-111-100YrCHI3Hr+20% 01/01/2019 20:55:00 82.316
MH-111-100YrCHI3Hr+20% 01/01/2019 21:00:00 82.314
MH-111-100YrCHI3Hr+20% 01/01/2019 21:05:00 82.313
MH-111-100YrCHI3Hr+20% 01/01/2019 21:10:00 82.313
MH-111-100YrCHI3Hr+20% 01/01/2019 21:15:00 82.311
MH-111-100YrCHI3Hr+20% 01/01/2019 21:20:00 82.31
MH-111-100YrCHI3Hr+20% 01/01/2019 21:25:00 82.309
MH-111-100YrCHI3Hr+20% 01/01/2019 21:30:00 82.308
MH-111-100YrCHI3Hr+20% 01/01/2019 21:35:00 82.307
MH-111-100YrCHI3Hr+20% 01/01/2019 21:40:00 82.305
MH-111-100YrCHI3Hr+20% 01/01/2019 21:45:00 82.304
MH-111-100YrCHI3Hr+20% 01/01/2019 21:50:00 82.303
MH-111-100YrCHI3Hr+20% 01/01/2019 21:55:00 82.302
MH-111-100YrCHI3Hr+20% 01/01/2019 22:00:00 82.301
MH-111-100YrCHI3Hr+20% 01/01/2019 22:05:00 82.299
MH-111-100YrCHI3Hr+20% 01/01/2019 22:10:00 82.298
MH-111-100YrCHI3Hr+20% 01/01/2019 22:15:00 82.297
MH-111-100YrCHI3Hr+20% 01/01/2019 22:20:00 82.296
MH-111-100YrCHI3Hr+20% 01/01/2019 22:25:00 82.295
MH-111-100YrCHI3Hr+20% 01/01/2019 22:30:00 82.294
MH-111-100YrCHI3Hr+20% 01/01/2019 22:35:00 82.293
MH-111-100YrCHI3Hr+20% 01/01/2019 22:40:00 82.291
MH-111-100YrCHI3Hr+20% 01/01/2019 22:45:00 82.29
MH-111-100YrCHI3Hr+20% 01/01/2019 22:50:00 82.289
MH-111-100YrCHI3Hr+20% 01/01/2019 22:55:00 82.288
MH-111-100YrCHI3Hr+20% 01/01/2019 23:00:00 82.287
MH-111-100YrCHI3Hr+20% 01/01/2019 23:05:00 82.285
MH-111-100YrCHI3Hr+20% 01/01/2019 23:10:00 82.284
MH-111-100YrCHI3Hr+20% 01/01/2019 23:15:00 82.283
MH-111-100YrCHI3Hr+20% 01/01/2019 23:20:00 82.283
MH-111-100YrCHI3Hr+20% 01/01/2019 23:25:00 82.281
MH-111-100YrCHI3Hr+20% 01/01/2019 23:30:00 82.28
MH-111-100YrCHI3Hr+20% 01/01/2019 23:35:00 82.279
MH-111-100YrCHI3Hr+20% 01/01/2019 23:40:00 82.278
MH-111-100YrCHI3Hr+20% 01/01/2019 23:45:00 82.276
MH-111-100YrCHI3Hr+20% 01/01/2019 23:50:00 82.275
MH-111-100YrCHI3Hr+20% 01/01/2019 23:55:00 82.274
MH-111-100YrCHI3Hr+20% 01/02/2019 00:00:00 82.273

;Depth (m)
MH-111-100YrSCS24Hr 01/01/2019 00:00:00 80.571
MH-111-100YrSCS24Hr 01/01/2019 00:05:00 80.571
MH-111-100YrSCS24Hr 01/01/2019 00:10:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:15:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:20:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:25:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:30:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:35:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:40:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:45:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:50:00 80.572

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MH-111-100YrSCS24Hr	01/01/2019	17:45:00	82.72
MH-111-100YrSCS24Hr	01/01/2019	17:50:00	82.719
MH-111-100YrSCS24Hr	01/01/2019	17:55:00	82.713
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MH-111-100YrSCS24Hr	01/01/2019	18:10:00	82.704
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MH-111-100YrSCS24Hr	01/01/2019	19:45:00	82.649
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MH-111-100YrSCS24Hr	01/01/2019	19:55:00	82.645
MH-111-100YrSCS24Hr	01/01/2019	20:00:00	82.644
MH-111-100YrSCS24Hr	01/01/2019	20:05:00	82.64
MH-111-100YrSCS24Hr	01/01/2019	20:10:00	82.64
MH-111-100YrSCS24Hr	01/01/2019	20:15:00	82.635
MH-111-100YrSCS24Hr	01/01/2019	20:20:00	82.635
MH-111-100YrSCS24Hr	01/01/2019	20:25:00	82.631
MH-111-100YrSCS24Hr	01/01/2019	20:30:00	82.63
MH-111-100YrSCS24Hr	01/01/2019	20:35:00	82.626
MH-111-100YrSCS24Hr	01/01/2019	20:40:00	82.625
MH-111-100YrSCS24Hr	01/01/2019	20:45:00	82.621
MH-111-100YrSCS24Hr	01/01/2019	20:50:00	82.62
MH-111-100YrSCS24Hr	01/01/2019	20:55:00	82.615
MH-111-100YrSCS24Hr	01/01/2019	21:00:00	82.615
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MH-111-100YrSCS24Hr	01/01/2019	21:25:00	82.601
MH-111-100YrSCS24Hr	01/01/2019	21:30:00	82.601
MH-111-100YrSCS24Hr	01/01/2019	21:35:00	82.597
MH-111-100YrSCS24Hr	01/01/2019	21:40:00	82.596
MH-111-100YrSCS24Hr	01/01/2019	21:45:00	82.593
MH-111-100YrSCS24Hr	01/01/2019	21:50:00	82.592
MH-111-100YrSCS24Hr	01/01/2019	21:55:00	82.588
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MH-111-100YrSCS24Hr	01/01/2019	22:50:00	82.569
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MH-111-100YrSCS24Hr	01/01/2019	23:30:00	82.556
MH-111-100YrSCS24Hr	01/01/2019	23:35:00	82.554
MH-111-100YrSCS24Hr	01/01/2019	23:40:00	82.553
MH-111-100YrSCS24Hr	01/01/2019	23:45:00	82.551
MH-111-100YrSCS24Hr	01/01/2019	23:50:00	82.55
MH-111-100YrSCS24Hr	01/01/2019	23:55:00	82.548
MH-111-100YrSCS24Hr	01/02/2019	00:00:00	82.548

;Depth (m)

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MH-111-10YrCHI3Hr	01/01/2019	00:10:00	80.572
MH-111-10YrCHI3Hr	01/01/2019	00:15:00	80.572
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MH-111-10YrCHI3Hr	01/01/2019	00:25:00	80.592
MH-111-10YrCHI3Hr	01/01/2019	00:30:00	80.644
MH-111-10YrCHI3Hr	01/01/2019	00:35:00	80.701
MH-111-10YrCHI3Hr	01/01/2019	00:40:00	80.783
MH-111-10YrCHI3Hr	01/01/2019	00:45:00	80.941
MH-111-10YrCHI3Hr	01/01/2019	00:50:00	81.073
MH-111-10YrCHI3Hr	01/01/2019	00:55:00	81.275
MH-111-10YrCHI3Hr	01/01/2019	01:00:00	81.595
MH-111-10YrCHI3Hr	01/01/2019	01:05:00	81.904
MH-111-10YrCHI3Hr	01/01/2019	01:10:00	81.976
MH-111-10YrCHI3Hr	01/01/2019	01:15:00	81.86
MH-111-10YrCHI3Hr	01/01/2019	01:20:00	81.723
MH-111-10YrCHI3Hr	01/01/2019	01:25:00	81.628
MH-111-10YrCHI3Hr	01/01/2019	01:30:00	81.572
MH-111-10YrCHI3Hr	01/01/2019	01:35:00	81.69
MH-111-10YrCHI3Hr	01/01/2019	01:40:00	81.753
MH-111-10YrCHI3Hr	01/01/2019	01:45:00	81.86
MH-111-10YrCHI3Hr	01/01/2019	01:50:00	81.897
MH-111-10YrCHI3Hr	01/01/2019	01:55:00	81.973
MH-111-10YrCHI3Hr	01/01/2019	02:00:00	81.986
MH-111-10YrCHI3Hr	01/01/2019	02:05:00	82.039
MH-111-10YrCHI3Hr	01/01/2019	02:10:00	82.049
MH-111-10YrCHI3Hr	01/01/2019	02:15:00	82.087
MH-111-10YrCHI3Hr	01/01/2019	02:20:00	82.095
MH-111-10YrCHI3Hr	01/01/2019	02:25:00	82.126
MH-111-10YrCHI3Hr	01/01/2019	02:30:00	82.13
MH-111-10YrCHI3Hr	01/01/2019	02:35:00	82.156
MH-111-10YrCHI3Hr	01/01/2019	02:40:00	82.159
MH-111-10YrCHI3Hr	01/01/2019	02:45:00	82.181
MH-111-10YrCHI3Hr	01/01/2019	02:50:00	82.182
MH-111-10YrCHI3Hr	01/01/2019	02:55:00	82.201
MH-111-10YrCHI3Hr	01/01/2019	03:00:00	82.202
MH-111-10YrCHI3Hr	01/01/2019	03:05:00	82.217
MH-111-10YrCHI3Hr	01/01/2019	03:10:00	82.216
MH-111-10YrCHI3Hr	01/01/2019	03:15:00	82.226
MH-111-10YrCHI3Hr	01/01/2019	03:20:00	82.23
MH-111-10YrCHI3Hr	01/01/2019	03:25:00	82.233
MH-111-10YrCHI3Hr	01/01/2019	03:30:00	82.233
MH-111-10YrCHI3Hr	01/01/2019	03:35:00	82.238
MH-111-10YrCHI3Hr	01/01/2019	03:40:00	82.238
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MH-111-10YrCHI3Hr	01/01/2019	03:50:00	82.238
MH-111-10YrCHI3Hr	01/01/2019	03:55:00	82.242
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MH-111-10YrCHI3Hr	01/01/2019	04:40:00	82.229
MH-111-10YrCHI3Hr	01/01/2019	04:45:00	82.23
MH-111-10YrCHI3Hr	01/01/2019	04:50:00	82.226
MH-111-10YrCHI3Hr	01/01/2019	04:55:00	82.227
MH-111-10YrCHI3Hr	01/01/2019	05:00:00	82.223
MH-111-10YrCHI3Hr	01/01/2019	05:05:00	82.223
MH-111-10YrCHI3Hr	01/01/2019	05:10:00	82.219
MH-111-10YrCHI3Hr	01/01/2019	05:15:00	82.22
MH-111-10YrCHI3Hr	01/01/2019	05:20:00	82.215
MH-111-10YrCHI3Hr	01/01/2019	05:25:00	82.215
MH-111-10YrCHI3Hr	01/01/2019	05:30:00	82.211
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MH-111-10YrCHI3Hr	01/01/2019	05:45:00	82.207
MH-111-10YrCHI3Hr	01/01/2019	05:50:00	82.203
MH-111-10YrCHI3Hr	01/01/2019	05:55:00	82.203
MH-111-10YrCHI3Hr	01/01/2019	06:00:00	82.199
MH-111-10YrCHI3Hr	01/01/2019	06:05:00	82.198
MH-111-10YrCHI3Hr	01/01/2019	06:10:00	82.195
MH-111-10YrCHI3Hr	01/01/2019	06:15:00	82.194
MH-111-10YrCHI3Hr	01/01/2019	06:20:00	82.191
MH-111-10YrCHI3Hr	01/01/2019	06:25:00	82.189
MH-111-10YrCHI3Hr	01/01/2019	06:30:00	82.187
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MH-111-10YrCHI3Hr	01/01/2019	06:40:00	82.183
MH-111-10YrCHI3Hr	01/01/2019	06:45:00	82.181
MH-111-10YrCHI3Hr	01/01/2019	06:50:00	82.179
MH-111-10YrCHI3Hr	01/01/2019	06:55:00	82.177
MH-111-10YrCHI3Hr	01/01/2019	07:00:00	82.175
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MH-111-10YrCHI3Hr	01/01/2019	07:20:00	82.167
MH-111-10YrCHI3Hr	01/01/2019	07:25:00	82.165
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MH-111-10YrCHI3Hr	01/01/2019	07:35:00	82.161
MH-111-10YrCHI3Hr	01/01/2019	07:40:00	82.158
MH-111-10YrCHI3Hr	01/01/2019	07:45:00	82.157
MH-111-10YrCHI3Hr	01/01/2019	07:50:00	82.154
MH-111-10YrCHI3Hr	01/01/2019	07:55:00	82.153
MH-111-10YrCHI3Hr	01/01/2019	08:00:00	82.15
MH-111-10YrCHI3Hr	01/01/2019	08:05:00	82.149
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MH-111-10YrCHI3Hr	01/01/2019	08:15:00	82.145
MH-111-10YrCHI3Hr	01/01/2019	08:20:00	82.142
MH-111-10YrCHI3Hr	01/01/2019	08:25:00	82.14
MH-111-10YrCHI3Hr	01/01/2019	08:30:00	82.138
MH-111-10YrCHI3Hr	01/01/2019	08:35:00	82.136
MH-111-10YrCHI3Hr	01/01/2019	08:40:00	82.134
MH-111-10YrCHI3Hr	01/01/2019	08:45:00	82.132
MH-111-10YrCHI3Hr	01/01/2019	08:50:00	82.13
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MH-111-10YrCHI3Hr	01/01/2019	09:00:00	82.126
MH-111-10YrCHI3Hr	01/01/2019	09:05:00	82.124
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MH-111-10YrCHI3Hr	01/01/2019	09:25:00	82.116
MH-111-10YrCHI3Hr	01/01/2019	09:30:00	82.113
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MH-111-10YrCHI3Hr	01/01/2019	09:40:00	82.109
MH-111-10YrCHI3Hr	01/01/2019	09:45:00	82.109
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MH-111-10YrCHI3Hr	01/01/2019	10:00:00	82.102
MH-111-10YrCHI3Hr	01/01/2019	10:05:00	82.1
MH-111-10YrCHI3Hr	01/01/2019	10:10:00	82.098
MH-111-10YrCHI3Hr	01/01/2019	10:15:00	82.096
MH-111-10YrCHI3Hr	01/01/2019	10:20:00	82.093
MH-111-10YrCHI3Hr	01/01/2019	10:25:00	82.092
MH-111-10YrCHI3Hr	01/01/2019	10:30:00	82.09
MH-111-10YrCHI3Hr	01/01/2019	10:35:00	82.088
MH-111-10YrCHI3Hr	01/01/2019	10:40:00	82.086
MH-111-10YrCHI3Hr	01/01/2019	10:45:00	82.085
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MH-111-10YrCHI3Hr	01/01/2019	10:55:00	82.081
MH-111-10YrCHI3Hr	01/01/2019	11:00:00	82.078
MH-111-10YrCHI3Hr	01/01/2019	11:05:00	82.077
MH-111-10YrCHI3Hr	01/01/2019	11:10:00	82.074
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MH-111-10YrCHI3Hr	01/01/2019	11:35:00	82.065

MH-111-10YrCHI3Hr	01/01/2019	11:40:00	82.063
MH-111-10YrCHI3Hr	01/01/2019	11:45:00	82.062
MH-111-10YrCHI3Hr	01/01/2019	11:50:00	82.059
MH-111-10YrCHI3Hr	01/01/2019	11:55:00	82.058
MH-111-10YrCHI3Hr	01/01/2019	12:00:00	82.056
MH-111-10YrCHI3Hr	01/01/2019	12:05:00	82.053
MH-111-10YrCHI3Hr	01/01/2019	12:10:00	82.052
MH-111-10YrCHI3Hr	01/01/2019	12:15:00	82.05
MH-111-10YrCHI3Hr	01/01/2019	12:20:00	82.048
MH-111-10YrCHI3Hr	01/01/2019	12:25:00	82.046
MH-111-10YrCHI3Hr	01/01/2019	12:30:00	82.045
MH-111-10YrCHI3Hr	01/01/2019	12:35:00	82.043
MH-111-10YrCHI3Hr	01/01/2019	12:40:00	82.041
MH-111-10YrCHI3Hr	01/01/2019	12:45:00	82.04
MH-111-10YrCHI3Hr	01/01/2019	12:50:00	82.037
MH-111-10YrCHI3Hr	01/01/2019	12:55:00	82.036
MH-111-10YrCHI3Hr	01/01/2019	13:00:00	82.034
MH-111-10YrCHI3Hr	01/01/2019	13:05:00	82.032
MH-111-10YrCHI3Hr	01/01/2019	13:10:00	82.03
MH-111-10YrCHI3Hr	01/01/2019	13:15:00	82.028
MH-111-10YrCHI3Hr	01/01/2019	13:20:00	82.027
MH-111-10YrCHI3Hr	01/01/2019	13:25:00	82.025
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MH-111-10YrCHI3Hr	01/01/2019	13:40:00	82.02
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MH-111-10YrCHI3Hr	01/01/2019	13:55:00	82.014
MH-111-10YrCHI3Hr	01/01/2019	14:00:00	82.012
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MH-111-10YrCHI3Hr	01/01/2019	14:15:00	82.007
MH-111-10YrCHI3Hr	01/01/2019	14:20:00	82.005
MH-111-10YrCHI3Hr	01/01/2019	14:25:00	82.003
MH-111-10YrCHI3Hr	01/01/2019	14:30:00	82.002
MH-111-10YrCHI3Hr	01/01/2019	14:35:00	82
MH-111-10YrCHI3Hr	01/01/2019	14:40:00	81.999
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MH-111-10YrCHI3Hr	01/01/2019	14:50:00	81.995
MH-111-10YrCHI3Hr	01/01/2019	14:55:00	81.993
MH-111-10YrCHI3Hr	01/01/2019	15:00:00	81.992
MH-111-10YrCHI3Hr	01/01/2019	15:05:00	81.99
MH-111-10YrCHI3Hr	01/01/2019	15:10:00	81.989
MH-111-10YrCHI3Hr	01/01/2019	15:15:00	81.986
MH-111-10YrCHI3Hr	01/01/2019	15:20:00	81.985
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MH-111-10YrCHI3Hr	01/01/2019	17:55:00	81.936
MH-111-10YrCHI3Hr	01/01/2019	18:00:00	81.935
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No_Rain 12/31/2019 0:00 0

[REPORT]
;;Reporting Options
INPUT YES
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]
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Node 03_(CB) CB
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Node 06_(CB) CB
Node 08_(CB) CB
Node 09_(CB) CB
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Node 10_(CB) CB
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Node 104_(STM) STM
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Node 112_(STM) STM
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Node 142_(STM) STM
Node 144_(STM) STM
Node 146_(STM) STM
Node 148_(STM) STM
Node 15_(CB) CB
Node 15_RYCB RY
Node 150_(STM) STM
Node 152_(STM) STM
Node 154_(STM) STM
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Node 158_(STM) STM
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Node 166_(STM) STM
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Node 17_(CB) CB
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Node 19_(CB) CB
Node 20_(CB) CB
Node 21_(CB) CB
Node 2121_(STM) STM
Node 2142_(STM) STM
Node 2143_(STM) STM
Node 2144_(STM) STM
Node 22_(RYCB) RY
Node 23_(CB) CB

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Node	26_(CB)	CB
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Node	58_(CB)	CB
Node	59_(CB)	CB
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Node	ELB_11_(RYCB)	RY
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Node	ELB_13_(RYCB)	RY
Node	ELB_14_(RYCB)	RY
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Node	ELB_22_(RYCB)	RY
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Node	ELB_24_(RYCB)	RY
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Node	ELB_6_(RYCB)	RY
Node	ELB_7_(RYCB)	RY
Node	ELB_8_(RYCB)	RY
Node	ELB_9_(RYCB)	RY
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Node	Maj-01_2	Maj
Node	Maj-02	Maj
Node	Maj-02_2	Maj
Node	Maj-03	Maj
Node	Maj-04	Maj
Node	Maj-04_2	Maj
Node	Maj-05	Maj
Node	Maj-05_2	Maj

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Node	Maj-06_2	Maj
Node	Maj-07	Maj
Node	Maj-08	Maj
Node	Maj-09	Maj
Node	Maj-10	Maj
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Node	Maj-17	Maj
Node	Maj-18_2	Maj
Node	Maj-19	Maj
Node	Maj-19_2	Maj
Node	Maj-20	Maj
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Node	Maj-46	Maj
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Node	Maj-48_3	Maj
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Node	Maj-63	Maj
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Node	Maj-65	Maj
Node	Maj-66	Maj
Node	Maj-67	Maj
Node	Maj-Park	Maj
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Node	RYCB_10_(RYCB)	RY
Node	RYCB_11_(RYCB)	RY
Node	RYCB_12_(RYCB)	RY
Node	RYCB_13_(RYCB)	RY
Node	RYCB_14_(RYCB)	RY

Node	RYCB_15_(RYCB)	RY
Node	RYCB_18_(RYCB)	RY
Node	RYCB_2_(RYCB)	RY
Node	RYCB_3_(RYCB)	RY
Node	RYCB_4_(RYCB)	RY
Node	RYCB_5_(RYCB)	RY
Node	RYCB_6_(RYCB)	RY
Node	RYCB_7_(RYCB)	RY
Node	RYCB_8_(RYCB)	RY
Node	RYCB_9_(RYCB)	RY
Node	Slope1	Maj
Node	StartNullStruct2	RY
Node	StartNullStruct3	STM
Node	STM-251_(STM)	STM
Node	Structure_-_(18)_(RYCB)	RY
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Node	TEE_11_(RYCB)	RY
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Node	TEE_15_(RYCB)	RY
Node	TEE_16_(RYCB)	RY
Node	TEE_17_(RYCB)	RY
Node	TEE_18_(RYCB)	RY
Node	TEE_19_(RYCB)	RY
Node	TEE_2_(RYCB)	RY
Node	TEE_20_(RYCB)	RY
Node	TEE_21_(RYCB)	RY
Node	TEE_22_(RYCB)	RY
Node	TEE_23_(RYCB)	RY
Node	TEE_24_(RYCB)	RY
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Node	TEE_28_(RYCB)	RY
Node	TEE_29_(RYCB)	RY
Node	TEE_3_(RYCB)	RY
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Node	TEE_31_(RYCB)	RY
Node	TEE_32_(RYCB)	RY
Node	TEE_33_(RYCB)	RY
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Node	TEE_36_(RYCB)	RY
Node	TEE_37_(RYCB)	RY
Node	TEE_38_(RYCB)	RY
Node	TEE_39_(RYCB)	RY
Node	TEE_4_(RYCB)	RY
Node	TEE_40_(RYCB)	RY
Node	TEE_41_(RYCB)	RY
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Node	TEE_44_(RYCB)	RY
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Node	TEE_8_(RYCB)	RY
Node	TEE_9_(RYCB)	RY
Node	Maj-01	Maj
Node	Maj-18	Maj
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Node	Maj-48	Maj
Node	Maj-49	Maj
Node	Maj-57	Maj
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Link	10_(STM)	STM
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Link	15_(11)_(STM)	STM
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Link	15_(15)_(STM)	STM
Link	15_(16)_(STM)	STM
Link	15_(19)_(STM)	STM
Link	15_(20)_(STM)	STM
Link	15_(21)_(STM)	STM
Link	15_(22)_(STM)	STM
Link	15_(3)_(STM)	STM
Link	15_(4)_(STM)	STM
Link	15_(5)_(STM)	STM
Link	15_(9)_(STM)	STM
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Link	5_(STM)	STM
Link	6_(STM)	STM
Link	7_(1)_(STM)	STM
Link	7_(STM)	STM
Link	8_(STM)	STM
Link	9_(STM)	STM
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Link	C1_2	Maj
Link	C10	Maj
Link	C11	Maj
Link	C12	Maj
Link	C13	Maj
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Link	C15	Maj
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Link	C18_5	Maj
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Link	C18_9	Maj
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Link	C30	Maj
Link	C31	Maj
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Link	C31_2	Maj
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Link	C34	Maj

Link	C35	Maj
Link	C36	Maj
Link	C37	Maj
Link	C38	Maj
Link	C39	Maj
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Link	C68	Maj
Link	C69	Maj
Link	C7	Maj
Link	C8	Maj
Link	C9	Maj
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Link	Pipe_-_(10)_(RYCB)	RY
Link	Pipe_-_(100)_(RYCB)	RY
Link	Pipe_-_(101)_(RYCB)	RY
Link	Pipe_-_(103)_(1)_(RYCB)	RY
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Link	Pipe_-_(110)_(RYCB)	RY
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Link	Pipe_-_(154)_(RYCB)	RY
Link	Pipe_-_(155)_(RYCB)	RY
Link	Pipe_-_(156)_(1)_(RYCB)	RY
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Link	Pipe_-_(159)_(RYCB)	RY
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Link	Pipe_-_(90)_(RYCB)	RY
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Link	Pipe_-_(94)_(RYCB)	RY
Link	Pipe_-_(95)_(RYCB)	RY
Link	Pipe_-_(96)_(RYCB)	RY
Link	Pipe_-_(98)_(RYCB)	RY

Link Pipe_-_(99)_(RYCB) RY
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Link RYCB-02 ICD
Link RYCB-03 ICD
Link RYCB-04 ICD
Link RYCB-06 Lead
Link RYCB-07 Lead
Link RYCB-10 ICD
Link RYCB-18 Lead
Link RYCB-22 ICD
Link RYCB-29 ICD
Link RYCB-38 ICD
Link RYCB-39 ICD

[MAP]
DIMENSIONS 381264.26565 5033747.0677
381848.96735 5034901.1063
UNITS Meters

[COORDINATES]
;;Node X-Coord Y-Coord
;;-------------- ------------------ ------------------
02_(CB) 381640.363 5033940.449
03_(CB) 381639.319 5033948.683

04_(CB)	381707.362	5033964.513
05_(CB)	381704.042	5033972.256
06_(CB)	381744.277	5033945.622
08_(CB)	381742.356	5034021.942
09_(CB)	381735.199	5034018.381
1_(RYCB)	381613.893	5033947.165
10_(CB)	381712.816	5034088.875
100_(STM)	381764.117	5033934.567
102_(STM)	381768.733	5033945.462
104_(STM)	381751.832	5033983.755
106_(STM)	381661.746	5033946.201
108_(STM)	381636.072	5033940.78
11_(CB)	381705.04	5034085.441
110_(STM)	381606.992	5033939.535
112_(STM)	381722.061	5034051.287
114_(STM)	381695.933	5034110.412
116_(STM)	381684.826	5034114.785
118_(STM)	381593.257	5034075.528
12_(CB)	381693.043	5034036.978
120_(STM)	381637.884	5034015.234
122_(STM)	381613.388	5034012.674
124_(STM)	381598.561	5034020.702
126_(STM)	381577.374	5034069.721
128_(STM)	381546.966	5034139.351
13_(CB)	381689.694	5034044.79
130_(STM)	381628.129	5034174.222
132_(STM)	381662.497	5034188.987
134_(STM)	381695.108	5034204.263
136_(STM)	381522.723	5034196.958
138_(STM)	381527.988	5034210.775
14_(CB)	381597.707	5034039.587
140_(STM)	381631.534	5034256.315
142_(STM)	381640.84	5034237.84
144_(STM)	381600.199	5034327.009
146_(STM)	381528.36	5034294.959
148_(STM)	381456.173	5034264.012
15_(CB)	381589.912	5034036.197
15_RYCB	381522.627	5034214.255
150_(STM)	381569.837	5034397.001
152_(STM)	381547.042	5034451.801
154_(STM)	381535.402	5034456.553
156_(STM)	381442.843	5034416.871
158_(STM)	381470.942	5034353.543
16_(CB)	381567.802	5034108.366
160_(STM)	381457.588	5034358.648
162_(STM)	381416.076	5034456.483
164_(STM)	381413.768	5034516.578
166_(STM)	381406.574	5034544.92
168_(STM)	381365.805	5034637.487
17_(CB)	381560.007	5034104.977
170_(STM)	381327.98	5034723.422
18_(CB)	381541.884	5034167.976
19_(CB)	381534.089	5034164.586
20_(CB)	381581.406	5034227.395
21_(CB)	381578.057	5034235.207
2121_(STM)	381797.506	5033862.116
2142_(STM)	381733.715	5033824.051
2143_(STM)	381710.028	5033827.852
2144_(STM)	381693.076	5033817.017
22_(RYCB)	381646.054	5034240.141
23_(CB)	381624.155	5034289.758
24_(CB)	381616.38	5034286.326
25_(CB)	381569.18	5034305.469
26_(CB)	381565.878	5034313.223
27_(CB)	381486.175	5034268.55
28_(CB)	381482.272	5034277.449
29_(RYCB)	381634.571	5034343.916
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32_(CB)	381567.034	5034420.338
33_(CB)	381559.242	5034416.94
34_(CB)	381537.986	5034376.241
35_(CB)	381534.823	5034383.637
36_(CB)	381439.974	5034407.723
37_(CB)	381431.96	5034404.589
38_(RYCB)	381428.516	5034412.648
39_(RYCB)	381422.234	5034448.442
40_(CB)	381417.006	5034502.802
41_(CB)	381408.506	5034502.869
42_(CB)	381362.704	5034648.887
43_(CB)	381354.995	5034645.351
44_(CB)	381657.847	5034213.423
45_(CB)	381650.071	5034209.99
46_(CB)	381640.714	5034173.395
47_(CB)	381637.365	5034181.208
48_(CB)	381580.475	5034147.57
49_(CB)	381577.127	5034155.38
50_(CB)	381646.323	5034096.374
51_(CB)	381642.974	5034104.186
52_(CB)	381437.977	5034421.78
53_(CB)	381495.276	5034445.607
54_(CB)	381498.626	5034437.794
55_(CB)	381765.154	5033970.288
57_(CB)	381763.267	5033922.607
58_(CB)	381708.111	5033853.995
59_(CB)	381762.072	5033997.514
98_(STM)	381785.194	5033899.178
ELB_1_(RYCB)	381700.573	5033926.894
ELB_10_(RYCB)	381599.13	5034277.804
ELB_11_(RYCB)	381637.075	5034217.32
ELB_12_(RYCB)	381642.665	5034324.923
ELB_13_(RYCB)	381495.849	5034321.044
ELB_14_(RYCB)	381510.037	5034327.133
ELB_15_(RYCB)	381429.255	5034328.779
ELB_16_(RYCB)	381461.331	5034385.698
ELB_17_(RYCB)	381418.154	5034354.74
ELB_18_(RYCB)	381384.507	5034431.762
ELB_19_(RYCB)	381584.211	5034112.987
ELB_2_(RYCB)	381662.86	5033987.854
ELB_20_(RYCB)	381735.662	5034114.708
ELB_21_(RYCB)	381691.942	5034213.823
ELB_22_(RYCB)	381568.311	5034495.286
ELB_23_(RYCB)	381518.443	5034489.592
ELB_24_(RYCB)	381791.285	5033989.638
ELB_25_(RYCB)	381708.31	5033927.869
ELB_3_(RYCB)	381652.666	5033983.757
ELB_4_(RYCB)	381581.795	5033976.053
ELB_5_(RYCB)	381580.949	5033978.006
ELB_6_(RYCB)	381748.325	5034086.133
ELB_7_(RYCB)	381616.382	5034075.058
ELB_8_(RYCB)	381504.046	5034155.002
ELB_9_(RYCB)	381496.419	5034172.819
J1	381549.496	5034106.162
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Maj-02	381342.288	5034683.606
Maj-02_2	381353.136	5034660.68
Maj-03	381359.381	5034647.481
Maj-04	381387.564	5034583.352
Maj-04_2	381393.958	5034569.717
Maj-05	381401.951	5034550.69
Maj-05_2	381402.995	5034546.144
Maj-06	381411.465	5034523.018
Maj-06_2	381411.962	5034502.787
Maj-07	381413.465	5034468.686
Maj-08	381416.91	5034452.058
Maj-09	381432.186	5034414.406
Maj-10	381435.592	5034406.105
Maj-11	381442.75	5034417.427
Maj-12	381497.775	5034442.101
Maj-13	381540.5	5034456.444

Maj-14	381562.795	5034420.84
Maj-15	381573.401	5034393.553
Maj-15_2	381603.958	5034326.421
Maj-16	381536.878	5034380.349
Maj-17	381457.696	5034356.091
Maj-18_2	381633.162	5034339.357
Maj-19	381566.414	5034309.792
Maj-19_2	381591.329	5034320.826
Maj-20	381543.507	5034300.033
Maj-21	381484.13	5034275.269
Maj-23	381608.541	5034316.121
Maj-24	381621.369	5034287.607
Maj-25	381635.742	5034254.688
Maj-26	381580.14	5034232.359
Maj-27	381542.959	5034216.408
Maj-28	381537.056	5034166.524
Maj-29	381551.053	5034138.553
Maj-30	381575.916	5034151.186
Maj-31	381619.905	5034169.158
Maj-32	381640.736	5034178.892
Maj-33	381654.551	5034211.412
Maj-34	381664.566	5034188.961
Maj-34_2	381690.114	5034200.739
Maj-35	381565.153	5034106.303
Maj-36	381580.163	5034072.113
Maj-37	381594.925	5034037.553
Maj-38	381607.643	5034017.588
Maj-39	381627.215	5034016.837
Maj-40	381641.204	5034020.262
Maj-41	381691.979	5034042.056
Maj-42	381649.35	5034103.078
Maj-43	381686.268	5034117.921
Maj-44	381709.885	5034086.785
Maj-45	381722.3	5034055.112
Maj-46	381739.691	5034019.616
Maj-48_2	381781.911	5034001.189
Maj-48_3	381763.999	5033993.482
Maj-50	381640.747	5033943.96
Maj-51	381672.455	5033954.954
Maj-52	381721.553	5033975.967
Maj-53	381753.038	5033988.766
Maj-54	381762.396	5033967.954
Maj-55	381756.035	5033936.811
Maj-56	381494.997	5034256.092
Maj-58	381766.255	5033924.846
Maj-59	381770.697	5033916.865
Maj-60	381528.438	5034203.663
Maj-61	381544.191	5034175.631
Maj-62	381554.75	5034415.29
Maj-63	381730.205	5034016.811
Maj-64	381448.655	5034285.38
Maj-65	381778.382	5034008.55
Maj-66	381736.548	5033940.72
Maj-67	381703.616	5034083.059
Maj-Park	381713.84	5033832.09
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RYCB_11_(RYCB)	381578.806	5034356.559
RYCB_12_(RYCB)	381550.039	5034423.66
RYCB_13_(RYCB)	381398.692	5034399.905
RYCB_14_(RYCB)	381595.739	5034432.854
RYCB_15_(RYCB)	381427.566	5034450.578
RYCB_18_(RYCB)	381670.55	5034150.009
RYCB_2_(RYCB)	381725.556	5034014.74
RYCB_3_(RYCB)	381612.277	5033977.722
RYCB_4_(RYCB)	381781.005	5034010.848
RYCB_5_(RYCB)	381699.781	5034083.118
RYCB_6_(RYCB)	381529.161	5034097.261
RYCB_7_(RYCB)	381502.626	5034236.326
RYCB_8_(RYCB)	381544.063	5034177.384
RYCB_9_(RYCB)	381674.723	5034252.795
Slope1	381588.486	5034360.411
StartNullStruct2	381672.996	5033992.169
StartNullStruct3	381785.825	5033999.81
STM-251_(STM)	381634.726	5034343.823
Structure_-_(18)_(RYCB)	381684.258	5034115.629
TEE_1_(RYCB)	381692.419	5034000.507
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TEE_11_(RYCB)	381526.967	5034102.206
TEE_12_(RYCB)	381481.223	5034207.753
TEE_13_(RYCB)	381474.067	5034224.19
TEE_14_(RYCB)	381499.643	5034235.058
TEE_15_(RYCB)	381507.237	5034238.213
TEE_16_(RYCB)	381540.082	5034252.461
TEE_17_(RYCB)	381560.408	5034261.179
TEE_18_(RYCB)	381580.624	5034269.812
TEE_19_(RYCB)	381620.112	5034209.907
TEE_2_(RYCB)	381633.017	5033978.954
TEE_20_(RYCB)	381594.914	5034199.197
TEE_21_(RYCB)	381574.635	5034190.459
TEE_22_(RYCB)	381660.032	5034285.809
TEE_23_(RYCB)	381468.715	5034309.368
TEE_24_(RYCB)	381523.065	5034332.731
TEE_25_(RYCB)	381550.359	5034344.355
TEE_26_(RYCB)	381486.817	5034396.509
TEE_27_(RYCB)	381513.832	5034408.124
TEE_28_(RYCB)	381412.802	5034367.12
TEE_29_(RYCB)	381601.179	5034120.349
TEE_3_(RYCB)	381565.175	5034014.419
TEE_30_(RYCB)	381621.361	5034128.918
TEE_31_(RYCB)	381642.632	5034138.054
TEE_32_(RYCB)	381666.847	5034148.422
TEE_33_(RYCB)	381674.215	5034151.582
TEE_34_(RYCB)	381701.138	5034163.137
TEE_35_(RYCB)	381712.266	5034167.926
TEE_36_(RYCB)	381587.21	5034452.17
TEE_37_(RYCB)	381604.181	5034413.374
TEE_38_(RYCB)	381612.601	5034394.104
TEE_39_(RYCB)	381631.287	5034351.415
TEE_4_(RYCB)	381547.662	5034054.776
TEE_40_(RYCB)	381490.353	5034477.632
TEE_41_(RYCB)	381457.485	5034463.531
TEE_42_(RYCB)	381806.618	5033954.387
TEE_43_(RYCB)	381821.326	5033920.619
TEE_44_(RYCB)	381733.757	5033868.705
TEE_5_(RYCB)	381530.407	5034094.432
TEE_6_(RYCB)	381764.108	5034050.504
TEE_7_(RYCB)	381626.502	5034052.072
TEE_8_(RYCB)	381647.239	5034060.747
TEE_9_(RYCB)	381667.469	5034069.361
Maj-01	381325.332	5034719.952
Maj-18	381637.356	5034341.21
Maj-22	381471.715	5034270.038
Maj-48	381786.497	5034003.157
Maj-49	381597.176	5033939.913
Maj-57	381697.2	5034204
OF1	381690.918	5033799.524
STM-111_(STM)	381695.19	5033799.968
B1_Stor	381381.8	5034524.754
B2_Stor	381428.703	5034532.135
B3_Stor	381440.972	5034513.72

[VERTICES]

;;Link	X-Coord	Y-Coord
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C16	381548.571	5034453.532
C27_1	381530.457	5034209.127
C27_2	381525.808	5034196.544

C31	381709.448	5033831.75
C31	381689.146	5033818.376
C31_2	381544.884	5034166.116
C4	381782.464	5033897.925
C4	381793.719	5033864.62
C4	381733.618	5033827.883
C4_4	381559.663	5034415.746
C40	381698.314	5034112.953
C57	381771.794	5033946.005
C58	381517.209	5034212.082
C58_2	381736.37	5034014.996
C60	381502.529	5034238.486
C63_2	381705.821	5034083.025
C67	381582.176	5034355.673
C69	381565.796	5034418.085
C7	381415.014	5034455.824
RYCB-18	381686.563	5034115.935
RYCB-29	381634.762	5034344

[POLYGONS]

;;Subcatchment	X-Coord	Y-Coord
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A10	381563.233	5034509.833
A10	381605.188	5034413.776
A10	381592.341	5034408.174
A10	381570.154	5034459.096
A10	381567.314	5034471.541
A10	381536.247	5034482.099
A10	381531.292	5034480.532
A11	381550.593	5034424.99
A11	381554.875	5034415.041
A11	381550.639	5034413.231
A11	381552.014	5034410.123
A11	381543.267	5034404.984
A11	381478.565	5034378.543
A11	381464.501	5034373.697
A11	381461.563	5034380.465
A11	381454.288	5034383.802
A11	381456.724	5034391.402
A11	381453.346	5034399.308
A11	381522.435	5034428.826
A11	381539.434	5034435.2
A11	381540.743	5034435.76
A11	381543.807	5034428.59
A11	381550.593	5034424.99
A12i	381603.575	5034325.904
A12i	381573.156	5034395.733
A12i	381589.032	5034403.102
A12i	381587.702	5034406.152
A12i	381592.446	5034408.22
A12i	381618.261	5034349.82
A12i	381624.954	5034352.71
A12i	381626.891	5034348.374
A12i	381632.397	5034351
A12i	381636.88	5034340.972
A12i	381603.575	5034325.904
A12ii	381573.156	5034395.733
A12ii	381603.575	5034325.904
A12ii	381590.101	5034319.808
A12ii	381582.52	5034337.492
A12ii	381585.089	5034338.593
A12ii	381579.688	5034351.312
A12ii	381579.992	5034357.472
A12ii	381573.409	5034361.654
A12ii	381568.251	5034373.511
A12ii	381566.784	5034377.24
A12ii	381567.964	5034381.301
A12ii	381569.546	5034386.864
A12ii	381573.156	5034395.733
A13	381530.192	5034320.178
A13	381515.153	5034313.748
A13	381509.139	5034327.791
A13	381503.199	5034341.647
A13	381569.774	5034370.189
A13	381573.409	5034361.654
A13	381579.992	5034357.472
A13	381579.648	5034351.406
A13	381585.024	5034338.57
A13	381582.52	5034337.492
A13	381580.785	5034341.808
A13	381558.955	5034332.475
A13	381530.192	5034320.178
A14	381447.103	5034284.654
A14	381417.289	5034354.315
A14	381424.587	5034357.425
A14	381431.404	5034360.379
A14	381437.223	5034347.192
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A14	381464.724	5034330.505
A14	381472.2	5034328.358
A14	381503.199	5034341.647
A14	381509.139	5034327.791
A14	381512.599	5034319.721
A14	381515.151	5034313.747
A14	381493.903	5034304.663
A14	381466.674	5034293.021
A14	381447.103	5034284.654
A15i	381567.244	5034310.002
A15i	381567.244	5034310.002
A15i	381472.296	5034269.296
A15i	381462.819	5034291.373
A15i	381493.903	5034304.663
A15i	381515.153	5034313.748
A15i	381546.959	5034327.346
A15i	381557.84	5034331.998
A15i	381567.244	5034310.002
A15ii	381472.296	5034269.296
A15ii	381567.244	5034310.002
A15ii	381567.244	5034310.002
A15ii	381577.731	5034285.474
A15ii	381499.928	5034251.954
A15ii	381498.003	5034256.002
A15ii	381492.764	5034253.757
A15ii	381494.517	5034249.639
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A15ii	381472.296	5034269.296
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A16ii	381568.321	5034310.464
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A16ii	381590.176	5034319.842
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A16ii	381567.244	5034310.002
A17	381605.188	5034413.776
A17	381632.595	5034350.922
A17	381626.871	5034348.366
A17	381624.954	5034352.71
A17	381618.261	5034349.82
A17	381592.434	5034408.246

A17	381605.188	5034413.776
A17ii	381603.575	5034325.904
A17ii	381634.735	5034255.086
A17ii	381634.856	5034255.039
A17ii	381625.735	5034258.586
A17ii	381621.236	5034263.563
A17ii	381617.344	5034261.852
A17ii	381610.829	5034276.619
A17ii	381611.967	5034284.565
A17ii	381606.225	5034288.349
A17ii	381602.709	5034296.167
A17ii	381600.627	5034295.272
A17ii	381590.101	5034319.808
A17ii	381603.575	5034325.904
A18i	381634.856	5034255.039
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A18i	381642.191	5034328.913
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A18i	381638.99	5034299.797
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A19	381642.191	5034328.913
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A19	381662.063	5034247.212
A19	381656.121	5034260.762
A19	381643.608	5034289.274
A19	381633.156	5034313.091
A19	381628.751	5034322.572
A19	381642.191	5034328.913
A1i	381386.831	5034583.572
A1i	381357.656	5034649.855
A1i	381324.99	5034719.106
A1i	381335.973	5034723.941
A1i	381395.985	5034587.599
A1i	381386.831	5034583.572
A1ii	381324.99	5034719.106
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A1ii	381331.724	5034634.567
A1ii	381331.943	5034634.725
A1ii	381332.151	5034634.897
A1ii	381332.347	5034635.083
A1ii	381332.529	5034635.281
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A1ii	381333.22	5034636.433
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A1ii	381333.471	5034637.479
A1ii	381333.489	5034637.748
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A1ii	381331.194	5034646.567
A1ii	381323.214	5034649.432
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A1ii	381314.008	5034714.27
A1ii	381324.99	5034719.106

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A20i	381543.015	5034215.565
A20i	381534.487	5034235.449
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A20i	381621.236	5034263.563
A20i	381625.735	5034258.586
A20i	381634.488	5034254.988
A20ii	381543.081	5034215.412
A20ii	381634.809	5034254.918
A20ii	381631.345	5034245.978
A20ii	381631.936	5034239.319
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A21	381610.829	5034276.619
A21	381614.086	5034269.236
A21	381570.95	5034251.169
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A21	381602.709	5034296.167
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A21	381611.967	5034284.565
A22	381498.141	5034256.061
A22	381507.271	5034235.078
A22	381520.172	5034217.553
A22	381516.384	5034212.577
A22	381502.03	5034232.083
A22	381492.764	5034253.757
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A39ii	381694.724	5034114.009
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A8i	381539.895	5034461.259	A9ii	381550.663	5034413.177
A8i	381539.134	5034457.074	A9ii	381554.942	5034415.069
A8ii	381539.134	5034457.074	A9ii	381550.593	5034424.99
A8ii	381538.374	5034452.896	A9ii	381543.767	5034428.681
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A8ii	381538.657	5034440.641	A9ii	381542.828	5034442.487
A8ii	381540.745	5034435.761	A9ii	381538.374	5034452.896
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A8ii	381464.369	5034404.032	B1	381300.46	5034616.904
A8ii	381455.786	5034424.057	B1	381306.314	5034623.312
A8ii	381530.54	5034456.106	B1	381331.724	5034634.567
A8ii	381531.448	5034456.459	B1	381345.964	5034636.945
A8ii	381532.377	5034456.753	B1	381389.639	5034537.477
A8ii	381533.323	5034456.986	B1	381391.747	5034532.199
A8ii	381534.283	5034457.158	B1	381393.497	5034526.791
A8ii	381535.251	5034457.267	B1	381394.88	5034521.278
A8ii	381536.224	5034457.313	B1	381395.89	5034515.685
A8ii	381537.199	5034457.296	B1	381396.522	5034510.037
A8ii	381538.17	5034457.216	B1	381396.774	5034504.359
A8ii	381539.134	5034457.074	B1	381396.644	5034498.677
A9i	381573.156	5034395.733	B1	381396.133	5034493.016
A9i	381550.598	5034447.402	B1	381395.726	5034485.529
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A9i	381549.818	5034449.199	B1	381396.426	5034470.558
A9i	381549.341	5034450.055	B1	381397.528	5034463.141

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B1ii	381351.366	5034639.322
B1ii	381395.133	5034539.889
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B3i	381427.305	5034476.016
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B4ii	381600.42	5033930.904
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C1            381290.843        5034752.831
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C2            381447.104        5034284.654
C2            381462.819        5034291.373
C2            381482.826        5034244.577
C2            381467.309        5034237.869
C2            381447.104        5034284.654

[SYMBOLS]
;;Gage          X-Coord           Y-Coord
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;;Name          Links
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_(10)_(RYCB)
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"Profile 103. Junction Maj-51 to Junction Maj-52" C52
"Profile 104. Junction Maj-53 to Junction Maj-46" C49
"Profile 105. Junction TEE_6_(RYCB) to Junction Maj-46" C58_1 C58_2
"Profile 106. Junction Maj-45 to Junction Maj-44" C41
"Profile 107. Junction Maj-43 to Junction Maj-42" C39
"Profile 108. Junction Maj-45 to Junction Maj-41" C42

"Profile 109. Junction Maj-40 to Junction Maj-39" C44
"Profile 110. Junction Maj-38 to Junction Maj-37" C47
"Profile 111. Junction Maj-36 to Junction Maj-35" C37
"Profile 112. Junction Maj-29 to Junction Maj-30" C35
"Profile 113. Junction Maj-31 to Junction Maj-32" C33
"Profile 114. Junction 24_(RYCB) to Junction 142_(STM)" RYCB-24
"Profile 115. Junction Maj-34 to Junction Maj-33" C30
"Profile 116. Junction Maj-29 to Junction Maj-28" C28
"Profile 117. Junction STM-Split to Junction Maj-60" C5
"Profile 118. Junction Structure_-_(115)_(RYCB) to Junction 20_(CB)" Pipe_-_(73)_(RYCB)
"Profile 119. Junction 144_(STM) to Junction 140_(STM)" 5_(STM)
"Profile 120. Junction 142_(STM) to Junction 140_(STM)" STM-81_(STM)
"Profile 121. Junction Maj-27 to Junction Maj-26" C26
"Profile 122. Junction Maj-34_2 to Outfall Maj-57" C18_2
"Profile 123. Outfall Maj-59 to Junction Maj-58" C2

[BMR The Commons Interim Model Input File]
;;Project Title/Notes
Submission 3 SWM Model for BMR The Commons - Interim Conditions including Phase 1 only

[OPTIONS]
;;Option Value
FLOW_UNITS CMS
INFILTRATION HORTON
FLOW_ROUTING DYNWAVE
LINK_OFFSETS ELEVATION
MIN_SLOPE 0
ALLOW_PONDING YES
SKIP_STEADY_STATE NO

START_DATE 01/01/2019
START_TIME 00:00:00
REPORT_START_DATE 01/01/2019
REPORT_START_TIME 00:00:00
END_DATE 01/02/2019
END_TIME 00:00:00
SWEEP_START 01/01
SWEEP_END 12/31
DRY_DAYS 0
REPORT_STEP 00:01:00
WET_STEP 00:05:00
DRY_STEP 00:05:00
ROUTING_STEP 0.5
RULE_STEP 00:00:00

INERTIAL_DAMPING PARTIAL
NORMAL_FLOW_LIMITED BOTH
FORCE_MAIN_EQUATION H-W
VARIABLE_STEP 0.75
LENGTHENING_STEP 0
MIN_SURFAREA 1.167
MAX_TRIALS 21
HEAD_TOLERANCE 0.0001
SYS_FLOW_TOL 5
LAT_FLOW_TOL 5
MINIMUM_STEP 0.5
THREADS 6

[EVAPORATION]
;;Data Source Parameters
;;-------------- ----------------
CONSTANT 0.0
DRY_ONLY NO

[RAINGAGES]
;;Name Format Interval SCF Source
;;-------------- --------- -------- -------- ----------
002yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 002yrChicago3hr
002YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 002YrSCS24
005yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 005yrChicago3hr
005YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 005YrSCS24
010yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 010yrChicago3hr
010YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 010YrSCS24
025yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 025yrChicago3hr
025YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 025YrSCS24
050yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 050yrChicago3hr
050YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 050YrSCS24
100yrChicago3hr INTENSITY 0:10 1.0 TIMESERIES 100yrChicago3hr
100yrChicago3hr+20% INTENSITY 0:10 1.0 TIMESERIES 100yrChicago3hr+20%
100YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 100YrSCS12hr
100YrSCS24 INTENSITY 0:10 1.0 TIMESERIES 100YrSCS24
100YrSCS24+20% INTENSITY 0:10 1.0 TIMESERIES 100YrSCS24+20%
1979July01 INTENSITY 0:05 1.0 TIMESERIES 1979July01
1988Aug04 INTENSITY 0:05 1.0 TIMESERIES 1988Aug04
1996Aug08 INTENSITY 0:05 1.0 TIMESERIES 1996Aug08
25mmChicago4Hr INTENSITY 0:10 1.0 TIMESERIES 25mmChicago4Hr
2YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 2YrSCS12hr
5YrSCS12hr INTENSITY 0:15 1.0 TIMESERIES 5YrSCS12hr
No_Rain INTENSITY 0:01 1.0 TIMESERIES No_Rain

[SUBCATCHMENTS]
;;Name Rain Gage Outlet Area %Imperv Width %Slope CurbLen SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
;30_(CB)
A12i 100yrChicago3hr Maj-15_2 0.0402 71.4 76.001 0.5 0
;31_(CB)
A12ii 100yrChicago3hr 31_(CB) 0.0502 71.4 76.001 0.5 0
;RYCB_11_(RYCB)
A13 100yrChicago3hr RYCB_11_(RYCB) 0.1132 42.9 76 0.5 0
;ELB_13_(RYCB)
A14 100yrChicago3hr ELB_13_(RYCB) 0.1142 42.9 75.001 0.5 0
;28_(CB)
A15i 100yrChicago3hr Maj-20 0.248 71.4 103 0.5 0
;27_(CB)
A15ii 100yrChicago3hr Maj-20 0.274 71.4 103 0.5 0
;26_(CB)
A16i 100yrChicago3hr Maj-19_2 0.06 71.4 24 0.5 0
;25_(CB)
A16ii 100yrChicago3hr Maj-19_2 0.067 71.4 25 0.5 0
;24_(CB)
A17ii 100yrChicago3hr Maj-24 0.093 71.4 77 0.5 0
;23_(CB)
A18i 100yrChicago3hr Maj-24 0.189 71.4 77.001 0.5 0
;RYCB_9_(RYCB)
A19 100yrChicago3hr RYCB_9_(RYCB) 0.1327 42.9 127.998 0.5 0
;21_(CB)
A20i 100yrChicago3hr Maj-26 0.195 71.4 99.8 0.9 0
;20_(CB)

A20ii 100yrChicago3hr Maj-26 0.206 71.4
99.801 0.9 0
;RYCB_7_(RYCB)
A21 100yrChicago3hr RYCB_7_(RYCB) 0.325
50 111.999 0.5 0
;RYCB_7_(RYCB)
A22 100yrChicago3hr TEE_14_(RYCB) 0.028
42.9 47.7 0.5 0
;RYCB_7_(RYCB)
A23 100yrChicago3hr TEE_14_(RYCB) 0.169
50 72.001 0.5 0
;18_(CB)
A24i 100yrChicago3hr Maj-28 0.11 71.4
90.002 0.9 0
;19_(CB)
A24ii 100yrChicago3hr Maj-28 0.237 71.4
129.998 0.9 0
;RYCB_8_(RYCB)
A25 100yrChicago3hr RYCB_8_(RYCB) 0.1549
50 101.998 0.5 0
;45_(CB)
A26i 100yrChicago3hr 142_(STM) 0.0155 71.4
73.002 0.5 0
;44_(CB)
A26ii 100yrChicago3hr 22_(RYCB) 0.0522 71.4
72.999 0.5 0
A28i 100yrChicago3hr DICB_2 0.9172 7
63.179 0.5 0
A28ii 100yrChicago3hr DICB_3 1.2702 7
90 0.5 0
;TEE_11_(RYCB)
A29 100yrChicago3hr TEE_11_(RYCB) 0.116
50 78.569 0.5 0
;ELB_23_(RYCB)
A3 100yrChicago3hr Slope1 3.0092 7
133.382 1 0
;RYCB_6_(RYCB)
A30 100yrChicago3hr RYCB_6_(RYCB) 0.014
42.9 17.981 0.5 0
;TEE_5_(RYCB)
A31 100yrChicago3hr TEE_5_(RYCB) 0.187
50 128.806 0.5 0
;17_(CB)
A32i 100yrChicago3hr Maj-35 0.155 71.4
73.089 1 0
;16_(CB)
A32ii 100yrChicago3hr Maj-35 0.082 71.4
72.689 1 0
;14_(CB)
A33i 100yrChicago3hr Maj-37 0.11 71.4
163.52 1 0
;15_(CB)
A33ii 100yrChicago3hr Maj-37 0.157 71.4
75.739 1 0
;13_(CB)
A34i 100yrChicago3hr Maj-41 0.212 71.4
124.53 0.5 0
;12_(CB)
A34ii 100yrChicago3hr Maj-41 0.276 71.4
133.747 0.5 0
;10_(CB)
A39i 100yrChicago3hr 11_(CB) 0.0786 71.4
113.588 1 0
;11_(CB)
A39ii 100yrChicago3hr 11_(CB) 0.0365 71.4
74.537 1 0
;RYCB_5_(RYCB)
A40 100yrChicago3hr RYCB_5_(RYCB) 0.1123
50 80.064 0.5 0
;TEE_7_(RYCB)
A41 100yrChicago3hr TEE_7_(RYCB) 0.075
50 54.989 0.5 0
;08_(CB)
A42i 100yrChicago3hr Maj-46 0.1456 71.4
72.329 0.5 0
;09_(CB)
A42ii 100yrChicago3hr Maj-46 0.083 71.4
72.438 0.5 0
A42iii 100yrChicago3hr Maj-48_3 0.0254 71.4
30 0.5 0
;RYCB_2_(RYCB)
A43 100yrChicago3hr RYCB_2_(RYCB) 0.236
50 80.93 0.5 0
;RYCB_3_(RYCB)
A44 100yrChicago3hr RYCB_3_(RYCB) 0.199
50 72.054 0.5 0
;03_(CB)
A45i 100yrChicago3hr Maj-50 0.168 71.4
77.609 0.5 0
;02_(CB)
A45ii 100yrChicago3hr Maj-50 0.075 71.4
77.672 0.5 0
;05_(CB)
A46i 100yrChicago3hr Maj-52 0.157 71.4
73.067 0.5 0
;04_(CB)
A46ii 100yrChicago3hr Maj-52 0.136 71.4
87.029 0.5 0
;RYCB_4_(RYCB)
A47 100yrChicago3hr RYCB_4_(RYCB) 0.136
50 92.998 0.5 0
;55_(CB)
A48 100yrChicago3hr 104_(STM) 0.0498 71.4
57.13 0.5 0
;RYCB_1_(RYCB)
A49 100yrChicago3hr RYCB_1_(RYCB) 0.0525
50 57.989 0.5 0
;TEE_43_(RYCB)
A54 100yrChicago3hr J2 0.7963 7
80.066 0.2 0
;B1_Stor
B1 100yrChicago3hr Slope1 1.9535 7
171.181 1 0
;B2_Stor
B2 100yrChicago3hr B2_Stor 3.432 100
279.024 1 0
;B3_Stor
B3i 100yrChicago3hr Slope1 0.965 85.7
86.65 0.5 0
;58_(CB)
B4i 100yrChicago3hr 58_(CB) 0.947 28.6
148.991 0.5 0
;02_(CB)
B4ii 100yrChicago3hr Maj-50 0.047 28.6
77.571 0.5 0
;04_(CB)
B4iii 100yrChicago3hr Maj-51 0.008 28.6
14.24 0.5 0
;Maj-22
C2 100yrChicago3hr Maj-21 0.087 71.4
60 0.5 0

[SUBAREAS]
;;Subcatchment N-Imperv N-Perv S-Imperv S-Perv
PctZero RouteTo PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ----------
----
A12i 0.013 0.25 1.57 4.67 0
OUTLET

A12ii 0.013 0.25 1.57 4.67 0
OUTLET
A13 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A14 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A15i 0.013 0.25 1.57 4.67 0
OUTLET
A15ii 0.013 0.25 1.57 4.67 0
OUTLET
A16i 0.013 0.25 1.57 4.67 0
OUTLET
A16ii 0.013 0.25 1.57 4.67 0
OUTLET
A17ii 0.013 0.25 1.57 4.67 0
OUTLET
A18i 0.013 0.25 1.57 4.67 0
OUTLET
A19 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A20i 0.013 0.25 1.57 4.67 0
OUTLET
A20ii 0.013 0.25 1.57 4.67 0
OUTLET
A21 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A22 0.013 0.25 1.57 4.67 0
OUTLET
A23 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A24i 0.013 0.25 1.57 4.67 0
OUTLET
A24ii 0.013 0.25 1.57 4.67 0
OUTLET
A25 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A26i 0.013 0.25 1.57 4.67 0
OUTLET
A26ii 0.013 0.25 1.57 4.67 0
OUTLET
A28i 0.013 0.25 1.57 4.67 0
OUTLET
A28ii 0.013 0.25 1.57 4.67 0
OUTLET
A29 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A3 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A30 0.013 0.25 1.57 4.67 0
OUTLET
A31 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A32i 0.013 0.25 1.57 4.67 0
OUTLET
A32ii 0.013 0.25 1.57 4.67 0
OUTLET
A33i 0.013 0.25 1.57 4.67 0
OUTLET
A33ii 0.013 0.25 1.57 4.67 0
OUTLET
A34i 0.013 0.25 1.57 4.67 0
OUTLET
A34ii 0.013 0.25 1.57 4.67 0
OUTLET
A39i 0.013 0.25 1.57 4.67 0
OUTLET
A39ii 0.013 0.25 1.57 4.67 0
OUTLET
A40 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A41 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A42i 0.013 0.25 1.57 4.67 0
OUTLET
A42ii 0.013 0.25 1.57 4.67 0
OUTLET
A42iii 0.013 0.25 1.57 4.67 0
OUTLET
A43 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A44 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A45i 0.013 0.25 1.57 4.67 0
OUTLET
A45ii 0.013 0.25 1.57 4.67 0
OUTLET
A46i 0.013 0.25 1.57 4.67 0
OUTLET
A46ii 0.013 0.25 1.57 4.67 0
OUTLET
A47 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A48 0.013 0.25 1.57 4.67 0
OUTLET
A49 0.013 0.25 1.57 4.67 0
PERVIOUS 100
A54 0.013 0.25 1.57 4.67 0
PERVIOUS 100
B1 0.013 0.25 1.57 4.67 0
PERVIOUS 100
B2 0.013 0.25 1.57 4.67 0
OUTLET
B3i 0.013 0.25 1.57 4.67 0
OUTLET
B4i 0.013 0.25 1.57 4.67 0
OUTLET
B4ii 0.013 0.25 1.57 4.67 0
OUTLET
B4iii 0.013 0.25 1.57 4.67 0
OUTLET
C2 0.013 0.25 1.57 4.67 0
OUTLET

[INFILTRATION]
;;Subcatchment Param1 Param2 Param3 Param4
Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
A12i 76.2 13.2 4.14 7 0
A12ii 76.2 13.2 4.14 7 0
A13 76.2 13.2 4.14 7 0
A14 76.2 13.2 4.14 7 0
A15i 76.2 13.2 4.14 7 0
A15ii 76.2 13.2 4.14 7 0
A16i 76.2 13.2 4.14 7 0
A16ii 76.2 13.2 4.14 7 0
A17ii 76.2 13.2 4.14 7 0
A18i 76.2 13.2 4.14 7 0
A19 76.2 13.2 4.14 7 0
A20i 76.2 13.2 4.14 7 0
A20ii 76.2 13.2 4.14 7 0
A21 76.2 13.2 4.14 7 0
A22 76.2 13.2 4.14 7 0
A23 76.2 13.2 4.14 7 0
A24i 76.2 13.2 4.14 7 0
A24ii 76.2 13.2 4.14 7 0
A25 76.2 13.2 4.14 7 0
A26i 76.2 13.2 4.14 7 0
A26ii 76.2 13.2 4.14 7 0
A28i 76.2 13.2 4.14 7 0
A28ii 76.2 13.2 4.14 7 0

A29 76.2 13.2 4.14 7 0
A3 76.2 13.2 4.14 7 0
A30 76.2 13.2 4.14 7 0
A31 76.2 13.2 4.14 7 0
A32i 76.2 13.2 4.14 7 0
A32ii 76.2 13.2 4.14 7 0
A33i 76.2 13.2 4.14 7 0
A33ii 76.2 13.2 4.14 7 0
A34i 76.2 13.2 4.14 7 0
A34ii 76.2 13.2 4.14 7 0
A39i 76.2 13.2 4.14 7 0
A39ii 76.2 13.2 4.14 7 0
A40 76.2 13.2 4.14 7 0
A41 76.2 13.2 4.14 7 0
A42i 76.2 13.2 4.14 7 0
A42ii 76.2 13.2 4.14 7 0
A42iii 76.2 13.2 4.14 7 0
A43 76.2 13.2 4.14 7 0
A44 76.2 13.2 4.14 7 0
A45i 76.2 13.2 4.14 7 0
A45ii 76.2 13.2 4.14 7 0
A46i 76.2 13.2 4.14 7 0
A46ii 76.2 13.2 4.14 7 0
A47 76.2 13.2 4.14 7 0
A48 76.2 13.2 4.14 7 0
A49 76.2 13.2 4.14 7 0
A54 76.2 13.2 4.14 7 0
B1 76.2 13.2 4.14 7 0
B2 76.2 13.2 4.14 7 0
B3i 76.2 13.2 4.14 7 0
B4i 76.2 13.2 4.14 7 0
B4ii 76.2 13.2 4.14 7 0
B4iii 76.2 13.2 4.14 7 0
C2 76.2 13.2 4.14 7 0

[JUNCTIONS]
;;Name Elevation MaxDepth InitDepth SurDepth Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
;T/G 87.6 m
02_(CB) 85.6 2.6 0 0 0
;T/G 87.6 m
03_(CB) 85.6 2.6 0 0 0
;T/G 87.53 m
04_(CB) 85.53 2.6 0 0 0
;T/G 87.531 m
05_(CB) 85.531 2.6 0 0 0
;T/G 87.436 m
08_(CB) 85.436 2.6 0 0 0
;T/G 87.425 m
09_(CB) 85.425 2.6 0 0 0
;Mcon-CBMH
1_(RYCB) 85.42 2.993 0 0 1
;Mcon MH - Concentric
100_(STM) 81.27 6.31 0 0 0
;Mcon MH - Concentric
102_(STM) 81.341 6.229 0 0 0
;Mcon MH - Concentric
104_(STM) 81.383 6.234 0 0 0
;Mcon MH - Concentric
106_(STM) 83.539 4.124 0 0 0
;Mcon MH - Concentric
108_(STM) 83.616 3.887 0 0 0
;T/G 87.555 m
11_(CB) 86.021 2.134 0 0 0
;Mcon MH - Concentric
110_(STM) 83.936 3.813 0 0 0
;Mcon MH - Concentric
112_(STM) 81.904 6.011 0 0 0
;Mcon MH - Concentric
114_(STM) 83.366 4.634 0 0 0
;T/G 87.643 m
12_(CB) 85.643 2.6 0 0 0
;Mcon MH - Concentric
120_(STM) 82.664 5.412 0 0 0
;Mcon MH - Concentric
122_(STM) 82.736 5.495 0 0 0
;Mcon MH - Concentric
124_(STM) 82.834 5.361 0 0 0
;Mcon MH - Concentric
126_(STM) 82.974 5.491 0 0 0
;Mcon MH - Concentric
128_(STM) 83.17 5.461 0 0 0
;T/G 87.63 m
13_(CB) 85.793 2.437 0 0 0
;Mcon MH - Concentric
136_(STM) 83.336 5.31 0 0 0
;Mcon MH - Concentric
138_(STM) 83.424 5.349 0 0 0
;T/G 88.012 m
14_(CB) 86.012 2.6 0 0 0
;Mcon MH - Concentric
140_(STM) 83.713 5.538 0 0 0
;Mcon MH - Concentric
142_(STM) 84.907 4.253 0 0 0
;Mcon MH - Concentric
144_(STM) 84.131 5.323 0 0 0
;Mcon MH - Concentric
146_(STM) 85 4.123 0 0 0
;Mcon MH - Concentric
148_(STM) 85.14 3.352 0 0 0
;T/G 88.016 m
15_(CB) 86.016 2.6 0 0 0
15_RYCB 86.595 2.178 0 0 1
;Mcon MH - Concentric
150_(STM) 84.379 5.419 0 0 0
;T/G 88.173 m
16_(CB) 86.173 2.6 0 0 0
;T/G 88.176 m
17_(CB) 86.176 2.6 0 0 0
;T/G 88.277 m
18_(CB) 86.97 1.907 0 0 0
;T/G 88.281 m
19_(CB) 86.281 2.6 0 0 0
;T/G 88.623 m
20_(CB) 86.623 2.6 0 0 0
;T/G 88.62 m
21_(CB) 86.773 2.447 0 0 0
;Mcon MH - Concentric
2121_(STM) 80.231 7.259 0 0 0
;Mcon MH - Concentric
2142_(STM) 80.104 7.267 0 0 0
;Mcon-CB
22_(RYCB) 87.076 2.824 0 0 1
;T/G 88.923 m
23_(CB) 86.923 2.6 0 0 0
;T/G 88.923 m
24_(CB) 86.923 2.6 0 0 0
;T/G 89.381 m
25_(CB) 86.775 3.206 0 0 0
;T/G 89.5 m
26_(CB) 86.775 3.325 0 0 0
;T/G 88.56 m
27_(CB) 86.775 2.385 0 0 0
;T/G 88.64 m
28_(CB) 86.775 2.465 0 0 0
;Mcon-CBMH
29_(RYCB) 85.31 5.13 0 0 1
;T/G 89.07 m
31_(CB) 86.9 2.77 0 0 0

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;T/G 86.60
58_(CB)        85.4    2.6     0     0     0
;T/G 87.65
59_(CB)        85.85   2.4     0     0     0
;Mcon MH - Concentric
98_(STM)       81.17   6.333   0     0     0
;Future CB_30, T/G 88.17 m
DICB_1         86.93   2.868   0     0     0
;Future CB_49, T/G 87.17
DICB_2         85.37   3.84    0     0     0
;Future CB_10, T/G 86.67  m
DICB_3         84.87   3.28    0     0     0
;CB-LANDSCAPE
ELB_1_(RYCB)   86.51   1.14    0     0     1
;Mcon-CBMH
ELB_10_(RYCB)  87.65   1.311   0     0     1
;Mcon-CBMH
ELB_11_(RYCB)  87.6    1.302   0     0     1
;Mcon-CBMH
ELB_12_(RYCB)  88      1.303   0     0     1
;Mcon-CBMH
ELB_13_(RYCB)  87.56   1.301   0     0     1
;Mcon-CBMH
ELB_14_(RYCB)  87.78   1.3     0     0     1
;Mcon-CBMH
ELB_2_(RYCB)   86.265  1.412   0     0     1
;Mcon-CBMH
ELB_3_(RYCB)   86.48   1.324   0     0     1
;Mcon-CBMH
ELB_4_(RYCB)   86.53   1.22    0     0     1
;Mcon-CBMH
ELB_5_(RYCB)   86.53   1.17    0     0     1
;Mcon-CBMH
ELB_6_(RYCB)   86.55   1.312   0     0     1
;Mcon-CBMH
ELB_7_(RYCB)   86.8    1.309   0     0     1
;Mcon-CBMH
ELB_8_(RYCB)   86.772  1.308   0     0     1
;Mcon-CBMH
ELB_9_(RYCB)   87.05   1.298   0     0     1
;Major Spill Point
J1             88.48   0.6     0     0     0
;Spill Point
J2             87.58   0.6     0     0     0
;HP
Maj-15         89.666  0.704   0     0     0
Maj-15_2       89.36   0.654   0     0     0
Maj-18_2       89.51   0.64    0     0     0
Maj-19         89.388  0.602   0     0     0
;HP
Maj-19_2       89.527  0.693   0     0     0
Maj-20         89.169  0.601   0     0     0
;LP
Maj-21         88.595  0.615   0     0     0
Maj-23         89.24   0.58    0     0     0
;LP
Maj-24         88.904  0.616   0     0     0
;HP
Maj-25         89.152  0.618   0     0     0
;LP
Maj-26         88.605  0.615   0     0     0
;HP
Maj-27         88.848  0.632   0     0     0
;LP
Maj-28         88.251  0.689   0     0     0
;HP
Maj-29         88.595  0.615   0     0     0
;LP
Maj-35         88.149  0.581   0     0     0
;HP
Maj-36         88.408  0.672   0     0     0
;LP
Maj-37         87.993  0.617   0     0     0
;HP
Maj-38         88.19   0.62    0     0     0
;LP
Maj-39         88.071  0.329   0     0     0
;HP
Maj-40         87.97   0.63    0     0     0
Maj-41         87.62   0.62    0     0     0
;LP
Maj-44         87.539  0.611   0     0     0
;HP
Maj-45         87.812  0.688   0     0     0
;LP
Maj-46         87.407  0.613   0     0     0
Maj-48_2       87.744  0.636   0     0     0
Maj-48_3       87.647  0.621   0     0     0
;LP
Maj-50         87.425  0.615   0     0     0
;HP
Maj-51         87.71   0.63    0     0     0
;LP
Maj-52         87.472  0.498   0     0     0
Maj-53         87.588  0.612   0     0     0
;Overland Major Spill Point
Maj-56         88.8    0.6     0     0     0
;Spill Point
Maj-60         88.618  0.679   0     0     0
;Overland Major Spill Point
Maj-61         88.7    0.6     0     0     0
;Major System Spill Point
Maj-63         87.72   1.091   0     0     0
;Major System Spill Point
Maj-64         88.8    0.6     0     0     0
;Major System Spill Point
Maj-65         87.8    1.182   0     0     0
Maj-67         87.95   0.6     0     0     0
Maj-Park       86.5    0.6     0     0     0
;Mcon-CBMH (T/G 87.3 m)
RYCB_1_(RYCB)  86      2.1     0     0     1
;Mcon-CBMH (T/G 88.55 m)
RYCB_10_(RYCB) 87.02   2.38    0     0     1
;Mcon-CBMH (T/G 89.3 m)
RYCB_11_(RYCB) 87.35   2.55    0     0     1
;TEE (T/G 88.55 m)
RYCB_2_(RYCB)  86.01   3.14    0     0     1
;Mcon-CBMH
RYCB_3_(RYCB)  86.18   2.27    0     0     1
;Mcon-CBMH (T/G 88.63 m)
RYCB_4_(RYCB)  86.12   3.11    0     0     1
;Mcon-CBMH
RYCB_5_(RYCB)  86.044  2.295   0     0     1
;Mcon-CBMH
RYCB_6_(RYCB)  85.72   3.209   0     0     1
;T/G 88.79m
RYCB_7_(RYCB)  86.49   2.9     0     0     1
;Mcon-CBMH (T/G 88.45 m)
RYCB_8_(RYCB)  86.97   2.23    0     0     1
;Mcon-CBMH
RYCB_9_(RYCB)  87.54   2.05    0     0     1
Slope1         89.066  0.6     0     0     0
;Dummy Null Structure for LandXML purposes
StartNullStruct2 86.62   1.4     0     0     1
;Dummy Null Structure for LandXML purposes
StartNullStruct3 84.091  3.709   0     0     0
;Null Structure
STM-251_(STM)  85.31   4.327   0     0     0
;Mcon-CBMH
TEE_1_(RYCB)   86.21   1.444   0     0     1
```

```
;Mcon-CBMH
TEE_10_(RYCB)    86.59    1.311    0    0    1
;CB-LANDSCAPE
TEE_11_(RYCB)    86.68    1.367    0    0    1
;Mcon-CBMH
TEE_12_(RYCB)    86.85    1.334    0    0    1
;CB-LANDSCAPE
TEE_13_(RYCB)    87    1.291    0    0    1
;CB-LANDSCAPE
TEE_14_(RYCB)    86.861    2.639    0    0    1
;CB-LANDSCAPE
TEE_15_(RYCB)    87.38    1.98    0    0    1
;Mcon-CBMH
TEE_16_(RYCB)    87.27    1.61    0    0    1
;Mcon-CBMH
TEE_17_(RYCB)    87.39    1.45    0    0    1
;Mcon-CBMH
TEE_18_(RYCB)    87.54    1.41    0    0    1
;Mcon-CBMH
TEE_19_(RYCB)    87.44    1.317    0    0    1
;Mcon-CBMH
TEE_2_(RYCB)    86.35    1.365    0    0    1
;Mcon-CBMH
TEE_20_(RYCB)    87.29    1.331    0    0    1
;Mcon-CBMH
TEE_21_(RYCB)    87.17    1.438    0    0    1
;Mcon-CBMH
TEE_22_(RYCB)    87.78    1.31    0    0    1
;Mcon-CBMH
TEE_23_(RYCB)    87.4    1.38    0    0    1
;Mcon-CBMH
TEE_24_(RYCB)    87.69    1.32    0    0    1
;Mcon-CBMH
TEE_25_(RYCB)    87.53    1.546    0    0    1
;Mcon-CBMH
TEE_3_(RYCB)    86.25    1.37    0    0    1
;Mcon-CBMH
TEE_4_(RYCB)    86.02    1.86    0    0    1
;CB-LANDSCAPE
TEE_5_(RYCB)    86.09    1.934    0    0    1
;Mcon-CBMH
TEE_6_(RYCB)    86.35    1.525    0    0    1
;Mcon-CBMH
TEE_7_(RYCB)    86.46    1.427    0    0    1
;Mcon-CBMH
TEE_8_(RYCB)    86.34    1.523    0    0    1
;Mcon-CBMH
TEE_9_(RYCB)    86.22    1.66    0    0    1

[OUTFALLS]
;;Name    Elevation  Type    Stage Data    Gated
Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
;HP
Maj-18    89.547    FREE    NO
Maj-22    88.834    FREE    NO
;HP
Maj-48    87.78    FREE    NO
;HP
Maj-49    87.673    FREE    NO
OF1    85    FREE    NO
;Rectangular Headwall Variable Height SI
STM-111_(STM)    80.137    FREE    NO

[STORAGE]
;;Name    Elev.    MaxDepth  InitDepth  Shape    Curve
Name/Params    N/A    Fevap   Psi    Ksat    IMD
;;-------------- -------- ---------- ---------- ---------- ----------------------
----- -------- --------    -------- --------
B2_Stor    90.5    1.5    0    TABULAR
UHAL_Onsite    0    0

[CONDUITS]
;;Name    From Node    To Node    Length
Roughness  InOffset  OutOffset  InitFlow  MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------
- ---------- ---------- ----------
;Mcon Circular Conc. Pipe
10_(STM)    124_(STM)    122_(STM)    16.861
0.013    83.134    83.05    0    0
;Mcon Circular Conc. Pipe
11_(STM)    122_(STM)    120_(STM)    24.629
0.013    83.036    82.974    0    0
;Mcon Circular Conc. Pipe
12_(STM)    120_(STM)    112_(STM)    91.574
0.013    82.964    82.735    0    0
;Mcon Circular Conc. Pipe
13_(STM)    112_(STM)    104_(STM)    73.804
0.013    82.204    81.983    0    0
;Mcon Circular Conc. Pipe
14_(STM)    104_(STM)    102_(STM)    41.856
0.013    81.683    81.641    0    0
;Mcon Circular Conc. Pipe
15_(10)_(STM)    138_(STM)    136_(STM)    14.785
0.013    83.724    83.65    0    0
;Mcon Circular Conc. Pipe
15_(11)_(STM)    136_(STM)    128_(STM)    62.501
0.013    83.636    83.48    0    0
;Mcon Circular Conc. Pipe
15_(12)_(STM)    148_(STM)    146_(STM)    78.542
0.013    85.33    85.21    0    0
;Mcon Circular Conc. Pipe
15_(13)_(STM)    146_(STM)    144_(STM)    78.665
0.013    85.15    85.03    0    0
;Mcon Circular Conc. Pipe
15_(5)_(STM)    114_(STM)    112_(STM)    64.641
0.013    83.666    83.44    0    0
;Mcon Circular Conc. Pipe
15_(9)_(STM)    140_(STM)    138_(STM)    113.118
0.013    84.013    83.73    0    0
;Mcon Circular Conc. Pipe
4_(STM)    150_(STM)    144_(STM)    76.294
0.013    84.679    84.49    0    0
;Mcon Circular Conc. Pipe
5_(STM)    144_(STM)    140_(STM)    77.327
0.013    84.36    84.13    0    0
;Mcon Circular Conc. Pipe
8_(STM)    128_(STM)    126_(STM)    75.98
0.013    83.47    83.28    0    0
;Mcon Circular Conc. Pipe
9_(STM)    126_(STM)    124_(STM)    53.402
0.013    83.274    83.14    0    0
C1    B2_Stor    Maj-15    288.955    0.035
90.5    89.666    0    0
;Maj RY Spill Point
C18    29_(RYCB)    Maj-18_2    4.776    0.035
89.84    89.55    0    0
C18_3    Maj-15    Slope1    36.415    0.013
89.666    89.066    0    0
C18_4    Slope1    Maj-15_2    37.347    0.013
89.066    89.36    0    0
C18_5    Maj-19_2    Maj-15_2    13.813    0.013
89.527    89.36    0    0
C18_6    Maj-19_2    Maj-19    27.25    0.013
89.527    89.388    0    0
C18_8    Maj-18    Maj-18_2    5    0.013
89.547    89.51    0    0
C18_9    Maj-18_2    Maj-15_2    31.942    0.013
89.51    89.36    0    0
```

C19 Maj-15_2 Maj-23 11.274 0.013
89.36 89.24 0 0
C20 Maj-19 Maj-20 24.9 0.013
89.388 89.169 0 0
C21 Maj-20 Maj-21 64.337 0.013
89.169 88.595 0 0
C22 Maj-22 Maj-21 13.47 0.013
88.834 88.595 0 0
C23 Maj-23 Maj-24 31.267 0.013
89.24 88.904 0 0
C24 Maj-25 Maj-24 35.922 0.013
89.152 88.904 0 0
C25 Maj-25 Maj-26 59.92 0.013
89.152 88.605 0 0
C26 Maj-27 Maj-26 40.459 0.013
88.848 88.605 0 0
;Maj RY Spill Point
C27 22_(RYCB) Maj-25 17.828 0.035
89.3 89.152 0 0
C27_1 Maj-27 Maj-60 20.292 0.013
88.848 88.618 0 0
C27_2 Maj-60 Maj-28 39.649 0.013
88.618 88.251 0 0
C28 Maj-29 Maj-28 31.279 0.013
88.595 88.251 0 0
C31 Maj-Park OF1 47.652 0.035
86.5 85 0 0
;Maj RY Spill Point
C31_1 RYCB_8_(RYCB) Maj-61 1.758
0.035 88.6 88.7 0 0
;Maj RY Spill Point
C31_2 Maj-61 Maj-28 17.384 0.035
88.7 88.251 0 0
C36 Maj-29 Maj-35 35.198 0.013
88.595 88.149 0 0
C37 Maj-36 Maj-35 37.341 0.013
88.408 88.149 0 0
C4_1 Maj-53 J2 13.091 0.035
87.588 87.526 0 0
C4_2 J2 58_(CB) 174.482 0.035
87.58 86.6 0 0
C41 Maj-45 Maj-44 34.02 0.013
87.812 87.539 0 0
C42 Maj-45 Maj-41 33.014 0.013
87.812 87.62 0 0
C43 Maj-40 Maj-41 55.256 0.013
87.97 87.62 0 0
C44 Maj-40 Maj-39 14.403 0.013
87.97 88.071 0 0
C45 Maj-38 Maj-39 19.588 0.013
88.19 88.071 0 0
C46 Maj-36 Maj-37 37.582 0.013
88.408 87.993 0 0
C47 Maj-38 Maj-37 23.672 0.013
88.19 87.993 0 0
C48 Maj-45 Maj-46 39.529 0.013
87.812 87.407 0 0
C49 Maj-53 Maj-46 33.614 0.013
87.588 87.407 0 0
C5 58_(CB) Maj-Park 30 0.035
86.71 86.5 0 0
C50_1 Maj-48 Maj-48_2 5 0.013
87.78 87.744 0 0
C50_2 Maj-48_2 Maj-53 31.434 0.013
87.744 87.588 0 0
C51 Maj-53 Maj-52 33.988 0.013
87.588 87.472 0 0
C52 Maj-51 Maj-52 53.407 0.013
87.71 87.472 0 0
C53 Maj-51 Maj-50 33.561 0.013
87.71 87.425 0 0
C54 Maj-49 Maj-50 43.76 0.013
87.673 87.425 0 0
C56 Maj-21 Maj-56 22.042 0.035
88.595 88.8 0 0
;Major System Spill Point
C58 TEE_14_(RYCB) Maj-60 42.957
0.035 88.9 88.618 0 0
;Maj RY Spill Point
C58_1 RYCB_2_(RYCB) Maj-63 5.09
0.035 87.58 87.72 0 0
;Maj RY Spill Point
C58_2 Maj-63 Maj-46 12.116 0.035
87.72 87.407 0 0
;Maj RY Spill Point
C59_1 RYCB_4_(RYCB) Maj-65 3.487
0.035 87.79 87.8 0 0
;Maj RY Spill Point
C59_2 Maj-65 Maj-48_2 8.163 0.035
87.8 87.744 0 0
;Major System Overland Spillway
C60 Maj-56 TEE_14_(RYCB) 23.631
0.035 88.8 88.9 0 0
C62 1_(RYCB) Maj-50 27.046 0.035
87.813 87.425 0 0
C63_1 RYCB_5_(RYCB) Maj-67 3.561
0.035 87.739 87.95 0 0
C63_2 Maj-67 Maj-44 7.188 0.035
87.95 87.539 0 0
C65_1 RYCB_6_(RYCB) J1 22.199
0.035 88.329 88.48 0 0
C65_2 J1 Maj-35 15.658 0.035
88.48 88.149 0 0
C66_1 RYCB_10_(RYCB) Maj-64 14.534
0.035 88.729 88.8 0 0
C66_2 Maj-64 Maj-21 36.889 0.035
88.8 88.595 0 0
C67 RYCB_11_(RYCB) Slope1 10.418
0.035 89.123 89.066 0 0
;HDPE Pipe SI
Pipe_-_(100)_(RYCB) TEE_6_(RYCB) RYCB_4_(RYCB)
43.106 0.013 86.65 86.434 0 0
;HDPE Pipe SI
Pipe_-_(110)_(RYCB) ELB_12_(RYCB) TEE_22_(RYCB)
42.796 0.013 88.3 88.086 0 0
;HDPE Pipe SI
Pipe_-_(111)_(RYCB) TEE_22_(RYCB) RYCB_9_(RYCB)
36.137 0.013 88.08 87.899 0 0
;HDPE Pipe SI
Pipe_-_(114)_(RYCB) ELB_10_(RYCB) TEE_18_(RYCB)
20.158 0.013 87.95 87.849 0 0
;HDPE Pipe SI
Pipe_-_(117)_(RYCB) ELB_14_(RYCB) TEE_24_(RYCB)
14.18 0.013 88.08 88.009 0 0
;HDPE Pipe SI
Pipe_-_(118)_(RYCB) TEE_24_(RYCB) TEE_25_(RYCB)
29.666 0.013 87.99 87.842 0 0
;HDPE Pipe SI
Pipe_-_(119)_(RYCB) ELB_13_(RYCB) TEE_23_(RYCB)
29.54 0.013 87.86 87.712 0 0
;HDPE Pipe SI
Pipe_-_(134)_(RYCB) TEE_10_(RYCB) TEE_11_(RYCB)
40.369 0.013 86.89 86.688 0 0
;HDPE Pipe SI
Pipe_-_(137)_(RYCB) TEE_7_(RYCB) TEE_8_(RYCB)
22.479 0.013 86.76 86.648 0 0
;HDPE Pipe SI
Pipe_-_(138)_(RYCB) TEE_8_(RYCB) TEE_9_(RYCB)
21.988 0.013 86.64 86.53 0 0

;HDPE Pipe SI
Pipe_-_(139)_(RYCB) ELB_3_(RYCB) TEE_2_(RYCB)
20.228 0.013 86.78 86.681 0 0
;HDPE Pipe SI
Pipe_-_(14)_(RYCB) TEE_15_(RYCB) RYCB_7_(RYCB)
4.757 0.013 87.38 87.356 0 0
;HDPE Pipe SI
Pipe_-_(140)_(RYCB) TEE_2_(RYCB) RYCB_3_(RYCB)
20.776 0.013 86.65 86.544 0 0
;HDPE Pipe SI
Pipe_-_(141)_(RYCB) ELB_11_(RYCB) TEE_19_(RYCB)
18.513 0.013 87.9 87.752 0 0
;HDPE Pipe SI
Pipe_-_(142)_(RYCB) TEE_19_(RYCB) TEE_20_(RYCB)
27.38 0.013 87.74 87.603 0 0
;HDPE Pipe SI
Pipe_-_(143)_(RYCB) TEE_20_(RYCB) TEE_21_(RYCB)
22.082 0.013 87.59 87.48 0 0
;HDPE Pipe SI
Pipe_-_(144)_(RYCB) TEE_21_(RYCB) RYCB_8_(RYCB)
33.251 0.013 87.47 87.304 0 0
;HDPE Pipe SI
Pipe_-_(15)_(RYCB) RYCB_7_(RYCB) 15_RYCB
39.009 0.013 86.79 86.595 0 0
;HDPE Pipe SI
Pipe_-_(150)_(RYCB) TEE_18_(RYCB) TEE_17_(RYCB)
21.983 0.013 87.84 87.73 0 0
;HDPE Pipe SI
Pipe_-_(151)_(RYCB) TEE_17_(RYCB) TEE_16_(RYCB)
22.116 0.013 87.69 87.579 0 0
;HDPE Pipe SI
Pipe_-_(152)_(RYCB) TEE_16_(RYCB) TEE_15_(RYCB)
36.027 0.013 87.57 87.39 0 0
;HDPE Pipe SI
Pipe_-_(153)_(RYCB) ELB_8_(RYCB) TEE_10_(RYCB)
17.189 0.013 87.072 86.9 0 0
;HDPE Pipe SI
Pipe_-_(154)_(RYCB) ELB_9_(RYCB) TEE_12_(RYCB)
38.096 0.013 87.35 87.16 0 0
;HDPE Pipe SI
Pipe_-_(155)_(RYCB) TEE_12_(RYCB) TEE_13_(RYCB)
17.927 0.013 87.15 87.06 0 0
;HDPE Pipe SI
Pipe_-_(156)_(1)_(RYCB) TEE_14_(RYCB)
RYCB_7_(RYCB) 3.241 0.013 86.861 86.845 0
0
;HDPE Pipe SI
Pipe_-_(156)_(RYCB) TEE_13_(RYCB) TEE_14_(RYCB)
27.79 0.013 87 86.861 0 0
;HDPE Pipe SI
Pipe_-_(16)_(RYCB) TEE_5_(RYCB) RYCB_6_(RYCB)
3.09 0.013 86.09 86.075 0 0
;HDPE Pipe SI
Pipe_-_(161)_(RYCB) ELB_1_(RYCB) RYCB_1_(RYCB)
36.543 0.013 86.51 86.327 0 0
;HDPE Pipe SI
Pipe_-_(164)_(RYCB) TEE_23_(RYCB) RYCB_10_(RYCB)
28.561 0.013 87.7 87.557 0 0
;HDPE Pipe SI
Pipe_-_(165)_(RYCB) TEE_25_(RYCB) RYCB_11_(RYCB)
30.956 0.013 87.83 87.675 0 0
;HDPE Pipe SI
Pipe_-_(17)_(RYCB) TEE_11_(RYCB) RYCB_6_(RYCB)
5.41 0.013 86.68 86.653 0 0
;HDPE Pipe SI
Pipe_-_(19)_(RYCB) RYCB_9_(RYCB) 22_(RYCB)
31.338 0.013 87.84 87.683 0 0
;HDPE Pipe SI
Pipe_-_(25)_(RYCB) RYCB_11_(RYCB) 31_(CB) 6.05
0.013 87.65 87.62 0 0
;HDPE Pipe SI
Pipe_-_(27)_(RYCB) RYCB_3_(RYCB) 1_(RYCB) 30.6
0.013 86.48 86.327 0 0
;HDPE Pipe SI
Pipe_-_(73)_(RYCB) RYCB_8_(RYCB) 18_(CB) 9.658
0.013 87.27 87.222 0 0
;HDPE Pipe SI
Pipe_-_(87)_(RYCB) StartNullStruct2 TEE_1_(RYCB)
21.137 0.013 86.62 86.515 0 0
;HDPE Pipe SI
Pipe_-_(88)_(RYCB) TEE_1_(RYCB) RYCB_2_(RYCB)
36.065 0.013 86.51 86.33 0 0
;HDPE Pipe SI
Pipe_-_(89)_(RYCB) ELB_4_(RYCB) RYCB_3_(RYCB)
30.528 0.013 86.75 86.6 0 0
;HDPE Pipe SI
Pipe_-_(9)_(RYCB) RYCB_5_(RYCB) 11_(CB) 5.75
0.013 86.35 86.321 0 0
;HDPE Pipe SI
Pipe_-_(90)_(RYCB) StartNullStruct2 ELB_2_(RYCB)
11.016 0.013 86.62 86.565 0 0
;HDPE Pipe SI
Pipe_-_(93)_(RYCB) ELB_5_(RYCB) TEE_3_(RYCB)
39.684 0.013 86.75 86.56 0 0
;HDPE Pipe SI
Pipe_-_(94)_(RYCB) TEE_3_(RYCB) TEE_4_(RYCB)
43.993 0.013 86.55 86.33 0 0
;HDPE Pipe SI
Pipe_-_(95)_(RYCB) TEE_4_(RYCB) TEE_5_(RYCB)
43.248 0.013 86.32 86.104 0 0
;HDPE Pipe SI
Pipe_-_(96)_(RYCB) ELB_7_(RYCB) TEE_7_(RYCB)
25.116 0.013 87.1 86.82 0 0
;HDPE Pipe SI
Pipe_-_(98)_(RYCB) TEE_9_(RYCB) RYCB_5_(RYCB)
35.118 0.013 86.52 86.344 0 0
;HDPE Pipe SI
Pipe_-_(99)_(RYCB) ELB_6_(RYCB) TEE_6_(RYCB)
38.969 0.013 86.85 86.655 0 0
;Mcon Circular Conc. Pipe
STM-23_(STM) 106_(STM) 104_(STM) 97.6
0.013 83.839 83.595 0 0
;Mcon Circular Conc. Pipe
STM-24_(STM) 108_(STM) 106_(STM) 26.241
0.013 83.916 83.85 0 0
;Ipex PVC DR 35
STM-28_(STM) 110_(STM) 108_(STM) 29.106
0.013 84.236 84.114 0 0
;Mcon Circular Conc. Pipe
STM-34_(1)_(1)_(STM) 98_(STM) 2121_(STM) 40.5
0.013 81.46 81.42 0 0
;Mcon Circular Conc. Pipe
STM-34_(1)_(STM) 100_(STM) 98_(STM) 39.5
0.013 81.56 81.52 0 0
;Mcon Circular Conc. Pipe
STM-34_(STM) 102_(STM) 100_(STM) 12.1
0.013 81.61 81.598 0 0
;Mcon Circular Conc. Pipe
STM-35_(STM) 2121_(STM) 2142_(STM) 83.9
0.013 80.72 80.59 0 0
;Mcon Circular Conc. Pipe
STM-36_(STM) 2142_(STM) STM-111_(STM) 65.7
0.013 80.43 80.36 0 0
;HDPE Pipe SI
STM-81_(STM) 142_(STM) 140_(STM) 20.687
0.013 85.244 85.11 0 0
;HDPE Pipe SI
STM-82_(STM) StartNullStruct3 104_(STM) 37.594
0.013 84.091 83.903 0 0
;HDPE Pipe SI

STM-83_(STM) STM-251_(STM) 144_(STM) 37.8
0.013 85.609 85.225 0 0

[ORIFICES]
;;Name From Node To Node Type
Offset Qcoeff Gated CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- ----------
--- -------- ----------
CB-02 02_(CB) 106_(STM) SIDE 85.6
0.62 NO 0
CB-03 03_(CB) 106_(STM) SIDE 85.6
0.62 NO 0
CB-04 04_(CB) 104_(STM) SIDE
85.53 0.62 NO 0
CB-05 05_(CB) 104_(STM) SIDE
85.531 0.62 NO 0
CB-06 RYCB_1_(RYCB) 104_(STM) SIDE
86.19 0.62 NO 0
CB-08 08_(CB) 112_(STM) SIDE
85.436 0.62 NO 0
CB-09 09_(CB) 112_(STM) SIDE
85.425 0.62 NO 0
CB-10 DICB_3 114_(STM) SIDE
84.87 0.62 NO 0
CB-11 11_(CB) 114_(STM) SIDE
86.321 0.62 NO 0
CB-12 12_(CB) 120_(STM) SIDE
85.643 0.62 NO 0
CB-13 13_(CB) 120_(STM) SIDE
85.793 0.62 NO 0
CB-14 14_(CB) 126_(STM) SIDE
86.012 0.62 NO 0
CB-15 15_(CB) 126_(STM) SIDE
86.016 0.62 NO 0
CB-16 16_(CB) 128_(STM) SIDE
86.173 0.62 NO 0
CB-17 17_(CB) 128_(STM) SIDE
86.176 0.62 NO 0
CB-18 18_(CB) 136_(STM) SIDE
87.222 0.62 NO 0
CB-19 19_(CB) 136_(STM) SIDE
86.281 0.62 NO 0
CB-20 20_(CB) 140_(STM) SIDE
86.623 0.62 NO 0
CB-21 21_(CB) 140_(STM) SIDE
86.773 0.62 NO 0
CB-23 23_(CB) 144_(STM) SIDE
86.923 0.62 NO 0
CB-24 24_(CB) 144_(STM) SIDE
86.923 0.62 NO 0
CB-25 25_(CB) 146_(STM) SIDE
86.775 0.82 NO 0
CB-26 26_(CB) 146_(STM) SIDE
86.775 0.82 NO 0
CB-27 27_(CB) 148_(STM) SIDE
86.775 0.62 NO 0
CB-28 28_(CB) 148_(STM) SIDE
86.775 0.62 NO 0
;On Slope
CB-30 DICB_1 150_(STM) SIDE
86.93 0.82 NO 0
;On Slope
CB-31 31_(CB) 150_(STM) SIDE
87.62 0.82 NO 0
;CICB
OR-02 Maj-50 02_(CB) SIDE 87.425
0.62 NO 0
;CICB
OR-03 Maj-50 03_(CB) SIDE 87.425
0.62 NO 0
;CICB
OR-04 Maj-52 04_(CB) SIDE 87.472
0.62 NO 0
;CICB
OR-05 Maj-52 05_(CB) SIDE 87.472
0.62 NO 0
OR-08 Maj-46 08_(CB) BOTTOM
87.407 0.62 NO 0
OR-09 Maj-46 09_(CB) BOTTOM
87.407 0.62 NO 0
OR1 59_(CB) 112_(STM) SIDE
85.85 0.62 NO 0
OR-10 Maj-44 DICB_3 BOTTOM
87.539 0.62 NO 0
OR-11 Maj-44 11_(CB) BOTTOM
87.539 0.62 NO 0
OR-12 Maj-41 12_(CB) BOTTOM
87.62 0.62 NO 0
OR-13 Maj-41 13_(CB) BOTTOM
87.62 0.62 NO 0
OR-14 Maj-37 14_(CB) BOTTOM
87.993 0.62 NO 0
OR-15 Maj-37 15_(CB) BOTTOM
87.993 0.62 NO 0
OR-16 Maj-35 16_(CB) BOTTOM
88.149 0.62 NO 0
OR-17 Maj-35 17_(CB) BOTTOM
88.149 0.62 NO 0
OR-18 Maj-28 18_(CB) BOTTOM
88.251 0.62 NO 0
OR-19 Maj-28 19_(CB) BOTTOM
88.251 0.62 NO 0
;CICB
OR2 Maj-48_3 59_(CB) SIDE
87.647 0.62 NO 0
OR-20 Maj-26 20_(CB) BOTTOM
88.605 0.62 NO 0
OR-21 Maj-26 21_(CB) BOTTOM
88.605 0.62 NO 0
OR-23 Maj-24 23_(CB) BOTTOM
88.904 0.62 NO 0
OR-24 Maj-24 24_(CB) BOTTOM
88.904 0.62 NO 0
OR-25 Maj-19 25_(CB) BOTTOM
89.388 0.62 NO 0
;CICB
OR-26 Maj-19 26_(CB) SIDE 89.388
0.62 NO 0
;Double CB
OR-27 Maj-21 27_(CB) BOTTOM
88.595 0.62 NO 0
;Double CB
OR-28 Maj-21 28_(CB) BOTTOM
88.595 0.62 NO 0
OR3 Slope1 DICB_1 BOTTOM
89.066 0.62 NO 0
;CICB
OR-31 Slope1 31_(CB) SIDE 89.066
0.62 NO 0
OR4 DICB_2 128_(STM) SIDE
85.37 0.62 NO 0
OR5 Maj-29 DICB_2 SIDE 88.595
0.65 NO 0
RYCB-02 RYCB_2_(RYCB) 112_(STM) SIDE
86.33 0.62 NO 0
RYCB-03 1_(RYCB) 110_(STM) SIDE
86.327 0.62 NO 0
RYCB-04 RYCB_4_(RYCB) StartNullStruct3 SIDE
86.42 0.62 NO 0

RYCB-06 RYCB_6_(RYCB) 128_(STM) SIDE
86.075 0.82 NO 0
;Direct Connection
RYCB-07 15_RYCB 138_(STM) SIDE
86.595 0.82 NO 0
RYCB-10 RYCB_10_(RYCB) 148_(STM) SIDE
87.33 0.62 NO 0
RYCB-22 22_(RYCB) 142_(STM) SIDE
87.683 0.62 NO 0
RYCB-29 29_(RYCB) STM-251_(STM) SIDE
88.539 0.62 NO 0

[OUTLETS]
;;Name From Node To Node Offset Type
QTable/Qcoeff Qexpon Gated
;;-------------- ---------------- ---------------- ---------- ---------------- ---
------------- ---------- --------
B2-Out B2_Stor 150_(STM) 90.5
TABULAR/HEAD B2-Out NO
B4-Out 58_(CB) 2142_(STM) 85.4
TABULAR/HEAD B4-Out NO

[XSECTIONS]
;;Link Shape Geom1 Geom2 Geom3
Geom4 Barrels Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- --
-------- ----------
10_(STM) CIRCULAR 1.35 0 0 0
1
11_(STM) CIRCULAR 1.35 0 0 0
1
12_(STM) CIRCULAR 1.35 0 0 0
1
13_(STM) CIRCULAR 1.35 0 0 0
1
14_(STM) CIRCULAR 1.65 0 0 0
1
15_(10)_(STM) CIRCULAR 1.35 0 0
0 1
15_(11)_(STM) CIRCULAR 1.35 0 0
0 1
15_(12)_(STM) CIRCULAR 0.75 0 0
0 1
15_(13)_(STM) CIRCULAR 0.75 0 0
0 1
15_(5)_(STM) CIRCULAR 0.525 0 0
0 1
15_(9)_(STM) CIRCULAR 1.35 0 0 0
1
4_(STM) CIRCULAR 1.2 0 0 0
1
5_(STM) CIRCULAR 1.35 0 0 0
1
8_(STM) CIRCULAR 1.35 0 0 0
1
9_(STM) CIRCULAR 1.35 0 0 0
1
C1 TRIANGULAR 0.5 3 0 0
1
C18 TRIANGULAR 0.6 3.6 0 0
1
C18_3 IRREGULAR 18mROWwSidewalk 0 0
0 1
C18_4 IRREGULAR 18mROWwSidewalk 0 0
0 1
C18_5 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_6 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_8 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C18_9 IRREGULAR 24mROW-Dbl-Sidewalk 0
0 0 1
C19 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C20 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C21 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C22 IRREGULAR 24mROW-Dbl-Sidewalk 0 0
0 1
C23 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C24 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C25 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C26 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C27 TRIANGULAR 0.6 3.6 0 0
1
C27_1 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C27_2 IRREGULAR 18mROW-No-Sidewalk 0
0 0 1
C28 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C31 TRIANGULAR 0.6 3.6 0 0
1
C31_1 TRIANGULAR 0.6 3.6 0 0
1
C31_2 TRIANGULAR 0.6 3.6 0 0
1
C36 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C37 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C4_1 TRIANGULAR 0.6 3.6 0 0
1
C4_2 TRIANGULAR 0.6 3.6 0 0
1
C41 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C42 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C43 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C44 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C45 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C46 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C47 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C48 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C49 IRREGULAR 18mROW-No-Sidewalk 0 0
0 1
C5 TRIANGULAR 0.6 3.6 0 0
1
C50_1 IRREGULAR 18mROWwSidewalk 0 0
0 1
C50_2 IRREGULAR 18mROWwSidewalk 0 0
0 1
C51 IRREGULAR 18mROWwSidewalk 0 0
0 1
C52 IRREGULAR 18mROWwSidewalk 0 0
0 1

C53 IRREGULAR 18mROWwSidewalk 0 0
0 1
C54 IRREGULAR 18mROWwSidewalk 0 0
0 1
C56 TRIANGULAR 0.6 3.6 0 0
1
C58 TRIANGULAR 0.6 3.6 0 0
1
C58_1 TRIANGULAR 0.6 3.6 0 0
1
C58_2 TRIANGULAR 0.6 3.6 0 0
1
C59_1 TRIANGULAR 0.6 3.6 0 0
1
C59_2 TRIANGULAR 0.6 3.6 0 0
1
C60 TRIANGULAR 0.6 3.6 0 0
1
C62 TRIANGULAR 0.6 3.6 0 0
1
C63_1 TRIANGULAR 0.6 3.6 0 0
1
C63_2 TRIANGULAR 0.6 3.6 0 0
1
C65_1 TRIANGULAR 0.6 3.6 0 0
1
C65_2 TRIANGULAR 0.6 3.6 0 0
1
C66_1 TRIANGULAR 0.6 3.6 0 0
1
C66_2 TRIANGULAR 0.6 3.6 0 0
1
C67 TRIANGULAR 0.6 3.6 0 0
1
Pipe_-_(100)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(110)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(111)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(114)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(117)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(118)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(119)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(134)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(137)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(138)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(139)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(14)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(140)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(141)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(142)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(143)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(144)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(15)_(RYCB) CIRCULAR 0.3 0 0
0 1
Pipe_-_(150)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(151)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(152)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(153)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(154)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(155)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(156)_(1)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(156)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(16)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(161)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(164)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(165)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(17)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(19)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(25)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(27)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(73)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(87)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(88)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(89)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(9)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(90)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(93)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(94)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(95)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(96)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(98)_(RYCB) CIRCULAR 0.25 0 0
0 1
Pipe_-_(99)_(RYCB) CIRCULAR 0.25 0 0
0 1
STM-23_(STM) CIRCULAR 0.45 0 0
0 1
STM-24_(STM) CIRCULAR 0.45 0 0
0 1
STM-28_(STM) CIRCULAR 0.25 0 0
0 1
STM-34_(1)_(1)_(STM) CIRCULAR 1.65 0 0
0 1
STM-34_(1)_(STM) CIRCULAR 1.65 0 0
0 1
STM-34_(STM) CIRCULAR 1.65 0 0
0 1
STM-35_(STM) CIRCULAR 1.65 0 0
0 1

```
STM-36_(STM)    CIRCULAR    1.65        0       0
0       1
STM-81_(STM)    CIRCULAR    0.25        0       0
0       1
STM-82_(STM)    CIRCULAR    0.25        0       0
0       1
STM-83_(STM)    CIRCULAR    0.25        0       0
0       1
CB-02       CIRCULAR    0.094       0       0       0
CB-03       CIRCULAR    0.102       0       0       0
CB-04       CIRCULAR    0.094       0       0       0
CB-05       CIRCULAR    0.094       0       0       0
CB-06       CIRCULAR    0.083       0       0       0
CB-08       CIRCULAR    0.102       0       0       0
CB-09       CIRCULAR    0.094       0       0       0
CB-10       CIRCULAR    0.094       0       0       0
CB-11       CIRCULAR    0.127       0       0       0
CB-12       CIRCULAR    0.127       0       0       0
CB-13       CIRCULAR    0.127       0       0       0
CB-14       CIRCULAR    0.094       0       0       0
CB-15       CIRCULAR    0.094       0       0       0
CB-16       CIRCULAR    0.083       0       0       0
CB-17       CIRCULAR    0.094       0       0       0
CB-18       CIRCULAR    0.152       0       0       0
CB-19       CIRCULAR    0.152       0       0       0
CB-20       CIRCULAR    0.108       0       0       0
CB-21       CIRCULAR    0.108       0       0       0
CB-23       CIRCULAR    0.127       0       0       0
CB-24       CIRCULAR    0.127       0       0       0
CB-25       CIRCULAR    0.25        0       0       0
CB-26       CIRCULAR    0.25        0       0       0
CB-27       CIRCULAR    0.152       0       0       0
CB-28       CIRCULAR    0.152       0       0       0
CB-30       CIRCULAR    0.178       0       0       0
CB-31       CIRCULAR    0.25        0       0       0
OR-02       RECT_CLOSED  0.13       0.65    0
0
OR-03       RECT_CLOSED  0.13       0.65    0
0
OR-04       RECT_CLOSED  0.13       0.65    0
0
OR-05       RECT_CLOSED  0.13       0.65    0
0
OR-08       RECT_CLOSED  0.35       0.35    0
0
OR-09       RECT_CLOSED  0.35       0.35    0
0
OR1         CIRCULAR    0.083       0       0       0
OR-10       RECT_CLOSED  0.35       0.35    0
0
OR-11       RECT_CLOSED  0.35       0.35    0
0
OR-12       RECT_CLOSED  0.35       0.35    0
0
OR-13       RECT_CLOSED  0.35       0.35    0
0
OR-14       RECT_CLOSED  0.35       0.35    0
0
OR-15       RECT_CLOSED  0.35       0.35    0
0
OR-16       RECT_CLOSED  0.35       0.35    0
0
OR-17       RECT_CLOSED  0.35       0.35    0
0
OR-18       RECT_CLOSED  0.35       0.35    0
0
OR-19       RECT_CLOSED  0.35       0.35    0
0
OR2         RECT_CLOSED  0.13       0.65    0
0
OR-20       RECT_CLOSED  0.35       0.35    0
0
OR-21       RECT_CLOSED  0.35       0.35    0
0
OR-23       RECT_CLOSED  0.35       0.35    0
0
OR-24       RECT_CLOSED  0.35       0.35    0
0
OR-25       RECT_CLOSED  0.35       0.35    0
0
OR-26       RECT_CLOSED  0.13       0.65    0
0
OR-27       RECT_CLOSED  0.35       0.7     0
0
OR-28       RECT_CLOSED  0.35       0.7     0
0
OR3         RECT_CLOSED  0.35       0.35    0
0
OR-31       RECT_CLOSED  0.13       0.65    0
0
OR4         CIRCULAR    0.083       0       0       0
OR5         CIRCULAR    0.35        0       0       0
RYCB-02     CIRCULAR    0.094       0       0       0
RYCB-03     CIRCULAR    0.152       0       0       0
RYCB-04     CIRCULAR    0.083       0       0       0
RYCB-06     CIRCULAR    0.2         0       0       0
RYCB-07     CIRCULAR    0.25        0       0       0
RYCB-10     CIRCULAR    0.178       0       0       0
RYCB-22     CIRCULAR    0.152       0       0       0
RYCB-29     CIRCULAR    0.152       0       0       0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.035    0.035    0.013
X1 16.5mROW-Dbl-Sidewalk  9     2      14.5    0.0     0.0
0.0     0.0     0.0
GR 0.6     -10.9    0.15    2      0.15    4      0      4.01
0.13    8.25
GR 0       12.49    0.15    12.5    0.15    14.5    0.6     25.6
;
NC 0.035    0.035    0.013
X1 16.5mROW-No-Sidewalk  9     3.8     12.7    0.0     0.0
0.0     0.0     0.0
GR 0.6     -9.1     0.15    3.8     0.15    4      0      4.01
0.13    8.25
GR 0       12.49    0.15    12.5    0.15    12.7    0.6     25.6
;
NC 0.035    0.035    0.013
X1 16.5mROWwSidewalk  9     2      12.7    0.0     0.0
0.0     0.0     0.0
GR 0.6     -10.9    0.15    2      0.15    4      0      4.01
0.13    8.25
GR 0       12.49    0.15    12.5    0.15    12.7    0.6     25.6
;
NC 0.035    0.035    0.013
X1 18mROW-Dbl-Sidewalk  9     5.5     18      0.0     0.0
0.0     0.0     0.0
GR 0.6     -10      0.09    5.5     0.08    7.5     0      7.5
0.13    11.75
GR 0       16       0.08    16      0.09    18      0.6     29.25
;
NC 0.035    0.035    0.013
X1 18mROW-No-Sidewalk  7     7.5     16      0.0     0.0
0.0     0.0     0.0
GR 0.6     -10      0.08    7.5     0      7.5     0.13    11.75
0       16
GR 0.08     16      0.6     29.25
;
NC 0.035    0.035    0.013
```

```
X1 18mROWwSidewalk   8       2.75     16       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.09     2.75     0.08     7.5      0        7.5
0.13     11.75
GR 0        16       0.08     16       0.6      29.25
;
NC 0.035    0.035    0.013
X1 18mROWwSidewalk-Half  5       2.75     16       0.0      0.0
0.0      0.0      0.0
GR 0.6      -10      0.09     2.75     0.08     7.5      0        7.5
0.13     11.75
;
NC 0.035    0.035    0.013
X1 24mROW-Dbl-Sidewalk  9       3.6      20.4     0.0      0.0
0.0      0.0      0.0
GR 0.6      -9.3     0.15     3.6      0.15     7.5      0        7.51
0.13     12
GR 0        16.49    0.15     16.5     0.15     20.4     0.6      33.3

[LOSSES]
;;Link          Kentry     Kexit      Kavg       Flap Gate  Seepage
;;-------------- ---------- ---------- ---------- ---------- ----------
10_(STM)        0          0.26       0          NO         0
11_(STM)        0          0.11       0          NO         0
12_(STM)        0          1.33       0          NO         0
13_(STM)        0          0.02       0          NO         0
14_(STM)        0          0.47       0          NO         0
15_(10)_(STM)   0          0.39       0          NO         0
15_(11)_(STM)   0          0.035      0          NO         0
15_(12)_(STM)   0          0.035      0          NO         0
15_(13)_(STM)   0          1.33       0          NO         0
15_(5)_(STM)    0          0.02       0          NO         0
15_(9)_(STM)    0          0.47       0          NO         0
4_(STM)         0          0.035      0          NO         0
5_(STM)         0          1.33       0          NO         0
8_(STM)         0          0.035      0          NO         0
9_(STM)         0          0.32       0          NO         0
Pipe_-_(110)_(RYCB) 0      0.02       0          NO         0
Pipe_-_(111)_(RYCB) 0      1.33       0          NO         0
Pipe_-_(114)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(117)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(118)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(119)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(134)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(137)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(138)_(RYCB) 0      0.02       0          NO         0
Pipe_-_(139)_(RYCB) 0      0.08       0          NO         0
Pipe_-_(14)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(140)_(RYCB) 0      1.33       0          NO         0
Pipe_-_(141)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(142)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(143)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(144)_(RYCB) 0      0.54       0          NO         0
Pipe_-_(15)_(RYCB) 0       0.84       0          NO         0
Pipe_-_(150)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(151)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(152)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(153)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(154)_(RYCB) 0      0.02       0          NO         0
Pipe_-_(155)_(RYCB) 0      1.33       0          NO         0
Pipe_-_(156)_(1)_(RYCB) 0  0.84       0          NO         0
Pipe_-_(156)_(RYCB) 0      0.02       0          NO         0
Pipe_-_(161)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(165)_(RYCB) 0      0.035      0          NO         0
Pipe_-_(87)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(89)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(93)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(94)_(RYCB) 0       0.02       0          NO         0
Pipe_-_(95)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(96)_(RYCB) 0       1.33       0          NO         0
Pipe_-_(98)_(RYCB) 0       0.035      0          NO         0
Pipe_-_(99)_(RYCB) 0       0.035      0          NO         0
STM-23_(STM)    0          1.33       0          NO         0
STM-24_(STM)    0          0.08       0          NO         0
STM-28_(STM)    0          0.055      0          NO         0
STM-34_(1)_(1)_(STM) 0     1.07       0          NO         0
STM-34_(1)_(STM) 0         0.08       0          NO         0
STM-34_(STM)    0          0.54       0          NO         0
STM-35_(STM)    0          0.32       0          NO         0
STM-36_(STM)    0          0.39       0          NO         0
STM-81_(STM)    0          1.33       0          NO         0
STM-82_(STM)    0          1.33       0          NO         0
STM-83_(STM)    0          1.33       0          NO         0

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
;100% capture of flow to this CB
100%_Capture     Rating     0          0
100%_Capture                0.01       0.001
100%_Capture                0.1        1
100%_Capture                0.3        5

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
102mm-ICD        Rating     0          0
102mm-ICD                   0.01       0.0266
102mm-ICD                   0.15       0.0278
102mm-ICD                   0.3        0.0296
102mm-ICD                   0.35       0.03

102mm-ICD-RLCB   Rating     0          0
102mm-ICD-RLCB              0.01       0.0301
102mm-ICD-RLCB              0.15       0.0312
102mm-ICD-RLCB              0.3        0.0328
102mm-ICD-RLCB              0.35       0.0332

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
108mm-ICD        Rating     0          0
108mm-ICD                   0.01       0.0298
108mm-ICD                   0.15       0.0312
108mm-ICD                   0.3        0.0332
108mm-ICD                   0.35       0.0337

108mm-ICD-RLCB   Rating     0          0
108mm-ICD-RLCB              0.01       0.0338
108mm-ICD-RLCB              0.15       0.035
108mm-ICD-RLCB              0.3        0.0367
108mm-ICD-RLCB              0.35       0.0372

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
;Depth from top of CB
127mm-ICD        Rating     0          0
127mm-ICD                   0.01       0.0413
127mm-ICD                   0.15       0.0432
127mm-ICD                   0.3        0.0458
127mm-ICD                   0.35       0.0466

127mm-ICD-RLCB   Rating     0          0
127mm-ICD-RLCB              0.01       0.047
127mm-ICD-RLCB              0.15       0.048
127mm-ICD-RLCB              0.3        0.051
127mm-ICD-RLCB              0.35       0.052

;Plas-Tech StormTech Orifice Plate Inlet Control Device
(ICD).
```

;Depth from top of CB
152mm-ICD Rating 0 0
152mm-ICD 0.01 0.0591
152mm-ICD 0.15 0.0618
152mm-ICD 0.3 0.0657
152mm-ICD 0.35 0.0667

152mm-ICD-RLCB Rating 0 0
152mm-ICD-RLCB 0.01 0.067
152mm-ICD-RLCB 0.15 0.069
152mm-ICD-RLCB 0.3 0.073
152mm-ICD-RLCB 0.35 0.074

;Sx0.03
16ROW_1CB_So0.005 Rating 0 0
16ROW_1CB_So0.005 0.01 0.0003
16ROW_1CB_So0.005 0.02 0.0011
16ROW_1CB_So0.005 0.03 0.0037
16ROW_1CB_So0.005 0.04 0.0072
16ROW_1CB_So0.005 0.05 0.0132
16ROW_1CB_So0.005 0.06 0.0168
16ROW_1CB_So0.005 0.07 0.0214
16ROW_1CB_So0.005 0.08 0.0253
16ROW_1CB_So0.005 0.09 0.0286
16ROW_1CB_So0.005 0.1 0.0331
16ROW_1CB_So0.005 0.11 0.0367
16ROW_1CB_So0.005 0.12 0.0409
16ROW_1CB_So0.005 0.13 0.0446
16ROW_1CB_So0.005 0.14 0.048
16ROW_1CB_So0.005 0.15 0.049
16ROW_1CB_So0.005 0.16 0.049
16ROW_1CB_So0.005 0.17 0.049
16ROW_1CB_So0.005 0.18 0.049
16ROW_1CB_So0.005 0.19 0.049
16ROW_1CB_So0.005 0.2 0.049
16ROW_1CB_So0.005 0.21 0.049
16ROW_1CB_So0.005 0.22 0.049
16ROW_1CB_So0.005 0.23 0.049
16ROW_1CB_So0.005 0.24 0.049
16ROW_1CB_So0.005 0.25 0.049
16ROW_1CB_So0.005 0.26 0.049
16ROW_1CB_So0.005 0.27 0.049
16ROW_1CB_So0.005 0.28 0.049
16ROW_1CB_So0.005 0.29 0.049
16ROW_1CB_So0.005 0.3 0.049
16ROW_1CB_So0.005 0.31 0.049
16ROW_1CB_So0.005 0.32 0.049
16ROW_1CB_So0.005 0.33 0.049
16ROW_1CB_So0.005 0.34 0.049
16ROW_1CB_So0.005 0.35 0.049
16ROW_1CB_So0.005 0.36 0.049
16ROW_1CB_So0.005 0.37 0.049
16ROW_1CB_So0.005 0.38 0.049
16ROW_1CB_So0.005 0.39 0.049
16ROW_1CB_So0.005 0.4 0.049

;Sx0.03
16ROW_1CB_So0.01 Rating 0 0
16ROW_1CB_So0.01 0.01 0.0005
16ROW_1CB_So0.01 0.02 0.0016
16ROW_1CB_So0.01 0.03 0.0052
16ROW_1CB_So0.01 0.04 0.0101
16ROW_1CB_So0.01 0.05 0.0158
16ROW_1CB_So0.01 0.06 0.0206
16ROW_1CB_So0.01 0.07 0.0254
16ROW_1CB_So0.01 0.08 0.029
16ROW_1CB_So0.01 0.09 0.0343
16ROW_1CB_So0.01 0.1 0.0382
16ROW_1CB_So0.01 0.11 0.043
16ROW_1CB_So0.01 0.12 0.0463
16ROW_1CB_So0.01 0.13 0.049
16ROW_1CB_So0.01 0.14 0.049
16ROW_1CB_So0.01 0.15 0.049
16ROW_1CB_So0.01 0.16 0.049
16ROW_1CB_So0.01 0.17 0.049
16ROW_1CB_So0.01 0.18 0.049
16ROW_1CB_So0.01 0.19 0.049
16ROW_1CB_So0.01 0.2 0.049
16ROW_1CB_So0.01 0.21 0.049
16ROW_1CB_So0.01 0.22 0.049
16ROW_1CB_So0.01 0.23 0.049
16ROW_1CB_So0.01 0.24 0.049
16ROW_1CB_So0.01 0.25 0.049
16ROW_1CB_So0.01 0.26 0.049
16ROW_1CB_So0.01 0.27 0.049
16ROW_1CB_So0.01 0.28 0.049
16ROW_1CB_So0.01 0.29 0.049
16ROW_1CB_So0.01 0.3 0.049
16ROW_1CB_So0.01 0.31 0.049
16ROW_1CB_So0.01 0.32 0.049
16ROW_1CB_So0.01 0.33 0.049
16ROW_1CB_So0.01 0.34 0.049
16ROW_1CB_So0.01 0.35 0.049
16ROW_1CB_So0.01 0.36 0.049
16ROW_1CB_So0.01 0.37 0.049

;Sx0.03
16ROW_1CB_So0.02 Rating 0 0
16ROW_1CB_So0.02 0.01 0.0006
16ROW_1CB_So0.02 0.02 0.0019
16ROW_1CB_So0.02 0.03 0.0062
16ROW_1CB_So0.02 0.04 0.012
16ROW_1CB_So0.02 0.05 0.0154
16ROW_1CB_So0.02 0.06 0.0192
16ROW_1CB_So0.02 0.07 0.0236
16ROW_1CB_So0.02 0.08 0.0275
16ROW_1CB_So0.02 0.09 0.0316
16ROW_1CB_So0.02 0.1 0.0363
16ROW_1CB_So0.02 0.11 0.041
16ROW_1CB_So0.02 0.12 0.045
16ROW_1CB_So0.02 0.13 0.045
16ROW_1CB_So0.02 0.14 0.045
16ROW_1CB_So0.02 0.15 0.045
16ROW_1CB_So0.02 0.16 0.045
16ROW_1CB_So0.02 0.17 0.045
16ROW_1CB_So0.02 0.18 0.045
16ROW_1CB_So0.02 0.19 0.045
16ROW_1CB_So0.02 0.2 0.045
16ROW_1CB_So0.02 0.21 0.045
16ROW_1CB_So0.02 0.22 0.045
16ROW_1CB_So0.02 0.23 0.045
16ROW_1CB_So0.02 0.24 0.045
16ROW_1CB_So0.02 0.25 0.045
16ROW_1CB_So0.02 0.26 0.045
16ROW_1CB_So0.02 0.27 0.045
16ROW_1CB_So0.02 0.28 0.045
16ROW_1CB_So0.02 0.29 0.045
16ROW_1CB_So0.02 0.3 0.045
16ROW_1CB_So0.02 0.31 0.045
16ROW_1CB_So0.02 0.32 0.045

;Sx0.03
16ROW_1CB_So0.03 Rating 0 0
16ROW_1CB_So0.03 0.01 0.0005
16ROW_1CB_So0.03 0.02 0.0017
16ROW_1CB_So0.03 0.03 0.0057
16ROW_1CB_So0.03 0.04 0.011
16ROW_1CB_So0.03 0.05 0.0146
16ROW_1CB_So0.03 0.06 0.0179
16ROW_1CB_So0.03 0.07 0.0216

16ROW_1CB_So0.03 0.08 0.0256
16ROW_1CB_So0.03 0.09 0.0298
16ROW_1CB_So0.03 0.1 0.0335
16ROW_1CB_So0.03 0.11 0.038
16ROW_1CB_So0.03 0.12 0.039
16ROW_1CB_So0.03 0.13 0.039
16ROW_1CB_So0.03 0.14 0.039
16ROW_1CB_So0.03 0.15 0.039
16ROW_1CB_So0.03 0.16 0.039
16ROW_1CB_So0.03 0.17 0.039
16ROW_1CB_So0.03 0.18 0.039
16ROW_1CB_So0.03 0.19 0.039
16ROW_1CB_So0.03 0.2 0.039
16ROW_1CB_So0.03 0.21 0.039
16ROW_1CB_So0.03 0.22 0.039
16ROW_1CB_So0.03 0.23 0.039
16ROW_1CB_So0.03 0.24 0.039
16ROW_1CB_So0.03 0.25 0.039
16ROW_1CB_So0.03 0.26 0.039
16ROW_1CB_So0.03 0.27 0.039
16ROW_1CB_So0.03 0.28 0.039
16ROW_1CB_So0.03 0.29 0.039
16ROW_1CB_So0.03 0.3 0.039

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
178mm-ICD Rating 0 0
178mm-ICD 0.01 0.0811
178mm-ICD 0.15 0.0848
178mm-ICD 0.3 0.0901
178mm-ICD 0.35 0.0915

178mm-ICD-RLCB Rating 0 0
178mm-ICD-RLCB 0.01 0.092
178mm-ICD-RLCB 0.15 0.095
178mm-ICD-RLCB 0.3 0.1
178mm-ICD-RLCB 0.35 0.101

;1 Single CB on single lead pipe. Single CB is limited by 250mm Lead pipe at 1.2m head. Q=195.3 L/s
1-CB Rating 0 0
1-CB 0.05 0.1953
1-CB 1 0.1954

;1 DCB on single lead pipe. DCB is limited by 300mm Lead pipe at 1.2m head. Q=281.2 L/s
1-DCB Rating 0 0
1-DCB 0.05 0.2812
1-DCB 1 0.2813

;Sx0.03
24ROW_1CB_So0.005 Rating 0 0
24ROW_1CB_So0.005 0.01 0.0004
24ROW_1CB_So0.005 0.02 0.0012
24ROW_1CB_So0.005 0.03 0.0039
24ROW_1CB_So0.005 0.04 0.0076
24ROW_1CB_So0.005 0.05 0.0136
24ROW_1CB_So0.005 0.06 0.0174
24ROW_1CB_So0.005 0.07 0.022
24ROW_1CB_So0.005 0.08 0.0258
24ROW_1CB_So0.005 0.09 0.0296
24ROW_1CB_So0.005 0.1 0.034
24ROW_1CB_So0.005 0.11 0.0378
24ROW_1CB_So0.005 0.12 0.0418
24ROW_1CB_So0.005 0.13 0.0453
24ROW_1CB_So0.005 0.14 0.0486
24ROW_1CB_So0.005 0.15 0.049
24ROW_1CB_So0.005 0.16 0.049
24ROW_1CB_So0.005 0.17 0.049
24ROW_1CB_So0.005 0.18 0.049
24ROW_1CB_So0.005 0.19 0.049
24ROW_1CB_So0.005 0.2 0.049
24ROW_1CB_So0.005 0.21 0.049
24ROW_1CB_So0.005 0.22 0.049
24ROW_1CB_So0.005 0.23 0.049
24ROW_1CB_So0.005 0.24 0.049
24ROW_1CB_So0.005 0.25 0.049
24ROW_1CB_So0.005 0.26 0.049
24ROW_1CB_So0.005 0.27 0.049
24ROW_1CB_So0.005 0.28 0.049
24ROW_1CB_So0.005 0.29 0.049
24ROW_1CB_So0.005 0.3 0.049
24ROW_1CB_So0.005 0.31 0.049
24ROW_1CB_So0.005 0.32 0.049
24ROW_1CB_So0.005 0.33 0.049
24ROW_1CB_So0.005 0.34 0.049
24ROW_1CB_So0.005 0.35 0.049
24ROW_1CB_So0.005 0.36 0.049
24ROW_1CB_So0.005 0.37 0.049
24ROW_1CB_So0.005 0.38 0.049
24ROW_1CB_So0.005 0.39 0.049
24ROW_1CB_So0.005 0.4 0.049

;Sx0.03
24ROW_1CB_So0.01 Rating 0 0
24ROW_1CB_So0.01 0.01 0.0005
24ROW_1CB_So0.01 0.02 0.0017
24ROW_1CB_So0.01 0.03 0.0055
24ROW_1CB_So0.01 0.04 0.0107
24ROW_1CB_So0.01 0.05 0.0164
24ROW_1CB_So0.01 0.06 0.0212
24ROW_1CB_So0.01 0.07 0.0259
24ROW_1CB_So0.01 0.08 0.03
24ROW_1CB_So0.01 0.09 0.0351
24ROW_1CB_So0.01 0.1 0.0396
24ROW_1CB_So0.01 0.11 0.044
24ROW_1CB_So0.01 0.12 0.0473
24ROW_1CB_So0.01 0.13 0.049
24ROW_1CB_So0.01 0.14 0.049
24ROW_1CB_So0.01 0.15 0.049
24ROW_1CB_So0.01 0.16 0.049
24ROW_1CB_So0.01 0.17 0.049
24ROW_1CB_So0.01 0.18 0.049
24ROW_1CB_So0.01 0.19 0.049
24ROW_1CB_So0.01 0.2 0.049
24ROW_1CB_So0.01 0.21 0.049
24ROW_1CB_So0.01 0.22 0.049
24ROW_1CB_So0.01 0.23 0.049
24ROW_1CB_So0.01 0.24 0.049
24ROW_1CB_So0.01 0.25 0.049
24ROW_1CB_So0.01 0.26 0.049
24ROW_1CB_So0.01 0.27 0.049
24ROW_1CB_So0.01 0.28 0.049
24ROW_1CB_So0.01 0.29 0.049
24ROW_1CB_So0.01 0.3 0.049
24ROW_1CB_So0.01 0.31 0.049
24ROW_1CB_So0.01 0.32 0.049
24ROW_1CB_So0.01 0.33 0.049
24ROW_1CB_So0.01 0.34 0.049
24ROW_1CB_So0.01 0.35 0.049
24ROW_1CB_So0.01 0.36 0.049
24ROW_1CB_So0.01 0.37 0.049

;Sx0.03
24ROW_1CB_So0.02 Rating 0 0
24ROW_1CB_So0.02 0.01 0.0006
24ROW_1CB_So0.02 0.02 0.002
24ROW_1CB_So0.02 0.03 0.0066
24ROW_1CB_So0.02 0.04 0.0123

24ROW_1CB_So0.02 0.05 0.0158
24ROW_1CB_So0.02 0.06 0.0198
24ROW_1CB_So0.02 0.07 0.0243
24ROW_1CB_So0.02 0.08 0.0281
24ROW_1CB_So0.02 0.09 0.0325
24ROW_1CB_So0.02 0.1 0.0373
24ROW_1CB_So0.02 0.11 0.0418
24ROW_1CB_So0.02 0.12 0.045
24ROW_1CB_So0.02 0.13 0.045
24ROW_1CB_So0.02 0.14 0.045
24ROW_1CB_So0.02 0.15 0.045
24ROW_1CB_So0.02 0.16 0.045
24ROW_1CB_So0.02 0.17 0.045
24ROW_1CB_So0.02 0.18 0.045
24ROW_1CB_So0.02 0.19 0.045
24ROW_1CB_So0.02 0.2 0.045
24ROW_1CB_So0.02 0.21 0.045
24ROW_1CB_So0.02 0.22 0.045
24ROW_1CB_So0.02 0.23 0.045
24ROW_1CB_So0.02 0.24 0.045
24ROW_1CB_So0.02 0.25 0.045
24ROW_1CB_So0.02 0.26 0.045
24ROW_1CB_So0.02 0.27 0.045
24ROW_1CB_So0.02 0.28 0.045
24ROW_1CB_So0.02 0.29 0.045
24ROW_1CB_So0.02 0.3 0.045
24ROW_1CB_So0.02 0.31 0.045
24ROW_1CB_So0.02 0.32 0.045

;Sx0.03
24ROW_1CB_So0.03 Rating 0 0
24ROW_1CB_So0.03 0.01 0.0006
24ROW_1CB_So0.03 0.02 0.0018
24ROW_1CB_So0.03 0.03 0.006
24ROW_1CB_So0.03 0.04 0.0113
24ROW_1CB_So0.03 0.05 0.015
24ROW_1CB_So0.03 0.06 0.0183
24ROW_1CB_So0.03 0.07 0.0225
24ROW_1CB_So0.03 0.08 0.0264
24ROW_1CB_So0.03 0.09 0.0306
24ROW_1CB_So0.03 0.1 0.0343
24ROW_1CB_So0.03 0.11 0.0388
24ROW_1CB_So0.03 0.12 0.039
24ROW_1CB_So0.03 0.13 0.039
24ROW_1CB_So0.03 0.14 0.039
24ROW_1CB_So0.03 0.15 0.039
24ROW_1CB_So0.03 0.16 0.039
24ROW_1CB_So0.03 0.17 0.039
24ROW_1CB_So0.03 0.18 0.039
24ROW_1CB_So0.03 0.19 0.039
24ROW_1CB_So0.03 0.2 0.039
24ROW_1CB_So0.03 0.21 0.039
24ROW_1CB_So0.03 0.22 0.039
24ROW_1CB_So0.03 0.23 0.039
24ROW_1CB_So0.03 0.24 0.039
24ROW_1CB_So0.03 0.25 0.039
24ROW_1CB_So0.03 0.26 0.039
24ROW_1CB_So0.03 0.27 0.039
24ROW_1CB_So0.03 0.28 0.039
24ROW_1CB_So0.03 0.29 0.039
24ROW_1CB_So0.03 0.3 0.039

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
;Assumes 2 CB's with individual ICD's
2x102mm-ICD Rating 0 0
2x102mm-ICD 0.005 0.0532
2x102mm-ICD 0.15 0.0556
2x102mm-ICD 0.3 0.0592
2x102mm-ICD 0.35 0.06

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
;Assumes 2 CB's with individual ICD's
2x152mm-ICD Rating 0 0
2x152mm-ICD 0.005 0.1182
2x152mm-ICD 0.15 0.1236
2x152mm-ICD 0.3 0.1314
2x152mm-ICD 0.35 0.1334

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
83mm-ICD Rating 0 0
83mm-ICD 0.01 0.0176
83mm-ICD 0.15 0.0184
83mm-ICD 0.3 0.0196
83mm-ICD 0.35 0.0199

83mm-ICD-RLCB Rating 0 0
83mm-ICD-RLCB 0.01 0.0199
83mm-ICD-RLCB 0.15 0.0207
83mm-ICD-RLCB 0.3 0.0217
83mm-ICD-RLCB 0.35 0.022

;Plas-Tech StormTech Orifice Plate Inlet Control Device (ICD).
;Depth from top of CB
94mm-ICD Rating 0 0
94mm-ICD 0.01 0.0226
94mm-ICD 0.15 0.0236
94mm-ICD 0.3 0.0251
94mm-ICD 0.35 0.0255

94mm-ICD-RLCB Rating 0 0
94mm-ICD-RLCB 0.01 0.0256
94mm-ICD-RLCB 0.15 0.0265
94mm-ICD-RLCB 0.3 0.0278
94mm-ICD-RLCB 0.35 0.0282

;Block 160 - Medium Density Residential
;0.883 ha C=0.80 tc= 10 min
;5 Year Rational = 205 L/s
B1-Out Rating 0 0
B1-Out 0.01 0.205
B1-Out 0.3 0.234

;Existing UHAUL site
;3.43 ha R=0.90 tc= 12 min
;5 Year Rational (via Novatech)= 786.6 L/s
B2-Out Rating 0 0
B2-Out 0.01 0.787
B2-Out 0.3 0.897

;Block 161 - Medium Density Residential
;0.965 ha C=0.80 tc= 10 min
;5 Year Rational = 224 L/s
B3-Out Rating 0 0
B3-Out 0.01 0.224
B3-Out 0.3 0.255

;Park Lands
;1.00 ha R=0.25 tc= 10 min
;5 Year Rational (via Novatech) = 129 L/s
B4-Out Rating 0 0
B4-Out 0.01 0.1297
B4-Out 0.3 0.1479

```
;540 m³ of storage assumed for site based on MArch 2020
UHAUL site Design Breif
UHAL_Onsite      Storage    0          1800
UHAL_Onsite                 0.3        1800
UHAL_Onsite                 0.31       1
UHAL_Onsite                 2          1

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Rainfall (mm/hr)
002yrChicago3hr  01-01-2019 00:00:00   0
002yrChicago3hr  01-01-2019 00:10:00   2.81459
002yrChicago3hr  01-01-2019 00:20:00   3.49824
002yrChicago3hr  01-01-2019 00:30:00   4.68718
002yrChicago3hr  01-01-2019 00:40:00   7.30485
002yrChicago3hr  01-01-2019 00:50:00   18.20881
002yrChicago3hr  01-01-2019 01:00:00   76.805
002yrChicago3hr  01-01-2019 01:10:00   24.07906
002yrChicago3hr  01-01-2019 01:20:00   12.36376
002yrChicago3hr  01-01-2019 01:30:00   8.32403
002yrChicago3hr  01-01-2019 01:40:00   6.30341
002yrChicago3hr  01-01-2019 01:50:00   5.09498
002yrChicago3hr  01-01-2019 02:00:00   4.29133
002yrChicago3hr  01-01-2019 02:10:00   3.71786
002yrChicago3hr  01-01-2019 02:20:00   3.28762
002yrChicago3hr  01-01-2019 02:30:00   2.95254
002yrChicago3hr  01-01-2019 02:40:00   2.68388
002yrChicago3hr  01-01-2019 02:50:00   2.46348
002yrChicago3hr  01-01-2019 03:00:00   2.27921

;Rainfall (mm/hr)
002YrSCS24       01-01-2019 00:00:00   0.53
002YrSCS24       01-01-2019 00:10:00   0.53
002YrSCS24       01-01-2019 00:20:00   0.53
002YrSCS24       01-01-2019 00:30:00   0.53
002YrSCS24       01-01-2019 00:40:00   0.53
002YrSCS24       01-01-2019 00:50:00   0.53
002YrSCS24       01-01-2019 01:00:00   0.53
002YrSCS24       01-01-2019 01:10:00   0.53
002YrSCS24       01-01-2019 01:20:00   0.53
002YrSCS24       01-01-2019 01:30:00   0.53
002YrSCS24       01-01-2019 01:40:00   0.53
002YrSCS24       01-01-2019 01:50:00   0.53
002YrSCS24       01-01-2019 02:00:00   0.63
002YrSCS24       01-01-2019 02:10:00   0.63
002YrSCS24       01-01-2019 02:20:00   0.63
002YrSCS24       01-01-2019 02:30:00   0.63
002YrSCS24       01-01-2019 02:40:00   0.63
002YrSCS24       01-01-2019 02:50:00   0.63
002YrSCS24       01-01-2019 03:00:00   0.63
002YrSCS24       01-01-2019 03:10:00   0.63
002YrSCS24       01-01-2019 03:20:00   0.63
002YrSCS24       01-01-2019 03:30:00   0.63
002YrSCS24       01-01-2019 03:40:00   0.63
002YrSCS24       01-01-2019 03:50:00   0.63
002YrSCS24       01-01-2019 04:00:00   0.78
002YrSCS24       01-01-2019 04:10:00   0.78
002YrSCS24       01-01-2019 04:20:00   0.78
002YrSCS24       01-01-2019 04:30:00   0.78
002YrSCS24       01-01-2019 04:40:00   0.78
002YrSCS24       01-01-2019 04:50:00   0.78
002YrSCS24       01-01-2019 05:00:00   0.78
002YrSCS24       01-01-2019 05:10:00   0.78
002YrSCS24       01-01-2019 05:20:00   0.78
002YrSCS24       01-01-2019 05:30:00   0.78
002YrSCS24       01-01-2019 05:40:00   0.78
002YrSCS24       01-01-2019 05:50:00   0.78
002YrSCS24       01-01-2019 06:00:00   0.87
002YrSCS24       01-01-2019 06:10:00   0.87
002YrSCS24       01-01-2019 06:20:00   0.87
002YrSCS24       01-01-2019 06:30:00   0.87
002YrSCS24       01-01-2019 06:40:00   0.87
002YrSCS24       01-01-2019 06:50:00   0.87
002YrSCS24       01-01-2019 07:00:00   1.07
002YrSCS24       01-01-2019 07:10:00   1.07
002YrSCS24       01-01-2019 07:20:00   1.07
002YrSCS24       01-01-2019 07:30:00   1.07
002YrSCS24       01-01-2019 07:40:00   1.07
002YrSCS24       01-01-2019 07:50:00   1.07
002YrSCS24       01-01-2019 08:00:00   1.26
002YrSCS24       01-01-2019 08:10:00   1.26
002YrSCS24       01-01-2019 08:20:00   1.26
002YrSCS24       01-01-2019 08:30:00   1.36
002YrSCS24       01-01-2019 08:40:00   1.36
002YrSCS24       01-01-2019 08:50:00   1.36
002YrSCS24       01-01-2019 09:00:00   1.55
002YrSCS24       01-01-2019 09:10:00   1.55
002YrSCS24       01-01-2019 09:20:00   1.55
002YrSCS24       01-01-2019 09:30:00   1.74
002YrSCS24       01-01-2019 09:40:00   1.74
002YrSCS24       01-01-2019 09:50:00   1.74
002YrSCS24       01-01-2019 10:00:00   2.23
002YrSCS24       01-01-2019 10:10:00   2.23
002YrSCS24       01-01-2019 10:20:00   2.23
002YrSCS24       01-01-2019 10:30:00   3.01
002YrSCS24       01-01-2019 10:40:00   3.01
002YrSCS24       01-01-2019 10:50:00   3.01
002YrSCS24       01-01-2019 11:00:00   4.65
002YrSCS24       01-01-2019 11:10:00   4.65
002YrSCS24       01-01-2019 11:20:00   4.65
002YrSCS24       01-01-2019 11:30:00   14.35
002YrSCS24       01-01-2019 11:40:00   36.84
002YrSCS24       01-01-2019 11:50:00   59.33
002YrSCS24       01-01-2019 12:00:00   6.98
002YrSCS24       01-01-2019 12:10:00   6.98
002YrSCS24       01-01-2019 12:20:00   6.98
002YrSCS24       01-01-2019 12:30:00   3.59
002YrSCS24       01-01-2019 12:40:00   3.59
002YrSCS24       01-01-2019 12:50:00   3.59
002YrSCS24       01-01-2019 13:00:00   2.62
002YrSCS24       01-01-2019 13:10:00   2.62
002YrSCS24       01-01-2019 13:20:00   2.62
002YrSCS24       01-01-2019 13:30:00   2.04
002YrSCS24       01-01-2019 13:40:00   2.04
002YrSCS24       01-01-2019 13:50:00   2.04
002YrSCS24       01-01-2019 14:00:00   1.45
002YrSCS24       01-01-2019 14:10:00   1.45
002YrSCS24       01-01-2019 14:20:00   1.45
002YrSCS24       01-01-2019 14:30:00   1.45
002YrSCS24       01-01-2019 14:40:00   1.45
002YrSCS24       01-01-2019 14:50:00   1.45
002YrSCS24       01-01-2019 15:00:00   1.45
002YrSCS24       01-01-2019 15:10:00   1.45
002YrSCS24       01-01-2019 15:20:00   1.45
002YrSCS24       01-01-2019 15:30:00   1.45
002YrSCS24       01-01-2019 15:40:00   1.45
002YrSCS24       01-01-2019 15:50:00   1.45
002YrSCS24       01-01-2019 16:00:00   0.87
002YrSCS24       01-01-2019 16:10:00   0.87
002YrSCS24       01-01-2019 16:20:00   0.87
002YrSCS24       01-01-2019 16:30:00   0.87
002YrSCS24       01-01-2019 16:40:00   0.87
002YrSCS24       01-01-2019 16:50:00   0.87
002YrSCS24       01-01-2019 17:00:00   0.87
002YrSCS24       01-01-2019 17:10:00   0.87
002YrSCS24       01-01-2019 17:20:00   0.87
002YrSCS24       01-01-2019 17:30:00   0.87
002YrSCS24       01-01-2019 17:40:00   0.87
002YrSCS24       01-01-2019 17:50:00   0.87
```

002YrSCS24	01-01-2019 18:00:00	0.87
002YrSCS24	01-01-2019 18:10:00	0.87
002YrSCS24	01-01-2019 18:20:00	0.87
002YrSCS24	01-01-2019 18:30:00	0.87
002YrSCS24	01-01-2019 18:40:00	0.87
002YrSCS24	01-01-2019 18:50:00	0.87
002YrSCS24	01-01-2019 19:00:00	0.87
002YrSCS24	01-01-2019 19:10:00	0.87
002YrSCS24	01-01-2019 19:20:00	0.87
002YrSCS24	01-01-2019 19:30:00	0.87
002YrSCS24	01-01-2019 19:40:00	0.87
002YrSCS24	01-01-2019 19:50:00	0.87
002YrSCS24	01-01-2019 20:00:00	0.58
002YrSCS24	01-01-2019 20:10:00	0.58
002YrSCS24	01-01-2019 20:20:00	0.58
002YrSCS24	01-01-2019 20:30:00	0.58
002YrSCS24	01-01-2019 20:40:00	0.58
002YrSCS24	01-01-2019 20:50:00	0.58
002YrSCS24	01-01-2019 21:00:00	0.58
002YrSCS24	01-01-2019 21:10:00	0.58
002YrSCS24	01-01-2019 21:20:00	0.58
002YrSCS24	01-01-2019 21:30:00	0.58
002YrSCS24	01-01-2019 21:40:00	0.58
002YrSCS24	01-01-2019 21:50:00	0.58
002YrSCS24	01-01-2019 22:00:00	0.58
002YrSCS24	01-01-2019 22:10:00	0.58
002YrSCS24	01-01-2019 22:20:00	0.58
002YrSCS24	01-01-2019 22:30:00	0.58
002YrSCS24	01-01-2019 22:40:00	0.58
002YrSCS24	01-01-2019 22:50:00	0.58
002YrSCS24	01-01-2019 23:00:00	0.58
002YrSCS24	01-01-2019 23:10:00	0.58
002YrSCS24	01-01-2019 23:20:00	0.58
002YrSCS24	01-01-2019 23:30:00	0.58
002YrSCS24	01-01-2019 23:40:00	0.58
002YrSCS24	01-01-2019 23:50:00	0.58

;Rainfall (mm/hr)

005yrChicago3hr	01-01-2019 00:00:00	0
005yrChicago3hr	01-01-2019 00:10:00	3.68223
005yrChicago3hr	01-01-2019 00:20:00	4.58232
005yrChicago3hr	01-01-2019 00:30:00	6.15055
005yrChicago3hr	01-01-2019 00:40:00	9.6141
005yrChicago3hr	01-01-2019 00:50:00	24.17035
005yrChicago3hr	01-01-2019 01:00:00	104.193
005yrChicago3hr	01-01-2019 01:10:00	32.03692
005yrChicago3hr	01-01-2019 01:20:00	16.3375
005yrChicago3hr	01-01-2019 01:30:00	10.96479
005yrChicago3hr	01-01-2019 01:40:00	8.28693
005yrChicago3hr	01-01-2019 01:50:00	6.68897
005yrChicago3hr	01-01-2019 02:00:00	5.6279
005yrChicago3hr	01-01-2019 02:10:00	4.87167
005yrChicago3hr	01-01-2019 02:20:00	4.30483
005yrChicago3hr	01-01-2019 02:30:00	3.8637
005yrChicago3hr	01-01-2019 02:40:00	3.51028
005yrChicago3hr	01-01-2019 02:50:00	3.22046
005yrChicago3hr	01-01-2019 03:00:00	2.97831

;Rainfall (mm/hr)

005YrSCS24	01-01-2019 00:00:00	0.71
005YrSCS24	01-01-2019 00:10:00	0.71
005YrSCS24	01-01-2019 00:20:00	0.71
005YrSCS24	01-01-2019 00:30:00	0.71
005YrSCS24	01-01-2019 00:40:00	0.71
005YrSCS24	01-01-2019 00:50:00	0.71
005YrSCS24	01-01-2019 01:00:00	0.71
005YrSCS24	01-01-2019 01:10:00	0.71
005YrSCS24	01-01-2019 01:20:00	0.71
005YrSCS24	01-01-2019 01:30:00	0.71
005YrSCS24	01-01-2019 01:40:00	0.71
005YrSCS24	01-01-2019 01:50:00	0.71
005YrSCS24	01-01-2019 02:00:00	0.83
005YrSCS24	01-01-2019 02:10:00	0.83
005YrSCS24	01-01-2019 02:20:00	0.83
005YrSCS24	01-01-2019 02:30:00	0.83
005YrSCS24	01-01-2019 02:40:00	0.83
005YrSCS24	01-01-2019 02:50:00	0.83
005YrSCS24	01-01-2019 03:00:00	0.83
005YrSCS24	01-01-2019 03:10:00	0.83
005YrSCS24	01-01-2019 03:20:00	0.83
005YrSCS24	01-01-2019 03:30:00	0.83
005YrSCS24	01-01-2019 03:40:00	0.83
005YrSCS24	01-01-2019 03:50:00	0.83
005YrSCS24	01-01-2019 04:00:00	1.03
005YrSCS24	01-01-2019 04:10:00	1.03
005YrSCS24	01-01-2019 04:20:00	1.03
005YrSCS24	01-01-2019 04:30:00	1.03
005YrSCS24	01-01-2019 04:40:00	1.03
005YrSCS24	01-01-2019 04:50:00	1.03
005YrSCS24	01-01-2019 05:00:00	1.03
005YrSCS24	01-01-2019 05:10:00	1.03
005YrSCS24	01-01-2019 05:20:00	1.03
005YrSCS24	01-01-2019 05:30:00	1.03
005YrSCS24	01-01-2019 05:40:00	1.03
005YrSCS24	01-01-2019 05:50:00	1.03
005YrSCS24	01-01-2019 06:00:00	1.15
005YrSCS24	01-01-2019 06:10:00	1.15
005YrSCS24	01-01-2019 06:20:00	1.15
005YrSCS24	01-01-2019 06:30:00	1.15
005YrSCS24	01-01-2019 06:40:00	1.15
005YrSCS24	01-01-2019 06:50:00	1.15
005YrSCS24	01-01-2019 07:00:00	1.41
005YrSCS24	01-01-2019 07:10:00	1.41
005YrSCS24	01-01-2019 07:20:00	1.41
005YrSCS24	01-01-2019 07:30:00	1.41
005YrSCS24	01-01-2019 07:40:00	1.41
005YrSCS24	01-01-2019 07:50:00	1.41
005YrSCS24	01-01-2019 08:00:00	1.67
005YrSCS24	01-01-2019 08:10:00	1.67
005YrSCS24	01-01-2019 08:20:00	1.67
005YrSCS24	01-01-2019 08:30:00	1.8
005YrSCS24	01-01-2019 08:40:00	1.8
005YrSCS24	01-01-2019 08:50:00	1.8
005YrSCS24	01-01-2019 09:00:00	2.05
005YrSCS24	01-01-2019 09:10:00	2.05
005YrSCS24	01-01-2019 09:20:00	2.05
005YrSCS24	01-01-2019 09:30:00	2.31
005YrSCS24	01-01-2019 09:40:00	2.31
005YrSCS24	01-01-2019 09:50:00	2.31
005YrSCS24	01-01-2019 10:00:00	2.95
005YrSCS24	01-01-2019 10:10:00	2.95
005YrSCS24	01-01-2019 10:20:00	2.95
005YrSCS24	01-01-2019 10:30:00	3.98
005YrSCS24	01-01-2019 10:40:00	3.98
005YrSCS24	01-01-2019 10:50:00	3.98
005YrSCS24	01-01-2019 11:00:00	6.16
005YrSCS24	01-01-2019 11:10:00	6.16
005YrSCS24	01-01-2019 11:20:00	6.16
005YrSCS24	01-01-2019 11:30:00	18.98
005YrSCS24	01-01-2019 11:40:00	48.73
005YrSCS24	01-01-2019 11:50:00	78.48
005YrSCS24	01-01-2019 12:00:00	9.23
005YrSCS24	01-01-2019 12:10:00	9.23
005YrSCS24	01-01-2019 12:20:00	9.23
005YrSCS24	01-01-2019 12:30:00	4.74
005YrSCS24	01-01-2019 12:40:00	4.74
005YrSCS24	01-01-2019 12:50:00	4.74
005YrSCS24	01-01-2019 13:00:00	3.46
005YrSCS24	01-01-2019 13:10:00	3.46
005YrSCS24	01-01-2019 13:20:00	3.46

005YrSCS24 01-01-2019 13:30:00 2.69
005YrSCS24 01-01-2019 13:40:00 2.69
005YrSCS24 01-01-2019 13:50:00 2.69
005YrSCS24 01-01-2019 14:00:00 1.92
005YrSCS24 01-01-2019 14:10:00 1.92
005YrSCS24 01-01-2019 14:20:00 1.92
005YrSCS24 01-01-2019 14:30:00 1.92
005YrSCS24 01-01-2019 14:40:00 1.92
005YrSCS24 01-01-2019 14:50:00 1.92
005YrSCS24 01-01-2019 15:00:00 1.92
005YrSCS24 01-01-2019 15:10:00 1.92
005YrSCS24 01-01-2019 15:20:00 1.92
005YrSCS24 01-01-2019 15:30:00 1.92
005YrSCS24 01-01-2019 15:40:00 1.92
005YrSCS24 01-01-2019 15:50:00 1.92
005YrSCS24 01-01-2019 16:00:00 1.15
005YrSCS24 01-01-2019 16:10:00 1.15
005YrSCS24 01-01-2019 16:20:00 1.15
005YrSCS24 01-01-2019 16:30:00 1.15
005YrSCS24 01-01-2019 16:40:00 1.15
005YrSCS24 01-01-2019 16:50:00 1.15
005YrSCS24 01-01-2019 17:00:00 1.15
005YrSCS24 01-01-2019 17:10:00 1.15
005YrSCS24 01-01-2019 17:20:00 1.15
005YrSCS24 01-01-2019 17:30:00 1.15
005YrSCS24 01-01-2019 17:40:00 1.15
005YrSCS24 01-01-2019 17:50:00 1.15
005YrSCS24 01-01-2019 18:00:00 1.15
005YrSCS24 01-01-2019 18:10:00 1.15
005YrSCS24 01-01-2019 18:20:00 1.15
005YrSCS24 01-01-2019 18:30:00 1.15
005YrSCS24 01-01-2019 18:40:00 1.15
005YrSCS24 01-01-2019 18:50:00 1.15
005YrSCS24 01-01-2019 19:00:00 1.15
005YrSCS24 01-01-2019 19:10:00 1.15
005YrSCS24 01-01-2019 19:20:00 1.15
005YrSCS24 01-01-2019 19:30:00 1.15
005YrSCS24 01-01-2019 19:40:00 1.15
005YrSCS24 01-01-2019 19:50:00 1.15
005YrSCS24 01-01-2019 20:00:00 0.77
005YrSCS24 01-01-2019 20:10:00 0.77
005YrSCS24 01-01-2019 20:20:00 0.77
005YrSCS24 01-01-2019 20:30:00 0.77
005YrSCS24 01-01-2019 20:40:00 0.77
005YrSCS24 01-01-2019 20:50:00 0.77
005YrSCS24 01-01-2019 21:00:00 0.77
005YrSCS24 01-01-2019 21:10:00 0.77
005YrSCS24 01-01-2019 21:20:00 0.77
005YrSCS24 01-01-2019 21:30:00 0.77
005YrSCS24 01-01-2019 21:40:00 0.77
005YrSCS24 01-01-2019 21:50:00 0.77
005YrSCS24 01-01-2019 22:00:00 0.77
005YrSCS24 01-01-2019 22:10:00 0.77
005YrSCS24 01-01-2019 22:20:00 0.77
005YrSCS24 01-01-2019 22:30:00 0.77
005YrSCS24 01-01-2019 22:40:00 0.77
005YrSCS24 01-01-2019 22:50:00 0.77
005YrSCS24 01-01-2019 23:00:00 0.77
005YrSCS24 01-01-2019 23:10:00 0.77
005YrSCS24 01-01-2019 23:20:00 0.77
005YrSCS24 01-01-2019 23:30:00 0.77
005YrSCS24 01-01-2019 23:40:00 0.77
005YrSCS24 01-01-2019 23:50:00 0.77

;Rainfall (mm/hr)
010yrChicago3hr 01-01-2019 00:00:00 0
010yrChicago3hr 01-01-2019 00:10:00 4.24804
010yrChicago3hr 01-01-2019 00:20:00 5.29032
010yrChicago3hr 01-01-2019 00:30:00 7.10821
010yrChicago3hr 01-01-2019 00:40:00 11.12994
010yrChicago3hr 01-01-2019 00:50:00 28.09961
010yrChicago3hr 01-01-2019 01:00:00 122.1418
010yrChicago3hr 01-01-2019 01:10:00 37.28489
010yrChicago3hr 01-01-2019 01:20:00 18.95368
010yrChicago3hr 01-01-2019 01:30:00 12.69959
010yrChicago3hr 01-01-2019 01:40:00 9.58762
010yrChicago3hr 01-01-2019 01:50:00 7.7327
010yrChicago3hr 01-01-2019 02:00:00 6.50203
010yrChicago3hr 01-01-2019 02:10:00 5.6255
010yrChicago3hr 01-01-2019 02:20:00 4.96886
010yrChicago3hr 01-01-2019 02:30:00 4.45808
010yrChicago3hr 01-01-2019 02:40:00 4.04902
010yrChicago3hr 01-01-2019 02:50:00 3.71371
010yrChicago3hr 01-01-2019 03:00:00 3.4336

;Rainfall (mm/hr)
010YrSCS24 01-01-2019 00:00:00 0.82
010YrSCS24 01-01-2019 00:10:00 0.82
010YrSCS24 01-01-2019 00:20:00 0.82
010YrSCS24 01-01-2019 00:30:00 0.82
010YrSCS24 01-01-2019 00:40:00 0.82
010YrSCS24 01-01-2019 00:50:00 0.82
010YrSCS24 01-01-2019 01:00:00 0.82
010YrSCS24 01-01-2019 01:10:00 0.82
010YrSCS24 01-01-2019 01:20:00 0.82
010YrSCS24 01-01-2019 01:30:00 0.82
010YrSCS24 01-01-2019 01:40:00 0.82
010YrSCS24 01-01-2019 01:50:00 0.82
010YrSCS24 01-01-2019 02:00:00 0.97
010YrSCS24 01-01-2019 02:10:00 0.97
010YrSCS24 01-01-2019 02:20:00 0.97
010YrSCS24 01-01-2019 02:30:00 0.97
010YrSCS24 01-01-2019 02:40:00 0.97
010YrSCS24 01-01-2019 02:50:00 0.97
010YrSCS24 01-01-2019 03:00:00 0.97
010YrSCS24 01-01-2019 03:10:00 0.97
010YrSCS24 01-01-2019 03:20:00 0.97
010YrSCS24 01-01-2019 03:30:00 0.97
010YrSCS24 01-01-2019 03:40:00 0.97
010YrSCS24 01-01-2019 03:50:00 0.97
010YrSCS24 01-01-2019 04:00:00 1.19
010YrSCS24 01-01-2019 04:10:00 1.19
010YrSCS24 01-01-2019 04:20:00 1.19
010YrSCS24 01-01-2019 04:30:00 1.19
010YrSCS24 01-01-2019 04:40:00 1.19
010YrSCS24 01-01-2019 04:50:00 1.19
010YrSCS24 01-01-2019 05:00:00 1.19
010YrSCS24 01-01-2019 05:10:00 1.19
010YrSCS24 01-01-2019 05:20:00 1.19
010YrSCS24 01-01-2019 05:30:00 1.19
010YrSCS24 01-01-2019 05:40:00 1.19
010YrSCS24 01-01-2019 05:50:00 1.19
010YrSCS24 01-01-2019 06:00:00 1.34
010YrSCS24 01-01-2019 06:10:00 1.34
010YrSCS24 01-01-2019 06:20:00 1.34
010YrSCS24 01-01-2019 06:30:00 1.34
010YrSCS24 01-01-2019 06:40:00 1.34
010YrSCS24 01-01-2019 06:50:00 1.34
010YrSCS24 01-01-2019 07:00:00 1.64
010YrSCS24 01-01-2019 07:10:00 1.64
010YrSCS24 01-01-2019 07:20:00 1.64
010YrSCS24 01-01-2019 07:30:00 1.64
010YrSCS24 01-01-2019 07:40:00 1.64
010YrSCS24 01-01-2019 07:50:00 1.64
010YrSCS24 01-01-2019 08:00:00 1.93
010YrSCS24 01-01-2019 08:10:00 1.93
010YrSCS24 01-01-2019 08:20:00 1.93
010YrSCS24 01-01-2019 08:30:00 2.08
010YrSCS24 01-01-2019 08:40:00 2.08
010YrSCS24 01-01-2019 08:50:00 2.08

010YrSCS24	01-01-2019 09:00:00	2.38
010YrSCS24	01-01-2019 09:10:00	2.38
010YrSCS24	01-01-2019 09:20:00	2.38
010YrSCS24	01-01-2019 09:30:00	2.68
010YrSCS24	01-01-2019 09:40:00	2.68
010YrSCS24	01-01-2019 09:50:00	2.68
010YrSCS24	01-01-2019 10:00:00	3.42
010YrSCS24	01-01-2019 10:10:00	3.42
010YrSCS24	01-01-2019 10:20:00	3.42
010YrSCS24	01-01-2019 10:30:00	4.61
010YrSCS24	01-01-2019 10:40:00	4.61
010YrSCS24	01-01-2019 10:50:00	4.61
010YrSCS24	01-01-2019 11:00:00	7.14
010YrSCS24	01-01-2019 11:10:00	7.14
010YrSCS24	01-01-2019 11:20:00	7.14
010YrSCS24	01-01-2019 11:30:00	22
010YrSCS24	01-01-2019 11:40:00	56.5
010YrSCS24	01-01-2019 11:50:00	90.99
010YrSCS24	01-01-2019 12:00:00	10.7
010YrSCS24	01-01-2019 12:10:00	10.7
010YrSCS24	01-01-2019 12:20:00	10.7
010YrSCS24	01-01-2019 12:30:00	5.5
010YrSCS24	01-01-2019 12:40:00	5.5
010YrSCS24	01-01-2019 12:50:00	5.5
010YrSCS24	01-01-2019 13:00:00	4.01
010YrSCS24	01-01-2019 13:10:00	4.01
010YrSCS24	01-01-2019 13:20:00	4.01
010YrSCS24	01-01-2019 13:30:00	3.12
010YrSCS24	01-01-2019 13:40:00	3.12
010YrSCS24	01-01-2019 13:50:00	3.12
010YrSCS24	01-01-2019 14:00:00	2.23
010YrSCS24	01-01-2019 14:10:00	2.23
010YrSCS24	01-01-2019 14:20:00	2.23
010YrSCS24	01-01-2019 14:30:00	2.23
010YrSCS24	01-01-2019 14:40:00	2.23
010YrSCS24	01-01-2019 14:50:00	2.23
010YrSCS24	01-01-2019 15:00:00	2.23
010YrSCS24	01-01-2019 15:10:00	2.23
010YrSCS24	01-01-2019 15:20:00	2.23
010YrSCS24	01-01-2019 15:30:00	2.23
010YrSCS24	01-01-2019 15:40:00	2.23
010YrSCS24	01-01-2019 15:50:00	2.23
010YrSCS24	01-01-2019 16:00:00	1.34
010YrSCS24	01-01-2019 16:10:00	1.34
010YrSCS24	01-01-2019 16:20:00	1.34
010YrSCS24	01-01-2019 16:30:00	1.34
010YrSCS24	01-01-2019 16:40:00	1.34
010YrSCS24	01-01-2019 16:50:00	1.34
010YrSCS24	01-01-2019 17:00:00	1.34
010YrSCS24	01-01-2019 17:10:00	1.34
010YrSCS24	01-01-2019 17:20:00	1.34
010YrSCS24	01-01-2019 17:30:00	1.34
010YrSCS24	01-01-2019 17:40:00	1.34
010YrSCS24	01-01-2019 17:50:00	1.34
010YrSCS24	01-01-2019 18:00:00	1.34
010YrSCS24	01-01-2019 18:10:00	1.34
010YrSCS24	01-01-2019 18:20:00	1.34
010YrSCS24	01-01-2019 18:30:00	1.34
010YrSCS24	01-01-2019 18:40:00	1.34
010YrSCS24	01-01-2019 18:50:00	1.34
010YrSCS24	01-01-2019 19:00:00	1.34
010YrSCS24	01-01-2019 19:10:00	1.34
010YrSCS24	01-01-2019 19:20:00	1.34
010YrSCS24	01-01-2019 19:30:00	1.34
010YrSCS24	01-01-2019 19:40:00	1.34
010YrSCS24	01-01-2019 19:50:00	1.34
010YrSCS24	01-01-2019 20:00:00	0.89
010YrSCS24	01-01-2019 20:10:00	0.89
010YrSCS24	01-01-2019 20:20:00	0.89
010YrSCS24	01-01-2019 20:30:00	0.89
010YrSCS24	01-01-2019 20:40:00	0.89
010YrSCS24	01-01-2019 20:50:00	0.89
010YrSCS24	01-01-2019 21:00:00	0.89
010YrSCS24	01-01-2019 21:10:00	0.89
010YrSCS24	01-01-2019 21:20:00	0.89
010YrSCS24	01-01-2019 21:30:00	0.89
010YrSCS24	01-01-2019 21:40:00	0.89
010YrSCS24	01-01-2019 21:50:00	0.89
010YrSCS24	01-01-2019 22:00:00	0.89
010YrSCS24	01-01-2019 22:10:00	0.89
010YrSCS24	01-01-2019 22:20:00	0.89
010YrSCS24	01-01-2019 22:30:00	0.89
010YrSCS24	01-01-2019 22:40:00	0.89
010YrSCS24	01-01-2019 22:50:00	0.89
010YrSCS24	01-01-2019 23:00:00	0.89
010YrSCS24	01-01-2019 23:10:00	0.89
010YrSCS24	01-01-2019 23:20:00	0.89
010YrSCS24	01-01-2019 23:30:00	0.89
010YrSCS24	01-01-2019 23:40:00	0.89
010YrSCS24	01-01-2019 23:50:00	0.89

;Rainfall (mm/hr)

025yrChicago3hr	01-01-2019 00:00:00	0
025yrChicago3hr	01-01-2019 00:10:00	4.9336
025yrChicago3hr	01-01-2019 00:20:00	6.15217
025yrChicago3hr	01-01-2019 00:30:00	8.28157
025yrChicago3hr	01-01-2019 00:40:00	13.00553
025yrChicago3hr	01-01-2019 00:50:00	33.04079
025yrChicago3hr	01-01-2019 01:00:00	144.693
025yrChicago3hr	01-01-2019 01:10:00	43.90416
025yrChicago3hr	01-01-2019 01:20:00	22.22391
025yrChicago3hr	01-01-2019 01:30:00	14.85162
025yrChicago3hr	01-01-2019 01:40:00	11.19158
025yrChicago3hr	01-01-2019 01:50:00	9.01374
025yrChicago3hr	01-01-2019 02:00:00	7.57085
025yrChicago3hr	01-01-2019 02:10:00	6.54433
025yrChicago3hr	01-01-2019 02:20:00	5.77608
025yrChicago3hr	01-01-2019 02:30:00	5.17898
025yrChicago3hr	01-01-2019 02:40:00	4.7011
025yrChicago3hr	01-01-2019 02:50:00	4.30965
025yrChicago3hr	01-01-2019 03:00:00	3.98283

;Rainfall (mm/hr)

025YrSCS24	01-01-2019 00:00:00	0.96
025YrSCS24	01-01-2019 00:10:00	0.96
025YrSCS24	01-01-2019 00:20:00	0.96
025YrSCS24	01-01-2019 00:30:00	0.96
025YrSCS24	01-01-2019 00:40:00	0.96
025YrSCS24	01-01-2019 00:50:00	0.96
025YrSCS24	01-01-2019 01:00:00	0.96
025YrSCS24	01-01-2019 01:10:00	0.96
025YrSCS24	01-01-2019 01:20:00	0.96
025YrSCS24	01-01-2019 01:30:00	0.96
025YrSCS24	01-01-2019 01:40:00	0.96
025YrSCS24	01-01-2019 01:50:00	0.96
025YrSCS24	01-01-2019 02:00:00	1.13
025YrSCS24	01-01-2019 02:10:00	1.13
025YrSCS24	01-01-2019 02:20:00	1.13
025YrSCS24	01-01-2019 02:30:00	1.13
025YrSCS24	01-01-2019 02:40:00	1.13
025YrSCS24	01-01-2019 02:50:00	1.13
025YrSCS24	01-01-2019 03:00:00	1.13
025YrSCS24	01-01-2019 03:10:00	1.13
025YrSCS24	01-01-2019 03:20:00	1.13
025YrSCS24	01-01-2019 03:30:00	1.13
025YrSCS24	01-01-2019 03:40:00	1.13
025YrSCS24	01-01-2019 03:50:00	1.13
025YrSCS24	01-01-2019 04:00:00	1.39
025YrSCS24	01-01-2019 04:10:00	1.39
025YrSCS24	01-01-2019 04:20:00	1.39

025YrSCS24 01-01-2019 04:30:00 1.39
025YrSCS24 01-01-2019 04:40:00 1.39
025YrSCS24 01-01-2019 04:50:00 1.39
025YrSCS24 01-01-2019 05:00:00 1.39
025YrSCS24 01-01-2019 05:10:00 1.39
025YrSCS24 01-01-2019 05:20:00 1.39
025YrSCS24 01-01-2019 05:30:00 1.39
025YrSCS24 01-01-2019 05:40:00 1.39
025YrSCS24 01-01-2019 05:50:00 1.39
025YrSCS24 01-01-2019 06:00:00 1.56
025YrSCS24 01-01-2019 06:10:00 1.56
025YrSCS24 01-01-2019 06:20:00 1.56
025YrSCS24 01-01-2019 06:30:00 1.56
025YrSCS24 01-01-2019 06:40:00 1.56
025YrSCS24 01-01-2019 06:50:00 1.56
025YrSCS24 01-01-2019 07:00:00 1.91
025YrSCS24 01-01-2019 07:10:00 1.91
025YrSCS24 01-01-2019 07:20:00 1.91
025YrSCS24 01-01-2019 07:30:00 1.91
025YrSCS24 01-01-2019 07:40:00 1.91
025YrSCS24 01-01-2019 07:50:00 1.91
025YrSCS24 01-01-2019 08:00:00 2.26
025YrSCS24 01-01-2019 08:10:00 2.26
025YrSCS24 01-01-2019 08:20:00 2.26
025YrSCS24 01-01-2019 08:30:00 2.43
025YrSCS24 01-01-2019 08:40:00 2.43
025YrSCS24 01-01-2019 08:50:00 2.43
025YrSCS24 01-01-2019 09:00:00 2.78
025YrSCS24 01-01-2019 09:10:00 2.78
025YrSCS24 01-01-2019 09:20:00 2.78
025YrSCS24 01-01-2019 09:30:00 3.13
025YrSCS24 01-01-2019 09:40:00 3.13
025YrSCS24 01-01-2019 09:50:00 3.13
025YrSCS24 01-01-2019 10:00:00 4
025YrSCS24 01-01-2019 10:10:00 4
025YrSCS24 01-01-2019 10:20:00 4
025YrSCS24 01-01-2019 10:30:00 5.39
025YrSCS24 01-01-2019 10:40:00 5.39
025YrSCS24 01-01-2019 10:50:00 5.39
025YrSCS24 01-01-2019 11:00:00 8.34
025YrSCS24 01-01-2019 11:10:00 8.34
025YrSCS24 01-01-2019 11:20:00 8.34
025YrSCS24 01-01-2019 11:30:00 25.73
025YrSCS24 01-01-2019 11:40:00 66.05
025YrSCS24 01-01-2019 11:50:00 106.38
025YrSCS24 01-01-2019 12:00:00 12.52
025YrSCS24 01-01-2019 12:10:00 12.52
025YrSCS24 01-01-2019 12:20:00 12.52
025YrSCS24 01-01-2019 12:30:00 6.43
025YrSCS24 01-01-2019 12:40:00 6.43
025YrSCS24 01-01-2019 12:50:00 6.43
025YrSCS24 01-01-2019 13:00:00 4.69
025YrSCS24 01-01-2019 13:10:00 4.69
025YrSCS24 01-01-2019 13:20:00 4.69
025YrSCS24 01-01-2019 13:30:00 3.65
025YrSCS24 01-01-2019 13:40:00 3.65
025YrSCS24 01-01-2019 13:50:00 3.65
025YrSCS24 01-01-2019 14:00:00 2.61
025YrSCS24 01-01-2019 14:10:00 2.61
025YrSCS24 01-01-2019 14:20:00 2.61
025YrSCS24 01-01-2019 14:30:00 2.61
025YrSCS24 01-01-2019 14:40:00 2.61
025YrSCS24 01-01-2019 14:50:00 2.61
025YrSCS24 01-01-2019 15:00:00 2.61
025YrSCS24 01-01-2019 15:10:00 2.61
025YrSCS24 01-01-2019 15:20:00 2.61
025YrSCS24 01-01-2019 15:30:00 2.61
025YrSCS24 01-01-2019 15:40:00 2.61
025YrSCS24 01-01-2019 15:50:00 2.61
025YrSCS24 01-01-2019 16:00:00 1.56
025YrSCS24 01-01-2019 16:10:00 1.56
025YrSCS24 01-01-2019 16:20:00 1.56
025YrSCS24 01-01-2019 16:30:00 1.56
025YrSCS24 01-01-2019 16:40:00 1.56
025YrSCS24 01-01-2019 16:50:00 1.56
025YrSCS24 01-01-2019 17:00:00 1.56
025YrSCS24 01-01-2019 17:10:00 1.56
025YrSCS24 01-01-2019 17:20:00 1.56
025YrSCS24 01-01-2019 17:30:00 1.56
025YrSCS24 01-01-2019 17:40:00 1.56
025YrSCS24 01-01-2019 17:50:00 1.56
025YrSCS24 01-01-2019 18:00:00 1.56
025YrSCS24 01-01-2019 18:10:00 1.56
025YrSCS24 01-01-2019 18:20:00 1.56
025YrSCS24 01-01-2019 18:30:00 1.56
025YrSCS24 01-01-2019 18:40:00 1.56
025YrSCS24 01-01-2019 18:50:00 1.56
025YrSCS24 01-01-2019 19:00:00 1.56
025YrSCS24 01-01-2019 19:10:00 1.56
025YrSCS24 01-01-2019 19:20:00 1.56
025YrSCS24 01-01-2019 19:30:00 1.56
025YrSCS24 01-01-2019 19:40:00 1.56
025YrSCS24 01-01-2019 19:50:00 1.56
025YrSCS24 01-01-2019 20:00:00 1.04
025YrSCS24 01-01-2019 20:10:00 1.04
025YrSCS24 01-01-2019 20:20:00 1.04
025YrSCS24 01-01-2019 20:30:00 1.04
025YrSCS24 01-01-2019 20:40:00 1.04
025YrSCS24 01-01-2019 20:50:00 1.04
025YrSCS24 01-01-2019 21:00:00 1.04
025YrSCS24 01-01-2019 21:10:00 1.04
025YrSCS24 01-01-2019 21:20:00 1.04
025YrSCS24 01-01-2019 21:30:00 1.04
025YrSCS24 01-01-2019 21:40:00 1.04
025YrSCS24 01-01-2019 21:50:00 1.04
025YrSCS24 01-01-2019 22:00:00 1.04
025YrSCS24 01-01-2019 22:10:00 1.04
025YrSCS24 01-01-2019 22:20:00 1.04
025YrSCS24 01-01-2019 22:30:00 1.04
025YrSCS24 01-01-2019 22:40:00 1.04
025YrSCS24 01-01-2019 22:50:00 1.04
025YrSCS24 01-01-2019 23:00:00 1.04
025YrSCS24 01-01-2019 23:10:00 1.04
025YrSCS24 01-01-2019 23:20:00 1.04
025YrSCS24 01-01-2019 23:30:00 1.04
025YrSCS24 01-01-2019 23:40:00 1.04
025YrSCS24 01-01-2019 23:50:00 1.04

;Rainfall (mm/hr)
050yrChicago3hr 01-01-2019 00:00:00 0
050yrChicago3hr 01-01-2019 00:10:00 5.46715
050yrChicago3hr 01-01-2019 00:20:00 6.8204
050yrChicago3hr 01-01-2019 00:30:00 9.18659
050yrChicago3hr 01-01-2019 00:40:00 14.44064
050yrChicago3hr 01-01-2019 00:50:00 36.76423
050yrChicago3hr 01-01-2019 01:00:00 161.4707
050yrChicago3hr 01-01-2019 01:10:00 48.876
050yrChicago3hr 01-01-2019 01:20:00 24.70426
050yrChicago3hr 01-01-2019 01:30:00 16.49475
050yrChicago3hr 01-01-2019 01:40:00 12.42227
050yrChicago3hr 01-01-2019 01:50:00 10.00043
050yrChicago3hr 01-01-2019 02:00:00 8.39661
050yrChicago3hr 01-01-2019 02:10:00 7.256
050yrChicago3hr 01-01-2019 02:20:00 6.40264
050yrChicago3hr 01-01-2019 02:30:00 5.73956
050yrChicago3hr 01-01-2019 02:40:00 5.20902
050yrChicago3hr 01-01-2019 02:50:00 4.77451
050yrChicago3hr 01-01-2019 03:00:00 4.41182

;Rainfall (mm/hr)

050YrSCS24	01-01-2019 00:00:00	1.06
050YrSCS24	01-01-2019 00:10:00	1.06
050YrSCS24	01-01-2019 00:20:00	1.06
050YrSCS24	01-01-2019 00:30:00	1.06
050YrSCS24	01-01-2019 00:40:00	1.06
050YrSCS24	01-01-2019 00:50:00	1.06
050YrSCS24	01-01-2019 01:00:00	1.06
050YrSCS24	01-01-2019 01:10:00	1.06
050YrSCS24	01-01-2019 01:20:00	1.06
050YrSCS24	01-01-2019 01:30:00	1.06
050YrSCS24	01-01-2019 01:40:00	1.06
050YrSCS24	01-01-2019 01:50:00	1.06
050YrSCS24	01-01-2019 02:00:00	1.25
050YrSCS24	01-01-2019 02:10:00	1.25
050YrSCS24	01-01-2019 02:20:00	1.25
050YrSCS24	01-01-2019 02:30:00	1.25
050YrSCS24	01-01-2019 02:40:00	1.25
050YrSCS24	01-01-2019 02:50:00	1.25
050YrSCS24	01-01-2019 03:00:00	1.25
050YrSCS24	01-01-2019 03:10:00	1.25
050YrSCS24	01-01-2019 03:20:00	1.25
050YrSCS24	01-01-2019 03:30:00	1.25
050YrSCS24	01-01-2019 03:40:00	1.25
050YrSCS24	01-01-2019 03:50:00	1.25
050YrSCS24	01-01-2019 04:00:00	1.54
050YrSCS24	01-01-2019 04:10:00	1.54
050YrSCS24	01-01-2019 04:20:00	1.54
050YrSCS24	01-01-2019 04:30:00	1.54
050YrSCS24	01-01-2019 04:40:00	1.54
050YrSCS24	01-01-2019 04:50:00	1.54
050YrSCS24	01-01-2019 05:00:00	1.54
050YrSCS24	01-01-2019 05:10:00	1.54
050YrSCS24	01-01-2019 05:20:00	1.54
050YrSCS24	01-01-2019 05:30:00	1.54
050YrSCS24	01-01-2019 05:40:00	1.54
050YrSCS24	01-01-2019 05:50:00	1.54
050YrSCS24	01-01-2019 06:00:00	1.74
050YrSCS24	01-01-2019 06:10:00	1.74
050YrSCS24	01-01-2019 06:20:00	1.74
050YrSCS24	01-01-2019 06:30:00	1.74
050YrSCS24	01-01-2019 06:40:00	1.74
050YrSCS24	01-01-2019 06:50:00	1.74
050YrSCS24	01-01-2019 07:00:00	2.12
050YrSCS24	01-01-2019 07:10:00	2.12
050YrSCS24	01-01-2019 07:20:00	2.12
050YrSCS24	01-01-2019 07:30:00	2.12
050YrSCS24	01-01-2019 07:40:00	2.12
050YrSCS24	01-01-2019 07:50:00	2.12
050YrSCS24	01-01-2019 08:00:00	2.51
050YrSCS24	01-01-2019 08:10:00	2.51
050YrSCS24	01-01-2019 08:20:00	2.51
050YrSCS24	01-01-2019 08:30:00	2.7
050YrSCS24	01-01-2019 08:40:00	2.7
050YrSCS24	01-01-2019 08:50:00	2.7
050YrSCS24	01-01-2019 09:00:00	3.09
050YrSCS24	01-01-2019 09:10:00	3.09
050YrSCS24	01-01-2019 09:20:00	3.09
050YrSCS24	01-01-2019 09:30:00	3.48
050YrSCS24	01-01-2019 09:40:00	3.48
050YrSCS24	01-01-2019 09:50:00	3.48
050YrSCS24	01-01-2019 10:00:00	4.44
050YrSCS24	01-01-2019 10:10:00	4.44
050YrSCS24	01-01-2019 10:20:00	4.44
050YrSCS24	01-01-2019 10:30:00	5.98
050YrSCS24	01-01-2019 10:40:00	5.98
050YrSCS24	01-01-2019 10:50:00	5.98
050YrSCS24	01-01-2019 11:00:00	9.27
050YrSCS24	01-01-2019 11:10:00	9.27
050YrSCS24	01-01-2019 11:20:00	9.27
050YrSCS24	01-01-2019 11:30:00	28.57
050YrSCS24	01-01-2019 11:40:00	73.36
050YrSCS24	01-01-2019 11:50:00	118.15
050YrSCS24	01-01-2019 12:00:00	13.9
050YrSCS24	01-01-2019 12:10:00	13.9
050YrSCS24	01-01-2019 12:20:00	13.9
050YrSCS24	01-01-2019 12:30:00	7.14
050YrSCS24	01-01-2019 12:40:00	7.14
050YrSCS24	01-01-2019 12:50:00	7.14
050YrSCS24	01-01-2019 13:00:00	5.21
050YrSCS24	01-01-2019 13:10:00	5.21
050YrSCS24	01-01-2019 13:20:00	5.21
050YrSCS24	01-01-2019 13:30:00	4.05
050YrSCS24	01-01-2019 13:40:00	4.05
050YrSCS24	01-01-2019 13:50:00	4.05
050YrSCS24	01-01-2019 14:00:00	2.9
050YrSCS24	01-01-2019 14:10:00	2.9
050YrSCS24	01-01-2019 14:20:00	2.9
050YrSCS24	01-01-2019 14:30:00	2.9
050YrSCS24	01-01-2019 14:40:00	2.9
050YrSCS24	01-01-2019 14:50:00	2.9
050YrSCS24	01-01-2019 15:00:00	2.9
050YrSCS24	01-01-2019 15:10:00	2.9
050YrSCS24	01-01-2019 15:20:00	2.9
050YrSCS24	01-01-2019 15:30:00	2.9
050YrSCS24	01-01-2019 15:40:00	2.9
050YrSCS24	01-01-2019 15:50:00	2.9
050YrSCS24	01-01-2019 16:00:00	1.74
050YrSCS24	01-01-2019 16:10:00	1.74
050YrSCS24	01-01-2019 16:20:00	1.74
050YrSCS24	01-01-2019 16:30:00	1.74
050YrSCS24	01-01-2019 16:40:00	1.74
050YrSCS24	01-01-2019 16:50:00	1.74
050YrSCS24	01-01-2019 17:00:00	1.74
050YrSCS24	01-01-2019 17:10:00	1.74
050YrSCS24	01-01-2019 17:20:00	1.74
050YrSCS24	01-01-2019 17:30:00	1.74
050YrSCS24	01-01-2019 17:40:00	1.74
050YrSCS24	01-01-2019 17:50:00	1.74
050YrSCS24	01-01-2019 18:00:00	1.74
050YrSCS24	01-01-2019 18:10:00	1.74
050YrSCS24	01-01-2019 18:20:00	1.74
050YrSCS24	01-01-2019 18:30:00	1.74
050YrSCS24	01-01-2019 18:40:00	1.74
050YrSCS24	01-01-2019 18:50:00	1.74
050YrSCS24	01-01-2019 19:00:00	1.74
050YrSCS24	01-01-2019 19:10:00	1.74
050YrSCS24	01-01-2019 19:20:00	1.74
050YrSCS24	01-01-2019 19:30:00	1.74
050YrSCS24	01-01-2019 19:40:00	1.74
050YrSCS24	01-01-2019 19:50:00	1.74
050YrSCS24	01-01-2019 20:00:00	1.16
050YrSCS24	01-01-2019 20:10:00	1.16
050YrSCS24	01-01-2019 20:20:00	1.16
050YrSCS24	01-01-2019 20:30:00	1.16
050YrSCS24	01-01-2019 20:40:00	1.16
050YrSCS24	01-01-2019 20:50:00	1.16
050YrSCS24	01-01-2019 21:00:00	1.16
050YrSCS24	01-01-2019 21:10:00	1.16
050YrSCS24	01-01-2019 21:20:00	1.16
050YrSCS24	01-01-2019 21:30:00	1.16
050YrSCS24	01-01-2019 21:40:00	1.16
050YrSCS24	01-01-2019 21:50:00	1.16
050YrSCS24	01-01-2019 22:00:00	1.16
050YrSCS24	01-01-2019 22:10:00	1.16
050YrSCS24	01-01-2019 22:20:00	1.16
050YrSCS24	01-01-2019 22:30:00	1.16
050YrSCS24	01-01-2019 22:40:00	1.16
050YrSCS24	01-01-2019 22:50:00	1.16
050YrSCS24	01-01-2019 23:00:00	1.16
050YrSCS24	01-01-2019 23:10:00	1.16

050YrSCS24 01-01-2019 23:20:00 1.16
050YrSCS24 01-01-2019 23:30:00 1.16
050YrSCS24 01-01-2019 23:40:00 1.16
050YrSCS24 01-01-2019 23:50:00 1.16

;Rainfall (mm/hr)
100yrChicago3hr 01-01-2019 00:00:00 0
100yrChicago3hr 01-01-2019 00:10:00 6.04573
100yrChicago3hr 01-01-2019 00:20:00 7.54219
100yrChicago3hr 01-01-2019 00:30:00 10.1588
100yrChicago3hr 01-01-2019 00:40:00 15.96889
100yrChicago3hr 01-01-2019 00:50:00 40.65497
100yrChicago3hr 01-01-2019 01:00:00 178.559
100yrChicago3hr 01-01-2019 01:10:00 54.04853
100yrChicago3hr 01-01-2019 01:20:00 27.3187
100yrChicago3hr 01-01-2019 01:30:00 18.24039
100yrChicago3hr 01-01-2019 01:40:00 13.73692
100yrChicago3hr 01-01-2019 01:50:00 11.05876
100yrChicago3hr 01-01-2019 02:00:00 9.28521
100yrChicago3hr 01-01-2019 02:10:00 8.02389
100yrChicago3hr 01-01-2019 02:20:00 7.08022
100yrChicago3hr 01-01-2019 02:30:00 6.34698
100yrChicago3hr 01-01-2019 02:40:00 5.76029
100yrChicago3hr 01-01-2019 02:50:00 5.27978
100yrChicago3hr 01-01-2019 03:00:00 4.87871

;Rainfall (mm/hr)
100yrChicago3hr+20% 01-01-2019 00:00:00 0
100yrChicago3hr+20% 01-01-2019 00:10:00 7.25488
100yrChicago3hr+20% 01-01-2019 00:20:00 9.05063
100yrChicago3hr+20% 01-01-2019 00:30:00 12.19056
100yrChicago3hr+20% 01-01-2019 00:40:00 19.16267
100yrChicago3hr+20% 01-01-2019 00:50:00 48.78596
100yrChicago3hr+20% 01-01-2019 01:00:00 214.2708
100yrChicago3hr+20% 01-01-2019 01:10:00 64.85824
100yrChicago3hr+20% 01-01-2019 01:20:00 32.78244
100yrChicago3hr+20% 01-01-2019 01:30:00 21.88847
100yrChicago3hr+20% 01-01-2019 01:40:00 16.4843
100yrChicago3hr+20% 01-01-2019 01:50:00 13.27051
100yrChicago3hr+20% 01-01-2019 02:00:00 11.14225
100yrChicago3hr+20% 01-01-2019 02:10:00 9.62867
100yrChicago3hr+20% 01-01-2019 02:20:00 8.49626
100yrChicago3hr+20% 01-01-2019 02:30:00 7.61638
100yrChicago3hr+20% 01-01-2019 02:40:00 6.91235
100yrChicago3hr+20% 01-01-2019 02:50:00 6.33574
100yrChicago3hr+20% 01-01-2019 03:00:00 5.85445

;Rainfall (mm/hr)
100YrSCS12hr 01-01-2019 0:00:00 2.4
100YrSCS12hr 01-01-2019 0:15:00 2.4
100YrSCS12hr 01-01-2019 0:30:00 2.4
100YrSCS12hr 01-01-2019 0:45:00 2.4
100YrSCS12hr 01-01-2019 1:00:00 2.4
100YrSCS12hr 01-01-2019 1:15:00 2.4
100YrSCS12hr 01-01-2019 1:30:00 2.4
100YrSCS12hr 01-01-2019 1:45:00 2.4
100YrSCS12hr 01-01-2019 2:00:00 2.88
100YrSCS12hr 01-01-2019 2:15:00 2.88
100YrSCS12hr 01-01-2019 2:30:00 2.88
100YrSCS12hr 01-01-2019 2:45:00 2.88
100YrSCS12hr 01-01-2019 3:00:00 3.84
100YrSCS12hr 01-01-2019 3:15:00 3.84
100YrSCS12hr 01-01-2019 3:30:00 3.84
100YrSCS12hr 01-01-2019 3:45:00 3.84
100YrSCS12hr 01-01-2019 4:00:00 5.76
100YrSCS12hr 01-01-2019 4:15:00 5.76
100YrSCS12hr 01-01-2019 4:30:00 7.68
100YrSCS12hr 01-01-2019 4:45:00 7.68
100YrSCS12hr 01-01-2019 5:00:00 11.52
100YrSCS12hr 01-01-2019 5:15:00 11.52
100YrSCS12hr 01-01-2019 5:30:00 46.08
100YrSCS12hr 01-01-2019 5:45:00 126.72
100YrSCS12hr 01-01-2019 6:00:00 17.28
100YrSCS12hr 01-01-2019 6:15:00 17.28
100YrSCS12hr 01-01-2019 6:30:00 7.68
100YrSCS12hr 01-01-2019 6:45:00 7.68
100YrSCS12hr 01-01-2019 7:00:00 5.76
100YrSCS12hr 01-01-2019 7:15:00 5.76
100YrSCS12hr 01-01-2019 7:30:00 5.76
100YrSCS12hr 01-01-2019 7:45:00 5.76
100YrSCS12hr 01-01-2019 8:00:00 3.36
100YrSCS12hr 01-01-2019 8:15:00 3.36
100YrSCS12hr 01-01-2019 8:30:00 3.36
100YrSCS12hr 01-01-2019 8:45:00 3.36
100YrSCS12hr 01-01-2019 9:00:00 3.36
100YrSCS12hr 01-01-2019 9:15:00 3.36
100YrSCS12hr 01-01-2019 9:30:00 3.36
100YrSCS12hr 01-01-2019 9:45:00 3.36
100YrSCS12hr 01-01-2019 10:00:00 1.92
100YrSCS12hr 01-01-2019 10:15:00 1.92
100YrSCS12hr 01-01-2019 10:30:00 1.92
100YrSCS12hr 01-01-2019 10:45:00 1.92
100YrSCS12hr 01-01-2019 11:00:00 1.92
100YrSCS12hr 01-01-2019 11:15:00 1.92
100YrSCS12hr 01-01-2019 11:30:00 1.92
100YrSCS12hr 01-01-2019 11:45:00 1.92
100YrSCS12hr 01-01-2019 12:00:00 0

;Rainfall (mm/hr)
100YrSCS24 01/01/2019 00:00:00 1.17
100YrSCS24 01/01/2019 00:10:00 1.17
100YrSCS24 01/01/2019 00:20:00 1.17
100YrSCS24 01/01/2019 00:30:00 1.17
100YrSCS24 01/01/2019 00:40:00 1.17
100YrSCS24 01/01/2019 00:50:00 1.17
100YrSCS24 01/01/2019 01:00:00 1.17
100YrSCS24 01/01/2019 01:10:00 1.17
100YrSCS24 01/01/2019 01:20:00 1.17
100YrSCS24 01/01/2019 01:30:00 1.17
100YrSCS24 01/01/2019 01:40:00 1.17
100YrSCS24 01/01/2019 01:50:00 1.17
100YrSCS24 01/01/2019 02:00:00 1.39
100YrSCS24 01/01/2019 02:10:00 1.39
100YrSCS24 01/01/2019 02:20:00 1.39
100YrSCS24 01/01/2019 02:30:00 1.39
100YrSCS24 01/01/2019 02:40:00 1.39
100YrSCS24 01/01/2019 02:50:00 1.39
100YrSCS24 01/01/2019 03:00:00 1.39
100YrSCS24 01/01/2019 03:10:00 1.39
100YrSCS24 01/01/2019 03:20:00 1.39
100YrSCS24 01/01/2019 03:30:00 1.39
100YrSCS24 01/01/2019 03:40:00 1.39
100YrSCS24 01/01/2019 03:50:00 1.39
100YrSCS24 01/01/2019 04:00:00 1.71
100YrSCS24 01/01/2019 04:10:00 1.71
100YrSCS24 01/01/2019 04:20:00 1.71
100YrSCS24 01/01/2019 04:30:00 1.71
100YrSCS24 01/01/2019 04:40:00 1.71
100YrSCS24 01/01/2019 04:50:00 1.71
100YrSCS24 01/01/2019 05:00:00 1.71
100YrSCS24 01/01/2019 05:10:00 1.71
100YrSCS24 01/01/2019 05:20:00 1.71
100YrSCS24 01/01/2019 05:30:00 1.71
100YrSCS24 01/01/2019 05:40:00 1.71
100YrSCS24 01/01/2019 05:50:00 1.71
100YrSCS24 01/01/2019 06:00:00 1.92
100YrSCS24 01/01/2019 06:10:00 1.92
100YrSCS24 01/01/2019 06:20:00 1.92
100YrSCS24 01/01/2019 06:30:00 1.92
100YrSCS24 01/01/2019 06:40:00 1.92

100YrSCS24	01/01/2019 06:50:00	1.92
100YrSCS24	01/01/2019 07:00:00	2.35
100YrSCS24	01/01/2019 07:10:00	2.35
100YrSCS24	01/01/2019 07:20:00	2.35
100YrSCS24	01/01/2019 07:30:00	2.35
100YrSCS24	01/01/2019 07:40:00	2.35
100YrSCS24	01/01/2019 07:50:00	2.35
100YrSCS24	01/01/2019 08:00:00	2.78
100YrSCS24	01/01/2019 08:10:00	2.78
100YrSCS24	01/01/2019 08:20:00	2.78
100YrSCS24	01/01/2019 08:30:00	2.99
100YrSCS24	01/01/2019 08:40:00	2.99
100YrSCS24	01/01/2019 08:50:00	2.99
100YrSCS24	01/01/2019 09:00:00	3.42
100YrSCS24	01/01/2019 09:10:00	3.42
100YrSCS24	01/01/2019 09:20:00	3.42
100YrSCS24	01/01/2019 09:30:00	3.84
100YrSCS24	01/01/2019 09:40:00	3.84
100YrSCS24	01/01/2019 09:50:00	3.84
100YrSCS24	01/01/2019 10:00:00	4.91
100YrSCS24	01/01/2019 10:10:00	4.91
100YrSCS24	01/01/2019 10:20:00	4.91
100YrSCS24	01/01/2019 10:30:00	6.62
100YrSCS24	01/01/2019 10:40:00	6.62
100YrSCS24	01/01/2019 10:50:00	6.62
100YrSCS24	01/01/2019 11:00:00	10.25
100YrSCS24	01/01/2019 11:10:00	10.25
100YrSCS24	01/01/2019 11:20:00	10.25
100YrSCS24	01/01/2019 11:30:00	31.6
100YrSCS24	01/01/2019 11:40:00	81.12
100YrSCS24	01/01/2019 11:50:00	130.65
100YrSCS24	01/01/2019 12:00:00	15.37
100YrSCS24	01/01/2019 12:10:00	15.37
100YrSCS24	01/01/2019 12:20:00	15.37
100YrSCS24	01/01/2019 12:30:00	7.9
100YrSCS24	01/01/2019 12:40:00	7.9
100YrSCS24	01/01/2019 12:50:00	7.9
100YrSCS24	01/01/2019 13:00:00	5.76
100YrSCS24	01/01/2019 13:10:00	5.76
100YrSCS24	01/01/2019 13:20:00	5.76
100YrSCS24	01/01/2019 13:30:00	4.48
100YrSCS24	01/01/2019 13:40:00	4.48
100YrSCS24	01/01/2019 13:50:00	4.48
100YrSCS24	01/01/2019 14:00:00	3.2
100YrSCS24	01/01/2019 14:10:00	3.2
100YrSCS24	01/01/2019 14:20:00	3.2
100YrSCS24	01/01/2019 14:30:00	3.2
100YrSCS24	01/01/2019 14:40:00	3.2
100YrSCS24	01/01/2019 14:50:00	3.2
100YrSCS24	01/01/2019 15:00:00	3.2
100YrSCS24	01/01/2019 15:10:00	3.2
100YrSCS24	01/01/2019 15:20:00	3.2
100YrSCS24	01/01/2019 15:30:00	3.2
100YrSCS24	01/01/2019 15:40:00	3.2
100YrSCS24	01/01/2019 15:50:00	3.2
100YrSCS24	01/01/2019 16:00:00	1.92
100YrSCS24	01/01/2019 16:10:00	1.92
100YrSCS24	01/01/2019 16:20:00	1.92
100YrSCS24	01/01/2019 16:30:00	1.92
100YrSCS24	01/01/2019 16:40:00	1.92
100YrSCS24	01/01/2019 16:50:00	1.92
100YrSCS24	01/01/2019 17:00:00	1.92
100YrSCS24	01/01/2019 17:10:00	1.92
100YrSCS24	01/01/2019 17:20:00	1.92
100YrSCS24	01/01/2019 17:30:00	1.92
100YrSCS24	01/01/2019 17:40:00	1.92
100YrSCS24	01/01/2019 17:50:00	1.92
100YrSCS24	01/01/2019 18:00:00	1.92
100YrSCS24	01/01/2019 18:10:00	1.92
100YrSCS24	01/01/2019 18:20:00	1.92
100YrSCS24	01/01/2019 18:30:00	1.92
100YrSCS24	01/01/2019 18:40:00	1.92
100YrSCS24	01/01/2019 18:50:00	1.92
100YrSCS24	01/01/2019 19:00:00	1.92
100YrSCS24	01/01/2019 19:10:00	1.92
100YrSCS24	01/01/2019 19:20:00	1.92
100YrSCS24	01/01/2019 19:30:00	1.92
100YrSCS24	01/01/2019 19:40:00	1.92
100YrSCS24	01/01/2019 19:50:00	1.92
100YrSCS24	01/01/2019 20:00:00	1.28
100YrSCS24	01/01/2019 20:10:00	1.28
100YrSCS24	01/01/2019 20:20:00	1.28
100YrSCS24	01/01/2019 20:30:00	1.28
100YrSCS24	01/01/2019 20:40:00	1.28
100YrSCS24	01/01/2019 20:50:00	1.28
100YrSCS24	01/01/2019 21:00:00	1.28
100YrSCS24	01/01/2019 21:10:00	1.28
100YrSCS24	01/01/2019 21:20:00	1.28
100YrSCS24	01/01/2019 21:30:00	1.28
100YrSCS24	01/01/2019 21:40:00	1.28
100YrSCS24	01/01/2019 21:50:00	1.28
100YrSCS24	01/01/2019 22:00:00	1.28
100YrSCS24	01/01/2019 22:10:00	1.28
100YrSCS24	01/01/2019 22:20:00	1.28
100YrSCS24	01/01/2019 22:30:00	1.28
100YrSCS24	01/01/2019 22:40:00	1.28
100YrSCS24	01/01/2019 22:50:00	1.28
100YrSCS24	01/01/2019 23:00:00	1.28
100YrSCS24	01/01/2019 23:10:00	1.28
100YrSCS24	01/01/2019 23:20:00	1.28
100YrSCS24	01/01/2019 23:30:00	1.28
100YrSCS24	01/01/2019 23:40:00	1.28
100YrSCS24	01/01/2019 23:50:00	1.28

;Rainfall (mm/hr)

100YrSCS24+20%	01-01-2019 00:00:00	1.404
100YrSCS24+20%	01-01-2019 00:10:00	1.404
100YrSCS24+20%	01-01-2019 00:20:00	1.404
100YrSCS24+20%	01-01-2019 00:30:00	1.404
100YrSCS24+20%	01-01-2019 00:40:00	1.404
100YrSCS24+20%	01-01-2019 00:50:00	1.404
100YrSCS24+20%	01-01-2019 01:00:00	1.404
100YrSCS24+20%	01-01-2019 01:10:00	1.404
100YrSCS24+20%	01-01-2019 01:20:00	1.404
100YrSCS24+20%	01-01-2019 01:30:00	1.404
100YrSCS24+20%	01-01-2019 01:40:00	1.404
100YrSCS24+20%	01-01-2019 01:50:00	1.404
100YrSCS24+20%	01-01-2019 02:00:00	1.668
100YrSCS24+20%	01-01-2019 02:10:00	1.668
100YrSCS24+20%	01-01-2019 02:20:00	1.668
100YrSCS24+20%	01-01-2019 02:30:00	1.668
100YrSCS24+20%	01-01-2019 02:40:00	1.668
100YrSCS24+20%	01-01-2019 02:50:00	1.668
100YrSCS24+20%	01-01-2019 03:00:00	1.668
100YrSCS24+20%	01-01-2019 03:10:00	1.668
100YrSCS24+20%	01-01-2019 03:20:00	1.668
100YrSCS24+20%	01-01-2019 03:30:00	1.668
100YrSCS24+20%	01-01-2019 03:40:00	1.668
100YrSCS24+20%	01-01-2019 03:50:00	1.668
100YrSCS24+20%	01-01-2019 04:00:00	2.052
100YrSCS24+20%	01-01-2019 04:10:00	2.052
100YrSCS24+20%	01-01-2019 04:20:00	2.052
100YrSCS24+20%	01-01-2019 04:30:00	2.052
100YrSCS24+20%	01-01-2019 04:40:00	2.052
100YrSCS24+20%	01-01-2019 04:50:00	2.052
100YrSCS24+20%	01-01-2019 05:00:00	2.052
100YrSCS24+20%	01-01-2019 05:10:00	2.052
100YrSCS24+20%	01-01-2019 05:20:00	2.052
100YrSCS24+20%	01-01-2019 05:30:00	2.052
100YrSCS24+20%	01-01-2019 05:40:00	2.052

100YrSCS24+20%	01-01-2019 05:50:00	2.052
100YrSCS24+20%	01-01-2019 06:00:00	2.304
100YrSCS24+20%	01-01-2019 06:10:00	2.304
100YrSCS24+20%	01-01-2019 06:20:00	2.304
100YrSCS24+20%	01-01-2019 06:30:00	2.304
100YrSCS24+20%	01-01-2019 06:40:00	2.304
100YrSCS24+20%	01-01-2019 06:50:00	2.304
100YrSCS24+20%	01-01-2019 07:00:00	2.82
100YrSCS24+20%	01-01-2019 07:10:00	2.82
100YrSCS24+20%	01-01-2019 07:20:00	2.82
100YrSCS24+20%	01-01-2019 07:30:00	2.82
100YrSCS24+20%	01-01-2019 07:40:00	2.82
100YrSCS24+20%	01-01-2019 07:50:00	2.82
100YrSCS24+20%	01-01-2019 08:00:00	3.336
100YrSCS24+20%	01-01-2019 08:10:00	3.336
100YrSCS24+20%	01-01-2019 08:20:00	3.336
100YrSCS24+20%	01-01-2019 08:30:00	3.588
100YrSCS24+20%	01-01-2019 08:40:00	3.588
100YrSCS24+20%	01-01-2019 08:50:00	3.588
100YrSCS24+20%	01-01-2019 09:00:00	4.104
100YrSCS24+20%	01-01-2019 09:10:00	4.104
100YrSCS24+20%	01-01-2019 09:20:00	4.104
100YrSCS24+20%	01-01-2019 09:30:00	4.608
100YrSCS24+20%	01-01-2019 09:40:00	4.608
100YrSCS24+20%	01-01-2019 09:50:00	4.608
100YrSCS24+20%	01-01-2019 10:00:00	5.892
100YrSCS24+20%	01-01-2019 10:10:00	5.892
100YrSCS24+20%	01-01-2019 10:20:00	5.892
100YrSCS24+20%	01-01-2019 10:30:00	7.944
100YrSCS24+20%	01-01-2019 10:40:00	7.944
100YrSCS24+20%	01-01-2019 10:50:00	7.944
100YrSCS24+20%	01-01-2019 11:00:00	12.3
100YrSCS24+20%	01-01-2019 11:10:00	12.3
100YrSCS24+20%	01-01-2019 11:20:00	12.3
100YrSCS24+20%	01-01-2019 11:30:00	37.92
100YrSCS24+20%	01-01-2019 11:40:00	97.344
100YrSCS24+20%	01-01-2019 11:50:00	156.78
100YrSCS24+20%	01-01-2019 12:00:00	18.444
100YrSCS24+20%	01-01-2019 12:10:00	18.444
100YrSCS24+20%	01-01-2019 12:20:00	18.444
100YrSCS24+20%	01-01-2019 12:30:00	9.48
100YrSCS24+20%	01-01-2019 12:40:00	9.48
100YrSCS24+20%	01-01-2019 12:50:00	9.48
100YrSCS24+20%	01-01-2019 13:00:00	6.912
100YrSCS24+20%	01-01-2019 13:10:00	6.912
100YrSCS24+20%	01-01-2019 13:20:00	6.912
100YrSCS24+20%	01-01-2019 13:30:00	5.376
100YrSCS24+20%	01-01-2019 13:40:00	5.376
100YrSCS24+20%	01-01-2019 13:50:00	5.376
100YrSCS24+20%	01-01-2019 14:00:00	3.84
100YrSCS24+20%	01-01-2019 14:10:00	3.84
100YrSCS24+20%	01-01-2019 14:20:00	3.84
100YrSCS24+20%	01-01-2019 14:30:00	3.84
100YrSCS24+20%	01-01-2019 14:40:00	3.84
100YrSCS24+20%	01-01-2019 14:50:00	3.84
100YrSCS24+20%	01-01-2019 15:00:00	3.84
100YrSCS24+20%	01-01-2019 15:10:00	3.84
100YrSCS24+20%	01-01-2019 15:20:00	3.84
100YrSCS24+20%	01-01-2019 15:30:00	3.84
100YrSCS24+20%	01-01-2019 15:40:00	3.84
100YrSCS24+20%	01-01-2019 15:50:00	3.84
100YrSCS24+20%	01-01-2019 16:00:00	2.304
100YrSCS24+20%	01-01-2019 16:10:00	2.304
100YrSCS24+20%	01-01-2019 16:20:00	2.304
100YrSCS24+20%	01-01-2019 16:30:00	2.304
100YrSCS24+20%	01-01-2019 16:40:00	2.304
100YrSCS24+20%	01-01-2019 16:50:00	2.304
100YrSCS24+20%	01-01-2019 17:00:00	2.304
100YrSCS24+20%	01-01-2019 17:10:00	2.304
100YrSCS24+20%	01-01-2019 17:20:00	2.304
100YrSCS24+20%	01-01-2019 17:30:00	2.304
100YrSCS24+20%	01-01-2019 17:40:00	2.304
100YrSCS24+20%	01-01-2019 17:50:00	2.304
100YrSCS24+20%	01-01-2019 18:00:00	2.304
100YrSCS24+20%	01-01-2019 18:10:00	2.304
100YrSCS24+20%	01-01-2019 18:20:00	2.304
100YrSCS24+20%	01-01-2019 18:30:00	2.304
100YrSCS24+20%	01-01-2019 18:40:00	2.304
100YrSCS24+20%	01-01-2019 18:50:00	2.304
100YrSCS24+20%	01-01-2019 19:00:00	2.304
100YrSCS24+20%	01-01-2019 19:10:00	2.304
100YrSCS24+20%	01-01-2019 19:20:00	2.304
100YrSCS24+20%	01-01-2019 19:30:00	2.304
100YrSCS24+20%	01-01-2019 19:40:00	2.304
100YrSCS24+20%	01-01-2019 19:50:00	2.304
100YrSCS24+20%	01-01-2019 20:00:00	1.536
100YrSCS24+20%	01-01-2019 20:10:00	1.536
100YrSCS24+20%	01-01-2019 20:20:00	1.536
100YrSCS24+20%	01-01-2019 20:30:00	1.536
100YrSCS24+20%	01-01-2019 20:40:00	1.536
100YrSCS24+20%	01-01-2019 20:50:00	1.536
100YrSCS24+20%	01-01-2019 21:00:00	1.536
100YrSCS24+20%	01-01-2019 21:10:00	1.536
100YrSCS24+20%	01-01-2019 21:20:00	1.536
100YrSCS24+20%	01-01-2019 21:30:00	1.536
100YrSCS24+20%	01-01-2019 21:40:00	1.536
100YrSCS24+20%	01-01-2019 21:50:00	1.536
100YrSCS24+20%	01-01-2019 22:00:00	1.536
100YrSCS24+20%	01-01-2019 22:10:00	1.536
100YrSCS24+20%	01-01-2019 22:20:00	1.536
100YrSCS24+20%	01-01-2019 22:30:00	1.536
100YrSCS24+20%	01-01-2019 22:40:00	1.536
100YrSCS24+20%	01-01-2019 22:50:00	1.536
100YrSCS24+20%	01-01-2019 23:00:00	1.536
100YrSCS24+20%	01-01-2019 23:10:00	1.536
100YrSCS24+20%	01-01-2019 23:20:00	1.536
100YrSCS24+20%	01-01-2019 23:30:00	1.536
100YrSCS24+20%	01-01-2019 23:40:00	1.536
100YrSCS24+20%	01-01-2019 23:50:00	1.536

;Rainfall (mm/hr)

1979July01	01-01-2019 00:00:00	2.3
1979July01	01-01-2019 00:05:00	2.3
1979July01	01-01-2019 00:10:00	8.89
1979July01	01-01-2019 00:15:00	8.89
1979July01	01-01-2019 00:20:00	8.89
1979July01	01-01-2019 00:25:00	8.89
1979July01	01-01-2019 00:30:00	38.1
1979July01	01-01-2019 00:35:00	38.1
1979July01	01-01-2019 00:40:00	38.1
1979July01	01-01-2019 00:45:00	38.1
1979July01	01-01-2019 00:50:00	38.1
1979July01	01-01-2019 00:55:00	38.1
1979July01	01-01-2019 01:00:00	38.1
1979July01	01-01-2019 01:05:00	50.8
1979July01	01-01-2019 01:10:00	50.8
1979July01	01-01-2019 01:15:00	76.2
1979July01	01-01-2019 01:20:00	106.7
1979July01	01-01-2019 01:25:00	106.7
1979July01	01-01-2019 01:30:00	71.1
1979July01	01-01-2019 01:35:00	71.1
1979July01	01-01-2019 01:40:00	30.5
1979July01	01-01-2019 01:45:00	30.5
1979July01	01-01-2019 01:50:00	30.5
1979July01	01-01-2019 01:55:00	30.5
1979July01	01-01-2019 02:00:00	3.8
1979July01	01-01-2019 02:05:00	3.8
1979July01	01-01-2019 02:10:00	3.8
1979July01	01-01-2019 02:15:00	3.8
1979July01	01-01-2019 02:20:00	3.8

1979July01 01-01-2019 02:25:00 3.8
1979July01 01-01-2019 02:30:00 3.8
1979July01 01-01-2019 02:35:00 3.8
1979July01 01-01-2019 02:40:00 3.8
1979July01 01-01-2019 02:45:00 3.8
1979July01 01-01-2019 02:50:00 3.8
1979July01 01-01-2019 02:55:00 3.8

;Rainfall (mm/hr)
1988Aug04 01-01-2019 00:00:00 0.1
1988Aug04 01-01-2019 00:05:00 0.1
1988Aug04 01-01-2019 00:10:00 0
1988Aug04 01-01-2019 00:15:00 3.7
1988Aug04 01-01-2019 00:20:00 6.2
1988Aug04 01-01-2019 00:25:00 101.5
1988Aug04 01-01-2019 00:30:00 15.5
1988Aug04 01-01-2019 00:35:00 29.3
1988Aug04 01-01-2019 00:40:00 19.8
1988Aug04 01-01-2019 00:45:00 1.5
1988Aug04 01-01-2019 00:50:00 1.7
1988Aug04 01-01-2019 00:55:00 5.4
1988Aug04 01-01-2019 01:00:00 24.6
1988Aug04 01-01-2019 01:05:00 26.5
1988Aug04 01-01-2019 01:10:00 34.9
1988Aug04 01-01-2019 01:15:00 10.2
1988Aug04 01-01-2019 01:20:00 27.1
1988Aug04 01-01-2019 01:25:00 104.4
1988Aug04 01-01-2019 01:30:00 27.5
1988Aug04 01-01-2019 01:35:00 62.5
1988Aug04 01-01-2019 01:40:00 31.8
1988Aug04 01-01-2019 01:45:00 79.8
1988Aug04 01-01-2019 01:50:00 67.5
1988Aug04 01-01-2019 01:55:00 156.2
1988Aug04 01-01-2019 02:00:00 5.1
1988Aug04 01-01-2019 02:05:00 0.2
1988Aug04 01-01-2019 02:10:00 0.2
1988Aug04 01-01-2019 02:15:00 0.2
1988Aug04 01-01-2019 02:20:00 0.2
1988Aug04 01-01-2019 02:25:00 0.2
1988Aug04 01-01-2019 02:30:00 0.2
1988Aug04 01-01-2019 02:35:00 0.2
1988Aug04 01-01-2019 02:40:00 0.2
1988Aug04 01-01-2019 02:45:00 0.2
1988Aug04 01-01-2019 02:50:00 0.2
1988Aug04 01-01-2019 02:55:00 12.8
1988Aug04 01-01-2019 03:00:00 14
1988Aug04 01-01-2019 03:05:00 22.2
1988Aug04 01-01-2019 03:10:00 21.8
1988Aug04 01-01-2019 03:15:00 1.4
1988Aug04 01-01-2019 03:20:00 0.2
1988Aug04 01-01-2019 03:25:00 0.2
1988Aug04 01-01-2019 03:30:00 0.2
1988Aug04 01-01-2019 03:35:00 0.2
1988Aug04 01-01-2019 03:40:00 0.2
1988Aug04 01-01-2019 03:45:00 0.2
1988Aug04 01-01-2019 03:50:00 0.2
1988Aug04 01-01-2019 03:55:00 0.2
1988Aug04 01-01-2019 04:00:00 0.2
1988Aug04 01-01-2019 04:05:00 0.2
1988Aug04 01-01-2019 04:10:00 0.2
1988Aug04 01-01-2019 04:15:00 0.2
1988Aug04 01-01-2019 04:20:00 0.2
1988Aug04 01-01-2019 04:25:00 0.2
1988Aug04 01-01-2019 04:30:00 0.2
1988Aug04 01-01-2019 04:35:00 0.2
1988Aug04 01-01-2019 04:40:00 0.2
1988Aug04 01-01-2019 04:45:00 0.2
1988Aug04 01-01-2019 04:50:00 0.2
1988Aug04 01-01-2019 04:55:00 2.9
1988Aug04 01-01-2019 05:00:00 7.8
1988Aug04 01-01-2019 05:05:00 10
1988Aug04 01-01-2019 05:10:00 6.3
1988Aug04 01-01-2019 05:15:00 5.1
1988Aug04 01-01-2019 05:20:00 9.8
1988Aug04 01-01-2019 05:25:00 2.6
1988Aug04 01-01-2019 05:30:00 1.7

;Rainfall (mm/hr)
1996Aug08 01-01-2019 00:00:00 4
1996Aug08 01-01-2019 00:05:00 11.9
1996Aug08 01-01-2019 00:10:00 26.5
1996Aug08 01-01-2019 00:15:00 13.3
1996Aug08 01-01-2019 00:20:00 0
1996Aug08 01-01-2019 00:25:00 2.7
1996Aug08 01-01-2019 00:30:00 0
1996Aug08 01-01-2019 00:35:00 8
1996Aug08 01-01-2019 00:40:00 18.6
1996Aug08 01-01-2019 00:45:00 10.6
1996Aug08 01-01-2019 00:50:00 21.2
1996Aug08 01-01-2019 00:55:00 2.7
1996Aug08 01-01-2019 01:00:00 2.7
1996Aug08 01-01-2019 01:05:00 15.9
1996Aug08 01-01-2019 01:10:00 66.3
1996Aug08 01-01-2019 01:15:00 55.7
1996Aug08 01-01-2019 01:20:00 122
1996Aug08 01-01-2019 01:25:00 88.9
1996Aug08 01-01-2019 01:30:00 9.3
1996Aug08 01-01-2019 01:35:00 8
1996Aug08 01-01-2019 01:40:00 4
1996Aug08 01-01-2019 01:45:00 0
1996Aug08 01-01-2019 01:50:00 2.7
1996Aug08 01-01-2019 01:55:00 0
1996Aug08 01-01-2019 02:00:00 0
1996Aug08 01-01-2019 02:05:00 0
1996Aug08 01-01-2019 02:10:00 5.3
1996Aug08 01-01-2019 02:15:00 0
1996Aug08 01-01-2019 02:20:00 0
1996Aug08 01-01-2019 02:25:00 0
1996Aug08 01-01-2019 02:30:00 0
1996Aug08 01-01-2019 02:35:00 0
1996Aug08 01-01-2019 02:40:00 0
1996Aug08 01-01-2019 02:45:00 4
1996Aug08 01-01-2019 02:50:00 53.1
1996Aug08 01-01-2019 02:55:00 69
1996Aug08 01-01-2019 03:00:00 63.7
1996Aug08 01-01-2019 03:05:00 58.4
1996Aug08 01-01-2019 03:10:00 47.8
1996Aug08 01-01-2019 03:15:00 15.9
1996Aug08 01-01-2019 03:20:00 13.3
1996Aug08 01-01-2019 03:25:00 8
1996Aug08 01-01-2019 03:30:00 5.3
1996Aug08 01-01-2019 03:35:00 6.6
1996Aug08 01-01-2019 03:40:00 2.7
1996Aug08 01-01-2019 03:45:00 4
1996Aug08 01-01-2019 03:50:00 2.7
1996Aug08 01-01-2019 03:55:00 4
1996Aug08 01-01-2019 04:00:00 2.7
1996Aug08 01-01-2019 04:05:00 5.3
1996Aug08 01-01-2019 04:10:00 4
1996Aug08 01-01-2019 04:15:00 2.7
1996Aug08 01-01-2019 04:20:00 4
1996Aug08 01-01-2019 04:25:00 2.7
1996Aug08 01-01-2019 04:30:00 1.3
1996Aug08 01-01-2019 04:35:00 1.3
1996Aug08 01-01-2019 04:40:00 0
1996Aug08 01-01-2019 04:45:00 0
1996Aug08 01-01-2019 04:50:00 0
1996Aug08 01-01-2019 04:55:00 0
1996Aug08 01-01-2019 05:00:00 2.7
1996Aug08 01-01-2019 05:05:00 0

1996Aug08 01-01-2019 05:10:00 0
1996Aug08 01-01-2019 05:15:00 0
1996Aug08 01-01-2019 05:20:00 0
1996Aug08 01-01-2019 05:25:00 0
1996Aug08 01-01-2019 05:30:00 0
1996Aug08 01-01-2019 05:35:00 0
1996Aug08 01-01-2019 05:40:00 1.3

;Rainfall (mm/hr)
25mmChicago4Hr 01-01-2019 00:00:00 0
25mmChicago4Hr 01-01-2019 00:10:00 1.5122
25mmChicago4Hr 01-01-2019 00:20:00 1.7483
25mmChicago4Hr 01-01-2019 00:30:00 2.0803
25mmChicago4Hr 01-01-2019 00:40:00 2.5819
25mmChicago4Hr 01-01-2019 00:50:00 3.4597
25mmChicago4Hr 01-01-2019 01:00:00 5.3924
25mmChicago4Hr 01-01-2019 01:10:00 13.4405
25mmChicago4Hr 01-01-2019 01:20:00 56.6613
25mmChicago4Hr 01-01-2019 01:30:00 17.7634
25mmChicago4Hr 01-01-2019 01:40:00 9.1177
25mmChicago4Hr 01-01-2019 01:50:00 6.1375
25mmChicago4Hr 01-01-2019 02:00:00 4.6474
25mmChicago4Hr 01-01-2019 02:10:00 3.7548
25mmChicago4Hr 01-01-2019 02:20:00 3.1647
25mmChicago4Hr 01-01-2019 02:30:00 2.7442
25mmChicago4Hr 01-01-2019 02:40:00 2.427
25mmChicago4Hr 01-01-2019 02:50:00 2.1762
25mmChicago4Hr 01-01-2019 03:00:00 1.977
25mmChicago4Hr 01-01-2019 03:10:00 1.8147
25mmChicago4Hr 01-01-2019 03:20:00 1.6819
25mmChicago4Hr 01-01-2019 03:30:00 1.5639
25mmChicago4Hr 01-01-2019 03:40:00 1.468
25mmChicago4Hr 01-01-2019 03:50:00 1.3795
25mmChicago4Hr 01-01-2019 04:00:00 1.3057

;Rainfall (mm/hr)
2YrSCS12hr 01-01-2019 0:00:00 1.08
2YrSCS12hr 01-01-2019 0:15:00 1.08
2YrSCS12hr 01-01-2019 0:30:00 1.08
2YrSCS12hr 01-01-2019 0:45:00 1.08
2YrSCS12hr 01-01-2019 1:00:00 1.08
2YrSCS12hr 01-01-2019 1:15:00 1.08
2YrSCS12hr 01-01-2019 1:30:00 1.08
2YrSCS12hr 01-01-2019 1:45:00 1.08
2YrSCS12hr 01-01-2019 2:00:00 1.296
2YrSCS12hr 01-01-2019 2:15:00 1.296
2YrSCS12hr 01-01-2019 2:30:00 1.296
2YrSCS12hr 01-01-2019 2:45:00 1.296
2YrSCS12hr 01-01-2019 3:00:00 1.728
2YrSCS12hr 01-01-2019 3:15:00 1.728
2YrSCS12hr 01-01-2019 3:30:00 1.728
2YrSCS12hr 01-01-2019 3:45:00 1.728
2YrSCS12hr 01-01-2019 4:00:00 2.592
2YrSCS12hr 01-01-2019 4:15:00 2.592
2YrSCS12hr 01-01-2019 4:30:00 3.456
2YrSCS12hr 01-01-2019 4:45:00 3.456
2YrSCS12hr 01-01-2019 5:00:00 5.184
2YrSCS12hr 01-01-2019 5:15:00 5.184
2YrSCS12hr 01-01-2019 5:30:00 20.736
2YrSCS12hr 01-01-2019 5:45:00 57.024
2YrSCS12hr 01-01-2019 6:00:00 7.776
2YrSCS12hr 01-01-2019 6:15:00 7.776
2YrSCS12hr 01-01-2019 6:30:00 3.456
2YrSCS12hr 01-01-2019 6:45:00 3.456
2YrSCS12hr 01-01-2019 7:00:00 2.592
2YrSCS12hr 01-01-2019 7:15:00 2.592
2YrSCS12hr 01-01-2019 7:30:00 2.592
2YrSCS12hr 01-01-2019 7:45:00 2.592
2YrSCS12hr 01-01-2019 8:00:00 1.512
2YrSCS12hr 01-01-2019 8:15:00 1.512
2YrSCS12hr 01-01-2019 8:30:00 1.512
2YrSCS12hr 01-01-2019 8:45:00 1.512
2YrSCS12hr 01-01-2019 9:00:00 1.512
2YrSCS12hr 01-01-2019 9:15:00 1.512
2YrSCS12hr 01-01-2019 9:30:00 1.512
2YrSCS12hr 01-01-2019 9:45:00 1.512
2YrSCS12hr 01-01-2019 10:00:00 0.864
2YrSCS12hr 01-01-2019 10:15:00 0.864
2YrSCS12hr 01-01-2019 10:30:00 0.864
2YrSCS12hr 01-01-2019 10:45:00 0.864
2YrSCS12hr 01-01-2019 11:00:00 0.864
2YrSCS12hr 01-01-2019 11:15:00 0.864
2YrSCS12hr 01-01-2019 11:30:00 0.864
2YrSCS12hr 01-01-2019 12:00:00 0

;Rainfall (mm/hr)
5YrSCS12hr 01-01-2019 0:00:00 1.44
5YrSCS12hr 01-01-2019 0:15:00 1.44
5YrSCS12hr 01-01-2019 0:30:00 1.44
5YrSCS12hr 01-01-2019 0:45:00 1.44
5YrSCS12hr 01-01-2019 1:00:00 1.44
5YrSCS12hr 01-01-2019 1:15:00 1.44
5YrSCS12hr 01-01-2019 1:30:00 1.44
5YrSCS12hr 01-01-2019 1:45:00 1.44
5YrSCS12hr 01-01-2019 2:00:00 1.728
5YrSCS12hr 01-01-2019 2:15:00 1.728
5YrSCS12hr 01-01-2019 2:30:00 1.728
5YrSCS12hr 01-01-2019 2:45:00 1.728
5YrSCS12hr 01-01-2019 3:00:00 2.304
5YrSCS12hr 01-01-2019 3:15:00 2.304
5YrSCS12hr 01-01-2019 3:30:00 2.304
5YrSCS12hr 01-01-2019 3:45:00 2.304
5YrSCS12hr 01-01-2019 4:00:00 3.456
5YrSCS12hr 01-01-2019 4:15:00 3.456
5YrSCS12hr 01-01-2019 4:30:00 4.608
5YrSCS12hr 01-01-2019 4:45:00 4.608
5YrSCS12hr 01-01-2019 5:00:00 6.912
5YrSCS12hr 01-01-2019 5:15:00 6.912
5YrSCS12hr 01-01-2019 5:30:00 27.648
5YrSCS12hr 01-01-2019 5:45:00 76.032
5YrSCS12hr 01-01-2019 6:00:00 10.368
5YrSCS12hr 01-01-2019 6:15:00 10.368
5YrSCS12hr 01-01-2019 6:30:00 4.608
5YrSCS12hr 01-01-2019 6:45:00 4.608
5YrSCS12hr 01-01-2019 7:00:00 3.456
5YrSCS12hr 01-01-2019 7:15:00 3.456
5YrSCS12hr 01-01-2019 7:30:00 3.456
5YrSCS12hr 01-01-2019 7:45:00 3.456
5YrSCS12hr 01-01-2019 8:00:00 2.016
5YrSCS12hr 01-01-2019 8:15:00 2.016
5YrSCS12hr 01-01-2019 8:30:00 2.016
5YrSCS12hr 01-01-2019 8:45:00 2.016
5YrSCS12hr 01-01-2019 9:00:00 2.016
5YrSCS12hr 01-01-2019 9:15:00 2.016
5YrSCS12hr 01-01-2019 9:30:00 2.016
5YrSCS12hr 01-01-2019 9:45:00 2.016
5YrSCS12hr 01-01-2019 10:00:00 1.152
5YrSCS12hr 01-01-2019 10:15:00 1.152
5YrSCS12hr 01-01-2019 10:30:00 1.152
5YrSCS12hr 01-01-2019 10:45:00 1.152
5YrSCS12hr 01-01-2019 11:00:00 1.152
5YrSCS12hr 01-01-2019 11:15:00 1.152
5YrSCS12hr 01-01-2019 11:30:00 1.152
5YrSCS12hr 01-01-2019 11:45:00 1.152
5YrSCS12hr 01-01-2019 12:00:00 0

;Depth (m)
MH-111-100YrCHI3Hr 01/01/2019 00:00:00 80.571
MH-111-100YrCHI3Hr 01/01/2019 00:05:00 80.571
MH-111-100YrCHI3Hr 01/01/2019 00:10:00 80.572

MH-111-100YrCHI3Hr	01/01/2019 00:15:00	80.573
MH-111-100YrCHI3Hr	01/01/2019 00:20:00	80.598
MH-111-100YrCHI3Hr	01/01/2019 00:25:00	80.659
MH-111-100YrCHI3Hr	01/01/2019 00:30:00	80.721
MH-111-100YrCHI3Hr	01/01/2019 00:35:00	80.794
MH-111-100YrCHI3Hr	01/01/2019 00:40:00	80.872
MH-111-100YrCHI3Hr	01/01/2019 00:45:00	80.963
MH-111-100YrCHI3Hr	01/01/2019 00:50:00	81.068
MH-111-100YrCHI3Hr	01/01/2019 00:55:00	81.22
MH-111-100YrCHI3Hr	01/01/2019 01:00:00	81.386
MH-111-100YrCHI3Hr	01/01/2019 01:05:00	81.505
MH-111-100YrCHI3Hr	01/01/2019 01:10:00	81.555
MH-111-100YrCHI3Hr	01/01/2019 01:15:00	81.604
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MH-111-100YrCHI3Hr+20% 01/01/2019 00:10:00 80.572
MH-111-100YrCHI3Hr+20% 01/01/2019 00:15:00 80.584
MH-111-100YrCHI3Hr+20% 01/01/2019 00:20:00 80.633
MH-111-100YrCHI3Hr+20% 01/01/2019 00:25:00 80.701
MH-111-100YrCHI3Hr+20% 01/01/2019 00:30:00 80.783
MH-111-100YrCHI3Hr+20% 01/01/2019 00:35:00 80.942
MH-111-100YrCHI3Hr+20% 01/01/2019 00:40:00 81.051
MH-111-100YrCHI3Hr+20% 01/01/2019 00:45:00 81.152
MH-111-100YrCHI3Hr+20% 01/01/2019 00:50:00 81.292
MH-111-100YrCHI3Hr+20% 01/01/2019 00:55:00 81.521
MH-111-100YrCHI3Hr+20% 01/01/2019 01:00:00 81.797
MH-111-100YrCHI3Hr+20% 01/01/2019 01:05:00 82.06
MH-111-100YrCHI3Hr+20% 01/01/2019 01:10:00 82.255
MH-111-100YrCHI3Hr+20% 01/01/2019 01:15:00 82.29
MH-111-100YrCHI3Hr+20% 01/01/2019 01:20:00 82.423
MH-111-100YrCHI3Hr+20% 01/01/2019 01:25:00 82.534
MH-111-100YrCHI3Hr+20% 01/01/2019 01:30:00 82.624
MH-111-100YrCHI3Hr+20% 01/01/2019 01:35:00 82.838
MH-111-100YrCHI3Hr+20% 01/01/2019 01:40:00 82.924
MH-111-100YrCHI3Hr+20% 01/01/2019 01:45:00 83.069
MH-111-100YrCHI3Hr+20% 01/01/2019 01:50:00 83.063
MH-111-100YrCHI3Hr+20% 01/01/2019 01:55:00 83.09
MH-111-100YrCHI3Hr+20% 01/01/2019 02:00:00 83.096
MH-111-100YrCHI3Hr+20% 01/01/2019 02:05:00 83.154
MH-111-100YrCHI3Hr+20% 01/01/2019 02:10:00 83.147
MH-111-100YrCHI3Hr+20% 01/01/2019 02:15:00 83.173
MH-111-100YrCHI3Hr+20% 01/01/2019 02:20:00 83.16
MH-111-100YrCHI3Hr+20% 01/01/2019 02:25:00 83.179
MH-111-100YrCHI3Hr+20% 01/01/2019 02:30:00 83.161
MH-111-100YrCHI3Hr+20% 01/01/2019 02:35:00 83.168
MH-111-100YrCHI3Hr+20% 01/01/2019 02:40:00 83.15
MH-111-100YrCHI3Hr+20% 01/01/2019 02:45:00 83.157
MH-111-100YrCHI3Hr+20% 01/01/2019 02:50:00 83.137
MH-111-100YrCHI3Hr+20% 01/01/2019 02:55:00 83.142
MH-111-100YrCHI3Hr+20% 01/01/2019 03:00:00 83.122
MH-111-100YrCHI3Hr+20% 01/01/2019 03:05:00 83.123
MH-111-100YrCHI3Hr+20% 01/01/2019 03:10:00 83.1
MH-111-100YrCHI3Hr+20% 01/01/2019 03:15:00 83.091
MH-111-100YrCHI3Hr+20% 01/01/2019 03:20:00 83.085
MH-111-100YrCHI3Hr+20% 01/01/2019 03:25:00 83.069
MH-111-100YrCHI3Hr+20% 01/01/2019 03:30:00 83.047
MH-111-100YrCHI3Hr+20% 01/01/2019 03:35:00 83.039
MH-111-100YrCHI3Hr+20% 01/01/2019 03:40:00 83.029
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MH-111-100YrCHI3Hr+20% 01/01/2019 03:50:00 82.994
MH-111-100YrCHI3Hr+20% 01/01/2019 03:55:00 82.983
MH-111-100YrCHI3Hr+20% 01/01/2019 04:00:00 82.972
MH-111-100YrCHI3Hr+20% 01/01/2019 04:05:00 82.959
MH-111-100YrCHI3Hr+20% 01/01/2019 04:10:00 82.942
MH-111-100YrCHI3Hr+20% 01/01/2019 04:15:00 82.933
MH-111-100YrCHI3Hr+20% 01/01/2019 04:20:00 82.923
MH-111-100YrCHI3Hr+20% 01/01/2019 04:25:00 82.911
MH-111-100YrCHI3Hr+20% 01/01/2019 04:30:00 82.896
MH-111-100YrCHI3Hr+20% 01/01/2019 04:35:00 82.887
MH-111-100YrCHI3Hr+20% 01/01/2019 04:40:00 82.878
MH-111-100YrCHI3Hr+20% 01/01/2019 04:45:00 82.867
MH-111-100YrCHI3Hr+20% 01/01/2019 04:50:00 82.853
MH-111-100YrCHI3Hr+20% 01/01/2019 04:55:00 82.845
MH-111-100YrCHI3Hr+20% 01/01/2019 05:00:00 82.836
MH-111-100YrCHI3Hr+20% 01/01/2019 05:05:00 82.827
MH-111-100YrCHI3Hr+20% 01/01/2019 05:10:00 82.815
MH-111-100YrCHI3Hr+20% 01/01/2019 05:15:00 82.806
MH-111-100YrCHI3Hr+20% 01/01/2019 05:20:00 82.799
MH-111-100YrCHI3Hr+20% 01/01/2019 05:25:00 82.791
MH-111-100YrCHI3Hr+20% 01/01/2019 05:30:00 82.78
MH-111-100YrCHI3Hr+20% 01/01/2019 05:35:00 82.772
MH-111-100YrCHI3Hr+20% 01/01/2019 05:40:00 82.765
MH-111-100YrCHI3Hr+20% 01/01/2019 05:45:00 82.758
MH-111-100YrCHI3Hr+20% 01/01/2019 05:50:00 82.748
MH-111-100YrCHI3Hr+20% 01/01/2019 05:55:00 82.741
MH-111-100YrCHI3Hr+20% 01/01/2019 06:00:00 82.735
MH-111-100YrCHI3Hr+20% 01/01/2019 06:05:00 82.729
MH-111-100YrCHI3Hr+20% 01/01/2019 06:10:00 82.72
MH-111-100YrCHI3Hr+20% 01/01/2019 06:15:00 82.713
MH-111-100YrCHI3Hr+20% 01/01/2019 06:20:00 82.707
MH-111-100YrCHI3Hr+20% 01/01/2019 06:25:00 82.702
MH-111-100YrCHI3Hr+20% 01/01/2019 06:30:00 82.694
MH-111-100YrCHI3Hr+20% 01/01/2019 06:35:00 82.687
MH-111-100YrCHI3Hr+20% 01/01/2019 06:40:00 82.681
MH-111-100YrCHI3Hr+20% 01/01/2019 06:45:00 82.677
MH-111-100YrCHI3Hr+20% 01/01/2019 06:50:00 82.67
MH-111-100YrCHI3Hr+20% 01/01/2019 06:55:00 82.664
MH-111-100YrCHI3Hr+20% 01/01/2019 07:00:00 82.658
MH-111-100YrCHI3Hr+20% 01/01/2019 07:05:00 82.654
MH-111-100YrCHI3Hr+20% 01/01/2019 07:10:00 82.648
MH-111-100YrCHI3Hr+20% 01/01/2019 07:15:00 82.643
MH-111-100YrCHI3Hr+20% 01/01/2019 07:20:00 82.637
MH-111-100YrCHI3Hr+20% 01/01/2019 07:25:00 82.634
MH-111-100YrCHI3Hr+20% 01/01/2019 07:30:00 82.628
MH-111-100YrCHI3Hr+20% 01/01/2019 07:35:00 82.624
MH-111-100YrCHI3Hr+20% 01/01/2019 07:40:00 82.618
MH-111-100YrCHI3Hr+20% 01/01/2019 07:45:00 82.615
MH-111-100YrCHI3Hr+20% 01/01/2019 07:50:00 82.61
MH-111-100YrCHI3Hr+20% 01/01/2019 07:55:00 82.606
MH-111-100YrCHI3Hr+20% 01/01/2019 08:00:00 82.601
MH-111-100YrCHI3Hr+20% 01/01/2019 08:05:00 82.597
MH-111-100YrCHI3Hr+20% 01/01/2019 08:10:00 82.593
MH-111-100YrCHI3Hr+20% 01/01/2019 08:15:00 82.589
MH-111-100YrCHI3Hr+20% 01/01/2019 08:20:00 82.584
MH-111-100YrCHI3Hr+20% 01/01/2019 08:25:00 82.581
MH-111-100YrCHI3Hr+20% 01/01/2019 08:30:00 82.577
MH-111-100YrCHI3Hr+20% 01/01/2019 08:35:00 82.574
MH-111-100YrCHI3Hr+20% 01/01/2019 08:40:00 82.569
MH-111-100YrCHI3Hr+20% 01/01/2019 08:45:00 82.566
MH-111-100YrCHI3Hr+20% 01/01/2019 08:50:00 82.563
MH-111-100YrCHI3Hr+20% 01/01/2019 08:55:00 82.56
MH-111-100YrCHI3Hr+20% 01/01/2019 09:00:00 82.555
MH-111-100YrCHI3Hr+20% 01/01/2019 09:05:00 82.552
MH-111-100YrCHI3Hr+20% 01/01/2019 09:10:00 82.549
MH-111-100YrCHI3Hr+20% 01/01/2019 09:15:00 82.546
MH-111-100YrCHI3Hr+20% 01/01/2019 09:20:00 82.543
MH-111-100YrCHI3Hr+20% 01/01/2019 09:25:00 82.539
MH-111-100YrCHI3Hr+20% 01/01/2019 09:30:00 82.536
MH-111-100YrCHI3Hr+20% 01/01/2019 09:35:00 82.534
MH-111-100YrCHI3Hr+20% 01/01/2019 09:40:00 82.53
MH-111-100YrCHI3Hr+20% 01/01/2019 09:45:00 82.527
MH-111-100YrCHI3Hr+20% 01/01/2019 09:50:00 82.524
MH-111-100YrCHI3Hr+20% 01/01/2019 09:55:00 82.522
MH-111-100YrCHI3Hr+20% 01/01/2019 10:00:00 82.519
MH-111-100YrCHI3Hr+20% 01/01/2019 10:05:00 82.516
MH-111-100YrCHI3Hr+20% 01/01/2019 10:10:00 82.513
MH-111-100YrCHI3Hr+20% 01/01/2019 10:15:00 82.511
MH-111-100YrCHI3Hr+20% 01/01/2019 10:20:00 82.508
MH-111-100YrCHI3Hr+20% 01/01/2019 10:25:00 82.506
MH-111-100YrCHI3Hr+20% 01/01/2019 10:30:00 82.503
MH-111-100YrCHI3Hr+20% 01/01/2019 10:35:00 82.5
MH-111-100YrCHI3Hr+20% 01/01/2019 10:40:00 82.499
MH-111-100YrCHI3Hr+20% 01/01/2019 10:45:00 82.496
MH-111-100YrCHI3Hr+20% 01/01/2019 10:50:00 82.493
MH-111-100YrCHI3Hr+20% 01/01/2019 10:55:00 82.491

MH-111-100YrCHI3Hr+20%	01/01/2019	11:00:00	82.489
MH-111-100YrCHI3Hr+20%	01/01/2019	11:05:00	82.486
MH-111-100YrCHI3Hr+20%	01/01/2019	11:10:00	82.484
MH-111-100YrCHI3Hr+20%	01/01/2019	11:15:00	82.481
MH-111-100YrCHI3Hr+20%	01/01/2019	11:20:00	82.48
MH-111-100YrCHI3Hr+20%	01/01/2019	11:25:00	82.477
MH-111-100YrCHI3Hr+20%	01/01/2019	11:30:00	82.476
MH-111-100YrCHI3Hr+20%	01/01/2019	11:35:00	82.473
MH-111-100YrCHI3Hr+20%	01/01/2019	11:40:00	82.472
MH-111-100YrCHI3Hr+20%	01/01/2019	11:45:00	82.469
MH-111-100YrCHI3Hr+20%	01/01/2019	11:50:00	82.468
MH-111-100YrCHI3Hr+20%	01/01/2019	11:55:00	82.464
MH-111-100YrCHI3Hr+20%	01/01/2019	12:00:00	82.464
MH-111-100YrCHI3Hr+20%	01/01/2019	12:05:00	82.46
MH-111-100YrCHI3Hr+20%	01/01/2019	12:10:00	82.46
MH-111-100YrCHI3Hr+20%	01/01/2019	12:15:00	82.456
MH-111-100YrCHI3Hr+20%	01/01/2019	12:20:00	82.456
MH-111-100YrCHI3Hr+20%	01/01/2019	12:25:00	82.452
MH-111-100YrCHI3Hr+20%	01/01/2019	12:30:00	82.453
MH-111-100YrCHI3Hr+20%	01/01/2019	12:35:00	82.449
MH-111-100YrCHI3Hr+20%	01/01/2019	12:40:00	82.45
MH-111-100YrCHI3Hr+20%	01/01/2019	12:45:00	82.445
MH-111-100YrCHI3Hr+20%	01/01/2019	12:50:00	82.447
MH-111-100YrCHI3Hr+20%	01/01/2019	12:55:00	82.442
MH-111-100YrCHI3Hr+20%	01/01/2019	13:00:00	82.443
MH-111-100YrCHI3Hr+20%	01/01/2019	13:05:00	82.438
MH-111-100YrCHI3Hr+20%	01/01/2019	13:10:00	82.44
MH-111-100YrCHI3Hr+20%	01/01/2019	13:15:00	82.435
MH-111-100YrCHI3Hr+20%	01/01/2019	13:20:00	82.436
MH-111-100YrCHI3Hr+20%	01/01/2019	13:25:00	82.432
MH-111-100YrCHI3Hr+20%	01/01/2019	13:30:00	82.433
MH-111-100YrCHI3Hr+20%	01/01/2019	13:35:00	82.428
MH-111-100YrCHI3Hr+20%	01/01/2019	13:40:00	82.43
MH-111-100YrCHI3Hr+20%	01/01/2019	13:45:00	82.425
MH-111-100YrCHI3Hr+20%	01/01/2019	13:50:00	82.426
MH-111-100YrCHI3Hr+20%	01/01/2019	13:55:00	82.422
MH-111-100YrCHI3Hr+20%	01/01/2019	14:00:00	82.423
MH-111-100YrCHI3Hr+20%	01/01/2019	14:05:00	82.419
MH-111-100YrCHI3Hr+20%	01/01/2019	14:10:00	82.419
MH-111-100YrCHI3Hr+20%	01/01/2019	14:15:00	82.415
MH-111-100YrCHI3Hr+20%	01/01/2019	14:20:00	82.416
MH-111-100YrCHI3Hr+20%	01/01/2019	14:25:00	82.412
MH-111-100YrCHI3Hr+20%	01/01/2019	14:30:00	82.414
MH-111-100YrCHI3Hr+20%	01/01/2019	14:35:00	82.41
MH-111-100YrCHI3Hr+20%	01/01/2019	14:40:00	82.411
MH-111-100YrCHI3Hr+20%	01/01/2019	14:45:00	82.406
MH-111-100YrCHI3Hr+20%	01/01/2019	14:50:00	82.408
MH-111-100YrCHI3Hr+20%	01/01/2019	14:55:00	82.403
MH-111-100YrCHI3Hr+20%	01/01/2019	15:00:00	82.405
MH-111-100YrCHI3Hr+20%	01/01/2019	15:05:00	82.4
MH-111-100YrCHI3Hr+20%	01/01/2019	15:10:00	82.402
MH-111-100YrCHI3Hr+20%	01/01/2019	15:15:00	82.398
MH-111-100YrCHI3Hr+20%	01/01/2019	15:20:00	82.399
MH-111-100YrCHI3Hr+20%	01/01/2019	15:25:00	82.396
MH-111-100YrCHI3Hr+20%	01/01/2019	15:30:00	82.396
MH-111-100YrCHI3Hr+20%	01/01/2019	15:35:00	82.394
MH-111-100YrCHI3Hr+20%	01/01/2019	15:40:00	82.394
MH-111-100YrCHI3Hr+20%	01/01/2019	15:45:00	82.393
MH-111-100YrCHI3Hr+20%	01/01/2019	15:50:00	82.392
MH-111-100YrCHI3Hr+20%	01/01/2019	15:55:00	82.391
MH-111-100YrCHI3Hr+20%	01/01/2019	16:00:00	82.389
MH-111-100YrCHI3Hr+20%	01/01/2019	16:05:00	82.387
MH-111-100YrCHI3Hr+20%	01/01/2019	16:10:00	82.385
MH-111-100YrCHI3Hr+20%	01/01/2019	16:15:00	82.384
MH-111-100YrCHI3Hr+20%	01/01/2019	16:20:00	82.383
MH-111-100YrCHI3Hr+20%	01/01/2019	16:25:00	82.382
MH-111-100YrCHI3Hr+20%	01/01/2019	16:30:00	82.38
MH-111-100YrCHI3Hr+20%	01/01/2019	16:35:00	82.377
MH-111-100YrCHI3Hr+20%	01/01/2019	16:40:00	82.377
MH-111-100YrCHI3Hr+20%	01/01/2019	16:45:00	82.376
MH-111-100YrCHI3Hr+20%	01/01/2019	16:50:00	82.376
MH-111-100YrCHI3Hr+20%	01/01/2019	16:55:00	82.374
MH-111-100YrCHI3Hr+20%	01/01/2019	17:00:00	82.373
MH-111-100YrCHI3Hr+20%	01/01/2019	17:05:00	82.372
MH-111-100YrCHI3Hr+20%	01/01/2019	17:10:00	82.371
MH-111-100YrCHI3Hr+20%	01/01/2019	17:15:00	82.368
MH-111-100YrCHI3Hr+20%	01/01/2019	17:20:00	82.367
MH-111-100YrCHI3Hr+20%	01/01/2019	17:25:00	82.366
MH-111-100YrCHI3Hr+20%	01/01/2019	17:30:00	82.365
MH-111-100YrCHI3Hr+20%	01/01/2019	17:35:00	82.363
MH-111-100YrCHI3Hr+20%	01/01/2019	17:40:00	82.363
MH-111-100YrCHI3Hr+20%	01/01/2019	17:45:00	82.361
MH-111-100YrCHI3Hr+20%	01/01/2019	17:50:00	82.36
MH-111-100YrCHI3Hr+20%	01/01/2019	17:55:00	82.358
MH-111-100YrCHI3Hr+20%	01/01/2019	18:00:00	82.358
MH-111-100YrCHI3Hr+20%	01/01/2019	18:05:00	82.356
MH-111-100YrCHI3Hr+20%	01/01/2019	18:10:00	82.356
MH-111-100YrCHI3Hr+20%	01/01/2019	18:15:00	82.354
MH-111-100YrCHI3Hr+20%	01/01/2019	18:20:00	82.353
MH-111-100YrCHI3Hr+20%	01/01/2019	18:25:00	82.351
MH-111-100YrCHI3Hr+20%	01/01/2019	18:30:00	82.351
MH-111-100YrCHI3Hr+20%	01/01/2019	18:35:00	82.348
MH-111-100YrCHI3Hr+20%	01/01/2019	18:40:00	82.348
MH-111-100YrCHI3Hr+20%	01/01/2019	18:45:00	82.347
MH-111-100YrCHI3Hr+20%	01/01/2019	18:50:00	82.347
MH-111-100YrCHI3Hr+20%	01/01/2019	18:55:00	82.344
MH-111-100YrCHI3Hr+20%	01/01/2019	19:00:00	82.344
MH-111-100YrCHI3Hr+20%	01/01/2019	19:05:00	82.341
MH-111-100YrCHI3Hr+20%	01/01/2019	19:10:00	82.341
MH-111-100YrCHI3Hr+20%	01/01/2019	19:15:00	82.339
MH-111-100YrCHI3Hr+20%	01/01/2019	19:20:00	82.34
MH-111-100YrCHI3Hr+20%	01/01/2019	19:25:00	82.336
MH-111-100YrCHI3Hr+20%	01/01/2019	19:30:00	82.337
MH-111-100YrCHI3Hr+20%	01/01/2019	19:35:00	82.334
MH-111-100YrCHI3Hr+20%	01/01/2019	19:40:00	82.334
MH-111-100YrCHI3Hr+20%	01/01/2019	19:45:00	82.332
MH-111-100YrCHI3Hr+20%	01/01/2019	19:50:00	82.332
MH-111-100YrCHI3Hr+20%	01/01/2019	19:55:00	82.329
MH-111-100YrCHI3Hr+20%	01/01/2019	20:00:00	82.33
MH-111-100YrCHI3Hr+20%	01/01/2019	20:05:00	82.326
MH-111-100YrCHI3Hr+20%	01/01/2019	20:10:00	82.327
MH-111-100YrCHI3Hr+20%	01/01/2019	20:15:00	82.325
MH-111-100YrCHI3Hr+20%	01/01/2019	20:20:00	82.324
MH-111-100YrCHI3Hr+20%	01/01/2019	20:25:00	82.323
MH-111-100YrCHI3Hr+20%	01/01/2019	20:30:00	82.321
MH-111-100YrCHI3Hr+20%	01/01/2019	20:35:00	82.32
MH-111-100YrCHI3Hr+20%	01/01/2019	20:40:00	82.319
MH-111-100YrCHI3Hr+20%	01/01/2019	20:45:00	82.318
MH-111-100YrCHI3Hr+20%	01/01/2019	20:50:00	82.317
MH-111-100YrCHI3Hr+20%	01/01/2019	20:55:00	82.316
MH-111-100YrCHI3Hr+20%	01/01/2019	21:00:00	82.314
MH-111-100YrCHI3Hr+20%	01/01/2019	21:05:00	82.313
MH-111-100YrCHI3Hr+20%	01/01/2019	21:10:00	82.313
MH-111-100YrCHI3Hr+20%	01/01/2019	21:15:00	82.311
MH-111-100YrCHI3Hr+20%	01/01/2019	21:20:00	82.31
MH-111-100YrCHI3Hr+20%	01/01/2019	21:25:00	82.309
MH-111-100YrCHI3Hr+20%	01/01/2019	21:30:00	82.308
MH-111-100YrCHI3Hr+20%	01/01/2019	21:35:00	82.307
MH-111-100YrCHI3Hr+20%	01/01/2019	21:40:00	82.305
MH-111-100YrCHI3Hr+20%	01/01/2019	21:45:00	82.304
MH-111-100YrCHI3Hr+20%	01/01/2019	21:50:00	82.303
MH-111-100YrCHI3Hr+20%	01/01/2019	21:55:00	82.302
MH-111-100YrCHI3Hr+20%	01/01/2019	22:00:00	82.301
MH-111-100YrCHI3Hr+20%	01/01/2019	22:05:00	82.299
MH-111-100YrCHI3Hr+20%	01/01/2019	22:10:00	82.298
MH-111-100YrCHI3Hr+20%	01/01/2019	22:15:00	82.297
MH-111-100YrCHI3Hr+20%	01/01/2019	22:20:00	82.296
MH-111-100YrCHI3Hr+20%	01/01/2019	22:25:00	82.295
MH-111-100YrCHI3Hr+20%	01/01/2019	22:30:00	82.294
MH-111-100YrCHI3Hr+20%	01/01/2019	22:35:00	82.293

MH-111-100YrCHI3Hr+20% 01/01/2019 22:40:00 82.291
MH-111-100YrCHI3Hr+20% 01/01/2019 22:45:00 82.29
MH-111-100YrCHI3Hr+20% 01/01/2019 22:50:00 82.289
MH-111-100YrCHI3Hr+20% 01/01/2019 22:55:00 82.288
MH-111-100YrCHI3Hr+20% 01/01/2019 23:00:00 82.287
MH-111-100YrCHI3Hr+20% 01/01/2019 23:05:00 82.285
MH-111-100YrCHI3Hr+20% 01/01/2019 23:10:00 82.284
MH-111-100YrCHI3Hr+20% 01/01/2019 23:15:00 82.283
MH-111-100YrCHI3Hr+20% 01/01/2019 23:20:00 82.283
MH-111-100YrCHI3Hr+20% 01/01/2019 23:25:00 82.281
MH-111-100YrCHI3Hr+20% 01/01/2019 23:30:00 82.28
MH-111-100YrCHI3Hr+20% 01/01/2019 23:35:00 82.279
MH-111-100YrCHI3Hr+20% 01/01/2019 23:40:00 82.278
MH-111-100YrCHI3Hr+20% 01/01/2019 23:45:00 82.276
MH-111-100YrCHI3Hr+20% 01/01/2019 23:50:00 82.275
MH-111-100YrCHI3Hr+20% 01/01/2019 23:55:00 82.274
MH-111-100YrCHI3Hr+20% 01/02/2019 00:00:00 82.273

;Depth (m)
MH-111-100YrSCS24Hr 01/01/2019 00:00:00 80.571
MH-111-100YrSCS24Hr 01/01/2019 00:05:00 80.571
MH-111-100YrSCS24Hr 01/01/2019 00:10:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:15:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:20:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:25:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:30:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:35:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:40:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:45:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:50:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 00:55:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:00:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:05:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:10:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:15:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:20:00 80.572
MH-111-100YrSCS24Hr 01/01/2019 01:25:00 80.574
MH-111-100YrSCS24Hr 01/01/2019 01:30:00 80.581
MH-111-100YrSCS24Hr 01/01/2019 01:35:00 80.591
MH-111-100YrSCS24Hr 01/01/2019 01:40:00 80.6
MH-111-100YrSCS24Hr 01/01/2019 01:45:00 80.607
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MH-111-100YrSCS24Hr 01/01/2019 02:05:00 80.671
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MH-111-100YrSCS24Hr 01/01/2019 02:20:00 80.728
MH-111-100YrSCS24Hr 01/01/2019 02:25:00 80.731
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MH-111-100YrSCS24Hr 01/01/2019 02:55:00 80.738
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MH-111-100YrSCS24Hr	01/01/2019	13:15:00	82.992
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MH-111-100YrSCS24Hr	01/01/2019	15:05:00	82.876
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MH-111-100YrSCS24Hr	01/01/2019	16:15:00	82.804
MH-111-100YrSCS24Hr	01/01/2019	16:20:00	82.803
MH-111-100YrSCS24Hr	01/01/2019	16:25:00	82.795
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MH-111-100YrSCS24Hr	01/01/2019	16:35:00	82.784
MH-111-100YrSCS24Hr	01/01/2019	16:40:00	82.782
MH-111-100YrSCS24Hr	01/01/2019	16:45:00	82.774
MH-111-100YrSCS24Hr	01/01/2019	16:50:00	82.772
MH-111-100YrSCS24Hr	01/01/2019	16:55:00	82.764
MH-111-100YrSCS24Hr	01/01/2019	17:00:00	82.762
MH-111-100YrSCS24Hr	01/01/2019	17:05:00	82.755
MH-111-100YrSCS24Hr	01/01/2019	17:10:00	82.752
MH-111-100YrSCS24Hr	01/01/2019	17:15:00	82.745
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MH-111-100YrSCS24Hr	01/01/2019	18:10:00	82.704
MH-111-100YrSCS24Hr	01/01/2019	18:15:00	82.699
MH-111-100YrSCS24Hr	01/01/2019	18:20:00	82.697
MH-111-100YrSCS24Hr	01/01/2019	18:25:00	82.692
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MH-111-100YrSCS24Hr	01/01/2019	18:45:00	82.68
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MH-111-100YrSCS24Hr	01/01/2019	19:00:00	82.674
MH-111-100YrSCS24Hr	01/01/2019	19:05:00	82.669
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MH-111-100YrSCS24Hr	01/01/2019	19:15:00	82.664
MH-111-100YrSCS24Hr	01/01/2019	19:20:00	82.663
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MH-111-100YrSCS24Hr	01/01/2019	19:35:00	82.654
MH-111-100YrSCS24Hr	01/01/2019	19:40:00	82.653
MH-111-100YrSCS24Hr	01/01/2019	19:45:00	82.649
MH-111-100YrSCS24Hr	01/01/2019	19:50:00	82.649
MH-111-100YrSCS24Hr	01/01/2019	19:55:00	82.645
MH-111-100YrSCS24Hr	01/01/2019	20:00:00	82.644
MH-111-100YrSCS24Hr	01/01/2019	20:05:00	82.64
MH-111-100YrSCS24Hr	01/01/2019	20:10:00	82.64
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MH-111-August_8_1996 01/01/2019 23:40:00 81.903
MH-111-August_8_1996 01/01/2019 23:45:00 81.901
MH-111-August_8_1996 01/01/2019 23:50:00 81.899
MH-111-August_8_1996 01/01/2019 23:55:00 81.897
MH-111-August_8_1996 01/02/2019 00:00:00 81.895

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MH-111-July_1_1979 01/01/2019 03:15:00 83.055
MH-111-July_1_1979 01/01/2019 03:20:00 83.045
MH-111-July_1_1979 01/01/2019 03:25:00 83.032
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MH-111-July_1_1979	01/01/2019	10:40:00	82.407
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MH-111-July_1_1979 01/01/2019 16:35:00 82.224
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MH-111-July_1_1979 01/01/2019 22:40:00 82.08
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MH-111-July_1_1979 01/01/2019 23:05:00 82.07
MH-111-July_1_1979 01/01/2019 23:10:00 82.069
MH-111-July_1_1979 01/01/2019 23:15:00 82.067
MH-111-July_1_1979 01/01/2019 23:20:00 82.066
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MH-111-July_1_1979 01/01/2019 23:30:00 82.062
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No_Rain 01/01/2019 00:00 0
No_Rain 12/31/2019 0:00 0

[REPORT]
;;Reporting Options
INPUT YES
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]
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Node 03_(CB) CB
Node 04_(CB) CB
Node 05_(CB) CB
Node 08_(CB) CB
Node 09_(CB) CB
Node 1_(RYCB) RY
Node 100_(STM) STM
Node 102_(STM) STM
Node 104_(STM) STM
Node 106_(STM) STM
Node 108_(STM) STM
Node 11_(CB) CB
Node 110_(STM) STM
Node 112_(STM) STM
Node 114_(STM) STM
Node 12_(CB) CB
Node 120_(STM) STM
Node 122_(STM) STM
Node 124_(STM) STM
Node 126_(STM) STM
Node 128_(STM) STM
Node 13_(CB) CB
Node 136_(STM) STM
Node 138_(STM) STM
Node 14_(CB) CB
Node 140_(STM) STM
Node 142_(STM) STM
Node 144_(STM) STM
Node 146_(STM) STM
Node 148_(STM) STM
Node 15_(CB) CB
Node 15_RYCB RY

Node	150_(STM)	STM
Node	16_(CB)	CB
Node	17_(CB)	CB
Node	18_(CB)	CB
Node	19_(CB)	CB
Node	20_(CB)	CB
Node	21_(CB)	CB
Node	2121_(STM)	STM
Node	2142_(STM)	STM
Node	22_(RYCB)	RY
Node	23_(CB)	CB
Node	24_(CB)	CB
Node	25_(CB)	CB
Node	26_(CB)	CB
Node	27_(CB)	CB
Node	28_(CB)	CB
Node	29_(RYCB)	RY
Node	31_(CB)	CB
Node	58_(CB)	CB
Node	59_(CB)	CB
Node	98_(STM)	STM
Node	DICB_1	CB
Node	DICB_3	CB
Node	ELB_1_(RYCB)	RY
Node	ELB_10_(RYCB)	RY
Node	ELB_11_(RYCB)	RY
Node	ELB_12_(RYCB)	RY
Node	ELB_13_(RYCB)	RY
Node	ELB_14_(RYCB)	RY
Node	ELB_2_(RYCB)	RY
Node	ELB_3_(RYCB)	RY
Node	ELB_4_(RYCB)	RY
Node	ELB_5_(RYCB)	RY
Node	ELB_6_(RYCB)	RY
Node	ELB_7_(RYCB)	RY
Node	ELB_8_(RYCB)	RY
Node	ELB_9_(RYCB)	RY
Node	J1	Maj
Node	J2	Maj
Node	Maj-15	Maj
Node	Maj-15_2	Maj
Node	Maj-18_2	Maj
Node	Maj-19	Maj
Node	Maj-19_2	Maj
Node	Maj-20	Maj
Node	Maj-21	Maj
Node	Maj-23	Maj
Node	Maj-24	Maj
Node	Maj-25	Maj
Node	Maj-26	Maj
Node	Maj-27	Maj
Node	Maj-28	Maj
Node	Maj-29	Maj
Node	Maj-35	Maj
Node	Maj-36	Maj
Node	Maj-37	Maj
Node	Maj-38	Maj
Node	Maj-39	Maj
Node	Maj-40	Maj
Node	Maj-41	Maj
Node	Maj-44	Maj
Node	Maj-45	Maj
Node	Maj-46	Maj
Node	Maj-48_2	Maj
Node	Maj-48_3	Maj
Node	Maj-50	Maj
Node	Maj-51	Maj
Node	Maj-52	Maj
Node	Maj-53	Maj
Node	Maj-56	Maj
Node	Maj-60	Maj
Node	Maj-61	Maj
Node	Maj-63	Maj
Node	Maj-64	Maj
Node	Maj-65	Maj
Node	Maj-67	Maj
Node	Maj-Park	Maj
Node	RYCB_1_(RYCB)	RY
Node	RYCB_10_(RYCB)	RY
Node	RYCB_11_(RYCB)	RY
Node	RYCB_2_(RYCB)	RY
Node	RYCB_3_(RYCB)	RY
Node	RYCB_4_(RYCB)	RY
Node	RYCB_5_(RYCB)	RY
Node	RYCB_6_(RYCB)	RY
Node	RYCB_7_(RYCB)	RY
Node	RYCB_8_(RYCB)	RY
Node	RYCB_9_(RYCB)	RY
Node	Slope1	Maj
Node	StartNullStruct2	RY
Node	StartNullStruct3	STM
Node	STM-251_(STM)	STM
Node	TEE_1_(RYCB)	RY
Node	TEE_10_(RYCB)	RY
Node	TEE_11_(RYCB)	RY
Node	TEE_12_(RYCB)	RY
Node	TEE_13_(RYCB)	RY
Node	TEE_14_(RYCB)	RY
Node	TEE_15_(RYCB)	RY
Node	TEE_16_(RYCB)	RY
Node	TEE_17_(RYCB)	RY
Node	TEE_18_(RYCB)	RY
Node	TEE_19_(RYCB)	RY
Node	TEE_2_(RYCB)	RY
Node	TEE_20_(RYCB)	RY
Node	TEE_21_(RYCB)	RY
Node	TEE_22_(RYCB)	RY
Node	TEE_23_(RYCB)	RY
Node	TEE_24_(RYCB)	RY
Node	TEE_25_(RYCB)	RY
Node	TEE_3_(RYCB)	RY
Node	TEE_4_(RYCB)	RY
Node	TEE_5_(RYCB)	RY
Node	TEE_6_(RYCB)	RY
Node	TEE_7_(RYCB)	RY
Node	TEE_8_(RYCB)	RY
Node	TEE_9_(RYCB)	RY
Node	Maj-18	Maj
Node	Maj-22	Maj
Node	Maj-48	Maj
Node	Maj-49	Maj
Node	STM-111_(STM)	STM
Link	10_(STM)	STM
Link	11_(STM)	STM
Link	12_(STM)	STM
Link	13_(STM)	STM
Link	14_(STM)	STM
Link	15_(10)_(STM)	STM
Link	15_(11)_(STM)	STM
Link	15_(12)_(STM)	STM
Link	15_(13)_(STM)	STM
Link	15_(5)_(STM)	STM
Link	15_(9)_(STM)	STM
Link	4_(STM)	STM
Link	5_(STM)	STM
Link	8_(STM)	STM
Link	9_(STM)	STM
Link	C1	Ditch
Link	C18	Maj
Link	C18_3	Maj

Link	C18_4	Maj
Link	C18_5	Maj
Link	C18_6	Maj
Link	C18_8	Maj
Link	C18_9	Maj
Link	C19	Maj
Link	C20	Maj
Link	C21	Maj
Link	C22	Maj
Link	C23	Maj
Link	C24	Maj
Link	C25	Maj
Link	C26	Maj
Link	C27	Maj
Link	C27_1	Maj
Link	C27_2	Maj
Link	C28	Maj
Link	C31	Maj
Link	C31_1	Maj
Link	C31_2	Maj
Link	C36	Maj
Link	C37	Maj
Link	C4_1	Maj
Link	C4_2	Maj
Link	C41	Maj
Link	C42	Maj
Link	C43	Maj
Link	C44	Maj
Link	C45	Maj
Link	C46	Maj
Link	C47	Maj
Link	C48	Maj
Link	C49	Maj
Link	C5	Maj
Link	C50_1	Maj
Link	C50_2	Maj
Link	C51	Maj
Link	C52	Maj
Link	C53	Maj
Link	C54	Maj
Link	C56	Maj
Link	C58	Maj
Link	C58_1	Maj
Link	C58_2	Maj
Link	C59_1	Maj
Link	C59_2	Maj
Link	C60	Maj
Link	C62	Maj
Link	C63_1	Maj
Link	C63_2	Maj
Link	C65_1	Maj
Link	C65_2	Maj
Link	C66_1	Maj
Link	C66_2	Maj
Link	C67	Maj
Link	Pipe_-_(100)_(RYCB)	RY
Link	Pipe_-_(110)_(RYCB)	RY
Link	Pipe_-_(111)_(RYCB)	RY
Link	Pipe_-_(114)_(RYCB)	RY
Link	Pipe_-_(117)_(RYCB)	RY
Link	Pipe_-_(118)_(RYCB)	RY
Link	Pipe_-_(119)_(RYCB)	RY
Link	Pipe_-_(134)_(RYCB)	RY
Link	Pipe_-_(137)_(RYCB)	RY
Link	Pipe_-_(138)_(RYCB)	RY
Link	Pipe_-_(139)_(RYCB)	RY
Link	Pipe_-_(14)_(RYCB)	RY
Link	Pipe_-_(140)_(RYCB)	RY
Link	Pipe_-_(141)_(RYCB)	RY
Link	Pipe_-_(142)_(RYCB)	RY

Link	Pipe_-_(143)_(RYCB)	RY
Link	Pipe_-_(144)_(RYCB)	RY
Link	Pipe_-_(15)_(RYCB)	RY
Link	Pipe_-_(150)_(RYCB)	RY
Link	Pipe_-_(151)_(RYCB)	RY
Link	Pipe_-_(152)_(RYCB)	RY
Link	Pipe_-_(153)_(RYCB)	RY
Link	Pipe_-_(154)_(RYCB)	RY
Link	Pipe_-_(155)_(RYCB)	RY
Link	Pipe_-_(156)_(1)_(RYCB)	RY
Link	Pipe_-_(156)_(RYCB)	RY
Link	Pipe_-_(16)_(RYCB)	RY
Link	Pipe_-_(161)_(RYCB)	RY
Link	Pipe_-_(164)_(RYCB)	RY
Link	Pipe_-_(165)_(RYCB)	RY
Link	Pipe_-_(17)_(RYCB)	RY
Link	Pipe_-_(19)_(RYCB)	RY
Link	Pipe_-_(25)_(RYCB)	RY
Link	Pipe_-_(27)_(RYCB)	RY
Link	Pipe_-_(73)_(RYCB)	RY
Link	Pipe_-_(87)_(RYCB)	RY
Link	Pipe_-_(88)_(RYCB)	RY
Link	Pipe_-_(89)_(RYCB)	RY
Link	Pipe_-_(9)_(RYCB)	RY
Link	Pipe_-_(90)_(RYCB)	RY
Link	Pipe_-_(93)_(RYCB)	RY
Link	Pipe_-_(94)_(RYCB)	RY
Link	Pipe_-_(95)_(RYCB)	RY
Link	Pipe_-_(96)_(RYCB)	RY
Link	Pipe_-_(98)_(RYCB)	RY
Link	Pipe_-_(99)_(RYCB)	RY
Link	STM-23_(STM)	STM
Link	STM-24_(STM)	STM
Link	STM-28_(STM)	STM
Link	STM-34_(1)_(1)_(STM)	STM
Link	STM-34_(1)_(STM)	STM
Link	STM-34_(STM)	STM
Link	STM-35_(STM)	STM
Link	STM-36_(STM)	STM
Link	STM-81_(STM)	STM
Link	STM-82_(STM)	STM
Link	STM-83_(STM)	STM
Link	CB-02	ICD
Link	CB-03	ICD
Link	CB-04	ICD
Link	CB-05	ICD
Link	CB-06	ICD
Link	CB-08	ICD
Link	CB-09	ICD
Link	CB-10	ICD
Link	CB-11	ICD
Link	CB-12	ICD
Link	CB-13	ICD
Link	CB-14	ICD
Link	CB-15	ICD
Link	CB-16	ICD
Link	CB-17	ICD
Link	CB-18	ICD
Link	CB-19	ICD
Link	CB-20	ICD
Link	CB-21	ICD
Link	CB-23	ICD
Link	CB-24	ICD
Link	CB-25	Lead
Link	CB-26	Lead
Link	CB-27	ICD
Link	CB-28	ICD
Link	CB-30	ICD
Link	CB-31	Lead
Link	OR-02	Grate

```
Link    OR-03    Grate
Link    OR-04    Grate
Link    OR-05    Grate
Link    OR-08    Grate
Link    OR-09    Grate
Link    OR1      ICD
Link    OR-10    Grate
Link    OR-11    Grate
Link    OR-12    Grate
Link    OR-13    Grate
Link    OR-14    Grate
Link    OR-15    Grate
Link    OR-16    Grate
Link    OR-17    Grate
Link    OR-18    Grate
Link    OR-19    Grate
Link    OR2      Grate
Link    OR-20    Grate
Link    OR-21    Grate
Link    OR-23    Grate
Link    OR-24    Grate
Link    OR-25    Grate
Link    OR-26    Grate
Link    OR-27    Grate
Link    OR-28    Grate
Link    OR3      Grate
Link    OR-31    Grate
Link    OR4      ICD
Link    OR5      Grate
Link    RYCB-02    ICD
Link    RYCB-03    ICD
Link    RYCB-04    ICD
Link    RYCB-06    Lead
Link    RYCB-07    Lead
Link    RYCB-10    ICD
Link    RYCB-22    ICD
Link    RYCB-29    ICD

[MAP]
DIMENSIONS    381264.26565    5033747.0677
381848.96735    5034901.1063
UNITS    Meters

[COORDINATES]
;;Node    X-Coord    Y-Coord
;;-------------- ------------------ ------------------
02_(CB)    381640.363    5033940.449
03_(CB)    381639.319    5033948.683
04_(CB)    381707.362    5033964.513
05_(CB)    381704.042    5033972.256
08_(CB)    381742.356    5034021.942
09_(CB)    381735.199    5034018.381
1_(RYCB)    381613.893    5033947.165
100_(STM)    381764.117    5033934.567
102_(STM)    381768.733    5033945.462
104_(STM)    381751.832    5033983.755
106_(STM)    381661.746    5033946.201
108_(STM)    381636.072    5033940.78
11_(CB)    381705.04    5034085.441
110_(STM)    381606.992    5033939.535
112_(STM)    381722.061    5034051.287
114_(STM)    381695.933    5034110.412
12_(CB)    381693.043    5034036.978
120_(STM)    381637.884    5034015.234
122_(STM)    381613.388    5034012.674
124_(STM)    381598.561    5034020.702
126_(STM)    381577.374    5034069.721
128_(STM)    381546.966    5034139.351
13_(CB)    381689.694    5034044.79
136_(STM)    381522.723    5034196.958
138_(STM)    381527.988    5034210.775
14_(CB)    381597.707    5034039.587
140_(STM)    381631.534    5034256.315
142_(STM)    381640.84    5034237.84
144_(STM)    381600.199    5034327.009
146_(STM)    381528.36    5034294.959
148_(STM)    381456.173    5034264.012
15_(CB)    381589.912    5034036.197
15_RYCB    381522.627    5034214.255
150_(STM)    381569.837    5034397.001
16_(CB)    381567.802    5034108.366
17_(CB)    381560.007    5034104.977
18_(CB)    381541.884    5034167.976
19_(CB)    381534.089    5034164.586
20_(CB)    381581.406    5034227.395
21_(CB)    381578.057    5034235.207
2121_(STM)    381797.506    5033862.116
2142_(STM)    381733.715    5033824.051
22_(RYCB)    381646.054    5034240.141
23_(CB)    381624.155    5034289.758
24_(CB)    381616.38    5034286.326
25_(CB)    381569.18    5034305.469
26_(CB)    381565.878    5034313.223
27_(CB)    381486.175    5034268.55
28_(CB)    381482.272    5034277.449
29_(RYCB)    381634.571    5034343.916
31_(CB)    381584.351    5034358.98
58_(CB)    381708.111    5033853.995
59_(CB)    381762.072    5033997.514
98_(STM)    381785.194    5033899.178
DICB_1    381592.282    5034362.433
DICB_2    381578.495    5034153.747
DICB_3    381712.816    5034088.875
ELB_1_(RYCB)    381700.573    5033926.894
ELB_10_(RYCB)    381599.13    5034277.804
ELB_11_(RYCB)    381637.075    5034217.32
ELB_12_(RYCB)    381642.665    5034324.923
ELB_13_(RYCB)    381495.849    5034321.044
ELB_14_(RYCB)    381510.037    5034327.133
ELB_2_(RYCB)    381662.86    5033987.854
ELB_3_(RYCB)    381652.666    5033983.757
ELB_4_(RYCB)    381581.795    5033976.053
ELB_5_(RYCB)    381580.949    5033978.006
ELB_6_(RYCB)    381748.325    5034086.133
ELB_7_(RYCB)    381616.382    5034075.058
ELB_8_(RYCB)    381504.046    5034155.002
ELB_9_(RYCB)    381496.419    5034172.819
J1    381549.496    5034106.162
J2    381757.843    5033977.487
Maj-15    381573.401    5034393.553
Maj-15_2    381603.958    5034326.421
Maj-18_2    381633.162    5034339.357
Maj-19    381566.414    5034309.792
Maj-19_2    381591.329    5034320.826
Maj-20    381543.507    5034300.033
Maj-21    381484.13    5034275.269
Maj-23    381608.541    5034316.121
Maj-24    381621.369    5034287.607
Maj-25    381635.742    5034254.688
Maj-26    381580.14    5034232.359
Maj-27    381542.959    5034216.408
Maj-28    381537.056    5034166.524
Maj-29    381551.053    5034138.553
Maj-35    381565.153    5034106.303
Maj-36    381580.163    5034072.113
Maj-37    381594.925    5034037.553
Maj-38    381607.643    5034017.588
Maj-39    381627.215    5034016.837
Maj-40    381641.204    5034020.262
Maj-41    381691.979    5034042.056
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Maj-44	381709.885	5034086.785
Maj-45	381722.3	5034055.112
Maj-46	381739.691	5034019.616
Maj-48_2	381781.911	5034001.189
Maj-48_3	381763.999	5033993.482
Maj-50	381640.747	5033943.96
Maj-51	381672.455	5033954.954
Maj-52	381721.553	5033975.967
Maj-53	381753.038	5033988.766
Maj-56	381494.997	5034256.092
Maj-60	381528.438	5034203.663
Maj-61	381544.191	5034175.631
Maj-63	381730.205	5034016.811
Maj-64	381448.655	5034285.38
Maj-65	381778.382	5034008.55
Maj-67	381703.616	5034083.059
Maj-Park	381728.399	5033825.619
RYCB_1_(RYCB)	381734.202	5033941.191
RYCB_10_(RYCB)	381442.319	5034298.46
RYCB_11_(RYCB)	381578.806	5034356.559
RYCB_2_(RYCB)	381725.556	5034014.74
RYCB_3_(RYCB)	381612.277	5033977.722
RYCB_4_(RYCB)	381781.005	5034010.848
RYCB_5_(RYCB)	381699.781	5034083.118
RYCB_6_(RYCB)	381529.161	5034097.261
RYCB_7_(RYCB)	381502.626	5034236.326
RYCB_8_(RYCB)	381544.063	5034177.384
RYCB_9_(RYCB)	381674.723	5034252.795
Slope1	381588.486	5034360.411
StartNullStruct2	381672.996	5033992.169
StartNullStruct3	381785.825	5033999.81
STM-251_(STM)	381634.726	5034343.823
TEE_1_(RYCB)	381692.419	5034000.507
TEE_10_(RYCB)	381510.902	5034139.24
TEE_11_(RYCB)	381526.967	5034102.206
TEE_12_(RYCB)	381481.223	5034207.753
TEE_13_(RYCB)	381474.067	5034224.19
TEE_14_(RYCB)	381499.643	5034235.058
TEE_15_(RYCB)	381507.237	5034238.213
TEE_16_(RYCB)	381540.082	5034252.461
TEE_17_(RYCB)	381560.408	5034261.179
TEE_18_(RYCB)	381580.624	5034269.812
TEE_19_(RYCB)	381620.112	5034209.907
TEE_2_(RYCB)	381633.017	5033978.954
TEE_20_(RYCB)	381594.914	5034199.197
TEE_21_(RYCB)	381574.635	5034190.459
TEE_22_(RYCB)	381660.032	5034285.809
TEE_23_(RYCB)	381468.715	5034309.368
TEE_24_(RYCB)	381523.065	5034332.731
TEE_25_(RYCB)	381550.359	5034344.355
TEE_3_(RYCB)	381565.175	5034014.419
TEE_4_(RYCB)	381547.662	5034054.776
TEE_5_(RYCB)	381530.407	5034094.432
TEE_6_(RYCB)	381764.108	5034050.504
TEE_7_(RYCB)	381626.502	5034052.072
TEE_8_(RYCB)	381647.239	5034060.747
TEE_9_(RYCB)	381667.469	5034069.361
Maj-18	381637.356	5034341.21
Maj-22	381471.715	5034270.038
Maj-48	381786.497	5034003.157
Maj-49	381597.176	5033939.913
OF1	381690.918	5033799.524
STM-111_(STM)	381695.19	5033799.968
B2_Stor	381428.703	5034532.135

[VERTICES]

;;Link	X-Coord	Y-Coord
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C1	381421.347	5034520.461
C1	381428.796	5034447.459
C1	381531.594	5034491.037
C27_1	381530.457	5034209.127
C27_2	381525.808	5034196.544
C31	381717.936	5033820.342
C31	381703.646	5033812.793
C31_2	381544.884	5034166.116
C4_2	381790.27	5033909.495
C58	381517.209	5034212.082
C58_2	381736.37	5034014.996
C60	381502.529	5034238.486
C63_2	381705.821	5034083.025
C67	381582.176	5034355.673
RYCB-29	381634.762	5034344
B2-Out	381413.192	5034526.387
B2-Out	381420.106	5034449.518
B2-Out	381424.58	5034439.35
B2-Out	381528.7	5034484.902

[POLYGONS]

;;Subcatchment	X-Coord	Y-Coord
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A12i	381603.575	5034325.904
A12i	381599.09	5034336.199
A12i	381626.891	5034348.374
A12i	381632.397	5034351
A12i	381636.88	5034340.972
A12i	381603.575	5034325.904
A12ii	381588.266	5034361.047
A12ii	381603.575	5034325.904
A12ii	381590.101	5034319.808
A12ii	381582.52	5034337.492
A12ii	381585.089	5034338.593
A12ii	381579.688	5034351.312
A12ii	381579.992	5034357.472
A12ii	381588.266	5034361.047
A13	381530.192	5034320.178
A13	381515.153	5034313.748
A13	381509.139	5034327.791
A13	381579.992	5034357.472
A13	381579.648	5034351.406
A13	381585.024	5034338.57
A13	381582.52	5034337.492
A13	381580.785	5034341.808
A13	381558.955	5034332.475
A13	381530.192	5034320.178
A14	381447.103	5034284.654
A14	381441.002	5034298.989
A14	381509.139	5034327.791
A14	381512.599	5034319.721
A14	381515.151	5034313.747
A14	381493.903	5034304.663
A14	381466.674	5034293.021
A14	381447.103	5034284.654
A15i	381567.244	5034310.002
A15i	381567.244	5034310.002
A15i	381472.296	5034269.296
A15i	381462.819	5034291.373
A15i	381493.903	5034304.663
A15i	381515.153	5034313.748
A15i	381546.959	5034327.346
A15i	381557.84	5034331.998
A15i	381567.244	5034310.002
A15ii	381472.296	5034269.296
A15ii	381567.244	5034310.002
A15ii	381567.244	5034310.002
A15ii	381577.731	5034285.474
A15ii	381499.928	5034251.954
A15ii	381498.003	5034256.002
A15ii	381492.764	5034253.757
A15ii	381494.517	5034249.639

A15ii	381482.768	5034244.552	A21	381514.208	5034225.655
A15ii	381472.789	5034268.148	A21	381507.271	5034235.078
A15ii	381472.296	5034269.296	A21	381499.928	5034251.954
A16i	381590.176	5034319.842	A21	381602.709	5034296.167
A16i	381590.1	5034319.81	A21	381606.078	5034288.284
A16i	381568.321	5034310.464	A21	381611.967	5034284.565
A16i	381567.244	5034310.002	A22	381498.141	5034256.061
A16i	381557.84	5034331.998	A22	381507.271	5034235.078
A16i	381580.785	5034341.808	A22	381520.172	5034217.553
A16i	381590.176	5034319.842	A22	381516.384	5034212.577
A16ii	381567.244	5034310.002	A22	381502.03	5034232.083
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A45i	381650.651	5033946.512
A45i	381644.505	5033945.268
A45i	381638.296	5033944.386
A45i	381632.047	5033943.869
A45i	381607.333	5033942.562
A45i	381605.976	5033942.469
A45i	381604.627	5033942.296
A45i	381603.29	5033942.044
A45i	381601.971	5033941.712
A45i	381600.673	5033941.303
A45i	381599.403	5033940.817
A45i	381596.633	5033939.613
A45i	381587.259	5033961.173
A45ii	381596.633	5033939.613
A45ii	381599.403	5033940.817
A45ii	381600.673	5033941.303
A45ii	381601.971	5033941.712
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A45ii	381604.627	5033942.296
A45ii	381605.976	5033942.469
A45ii	381607.333	5033942.562
A45ii	381632.047	5033943.869
A45ii	381638.296	5033944.386
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A45ii	381656.714	5033948.114
A45ii	381662.673	5033950.069
A45ii	381672.844	5033954.229
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A45ii	381662.718	5033939.873
A45ii	381652.843	5033937.109
A45ii	381646.586	5033935.831
A45ii	381639.597	5033934.819
A45ii	381632.558	5033934.232
A45ii	381607.711	5033932.918
A45ii	381602.883	5033931.977
A45ii	381600.42	5033930.904
A45ii	381596.633	5033939.613
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A46i	381740.056	5033982.939
A46i	381672.844	5033954.229
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A46i	381664.49	5033974.096
A46i	381668.606	5033975.86
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A46i	381731.69	5034002.773
A46i	381740.213	5033983.122
A46ii	381672.844	5033954.229
A46ii	381740.056	5033982.939
A46ii	381740.213	5033983.122
A46ii	381752.566	5033988.289
A46ii	381744.291	5033974.348
A46ii	381746.161	5033969.986
A46ii	381724.771	5033960.685
A46ii	381728.024	5033953.086
A46ii	381694.461	5033938.716

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A48	381786.259	5034002.846
A48	381790.062	5033993.977
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A48	381744.291	5033974.348
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A54	381781.834	5033896.02
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B1	381300.46	5034616.904
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B1	381332.991	5034635.944
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B1	381331.194	5034646.567
B1	381323.214	5034649.432
B1	381332.596	5034655.255
B1	381338.741	5034658.094
B1	381314.105	5034714.313
B1	381298.068	5034750.52
B1	381290.843	5034752.831
B1	381295.775	5034755.874
B1	381316.325	5034768.58
B1	381335.973	5034723.941
B1	381395.985	5034587.599
B1	381424.704	5034522.35
B1	381426.875	5034523.611
B1	381427.978	5034515.982
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B1	381427.326	5034481.699
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B1	381427.638	5034471.418
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B1	381430.333	5034457.869
B1	381431.785	5034453.492
B1	381426.008	5034451.003
B1	381424.51	5034455.577
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B1	381422.944	5034462.427
B1	381422.467	5034464.976
B1	381421.996	5034468.268
B1	381421.825	5034469.744
B1	381412.794	5034468.768
B1	381402.85	5034467.694
B1	381403.261	5034465.075
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B3i	381563.223	5034509.829
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B4i	381699.904	5033925.461
B4i	381707.071	5033928.476
B4i	381733.358	5033867.077
B4i	381726.731	5033863.113
B4i	381649.852	5033817.212
B4i	381602.985	5033925.012
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B4ii	381646.586	5033935.831
B4ii	381652.843	5033937.109
B4ii	381662.718	5033939.873
B4ii	381676.204	5033945.164
B4ii	381678.395	5033939.755

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B4ii	381690.549	5033944.759
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B4ii	381664.627	5033934.177
B4ii	381654.461	5033931.331
B4ii	381647.625	5033929.921
B4ii	381640.276	5033928.858
B4ii	381632.876	5033928.241
B4ii	381608.677	5033926.961
B4ii	381605.53	5033926.1
B4ii	381602.985	5033925.012
B4ii	381600.42	5033930.904
B4iii	381676.204	5033945.164
B4iii	381689.214	5033950.742
B4iii	381691.563	5033945.188
B4iii	381678.395	5033939.755
B4iii	381676.204	5033945.164
C2	381447.104	5034284.654
C2	381462.819	5034291.373
C2	381482.826	5034244.577
C2	381467.309	5034237.869
C2	381447.104	5034284.654

[SYMBOLS]
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"Profile 008. Junction RYCB_6_(1)_(31)_(RYCB) to Junction 150_(STM)" Pipe_-_(123)_(RYCB) Pipe_-_(124)_(RYCB) Pipe_-_(125)_(RYCB) Pipe_-_(23)_(RYCB) CB-35
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"Profile 009. Junction RYCB_6_(1)_(6)_(RYCB) to Junction 114_(STM)" Pipe_-_(96)_(RYCB) Pipe_-_(137)_(RYCB) Pipe_-_(138)_(RYCB) Pipe_-_(98)_(RYCB) Pipe_-_(9)_(RYCB)
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"Profile 104. Junction Maj-53 to Junction Maj-46" C49
"Profile 105. Junction TEE_6_(RYCB) to Junction Maj-46" C58_1 C58_2
"Profile 106. Junction Maj-45 to Junction Maj-44" C41
"Profile 107. Junction Maj-43 to Junction Maj-42" C39
"Profile 108. Junction Maj-45 to Junction Maj-41" C42
"Profile 109. Junction Maj-40 to Junction Maj-39" C44
"Profile 110. Junction Maj-38 to Junction Maj-37" C47
"Profile 111. Junction Maj-36 to Junction Maj-35" C37
"Profile 112. Junction Maj-29 to Junction Maj-30" C35
"Profile 113. Junction Maj-31 to Junction Maj-32" C33
"Profile 114. Junction 24_(RYCB) to Junction 142_(STM)" RYCB-24
"Profile 115. Junction Maj-34 to Junction Maj-33" C30
"Profile 116. Junction Maj-29 to Junction Maj-28" C28
"Profile 117. Junction STM-Split to Junction Maj-60" C5
"Profile 118. Junction Structure_-_(115)_(RYCB) to Junction 20_(CB)" Pipe_-_(73)_(RYCB)
"Profile 119. Junction 144_(STM) to Junction 140_(STM)" 5_(STM)
"Profile 120. Junction 142_(STM) to Junction 140_(STM)" STM-81_(STM)
"Profile 121. Junction Maj-27 to Junction Maj-26" C26
"Profile 122. Junction Maj-34_2 to Outfall Maj-57" C18_2
"Profile 123. Outfall Maj-59 to Junction Maj-58" C2

APPENDIX C

Manhole Loss Coefficient Nomograph and Table

Pipe Data and Hydraulic Simulation Results
(Ultimate and Interim Conditions)

JFSA Water Resources and Environmental Consultants

MANHOLE LOSS COEFFICIENT NOMOGRAPH AND TABLE

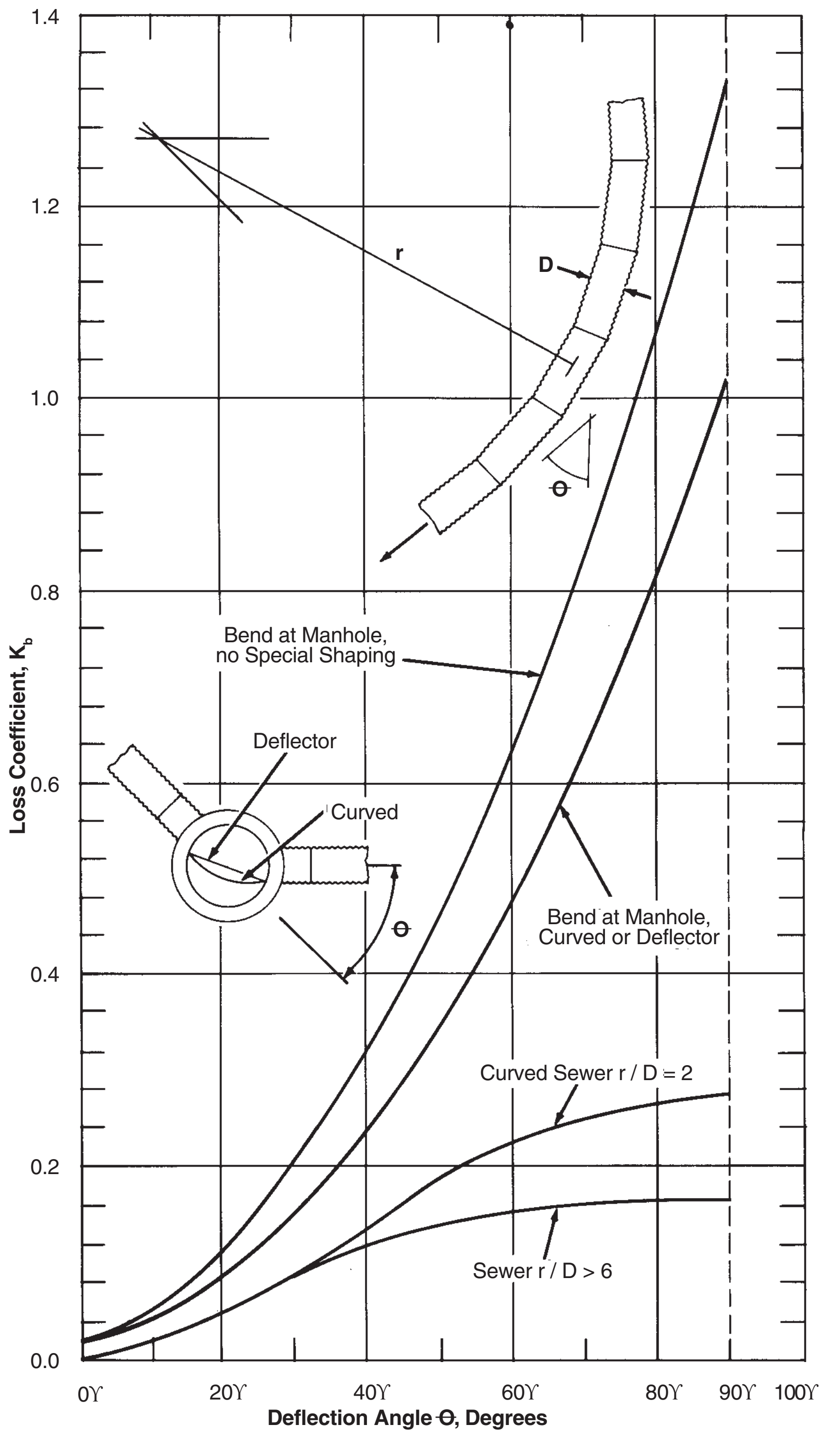


Figure 4.13 Sewer bend loss coefficient[16]

Angle	Exit Loss
0	0.02
5	0.035
10	0.055
15	0.08
20	0.11
25	0.16
30	0.21
35	0.26
40	0.32
45	0.39
50	0.47
55	0.54
60	0.635
65	0.73
70	0.84
75	0.95
80	1.07
85	1.19
90	1.33

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [(1)] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [(2)] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	4.04	1.4	0.021	01:16	83.28	83.15	145	85.8	2.519			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	4.04	1.4	0.110	01:15	83.44	83.28	139	85.7	2.257			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.11	0.8	-0.100	01:19	84.19	83.44	23	85.85	1.661			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.06	0.4	-0.170	01:17	84.20	84.19	28	86	1.804			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.06	1.4	0.080	01:16	84.57	84.20	26	86.1	1.534			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.76	1.3	0.260	01:14	83.81	83.44	18	85.95	2.136			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.30	1.2	-0.035	01:16	84.16	83.81	113	86.05	1.894			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.23	1.1	0.020	01:15	84.27	84.16	108	86.5	2.229			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.10	1.0	-0.015	01:19	84.54	84.27	104	86.35	1.810			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	3.40	1.3	0.350	01:14	84.66	83.81	9	86.1	1.436			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	3.30	1.2	0.400	01:14	84.79	84.66	46	86.35	1.564			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	3.30	0.9	0.440	01:14	84.92	84.79	49	86.5	1.576			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	3.30	1.2	0.600	01:14	85.22	84.92	3	86.5	1.276			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	3.24	1.2	0.700	01:14	85.52	85.22	56	86.7	1.180			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.17	1.3	0.888	01:13	85.89	85.52	115	86.85	0.962			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.11	1.4	0.939	01:13	86.03	85.89	122	87.3	1.266			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.02	0.3	0.644	01:11	86.03	86.03	125	87.4	1.366			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	2.93	1.1	0.740	01:14	85.73	85.52	65	86.7	0.974			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.80	0.7	0.780	01:14	85.85	85.73	70	87.05	1.196			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.66	1.0	0.880	01:14	86.24	85.85	76	87.05	0.807			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.05	1.1	1.050	01:13	86.50	86.03	113	87.35	0.853			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.05	1.1	1.050	01:13	86.50	86.24	92	87.45	0.953			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.54	0.9	0.931	01:14	86.64	86.24	91	87.45	0.809			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.29	0.7	0.760	01:13	86.66	86.64	94	87.8	1.140			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.21	0.5	0.610	01:16	86.69	86.66	97	87.28	0.590			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	2.16	1.1	1.010	01:13	86.89	86.64	114	87.7	0.811			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.21	0.8	0.925	01:28	87.01	86.89	115	87.9	0.888			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.11	0.9	1.045	01:30	87.07	87.01	117	88.3	1.227			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.11	1.0	1.005	01:29	87.41	87.07	118	88.2	0.792			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.79	1.1	1.380	01:13	87.64	86.89	103	88	0.363			
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.69	0.9	1.430	01:13	87.77	87.64	106	88.4	0.631			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.69	1.1	1.580	01:13	88.28	87.77	107	88.4	0.122			
																		107	88.4	0.574	106.3	11.954	87.826
																		108	88.4	0.574	106.3	11.954	87.826
																		109	88.4	0.574	106.3	11.954	87.826

(2) Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
(3) Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [(1)] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [(2)] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	3.89	1.4	0.031	12:03	83.29	83.17	145	85.8	2.509			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	3.89	1.3	0.110	12:03	83.44	83.29	139	85.7	2.257			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.11	0.8	-0.110	12:04	84.18	83.44	23	85.85	1.671			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.05	0.4	-0.180	12:03	84.19	84.18	28	86	1.814			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.05	1.4	0.060	12:02	84.55	84.19	26	86.1	1.554			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.62	1.2	0.230	12:03	83.78	83.44	18	85.95	2.166			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.29	1.2	-0.055	12:02	84.14	83.78	113	86.05	1.914			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.22	1.1	0.010	12:01	84.26	84.14	108	86.5	2.239			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.10	1.0	-0.045	12:04	84.51	84.26	104	86.35	1.840			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	3.26	1.2	0.300	12:02	84.61	83.78	9	86.1	1.486			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	3.16	1.2	0.340	12:02	84.73	84.61	46	86.35	1.624			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	3.16	0.8	0.370	12:02	84.85	84.73	49	86.5	1.646			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	3.16	1.2	0.500	12:02	85.12	84.85	3	86.5	1.376			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	3.11	1.2	0.580	12:02	85.40	85.12	56	86.7	1.300			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.16	1.3	0.748	12:01	85.75	85.40	115	86.85	1.102			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.11	1.3	0.789	12:01	85.88	85.75	122	87.3	1.416			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.02	0.3	0.494	12:10	85.88	85.88	125	87.4	1.516			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	2.81	1.1	0.600	12:02	85.59	85.40	65	86.7	1.114			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.68	0.7	0.620	12:02	85.69	85.59	70	87.05	1.356			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.56	1.0	0.680	12:02	86.04	85.69	76	87.05	1.007			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.05	1.0	0.860	12:01	86.31	85.88	113	87.35	1.043			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.05	1.0	0.860	12:01	86.31	86.04	92	87.45	1.143			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.43	0.8	0.691	12:02	86.40	86.04	91	87.45	1.049			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.27	0.6	0.550	12:09	86.45	86.40	94	87.8	1.350			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.22	0.5	0.400	12:07	86.48	86.45	97	87.28	0.800			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	2.06	1.1	0.750	12:02	86.63	86.40	114	87.7	1.071			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.22	0.9	0.665	12:09	86.75	86.63	115	87.9	1.148			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.11	0.9	0.785	12:11	86.81	86.75	117	88.3	1.487			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.10	1.0	0.735	12:10	87.14	86.81	118	88.2	1.062			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.71	1.1	1.070	12:02	87.33	86.63	103	88	0.673			
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.61	0.8	1.110	12:02	87.45	87.33	106	88.4	0.951			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.61	1.0	1.210	12:02	87.91	87.45	107	88.4	0.492			

[(2)] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[(3)] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-1C: Pipe Data and Hydraulic Simulation Results for the Historical July 1, 1979 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	3.71	1.3	-0.039	01:36	83.22	83.13	145	85.8	2.579			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	3.71	1.3	0.020	01:36	83.35	83.22	139	85.7	2.347			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.10	0.7	-0.120	01:37	84.17	83.35	23	85.85	1.681			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.05	0.3	-0.190	01:35	84.18	84.17	28	86	1.824			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.05	1.2	0.000	01:34	84.49	84.18	26	86.1	1.614			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.46	1.2	0.110	01:36	83.66	83.35	18	85.95	2.286			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.29	1.1	-0.065	01:36	84.13	83.66	113	86.05	1.924			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.21	1.1	-0.010	01:35	84.24	84.13	108	86.5	2.259			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.09	1.0	-0.065	01:39	84.49	84.24	104	86.35	1.860			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	3.08	1.2	0.210	01:36	84.52	83.66	9	86.1	1.576			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	2.98	1.1	0.240	01:36	84.63	84.52	46	86.35	1.724			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	2.98	0.8	0.250	01:36	84.73	84.63	49	86.5	1.766			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	2.98	1.1	0.350	01:36	84.97	84.73	3	86.5	1.526			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	2.93	1.1	0.380	01:36	85.20	84.97	56	86.7	1.500			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.16	1.2	0.518	01:35	85.52	85.20	115	86.85	1.332			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.10	1.3	0.549	01:35	85.64	85.52	122	87.3	1.656			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.01	0.2	0.254	01:30	85.64	85.64	125	87.4	1.756			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	2.65	1.0	0.380	01:36	85.37	85.20	65	86.7	1.334			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.53	0.7	0.380	01:36	85.45	85.37	70	87.05	1.596			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.41	0.9	0.390	01:36	85.75	85.45	76	87.05	1.297			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.04	0.9	0.520	01:22	85.97	85.64	113	87.35	1.383			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.04	0.9	0.520	01:22	85.97	85.75	92	87.45	1.483			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.29	0.8	0.361	01:36	86.07	85.75	91	87.45	1.379			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.27	0.6	0.200	01:44	86.10	86.07	94	87.8	1.700			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.22	0.5	0.150	01:43	86.23	86.10	97	87.28	1.050			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.97	1.0	0.410	01:36	86.29	86.07	114	87.7	1.411			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.21	0.8	0.315	01:43	86.40	86.29	115	87.9	1.498			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.10	0.8	0.435	01:45	86.46	86.40	117	88.3	1.837			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.10	1.0	0.385	01:32	86.79	86.46	118	88.2	1.412			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.66	1.0	0.720	01:30	86.98	86.29	103	88	1.023			
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.56	0.8	0.750	01:36	87.09	86.98	106	88.4	1.311			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.56	1.0	0.860	01:36	87.56	87.09	107	88.4	0.842			

(2) Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

(3) Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

Green	Interpolated HGL elevation
Yellow	Freebaord Less than 0.3m
Red	Freebaord Less than 0.0m

Table C-1D: Pipe Data and Hydraulic Simulation Results for the Historical August 4, 1988 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [(1)] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [(2)] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	3.45	1.2	0.071	02:06	83.33	83.25	145	85.8	2.469			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	3.45	1.2	0.120	02:04	83.45	83.33	139	85.7	2.247			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.10	0.7	-0.130	02:06	84.16	83.45	23	85.85	1.691			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.04	0.3	-0.200	02:05	84.17	84.16	28	86	1.834			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.04	1.1	-0.020	02:04	84.47	84.17	26	86.1	1.634			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.23	1.1	0.160	02:06	83.71	83.45	18	85.95	2.236			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.28	1.1	-0.075	02:05	84.12	83.71	113	86.05	1.934			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.21	1.0	-0.020	02:04	84.23	84.12	108	86.5	2.269			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.09	1.0	-0.065	02:02	84.49	84.23	104	86.35	1.860			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.89	1.1	0.120	02:06	84.43	83.71	9	86.1	1.666			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	2.79	1.0	0.140	02:06	84.53	84.43	46	86.35	1.824			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	2.79	0.7	0.140	02:06	84.62	84.53	49	86.5	1.876			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	2.79	1.0	0.210	02:06	84.83	84.62	3	86.5	1.666			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	2.73	1.0	0.230	02:06	85.05	84.83	56	86.7	1.650			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.15	1.2	0.358	02:00	85.36	85.05	115	86.85	1.492			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.10	1.2	0.379	02:00	85.47	85.36	122	87.3	1.826			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.02	0.3	0.084	02:08	85.47	85.47	125	87.4	1.926			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	2.47	0.9	0.210	02:06	85.20	85.05	65	86.7	1.504			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.35	0.6	0.200	02:06	85.27	85.20	70	87.05	1.776			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.25	0.8	0.180	02:09	85.54	85.27	76	87.05	1.507			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.04	0.9	0.300	01:53	85.75	85.47	113	87.35	1.603			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.04	0.9	0.300	01:53	85.75	85.54	92	87.45	1.703			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.23	0.8	0.091	02:02	85.80	85.54	91	87.45	1.649			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.26	0.6	-0.070	02:08	85.83	85.80	94	87.8	1.970			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.22	0.5	-0.220	02:07	85.86	85.83	97	87.28	1.420			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.98	1.0	0.100	02:03	85.98	85.80	114	87.7	1.721			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.21	0.8	-0.025	02:07	86.06	85.98	115	87.9	1.838			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.11	0.8	0.085	02:08	86.11	86.06	117	88.3	2.187			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.10	1.0	-0.015	02:04	86.39	86.11	118	88.2	1.812			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.67	1.0	0.340	02:02	86.60	85.98	103	88	1.403			
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.57	0.8	0.360	02:03	86.70	86.60	106	88.4	1.701			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.57	1.0	0.400	02:03	87.10	86.70	107	88.4	1.302			

[(2)] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

[(3)] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

Interpolated HGL elevation

Freebaord Less than 0.3m

Freebaord Less than 0.0m

Table C-1E: Pipe Data and Hydraulic Simulation Results for the Historical August 8, 1996 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	3.24	1.1	-0.239	01:34	83.02	82.94	145	85.8	2.779			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	3.23	1.1	-0.180	01:34	83.15	83.02	139	85.7	2.547			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.08	0.6	-0.170	01:34	84.12	83.15	23	85.85	1.731			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.03	0.2	-0.240	01:37	84.13	84.12	28	86	1.874			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.03	0.8	-0.090	01:34	84.40	84.13	26	86.1	1.704			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.02	1.0	-0.180	01:34	83.37	83.15	18	85.95	2.576			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.26	1.0	-0.105	01:33	84.09	83.37	113	86.05	1.964			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.19	0.9	-0.070	01:33	84.18	84.09	108	86.5	2.319			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.09	1.0	-0.065	01:28	84.49	84.18	104	86.35	1.860			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.71	1.0	0.040	01:34	84.35	83.37	9	86.1	1.746			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	2.61	1.0	0.050	01:34	84.44	84.35	46	86.35	1.914			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	2.61	0.7	0.030	01:34	84.51	84.44	49	86.5	1.986			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	2.61	1.0	0.070	01:34	84.69	84.51	3	86.5	1.806			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	2.56	1.0	0.060	01:34	84.88	84.69	56	86.7	1.820			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.15	1.2	0.148	01:31	85.15	84.88	115	86.85	1.702			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.10	1.2	0.149	01:31	85.24	85.15	122	87.3	2.056			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.01	0.2	-0.126	01:34	85.26	85.24	125	87.4	2.136			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	2.36	0.9	0.010	01:36	85.00	84.88	65	86.7	1.704			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.26	0.6	0.000	01:36	85.07	85.00	70	87.05	1.976			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.20	0.8	-0.080	01:31	85.28	85.07	76	87.05	1.767			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.05	0.9	0.030	01:25	85.48	85.24	113	87.35	1.873			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.05	0.9	0.030	01:25	85.48	85.28	92	87.45	1.973			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.15	0.7	-0.159	01:31	85.55	85.28	91	87.45	1.899			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.17	0.4	-0.310	01:33	85.59	85.55	94	87.8	2.210			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.17	0.4	-0.410	01:34	85.67	85.59	97	87.28	1.610			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.91	1.0	-0.180	01:30	85.70	85.55	114	87.7	2.001			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.19	0.7	-0.185	01:31	85.90	85.70	115	87.9	1.998			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.10	0.8	-0.065	01:29	85.96	85.90	117	88.3	2.337			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.10	0.9	-0.065	01:29	86.34	85.96	118	88.2	1.862			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.62	1.0	0.090	01:30	86.35	85.70	103	88	1.653			
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.52	0.8	0.110	01:30	86.45	86.35	106	88.4	1.951			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.52	1.0	0.150	01:30	86.85	86.45	107	88.4	1.552			

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20%

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
102_(STM)	100_(STM)	81.610	81.598	1650	12.1	0.1	0.013	87.570	87.580	1.341	2.87	4.30	1.5	0.261	01:13	83.52	83.46	145	85.8	2.279			
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	87.570	1.348	2.88	4.30	1.5	0.370	01:13	83.70	83.52	139	85.7	1.997			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.12	0.8	-0.080	01:19	84.21	83.70	23	85.85	1.641			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.06	0.4	-0.150	01:17	84.22	84.21	28	86	1.784			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.06	1.6	0.140	01:16	84.63	84.22	26	86.1	1.474			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	3.99	1.4	0.560	01:12	84.11	83.70	18	85.95	1.836			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.32	1.2	0.265	01:16	84.46	84.11	113	86.05	1.594			
116_(STM)	114_(STM)	83.801	83.741	450	11.9	0.5	0.013	88.174	88.000	1.271	0.20	0.24	1.2	0.330	01:16	84.58	84.46	108	86.5	1.919			
118_(STM)	116_(STM)	84.180	83.873	375	99.6	0.3	0.013	88.362	88.174	0.881	0.10	0.10	1.0	0.345	01:29	84.90	84.58	104	86.35	1.450			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	3.59	1.3	0.620	01:12	84.93	84.11	9	86.1	1.166			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	3.49	1.3	0.680	01:12	85.07	84.93	46	86.35	1.284			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	3.49	0.9	0.730	01:12	85.21	85.07	49	86.5	1.286			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	3.49	1.3	0.910	01:12	85.53	85.21	3	86.5	0.966			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	3.43	1.3	1.030	01:12	85.85	85.53	56	86.7	0.850			
130_(STM)	128_(STM)	84.550	83.480	450	88.3	0.2	0.013	89.045	88.631	0.810	0.13	0.17	1.3	1.238	01:11	86.24	85.85	115	86.85	0.612			
132_(STM)	130_(STM)	84.720	84.642	375	37.4	0.2	0.013	89.181	89.045	0.726	0.08	0.11	1.4	1.289	01:11	86.38	86.24	122	87.3	0.916			
134_(STM)	132_(STM)	85.140	84.850	250	36.0	0.7	0.013	89.320	89.181	0.977	0.05	0.02	0.4	0.994	01:10	86.38	86.38	125	87.4	1.016			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	3.08	1.2	1.080	01:12	86.07	85.85	65	86.7	0.634			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	2.95	0.8	1.120	01:12	86.19	86.07	70	87.05	0.856			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	2.79	1.0	1.220	01:12	86.58	86.19	76	87.05	0.467			
142_(STM)	132_(STM)	85.197	84.850	250	53.4	0.6	0.013	89.160	89.181	0.976	0.05	0.06	1.1	1.450	01:11	86.90	86.38	113	87.35	0.453			
142_(STM)	140_(STM)	85.197	84.130	250	53.4	0.6	0.013	89.160	89.251	0.976	0.05	0.06	1.1	1.450	01:11	86.90	86.58	92	87.45	0.553			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	2.66	0.9	1.291	01:12	87.00	86.58	91	87.45	0.449			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.27	0.6	1.140	01:11	87.04	87.00	94	87.8	0.760			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	89.210	89.123	0.986	0.44	0.33	0.8	0.990	01:11	87.07	87.04	97	87.28	0.210			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	2.31	1.2	1.380	01:11	87.26	87.00	114	87.7	0.441			
152_(STM)	150_(STM)	85.562	84.829	525	59.4	0.4	0.013	90.000	89.798	1.175	0.25	0.21	0.8	1.295	01:36	87.38	87.26	115	87.9	0.518			
154_(STM)	152_(STM)	85.653	85.590	375	12.6	0.5	0.013	90.091	90.000	1.124	0.12	0.11	0.9	1.415	01:37	87.44	87.38	117	88.3	0.857			
156_(STM)	154_(STM)	86.028	85.680	375	100.7	0.3	0.013	89.939	90.091	0.934	0.10	0.11	1.0	1.385	01:36	87.79	87.44	118	88.2	0.412			
158_(STM)	150_(STM)	85.207	84.829	1050	108.0	0.4	0.013	90.066	89.798	1.866	1.62	1.88	1.2	1.780	01:11	88.04	87.26	103	88	-0.037			
																		103	88	0.661	108.0	11.099	87.339
																		110	88	0.661	108.0	11.099	87.339
																		104	88.1	0.761	108.0	11.099	87.339
																		111	88.15	0.811	108.0	11.099	87.339
																		112	88.3	0.961	108.0	11.099	87.339
																		105	88.3	0.961	108.0	11.099	87.339
160_(STM)	158_(STM)	85.289	85.217	1050	14.3	0.5	0.013	90.162	90.066	2.239	1.94	1.78	0.9	1.830	01:11	88.17	88.04	106	88.4	0.231			
162_(STM)	160_(STM)	85.648	85.299	1050	106.3	0.3	0.013	90.303	90.162	1.806	1.56	1.78	1.1	2.000	01:11	88.70	88.17	107	88.4	-0.298			
																		107	88.4	0.171	106.3	11.954	88.229
																		108	88.4	0.171	106.3	11.954	88.229
																		109	88.4	0.171	106.3	11.954	88.229

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2A: Pipe Data and Hydraulic Simulation Results for the Interim Condition 100-Year, 3-Hour Chicago Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.48	0.9	-0.430	01:19	82.90	82.79	139	85.7	2.797			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.11	0.8	-0.100	01:19	84.19	82.90	23	85.85	1.661			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.06	0.4	-0.170	01:17	84.20	84.19	28	86	1.804			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.06	1.4	0.080	01:16	84.57	84.20	26	86.1	1.534			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.28	0.8	-0.440	01:18	83.11	82.90	18	85.95	2.836			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.08	0.3	-0.325	01:13	83.87	83.11	113	86.05	2.184			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.12	0.8	-0.210	01:18	84.10	83.11	9	86.1	1.996			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	2.02	0.8	-0.230	01:17	84.16	84.10	46	86.35	2.194			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	2.03	0.5	-0.280	01:17	84.20	84.16	49	86.5	2.296			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	2.03	0.8	-0.290	01:17	84.33	84.20	3	86.5	2.166			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	1.98	0.7	-0.380	01:16	84.44	84.33	56	86.7	2.260			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.81	0.7	-0.450	01:16	84.54	84.44	65	86.7	2.164			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.69	0.4	-0.460	01:16	84.61	84.54	70	87.05	2.436			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.55	0.6	-0.520	01:15	84.84	84.61	76	87.05	2.207			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.07	1.4	0.223	01:11	85.72	84.84	92	87.45	1.733			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.42	0.5	-0.499	01:15	85.21	84.84	91	87.45	2.239			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.19	0.4	-0.360	01:13	85.54	85.21	94	87.8	2.260			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.17	0.4	-0.420	01:12	85.66	85.54	97	87.28	1.620			

[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2B: Pipe Data and Hydraulic Simulation Results for the Interim Condition 100-Year, 24-Hour SCS Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.41	0.8	-0.460	12:05	82.87	82.76	139	85.7	2.827			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.11	0.8	-0.110	12:04	84.18	82.87	23	85.85	1.671			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.05	0.4	-0.180	12:03	84.19	84.18	28	86	1.814			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.05	1.4	0.060	12:02	84.55	84.19	26	86.1	1.554			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.22	0.8	-0.460	12:05	83.09	82.87	18	85.95	2.856			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.08	0.3	-0.325	12:02	83.87	83.09	113	86.05	2.184			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.05	0.8	-0.230	12:05	84.08	83.09	9	86.1	2.016			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	1.96	0.7	-0.260	12:04	84.13	84.08	46	86.35	2.224			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	1.96	0.5	-0.310	12:04	84.17	84.13	49	86.5	2.326			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	1.96	0.7	-0.320	12:04	84.30	84.17	3	86.5	2.196			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	1.91	0.7	-0.410	12:04	84.41	84.30	56	86.7	2.290			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.75	0.7	-0.480	12:03	84.51	84.41	65	86.7	2.194			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.63	0.4	-0.480	12:03	84.59	84.51	70	87.05	2.456			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.51	0.6	-0.540	12:03	84.82	84.59	76	87.05	2.227			
142_(STM)	132_(STM)	85.244	#N/A	250	20.7	0.6	0.013	89.160	#N/A	0.975	0.05	0.06	1.3	0.163	12:00	85.66	#N/A	113	87.35	1.693			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.06	1.3	0.163	12:00	85.66	84.82	92	87.45	1.793			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.38	0.5	-0.519	12:03	85.19	84.82	91	87.45	2.259			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.18	0.4	-0.370	12:02	85.53	85.19	94	87.8	2.270			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.17	0.4	-0.420	12:01	85.66	85.53	97	87.28	1.620			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.11	0.6	-0.530	12:03	85.35	85.19	114	87.7	2.351			

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2C: Pipe Data and Hydraulic Simulation Results for the Interim Condition Historical July 1, 1979 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL		
																					Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.42	0.8	-0.450	01:39	82.88	82.77	139	85.7	2.817			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.10	0.7	-0.120	01:37	84.17	82.88	23	85.85	1.681			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.05	0.3	-0.190	01:35	84.18	84.17	28	86	1.824			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.05	1.2	0.000	01:34	84.49	84.18	26	86.1	1.614			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.23	0.8	-0.460	01:39	83.09	82.88	18	85.95	2.856			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.08	0.3	-0.325	01:40	83.87	83.09	113	86.05	2.184			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.06	0.8	-0.230	01:39	84.08	83.09	9	86.1	2.016			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	1.97	0.7	-0.260	01:38	84.13	84.08	46	86.35	2.224			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	1.97	0.5	-0.310	01:38	84.17	84.13	49	86.5	2.326			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	1.97	0.7	-0.320	01:37	84.30	84.17	3	86.5	2.196			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	1.92	0.7	-0.410	01:37	84.41	84.30	56	86.7	2.290			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.77	0.7	-0.470	01:37	84.52	84.41	65	86.7	2.184			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.65	0.4	-0.470	01:37	84.60	84.52	70	87.05	2.446			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.54	0.6	-0.530	01:36	84.83	84.60	76	87.05	2.217			
142_(STM)	132_(STM)	85.244	#N/A	250	20.7	0.6	0.013	89.160	#N/A	0.975	0.05	0.05	1.0	0.053	01:32	85.55	#N/A	113	87.35	1.803			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.05	1.0	0.053	01:32	85.55	84.83	92	87.45	1.903			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.42	0.5	-0.499	01:36	85.21	84.83	91	87.45	2.239			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.17	0.4	-0.380	01:33	85.52	85.21	94	87.8	2.280			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.16	0.4	-0.430	01:32	85.65	85.52	97	87.28	1.630			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.16	0.6	-0.510	01:35	85.37	85.21	114	87.7	2.331			

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2D: Pipe Data and Hydraulic Simulation Results for the Interim Condition Historical August 4, 1988 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.39	0.8	-0.460	02:07	82.87	82.76	139	85.7	2.827			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.10	0.7	-0.130	02:06	84.16	82.87	23	85.85	1.691			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.04	0.3	-0.200	02:05	84.17	84.16	28	86	1.834			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.04	1.1	-0.020	02:04	84.47	84.17	26	86.1	1.634			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.21	0.8	-0.470	02:07	83.08	82.87	18	85.95	2.866			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.08	0.3	-0.325	02:02	83.87	83.08	113	86.05	2.184			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.05	0.8	-0.240	02:07	84.07	83.08	9	86.1	2.026			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	1.95	0.7	-0.270	02:06	84.12	84.07	46	86.35	2.234			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	1.95	0.5	-0.310	02:06	84.17	84.12	49	86.5	2.326			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	1.96	0.7	-0.330	02:05	84.29	84.17	3	86.5	2.206			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	1.91	0.7	-0.410	02:05	84.41	84.29	56	86.7	2.290			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.77	0.7	-0.480	02:04	84.51	84.41	65	86.7	2.194			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.65	0.4	-0.480	02:04	84.59	84.51	70	87.05	2.456			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.54	0.6	-0.530	02:03	84.83	84.59	76	87.05	2.217			
142_(STM)	132_(STM)	85.244	#N/A	250	20.7	0.6	0.013	89.160	#N/A	0.975	0.05	0.05	1.1	0.063	02:02	85.56	#N/A	113	87.35	1.793			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.05	1.1	0.063	02:02	85.56	84.83	92	87.45	1.893			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.43	0.5	-0.499	02:03	85.21	84.83	91	87.45	2.239			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.17	0.4	-0.380	02:03	85.52	85.21	94	87.8	2.280			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.16	0.4	-0.430	02:01	85.65	85.52	97	87.28	1.630			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.16	0.6	-0.510	02:03	85.37	85.21	114	87.7	2.331			

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2E: Pipe Data and Hydraulic Simulation Results for the Interim Condition Historical August 8, 1996 Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.18	0.8	-0.530	01:34	82.80	82.69	139	85.7	2.897			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.08	0.6	-0.170	01:34	84.12	82.80	23	85.85	1.731			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.03	0.2	-0.240	01:37	84.13	84.12	28	86	1.874			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.03	0.8	-0.090	01:34	84.40	84.13	26	86.1	1.704			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.01	0.7	-0.520	01:34	83.03	82.80	18	85.95	2.916			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.07	0.3	-0.335	01:31	83.86	83.03	113	86.05	2.194			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	1.86	0.7	-0.310	01:34	84.00	83.03	9	86.1	2.096			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	1.77	0.7	-0.340	01:33	84.05	84.00	46	86.35	2.304			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	1.77	0.5	-0.390	01:33	84.09	84.05	49	86.5	2.406			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	1.78	0.7	-0.410	01:33	84.21	84.09	3	86.5	2.286			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	1.73	0.6	-0.490	01:32	84.33	84.21	56	86.7	2.370			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.60	0.6	-0.550	01:32	84.44	84.33	65	86.7	2.264			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.50	0.4	-0.540	01:33	84.53	84.44	70	87.05	2.516			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.41	0.5	-0.580	01:32	84.78	84.53	76	87.05	2.267			
142_(STM)	132_(STM)	85.244	#N/A	250	20.7	0.6	0.013	89.160	#N/A	0.975	0.05	0.04	0.8	-0.037	01:30	85.46	#N/A	113	87.35	1.893			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.04	0.8	-0.037	01:30	85.46	84.78	92	87.45	1.993			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.31	0.5	-0.549	01:31	85.16	84.78	91	87.45	2.289			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.16	0.4	-0.390	01:32	85.51	85.16	94	87.8	2.290			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.16	0.4	-0.440	01:31	85.64	85.51	97	87.28	1.640			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.08	0.6	-0.550	01:32	85.33	85.16	114	87.7	2.371			

(2) Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
(3) Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

Table C-2F: Pipe Data and Hydraulic Simulation Results for the Interim Condition 100-Year, 3-Hour Chicago Storm + 20%

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S [1] (m)	Time to Peak (hh:mm)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard [2] (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
104_(STM)	102_(STM)	81.683	81.641	1650	41.9	0.1	0.013	87.617	67.400	1.348	2.88	2.62	0.9	-0.390	01:19	82.94	82.83	139	85.7	2.757			
106_(STM)	104_(STM)	83.839	81.983	450	97.6	0.3	0.013	87.663	87.617	0.896	0.14	0.12	0.8	-0.080	01:19	84.21	82.94	23	85.85	1.641			
108_(STM)	106_(STM)	83.916	83.850	450	26.2	0.3	0.013	87.503	87.663	0.900	0.14	0.06	0.4	-0.150	01:17	84.22	84.21	28	86	1.784			
110_(STM)	108_(STM)	84.236	84.114	250	29.1	0.4	0.013	87.749	87.503	0.784	0.04	0.06	1.6	0.140	01:16	84.63	84.22	26	86.1	1.474			
112_(STM)	104_(STM)	82.204	81.983	1350	73.8	0.3	0.013	87.915	87.617	2.039	2.92	2.40	0.8	-0.400	01:18	83.15	82.94	18	85.95	2.796			
114_(STM)	112_(STM)	83.666	82.735	525	64.6	0.4	0.013	88.000	87.915	1.175	0.25	0.08	0.3	-0.325	01:12	83.87	83.15	113	86.05	2.184			
120_(STM)	112_(STM)	82.964	82.735	1350	91.6	0.3	0.013	88.076	87.915	1.864	2.67	2.23	0.8	-0.160	01:18	84.15	83.15	9	86.1	1.946			
122_(STM)	120_(STM)	83.036	82.974	1350	24.6	0.3	0.013	88.231	88.076	1.872	2.68	2.14	0.8	-0.180	01:18	84.21	84.15	46	86.35	2.144			
124_(STM)	122_(STM)	83.134	83.050	1350	16.9	0.5	0.013	88.195	88.231	2.631	3.77	2.14	0.6	-0.230	01:17	84.25	84.21	49	86.5	2.246			
126_(STM)	124_(STM)	83.274	83.140	1350	53.4	0.3	0.013	88.465	88.195	1.868	2.67	2.14	0.8	-0.240	01:17	84.38	84.25	3	86.5	2.116			
128_(STM)	126_(STM)	83.470	83.280	1350	76.0	0.3	0.013	88.631	88.465	1.864	2.67	2.09	0.8	-0.330	01:16	84.49	84.38	56	86.7	2.210			
136_(STM)	128_(STM)	83.636	83.480	1350	62.5	0.3	0.013	88.646	88.631	1.864	2.67	1.90	0.7	-0.400	01:17	84.59	84.49	65	86.7	2.114			
138_(STM)	136_(STM)	83.724	83.650	1350	14.8	0.5	0.013	88.773	88.646	2.639	3.78	1.78	0.5	-0.410	01:17	84.66	84.59	70	87.05	2.386			
140_(STM)	138_(STM)	84.013	83.730	1350	113.1	0.3	0.013	89.251	88.773	1.864	2.67	1.61	0.6	-0.490	01:16	84.87	84.66	76	87.05	2.177			
142_(STM)	132_(STM)	85.244	#N/A	250	20.7	0.6	0.013	89.160	#N/A	0.975	0.05	0.07	1.5	0.303	01:10	85.80	#N/A	113	87.35	1.553			
142_(STM)	140_(STM)	85.244	84.130	250	20.7	0.6	0.013	89.160	89.251	0.975	0.05	0.07	1.5	0.303	01:10	85.80	84.87	92	87.45	1.653			
144_(STM)	140_(STM)	84.360	84.130	1350	77.3	0.3	0.013	89.454	89.251	2.032	2.91	1.48	0.5	-0.469	01:15	85.24	84.87	91	87.45	2.209			
146_(STM)	144_(STM)	85.150	85.030	750	78.7	0.2	0.013	89.123	89.454	0.986	0.44	0.20	0.5	-0.340	01:13	85.56	85.24	94	87.8	2.240			
148_(STM)	146_(STM)	85.330	85.210	750	78.5	0.2	0.013	88.492	89.123	0.986	0.44	0.19	0.4	-0.410	01:11	85.67	85.56	97	87.28	1.610			
150_(STM)	144_(STM)	84.679	85.030	1200	76.3	0.2	0.013	89.798	89.454	1.717	1.94	1.18	0.6	-0.500	01:14	85.38	85.24	114	87.7	2.321			

[2] Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.
[3] Future USF elevations estimated as 1.8 m below the upstream top of manhole elevations.

(green)	Interpolated HGL elevation
(yellow)	Freebaord Less than 0.3m
(red)	Freebaord Less than 0.0m

APPENDIX

D

Tables and Calculation Sheets

JFSA Water Resources and Environmental Consultants

Table D-1: Approach Flows and Captured Flows for the 100-Year Chicago Storm

Catch Basin ID	Approach Flow On The Road (m^3/s)	Approach Flow at Catch Basin (m^3/s)	Captured Flow Through ICD (m^3/s)
02_(CB)	0.065	0.027	0.026
03_(CB)	0.065	0.031	0.031
04_(CB)	0.067	0.027	0.027
05_(CB)	0.067	0.027	0.027
06_(CB)	0.054	0.030	0.030
08_(CB)	0.053	0.032	0.032
09_(CB)	0.053	0.027	0.027
10_(CB)	0.086	0.031	0.031
11_(CB)	0.086	0.087	0.043
12_(CB)	0.110	0.050	0.050
13_(CB)	0.110	0.048	0.048
14_(CB)	0.062	0.028	0.027
15_(CB)	0.062	0.028	0.027
16_(CB)	0.055	0.021	0.021
17_(CB)	0.055	0.027	0.027
18_(CB)	0.093	0.085	0.055
19_(CB)	0.093	0.071	0.071
20_(CB)	0.092	0.036	0.036
21_(CB)	0.092	0.035	0.035
23_(CB)	0.072	0.049	0.049
24_(CB)	0.072	0.049	0.049
25_(CB)	0.011	0.009	0.009
26_(CB)	0.011	0.004	0.004
27_(CB)	0.136	0.069	0.068
28_(CB)	0.136	0.069	0.068
30_(CB)	0.118	0.086	0.086
31_(CB)	0.119	0.100	0.100
32_(CB)	0.117	0.106	0.039
33_(CB)	0.144	0.072	0.059
34_(CB)	0.116	0.049	0.049
35_(CB)	0.116	0.049	0.049
36_(CB)	0.081	0.036	0.036
37_(CB)	0.081	0.049	0.049
40_(CB)	0.097	0.048	0.048
41_(CB)	0.097	0.050	0.050
42_(CB)	0.083	0.032	0.032
43_(CB)	0.083	0.036	0.036
44_(CB)	0.052	0.032	0.032
45_(CB)	0.052	0.021	0.021
46_(CB)	0.060	0.032	0.032
47_(CB)	0.060	0.026	0.026
48_(CB)	0.066	0.028	0.028
49_(CB)	0.066	0.027	0.027
50_(CB)	0.097	0.048	0.048
51_(CB)	0.097	0.047	0.047
52_(CB)	0.099	0.043	0.044
53_(CB)	0.107	0.050	0.050
54_(CB)	0.107	0.049	0.049
55_(CB)	0.098	0.049	0.049
57_(CB)	0.106	0.050	0.050

Table D-2: Major System Flow Depths for the 100-Year Chicago Storm

Catch Basin ID	Depth (m)
02_(CB)	0.16
03_(CB)	0.16
04_(CB)	0.15
05_(CB)	0.15
06_(CB)	0.03
08_(CB)	0.16
09_(CB)	0.16
10_(CB)	0.28
11_(CB)	0.28
12_(CB)	0.21
13_(CB)	0.21
14_(CB)	0.20
15_(CB)	0.20
16_(CB)	0.17
17_(CB)	0.17
18_(CB)	0.22
19_(CB)	0.22
20_(CB)	0.20
21_(CB)	0.20
23_(CB)	0.14
24_(CB)	0.14
25_(CB)	0.02
26_(CB)	0.02
27_(CB)	0.22
28_(CB)	0.22
30_(CB)	0.10
31_(CB)	0.10
32_(CB)	0.21
33_(CB)	0.21
34_(CB)	0.18
35_(CB)	0.18
36_(CB)	0.14
37_(CB)	0.14
40_(CB)	0.20
41_(CB)	0.20
42_(CB)	0.18
43_(CB)	0.18
44_(CB)	0.15
45_(CB)	0.15
46_(CB)	0.18
47_(CB)	0.18
48_(CB)	0.20
49_(CB)	0.20
50_(CB)	0.17
51_(CB)	0.17
52_(CB)	0.07
53_(CB)	0.19
54_(CB)	0.19
55_(CB)	0.17
57_(CB)	0.27

Note: Depth calculated as per PCSWMM model

Table D-3A: PCSWMM Subcatchment Parameters

Name	Area (ha)	Width (m)	Slope (%)	Imperv. (%)	N Imperv	N Perv	Dstore Imperv (mm)	Dstore Perv (mm)	Subarea Routing	Percent Routed (%)	Infiltration Method	Max. Infil. Rate (mm/hr)	Min. Infil. Rate (mm/hr)	Decay Constant (1/hr)
A10	0.202	105	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A11	0.287	105	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A12i	0.194	76	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A12ii	0.090	76	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A13	0.226	76	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A14	0.319	75	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A15i	0.248	103	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A15ii	0.274	103	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A16i	0.060	24	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A16ii	0.067	25	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A17	0.091	68	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A17ii	0.093	77	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A18i	0.189	77	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A19	0.190	128	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A1i	0.157	149	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A1ii	0.202	149	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A20i	0.195	100	0.9	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A20ii	0.206	100	0.9	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A21	0.325	112	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A22	0.028	48	0.5	42.9	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A23	0.169	72	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A24i	0.110	90	0.9	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A24ii	0.237	130	0.9	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A25	0.294	102	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A26i	0.060	73	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A26ii	0.172	73	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A27i	0.088	48	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A27ii	0.181	85	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A28i	0.143	63	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A28ii	0.142	65	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A29	0.116	79	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A2i	0.120	120	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A2ii	0.118	120	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A3	0.154	111	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A30	0.014	18	0.5	42.9	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A31	0.187	129	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A32i	0.155	73	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A32ii	0.082	73	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A33i	0.110	164	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A33ii	0.157	76	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A34i	0.212	125	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A34ii	0.276	134	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A35i	0.228	116	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A35ii	0.203	117	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A36	0.294	99	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A37	0.029	47	0.5	42.9	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A38	0.239	95	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A39i	0.214	114	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A39ii	0.074	75	1.0	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A4	0.092	60	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A40	0.219	80	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A41	0.075	55	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A42i	0.146	72	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A42ii	0.083	72	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A43	0.236	81	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A44	0.199	72	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A45i	0.168	78	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A45ii	0.075	78	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A46i	0.157	73	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A46ii	0.136	87	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A47	0.136	93	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A48	0.205	57	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A49	0.074	58	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A50	0.066	32	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14

Table D-3A: PCSWMM Subcatchment Parameters

Name	Area (ha)	Width (m)	Slope (%)	Imperv. (%)	N Imperv	N Perv	Dstore Imperv (mm)	Dstore Perv (mm)	Subarea Routing	Percent Routed (%)	Infiltration Method	Max. Infil. Rate (mm/hr)	Min. Infil. Rate (mm/hr)	Decay Constant (1/hr)
A51	0.186	73	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A52	0.021	24	1.2	42.9	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A53	0.182	121	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A54	0.165	80	0.5	50.0	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A5i	0.102	65	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A5ii	0.260	122	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A6	0.131	112	0.5	42.9	0.013	0.25	1.57	4.67	PERVIOUS	100	HORTON	76.2	13.2	4.14
A7i	0.228	120	0.7	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A7ii	0.282	130	0.7	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A8i	0.220	105	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A8ii	0.190	87	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A9i	0.188	85	0.7	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
A9ii	0.067	72	0.7	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B1	0.883	200	0.5	85.7	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B1ii	0.123	200	0.5	85.7	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B2	3.432	227	1.0	100.0	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B3i	0.965	87	0.5	85.7	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B3ii	0.046	70	0.5	85.7	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B4i	0.947	149	0.5	28.6	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B4ii	0.047	78	0.5	28.6	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
B4iii	0.008	14	0.5	28.6	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
C1	0.114	55	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14
C2	0.087	60	0.5	71.4	0.013	0.25	1.57	4.67	OUTLET	100	HORTON	76.2	13.2	4.14

Table D-4A: Capacity of Grates

Water Depth H (m)	$Q_{captured}$ (L/s) OPSD 400.01 SINGLE * (L/s)	TWIN * (L/s)
0.00	0	0
0.01	1	1
0.02	2	3
0.03	4	5
0.04	7	9
0.05	11	16
0.06	16	27
0.07	20	36
0.08	36	54
0.09	48	71
0.10	61	91
0.11	73	109
0.12	86	127
0.13	99	140
0.14	109	155
0.15	120	169
0.16	129	183
0.17	136	196
0.18	145	211
0.19	150	228
0.20	156	243
0.21	161	259
0.22	167	275
0.23	172	291
0.24	176	307
0.25	181	322
0.26	186	337
0.27	189	354
0.28	194	371
0.29	199	387
0.30	202	403

* From MTO Drainage Management Manual (1997), Design Chart 4.19

Table D-4B: Capacity of Side Inlet [1]

Water Depth (m)	SINGLE Capacity (L/s)	TWIN Capacity (L/s)
0.00	0	0
0.01	1	2
0.02	3	6
0.03	6	12
0.04	9	18
0.05	13	26
0.06	17	34
0.07	22	44
0.08	26	52
0.09	32	64
0.10	37	74
0.11	43	86
0.12	49	98
0.13	62	124
0.14	67	134
0.15	71	142
0.16	75	150
0.17	79	158
0.18	83	166
0.19	86	172
0.20	89	178
0.21	93	186
0.22	96	192
0.23	99	198
0.24	102	204
0.25	105	210
0.26	107	214
0.27	110	220
0.28	113	226
0.29	115	230
0.30	118	236

[1] As per $Q_{weir} = CLH^{3/2}$ where C = 1.8,
and $Q_{orifice} = CA\times(2gh)^{0.5}$ where C = 0.65
for a 13 cm high x 65 cm wide side inlet.

Table D-5: Capacity of Lead Pipes

	Release Rate (L/s) by Pipe Diameter (mm)						
Head (m)	100	150	200	250	300	375	450
0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.050	6.4	14.4	25.5	39.9	57.4	89.7	129.2
0.100	9.0	20.3	36.1	56.4	81.2	126.9	182.7
0.150	11.0	24.9	44.2	69.1	99.4	155.4	223.7
0.200	12.8	28.7	51.0	79.7	114.8	179.4	258.3
0.250	14.3	32.1	57.1	89.1	128.4	200.6	288.8
0.300	15.6	35.2	62.5	97.7	140.6	219.7	316.4
0.350	16.9	38.0	67.5	105.5	151.9	237.3	341.8
0.400	18.0	40.6	72.2	112.8	162.4	253.7	365.3
0.450	19.1	43.1	76.5	119.6	172.2	269.1	387.5
0.500	20.2	45.4	80.7	126.1	181.5	283.7	408.5
0.550	21.2	47.6	84.6	132.2	190.4	297.5	428.4
0.600	22.1	49.7	88.4	138.1	198.9	310.7	447.5
0.650	23.0	51.7	92.0	143.7	207.0	323.4	465.7
0.700	23.9	53.7	95.5	149.2	214.8	335.6	483.3
0.750	24.7	55.6	98.8	154.4	222.3	347.4	500.3
0.800	25.5	57.4	102.1	159.5	229.6	358.8	516.7
0.850	26.3	59.2	105.2	164.4	236.7	369.8	532.6
0.900	27.1	60.9	108.3	169.1	243.6	380.6	548.0
0.950	27.8	62.6	111.2	173.8	250.2	391.0	563.0
1.000	28.5	64.2	114.1	178.3	256.7	401.2	577.7
1.050	29.2	65.8	116.9	182.7	263.1	411.1	591.9
1.100	29.9	67.3	119.7	187.0	269.3	420.7	605.9
1.150	30.6	68.8	122.4	191.2	275.3	430.2	619.5
1.200	31.2	70.3	125.0	195.3	281.2	439.4	632.8
1.250	31.9	71.8	127.6	199.3	287.0	448.5	645.9
1.300	32.5	73.2	130.1	203.3	292.7	457.4	658.6
1.350	33.1	74.6	132.6	207.2	298.3	466.1	671.2
1.400	33.8	75.9	135.0	211.0	303.8	474.7	683.5
1.450	34.4	77.3	137.4	214.7	309.2	483.1	695.6
1.500	34.9	78.6	139.8	218.4	314.4	491.3	707.5
1.550	35.5	79.9	142.1	222.0	319.6	499.4	719.2
1.600	36.1	81.2	144.3	225.5	324.8	507.4	730.7

Short tube orifice coefficient = 0.82

Short tube release rate = $C\pi(\text{Dia}/1000)^2/4\times(2\times9.81\times H)^{0.5}\times1000$

Table D-6: ICD Type and Inlet Capture Results for the 2-Year Chicago Storm [(1)]

Catch Basin ID	Peak Flow (m^3/s)	Actual Capture (m^3/s)	Max Depth (cm)	Flow Spread (m)	% of Total Travel Lane [(1)]	ICD Type	Comment
02_(CB)	0.019	0.019	6.0	1.96	23%	94 mm	Low Point CICB
03_(CB)	0.019	0.019	6.0	1.96	23%	102 mm	Low Point CICB
04_(CB)	0.021	0.021	6.0	1.96	23%	94 mm	Low Point CICB
05_(CB)	0.021	0.021	6.0	1.96	23%	94 mm	Low Point CICB
06_(CB)	0.008	0.008	2.0	0.65	8%	127 mm	Low Point CICB
08_(CB)	0.018	0.018	4.0	1.31	15%	102 mm	Low Point CB
09_(CB)	0.018	0.018	4.0	1.31	15%	94 mm	Low Point CB
10_(CB)	0.022	0.022	4.0	1.31	15%	108 mm	Low Point CB
11_(CB)	0.027	0.027	4.0	1.31	15%	127 mm	Low Point CB
12_(CB)	0.037	0.037	6.0	1.96	23%	127 mm	Low Point CB
13_(CB)	0.037	0.037	6.0	1.96	23%	127 mm	Low Point CB
14_(CB)	0.021	0.021	4.0	1.31	15%	94 mm	Low Point CB
15_(CB)	0.021	0.021	4.0	1.31	15%	94 mm	Low Point CB
16_(CB)	0.018	0.018	4.0	1.31	15%	83 mm	Low Point CB
17_(CB)	0.018	0.018	4.0	1.31	15%	94 mm	Low Point CB
18_(CB)	0.031	0.031	5.0	1.63	19%	152 mm	Low Point CB
19_(CB)	0.027	0.027	5.0	1.63	19%	152 mm	Low Point CB
20_(CB)	0.031	0.031	5.0	1.63	19%	108 mm	Low Point CB
21_(CB)	0.031	0.031	5.0	1.63	19%	108 mm	Low Point CB
23_(CB)	0.025	0.025	5.0	1.63	19%	127 mm	Low Point CB
24_(CB)	0.025	0.025	5.0	1.63	19%	127 mm	Low Point CB
25_(CB)	0.004	0.004	1.0	0.33	4%	250 mm	Low Point CB
26_(CB)	0.002	0.002	1.0	0.33	4%	250 mm	Low Point CICB
27_(CB)	0.047	0.047	5.0	1.63	19%	152 mm	Double Low Point CICB
28_(CB)	0.047	0.047	5.0	1.63	19%	152 mm	Double Low Point CICB
30_(CB)	0.032	0.032	5.0	1.63	19%	200 mm	Low Point CB
31_(CB)	0.022	0.022	5.0	1.63	19%	200 mm	Low Point CICB
32_(CB)	0.021	0.021	4.0	1.31	15%	127 mm	Low Point CB
33_(CB)	0.024	0.024	4.0	1.31	15%	152 mm	Low Point CB
34_(CB)	0.038	0.038	6.0	1.96	23%	127 mm	Low Point CB
35_(CB)	0.038	0.038	6.0	1.96	23%	127 mm	Low Point CB
36_(CB)	0.030	0.030	5.0	1.63	19%	108 mm	Low Point CB
37_(CB)	0.030	0.030	5.0	1.63	19%	127 mm	Low Point CB
40_(CB)	0.034	0.034	6.0	1.96	23%	127 mm	Low Point CB
41_(CB)	0.034	0.034	6.0	1.96	23%	127 mm	Low Point CB
42_(CB)	0.027	0.027	5.0	1.63	19%	102 mm	Low Point CB
43_(CB)	0.027	0.027	5.0	1.63	19%	108 mm	Low Point CB
44_(CB)	0.018	0.018	4.0	1.31	15%	102 mm	Low Point CB
45_(CB)	0.018	0.018	4.0	1.31	15%	83 mm	Low Point CB
46_(CB)	0.021	0.021	4.0	1.31	15%	102 mm	Low Point CB
47_(CB)	0.021	0.021	4.0	1.31	15%	94 mm	Low Point CB
48_(CB)	0.022	0.022	4.0	1.31	15%	94 mm	Low Point CB
49_(CB)	0.022	0.022	4.0	1.31	15%	94 mm	Low Point CB
50_(CB)	0.033	0.033	5.0	1.63	19%	127 mm	Low Point CB
51_(CB)	0.033	0.033	5.0	1.63	19%	127 mm	Low Point CB
52_(CB)	0.009	0.008	2.0	0.65	8%	178 mm	Low Point CB
53_(CB)	0.032	0.032	5.0	1.63	19%	127 mm	Low Point CB
54_(CB)	0.032	0.032	5.0	1.63	19%	127 mm	Low Point CB
55_(CB)	0.033	0.033	5.0	1.63	19%	127 mm	Low Point CB
57_(CB)	0.035	0.035	4.0	1.31	15%	127 mm	Double Low Point CB

[(1)]Total travel lane width assumed to be 8.5 m (minimum road width in subdivision)

Table D-7: Ponding at Major Low Points for the 100-Year Chicago Storm & 100-Year Chicago Storm +20% [(1)]

Catch Basin ID	Total Depth [(1)]		Water Surface Elevation [(1)]	
	100 Year 3 Hr Chi (m)	100 Year 3 Hr Chi+20% (m)	100 Year 3 Hr Chi (m)	100 Year 3 Hr Chi+20% (m)
02_(CB)	0.16	0.20	87.58	87.62
03_(CB)	0.16	0.20	87.58	87.62
04_(CB)	0.15	0.17	87.62	87.64
05_(CB)	0.15	0.17	87.62	87.64
06_(CB)	0.03	0.03	87.52	87.52
08_(CB)	0.16	0.23	87.57	87.64
09_(CB)	0.16	0.23	87.57	87.64
10_(CB)	0.28	0.32	87.82	87.86
11_(CB)	0.28	0.32	87.82	87.86
12_(CB)	0.21	0.24	87.83	87.86
13_(CB)	0.21	0.24	87.83	87.86
14_(CB)	0.20	0.23	88.19	88.22
15_(CB)	0.20	0.23	88.19	88.22
16_(CB)	0.17	0.22	88.32	88.37
17_(CB)	0.17	0.22	88.32	88.37
18_(CB)	0.22	0.31	88.47	88.56
19_(CB)	0.22	0.31	88.47	88.56
20_(CB)	0.20	0.25	88.81	88.85
21_(CB)	0.20	0.25	88.81	88.85
23_(CB)	0.14	0.19	89.05	89.10
24_(CB)	0.14	0.19	89.05	89.10
25_(CB)	0.02	0.03	89.41	89.41
26_(CB)	0.02	0.03	89.41	89.41
27_(CB)	0.22	0.27	88.81	88.87
28_(CB)	0.22	0.27	88.81	88.87
30_(CB)	0.10	0.12	89.17	89.19
31_(CB)	0.10	0.12	89.17	89.19
32_(CB)	0.21	0.24	89.69	89.72
33_(CB)	0.21	0.24	89.69	89.72
34_(CB)	0.18	0.23	89.60	89.65
35_(CB)	0.18	0.23	89.60	89.65
36_(CB)	0.14	0.15	89.92	89.93
37_(CB)	0.14	0.15	89.92	89.93
40_(CB)	0.20	0.23	90.30	90.32
41_(CB)	0.20	0.23	90.30	90.32
42_(CB)	0.18	0.22	90.46	90.49
43_(CB)	0.18	0.22	90.46	90.49
44_(CB)	0.15	0.18	89.07	89.10
45_(CB)	0.15	0.18	89.07	89.10
46_(CB)	0.18	0.20	89.06	89.08
47_(CB)	0.18	0.20	89.06	89.08
48_(CB)	0.20	0.23	88.59	88.63
49_(CB)	0.20	0.23	88.59	88.63
50_(CB)	0.17	0.21	88.06	88.09
51_(CB)	0.17	0.21	88.06	88.09
52_(CB)	0.07	0.08	89.91	89.92
53_(CB)	0.19	0.24	89.85	89.91
54_(CB)	0.19	0.24	89.85	89.91
55_(CB)	0.17	0.27	87.42	87.52
57_(CB)	0.27	0.34	87.43	87.50

[(1)] As per PCSWMM models for the 100-year, 3-hour Chicago storm and the 100-year, 3-hour Chicago storm + 20%.

Table D-8: Major System Flow Depths 100-Year 3-Hour Chicago Peak Flow

Link Name	Transect	Max Velocity (m/s)	Max/Full Depth (m)	Depth x Velocity x 0.6m (m²/s)
C1	18mROW-No-Sidewalk	0.170	0.24	0.02
C1_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C1_2	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C10	18mROWwSidewalk	0.000	0.12	0.00
C11	18mROWwSidewalk	0.000	0.15	0.00
C12	18mROW-No-Sidewalk	0.470	0.10	0.03
C13	18mROW-No-Sidewalk	0.090	0.20	0.01
C14	18mROW-No-Sidewalk	0.000	0.16	0.00
C15	18mROWwSidewalk	0.020	0.17	0.00
C16	18mROW-No-Sidewalk	0.000	0.17	0.00
C17	18mROW-No-Sidewalk	0.100	0.20	0.01
C18_2	18mROW-No-Sidewalk	0.000	0.00	0.00
C18_3	18mROWwSidewalk	0.190	0.09	0.01
C18_4	18mROWwSidewalk	0.180	0.11	0.01
C18_5	24mROW-Dbl-Sidewalk	0.720	0.06	0.03
C18_6	24mROW-Dbl-Sidewalk	0.550	0.05	0.02
C18_7	18mROW-No-Sidewalk	0.000	0.01	0.00
C18_8	24mROW-Dbl-Sidewalk	0.000	0.00	0.00
C18_9	24mROW-Dbl-Sidewalk	0.000	0.03	0.00
C19	18mROW-No-Sidewalk	0.510	0.05	0.02
C2	18mROW-No-Sidewalk	0.000	0.22	0.00
C2_1	18mROW-Dbl-Sidewalk	0.000	0.03	0.00
C2_2	18mROW-Dbl-Sidewalk	0.050	0.19	0.01
C20	24mROW-Dbl-Sidewalk	0.060	0.09	0.00
C21	24mROW-Dbl-Sidewalk	0.820	0.24	0.12
C22	24mROW-Dbl-Sidewalk	0.000	0.18	0.00
C23	18mROW-No-Sidewalk	0.280	0.15	0.03
C24	18mROW-No-Sidewalk	0.000	0.12	0.00
C25	18mROW-No-Sidewalk	0.000	0.17	0.00
C26	18mROW-No-Sidewalk	0.000	0.17	0.00
C27_1	18mROW-No-Sidewalk	0.000	0.00	0.00
C27_2	18mROW-No-Sidewalk	0.000	0.18	0.00
C28	18mROW-No-Sidewalk	0.000	0.18	0.00
C29	18mROW-No-Sidewalk	0.000	0.13	0.00
C3	18mROW-Dbl-Sidewalk	0.000	0.15	0.00
C30	18mROW-No-Sidewalk	0.040	0.13	0.00
C32	18mROW-No-Sidewalk	0.010	0.16	0.00
C33	18mROW-No-Sidewalk	0.100	0.18	0.01
C34	18mROW-No-Sidewalk	0.040	0.19	0.00
C35	18mROW-No-Sidewalk	0.000	0.16	0.00
C36	18mROW-No-Sidewalk	0.000	0.14	0.00
C37	18mROW-No-Sidewalk	0.000	0.14	0.00
C38	18mROW-No-Sidewalk	0.000	0.15	0.00
C39	18mROW-No-Sidewalk	0.000	0.15	0.00
C4_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C4_2	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C40	18mROW-No-Sidewalk	0.000	0.24	0.00
C41	18mROW-No-Sidewalk	0.010	0.24	0.00
C42	18mROW-No-Sidewalk	0.090	0.19	0.01
C43	18mROW-No-Sidewalk	0.000	0.18	0.00
C44	18mROW-No-Sidewalk	0.000	0.00	0.00
C45	18mROW-No-Sidewalk	0.000	0.00	0.00
C46	18mROW-No-Sidewalk	0.000	0.17	0.00
C47	18mROW-No-Sidewalk	0.010	0.17	0.00
C48	18mROW-No-Sidewalk	0.050	0.15	0.00

Table D-8: Major System Flow Depths 100-Year 3-Hour Chicago Peak Flow

Link Name	Transect	Max Velocity (m/s)	Max/Full Depth (m)	Depth x Velocity x 0.6m (m^2/s)
C49	18mROW-No-Sidewalk	0.040	0.16	0.00
C5_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C5_2	18mROW-Dbl-Sidewalk	0.000	0.06	0.00
C50_1	18mROWwSidewalk	0.000	0.00	0.00
C50_3	18mROWwSidewalk	0.010	0.02	0.00
C50_4	18mROWwSidewalk	0.450	0.04	0.01
C51	18mROWwSidewalk	0.090	0.15	0.01
C52	18mROWwSidewalk	0.030	0.14	0.00
C53	18mROWwSidewalk	0.040	0.14	0.00
C54	18mROWwSidewalk	0.000	0.13	0.00
C55	18mROW-No-Sidewalk	0.050	0.16	0.00
C57	18mROW-No-Sidewalk	0.070	0.16	0.01
C6_1	18mROW-Dbl-Sidewalk	0.060	0.19	0.01
C6_2	18mROW-Dbl-Sidewalk	0.080	0.23	0.01
C7	18mROW-Dbl-Sidewalk	0.560	0.03	0.01
C8	18mROW-Dbl-Sidewalk	0.140	0.06	0.01
C9	18mROWwSidewalk	0.140	0.17	0.01
	Max	**0.82**	**0.24**	**0.12**

Note: Depth and velocity calculated by PCSWMM model.

Table D-9: Major System Flow Depths 100-Year 3 Hour Chicago + 20% Peak Flow

Link Name	Transect	Max Velocity (m/s)	Max/Full Depth (m)	Depth x Velocity x 0.6m (m^2/s)
C1	18mROW-No-Sidewalk	0.180	0.30	0.03
C1_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C1_2	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C10	18mROWwSidewalk	0.000	0.13	0.00
C11	18mROWwSidewalk	0.000	0.19	0.00
C12	18mROW-No-Sidewalk	0.540	0.13	0.04
C13	18mROW-No-Sidewalk	0.100	0.28	0.02
C14	18mROW-No-Sidewalk	0.000	0.20	0.00
C15	18mROWwSidewalk	0.040	0.23	0.01
C16	18mROW-No-Sidewalk	0.000	0.20	0.00
C17	18mROW-No-Sidewalk	0.160	0.24	0.02
C18_2	18mROW-No-Sidewalk	0.000	0.00	0.00
C18_3	18mROWwSidewalk	0.310	0.13	0.02
C18_4	18mROWwSidewalk	0.180	0.13	0.01
C18_5	24mROW-Dbl-Sidewalk	0.750	0.07	0.03
C18_6	24mROW-Dbl-Sidewalk	0.580	0.06	0.02
C18_7	18mROW-No-Sidewalk	0.000	0.03	0.00
C18_8	24mROW-Dbl-Sidewalk	0.000	0.00	0.00
C18_9	24mROW-Dbl-Sidewalk	0.000	0.03	0.00
C19	18mROW-No-Sidewalk	0.540	0.06	0.02
C2	18mROW-No-Sidewalk	0.000	0.28	0.00
C2_1	18mROW-Dbl-Sidewalk	0.000	0.07	0.00
C2_2	18mROW-Dbl-Sidewalk	0.060	0.25	0.01
C20	24mROW-Dbl-Sidewalk	0.070	0.10	0.00
C21	24mROW-Dbl-Sidewalk	0.840	0.29	0.15
C22	24mROW-Dbl-Sidewalk	0.210	0.25	0.03
C23	18mROW-No-Sidewalk	0.280	0.19	0.03
C24	18mROW-No-Sidewalk	0.000	0.16	0.00
C25	18mROW-No-Sidewalk	0.000	0.20	0.00
C26	18mROW-No-Sidewalk	0.010	0.21	0.00
C27_1	18mROW-No-Sidewalk	0.070	0.01	0.00
C27_2	18mROW-No-Sidewalk	0.020	0.26	0.00
C28	18mROW-No-Sidewalk	0.020	0.28	0.00
C29	18mROW-No-Sidewalk	0.000	0.15	0.00
C3	18mROW-Dbl-Sidewalk	0.000	0.19	0.00
C30	18mROW-No-Sidewalk	0.090	0.18	0.01
C32	18mROW-No-Sidewalk	0.030	0.19	0.00
C33	18mROW-No-Sidewalk	0.120	0.21	0.02
C34	18mROW-No-Sidewalk	0.070	0.23	0.01
C35	18mROW-No-Sidewalk	0.110	0.22	0.01
C36	18mROW-No-Sidewalk	0.030	0.21	0.00
C37	18mROW-No-Sidewalk	0.000	0.18	0.00
C38	18mROW-No-Sidewalk	0.000	0.17	0.00
C39	18mROW-No-Sidewalk	0.080	0.19	0.01
C4_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C4_2	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C40	18mROW-No-Sidewalk	0.020	0.28	0.00
C41	18mROW-No-Sidewalk	0.070	0.31	0.01
C42	18mROW-No-Sidewalk	0.130	0.24	0.02
C43	18mROW-No-Sidewalk	0.030	0.22	0.00
C44	18mROW-No-Sidewalk	0.890	0.04	0.02
C45	18mROW-No-Sidewalk	0.490	0.06	0.02
C46	18mROW-No-Sidewalk	0.000	0.19	0.00
C47	18mROW-No-Sidewalk	0.060	0.22	0.01
C48	18mROW-No-Sidewalk	0.060	0.23	0.01

Table D-9: Major System Flow Depths 100-Year 3 Hour Chicago + 20% Peak Flow

Link Name	Transect	Max Velocity (m/s)	Max/Full Depth (m)	Depth x Velocity x 0.6m (m^2/s)
C49	18mROW-No-Sidewalk	0.090	0.23	0.01
C5_1	18mROW-Dbl-Sidewalk	0.000	0.00	0.00
C5_2	18mROW-Dbl-Sidewalk	0.000	0.08	0.00
C50_1	18mROWwSidewalk	0.150	0.04	0.00
C50_3	18mROWwSidewalk	0.360	0.05	0.01
C50_4	18mROWwSidewalk	0.490	0.07	0.02
C51	18mROWwSidewalk	0.130	0.18	0.01
C52	18mROWwSidewalk	0.030	0.15	0.00
C53	18mROWwSidewalk	0.040	0.18	0.00
C54	18mROWwSidewalk	0.000	0.16	0.00
C55	18mROW-No-Sidewalk	0.080	0.26	0.01
C57	18mROW-No-Sidewalk	0.070	0.24	0.01
C6_1	18mROW-Dbl-Sidewalk	0.080	0.23	0.01
C6_2	18mROW-Dbl-Sidewalk	0.100	0.27	0.02
C7	18mROW-Dbl-Sidewalk	0.700	0.08	0.03
C8	18mROW-Dbl-Sidewalk	0.350	0.10	0.02
C9	18mROWwSidewalk	0.160	0.19	0.02
	Max	**0.89**	**0.31**	**0.15**

Note: Depth and velocity calculated by PCSWMM model.

Table D-10: Rear Yard Ponding Depths for the 100-Year Chicago Storm

Catch Basin ID	Depth (m)	Catch Basin ID	Depth (cm)
1_(RYCB)	0.00	Structure_-_(18)_(RYCB)	0.00
22_(RYCB)	0.00	TEE_1_(RYCB)	0.20
29_(RYCB)	0.00	TEE_10_(RYCB)	0.00
38_(RYCB)	0.00	TEE_11_(RYCB)	0.00
39_(RYCB)	0.00	TEE_12_(RYCB)	0.25
ELB_1_(RYCB)	0.00	TEE_13_(RYCB)	0.14
ELB_10_(RYCB)	0.01	TEE_14_(RYCB)	0.00
ELB_11_(RYCB)	0.05	TEE_15_(RYCB)	0.00
ELB_12_(RYCB)	0.01	TEE_16_(RYCB)	0.00
ELB_13_(RYCB)	0.01	TEE_17_(RYCB)	0.00
ELB_14_(RYCB)	0.00	TEE_18_(RYCB)	0.00
ELB_15_(RYCB)	0.01	TEE_19_(RYCB)	0.02
ELB_16_(RYCB)	0.03	TEE_2_(RYCB)	0.16
ELB_17_(RYCB)	0.00	TEE_20_(RYCB)	0.11
ELB_18_(RYCB)	0.03	TEE_21_(RYCB)	0.12
ELB_19_(RYCB)	0.09	TEE_22_(RYCB)	0.00
ELB_2_(RYCB)	0.18	TEE_23_(RYCB)	0.09
ELB_21_(RYCB)	0.00	TEE_24_(RYCB)	0.00
ELB_22_(RYCB)	0.02	TEE_25_(RYCB)	0.00
ELB_23_(RYCB)	0.21	TEE_26_(RYCB)	0.19
ELB_24_(RYCB)	0.00	TEE_27_(RYCB)	0.27
ELB_25_(RYCB)	0.00	TEE_28_(RYCB)	0.02
ELB_3_(RYCB)	0.08	TEE_29_(RYCB)	0.01
ELB_4_(RYCB)	0.13	TEE_3_(RYCB)	0.00
ELB_5_(RYCB)	0.00	TEE_30_(RYCB)	0.04
ELB_7_(RYCB)	0.04	TEE_31_(RYCB)	0.12
ELB_8_(RYCB)	0.00	TEE_32_(RYCB)	0.04
ELB_9_(RYCB)	0.09	TEE_33_(RYCB)	0.00
RYCB_1_(RYCB)	0.22	TEE_34_(RYCB)	0.13
RYCB_10_(RYCB)	0.00	TEE_35_(RYCB)	0.02
RYCB_11_(RYCB)	0.00	TEE_36_(RYCB)	0.00
RYCB_12_(RYCB)	0.21	TEE_37_(RYCB)	0.00
RYCB_13_(RYCB)	0.00	TEE_38_(RYCB)	0.00
RYCB_14_(RYCB)	0.00	TEE_39_(RYCB)	0.02
RYCB_15_(RYCB)	0.00	TEE_4_(RYCB)	0.00
RYCB_18_(RYCB)	0.00	TEE_40_(RYCB)	0.00
RYCB_2_(RYCB)	0.30	TEE_41_(RYCB)	0.00
RYCB_3_(RYCB)	0.00	TEE_42_(RYCB)	0.00
RYCB_4_(RYCB)	0.22	TEE_43_(RYCB)	0.00
RYCB_5_(RYCB)	0.00	TEE_44_(RYCB)	0.00
RYCB_6_(RYCB)	0.00	TEE_5_(RYCB)	0.00
RYCB_7_(RYCB)	0.00	TEE_6_(RYCB)	0.05
RYCB_8_(RYCB)	0.28	TEE_7_(RYCB)	0.24
RYCB_9_(RYCB)	0.08	TEE_8_(RYCB)	0.23
StartNullStruct2	0.00	TEE_9_(RYCB)	0.17

Note: Depth calculated as per PCSWMM model

Table D-11: Rational Method Calculations

Name	CB	Area (ha)	Imperv. (%)	C	Tc (mins)	Minor System Capture	Intensity (mm/hr)	Design Flow - Calculated (1) (L/s)	Design Flow - PCSWMM (2) (L/s)	Difference (1) - (2) (L/s)	Theortical Minimum ICD	Applied ICD Size
A45ii	02_(CB)	0.075	71.4	0.70	10	2-Year	76.81	11	10	1	0.083	0.094
B4ii	02_(CB)	0.047	28.6	0.40	10	2-Year	76.81	4	0	4	0.083	0.094
A45i	03_(CB)	0.168	71.4	0.70	10	2-Year	76.81	25	30	-5	0.102	0.102
A46ii	04_(CB)	0.136	71.4	0.70	10	2-Year	76.81	20	20	0	0.094	0.094
B4iii	04_(CB)	0.008	28.6	0.40	10	2-Year	76.81	1	0	1	0.094	0.094
A46i	05_(CB)	0.157	71.4	0.70	10	2-Year	76.81	23	20	3	0.094	0.094
A50	06_(CB)	0.066	71.4	0.70	10	2-Year	76.81	10	10	0	0.083	0.127
A42i	08_(CB)	0.146	71.4	0.70	10	2-Year	76.81	22	20	2	0.094	0.102
A42ii	09_(CB)	0.083	71.4	0.70	10	2-Year	76.81	12	10	2	0.083	0.094
A39i	10_(CB)	0.214	71.4	0.70	10	2-Year	76.81	32	30	2	0.108	0.108
A39ii	11_(CB)	0.074	71.4	0.70	10	2-Year	76.81	11	10	1	0.083	0.127
A34ii	12_(CB)	0.276	71.4	0.70	10	2-Year	76.81	41	40	1	0.127	0.127
A34i	13_(CB)	0.212	71.4	0.70	10	2-Year	76.81	32	30	2	0.108	0.127
A33i	14_(CB)	0.110	71.4	0.70	10	2-Year	76.81	16	20	-4	0.083	0.094
A33ii	15_(CB)	0.157	71.4	0.70	10	2-Year	76.81	23	20	3	0.094	0.094
A32ii	16_(CB)	0.082	71.4	0.70	10	2-Year	76.81	12	10	2	0.083	0.083
A32i	17_(CB)	0.155	71.4	0.70	10	2-Year	76.81	23	20	3	0.094	0.094
A24i	18_(CB)	0.110	71.4	0.70	10	2-Year	76.81	16	20	-4	0.083	0.152
A24ii	19_(CB)	0.237	71.4	0.70	10	2-Year	76.81	35	40	-5	0.127	0.152
A20ii	20_(CB)	0.206	71.4	0.70	10	2-Year	76.81	31	30	1	0.108	0.108
A20i	21_(CB)	0.195	71.4	0.70	10	2-Year	76.81	29	30	-1	0.102	0.108
A18i	23_(CB)	0.189	71.4	0.70	10	5-Year	104.19	38	40	-2	0.127	0.127
A17ii	24_(CB)	0.093	71.4	0.70	10	5-Year	104.19	19	20	-1	0.083	0.127
A16ii	25_(CB)	0.067	71.4	0.70	10	5-Year	104.19	14	10	4	0.083	0.250
A16i	26_(CB)	0.060	71.4	0.70	10	5-Year	104.19	12	10	2	0.083	0.250
A15ii	27_(CB)	0.274	71.4	0.70	10	5-Year	104.19	56	60	-4	0.152	0.152
A15i	28_(CB)	0.248	71.4	0.70	10	5-Year	104.19	50	60	-10	0.152	0.152
A12i	30_(CB)	0.194	71.4	0.70	10	5-Year	104.19	39	40	-1	0.127	0.200
A12ii	31_(CB)	0.090	71.4	0.70	10	5-Year	104.19	18	20	-2	0.083	0.200
A9i	32_(CB)	0.188	71.4	0.70	10	2-Year	76.81	28	30	-2	0.102	0.127
A9ii	33_(CB)	0.067	71.4	0.70	10	2-Year	76.81	10	10	0	0.083	0.152
A7ii	34_(CB)	0.282	71.4	0.70	10	2-Year	76.81	42	40	2	0.127	0.127
A7i	35_(CB)	0.228	71.4	0.70	10	2-Year	76.81	34	30	4	0.127	0.127
A5i	36_(CB)	0.102	71.4	0.70	10	2-Year	76.81	15	20	-5	0.083	0.108
A5ii	37_(CB)	0.260	71.4	0.70	10	2-Year	76.81	39	40	-1	0.127	0.127
A2i	40_(CB)	0.120	71.4	0.70	10	2-Year	76.81	18	20	-2	0.102	0.127
B3ii	40_(CB)	0.046	85.7	0.80	10	2-Year	76.81	8	10	-2	0.102	0.127
A2ii	41_(CB)	0.118	71.4	0.70	10	2-Year	76.81	18	20	-2	0.127	0.127
B1ii	41_(CB)	0.123	85.7	0.80	10	2-Year	76.81	21	20	1	0.127	0.127
A1i	42_(CB)	0.157	71.4	0.70	10	2-Year	76.81	23	20	3	0.094	0.102
A1ii	43_(CB)	0.202	71.4	0.70	10	2-Year	76.81	30	30	0	0.108	0.108
A26ii	44_(CB)	0.172	71.4	0.70	10	2-Year	76.81	26	30	-4	0.102	0.102
A26i	45_(CB)	0.060	71.4	0.70	10	2-Year	76.81	9	10	-1	0.083	0.083
A27ii	46_(CB)	0.181	71.4	0.70	10	2-Year	76.81	27	30	-3	0.102	0.102
A27i	47_(CB)	0.088	71.4	0.70	10	2-Year	76.81	13	10	3	0.083	0.094
A28ii	48_(CB)	0.142	71.4	0.70	10	2-Year	76.81	21	20	1	0.094	0.094
A28i	49_(CB)	0.143	71.4	0.70	10	2-Year	76.81	21	20	1	0.094	0.094
A35ii	50_(CB)	0.203	71.4	0.70	10	2-Year	76.81	30	30	0	0.108	0.127
A35i	51_(CB)	0.228	71.4	0.70	10	2-Year	76.81	34	30	4	0.127	0.127
A4	52_(CB)	0.092	71.4	0.70	10	2-Year	76.81	14	10	4	0.083	0.178
A8i	53_(CB)	0.220	71.4	0.70	10	2-Year	76.81	33	30	3	0.108	0.127
A8ii	54_(CB)	0.190	71.4	0.70	10	2-Year	76.81	28	30	-2	0.102	0.127
A48	55_(CB)	0.205	71.4	0.70	10	2-Year	76.81	31	30	1	0.108	0.127
A51	57_(CB)	0.186	71.4	0.70	10	2-Year	76.81	28	30	-2	0.102	0.127
A49	RYCB-01	0.074	50	0.55	10	2-Year	76.81	9	10	-1	0.083	0.127
A43	RYCB-02	0.236	50	0.55	10	2-Year	76.81	28	10	18	0.083	0.127
A44	RYCB-03	0.199	50	0.55	10	2-Year	76.81	23	10	13	0.083	0.152
A47	RYCB-04	0.136	50	0.55	10	2-Year	76.81	16	10	6	0.083	0.152
A21	RYCB-07	0.325	50	0.55	10	2-Year	76.81	38	20	18	-	-
A23	RYCB-10	0.169	50	0.55	10	2-Year	76.81	20	10	10	0.083	0.178
A14	RYCB-10	0.319	42.9	0.50	10	2-Year	76.81	34	10	24	0.083	0.178
A36	RYCB-18	0.294	50	0.55	10	2-Year	76.81	35	20	15	-	-
A38	RYCB-18	0.239	50	0.55	10	2-Year	76.81	28	20	8	-	-
A19	RYCB-22	0.190	42.9	0.50	10	2-Year	76.81	20	10	10	0.083	0.152
A17	RYCB-29	0.091	42.9	0.50	10	2-Year	76.81	10	10	0	0.083	0.152
A6	RYCB-38	0.131	42.9	0.50	10	2-Year	76.81	14	10	4	0.083	0.152
A3	RYCB-39	0.154	42.9	0.50	10	2-Year	76.81	16	10	6	0.083	0.152

Notes: All applied ICD sizes are equal or greater than the theoretically calculated ICD sizes.
-RYCB-06 is not included because it was designed for the 100-year level of service and therefore does not require an ICD,
-RYCB-07 and RYCB-18 are both direct STM connections and therefore do not require ICD's.

Table D-12: Time Series for Downstream Boundary Condition at STM-111

Time	Depth (m)								
	2-Yr 3-Hr Chicago	5-Yr 3-Hr Chicago	10-Yr 3-Hr Chicago	100-Yr 3-Hr Chicago	100-Yr 24-Hr SCS	100-Yr 3-Hr Chi + 20%	4-Aug-88	8-Aug-96	1-Jul-79
0:00	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:05	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:10	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:15	80.57	80.57	80.57	80.57	80.57	80.58	80.57	80.64	80.57
0:20	80.57	80.57	80.57	80.60	80.57	80.63	80.57	80.75	80.58
0:25	80.57	80.58	80.59	80.66	80.57	80.70	80.57	80.84	80.62
0:30	80.58	80.62	80.64	80.72	80.57	80.78	80.78	80.97	80.68
0:35	80.61	80.67	80.70	80.79	80.57	80.94	81.04	80.95	80.81
0:40	80.66	80.73	80.78	80.87	80.57	81.05	81.42	80.89	81.02
0:45	80.73	80.86	80.94	80.96	80.57	81.15	81.36	80.87	81.28
0:50	80.87	81.02	81.07	81.07	80.57	81.29	81.28	80.89	81.39
0:55	81.10	81.22	81.28	81.22	80.57	81.52	81.17	81.00	81.42
1:00	81.37	81.52	81.60	81.39	80.57	81.80	81.03	81.06	81.44
1:05	81.64	81.85	81.90	81.51	80.57	82.06	80.96	81.06	81.45
1:10	81.61	81.88	81.98	81.56	80.57	82.26	80.98	81.02	81.48
1:15	81.45	81.72	81.86	81.60	80.57	82.29	81.13	81.04	81.54
1:20	81.32	81.52	81.72	81.72	80.57	82.42	81.25	81.25	81.63
1:25	81.21	81.39	81.63	81.91	80.57	82.53	81.28	81.59	81.75
1:30	81.14	81.36	81.57	82.12	80.58	82.62	81.30	81.82	81.91
1:35	81.10	81.40	81.69	82.31	80.59	82.84	81.56	81.95	82.05
1:40	81.09	81.48	81.75	82.44	80.60	82.92	81.78	81.89	82.22
1:45	81.11	81.54	81.86	82.50	80.61	83.07	81.78	81.71	82.41
1:50	81.14	81.61	81.90	82.57	80.62	83.06	81.81	81.61	82.59
1:55	81.18	81.66	81.97	82.63	80.63	83.09	81.96	81.68	82.74
2:00	81.21	81.70	81.99	82.69	80.64	83.10	82.18	81.77	82.90
2:05	81.25	81.74	82.04	82.71	80.67	83.15	82.48	81.85	83.01
2:10	81.27	81.77	82.05	82.74	80.71	83.15	82.71	81.90	83.02
2:15	81.30	81.80	82.09	82.76	80.72	83.17	82.75	81.94	83.03
2:20	81.32	81.82	82.10	82.78	80.73	83.16	82.75	81.97	83.08
2:25	81.34	81.84	82.13	82.79	80.73	83.18	82.77	81.99	83.11
2:30	81.36	81.86	82.13	82.80	80.73	83.16	82.81	82.00	83.12
2:35	81.38	81.88	82.16	82.80	80.74	83.17	82.87	82.02	83.12
2:40	81.39	81.89	82.16	82.81	80.74	83.15	82.89	82.03	83.12
2:45	81.41	81.90	82.18	82.81	80.74	83.16	82.88	82.04	83.12
2:50	81.42	81.92	82.18	82.81	80.74	83.14	82.88	82.05	83.11
2:55	81.43	81.93	82.20	82.81	80.74	83.14	82.89	82.07	83.10
3:00	81.44	81.94	82.20	82.82	80.74	83.12	82.89	82.16	83.09
3:05	81.45	81.94	82.22	82.81	80.74	83.12	82.90	82.34	83.08
3:10	81.46	81.95	82.22	82.81	80.74	83.10	82.90	82.47	83.07
3:15	81.47	81.96	82.23	82.81	80.74	83.09	82.92	82.58	83.06
3:20	81.48	81.97	82.23	82.81	80.74	83.09	82.92	82.66	83.05
3:25	81.49	81.97	82.23	82.80	80.74	83.07	82.90	82.67	83.03
3:30	81.49	81.98	82.23	82.79	80.74	83.05	82.90	82.69	83.02
3:35	81.50	81.98	82.24	82.79	80.74	83.04	82.91	82.73	83.00
3:40	81.50	81.98	82.24	82.78	80.74	83.03	82.90	82.76	82.99
3:45	81.51	81.98	82.24	82.77	80.74	83.01	82.88	82.79	82.97
3:50	81.51	81.99	82.24	82.76	80.74	82.99	82.87	82.80	82.96
3:55	81.52	81.98	82.24	82.76	80.74	82.98	82.88	82.81	82.94
4:00	81.52	81.99	82.24	82.75	80.74	82.97	82.86	82.81	82.93
4:05	81.52	81.99	82.24	82.74	80.74	82.96	82.85	82.81	82.92
4:10	81.52	81.99	82.24	82.73	80.74	82.94	82.84	82.81	82.90
4:15	81.53	81.99	82.24	82.73	80.74	82.93	82.83	82.81	82.89
4:20	81.53	81.99	82.24	82.72	80.74	82.92	82.82	82.81	82.88
4:25	81.53	81.99	82.24	82.71	80.75	82.91	82.81	82.80	82.86
4:30	81.53	81.99	82.23	82.70	80.75	82.90	82.80	82.80	82.85
4:35	81.53	81.99	82.24	82.70	80.75	82.89	82.79	82.79	82.84
4:40	81.53	81.99	82.23	82.69	80.75	82.88	82.78	82.78	82.83
4:45	81.53	81.98	82.23	82.69	80.76	82.87	82.77	82.77	82.82
4:50	81.53	81.99	82.23	82.68	80.76	82.85	82.76	82.77	82.81
4:55	81.53	81.98	82.23	82.67	80.76	82.85	82.76	82.76	82.79
5:00	81.53	81.99	82.22	82.67	80.76	82.84	82.74	82.75	82.78
5:05	81.53	81.98	82.22	82.66	80.76	82.83	82.74	82.74	82.77
5:10	81.53	81.98	82.22	82.65	80.76	82.82	82.74	82.73	82.76
5:15	81.53	81.98	82.22	82.65	80.76	82.81	82.74	82.73	82.75
5:20	81.53	81.98	82.22	82.64	80.76	82.80	82.73	82.72	82.74
5:25	81.53	81.98	82.22	82.64	80.76	82.79	82.73	82.71	82.74
5:30	81.53	81.98	82.21	82.63	80.76	82.78	82.73	82.70	82.73
5:35	81.53	81.97	82.21	82.62	80.76	82.77	82.73	82.69	82.72
5:40	81.53	81.98	82.21	82.62	80.76	82.77	82.72	82.68	82.71
5:45	81.53	81.97	82.21	82.62	80.76	82.76	82.72	82.67	82.70
5:50	81.53	81.97	82.20	82.61	80.76	82.75	82.72	82.67	82.69
5:55	81.53	81.97	82.20	82.60	80.76	82.74	82.71	82.66	82.68
6:00	81.53	81.97	82.20	82.60	80.76	82.74	82.70	82.65	82.67
6:05	81.53	81.96	82.20	82.60	80.76	82.73	82.70	82.64	82.67

6:10	81.53	81.97	82.20	82.59	80.76	82.72	82.69	82.63	82.66
6:15	81.53	81.96	82.19	82.59	80.76	82.71	82.69	82.63	82.65
6:20	81.53	81.96	82.19	82.58	80.76	82.71	82.68	82.62	82.64
6:25	81.52	81.96	82.19	82.58	80.76	82.70	82.67	82.61	82.64
6:30	81.52	81.96	82.19	82.57	80.76	82.69	82.67	82.60	82.63
6:35	81.52	81.96	82.19	82.57	80.76	82.69	82.66	82.60	82.63
6:40	81.52	81.96	82.18	82.56	80.77	82.68	82.65	82.59	82.62
6:45	81.52	81.95	82.18	82.56	80.77	82.68	82.64	82.58	82.61
6:50	81.52	81.95	82.18	82.56	80.77	82.67	82.64	82.58	82.60
6:55	81.52	81.95	82.18	82.55	80.77	82.66	82.63	82.57	82.60
7:00	81.52	81.95	82.18	82.55	80.77	82.66	82.63	82.56	82.59
7:05	81.52	81.94	82.17	82.54	80.77	82.65	82.62	82.56	82.59
7:10	81.51	81.95	82.17	82.54	80.77	82.65	82.61	82.55	82.58
7:15	81.51	81.94	82.17	82.54	80.77	82.64	82.61	82.54	82.58
7:20	81.51	81.94	82.17	82.53	80.77	82.64	82.60	82.54	82.57
7:25	81.51	81.94	82.17	82.53	80.78	82.63	82.60	82.53	82.56
7:30	81.51	81.94	82.16	82.53	80.78	82.63	82.59	82.53	82.56
7:35	81.51	81.93	82.16	82.52	80.78	82.62	82.59	82.52	82.55
7:40	81.51	81.93	82.16	82.52	80.78	82.62	82.58	82.52	82.55
7:45	81.51	81.93	82.16	82.52	80.78	82.62	82.57	82.51	82.54
7:50	81.51	81.93	82.15	82.51	80.78	82.61	82.57	82.50	82.54
7:55	81.50	81.93	82.15	82.51	80.78	82.61	82.57	82.50	82.53
8:00	81.50	81.93	82.15	82.51	80.78	82.60	82.56	82.49	82.53
8:05	81.50	81.92	82.15	82.50	80.79	82.60	82.56	82.49	82.52
8:10	81.50	81.92	82.15	82.50	80.79	82.59	82.55	82.48	82.52
8:15	81.50	81.92	82.15	82.50	80.79	82.59	82.55	82.48	82.51
8:20	81.50	81.92	82.14	82.50	80.79	82.58	82.54	82.47	82.51
8:25	81.50	81.92	82.14	82.49	80.80	82.58	82.54	82.47	82.51
8:30	81.50	81.92	82.14	82.49	80.80	82.58	82.53	82.46	82.50
8:35	81.49	81.91	82.14	82.49	80.80	82.57	82.53	82.46	82.50
8:40	81.49	81.91	82.13	82.48	80.80	82.57	82.52	82.45	82.49
8:45	81.49	81.91	82.13	82.48	80.80	82.57	82.52	82.45	82.49
8:50	81.49	81.91	82.13	82.48	80.81	82.56	82.51	82.44	82.48
8:55	81.49	81.91	82.13	82.47	80.81	82.56	82.51	82.44	82.48
9:00	81.49	81.91	82.13	82.47	80.81	82.56	82.51	82.43	82.48
9:05	81.49	81.90	82.12	82.47	80.81	82.55	82.51	82.43	82.47
9:10	81.48	81.90	82.12	82.47	80.81	82.55	82.50	82.42	82.47
9:15	81.48	81.90	82.12	82.46	80.81	82.55	82.50	82.42	82.47
9:20	81.48	81.90	82.12	82.46	80.82	82.54	82.49	82.42	82.46
9:25	81.48	81.90	82.12	82.46	80.82	82.54	82.49	82.41	82.46
9:30	81.48	81.90	82.11	82.46	80.82	82.54	82.48	82.41	82.45
9:35	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.40	82.45
9:40	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.40	82.45
9:45	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.39	82.44
9:50	81.47	81.89	82.11	82.45	80.84	82.52	82.47	82.39	82.44
9:55	81.47	81.89	82.10	82.44	80.84	82.52	82.47	82.39	82.44
10:00	81.47	81.88	82.10	82.44	80.84	82.52	82.46	82.38	82.43
10:05	81.47	81.88	82.10	82.44	80.85	82.52	82.46	82.38	82.43
10:10	81.47	81.88	82.10	82.44	80.85	82.51	82.46	82.37	82.43
10:15	81.47	81.88	82.10	82.44	80.86	82.51	82.46	82.37	82.42
10:20	81.47	81.88	82.09	82.43	80.87	82.51	82.45	82.37	82.42
10:25	81.46	81.88	82.09	82.43	80.88	82.51	82.45	82.36	82.42
10:30	81.46	81.88	82.09	82.43	80.88	82.50	82.45	82.36	82.41
10:35	81.46	81.87	82.09	82.43	80.89	82.50	82.44	82.35	82.41
10:40	81.46	81.87	82.09	82.43	80.90	82.50	82.44	82.35	82.41
10:45	81.46	81.87	82.09	82.42	80.91	82.50	82.44	82.35	82.41
10:50	81.46	81.87	82.08	82.42	80.93	82.49	82.44	82.34	82.40
10:55	81.46	81.87	82.08	82.42	80.94	82.49	82.43	82.34	82.40
11:00	81.45	81.86	82.08	82.42	80.95	82.49	82.43	82.34	82.40
11:05	81.45	81.86	82.08	82.41	80.97	82.49	82.43	82.33	82.39
11:10	81.45	81.86	82.07	82.41	80.98	82.48	82.43	82.33	82.39
11:15	81.45	81.86	82.07	82.41	81.00	82.48	82.42	82.32	82.39
11:20	81.45	81.86	82.07	82.41	81.04	82.48	82.42	82.32	82.38
11:25	81.45	81.85	82.07	82.41	81.06	82.48	82.42	82.32	82.38
11:30	81.45	81.85	82.07	82.41	81.07	82.48	82.41	82.31	82.38
11:35	81.44	81.85	82.07	82.40	81.11	82.47	82.41	82.31	82.38
11:40	81.44	81.85	82.06	82.40	81.19	82.47	82.41	82.31	82.37
11:45	81.44	81.85	82.06	82.40	81.39	82.47	82.40	82.30	82.37
11:50	81.44	81.85	82.06	82.40	81.64	82.47	82.40	82.30	82.37
11:55	81.44	81.85	82.06	82.40	81.87	82.46	82.40	82.29	82.36
12:00	81.44	81.84	82.06	82.39	82.06	82.46	82.40	82.29	82.36
12:05	81.44	81.84	82.05	82.39	82.27	82.46	82.39	82.29	82.36
12:10	81.43	81.84	82.05	82.39	82.49	82.46	82.39	82.28	82.36
12:15	81.43	81.84	82.05	82.39	82.58	82.46	82.39	82.28	82.35
12:20	81.43	81.84	82.05	82.39	82.69	82.46	82.39	82.28	82.35
12:25	81.43	81.84	82.05	82.39	82.79	82.45	82.39	82.27	82.35
12:30	81.43	81.83	82.05	82.38	82.82	82.45	82.38	82.27	82.35
12:35	81.43	81.83	82.04	82.38	82.86	82.45	82.38	82.27	82.34
12:40	81.43	81.83	82.04	82.38	82.90	82.45	82.38	82.26	82.34
12:45	81.42	81.83	82.04	82.38	82.93	82.45	82.38	82.26	82.34
12:50	81.42	81.83	82.04	82.38	82.97	82.45	82.38	82.26	82.33

12:55	81.42	81.83	82.04	82.37	82.98	82.44	82.37	82.25	82.33
13:00	81.42	81.82	82.03	82.37	82.99	82.44	82.37	82.25	82.33
13:05	81.42	81.82	82.03	82.37	82.99	82.44	82.37	82.25	82.33
13:10	81.42	81.82	82.03	82.37	83.00	82.44	82.37	82.24	82.32
13:15	81.42	81.82	82.03	82.37	82.99	82.44	82.36	82.24	82.32
13:20	81.41	81.82	82.03	82.37	83.00	82.44	82.36	82.24	82.32
13:25	81.41	81.82	82.03	82.36	82.99	82.43	82.36	82.23	82.32
13:30	81.41	81.81	82.02	82.36	82.99	82.43	82.36	82.23	82.31
13:35	81.41	81.81	82.02	82.36	82.98	82.43	82.36	82.23	82.31
13:40	81.41	81.81	82.02	82.36	82.98	82.43	82.35	82.22	82.31
13:45	81.41	81.81	82.02	82.36	82.97	82.43	82.35	82.22	82.31
13:50	81.41	81.81	82.02	82.36	82.97	82.43	82.35	82.22	82.30
13:55	81.40	81.81	82.01	82.35	82.96	82.42	82.35	82.21	82.30
14:00	81.40	81.80	82.01	82.35	82.96	82.42	82.35	82.21	82.30
14:05	81.40	81.80	82.01	82.35	82.95	82.42	82.34	82.21	82.30
14:10	81.40	81.80	82.01	82.35	82.95	82.42	82.34	82.20	82.29
14:15	81.40	81.80	82.01	82.35	82.94	82.42	82.34	82.20	82.29
14:20	81.40	81.80	82.01	82.35	82.94	82.42	82.34	82.20	82.29
14:25	81.40	81.80	82.00	82.34	82.93	82.41	82.33	82.19	82.29
14:30	81.39	81.79	82.00	82.34	82.92	82.41	82.33	82.19	82.28
14:35	81.39	81.79	82.00	82.34	82.91	82.41	82.33	82.19	82.28
14:40	81.39	81.79	82.00	82.34	82.91	82.41	82.33	82.18	82.28
14:45	81.39	81.79	82.00	82.34	82.90	82.41	82.33	82.18	82.28
14:50	81.39	81.79	82.00	82.34	82.90	82.41	82.33	82.18	82.27
14:55	81.39	81.79	81.99	82.33	82.89	82.40	82.32	82.18	82.27
15:00	81.38	81.78	81.99	82.33	82.89	82.41	82.32	82.17	82.27
15:05	81.38	81.78	81.99	82.33	82.88	82.40	82.32	82.17	82.27
15:10	81.38	81.78	81.99	82.33	82.87	82.40	82.32	82.17	82.26
15:15	81.38	81.78	81.99	82.33	82.86	82.40	82.31	82.16	82.26
15:20	81.38	81.78	81.99	82.33	82.86	82.40	82.31	82.16	82.26
15:25	81.38	81.78	81.98	82.32	82.85	82.40	82.31	82.16	82.26
15:30	81.38	81.77	81.98	82.32	82.85	82.40	82.31	82.15	82.25
15:35	81.37	81.77	81.98	82.32	82.84	82.39	82.31	82.15	82.25
15:40	81.37	81.77	81.98	82.32	82.84	82.39	82.31	82.15	82.25
15:45	81.37	81.77	81.98	82.32	82.83	82.39	82.30	82.14	82.25
15:50	81.37	81.77	81.98	82.32	82.83	82.39	82.30	82.14	82.25
15:55	81.37	81.77	81.97	82.31	82.82	82.39	82.30	82.14	82.24
16:00	81.37	81.77	81.97	82.31	82.82	82.39	82.30	82.14	82.24
16:05	81.37	81.76	81.97	82.31	82.81	82.39	82.30	82.13	82.24
16:10	81.36	81.76	81.97	82.31	82.81	82.39	82.29	82.13	82.24
16:15	81.36	81.76	81.97	82.31	82.80	82.38	82.29	82.13	82.23
16:20	81.36	81.76	81.97	82.31	82.80	82.38	82.29	82.12	82.23
16:25	81.36	81.76	81.96	82.31	82.80	82.38	82.29	82.12	82.23
16:30	81.36	81.76	81.96	82.30	82.79	82.38	82.29	82.12	82.23
16:35	81.36	81.75	81.96	82.30	82.78	82.38	82.29	82.11	82.22
16:40	81.36	81.75	81.96	82.30	82.78	82.38	82.28	82.11	82.22
16:45	81.35	81.75	81.96	82.30	82.77	82.38	82.28	82.11	82.22
16:50	81.35	81.75	81.96	82.30	82.77	82.38	82.28	82.11	82.22
16:55	81.35	81.75	81.95	82.30	82.76	82.37	82.28	82.10	82.22
17:00	81.35	81.75	81.95	82.29	82.76	82.37	82.28	82.10	82.21
17:05	81.35	81.75	81.95	82.29	82.76	82.37	82.27	82.10	82.21
17:10	81.35	81.74	81.95	82.29	82.75	82.37	82.27	82.09	82.21
17:15	81.35	81.74	81.95	82.29	82.75	82.37	82.27	82.09	82.21

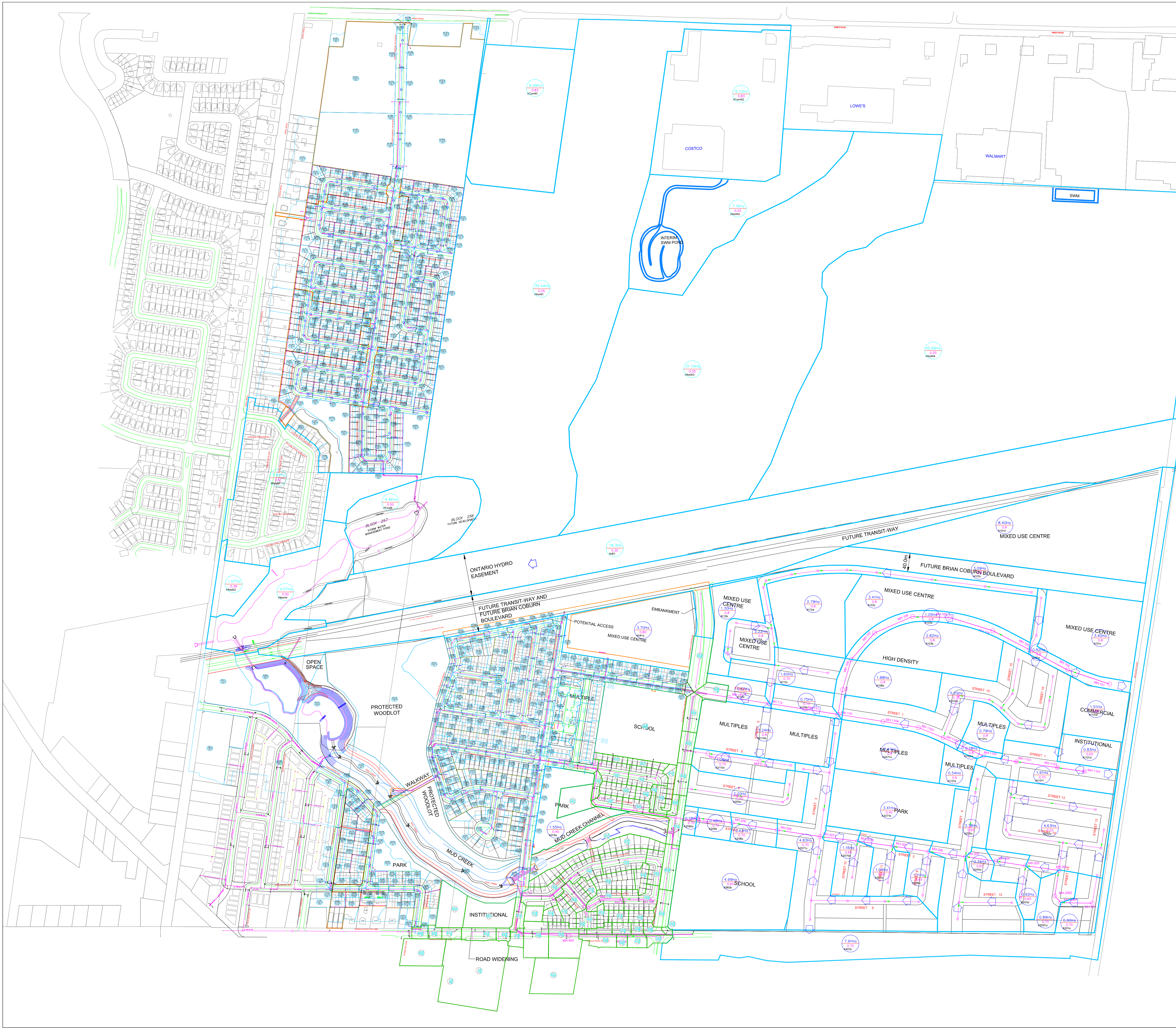
17:20	81.34	81.74	81.95	82.29	82.74	82.37	82.27	82.09	82.21
17:25	81.34	81.74	81.95	82.29	82.74	82.37	82.27	82.09	82.20
17:30	81.34	81.74	81.94	82.29	82.74	82.37	82.27	82.08	82.20
17:35	81.34	81.74	81.94	82.28	82.73	82.36	82.26	82.08	82.20
17:40	81.34	81.73	81.94	82.28	82.73	82.36	82.26	82.08	82.20
17:45	81.34	81.73	81.94	82.28	82.72	82.36	82.26	82.07	82.19
17:50	81.33	81.73	81.94	82.28	82.72	82.36	82.26	82.07	82.19
17:55	81.33	81.73	81.94	82.28	82.71	82.36	82.26	82.07	82.19
18:00	81.33	81.73	81.94	82.28	82.71	82.36	82.26	82.07	82.19
18:05	81.33	81.73	81.93	82.28	82.71	82.36	82.25	82.06	82.19
18:10	81.33	81.73	81.93	82.27	82.70	82.36	82.25	82.06	82.18
18:15	81.33	81.72	81.93	82.27	82.70	82.35	82.25	82.06	82.18
18:20	81.33	81.72	81.93	82.27	82.70	82.35	82.25	82.06	82.18
18:25	81.32	81.72	81.93	82.27	82.69	82.35	82.25	82.05	82.18
18:30	81.32	81.72	81.93	82.27	82.69	82.35	82.25	82.05	82.18
18:35	81.32	81.72	81.92	82.27	82.69	82.35	82.24	82.05	82.17
18:40	81.32	81.72	81.92	82.27	82.69	82.35	82.24	82.04	82.17
18:45	81.32	81.72	81.92	82.26	82.68	82.35	82.24	82.04	82.17
18:50	81.32	81.71	81.92	82.26	82.68	82.35	82.24	82.04	82.17
18:55	81.32	81.71	81.92	82.26	82.68	82.34	82.24	82.04	82.16
19:00	81.31	81.71	81.92	82.26	82.67	82.34	82.24	82.03	82.16
19:05	81.31	81.71	81.92	82.26	82.67	82.34	82.23	82.03	82.16
19:10	81.31	81.71	81.91	82.26	82.67	82.34	82.23	82.03	82.16
19:15	81.31	81.71	81.91	82.25	82.66	82.34	82.23	82.03	82.16
19:20	81.31	81.71	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:25	81.31	81.70	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:30	81.30	81.70	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:35	81.30	81.70	81.91	82.25	82.65	82.33	82.22	82.02	82.15
19:40	81.30	81.70	81.91	82.25	82.65	82.33	82.22	82.01	82.15
19:45	81.30	81.70	81.90	82.25	82.65	82.33	82.22	82.01	82.14
19:50	81.30	81.70	81.90	82.24	82.65	82.33	82.22	82.01	82.14
19:55	81.30	81.70	81.90	82.24	82.65	82.33	82.22	82.01	82.14
20:00	81.30	81.69	81.90	82.24	82.64	82.33	82.22	82.00	82.14
20:05	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.14
20:10	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.14
20:15	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.13
20:20	81.29	81.69	81.90	82.24	82.64	82.32	82.21	81.99	82.13
20:25	81.29	81.69	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:30	81.29	81.68	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:35	81.29	81.68	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:40	81.28	81.68	81.89	82.23	82.63	82.32	82.21	81.98	82.12
20:45	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
20:50	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
20:55	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
21:00	81.28	81.68	81.88	82.23	82.62	82.31	82.20	81.97	82.12
21:05	81.28	81.67	81.88	82.22	82.61	82.31	82.20	81.97	82.11
21:10	81.28	81.67	81.88	82.22	82.61	82.31	82.20	81.97	82.11
21:15	81.27	81.67	81.88	82.22	82.61	82.31	82.19	81.97	82.11
21:20	81.27	81.67	81.88	82.22	82.61	82.31	82.19	81.96	82.11
21:25	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.11
21:30	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.11
21:35	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.10
21:40	81.27	81.66	81.87	82.21	82.60	82.31	82.19	81.96	82.10
21:45	81.27	81.66	81.87	82.21	82.59	82.30	82.19	81.95	82.10
21:50	81.26	81.66	81.87	82.21	82.59	82.30	82.19	81.95	82.10
21:55	81.26	81.66	81.87	82.21	82.59	82.30	82.18	81.95	82.10
22:00	81.26	81.66	81.87	82.21	82.59	82.30	82.18	81.95	82.09
22:05	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:10	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:15	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:20	81.25	81.65	81.86	82.20	82.58	82.30	82.18	81.94	82.09
22:25	81.25	81.65	81.86	82.20	82.58	82.30	82.18	81.94	82.08
22:30	81.25	81.65	81.86	82.20	82.58	82.29	82.17	81.93	82.08
22:35	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:40	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:45	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:50	81.25	81.64	81.86	82.20	82.57	82.29	82.17	81.92	82.08
22:55	81.24	81.64	81.86	82.19	82.57	82.29	82.17	81.92	82.07
23:00	81.24	81.64	81.85	82.19	82.57	82.29	82.17	81.92	82.07
23:05	81.24	81.64	81.85	82.19	82.56	82.29	82.17	81.92	82.07
23:10	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.92	82.07
23:15	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.07
23:20	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.07
23:25	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.06
23:30	81.23	81.63	81.85	82.19	82.56	82.28	82.16	81.91	82.06
23:35	81.23	81.63	81.85	82.18	82.55	82.28	82.16	81.91	82.06
23:40	81.23	81.63	81.84	82.18	82.55	82.28	82.16	81.90	82.06
23:45	81.23	81.63	81.84	82.18	82.55	82.28	82.16	81.90	82.06
23:50	81.23	81.63	81.84	82.18	82.55	82.28	82.15	81.90	82.06
23:55	81.23	81.63	81.84	82.18	82.55	82.27	82.15	81.90	82.05
0:00	81.23	81.62	81.84	82.18	82.55	82.27	82.15	81.90	82.05

APPENDIX

E

Interim Condition and EUC Pond 1 Analysis

JFSA Water Resources and Environmental Consultants



LEGEND :

LIMITS OF SUBDIVISION

MAJOR SYSTEM SUBCATCHMENT BOUNDARY TO LOW POINTS AND OTHER AREAS

MAJOR SYSTEM FLOW DIRECTION

4.40Ha / 0.8 / A101c — SUB-CATCHMENT AREA, RUNOFF COEFFICIENT, AREA ID

MODELLING BY IBI GROUP

MAJOR SYSTEM FLOW DIRECTION

APOND3 / 0.057 ha / 80% — SUB-CATCHMENT ID, SUB-CATCHMENT AREA, TOTAL IMPERVIOUSNESS

SCALE :

0 50 100 150 200m

J.F. Sabourin & Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
OTTAWA (613) 836-3884
GATINEAU (819) 243-6858

CLIENT :

DSEL
david schaeffer engineering ltd
600 ALDEN ROAD., SUITE 500
MARKHAM, ONTARIO., L3R 0E7
(905) 475-3080

PROJECT :

TRAILS EDGE COMMUNITY
TO SWM POND 1

	BY	DATE	DESCRIPTION	BY

TOTAL DRAINAGE AREA
TO SWM FACILITY
(INTERIM CONDITIONS B)

FIGURE E-1

DESIGNED:	
DRAWN:	LP
VERIFIED:	JFS
APPROVED:	JFS
DATE	PROJECT No.
Jun/21	883-10

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Table E-1: Criteria for Required Storage Volumes Under Interim B Conditions

Pond	Area (ha)	Imperviousness (%)	Storage Volume for Impervious Level (1) (m^3/ha)
N/A	N/A	35	90
SWM Pond 1	372.298	42	97.00
N/A	N/A	55	110

(1) Protection Level for Wet Pond: Normal 70% long-term S.S. removal.
SWM Planning & Design Manual, Table 3.2, p.3-10 (March 2003).

Table E-2: Required Storage Volumes for SWM Facility Under Interim B Conditions

Pond Component	Required Volume (m^3)	Provided Volume (4) (m^3)	Volume Ratio	Provided Area (5) (m^2)	Provided Elevation (m)
Permanent Pool (PP) (1)	21221	36400	1.72	35421	Variable (7)
Quality Control (2)	14892	14892	1.00	N/A	80.684
Extended Detention (3)	33922	43988	1.30	N/A	81.650
Forebay (20% PP)	N/A	N/A	N/A	11212.4	Variable (7)
PP - Forebay	N/A	N/A	N/A	24208	Variable (7)
			Area Ratio (%) (6) =	32	

(1) Required PP volume based on Table E-1 (97.00 - 40 = 57.00 m^3/ha).
(2) Required quality control volume based on 40 m^3/ha.
(3) Required extended detention volume based on the detention of the 25 mm storm for a 24 to 48 hour drawdown time.
(4) Provided volume based on stage-storage curve and extended detention (refer to Tables E-3 and E-4).
(5) Based on grading plan provided by DSEL (refer to Figure 2).
(6) As per MOE, Maximum Forebay Area: 33% of Total Permanent Pool.
(7) Permanent pool elevations are 80.10 m in the main cell, 81.60 m in the north forebay and 81.50 m in the south forebay.

Table E-3: Extended Detention Parameters for SWM Facility Under Interim B Conditions

			Quality Orifice Parameters		
Area (C3)	24208.20	m^2	Diameter	0.400	m
Volume	36400.40	m^3			
PP Elev	80.100	m	Area	0.126	m^2
QC Elev	80.684	m	Invert	80.100	m
h (m)	0.584	m	C_o	0.62	

Notes:
- C3 is the intercept from the area-depth linear regression.
- PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- h is the maximum water elevation above the orifice (m).

Table E-4: Extended Detention Drawdown Time for SWM Facility Under Interim B Conditions (Existing Controls)

Elev.	Active Storage			C2	Drawdown Time	Drawdown Time	Flow	Demarkation
(m)	V (m^3)	A (m^2)	depth (m)	(m^2/m)	(h)	(days)	(m^3/s)	Point
80.100	**0.0**	**24208.2**	**0.00**				**0.000**	**PP Elev (Main)**
80.150	1219.2	24453.2	0.05	4900	8.73	0.36	0.019	
80.200	2448.4	24672.4	0.10	4642	12.38	0.52	0.038	
80.250	3687.2	24882.3	0.15	4494	15.21	0.63	0.057	
80.300	4931.9	25091.0	0.20	4414	17.61	0.73	0.075	
80.350	6196.0	25302.1	0.25	4376	19.75	0.82	0.094	
80.400	7507.8	25553.4	0.30	4484	21.71	0.90	0.112	
80.450	8742.2	25921.8	0.35	4896	23.56	0.98	0.130	
80.500	10038.4	25925.1	0.40	4292	25.19	1.05	0.147	
80.550	11335.4	25939.8	0.45	3848	26.72	1.11	0.165	
80.600	12653.7	26378.5	0.50	4341	28.33	1.18	0.181	
80.650	13983.1	26657.4	0.55	4453	29.83	1.24	0.195	
80.684	**14892.0**	**26831.1**	**0.58**	**4492**	**30.80**	**1.28**	**0.204**	**QC Elev**
80.700	15323.5	26913.6	0.60	4509	31.26	1.30	0.209	
80.750	16675.6	27152.6	0.65	4530	32.64	1.36	0.221	
80.800	18031.5	27386.6	0.70	4541	33.97	1.42	0.233	
80.850	19415.8	27631.9	0.75	4565	35.28	1.47	0.245	
80.900	20845.4	27913.0	0.80	4631	36.57	1.52	0.255	
80.950	22194.0	28324.5	0.85	4843	37.89	1.58	0.266	
81.000	23610.8	28336.7	0.90	4587	39.00	1.62	0.276	
81.050	25028.8	28361.2	0.95	4372	40.08	1.67	0.286	
81.100	26464.1	28707.0	1.00	4499	41.30	1.72	0.295	
81.150	27908.4	28942.1	1.05	4508	42.45	1.77	0.304	
81.200	29360.8	29142.3	1.10	4486	43.56	1.82	0.313	
81.250	30815.5	29338.0	1.15	4461	44.65	1.86	0.321	
81.300	32295.1	29535.6	1.20	4439	45.73	1.91	0.330	
81.350	33777.2	29736.9	1.25	4423	46.79	1.95	0.338	
81.400	35307.4	29972.4	1.30	4434	47.86	1.99	0.346	
81.450	36764.7	30324.9	1.35	4531	48.99	2.04	0.354	
81.500	**38275.7**	**35486.6**	**1.40**	**8056**	**53.13**	**2.21**	**0.361**	**PP Elev (SFore)**
81.550	40062.1	35627.9	1.45	7876	54.16	2.26	0.369	
81.600	**41866.2**	**42142.6**	**1.50**	**11956**	**59.32**	**2.47**	**0.376**	**PP Elev (NFore)**
81.650	**43987.5**	**42516.9**	**1.55**	**11812**	**60.54**	**2.52**	**0.383**	**Ext. Det.**
81.700	46121.5	42829.6	1.60	11638	61.72	2.57	0.390	
81.750	48270.9	43143.8	1.65	11476	62.89	2.62	0.397	

Table E-4: Extended Detention Drawdown Time for SWM Facility Under Interim B Conditions (Existing Controls)

Elev. (m)	Active Storage V (m^3)	Active Storage A (m^2)	Active Storage depth (m)	C2 (m^2/m)	Drawdown Time (h)	Drawdown Time (days)	Flow (m^3/s)	Demarkation Point
81.800	50436.7	43457.5	1.70	11323	64.06	2.67	0.404	
81.850	52614.8	43779.8	1.75	11184	65.22	2.72	0.411	
81.900	54874.0	44141.0	1.80	11074	66.40	2.77	0.417	
81.950	57016.8	44692.9	1.85	11073	67.72	2.82	0.424	
82.000	59250.7	44700.3	1.90	10785	68.63	2.86	0.430	
82.050	61533.8	45651.1	1.95	10996	70.23	2.93	0.436	
82.100	63847.2	46277.0	2.00	11034	71.60	2.98	0.442	

Notes:
- C2 is the slope coefficient from the area-depth linear regression.
- PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- Ext. Det. indicates the elevation of extended detention provided based on the detention of the 25 mm storm for a 24 to 48 hour drawdown time.

Table E-5: Stage-Storage-Outflow Curve for SWM Facility Under Interim B Conditions (Existing Controls)

			Quality Control 1		Quantity Control 1		Quantity Control 2		Quantity Control 3		Quantity Control 4			
			Vertical Orifice		Rectangular Weir		Rectangular Weir		Rectangular Weir		Rectangular Weir			
			Dia (m)	0.400	L (m)	1.000	L (m)	3.000	L (m)	1.500	L (m)	1.500		
			Area (m^2)	0.126										
			Invert (m)	80.10	C_w	1.800	C_w	1.800	C_w	1.800	C_w	1.800		
			C_o	0.62	Invert (m)	81.65	Invert (m)	82.35	Invert (m)	82.35	Invert (m)	82.35		
			Q @ D	0.154	n contr.	2	n contr.	2	n contr.	2	n contr.	2		
Elevation (m)	Active Sto. (m^3)	Demarkation Points	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Outflow (m^3/s)	Storage (ha·m)
80.100	**0**	**PP Elev (Main)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
80.150	1219		0.050	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.122
80.200	2448		0.100	0.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.038	0.245
80.250	3687		0.150	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.369
80.300	4932		0.200	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.493
80.350	6196		0.250	0.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.094	0.620
80.400	7508		0.300	0.112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.751
80.450	8742		0.350	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.130	0.874
80.500	10038		0.400	0.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.147	1.004
80.550	11335		0.450	0.165	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.165	1.134
80.600	12654		0.500	0.181	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.181	1.265
80.650	13983		0.550	0.195	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.195	1.398
80.684	**14892**	**QC Elev**	**0.584**	**0.204**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.204**	**1.489**
80.700	15324		0.600	0.209	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.209	1.532
80.750	16676		0.650	0.221	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	1.668
80.800	18032		0.700	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.233	1.803
80.850	19416		0.750	0.245	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.245	1.942
80.900	20845		0.800	0.255	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.255	2.085
80.950	22194		0.850	0.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.266	2.219
81.000	23611		0.900	0.276	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.276	2.361
81.050	25029		0.950	0.286	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.286	2.503
81.100	26464		1.000	0.295	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.295	2.646
81.150	27908		1.050	0.304	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.304	2.791
81.200	29361		1.100	0.313	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.313	2.936
81.250	30816		1.150	0.321	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.321	3.082
81.300	32295		1.200	0.330	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.330	3.230
81.350	33777		1.250	0.338	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.338	3.378
81.400	35307		1.300	0.346	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.346	3.531
81.450	36765		1.350	0.354	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	3.676
81.500	**38276**	**PP Elev (South)**	**1.400**	**0.361**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.361**	**3.828**
81.550	40062		1.450	0.369	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.369	4.006
81.600	**41866**	**PP Elev (North)**	**1.500**	**0.376**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.376**	**4.187**
81.650	**43988**	**Ext. Det.**	**1.550**	**0.383**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.383**	**4.399**

Table E-5: Stage-Storage-Outflow Curve for SWM Facility Under Interim B Conditions (Existing Controls)

			Quality Control 1		Quantity Control 1		Quantity Control 2		Quantity Control 3		Quantity Control 4			
			Vertical Orifice		Rectangular Weir		Rectangular Weir		Rectangular Weir		Rectangular Weir			
			Dia (m)	0.400	L (m)	1.000	L (m)	3.000	L (m)	1.500	L (m)	1.500		
			Area (m^2)	0.126										
			Invert (m)	80.10	C_w	1.800	C_w	1.800	C_w	1.800	C_w	1.800		
			C_o	0.62	Invert (m)	81.65	Invert (m)	82.35	Invert (m)	82.35	Invert (m)	82.35		
			Q @ D	0.154	n contr.	2	n contr.	2	n contr.	2	n contr.	2		
Elevation (m)	Active Sto. (m^3)	Demarkation Points	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Outflow (m^3/s)	Storage (ha·m)
81.700	46122		1.600	0.390	0.050	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.410	4.612
81.750	48271		1.650	0.397	0.100	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.453	4.827
81.800	50437		1.700	0.404	0.150	0.101	0.000	0.000	0.000	0.000	0.000	0.000	0.505	5.044
81.850	52615		1.750	0.411	0.200	0.155	0.000	0.000	0.000	0.000	0.000	0.000	0.565	5.261
81.900	54874		1.800	0.417	0.250	0.214	0.000	0.000	0.000	0.000	0.000	0.000	0.631	5.487
81.950	57017		1.850	0.424	0.300	0.278	0.000	0.000	0.000	0.000	0.000	0.000	0.702	5.702
82.000	59251		1.900	0.430	0.350	0.347	0.000	0.000	0.000	0.000	0.000	0.000	0.777	5.925
82.050	61534		1.950	0.436	0.400	0.419	0.000	0.000	0.000	0.000	0.000	0.000	0.855	6.153
82.100	63847		2.000	0.442	0.450	0.494	0.000	0.000	0.000	0.000	0.000	0.000	0.937	6.385
82.150	66177		2.050	0.449	0.500	0.573	0.000	0.000	0.000	0.000	0.000	0.000	1.021	6.618
82.200	68518		2.100	0.455	0.550	0.653	0.000	0.000	0.000	0.000	0.000	0.000	1.108	6.852
82.250	70885		2.150	0.460	0.600	0.736	0.000	0.000	0.000	0.000	0.000	0.000	1.197	7.089
82.300	73266		2.200	0.466	0.650	0.821	0.000	0.000	0.000	0.000	0.000	0.000	1.287	7.327
82.350	**75666**		**2.250**	**0.472**	**0.700**	**0.907**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**1.379**	**7.567**
82.400	78151		2.300	0.478	0.750	*0.907*	0.050	0.060	0.050	0.030	0.050	0.030	1.505	7.815
82.450	80507		2.350	0.484	0.800	*0.907*	0.100	0.170	0.100	0.084	0.100	0.084	1.728	8.051
82.500	82968		2.400	0.489	0.850	*0.907*	0.150	0.311	0.150	0.154	0.150	0.154	2.014	8.297
82.550	85443		2.450	0.495	0.900	*0.907*	0.200	0.477	0.200	0.235	0.200	0.235	2.348	8.544
82.600	87947		2.500	0.500	0.950	*0.907*	0.250	0.664	0.250	0.326	0.250	0.326	2.723	8.795
82.650	90467		2.550	0.506	1.000	*0.907*	0.300	0.870	0.300	0.426	0.300	0.426	3.133	9.047
82.700	92991		2.600	0.511	1.050	*0.907*	0.350	1.092	0.350	0.533	0.350	0.533	3.575	9.299
82.750	95541		2.650	0.516	1.100	*0.907*	0.400	1.330	0.400	0.647	0.400	0.647	4.046	9.554
82.800	98121		2.700	0.521	1.150	*0.907*	0.450	1.581	0.450	0.766	0.450	0.766	4.541	9.812
82.850	100710		2.750	0.527	1.200	*0.907*	0.500	1.846	0.500	0.891	0.500	0.891	5.061	10.071
82.900	103374		2.800	0.532	1.250	*0.907*	0.550	2.122	0.550	1.021	0.550	1.021	5.601	10.337
82.950	105922		2.850	0.537	1.300	*0.907*	0.600	2.409	0.600	1.154	0.600	1.154	6.162	10.592
83.000	**108567**	**100-Year**	**2.900**	**0.542**	**1.350**	***0.907***	**0.650**	**2.707**	**0.650**	**1.292**	**0.650**	**1.292**	**6.740**	**10.857**
83.050	111257		2.950	0.547	1.400	*0.907*	0.700	3.015	0.700	1.434	0.700	1.434	7.336	11.126
83.100	113981		3.000	0.552	1.450	*0.907*	0.750	3.332	0.750	1.578	0.750	1.578	7.947	11.398
83.150	115245		3.050	0.557	1.500	*0.907*	0.800	3.658	0.800	1.726	0.800	1.726	8.573	11.525
83.200	116522		3.100	0.562	1.550	*0.907*	0.850	3.992	0.850	1.876	0.850	1.876	9.212	11.652
83.250	117806		3.150	0.566	1.600	*0.907*	0.900	4.334	0.900	2.029	0.900	2.029	9.864	11.781
83.300	119098		3.200	0.571	1.650	*0.907*	0.950	4.683	0.950	2.183	0.950	2.183	10.528	11.910

Table E-5: Stage-Storage-Outflow Curve for SWM Facility Under Interim B Conditions (Existing Controls)

			Quality Control 1		Quantity Control 1		Quantity Control 2		Quantity Control 3		Quantity Control 4			
			Vertical Orifice		Rectangular Weir		Rectangular Weir		Rectangular Weir		Rectangular Weir			
			Dia (m)	0.400	L (m)	1.000	L (m)	3.000	L (m)	1.500	L (m)	1.500		
			Area (m^2)	0.126										
			Invert (m)	80.10	C_w	1.800	C_w	1.800	C_w	1.800	C_w	1.800		
			C_o	0.62	Invert (m)	81.65	Invert (m)	82.35	Invert (m)	82.35	Invert (m)	82.35		
			Q @ D	0.154	n contr.	2	n contr.	2	n contr.	2	n contr.	2		
Elevation (m)	Active Sto. (m^3)	Demarkation Points	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Head (m)	Outflow (m^3/s)	Outflow (m^3/s)	Storage (ha·m)
83.350	120419		3.250	0.576	1.700	*0.907*	1.000	5.040	1.000	2.340	1.000	2.340	11.202	12.042
83.400	130762		3.300	0.581	1.750	*0.907*	1.050	5.403	1.050	2.498	1.050	2.498	11.887	13.076
83.450	133548		3.350	0.585	1.800	*0.907*	1.100	5.773	1.100	2.658	1.100	2.658	12.581	13.355
83.500	**136424**	**Top of Berm**	**3.400**	**0.590**	**1.850**	***0.907***	**1.150**	**6.149**	**1.150**	**2.819**	**1.150**	**2.819**	**13.284**	**13.642**

Notes :
- PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- Ext. Det. indicates the elevation of extended detention provided based on the detention of the 25 mm storm for a 24 to 48 hour drawdown time.
- 100-Year indicates the elevation of the maximum allowable 100-year water level in the main pond cell.
- Top of Berm indicates the elevation at the top of the berm.
- Head losses for reverse grade pipe included in quality control outflow calculations.

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID (1)	Area (ha)	Imperviousness (%)	Area x Imp.
To SWM Facility 1			
A101a	0.820	86	70.520
A101b	3.090	86	265.740
A101c	3.400	86	292.400
A103a	1.050	86	90.300
A103b	2.820	86	242.520
A103c	3.410	86	293.260
A108a	1.880	86	161.680
A110a	0.750	71	53.250
A112a	0.570	71	40.470
A112b	1.300	86	111.800
A112c	1.600	71	113.600
A112d	2.220	86	190.920
A112e	2.790	86	239.940
A201a	0.900	71	63.900
A202a	4.630	71	328.730
A203a	0.920	64	58.880
A204a	0.340	64	21.760
A205a	3.780	64	241.920
A206a	1.110	64	71.040
A207a	1.040	64	66.560
A208a	0.630	71	44.730
A209a	0.480	71	34.080
A1101a	0.180	86	15.480
A1101b	0.540	86	46.440
A1101c	0.790	86	67.940
A1101d	0.830	64	53.120
A1101e	1.510	64	96.640
A1101f	1.910	71	135.610
A1102a	5.200	71	369.200
A2001a	0.890	71	63.190
A2070a	1.160	64	74.240
A2071a	2.410	86	207.260
A2071b	3.410	29	98.890
A2071c	4.830	71	342.930
A2090a	0.180	71	12.780
ABLK246	2.890	64	184.960
AR114	0.110	49	5.390
AR113	0.130	49	6.370
AR112A	0.170	49	8.330
AS112A	0.140	73	10.220
AS113	0.340	73	24.820
AS112B	0.060	73	4.380
AS101	0.200	73	14.600
AS102	0.180	73	13.140
AP104	0.420	0	0.000
AS106	0.150	73	10.950
AS114	0.290	73	21.170
AS104	0.100	73	7.300
AR112B	0.090	49	4.410
AR104	0.220	49	10.780
AS3901E	0.270	86	23.220
AS3900B	0.220	86	18.920
AS54E	0.170	86	14.620
AS55AE	0.120	86	10.320

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
AS55BE	0.110	86	9.460
AS55C	0.080	86	6.880
AS56E	0.170	86	14.620
AS3901W	0.190	86	16.340
AS54W	0.110	86	9.460
AS55AW	0.096	86	8.256
AS55BW	0.096	86	8.256
AS56W	0.097	86	8.342
AEXT2A	1.516	100	151.600
AEXT2B	0.720	49	35.280
AS500C	0.310	86	26.660
AS500	0.260	86	22.360
AS307	0.250	73	18.250
AS311	0.430	73	31.390
AS312	0.350	73	25.550
AS306	0.390	73	28.470
AR301B	0.160	49	7.840
AS301	0.360	73	26.280
AS303	0.310	73	22.630
AS304	0.280	73	20.440
AR312A	0.330	49	16.170
AR312B	0.110	49	5.390
AR301A	0.150	49	7.350
AR301C	0.120	49	5.880
AR301D	0.100	49	4.900
AS314	0.170	73	12.410
AR305	0.170	49	8.330
AR402B	0.130	49	6.370
AR402A	0.130	49	6.370
AS400e	0.030	71	2.130
AS400A	0.100	71	7.100
AS400B	0.100	71	7.100
AS400C	0.120	71	8.520
AS400D	0.070	71	4.970
AS401A	0.060	71	4.260
AS401B	0.110	71	7.810
AS401C	0.290	71	20.590
AS401E	0.020	71	1.420
AS402A	0.510	71	36.210
AS402C	0.340	71	24.140
AS402G	0.110	71	7.810
AS404	0.160	70	11.200
A21	0.630	86	54.180
AS410A	0.210	86	18.060
AS410B	0.090	86	7.740
AR410A	1.830	42	76.860
AR410B	0.480	42	20.160
A402I	0.760	63	47.880
A055a	2.200	64	140.800
A101d	8.400	86	722.400
A401b	7.910	71	561.610
A560b	4.990	64	319.360
A2110a	1.040	71	73.840
A2110b	3.240	86	278.640
A039NE	0.017	75	1.275

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
A039NW	0.046	74	3.404
A039SE	0.021	84	1.764
A039SW	0.023	57	1.311
A019a	1.550	29	44.950
A001N1	0.038	47	1.786
A001N2	0.047	36	1.692
A001NE	0.029	48	1.392
A001NW	0.017	47	0.799
A001R1	0.034	18	0.612
A001S1	0.057	54	3.078
A001S2	0.011	55	0.605
A001SE	0.047	62	2.914
A001SW	0.039	64	2.496
A003R1	0.040	20	0.800
A003R2	0.176	15	2.640
A004NE	0.098	66	6.468
A004NW	0.054	46	2.484
A004SW	0.024	42	1.008
A005NE	0.030	47	1.410
A005NW	0.018	50	0.900
A005SE	0.186	71	13.206
A005SW	0.130	80	10.400
A005W1	0.039	41	1.599
A006NE	0.105	71	7.455
A006NW	0.031	77	2.387
A006SE	0.142	76	10.792
A006SW	0.127	81	10.287
A007E1	0.117	74	8.658
A007E2	0.131	76	9.956
A007N1	0.063	84	5.292
A007NE	0.023	48	1.104
A007NW	0.045	62	2.790
A007R1	0.183	17	3.111
A007R2	0.036	19	0.684
A007S1	0.020	90	1.800
A007SE	0.021	52	1.092
A007SW	0.064	55	3.520
A008NE	0.039	33	1.287
A008NW	0.045	42	1.890
A008R1	0.027	19	0.513
A008R2	0.178	19	3.382
A008R3	0.153	18	2.754
A008SE	0.021	33	0.693
A008SW	0.026	42	1.092
A009E1	0.090	70	6.300
A009E2	0.039	72	2.808
A009N1	0.018	50	0.900
A009N2	0.027	48	1.296
A009N3	0.028	29	0.812
A009NE	0.054	70	3.780
A009NW	0.027	63	1.701
A009SE	0.049	84	4.116
A009SW	0.044	70	3.080
A009W1	0.086	74	6.364
A009W2	0.037	70	2.590

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
A010NE	0.080	66	5.280
A010NW	0.080	71	5.680
A010S1	0.151	75	11.325
A010S2	0.151	75	11.325
A010SE	0.052	83	4.316
A010SW	0.052	75	3.900
A010W1	0.035	69	2.415
A011NE	0.076	82	6.232
A011NW	0.036	69	2.484
A011SW	0.189	77	14.553
A012NE	0.033	58	1.914
A012NW	0.055	65	3.575
A012SE	0.089	74	6.586
A012SW	0.040	80	3.200
A013N1	0.031	39	1.209
A013N2	0.029	86	2.494
A013NE	0.073	78	5.694
A013NW	0.037	78	2.886
A013S1	0.058	38	2.204
A013S2	0.062	79	4.898
A013SE	0.068	72	4.896
A013SW	0.042	74	3.108
A015N1	0.019	47	0.893
A015N2	0.010	40	0.400
A015NE	0.063	51	3.213
A015NW	0.057	70	3.990
A015S1	0.029	31	0.899
A015S2	0.007	43	0.301
A015SE	0.028	68	1.904
A015SW	0.081	74	5.994
A017NE	0.021	76	1.596
A017NW	0.168	76	12.768
A017SE	0.021	71	1.491
A017SW	0.048	73	3.504
A018DV1	0.621	74	45.954
A018NE	0.040	70	2.800
A018NW	0.045	56	2.520
A018R1	0.153	20	3.060
A018R2	0.114	21	2.394
A018R3	0.082	21	1.722
A018SE	0.021	71	1.491
A018SW	0.026	50	1.300
A019b	0.073	73	5.329
A019DV1	0.084	59	4.956
A019E1	0.040	70	2.800
A019E2	0.022	73	1.606
A019N1	0.035	69	2.415
A019N2	0.064	77	4.928
A019N3	0.027	63	1.701
A019N4	0.082	76	6.232
A019NE	0.040	85	3.400
A019NW	0.023	61	1.403
A019R1	0.198	22	4.356
A019R2	0.080	16	1.280
A019S1	0.035	77	2.695

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
A019S2	0.066	70	4.620
A019S3	0.029	72	2.088
A019S4	0.083	72	5.976
A019SE	0.020	70	1.400
A019SW	0.026	50	1.300
A019W1	0.071	83	5.893
A019W2	0.065	72	4.680
A020E1	0.042	71	2.982
A020N1	0.066	52	3.432
A020N2	0.040	70	2.800
A020N3	0.049	57	2.793
A020NE	0.059	68	4.012
A020NW	0.064	67	4.288
A020S1	0.046	72	3.312
A020S2	0.022	68	1.496
A020SE	0.068	82	5.576
A020SW	0.068	75	5.100
A020W1	0.086	74	6.364
A020W2	0.047	66	3.102
A021NE	0.076	71	5.396
A021NW	0.122	67	8.174
A021SE	0.054	75	4.050
A021SW	0.073	63	4.599
A023N1	0.024	83	1.992
A023N2	0.059	73	4.307
A023NE	0.060	73	4.380
A023NW	0.032	84	2.688
A023R1	0.048	17	0.816
A023R2	0.130	18	2.340
A023R3	0.147	17	2.499
A023R4	0.116	20	2.320
A023S1	0.022	41	0.902
A023S2	0.048	46	2.208
A023SE	0.066	67	4.422
A023SW	0.026	81	2.106
A025NE	0.042	55	2.310
A025NW	0.094	55	5.170
A025SE	0.030	83	2.490
A025SW	0.020	45	0.900
A028R1	0.478	8	3.824
A029NE	0.050	66	3.300
A029NW	0.015	53	0.795
A029R1	0.129	11	1.419
A029R2	0.156	18	2.808
A029R3	0.028	23	0.644
A029R4	0.110	21	2.310
A029R5	0.211	20	4.220
A029R6	0.048	10	0.480
A029S1	0.074	42	3.108
A029S2	0.108	60	6.480
A029SE	0.155	72	11.160
A029SW	0.186	71	13.206
A031NE	0.071	62	4.402
A031NW	0.034	74	2.516
A031SE	0.061	80	4.880

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
A031SW	0.027	37	0.999
A032NE	0.059	59	3.481
A032NW	0.024	29	0.696
A032R1	0.061	20	1.220
A032SE	0.054	78	4.212
A032SW	0.036	67	2.412
A034NE	0.024	71	1.704
A034NW	0.016	44	0.704
A034SE	0.021	48	1.008
A034SW	0.110	55	6.050
A039N1	0.042	88	3.696
A039N2	0.069	87	6.003
A039S1	0.021	57	1.197
A039S2	0.034	59	2.006
A040N1	0.032	81	2.592
A040N2	0.068	75	5.100
A040NE	0.082	84	6.888
A040NW	0.029	83	2.407
A040R1	0.050	19	0.950
A040R2	0.056	17	0.952
A040R3	0.076	20	1.520
A040R4	0.062	22	1.364
A040R5	0.040	13	0.520
A040S1	0.021	57	1.197
A040S2	0.035	60	2.100
A040SE	0.035	60	2.100
A040SW	0.021	57	1.197
A041a	3.700	86	318.200
A041DV1	0.631	66	41.646
A041DV2	0.018	49	0.882
A041DV3	0.048	40	1.920
A041DV4	0.144	46	6.624
A041DV5	0.129	46	5.934
A041DV6	0.070	36	2.520
A041N1	0.139	77	10.703
A041N2	0.030	73	2.190
A041NE	0.053	81	4.293
A041NW	0.044	77	3.388
A041S1	0.067	61	4.087
A041SE	0.035	60	2.100
A041SW	0.021	57	1.197
A047E1	0.015	73	1.095
A047E2	0.027	74	1.998
A047PK1	0.375	7	2.625
A047W1	0.036	22	0.792
A047W2	0.074	62	4.588
A049NE	0.039	69	2.691
A049NW	0.018	72	1.296
A049R1	0.082	16	1.312
A049R2	0.052	16	0.832
A049R3	0.116	16	1.856
A049R4	0.023	20	0.460
A049R5	0.039	22	0.858
A049SE	0.072	69	4.968
A049SW	0.045	76	3.420

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID (1)	Area (ha)	Imperviousness (%)	Area x Imp.
A100NE	3.234	65	210.210
A101E1	0.017	82	1.394
A101E2	0.150	57	8.550
A101E3	0.054	48	2.592
A101N1	0.151	64	9.664
A101N2	0.142	76	10.792
A101W1	0.033	64	2.112
A101W2	0.153	64	9.792
A107NW	0.087	72	6.264
A107SW	0.125	64	8.000
A140R1	0.054	22	1.188
A140R2	0.150	20	3.000
A140R3	0.125	20	2.500
A140R4	0.133	20	2.660
A140WK1	0.084	24	2.016
A170DV1	0.130	41	5.330
A170NE	0.040	70	2.800
A170NW	0.090	81	7.290
A170S1	0.038	71	2.698
A170S2	0.022	68	1.496
A170SE	0.020	70	1.400
A170SW	0.046	72	3.312
A200NE	0.035	34	1.190
A200NW	0.034	35	1.190
A200R1	0.026	13	0.338
A200R2	0.041	18	0.738
A200R3	0.049	18	0.882
A200R4	0.030	18	0.540
A250NE	0.051	67	3.417
A250NW	0.033	42	1.386
A250SE	0.071	73	5.183
A250SW	0.044	50	2.200
AChan2	2.658	100	265.800
AChan3	1.162	100	116.200
AForeS	1.859	37	68.783
ARes2	1.385	33	45.705
AWood1	0.847	7	5.929
AWood2	5.699	7	39.893
A21	0.630	86	54.180
A410F	0.520	64	33.280
AForeN	4.460	43	191.780
AMainN	4.070	43	175.010
AMainS	1.902	43	81.786
ARes1	1.212	24	29.088
AResN1	5.840	44	256.960
AResN2	1.070	26	27.820
AHE1b	18.300	14	256.200
ATW1b	3.100	7	21.700
ATW2b	6.100	7	42.700
ATW3b	5.100	86	438.600
B001N1	0.096	78	7.488
B001N2	0.090	78	7.020
B002NE	0.092	73	6.716
B002NW	0.101	77	7.777
B002R1	0.042	22	0.924

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
B002R2	0.056	22	1.232
B002R3	0.092	15	1.380
B002R4	0.033	9	0.297
B002R5	0.037	22	0.814
B002SE	0.048	44	2.112
B002SW	0.128	75	9.600
B002WK1	0.019	32	0.608
B004NE	0.067	72	4.824
B004NW	0.083	70	5.810
B004PK1	0.654	29	18.966
B004R1	0.067	13	0.871
B004R2	0.062	16	0.992
B004SE	0.032	72	2.304
B004SW	0.044	68	2.992
B004WK1	0.025	50	1.250
B005N1	0.080	73	5.840
B005N2	0.043	81	3.483
B005N3	0.030	63	1.890
B005NE	0.058	71	4.118
B005NW	0.156	70	10.920
B005R1	0.059	14	0.826
B005R2	0.119	22	2.618
B005R3	0.063	20	1.260
B005R4	0.121	22	2.662
B005S1	0.080	71	5.680
B005S2	0.043	77	3.311
B005SE	0.063	71	4.473
B005SW	0.075	68	5.100
B008NE	0.049	71	3.479
B008NW	0.076	63	4.788
B008R1	0.132	22	2.904
B008SE	0.024	75	1.800
B008SW	0.106	74	7.844
B009NE	0.043	79	3.397
B009NW	0.090	73	6.570
B009PK1	0.711	29	20.619
B009R1	0.057	23	1.311
B009R2	0.128	21	2.688
B009SE	0.029	62	1.798
B009SW	0.043	74	3.182
B010N1	0.041	78	3.198
B010N2	0.048	79	3.792
B010NE	0.055	69	3.795
B010NW	0.050	68	3.400
B010R1	0.116	22	2.552
B010S1	0.052	79	4.108
B010S2	0.049	76	3.724
B010SE	0.058	71	4.118
B010SW	0.048	75	3.600
B010W1	0.021	48	1.008
B010W2	0.025	48	1.200
B011NE	0.031	55	1.705
B011NW	0.097	72	6.984
B011R1	0.074	21	1.554
B011R2	0.113	22	2.486

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
B011S1	0.034	87	2.958
B011SE	0.030	53	1.590
B011SW	0.097	72	6.984
B012EX1	0.054	29	1.566
B012EX2	0.522	39	20.358
B012NE	0.082	63	5.166
B012NW	0.100	63	6.300
B012SE	0.074	63	4.662
B012SW	0.091	63	5.733
B013DV1	2.860	93	265.980
B013DV2	2.535	7	17.745
B013EX1	0.084	29	2.436
B013EX2	0.074	51	3.774
B013NE	0.080	62	4.960
B013NW	0.099	62	6.138
B015NE	0.085	63	5.355
B015NW	0.102	63	6.426
B015RE1	2.173	79	171.667
B015RE2	2.165	7	15.155
B015SE	0.049	63	3.087
B015SW	0.059	63	3.717
B016NE	0.135	68	9.180
B016NW	0.073	64	4.672
B016R1	0.065	24	1.560
B016R2	0.031	23	0.713
B016R3	0.056	11	0.616
B016R4	0.015	23	0.345
B016S1	0.061	68	4.148
B016S2	0.062	68	4.216
B016S3	0.029	61	1.769
B016SE	0.048	73	3.504
B016SW	0.052	76	3.952
B018NE	0.110	67	7.370
B018NW	0.049	72	3.528
B018R1	0.060	23	1.380
B018R2	0.044	23	1.012
B018R3	0.051	15	0.765
B018SE	0.023	48	1.104
B018SW	0.047	55	2.585
B019N1	0.070	64	4.480
B019N2	0.051	73	3.723
B019NE	0.067	70	4.690
B019NW	0.141	72	10.152
B019R1	0.045	12	0.540
B019R2	0.045	23	1.035
B019R3	0.032	22	0.704
B019R4	0.025	22	0.550
B019R5	0.052	23	1.196
B019S1	0.070	70	4.900
B019S2	0.064	73	4.672
B019SE	0.066	65	4.290
B019SW	0.074	61	4.514
B021R1	0.056	21	1.176
B021R2	0.128	23	2.944
B022N1	0.072	68	4.896

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
B022N2	0.050	72	3.600
B022N3	0.056	58	3.248
B022NE	0.055	69	3.795
B022NW	0.056	66	3.696
B022S1	0.073	68	4.964
B022S2	0.050	72	3.600
B022SE	0.055	68	3.740
B022SW	0.063	67	4.221
B022W1	0.045	71	3.195
B022W2	0.023	83	1.909
B022W3	0.024	46	1.104
B024NE	0.127	70	8.890
B024NW	0.021	62	1.302
B024R1	0.109	23	2.507
B024R2	0.051	22	1.122
B024R3	0.034	24	0.816
B024SE	0.057	72	4.104
B024SW	0.049	61	2.989
B026R1	0.120	23	2.760
B028N1	0.084	68	5.712
B028N2	0.048	83	3.984
B028NE	0.062	73	4.526
B028NW	0.092	58	5.336
B028R1	0.108	22	2.376
B028R2	0.056	21	1.176
B028R3	0.139	22	3.058
B028S1	0.085	72	6.120
B028S2	0.056	67	3.752
B028SE	0.062	65	4.030
B028SW	0.184	62	11.408
B031N1	0.062	71	4.402
B031N2	0.025	56	1.400
B031N3	0.070	82	5.740
B031NE	0.077	74	5.698
B031NW	0.171	73	12.483
B031R1	0.052	13	0.676
B031R2	0.135	21	2.835
B031R3	0.062	23	1.426
B031R4	0.094	21	1.974
B031R5	0.015	23	0.345
B031S1	0.063	70	4.410
B031S2	0.032	53	1.696
B031SE	0.077	74	5.698
B031SW	0.092	58	5.336
B033NE	0.131	71	9.301
B033NW	0.034	76	2.584
B033R1	0.041	22	0.902
B033R2	0.063	21	1.323
B033R3	0.142	21	2.982
B033SE	0.105	70	7.350
B033SW	0.045	84	3.780
B036NE	0.061	70	4.270
B036NW	0.047	77	3.619
B036R1	0.126	21	2.646
B036SE	0.059	71	4.189

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
B036SW	0.048	75	3.600
B036W1	0.025	48	1.200
B036W2	0.025	52	1.300
B037N1	0.045	78	3.510
B037NE	0.025	56	1.400
B037NW	0.094	73	6.862
B037R1	0.060	22	1.320
B037R2	0.113	21	2.373
B037R3	0.014	23	0.322
B037R4	0.012	25	0.300
B037SE	0.025	52	1.300
B037SW	0.095	73	6.935
B038NE	0.104	70	7.280
B038NW	0.032	78	2.496
B038SE	0.047	77	3.619
B038SW	0.047	81	3.807
B040NE	0.034	59	2.006
B040NW	0.028	58	1.624
B040R1	0.031	23	0.713
B040SE	0.129	70	9.030
B040SW	0.051	81	4.131
B041NE	0.034	59	2.006
B041NW	0.030	59	1.770
B041R1	0.031	23	0.713
B041SE	0.036	61	2.196
B041SW	0.043	74	3.182
B042N1	0.112	70	7.840
B042N2	0.044	73	3.212
B042N3	0.027	48	1.296
B042NE	0.116	72	8.352
B042NW	0.044	73	3.212
B042R1	0.090	21	1.890
B042R2	0.142	20	2.840
B042R3	0.077	16	1.232
B042S1	0.094	72	6.768
B042S2	0.094	71	6.674
B042SE	0.053	66	3.498
B042SW	0.027	48	1.296
B044NE	0.081	70	5.670
B044NW	0.082	71	5.822
B044R1	0.043	20	0.860
B044R2	0.088	22	1.936
B044SE	0.121	71	8.591
B044SW	0.053	70	3.710
B046NE	0.023	48	1.104
B046NW	0.055	63	3.465
B046R2	0.052	20	1.040
B046R3	0.080	27	2.160
B046S1	0.022	50	1.100
B046SE	0.038	79	3.002
B046SW	0.119	73	8.687
B047NE	0.112	71	7.952
B047NW	0.026	50	1.300
B047R1	0.125	22	2.750
B047R2	0.060	21	1.260

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
B047R3	0.053	23	1.219
B047R4	0.014	18	0.252
B047R5	0.048	21	1.008
B047R6	0.065	20	1.300
B047SE	0.111	73	8.103
B047SW	0.055	69	3.795
B048N1	0.027	48	1.296
B048NE	0.075	75	5.625
B048NW	0.064	70	4.480
B048R1	0.062	21	1.302
B048R2	0.082	20	1.640
B048R3	0.138	16	2.208
B048SE	0.076	79	6.004
B048SW	0.065	68	4.420
B048W1	0.032	47	1.504
B048W2	0.036	83	2.988
B048W3	0.024	50	1.200
B050N1	0.088	72	6.336
B050N2	0.033	52	1.716
B050NE	0.065	75	4.875
B050NW	0.070	64	4.480
B050R1	0.128	21	2.688
B050R2	0.068	22	1.496
B050R3	0.103	22	2.266
B050S1	0.087	72	6.264
B050S2	0.039	85	3.315
B050S3	0.023	61	1.403
B050SE	0.057	68	3.876
B050SW	0.153	72	11.016
B055N1	0.030	47	1.410
B055NE	0.096	69	6.624
B055NW	0.046	72	3.312
B055R1	0.118	21	2.478
B055SE	0.093	72	6.696
B055SW	0.048	71	3.408
B056NE	0.029	48	1.392
B056NW	0.028	61	1.708
B056SE	0.025	48	1.200
B056SW	0.025	64	1.600
B058NE	0.039	72	2.808
B058NW	0.046	72	3.312
B058R1	0.117	21	2.457
B058R2	0.102	22	2.244
B058SE	0.021	62	1.302
B058SW	0.031	61	1.891
B180N1	0.060	68	4.080
B180N2	0.060	68	4.080
B180N3	0.038	46	1.748
B180NE	0.065	71	4.615
B180NW	0.067	70	4.690
B180R1	0.117	23	2.691
B180R2	0.075	23	1.725
B180SE	0.050	72	3.600
B180SW	0.047	73	3.431
B410NE	0.025	56	1.400

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
B410NW	0.037	78	2.886
B590NE	0.103	74	7.622
B590NW	0.105	76	7.980
B590R1	0.067	22	1.474
B590R2	0.172	22	3.784
B590R3	0.120	21	2.520
B590R4	0.080	10	0.800
B590SE	0.108	69	7.452
B590SW	0.071	73	5.183
C001R1	0.084	9	0.756
C001R2	0.705	9	6.345
C002R1	0.200	11	2.200
C003R1	0.155	5	0.775
C004R1	0.381	6	2.286
C005R1	0.297	9	2.673
C006R1	0.319	9	2.871
C007R1	0.342	6	2.052
C008R1	0.385	7	2.695
C009R1	0.460	9	4.140
C010R1	0.334	10	3.340
C011R1	0.130	13	1.690
C012R1	0.092	13	1.196
C012WK1	0.028	66	1.848
C013PK1	0.428	29	12.412
C013R1	0.295	39	11.505
C013R2	0.151	40	6.040
NCOM2	8.720	90	784.800
NNAT1	21.420	7	149.940
NNAT2	7.160	7	50.120
NNAT3	31.740	7	222.180
NNAT4	45.990	7	321.930
To SWM Facility 1 (BMR Phase 1 Interim)			
A11	0.063	69.915	4.370
A12	0.155	50.168	7.751
A13	0.148	41.86	6.179
A14	0.423	70.28	29.714
A15	0.096	70.28	6.747
A17	0.242	61.404	14.854
A18	0.166	52.344	8.710
A19	0.035	69.048	2.430
A20	0.250	62.8	15.713
A21	0.480	55.324	26.528
A22	0.028	28.571	0.811
A23	0.227	60.987	13.838
A24	0.223	61.111	13.609
A25	0.239	56.478	13.493
A29	0.184	60.326	11.118
A30	0.014	50	0.705
A31	0.289	61.938	17.894
A32	0.162	61.875	10.005
A33	0.159	62.581	9.932
A34	0.090	59.756	5.402
A35	0.225	63.556	14.326
A41	0.297	57.229	17.008
A42	0.238	58.242	13.867

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [1]	Area (ha)	Imperviousness (%)	Area x Imp.
A43	0.347	58.205	20.185
A44	0.288	61.716	17.774
A45	0.195	60.112	11.722
A46	0.209	63.587	13.258
A47	0.145	56.757	8.213
A54	0.816	7	5.714
A9	3.038	7	21.265
B1	1.681	7	11.764
B2	3.432	100	343.220
B3	1.007	86	86.611
B4	1.002	7	7.014
C2	0.069	67.606	4.651
S6	0.044	25	1.098
S7	0.049	25	1.215
S8	0.083	25	2.080
S9	2.319	7	16.230
To SWM Facility 3			
A043R1	0.226	8	1.808
A043R2	0.017	18	0.306
A043R3	0.076	32	2.432
A043R4	0.078	32	2.496
A043SE	0.064	64	4.096
A043SW	0.048	64	3.072
A044R1	0.173	12	2.076
A045N1	0.049	71	3.479
A045N2	0.081	77	6.237
A045NE	0.251	69	17.319
A045NW	0.043	84	3.612
A045S1	0.048	73	3.504
A045S2	0.081	78	6.318
A045SE	0.118	61	7.198
A045SW	0.043	86	3.698
A046NE	0.058	69	4.002
A046R1	0.170	21	3.570
A046R2	0.145	12	1.740
A046R3	0.280	14	3.920
A046SE	0.095	76	7.220
A046SW	0.039	77	3.003
A047NE	0.009	78	0.702
A047NW	0.025	76	1.900
A047R1	0.144	17	2.448
A047R2	0.098	16	1.568
A047SE	0.040	73	2.920
A047SW	0.115	66	7.590
A101NE	0.073	73	5.329
A101NW	0.046	64	2.944
A101S1	0.107	64	6.848
A101S2	0.113	63	7.119
A101SE	0.084	70	5.880
A101SW	0.076	64	4.864
A102R1	0.087	32	2.784
A410F	0.520	64	33.280
A460NE	0.059	61	3.599
A460NW	0.090	57	5.130
A460PK1	0.355	7	2.485

Table E-6: Drainage Area to SWM Facility (Interim B Conditions)

Segment ID [(1)]	Area (ha)	Imperviousness (%)	Area x Imp.
A460R1	0.071	20	1.420
A460R2	0.057	19	1.083
A460R3	0.030	23	0.690
A460SE	0.041	85	3.485
AR410C	0.550	64	35.200
AS410C	0.110	86	9.460
AS410D	0.080	86	6.880
AS410E	0.100	86	8.600
Total	**377.561**	**42**	**15965.636**

(1) Refer to Figure 2

Weighted Average Imperviousness = S(Area x Imp) / Total Area = 15965.636 / 377.561 = 42 %

Table E-7: Summary of Total Drainage Area (Interim B Conditions)

Land Use [1]	Area (ha)	Imperviousness (%)	Area x Imp.
To SWM Facility 1	372.298	42	15710.322
To SWM Facility 3	5.263	49	255.314
Total	377.561	42	15965.636

[1] Refer to Figure 2

Weighted Average Imperviousness = S(Area x Imp) / Total Area = 15965.636 / 377.561 = 42 %

Table E-8: Target Release Rates for SWM Facility [1]

Event	Pre-Development Release Rate (m^3/s/ha)	Target Release Rate (m^3/s)
2-Year, 24-Hour SCS	1.600	1.000
5-Year, 24-Hour SCS	2.900	2.300
10-Year, 24-Hour SCS	3.900	3.800
25-Year, 24-Hour SCS	5.500	5.600
50-Year, 24-Hour SCS	6.600	6.700
100-Year, 24-Hour SCS	7.800	8.000

[1] As per the April 2008 "*East Urban Community Pond No. 1 Design Brief*" by Stantec.

CALCULATION SHEET E-1: EXISTING CONTROLS (INTERIM B CONDITIONS)

Quality Control 1			Quantity Control 1			Quantity Control 2			Quantity Control 3			Quantity Control 4		
Vertical Circular Orifice			Rectangular Weir			Rectangular Weir			Rectangular Weir			Rectangular Weir		
Diameter	(m)	0.400	L	(m)	1.000	L	(m)	3.000	L	(m)	1.500	L	(m)	1.500
A_o	(m^2)	0.126												
invert	(m)	80.10	C_w		1.80	C_w		1.80	C_w		1.80	C_w		1.80
C_o		0.62	Crest Elev.	(m)	81.65	Crest Elev.	(m)	82.35	Crest Elev.	(m)	82.35	Crest Elev.	(m)	82.35
			n		2	n		2	n		2	n		2
Max Water Level	(m)	83.009	Max Water Level	(m)	83.009	Max Water Level	(m)	83.009	Max Water Level	(m)	83.009	Max Water Level	(m)	83.009
Head of Water	(m)	2.909	Head of Water	(m)	1.359	Head of Water	(m)	0.659	Head of Water	(m)	0.659	Head of Water	(m)	0.659
Q_0	(m^3/s)	0.568	Q_w	(m^3/s)	2.077	Q_w	(m^3/s)	2.762	Q_w	(m^3/s)	1.317	Q_w	(m^3/s)	1.317
Orifice Equation:			Weir Equation:			Weir Equation:			Weir Equation:			Weir Equation:		
$Q_o = C_o A_o (2gh)^{0.5}$			$Qw = C_w (L-0.1nh)h^{1.5}$			$Qw = C_w (L-0.1nh)h^{1.5}$			$Qw = C_w (L-0.1nh)h^{1.5}$			$Qw = C_w (L-0.1nh)h^{1.5}$		
Not including outlet pipe losses														
Q_o *is the orifice flow*			*Qw is the weir flow*			*Qw is the weir flow*			*Qw is the weir flow*			*Qw is the weir flow*		
C_o *is the orifice coefficient*			*Cw is the weir coefficient*			*Cw is the weir coefficient*			*Cw is the weir coefficient*			*Cw is the weir coefficient*		
A_o *is the orifice flow area*			*L is the weir length*			*L is the weir length*			*L is the weir length*			*L is the weir length*		
g is the gravitational constant			*h is the weir height*			*h is the weir height*			*h is the weir height*			*h is the weir height*		
h is the head of water			*n is the # of side contractions*			*n is the # of side contractions*			*n is the # of side contractions*			*n is the # of side contractions*		

CALCULATION SHEET E-2: FOREBAY SIZING FOR SWM FACILITY

Trails Edge Subdivision
SWM Facility 1 - Interim B Conditions
City of Ottawa
Calculation of North Forebay Size

Settling Criteria

From the SWMP Manual, the required length for settling is as follows:

$$L_{min} = \left(\frac{r\,Q_p}{V_s}\right)^{0.5}$$

where:
- r = length to width ratio, at the invert of the inlet pipe.
- Q_p = peak outflow during design quality storm
- V_s = settling velocity

Input:
- r = 3.47 (149 m / 43 m)
- Q_p = 0.383 m^3/s (at elevation 81.65 m)
- V_s = 0.0003 m/s

L_{min} = 66.52 m

The peak flow rate from the pond during the quality storm is taken as the flow that would occur just below the quantity controls (Refer to Table B-5 of Appendix B)

Dispersion Criteria

From the SWMP Manual, the required length for dispersion is as follows:

$$L_{min} = \frac{8\,Q}{d\,V_f}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Type II Storm)
- d = depth of pond during peak 10-year inflow (12h:00min)
- V_f = desired final velocity

Input:
- Q = 5.579 m^3/s
- d = 2.51 m
- Vf = 0.5 m/s

L_{min} = 35.55 m

The minimum forebay length is determined by the larger of the settling or dispersion criteria.

Minimum Length of Forebay Required 66.52 m
Length of Forebay Provided 149.00 m (at elevation 81.6 m)

Average Forebay Velocity

From the SWMP Manual, the maximum allowable average velocity is 0.15 m/s:

$$V_{avg} = \frac{Q}{d\,W_{avg}}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Type II Storm)
- d = depth of pond during peak 10-year inflow (12h:05min)
- W_{avg} = average width of forebay

Input:
- Q = 5.579 m^3/s
- d = 2.51 m
- W_{avg} = 40 m (36 m bottom, 43 m permanent pool)

V = 0.06 m/s < 0.15 m/s

CALCULATION SHEET E-3: FOREBAY SIZING FOR SWM FACILITY

Trails Edge Subdivision
SWM Facility 1 - Interim B Conditions
City of Ottawa
Calculation of South Forebay Size

Settling Criteria

From the SWMP Manual, the required length for settling is as follows:

$$L_{min} = \left(\frac{r\,Q_p}{V_s}\right)^{0.5}$$

where:
- r = length to width ratio, at the invert of the inlet pipe.
- Q_p = peak outflow during design quality storm
- V_s = settling velocity

Input:
- r = 3.18 — 143 m / 45 m
- Q_p = 0.383 m^3/s — (at elevation 81.65 m)
- V_s = 0.0003 m/s

L_{min} = 63.71 m

The peak flow rate from the pond during the quality storm is taken as the flow that would occur just below the quantity controls (Refer to Table B-5 of Appendix B)

Dispersion Criteria

From the SWMP Manual, the required length for dispersion is as follows:

$$L_{min} = \frac{8\,Q}{d\,V_f}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Type II Storm)
- d = depth of pond during peak 10-year inflow (12h:10min)
- V_f = desired final velocity

Input:
- Q = 15.601 m^3/s
- d = 2.08 m
- Vf = 0.5 m/s

L_{min} = 120.30 m

The minimum forebay length is determined by the larger of the settling or dispersion criteria.

Minimum Length of Forebay Required 120.30 m
Length of Forebay Provided 143.00 m (at elevation 81.5 m)

Average Forebay Velocity

From the SWMP Manual, the maximum allowable average velocity is 0.15 m/s:

$$V_{avg} = \frac{Q}{d\,W_{avg}}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Type II Storm)
- d = depth of pond during peak 10-year inflow (12h:10min)
- W_{avg} = average width of forebay

Input:
- Q = 15.601 m^3/s
- d = 2.08 m
- W_{avg} = 38 m — (31 m bottom, 45 m permanent pool)

V = 0.20 m/s > 0.15 m/s

Engineers, Planners & Landscape Architects

M E M O R A N D U M

DATE: APRIL 3, 2023

REVISED JANUARY 17, 2024

TO: MICHAEL PETEPIECE
BASSAM BAHIA

FROM: VAHID MEHDIPOUR

RE: BMR – THE COMMONS PHASE 2 & 3
PCSWMM MODEL UPDATE
118124

BACKGROUND

This memo serves as a support document for updating the PCSWMM model submitted by JFSA along with the Stormwater Management Report for BMR The Commons Phase 1 in May 2022. The aim of this update is to reflect the as-built conditions of the development.

The as-built drawings for Phase 1 were provided to the City of Ottawa as a part of the subdivision conformance package for Phase 1 of the Commons subdivision, and the PCSWMM model was updated to reflect the as-built elevations. It should be noted that the previous model completed by JFSA had considered Phase 2 and 3 in the ultimate buildout, and no changes were made to the design of Phase 2 and 3 in the model updated by Novatech.

The BMR - The Commons subdivision is situated in Orleans, within the city of Ottawa, covering an area of 19.19 hectares, including a 0.95-hectare park block, 13.61 hectares of residential development, 1.85 hectares of medium-density development, and a 3.43-hectare existing U-Haul site. The proposed development outlets to the East Urban Community (EUC) Pond 1. For further details, please refer to the following pertinent reports.

- JFSA Stormwater Management Report BMR – The Commons Subdivision Phase 1 May 2022 (SWMR Ph 1)
- DSEL & JFSA Pond 1 East Urban Community North Main Cell and North Forebay Modifications October 2022, Revised February 2023 (PDR)

METHODOLOGY

The scope of work involved updating the ultimate SWM scenario model to align with the as-built profiles of Phase 1 and the proposed modifications to the north main cell and north forebay of Pond 1. The updated model was created using PCSWMM software with a 1.015 SWM engine.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

The model's pipes and manholes inverts were revised to conform to the as-built profiles. Updated hydraulic grade lines (HGLs) are compared with minimum underside of footing (USF) elevation for 100 year and stress test events to make sure that there are enough clearances.

The ultimate SWM scenario model outlets to the East Urban Community (EUC) Pond 1 where a boundary condition is considered for the original model. The model was cross-checked against the SWMR Ph1 and the upcoming proposed pond modification documented within the PDR to ensure that the boundary conditions are updated. Boundary condition data are attached.

The major system of the model was further checked to be consistent with the Phase and 3 detailed drawings. A “Modified” Table 2 Summary of Major System Results for the 100-year-3-Hour Chicago Storm of the Phase 1 SWMR has been appended to this memorandum.

RESULTS

The revised PCSWMM model has been run for 3-hour Chicago and 24-hour SCS Type II storm distributions with a 100-year return period and stress test (100-year + 20%). As there is no stress test time series boundary condition for 24-hour SCS Type II available in the original model/report, the model is stress tested only under the 3-hour Chicago storm.

Updated HGL tables and a summary table of major system flow depths, extracted from the revised ultimate scenario model are added to the appendices.

CONCLUSION

The following items are found to be the results of updating the PCSWMM model:

- The updated model results in slight increases to the 100yr HGL elevations compared to the original JFSA model. For all 100yr profiles, all USF elevations have enough clearance (more than 0.3m) from HGLs. No HGL under stress test reaches the USF elevation.

- Table 1 from the JFSA SWM report provides target release rates and corresponding storage volumes for areas B1, B2 and B3i. The release rates have not been changed from the JFSA model. The storage required to meet the target release rates will need to be confirmed as part of the individual site plan designs for these areas.

- Major system flow depths are lower than 0.35 m in all places.

APPENDICES & ATTACHMENTS

APPENDIX A: HGL tables
APPENDIX B: Summary of Major System Flow Depths
APPENDIX C: Boundary Condition in MH-111

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

3 hr Chicago - 100 yr

MH ID	Obvert Elevation (m)	T/G Elevation (m)	Invert Elevation (m)	HGL Elevation (m)	Surcharge (m)	Lot Number	Design USF (m)	Clearance (m)
100_(STM)	83.16	87.58	81.27	83.10	0.00	Ph3 - 7	85.80	2.70
102_(STM)	83.22	87.57	81.34	83.24	0.02	Ph3 - 1	85.70	2.46
104_(STM)	83.33	87.62	81.38	83.41	0.08	Ph3 - 1	85.70	2.29
106_(STM)	84.29	87.66	83.54	84.19	0.00	23	85.85	1.66
108_(STM)	84.37	87.50	83.62	84.20	0.00	28	86.00	1.80
110_(STM)	84.49	87.75	83.94	84.58	0.09	26	86.10	1.52
112_(STM)	83.53	87.92	81.90	83.78	0.25	18	85.95	2.17
114_(STM)	84.20	88.00	83.37	84.15	0.00	Ph2 - 22	86.05	1.90
116_(STM)	84.25	88.17	83.50	84.27	0.02	Ph2 - 31	86.35	2.08
118_(STM)	84.56	88.36	83.88	84.54	0.00	Ph2 - 31	86.35	1.81
120_(STM)	84.28	88.08	82.66	84.67	0.39	46	86.35	1.68
122_(STM)	84.37	88.23	82.74	84.79	0.42	46	86.35	1.56
124_(STM)	84.46	88.20	82.83	84.93	0.47	3	86.50	1.57
126_(STM)	84.61	88.47	82.97	85.23	0.62	3	86.50	1.27
128_(STM)	84.82	88.63	83.17	85.53	0.71	56	86.70	1.17
130_(STM)	85.00	89.05	84.27	85.77	0.77	Ph2 - 38	86.85	1.08
132_(STM)	85.10	89.18	84.48	85.91	0.81	Ph2 - 45	87.30	1.39
134_(STM)	85.39	89.32	84.80	85.91	0.52	65	86.70	0.79
136_(STM)	84.96	88.65	83.34	85.73	0.77	65	86.70	0.97
138_(STM)	85.07	88.77	83.42	85.85	0.78	70	87.05	1.20
140_(STM)	85.37	89.25	83.71	86.22	0.85	76	87.05	0.83
142_(STM)	85.45	89.16	84.91	86.50	1.05	92	87.45	0.95
144_(STM)	85.74	89.45	84.13	86.61	0.87	91	87.45	0.84
146_(STM)	85.91	89.12	85.00	86.65	0.74	94	87.80	1.15
148_(STM)	86.05	89.21	85.14	86.67	0.62	97	87.28	0.61
150_(STM)	85.88	89.80	84.38	86.85	0.97	Blk 65	87.70	0.85
152_(STM)	86.09	90.00	85.26	86.97	0.88	Blk 66	87.90	0.93
154_(STM)	86.03	90.09	85.35	87.03	1.00	Blk 69	88.20	1.17
156_(STM)	86.40	89.94	85.73	87.37	0.97	Blk 69	88.20	0.83
158_(STM)	86.26	90.07	84.91	87.59	1.33	Blk 78	88.00	0.41
160_(STM)	86.34	90.16	84.99	87.72	1.38	Blk 75	88.40	0.68
162_(STM)	86.70	90.30	85.35	88.21	1.51	Blk 74	88.40	0.19
164_(STM)	86.95	90.28	85.60	88.42	1.47			
166_(STM)	87.07	90.42	86.17	88.42	1.36			
168_(STM)	87.40	90.39	86.50	88.43	1.03			
170_(STM)	87.73	91.06	87.06	88.57	0.84			

82.841

Interpolated HGL Calcs					
Lot Number	Design USF (m)	Clearance (m)	Length (m)	Dist. From D/S MH (m)	HGL (m)
Blk 74	88.40	0.62	106.3	9.089	87.77
Blk 73	88.45	0.51	106.3	45.684	87.94
Blk 72	88.60	0.52	106.3	74.955	88.08

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24-Hour SCS Type II - 100 Year

MH ID	Obvert Elevation (m)	T/G Elevation (m)	Invert Elevation (m)	HGL Elevation (m)	Surcharge (m)	Lot Number	Design USF (m)	Clearance (m)
100_(STM)	83.16	87.58	81.27	83.14	0.00	Ph3 - 7	85.80	2.66
102_(STM)	83.22	87.57	81.34	83.26	0.04	Ph3 - 1	85.70	2.44
104_(STM)	83.33	87.62	81.38	83.42	0.09	Ph3 - 1	85.70	2.28
106_(STM)	84.29	87.66	83.54	84.19	0.00	23	85.85	1.66
108_(STM)	84.37	87.50	83.62	84.20	0.00	28	86.00	1.80
110_(STM)	84.49	87.75	83.94	84.56	0.07	26	86.10	1.54
112_(STM)	83.53	87.92	81.90	83.78	0.25	18	85.95	2.17
114_(STM)	84.20	88.00	83.37	84.14	0.00	Ph2 - 22	86.05	1.91
116_(STM)	84.25	88.17	83.50	84.26	0.01	Ph2 - 31	86.35	2.09
118_(STM)	84.56	88.36	83.88	84.52	0.00	Ph2 - 31	86.35	1.83
120_(STM)	84.28	88.08	82.66	84.62	0.34	46	86.35	1.73
122_(STM)	84.37	88.23	82.74	84.73	0.36	46	86.35	1.62
124_(STM)	84.46	88.20	82.83	84.87	0.41	3	86.50	1.63
126_(STM)	84.61	88.47	82.97	85.14	0.53	3	86.50	1.36
128_(STM)	84.82	88.63	83.17	85.42	0.60	56	86.70	1.28
130_(STM)	85.00	89.05	84.27	85.77	0.77	Ph2 - 38	86.85	1.08
132_(STM)	85.10	89.18	84.48	85.91	0.81	Ph2 - 45	87.30	1.39
134_(STM)	85.39	89.32	84.80	85.91	0.52	65	86.70	0.79
136_(STM)	84.96	88.65	83.34	85.61	0.65	65	86.70	1.09
138_(STM)	85.07	88.77	83.42	85.72	0.65	70	87.05	1.33
140_(STM)	85.37	89.25	83.71	86.07	0.70	76	87.05	0.98
142_(STM)	85.45	89.16	84.91	86.35	0.90	92	87.45	1.10
144_(STM)	85.74	89.45	84.13	86.45	0.71	91	87.45	1.00
146_(STM)	85.91	89.12	85.00	86.48	0.57	94	87.80	1.32
148_(STM)	86.05	89.21	85.14	86.51	0.46	97	87.28	0.77
150_(STM)	85.88	89.80	84.38	86.66	0.78	Blk 65	87.70	1.04
152_(STM)	86.09	90.00	85.26	86.78	0.69	Blk 66	87.90	1.12
154_(STM)	86.03	90.09	85.35	86.84	0.81	Blk 69	88.20	1.36
156_(STM)	86.40	89.94	85.73	87.18	0.78	Blk 69	88.20	1.02
158_(STM)	86.26	90.07	84.91	87.35	1.09	Blk 78	88.00	0.65
160_(STM)	86.34	90.16	84.99	87.48	1.14	Blk 75	88.40	0.92
162_(STM)	86.70	90.30	85.35	87.94	1.24	Blk 74	88.40	0.46
164_(STM)	86.95	90.28	85.60	88.13	1.18			
166_(STM)	87.07	90.42	86.17	88.13	1.07			
168_(STM)	87.40	90.39	86.50	88.14	0.74			
170_(STM)	87.73	91.06	87.06	88.28	0.55			

3-Hour Chicago - 100-Year+20% (Stress Test)

MH ID	Obvert Elevation (m)	T/G Elevation (m)	Invert Elevation (m)	HGL Elevation (m)	Surcharge (m)	Lot Number	Design USF (m)	Clearance (m)
100_(STM)	83.16	87.58	81.27	83.41	0.25	Ph3 - 7	85.80	2.39
102_(STM)	83.22	87.57	81.34	83.53	0.31	Ph3 - 1	85.70	2.17
104_(STM)	83.33	87.62	81.38	83.73	0.40	Ph3 - 1	85.70	1.97
106_(STM)	84.29	87.66	83.54	84.21	0.00	23	85.85	1.64
108_(STM)	84.37	87.50	83.62	84.22	0.00	28	86.00	1.78
110_(STM)	84.49	87.75	83.94	84.63	0.14	26	86.10	1.47
112_(STM)	83.53	87.92	81.90	84.14	0.61	18	85.95	1.81
114_(STM)	84.20	88.00	83.37	84.50	0.30	Ph2 - 22	86.05	1.55
116_(STM)	84.25	88.17	83.50	84.63	0.38	Ph2 - 31	86.35	1.72
118_(STM)	84.56	88.36	83.88	84.94	0.38	Ph2 - 31	86.35	1.41
120_(STM)	84.28	88.08	82.66	84.98	0.70	46	86.35	1.37
122_(STM)	84.37	88.23	82.74	85.11	0.74	46	86.35	1.24
124_(STM)	84.46	88.20	82.83	85.26	0.80	3	86.50	1.24
126_(STM)	84.61	88.47	82.97	85.58	0.97	3	86.50	0.92
128_(STM)	84.82	88.63	83.17	85.91	1.09	56	86.70	0.79
130_(STM)	85.00	89.05	84.27	86.29	1.29	Ph2 - 38	86.85	0.56
132_(STM)	85.10	89.18	84.48	86.45	1.36	Ph2 - 45	87.30	0.85
134_(STM)	85.39	89.32	84.80	86.44	1.05	65	86.70	0.26
136_(STM)	84.96	88.65	83.34	86.12	1.16	65	86.70	0.58
138_(STM)	85.07	88.77	83.42	86.25	1.18	70	87.05	0.80
140_(STM)	85.37	89.25	83.71	86.64	1.27	76	87.05	0.41
142_(STM)	85.45	89.16	84.91	86.97	1.52	92	87.45	0.48
144_(STM)	85.74	89.45	84.13	87.06	1.32	91	87.45	0.39
146_(STM)	85.91	89.12	85.00	87.13	1.22	94	87.80	0.67
148_(STM)	86.05	89.21	85.14	87.15	1.10	97	87.28	0.13
150_(STM)	85.88	89.80	84.38	87.31	1.43	Blk 65	87.70	0.39
152_(STM)	86.09	90.00	85.26	87.43	1.34	Blk 66	87.90	0.47
154_(STM)	86.03	90.09	85.35	87.50	1.47	Blk 69	88.20	0.70
156_(STM)	86.40	89.94	85.73	87.82	1.42	Blk 69	88.20	0.38
158_(STM)	86.26	90.07	84.91	88.08	1.82	Blk 78	88.00	-0.08
160_(STM)	86.34	90.16	84.99	88.21	1.87	Blk 75	88.40	0.19
162_(STM)	86.70	90.30	85.35	88.72	2.02	Blk 74	88.40	-0.32
164_(STM)	86.95	90.28	85.60	89.93	2.98			
166_(STM)	87.07	90.42	86.17	89.93	2.87			
168_(STM)	87.40	90.39	86.50	89.37	1.97			
170_(STM)	87.73	91.06	87.06	89.17	1.44			

Interpolated HGL Calcs					
Lot Number	Design USF (m)	Clearance (m)	Length (m)	Dist. From D/S MH (m)	HGL (m)
Blk 78	88.00	0.45	108	30.592	87.55
Blk 79	88.00	0.45	108	30.592	87.55
Blk 77	88.10	0.30	108	60.320	87.80
Blk 80	88.15	0.35	108	60.320	87.80
Blk 81	88.30	0.34	108	89.650	87.96
Blk 76	88.30	0.25	108	101.582	88.05
Blk 74	88.40	0.13	106.3	9.809	88.27
Blk 73	88.45	0.03	106.3	45.684	88.42
Blk 72	88.60	0.04	106.3	74.955	88.56

Table 2: Summary of Major System Results for the 100-Year 3-Hour Chicago Storm

Catch	Flow Depth	Approach Flow On	Approach Flow at	Captured Flow
02_(CB)	0.15	0.065	0.027	0.026
03_(CB)	0.15	0.065	0.031	0.031
04_(CB)	0.15	0.067	0.027	0.027
05_(CB)	0.15	0.067	0.027	0.027
06_(CB)	0.03	0.054	0.030	0.030
08_(CB)	0.16	0.062	0.032	0.032
09_(CB)	0.16	0.062	0.027	0.027
10_(CB)	0.28	0.086	0.031	0.031
11_(CB)	0.28	0.086	0.087	0.043
12_(CB)	0.21	0.110	0.050	0.050
13_(CB)	0.21	0.110	0.048	0.048
14_(CB)	0.20	0.062	0.028	0.027
15_(CB)	0.20	0.062	0.028	0.027
16_(CB)	0.17	0.055	0.021	0.021
17_(CB)	0.17	0.055	0.027	0.027
18_(CB)	0.22	0.097	0.085	0.055
19_(CB)	0.22	0.097	0.071	0.071
20_(CB)	0.20	0.092	0.036	0.036
21_(CB)	0.20	0.092	0.035	0.035
23_(CB)	0.14	0.072	0.049	0.049
24_(CB)	0.14	0.072	0.049	0.049
25_(CB)	0.02	0.011	0.009	0.009
26_(CB)	0.02	0.011	0.004	0.004
27_(CB)	0.22	0.136	0.069	0.068
28_(CB)	0.22	0.136	0.069	0.068
30_(CB)	0.10	0.071	0.086	0.086
31_(CB)	0.10	0.071	0.100	0.100
32_(CB)	0.21	0.068	0.106	0.039
33_(CB)	0.21	0.068	0.072	0.059
34_(CB)	0.18	0.116	0.049	0.049
35_(CB)	0.18	0.116	0.049	0.049
36_(CB)	0.14	0.081	0.036	0.036
37_(CB)	0.14	0.081	0.049	0.049
40_(CB)	0.20	0.097	0.048	0.048
41_(CB)	0.20	0.097	0.050	0.050
42_(CB)	0.18	0.083	0.032	0.032
43_(CB)	0.18	0.083	0.036	0.036
44_(CB)	0.15	0.052	0.032	0.032
45_(CB)	0.15	0.052	0.021	0.021
46_(CB)	0.18	0.060	0.032	0.032
47_(CB)	0.18	0.060	0.026	0.026
48_(CB)	0.19	0.066	0.028	0.028
49_(CB)	0.19	0.066	0.027	0.027
50_(CB)	0.17	0.097	0.048	0.048
51_(CB)	0.17	0.097	0.047	0.047
52_(CB)	0.07	0.104	0.043	0.044
53_(CB)	0.18	0.111	0.050	0.050
54_(CB)	0.18	0.111	0.049	0.049
55_(CB)	0.07	0.051	0.046	0.046
56_(CB)	0.07	0.051	0.046	0.046
57_(CB)	0.26	0.106	0.050	0.050
59_(CB)	0.03	0.012	0.006	0.006

Table D-12: Time Series for Downstream Boundary Condition at STM-111

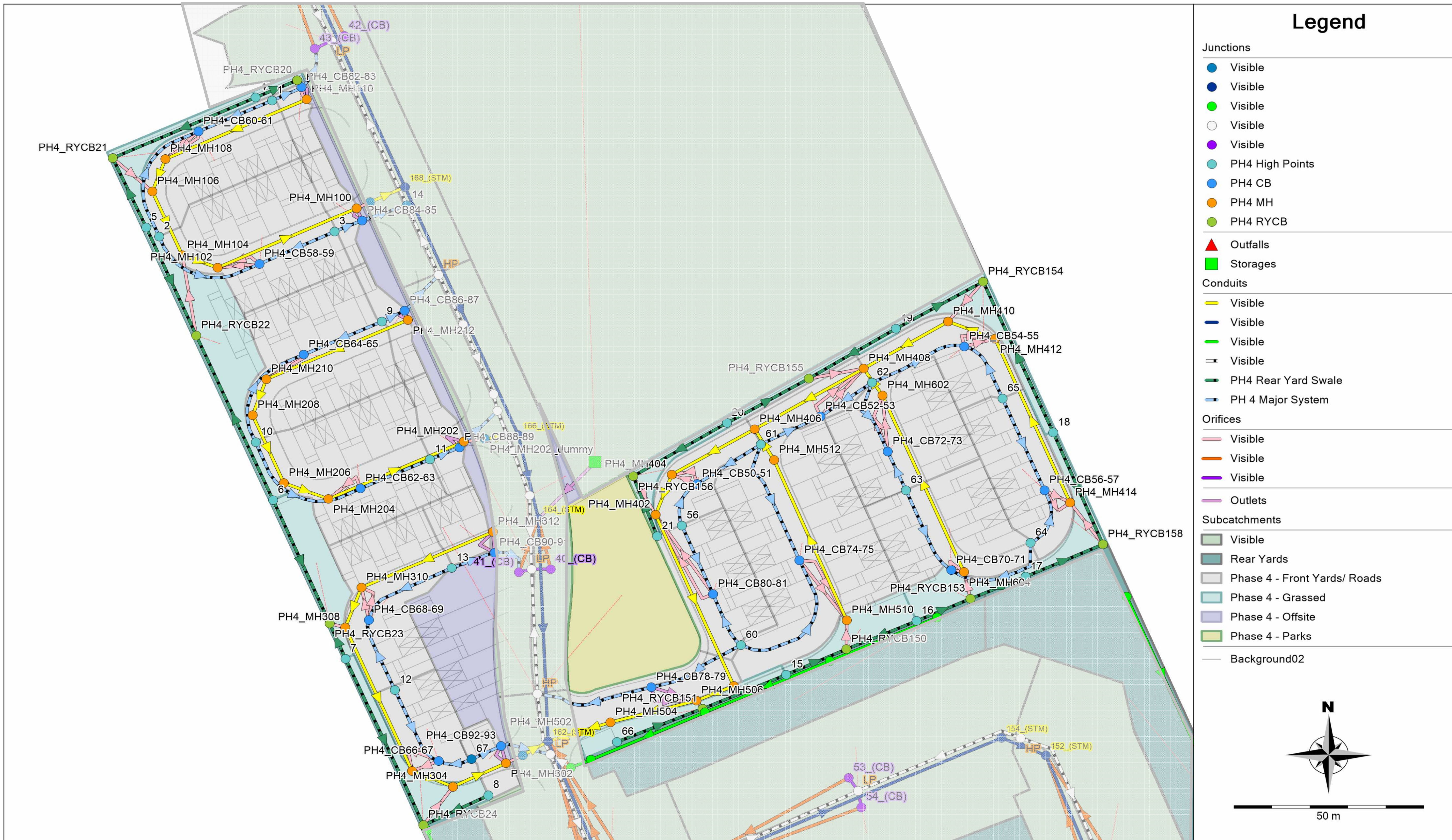
Time	Depth (m)								
	2-Yr 3-Hr Chicago	5-Yr 3-Hr Chicago	10-Yr 3-Hr Chicago	100-Yr 3-Hr Chicago	100-Yr 24-Hr SCS	100-Yr 3-Hr Chi + 20%	4-Aug-88	8-Aug-96	1-Jul-79
0:00	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:05	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:10	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57	80.57
0:15	80.57	80.57	80.57	80.57	80.57	80.58	80.57	80.64	80.57
0:20	80.57	80.57	80.57	80.60	80.57	80.63	80.57	80.75	80.58
0:25	80.57	80.58	80.59	80.66	80.57	80.70	80.57	80.84	80.62
0:30	80.58	80.62	80.64	80.72	80.57	80.78	80.78	80.97	80.68
0:35	80.61	80.67	80.70	80.79	80.57	80.94	81.04	80.95	80.81
0:40	80.66	80.73	80.78	80.87	80.57	81.05	81.42	80.89	81.02
0:45	80.73	80.86	80.94	80.96	80.57	81.15	81.36	80.87	81.28
0:50	80.87	81.02	81.07	81.07	80.57	81.29	81.28	80.89	81.39
0:55	81.10	81.22	81.28	81.22	80.57	81.52	81.17	81.00	81.42
1:00	81.37	81.52	81.60	81.39	80.57	81.80	81.03	81.06	81.44
1:05	81.64	81.85	81.90	81.51	80.57	82.06	80.96	81.06	81.45
1:10	81.61	81.88	81.98	81.56	80.57	82.26	80.98	81.02	81.48
1:15	81.45	81.72	81.86	81.60	80.57	82.29	81.13	81.04	81.54
1:20	81.32	81.52	81.72	81.72	80.57	82.42	81.25	81.25	81.63
1:25	81.21	81.39	81.63	81.91	80.57	82.53	81.28	81.59	81.75
1:30	81.14	81.36	81.57	82.12	80.58	82.62	81.30	81.82	81.91
1:35	81.10	81.40	81.69	82.31	80.59	82.84	81.56	81.95	82.05
1:40	81.09	81.48	81.75	82.44	80.60	82.92	81.78	81.89	82.22
1:45	81.11	81.54	81.86	82.50	80.61	83.07	81.78	81.71	82.41
1:50	81.14	81.61	81.90	82.57	80.62	83.06	81.81	81.61	82.59
1:55	81.18	81.66	81.97	82.63	80.63	83.09	81.96	81.68	82.74
2:00	81.21	81.70	81.99	82.69	80.64	83.10	82.18	81.77	82.90
2:05	81.25	81.74	82.04	82.71	80.67	83.15	82.48	81.85	83.01
2:10	81.27	81.77	82.05	82.74	80.71	83.15	82.71	81.90	83.02
2:15	81.30	81.80	82.09	82.76	80.72	83.17	82.75	81.94	83.03
2:20	81.32	81.82	82.10	82.78	80.73	83.16	82.75	81.97	83.08
2:25	81.34	81.84	82.13	82.79	80.73	83.18	82.77	81.99	83.11
2:30	81.36	81.86	82.13	82.80	80.73	83.16	82.81	82.00	83.12
2:35	81.38	81.88	82.16	82.80	80.74	83.17	82.87	82.02	83.12
2:40	81.39	81.89	82.16	82.81	80.74	83.15	82.89	82.03	83.12
2:45	81.41	81.90	82.18	82.81	80.74	83.16	82.88	82.04	83.12
2:50	81.42	81.92	82.18	82.81	80.74	83.14	82.88	82.05	83.11
2:55	81.43	81.93	82.20	82.81	80.74	83.14	82.89	82.07	83.10
3:00	81.44	81.94	82.20	82.82	80.74	83.12	82.89	82.16	83.09
3:05	81.45	81.94	82.22	82.81	80.74	83.12	82.90	82.34	83.08
3:10	81.46	81.95	82.22	82.81	80.74	83.10	82.90	82.47	83.07
3:15	81.47	81.96	82.23	82.81	80.74	83.09	82.92	82.58	83.06
3:20	81.48	81.97	82.23	82.81	80.74	83.09	82.92	82.66	83.05
3:25	81.49	81.97	82.23	82.80	80.74	83.07	82.90	82.67	83.03
3:30	81.49	81.98	82.23	82.79	80.74	83.05	82.90	82.69	83.02
3:35	81.50	81.98	82.24	82.79	80.74	83.04	82.91	82.73	83.00
3:40	81.50	81.98	82.24	82.78	80.74	83.03	82.90	82.76	82.99
3:45	81.51	81.98	82.24	82.77	80.74	83.01	82.88	82.79	82.97
3:50	81.51	81.99	82.24	82.76	80.74	82.99	82.87	82.80	82.96
3:55	81.52	81.98	82.24	82.76	80.74	82.98	82.88	82.81	82.94
4:00	81.52	81.99	82.24	82.75	80.74	82.97	82.86	82.81	82.93
4:05	81.52	81.99	82.24	82.74	80.74	82.96	82.85	82.81	82.92
4:10	81.52	81.99	82.24	82.73	80.74	82.94	82.84	82.81	82.90
4:15	81.53	81.99	82.24	82.73	80.74	82.93	82.83	82.81	82.89
4:20	81.53	81.99	82.24	82.72	80.74	82.92	82.82	82.81	82.88
4:25	81.53	81.99	82.24	82.71	80.75	82.91	82.81	82.80	82.86
4:30	81.53	81.99	82.23	82.70	80.75	82.90	82.80	82.80	82.85
4:35	81.53	81.99	82.24	82.70	80.75	82.89	82.79	82.79	82.84
4:40	81.53	81.99	82.23	82.69	80.75	82.88	82.78	82.78	82.83
4:45	81.53	81.98	82.23	82.69	80.76	82.87	82.77	82.77	82.82
4:50	81.53	81.99	82.23	82.68	80.76	82.85	82.76	82.77	82.81
4:55	81.53	81.98	82.23	82.67	80.76	82.85	82.76	82.76	82.79
5:00	81.53	81.99	82.22	82.67	80.76	82.84	82.74	82.75	82.78
5:05	81.53	81.98	82.22	82.66	80.76	82.83	82.74	82.74	82.77
5:10	81.53	81.98	82.22	82.65	80.76	82.82	82.74	82.73	82.76
5:15	81.53	81.98	82.22	82.65	80.76	82.81	82.74	82.73	82.75
5:20	81.53	81.98	82.22	82.64	80.76	82.80	82.73	82.72	82.74
5:25	81.53	81.98	82.22	82.64	80.76	82.79	82.73	82.71	82.74
5:30	81.53	81.98	82.21	82.63	80.76	82.78	82.73	82.70	82.73
5:35	81.53	81.97	82.21	82.62	80.76	82.77	82.73	82.69	82.72
5:40	81.53	81.98	82.21	82.62	80.76	82.77	82.72	82.68	82.71
5:45	81.53	81.97	82.21	82.62	80.76	82.76	82.72	82.67	82.70
5:50	81.53	81.97	82.20	82.61	80.76	82.75	82.72	82.67	82.69
5:55	81.53	81.97	82.20	82.60	80.76	82.74	82.71	82.66	82.68
6:00	81.53	81.97	82.20	82.60	80.76	82.74	82.70	82.65	82.67
6:05	81.53	81.96	82.20	82.60	80.76	82.73	82.70	82.64	82.67

6:10	81.53	81.97	82.20	82.59	80.76	82.72	82.69	82.63	82.66
6:15	81.53	81.96	82.19	82.59	80.76	82.71	82.69	82.63	82.65
6:20	81.53	81.96	82.19	82.58	80.76	82.71	82.68	82.62	82.64
6:25	81.52	81.96	82.19	82.58	80.76	82.70	82.67	82.61	82.64
6:30	81.52	81.96	82.19	82.57	80.76	82.69	82.67	82.60	82.63
6:35	81.52	81.96	82.19	82.57	80.76	82.69	82.66	82.60	82.63
6:40	81.52	81.96	82.18	82.56	80.77	82.68	82.65	82.59	82.62
6:45	81.52	81.95	82.18	82.56	80.77	82.68	82.64	82.58	82.61
6:50	81.52	81.95	82.18	82.56	80.77	82.67	82.64	82.58	82.60
6:55	81.52	81.95	82.18	82.55	80.77	82.66	82.63	82.57	82.60
7:00	81.52	81.95	82.18	82.55	80.77	82.66	82.63	82.56	82.59
7:05	81.52	81.94	82.17	82.54	80.77	82.65	82.62	82.56	82.59
7:10	81.51	81.95	82.17	82.54	80.77	82.65	82.61	82.55	82.58
7:15	81.51	81.94	82.17	82.54	80.77	82.64	82.61	82.54	82.58
7:20	81.51	81.94	82.17	82.53	80.77	82.64	82.60	82.54	82.57
7:25	81.51	81.94	82.17	82.53	80.78	82.63	82.60	82.53	82.56
7:30	81.51	81.94	82.16	82.53	80.78	82.63	82.59	82.53	82.56
7:35	81.51	81.93	82.16	82.52	80.78	82.62	82.59	82.52	82.55
7:40	81.51	81.93	82.16	82.52	80.78	82.62	82.58	82.52	82.55
7:45	81.51	81.93	82.16	82.52	80.78	82.62	82.57	82.51	82.54
7:50	81.51	81.93	82.15	82.51	80.78	82.61	82.57	82.50	82.54
7:55	81.50	81.93	82.15	82.51	80.78	82.61	82.57	82.50	82.53
8:00	81.50	81.93	82.15	82.51	80.78	82.60	82.56	82.49	82.53
8:05	81.50	81.92	82.15	82.50	80.79	82.60	82.56	82.49	82.52
8:10	81.50	81.92	82.15	82.50	80.79	82.59	82.55	82.48	82.52
8:15	81.50	81.92	82.15	82.50	80.79	82.59	82.55	82.48	82.51
8:20	81.50	81.92	82.14	82.50	80.79	82.58	82.54	82.47	82.51
8:25	81.50	81.92	82.14	82.49	80.80	82.58	82.54	82.47	82.51
8:30	81.50	81.92	82.14	82.49	80.80	82.58	82.53	82.46	82.50
8:35	81.49	81.91	82.14	82.49	80.80	82.57	82.53	82.46	82.50
8:40	81.49	81.91	82.13	82.48	80.80	82.57	82.52	82.45	82.49
8:45	81.49	81.91	82.13	82.48	80.80	82.57	82.52	82.45	82.49
8:50	81.49	81.91	82.13	82.48	80.81	82.56	82.51	82.44	82.48
8:55	81.49	81.91	82.13	82.47	80.81	82.56	82.51	82.44	82.48
9:00	81.49	81.91	82.13	82.47	80.81	82.56	82.51	82.43	82.48
9:05	81.49	81.90	82.12	82.47	80.81	82.55	82.51	82.43	82.47
9:10	81.48	81.90	82.12	82.47	80.81	82.55	82.50	82.42	82.47
9:15	81.48	81.90	82.12	82.46	80.81	82.55	82.50	82.42	82.47
9:20	81.48	81.90	82.12	82.46	80.82	82.54	82.49	82.42	82.46
9:25	81.48	81.90	82.12	82.46	80.82	82.54	82.49	82.41	82.46
9:30	81.48	81.90	82.11	82.46	80.82	82.54	82.48	82.41	82.45
9:35	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.40	82.45
9:40	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.40	82.45
9:45	81.48	81.89	82.11	82.45	80.83	82.53	82.48	82.39	82.44
9:50	81.47	81.89	82.11	82.45	80.84	82.52	82.47	82.39	82.44
9:55	81.47	81.89	82.10	82.44	80.84	82.52	82.47	82.39	82.44
10:00	81.47	81.88	82.10	82.44	80.84	82.52	82.46	82.38	82.43
10:05	81.47	81.88	82.10	82.44	80.85	82.52	82.46	82.38	82.43
10:10	81.47	81.88	82.10	82.44	80.85	82.51	82.46	82.37	82.43
10:15	81.47	81.88	82.10	82.44	80.86	82.51	82.46	82.37	82.42
10:20	81.47	81.88	82.09	82.43	80.87	82.51	82.45	82.37	82.42
10:25	81.46	81.88	82.09	82.43	80.88	82.51	82.45	82.36	82.42
10:30	81.46	81.88	82.09	82.43	80.88	82.50	82.45	82.36	82.41
10:35	81.46	81.87	82.09	82.43	80.89	82.50	82.44	82.35	82.41
10:40	81.46	81.87	82.09	82.43	80.90	82.50	82.44	82.35	82.41
10:45	81.46	81.87	82.09	82.42	80.91	82.50	82.44	82.35	82.41
10:50	81.46	81.87	82.08	82.42	80.93	82.49	82.44	82.34	82.40
10:55	81.46	81.87	82.08	82.42	80.94	82.49	82.43	82.34	82.40
11:00	81.45	81.86	82.08	82.42	80.95	82.49	82.43	82.34	82.40
11:05	81.45	81.86	82.08	82.41	80.97	82.49	82.43	82.33	82.39
11:10	81.45	81.86	82.07	82.41	80.98	82.48	82.43	82.33	82.39
11:15	81.45	81.86	82.07	82.41	81.00	82.48	82.42	82.32	82.39
11:20	81.45	81.86	82.07	82.41	81.04	82.48	82.42	82.32	82.38
11:25	81.45	81.85	82.07	82.41	81.06	82.48	82.42	82.32	82.38
11:30	81.45	81.85	82.07	82.41	81.07	82.48	82.41	82.31	82.38
11:35	81.44	81.85	82.07	82.40	81.11	82.47	82.41	82.31	82.38
11:40	81.44	81.85	82.06	82.40	81.19	82.47	82.41	82.31	82.37
11:45	81.44	81.85	82.06	82.40	81.39	82.47	82.40	82.30	82.37
11:50	81.44	81.85	82.06	82.40	81.64	82.47	82.40	82.30	82.37
11:55	81.44	81.85	82.06	82.40	81.87	82.46	82.40	82.29	82.36
12:00	81.44	81.84	82.06	82.39	82.06	82.46	82.40	82.29	82.36
12:05	81.44	81.84	82.05	82.39	82.27	82.46	82.39	82.29	82.36
12:10	81.43	81.84	82.05	82.39	82.49	82.46	82.39	82.28	82.36
12:15	81.43	81.84	82.05	82.39	82.58	82.46	82.39	82.28	82.35
12:20	81.43	81.84	82.05	82.39	82.69	82.46	82.39	82.28	82.35
12:25	81.43	81.84	82.05	82.39	82.79	82.45	82.39	82.27	82.35
12:30	81.43	81.83	82.05	82.38	82.82	82.45	82.38	82.27	82.35
12:35	81.43	81.83	82.04	82.38	82.86	82.45	82.38	82.27	82.34
12:40	81.43	81.83	82.04	82.38	82.90	82.45	82.38	82.26	82.34
12:45	81.42	81.83	82.04	82.38	82.93	82.45	82.38	82.26	82.34
12:50	81.42	81.83	82.04	82.38	82.97	82.45	82.38	82.26	82.33

12:55	81.42	81.83	82.04	82.37	82.98	82.44	82.37	82.25	82.33
13:00	81.42	81.82	82.03	82.37	82.99	82.44	82.37	82.25	82.33
13:05	81.42	81.82	82.03	82.37	82.99	82.44	82.37	82.25	82.33
13:10	81.42	81.82	82.03	82.37	83.00	82.44	82.37	82.24	82.32
13:15	81.42	81.82	82.03	82.37	82.99	82.44	82.36	82.24	82.32
13:20	81.41	81.82	82.03	82.37	83.00	82.44	82.36	82.24	82.32
13:25	81.41	81.82	82.03	82.36	82.99	82.43	82.36	82.23	82.32
13:30	81.41	81.81	82.02	82.36	82.99	82.43	82.36	82.23	82.31
13:35	81.41	81.81	82.02	82.36	82.98	82.43	82.36	82.23	82.31
13:40	81.41	81.81	82.02	82.36	82.98	82.43	82.35	82.22	82.31
13:45	81.41	81.81	82.02	82.36	82.97	82.43	82.35	82.22	82.31
13:50	81.41	81.81	82.02	82.36	82.97	82.43	82.35	82.22	82.30
13:55	81.40	81.81	82.01	82.35	82.96	82.42	82.35	82.21	82.30
14:00	81.40	81.80	82.01	82.35	82.96	82.42	82.35	82.21	82.30
14:05	81.40	81.80	82.01	82.35	82.95	82.42	82.34	82.21	82.30
14:10	81.40	81.80	82.01	82.35	82.95	82.42	82.34	82.20	82.29
14:15	81.40	81.80	82.01	82.35	82.94	82.42	82.34	82.20	82.29
14:20	81.40	81.80	82.01	82.35	82.94	82.42	82.34	82.20	82.29
14:25	81.40	81.80	82.00	82.34	82.93	82.41	82.33	82.19	82.29
14:30	81.39	81.79	82.00	82.34	82.92	82.41	82.33	82.19	82.28
14:35	81.39	81.79	82.00	82.34	82.91	82.41	82.33	82.19	82.28
14:40	81.39	81.79	82.00	82.34	82.91	82.41	82.33	82.18	82.28
14:45	81.39	81.79	82.00	82.34	82.90	82.41	82.33	82.18	82.28
14:50	81.39	81.79	82.00	82.34	82.90	82.41	82.33	82.18	82.27
14:55	81.39	81.79	81.99	82.33	82.89	82.40	82.32	82.18	82.27
15:00	81.38	81.78	81.99	82.33	82.89	82.41	82.32	82.17	82.27
15:05	81.38	81.78	81.99	82.33	82.88	82.40	82.32	82.17	82.27
15:10	81.38	81.78	81.99	82.33	82.87	82.40	82.32	82.17	82.26
15:15	81.38	81.78	81.99	82.33	82.86	82.40	82.31	82.16	82.26
15:20	81.38	81.78	81.99	82.33	82.86	82.40	82.31	82.16	82.26
15:25	81.38	81.78	81.98	82.32	82.85	82.40	82.31	82.16	82.26
15:30	81.38	81.77	81.98	82.32	82.85	82.40	82.31	82.15	82.25
15:35	81.37	81.77	81.98	82.32	82.84	82.39	82.31	82.15	82.25
15:40	81.37	81.77	81.98	82.32	82.84	82.39	82.31	82.15	82.25
15:45	81.37	81.77	81.98	82.32	82.83	82.39	82.30	82.14	82.25
15:50	81.37	81.77	81.98	82.32	82.83	82.39	82.30	82.14	82.25
15:55	81.37	81.77	81.97	82.31	82.82	82.39	82.30	82.14	82.24
16:00	81.37	81.77	81.97	82.31	82.82	82.39	82.30	82.14	82.24
16:05	81.37	81.76	81.97	82.31	82.81	82.39	82.30	82.13	82.24
16:10	81.36	81.76	81.97	82.31	82.81	82.39	82.29	82.13	82.24
16:15	81.36	81.76	81.97	82.31	82.80	82.38	82.29	82.13	82.23
16:20	81.36	81.76	81.97	82.31	82.80	82.38	82.29	82.12	82.23
16:25	81.36	81.76	81.96	82.31	82.80	82.38	82.29	82.12	82.23
16:30	81.36	81.76	81.96	82.30	82.79	82.38	82.29	82.12	82.23
16:35	81.36	81.75	81.96	82.30	82.78	82.38	82.29	82.11	82.22
16:40	81.36	81.75	81.96	82.30	82.78	82.38	82.28	82.11	82.22
16:45	81.35	81.75	81.96	82.30	82.77	82.38	82.28	82.11	82.22
16:50	81.35	81.75	81.96	82.30	82.77	82.38	82.28	82.11	82.22
16:55	81.35	81.75	81.95	82.30	82.76	82.37	82.28	82.10	82.22
17:00	81.35	81.75	81.95	82.29	82.76	82.37	82.28	82.10	82.21
17:05	81.35	81.75	81.95	82.29	82.76	82.37	82.27	82.10	82.21
17:10	81.35	81.74	81.95	82.29	82.75	82.37	82.27	82.09	82.21
17:15	81.35	81.74	81.95	82.29	82.75	82.37	82.27	82.09	82.21

17:20	81.34	81.74	81.95	82.29	82.74	82.37	82.27	82.09	82.21
17:25	81.34	81.74	81.95	82.29	82.74	82.37	82.27	82.09	82.20
17:30	81.34	81.74	81.94	82.29	82.74	82.37	82.27	82.08	82.20
17:35	81.34	81.74	81.94	82.28	82.73	82.36	82.26	82.08	82.20
17:40	81.34	81.73	81.94	82.28	82.73	82.36	82.26	82.08	82.20
17:45	81.34	81.73	81.94	82.28	82.72	82.36	82.26	82.07	82.19
17:50	81.33	81.73	81.94	82.28	82.72	82.36	82.26	82.07	82.19
17:55	81.33	81.73	81.94	82.28	82.71	82.36	82.26	82.07	82.19
18:00	81.33	81.73	81.94	82.28	82.71	82.36	82.26	82.07	82.19
18:05	81.33	81.73	81.93	82.28	82.71	82.36	82.25	82.06	82.19
18:10	81.33	81.73	81.93	82.27	82.70	82.36	82.25	82.06	82.18
18:15	81.33	81.72	81.93	82.27	82.70	82.35	82.25	82.06	82.18
18:20	81.33	81.72	81.93	82.27	82.70	82.35	82.25	82.06	82.18
18:25	81.32	81.72	81.93	82.27	82.69	82.35	82.25	82.05	82.18
18:30	81.32	81.72	81.93	82.27	82.69	82.35	82.25	82.05	82.18
18:35	81.32	81.72	81.92	82.27	82.69	82.35	82.24	82.05	82.17
18:40	81.32	81.72	81.92	82.27	82.69	82.35	82.24	82.04	82.17
18:45	81.32	81.72	81.92	82.26	82.68	82.35	82.24	82.04	82.17
18:50	81.32	81.71	81.92	82.26	82.68	82.35	82.24	82.04	82.17
18:55	81.32	81.71	81.92	82.26	82.68	82.34	82.24	82.04	82.16
19:00	81.31	81.71	81.92	82.26	82.67	82.34	82.24	82.03	82.16
19:05	81.31	81.71	81.92	82.26	82.67	82.34	82.23	82.03	82.16
19:10	81.31	81.71	81.91	82.26	82.67	82.34	82.23	82.03	82.16
19:15	81.31	81.71	81.91	82.25	82.66	82.34	82.23	82.03	82.16
19:20	81.31	81.71	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:25	81.31	81.70	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:30	81.30	81.70	81.91	82.25	82.66	82.34	82.23	82.02	82.15
19:35	81.30	81.70	81.91	82.25	82.65	82.33	82.22	82.02	82.15
19:40	81.30	81.70	81.91	82.25	82.65	82.33	82.22	82.01	82.15
19:45	81.30	81.70	81.90	82.25	82.65	82.33	82.22	82.01	82.14
19:50	81.30	81.70	81.90	82.24	82.65	82.33	82.22	82.01	82.14
19:55	81.30	81.70	81.90	82.24	82.65	82.33	82.22	82.01	82.14
20:00	81.30	81.69	81.90	82.24	82.64	82.33	82.22	82.00	82.14
20:05	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.14
20:10	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.14
20:15	81.29	81.69	81.90	82.24	82.64	82.33	82.21	82.00	82.13
20:20	81.29	81.69	81.90	82.24	82.64	82.32	82.21	81.99	82.13
20:25	81.29	81.69	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:30	81.29	81.68	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:35	81.29	81.68	81.89	82.23	82.63	82.32	82.21	81.99	82.13
20:40	81.28	81.68	81.89	82.23	82.63	82.32	82.21	81.98	82.12
20:45	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
20:50	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
20:55	81.28	81.68	81.89	82.23	82.62	82.32	82.20	81.98	82.12
21:00	81.28	81.68	81.88	82.23	82.62	82.31	82.20	81.97	82.12
21:05	81.28	81.67	81.88	82.22	82.61	82.31	82.20	81.97	82.11
21:10	81.28	81.67	81.88	82.22	82.61	82.31	82.20	81.97	82.11
21:15	81.27	81.67	81.88	82.22	82.61	82.31	82.19	81.97	82.11
21:20	81.27	81.67	81.88	82.22	82.61	82.31	82.19	81.96	82.11
21:25	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.11
21:30	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.11
21:35	81.27	81.67	81.88	82.22	82.60	82.31	82.19	81.96	82.10
21:40	81.27	81.66	81.87	82.21	82.60	82.31	82.19	81.96	82.10
21:45	81.27	81.66	81.87	82.21	82.59	82.30	82.19	81.95	82.10
21:50	81.26	81.66	81.87	82.21	82.59	82.30	82.19	81.95	82.10
21:55	81.26	81.66	81.87	82.21	82.59	82.30	82.18	81.95	82.10
22:00	81.26	81.66	81.87	82.21	82.59	82.30	82.18	81.95	82.09
22:05	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:10	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:15	81.26	81.66	81.87	82.21	82.58	82.30	82.18	81.94	82.09
22:20	81.25	81.65	81.86	82.20	82.58	82.30	82.18	81.94	82.09
22:25	81.25	81.65	81.86	82.20	82.58	82.30	82.18	81.94	82.08
22:30	81.25	81.65	81.86	82.20	82.58	82.29	82.17	81.93	82.08
22:35	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:40	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:45	81.25	81.65	81.86	82.20	82.57	82.29	82.17	81.93	82.08
22:50	81.25	81.64	81.86	82.20	82.57	82.29	82.17	81.92	82.08
22:55	81.24	81.64	81.86	82.19	82.57	82.29	82.17	81.92	82.07
23:00	81.24	81.64	81.85	82.19	82.57	82.29	82.17	81.92	82.07
23:05	81.24	81.64	81.85	82.19	82.56	82.29	82.17	81.92	82.07
23:10	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.92	82.07
23:15	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.07
23:20	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.07
23:25	81.24	81.64	81.85	82.19	82.56	82.28	82.16	81.91	82.06
23:30	81.23	81.63	81.85	82.19	82.56	82.28	82.16	81.91	82.06
23:35	81.23	81.63	81.85	82.18	82.55	82.28	82.16	81.91	82.06
23:40	81.23	81.63	81.84	82.18	82.55	82.28	82.16	81.90	82.06
23:45	81.23	81.63	81.84	82.18	82.55	82.28	82.16	81.90	82.06
23:50	81.23	81.63	81.84	82.18	82.55	82.28	82.15	81.90	82.06
23:55	81.23	81.63	81.84	82.18	82.55	82.27	82.15	81.90	82.05
0:00	81.23	81.62	81.84	82.18	82.55	82.27	82.15	81.90	82.05

he Commons - Medium Density (Phase 4)
Post-Development Model Schematic



10/31/2024
PREPARED BY: NOVATECH

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STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224-MD
Project Name: The Commons- Phase 4
Date: 10/18/2024
Input By: C.Visser/B. Smith
Reviewed By: M. Savic
Drawing Reference: 118224-GP-MD

Storm Design Event = 2 Year

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Uncontrolled Peak Flow Cell Output
- Design Input Restricted Peak Flow Cell

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Flow							Design Capacity								
											Proposed Sewer Pipe Sizing / Design								
Street	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Street One	A-2	110	108	0.004	0.20	0.00	0.00	10.00	76.81	0.2	42.1	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.87	0.3%
Street One	A-3	110	108	0.013	0.79	0.03	0.03	10.87	73.62	2.3	42.1	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.87	3.9%
Street One	A-4	110	108	0.079	0.81	0.18	0.21	11.74	70.71	14.8	42.1	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.87	25.1%
Street One	A-5	108	106	0.024	0.20	0.01	0.22	12.61	68.05	15.1	9.4	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.16	21.2%
Street One	-	106	104	0.000	0.00	0.00	0.22	12.77	67.58	15.0	19.2	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.40	25.5%
Street One	A-6	104	102	0.066	0.36	0.07	0.29	13.17	66.46	19.1	10.0	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.17	26.8%
Street One	A-7	102	100	0.120	0.80	0.27	0.55	13.34	65.99	36.6	39.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.82	62.3%
Street One	A-8	102	100	0.020	0.73	0.04	0.60	14.16	63.81	38.0	39.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.82	64.6%
Street One	-	100	EX	0.000	0.00	0.00	0.60	14.99	61.79	36.8	12.5	375 PVC	0.381	0.013	0.28	96.8	0.85	0.25	38.0%
Street Two	A-9	212	210	0.019	0.68	0.04	0.04	10.00	76.81	2.8	42.0	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.87	4.7%
Street Two	A-10	212	210	0.124	0.80	0.28	0.31	10.87	73.62	22.9	42.0	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.87	39.0%
Street Two	-	210	208	0.000	0.00	0.00	0.31	11.74	70.72	22.0	10.4	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.18	30.9%
Street Two	-	208	206	0.000	0.00	0.00	0.31	11.91	70.16	21.9	20.3	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.42	37.2%
Street Two	A-11	206	204	0.000	0.22	0.00	0.31	12.33	68.87	21.5	12.4	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.21	30.1%
Street Two	A-12	204	202	0.125	0.76	0.26	0.58	12.54	68.24	39.3	38.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.80	66.8%
Street Two	A-13	204	202	0.027	0.74	0.06	0.63	13.35	65.96	41.6	38.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.80	70.8%
Street Two	-	202	EX	0.000	0.00	0.00	0.63	13.35	65.96	41.6	14.4	375 PVC	0.381	0.013	0.25	91.5	0.80	0.30	45.5%
Street Three	A-14	312	310	0.025	0.85	0.06	0.06	10.00	76.81	4.5	38.0	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.79	7.7%
Street Three	A-15	310	308	0.096	0.78	0.21	0.27	10.79	73.91	19.8	11.7	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.20	27.7%
Street Three	A-11	310	308	0.036	0.22	0.02	0.29	10.99	73.22	21.2	11.7	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.20	29.7%
Street Three	-	308	306	0.000	0.00	0.00	0.29	11.18	72.54	21.0	43.0	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.89	35.7%
Street Three	A-16	306	304	0.050	0.79	0.11	0.40	10.99	73.22	29.2	11.5	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.24	49.7%
Street Three	A-17	306	304	0.031	0.20	0.02	0.42	11.18	72.54	30.2	11.5	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.24	51.3%
Street Three	A-18	304	302	0.017	0.60	0.03	0.44	12.07	69.67	31.0	15.3	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.32	52.7%
Street Three	-	302	EX	0.000	0.00	0.00	0.44	11.22	72.41	32.2	12.4	375 PVC	0.381	0.013	0.29	98.5	0.86	0.24	32.7%
Street Four	B-1	414	412	0.021	0.20	0.01	0.01	10.00	76.81	0.9	49.1	300 PVC	0.3048	0.013	0.34	58.8	0.81	1.02	1.5%
Street Four	B-2	414	412	0.075	0.81	0.17	0.18	11.02	73.12	13.2	49.1	300 PVC	0.3048	0.013	0.34	58.8	0.81	1.02	22.4%
Street Four	B-3	412	410	0.029	0.20	0.02	0.20	12.03	69.80	13.7	13.2	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.23	19.2%
Street Four	B-4	412	410	0.061	0.83	0.14	0.34	12.26	69.11	23.3	25.7	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.53	39.6%
Street Six	B-5	604	602	0.022	0.20	0.01	0.01	10.00	76.81	0.9	52.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	1.09	1.6%
Street Six	B-6	604	602	0.094	0.75	0.20	0.21	11.09	72.85	15.2	52.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	1.09	25.8%
Street Six	B-7	604	602	0.097	0.78	0.21	0.42	12.19	69.32	29.0	52.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	1.09	49.3%
Street Six	-	602	408	0.000	0.00	0.00	0.42	13.28	66.15	27.7	8.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.18	47.1%
Street Four	B-8	408	406	0.015	0.20	0.01	0.76	13.46	65.65	50.2	32.9	375 PVC	0.381	0.013	0.25	91.5	0.80	0.68	54.9%
Street Four	B-9	408	406	0.035	0.84	0.08	0.85	14.15	63.85	54.0	32.9	375 PVC	0.381	0.013	0.25	91.5	0.80	0.68	59.1%
Street Five	B-10	510	512	0.025	0.20	0.01	0.01	10.00	76.81	1.1	47.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.99	1.8%
Street Five	B-11	510	512	0.195	0.76	0.41	0.43	10.99	73.20	31.2	47.9	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.99	53.0%
Street Five		512	406	0.000	0.00	0.00	0.43	11.98	69.95	29.8	10.0	300 PVC	0.3048	0.013	0.34	58.8	0.81	0.21	50.6%

STORM SEWER DESIGN SHEET

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Location				Flow							Design Capacity								
											Proposed Sewer Pipe Sizing / Design								
Street	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Street Four	B-12	406	404	0.065	0.84	0.15	1.31	14.83	62.17	81.3	25.3	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.52	61.1%
Street Four	B-13	404	402	0.016	0.20	0.01	1.32	15.35	60.95	80.3	11.6	450 CONC	0.4572	0.013	0.50	210.3	1.28	0.15	38.2%
Street Four	B-14	402	508	0.072	0.80	0.16	1.48	15.50	60.60	89.5	51.2	450 CONC	0.4572	0.013	0.20	133.0	0.81	1.05	67.3%
Street Four	B-15	508	506	0.025	0.20	0.01	1.49	16.56	58.32	87.0	10.6	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.22	65.4%
Street Five	B-16	508	506	0.045	0.79	0.10	1.58	16.56	58.32	91.9	10.6	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.22	69.1%
Street Five	-	506	504	0.000	0.00	0.00	1.58	16.77	57.87	91.2	23.5	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.48	68.6%
Street Five	-	504	502	0.000	0.00	0.00	1.58	17.26	56.91	89.7	8.8	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.18	67.4%
Street Five	-	502	EX	0.000	0.00	0.00	1.58	17.44	56.55	89.1	8.5	450 CONC	0.4572	0.013	0.20	133.0	0.81	0.17	67.0%
PARK	B-17			0.016	0.20	0.01	0.01	10.00	76.81	1.1	7.8	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.13	1.5%
PARK	B-18	404	402	0.143	0.20	0.08	0.09	10.13	76.30	7.1	7.8	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.13	10.0%
Totals				**1.927**							**969.2**								

Demand Equation / Parameters

1. Q = 2.78 ACI

Definitions

Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
C = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)

Rainfall intensity is based on City of Ottawa IDF data presented in the City of Ottawa - Sewer Design Guidelines

Capacity Equation

Q full = $1000 \cdot (1/n) \cdot A_p \cdot R^{2/3} \cdot So^{0.5}$

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A_p = Pipe flow area (m^2)
R = Hydraulic Radius of wetted area (dia./4 for full pipes)
So = Pipe slope/gradient

The Commons - Medium Density (Phase 4)
Allowable Release Rate Calculations

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Block ID	Total Release Rate (cms)	Area (ha)	Per ha Release Rate (cms/ha)
B1 (A)	0.228	0.990	0.230
B3i (B)	0.245	1.014	0.242

AREA A FLOWS
Uncontrolled area - 100 year uncontrolled flow

Area A01	0.114 ha	0.046	cms
remaining allowable =		0.182	cms
remaining area =		0.876	ha
flow rate per area =		0.2077626	

Split into 3 loops

Street 1

Areas A02-A08 =	0.326
allowable flow =	0.068

Street 2

Areas A09, 10, 12, 13 =	0.295
allowable flow =	0.061

Street 3

Areas A11, A14-A18 =	0.255
allowable flow =	0.053

AREA B FLOWS
Uncontrolled area - 100 year uncontrolled flow

Area B17	0.143 ha =	0.026	cms
Area B18	0.003 ha =	0.001	
remaining allowable =		0.218	cms

The Commons - Medium Density (Phase 4)
Peak Flows (cms)

Storm Distribution->		4hr Chi.	3hr Chicago				12hr SCS		
Return Period->		**25mm**	**2yr**	**5yr**	**100yr**	**100yr+20%**	**2yr**	**5yr**	**100yr**
Area A Uncontrolled (A01)		0.003	0.004	0.016	0.046	0.060	0.009	0.019	0.037
Street 1	*minor flows*	0.032	0.040	0.048	0.064	0.067	0.036	0.048	0.062
	major flows	0	0	0	0	0	0	0	0
Street 2	*minor flows*	0.034	0.045	0.052	0.059	0.061	0.037	0.050	0.055
	major flows	0	0	0	0	0	0	0	0
Street 3	*minor flows*	0.023	0.028	0.037	0.053	0.055	0.027	0.037	0.052
	major flows	0	0	0	0	0	0	0	0
Area A TOTAL		**0.092**	**0.117**	**0.153**	**0.222**	**0.243**	**0.109**	**0.154**	**0.206**
Area B Uncontrolled (B17, 18)		0.001	0.001	0.005	0.027	0.041	0.003	0.010	0.033
Street 4	*minor flows*	0.090	0.118	0.150	0.185	0.216	0.104	0.150	0.191
	major flows	0	0	0	0	0	0	0	0
Area B TOTAL		**0.091**	**0.119**	**0.155**	**0.212**	**0.257**	**0.107**	**0.160**	**0.224**

The Commons - Medium Density (Phase 4)
Inlet Control Device Parameters

Structure	ICD Size & Inlet Rate					Approach Flow**
	Diameter 1 (mm)	Diameter 2* (mm)	Max Head (m)	Calculated 2-yr Capture Rate (L/s)	2-yr Capture Rate** (L/s)	(L/s)
CB50-51	IPEX LMF 65	IPEX LMF 65	2.06	12.53	7.60	8.04
CB52-53	IPEX LMF 70	IPEX LMF 70	2.03	12.44	6.20	6.47
CB54-55	IPEX LMF 75	IPEX LMF 65	2.04	13.96	11.00	11.88
CB56-57	IPEX LMF 75	IPEX LMF 65	2.05	13.99	12.80	14.15
CB58-59	IPEX LMF 100	IPEX LMF 100	1.73	23.96	21.60	22.31
CB60-61	IPEX LMF 75	IPEX LMF 85	1.69	15.51	14.10	14.89
CB62-63	IPEX LMF 95	IPEX LMF 95	1.76	24.16	20.20	21.63
CB64-65	IPEX LMF 95	IPEX LMF 95	1.76	24.16	22.00	23.04
CB66-67	IPEX LMF 70	IPEX LMF 70	1.74	12.86	8.70	9.10
CB68-69	IPEX LMF 95	IPEX LMF 95	1.73	20.43	16.80	17.30
CB70-71	IPEX LMF 80	IPEX LMF 80	1.95	15.04	14.80	16.09
CB72-73	IPEX LMF 85	IPEX LMF 85	2.00	18.47	16.60	17.46
CB74-75	83	83	1.97	41.70	33.40	33.90
CB78-79	83	83	1.69	38.62	8.02	8.04
CB80-81	IPEX LMF 75	IPEX LMF 75	2.04	13.92	12.30	13.42
CB82-83	83	83	1.70	38.73	2.40	23.53
CB84-85	83	83	1.66	38.27	3.20	3.28
CB86-87	83	83	1.66	38.27	2.80	2.83
CB88-89	83	83	1.68	38.50	4.40	4.49
CB90-91	83	83	1.82	40.08	3.60	3.66
CB92-93	83	83	1.72	38.96	2.00	2.00
Rear Yards						
RYCB20	83	-	1.11	15.64	0.18	0.22
RYCB21	83	-	1.16	15.99	0.10	0.55
RYCB22	83	-	1.46	17.94	3.00	0.33
RYCB23	83	-	1.46	17.94	0.27	0.36
RYCB24	83	-	1.16	15.99	0.24	0.34
RYCB150	83	-	1.96	20.79	0.18	0.26
RYCB151	83	-	1.96	20.79	0.21	0.31
RYCB153	83	-	1.96	20.79	0.16	0.21
RYCB154	83	-	1.96	20.79	0.21	0.27
RYCB155	83	-	1.46	17.94	0.19	0.30
RYCB156	83	-	1.96	20.79	0.13	0.17
RYCB158	83	-	1.96	20.79	0.03	0.07

The Commons - Medium Density (Phase 4)
Inlet Control Device Parameters

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Structure	ICD Size & Inlet Rate					Approach Flow**
	Diameter 1 (mm)	Diameter 2* (mm)	Max Head (m)	Calculated 2-yr Capture Rate (L/s)	2-yr Capture Rate** (L/s)	(L/s)
Manholes - Outlets from Phase 4						
MH100	178	-	2.29	103.44	40.13	40.13
MH202	152	-	2.35	76.46	43.23	43.23
MH302	127	-	4.06	70.07	28.34	28.34

**Diameter 2 only specified where catchbasins are not interconnected*

***From PCSWMM Model, 2-year 3-hour Chicago storm distribution*

The Commons - Medium Density (Phase 4)
ICD Rating Curves

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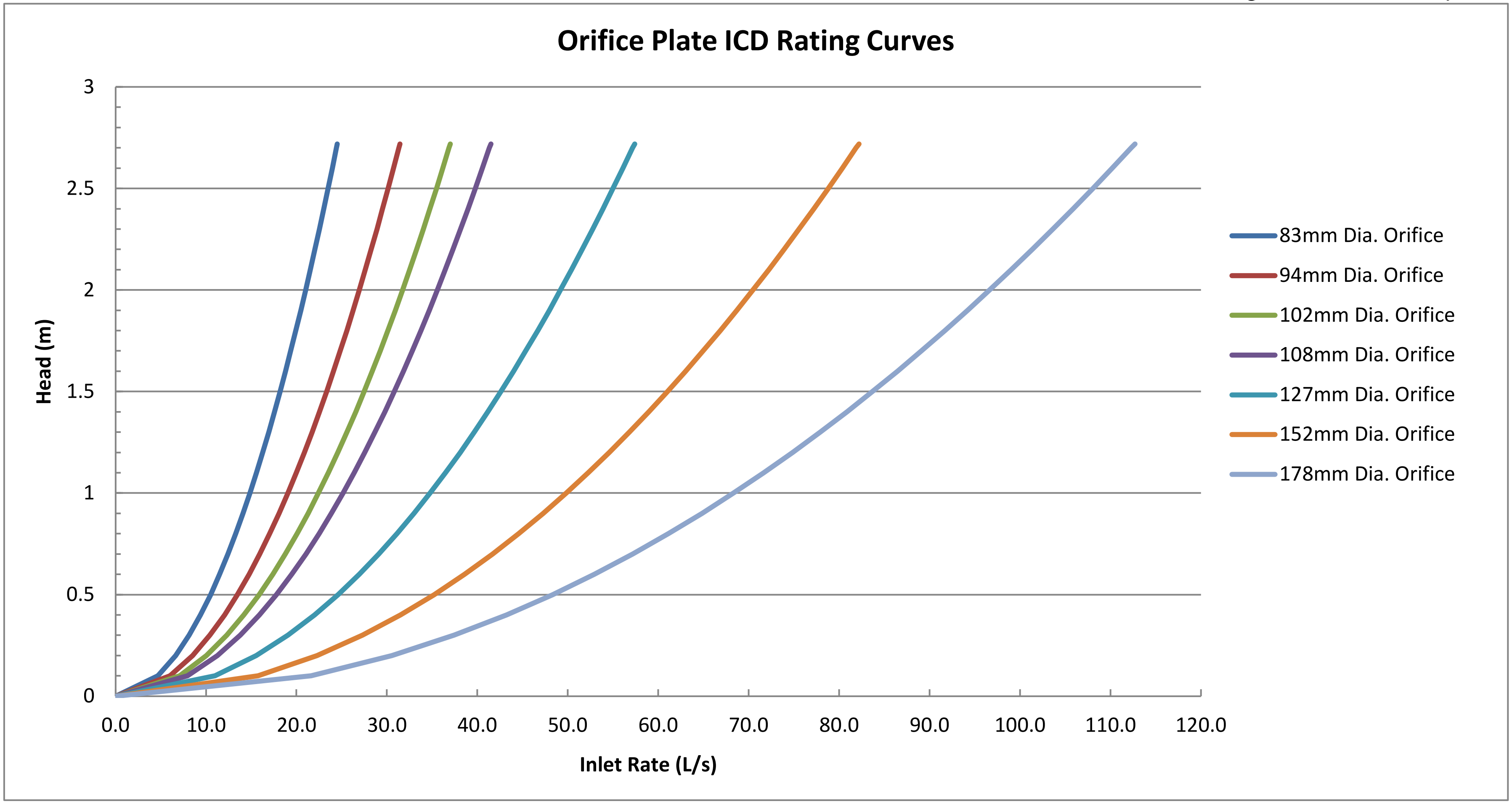

Prepared By: Novatech Engineering Consultants
Date: 10/31/2024

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The Commons - Medium Density (Phase 4)
Catchbasin (On-Grade) with ICD Curves

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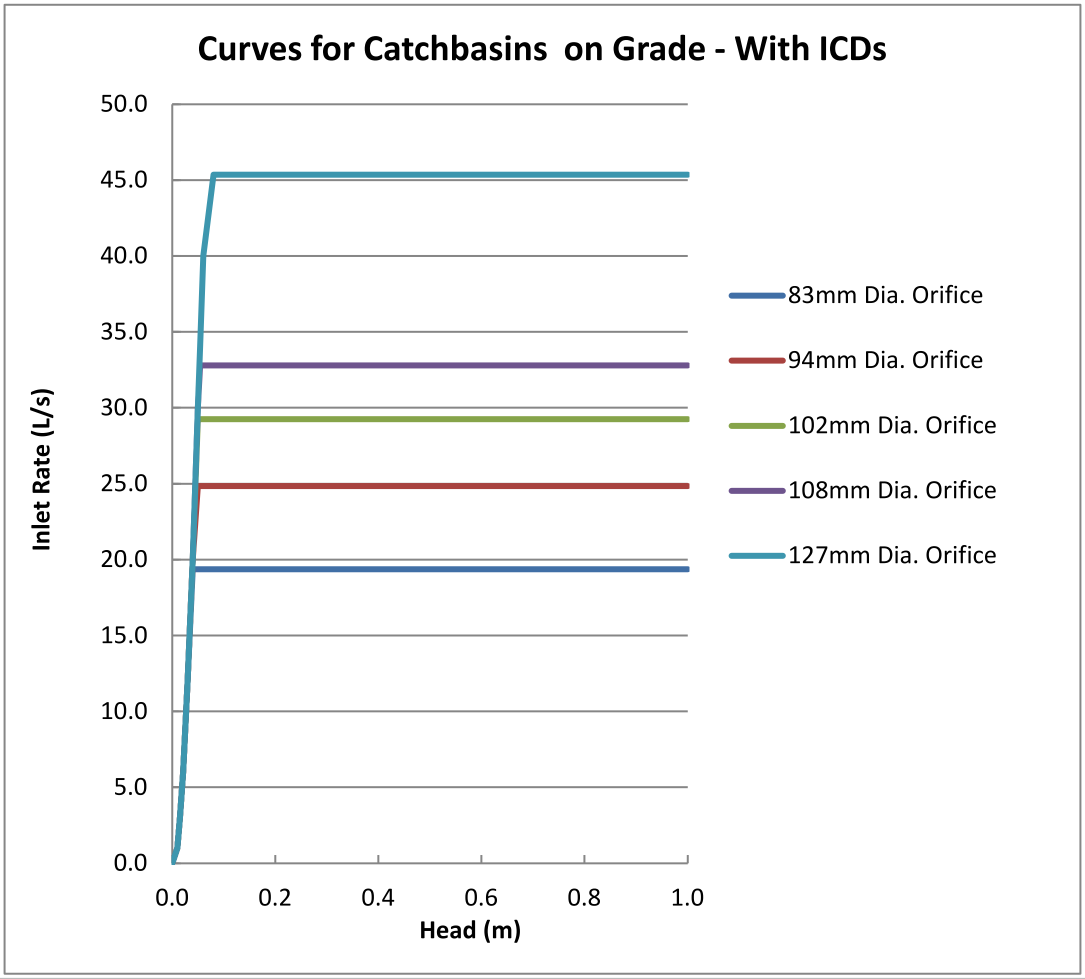


Curb Inlet Catchbasins on Continuous Grade

Depth vs. Captured Flow Curve

A standard depth vs. captured flow curve for catch basins on a continuous grade was provided to Novatech by City staff for use in a dual-drainage model of an existing residential neighbourhood. This standard curve was derived using the inlet curves in Appendix 7A of the Ottawa Sewer Design Guidelines.

Novatech reviewed the methodology used to create this standard curve (described below) and determined that it was suitable for general use in other dual-drainage models.

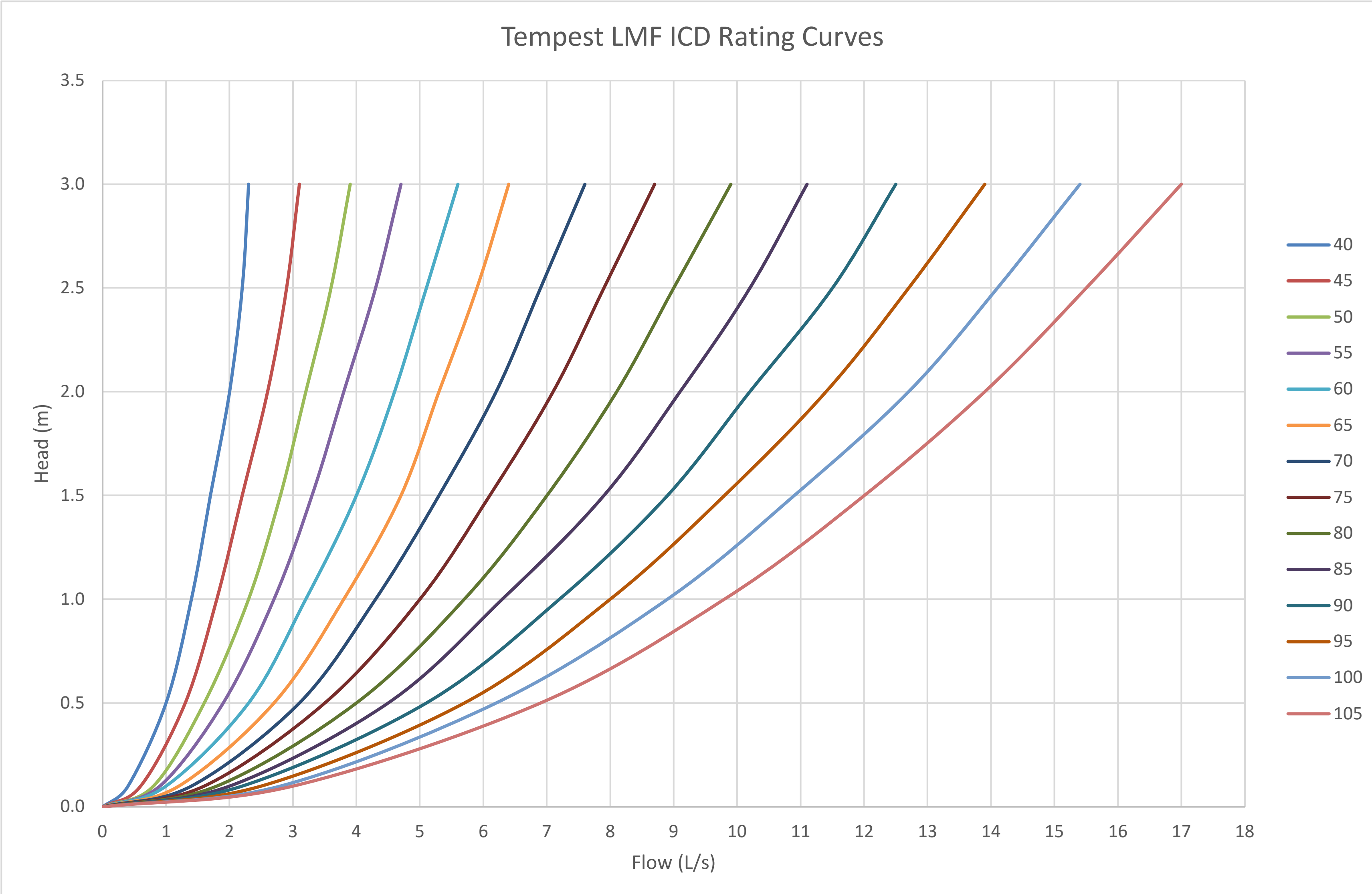
- MTO Design Chart 4.04 provides the relationship between the gutter flow rate (Q_t) and flow spread (T) for Barrier Curb.
- MTO Design Chart 4.12 provides the relationship between flow spread (T) and flow depth (D).
- The relationship between the gutter flow rate (Q_t) and flow depth (D) was determined for different road slopes using the above charts and Manning's equation (refer to pages 58-60 of the MTO Drainage Management Manual – Part 2);
- The relationship between approach flow (Q_t) and captured flow (Q_c) was determined for different road slopes using the design chart for Barrier Curb with Gutter (Appendix 7-A.2).
- Using the above information, a family of curves was developed to characterize the relationship between flow depth and captured flow for curb inlet catchbasins on different road slopes. The results of this exercise can be summarized as follows:
    - For a given flow depth, the gutter flow rate (Q_t) increases as the road slope increases.
    - The capture efficiency (Q_c) of curb inlet catchbasins decrease as the road slope increases.
    - The net result is that the relationship between flow depth and capture rate is largely independent of road slope: While approach flow vs. captured flow (Q_t vs. Q_c) varies significantly with road grade, flow depth vs. captured flow (D vs. Q_c) does not.

Since there was very little difference in the flow depth vs. captured flow curves for different road slopes, this family of curves was averaged to create a single standard curve for use in dual-drainage models.

Inlet Control Devices

The standard depth vs. capture flow curve was modified to account for the installation of ICDs in curb inlet catchbasins on continuous grade. Separate inlet curves were created for each standard ICD orifice size by capping the inlet rate on the depth vs. capture flow curve at the maximum flow rate through the ICD at a head of 1.2m (depth from centerline of CB lead to top of CICB frame).

The Commons - Medium Density (Phase 4)
ICD Rating Curves - Tempest LMF



Prepared By: Novatech Engineering Consultants
Date: 10/31/2024

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The Commons - Medium Density (Phase 4)
ROW Ponding Depths

Structure	T/G	Max. Static Ponding (Spill Depth)		2-yr Event (4hr)				5-yr Event (4hr)				100-yr Event (4hr)				100-yr Event (+20%) (4hr)			
	(m)	Elev. (m)	Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)	Elev. (m)	Depth (m)	Cascading Flow?	Cascade Depth (m)
CB50-51	90.42	90.74	0.32	89.12	0.00	N	0.00	89.74	0.00	N	0.00	90.50	0.08	N	0.00	90.53	0.11	N	0.00
CB52-53	90.46	90.75	0.29	88.94	0.00	N	0.00	89.38	0.00	N	0.00	90.50	0.04	N	0.00	90.54	0.08	N	0.00
CB54-55	90.50	90.77	0.27	89.73	0.00	N	0.00	90.52	0.02	N	0.00	90.62	0.12	N	0.00	90.65	0.15	N	0.00
CB56-57	90.59	90.86	0.27	90.26	0.00	N	0.00	90.57	0.00	N	0.00	90.66	0.07	N	0.00	90.70	0.11	N	0.00
CB58-59	90.82	91.06	0.24	90.52	0.00	N	0.00	90.89	0.07	N	0.00	91.00	0.18	N	0.00	91.04	0.22	N	0.00
CB60-61	90.81	91.10	0.29	90.51	0.00	N	0.00	90.86	0.05	N	0.00	90.95	0.14	N	0.00	90.89	0.08	N	0.00
CB62-63	90.74	90.95	0.21	90.43	0.00	N	0.00	90.81	0.07	N	0.00	90.93	0.19	N	0.00	90.96	0.22	Y	0.01
CB64-65	90.84	91.07	0.23	90.64	0.00	N	0.00	90.92	0.08	N	0.00	91.03	0.19	N	0.00	91.07	0.23	N	0.00
CB66-67	90.40	90.69	0.29	89.46	0.00	N	0.00	90.18	0.00	N	0.00	90.53	0.13	N	0.00	90.57	0.17	N	0.00
CB68-69	90.52	90.73	0.21	89.96	0.00	N	0.00	90.57	0.05	N	0.00	90.69	0.17	N	0.00	90.73	0.21	N	0.00
CB70-71	90.54	90.83	0.29	90.46	0.00	N	0.00	90.61	0.07	N	0.00	90.70	0.16	N	0.00	90.74	0.20	N	0.00
CB72-73	90.48	90.77	0.29	90.09	0.00	N	0.00	90.55	0.07	N	0.00	90.68	0.20	N	0.00	90.72	0.24	N	0.00
CB74-75	90.36	90.61	0.25	89.66	0.00	N	0.00	90.41	0.05	N	0.00	90.54	0.18	N	0.00	90.58	0.22	N	0.00
CB80-81	90.41	90.61	0.20	89.95	0.00	N	0.00	90.47	0.06	N	0.00	90.57	0.16	N	0.00	90.61	0.20	N	0.00

The Commons - Medium Density (Phase 4)
HGL Elevations

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Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation - 100yr4hr (m)	HGL Elevation - 100yr4hr+20% (m)	Min USF (m)	Clearance from T/G (100yr) (m)	Clearance from T/G (100yr+20%) (m)
MH100	88.48	90.86	89.68	89.76	89.98	-1.18	-1.10
MH102	88.69	91.02	89.81	89.90	90.11	-1.21	-1.12
MH104	88.78	91.12	89.83	89.92	90.13	-1.29	-1.20
MH106	88.90	91.07	89.84	89.93	90.14	-1.23	-1.14
MH108	89.00	90.99	89.85	89.94	90.15	-1.14	-1.05
MH110	89.19	90.79	89.85	89.95	90.15	-0.94	-0.84
MH202	88.25	90.68	89.84	89.97	90.14	-0.84	-0.71
MH204	88.46	90.85	89.92	90.06	90.22	-0.93	-0.79
MH206	88.57	91.01	89.94	90.08	90.24	-1.07	-0.93
MH208	88.69	91.08	89.96	90.10	90.26	-1.12	-0.98
MH210	88.79	90.99	89.97	90.11	90.27	-1.02	-0.88
MH212	88.98	90.96	89.97	90.12	90.27	-0.99	-0.84
MH302	86.34	90.46	89.13	89.47	89.43	-1.33	-0.99
MH304	86.46	90.60	89.16	89.49	89.46	-1.44	-1.11
MH306	86.95	90.54	89.20	89.53	89.50	-1.34	-1.01
MH308	87.15	90.55	89.28	89.62	89.58	-1.27	-0.93
MH310	87.26	90.60	89.30	89.64	89.60	-1.30	-0.96
MH312	87.44	90.38	89.30	89.64	89.60	-1.08	-0.74
MH402	87.13	90.67	87.80	88.48	88.10	-2.87	-2.19
MH404	87.24	90.54	87.85	88.52	88.15	-2.69	-2.02
MH406	87.34	90.81	88.04	88.69	88.34	-2.77	-2.12
MH408	87.50	90.87	88.13	88.77	88.43	-2.74	-2.10
MH410	87.66	90.58	88.14	88.78	88.44	-2.44	-1.80
MH412	87.78	90.62	88.15	88.78	88.45	-2.47	-1.84
MH414	88.00	90.69	88.13	88.79	88.43	-2.56	-1.90
MH502	86.87	90.20	87.36	88.09	87.66	-2.84	-2.11
MH504	86.88	90.29	87.40	88.12	87.70	-2.89	-2.17
MH506	86.93	90.64	87.51	88.21	87.81	-3.13	-2.43
MH508	86.98	90.79	87.56	88.25	87.86	-3.23	-2.54
MH510	87.71	90.62	88.08	88.74	88.38	-2.54	-1.88
MH512	87.52	90.56	88.06	88.71	88.36	-2.50	-1.85
MH602	87.60	90.69	88.14	88.78	88.44	-2.55	-1.91
MH604	87.81	90.65	88.15	88.79	88.45	-2.50	-1.86

The Commons - Medium Density (Phase 4)
HGL Elevations - Model Comparison

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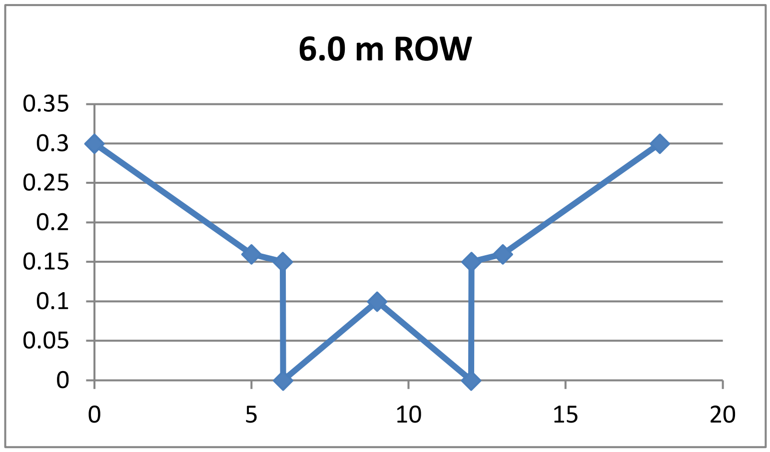
Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation - Original Model (m)	HGL Elevation - With Phase 4 (m)	Change (m)
100_(STM)	81.27	87.58	83.10	83.00	-0.10
102_(STM)	81.34	87.57	83.24	83.13	-0.11
104_(STM)	81.38	87.62	83.41	83.28	-0.13
106_(STM)	83.54	87.66	84.19	84.19	0.00
108_(STM)	83.62	87.50	84.20	84.20	0.00
110_(STM)	83.94	87.75	84.58	84.58	0.00
112_(STM)	81.90	87.92	83.78	83.57	-0.21
114_(STM)	83.37	88.00	84.15	84.15	0.00
116_(STM)	83.50	88.17	84.27	84.27	0.00
118_(STM)	83.88	88.36	84.54	84.54	0.00
120_(STM)	82.66	88.08	84.77	84.53	-0.24
122_(STM)	82.74	88.23	84.94	84.63	-0.31
124_(STM)	82.83	88.20	85.10	84.74	-0.36
126_(STM)	82.97	88.47	85.45	84.98	-0.47
128_(STM)	83.17	88.63	85.85	85.22	-0.63
130_(STM)	84.27	89.05	86.26	85.56	-0.70
132_(STM)	84.48	89.18	86.43	85.75	-0.68
134_(STM)	84.80	89.32	86.82	86.31	-0.51
136_(STM)	83.34	88.65	86.13	85.38	-0.75
138_(STM)	83.42	88.77	86.25	85.47	-0.78
140_(STM)	83.71	89.25	86.70	85.76	-0.94
142_(STM)	84.91	89.16	86.97	86.07	-0.90
144_(STM)	84.13	89.45	87.13	86.06	-1.07
146_(STM)	85.00	89.12	87.77	86.55	-1.22
148_(STM)	85.14	89.21	88.62	86.74	-1.88
150_(STM)	84.38	89.80	87.32	86.55	-0.77
152_(STM)	85.26	90.00	88.16	86.47	-1.69
154_(STM)	85.35	90.09	87.96	86.53	-1.43
156_(STM)	85.73	89.94	88.51	87.88	-0.63
158_(STM)	84.91	90.07	87.94	86.98	-0.96
160_(STM)	84.99	90.16	88.05	87.06	-0.99
162_(STM)	85.35	90.30	88.50	87.22	-1.28
164_(STM)	85.60	90.28	88.69	87.33	-1.36
166_(STM)	86.17	90.42	88.69	87.36	-1.33
168_(STM)	86.50	90.39	88.75	87.41	-1.34
170_(STM)	87.06	91.06	89.91	87.59	-2.32
2121_(STM)	80.23	87.49	82.82	82.82	0.00
2142_(STM)	80.10	87.37	82.82	82.83	0.01
2143_(STM)	79.93	86.32	82.82	82.82	0.00
2144_(STM)	79.85	86.00	82.82	82.82	0.00
98_(STM)	81.17	87.50	83.01	82.92	-0.09
StartNullStruct3	84.09	87.80	84.59	84.59	0.00
STM-251_(STM)	85.31	89.64	87.19	86.26	-0.93

The Commons - Medium Density (Phase 4)
Roadway Cross-Sections

6.0m Roadway

0	0.3
5	0.16
6	0.15
6.01	0
9	0.1
11.99	0
12	0.15
13	0.16
18	0.3



The Commons - Medium Density (Phase 4)
Design Storm Time Series Data
3-hour Chicago Design Storms

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C25mm-3.stm			C2-3.stm			C5-3.stm	
Duration	Intensity		Duration	Intensity		Duration	Intensity
min	mm/hr		min	mm/hr		min	mm/hr
0:00	0		0:00	0		0:00	0
0:10	2.21		0:10	2.81		0:10	3.68
0:20	2.75		0:20	3.5		0:20	4.58
0:30	3.68		0:30	4.69		0:30	6.15
0:40	5.73		0:40	7.3		0:40	9.61
0:50	14.29		0:50	18.21		0:50	24.17
1:00	60.28		1:00	76.81		1:00	104.19
1:10	18.9		1:10	24.08		1:10	32.04
1:20	9.7		1:20	12.36		1:20	16.34
1:30	6.53		1:30	8.32		1:30	10.96
1:40	4.94		1:40	6.3		1:40	8.29
1:50	3.99		1:50	5.09		1:50	6.69
2:00	3.37		2:00	4.29		2:00	5.63
2:10	2.92		2:10	3.72		2:10	4.87
2:20	2.58		2:20	3.29		2:20	4.3
2:30	2.32		2:30	2.95		2:30	3.86
2:40	2.1		2:40	2.68		2:40	3.51
2:50	1.93		2:50	2.46		2:50	3.22
3:00	1.79		3:00	2.28		3:00	2.98

The Commons - Medium Density (Phase 4)
Design Storm Time Series Data
3-hour Chicago Design Storms

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C100-3.stm			C100-3+20%.stm	
Duration	Intensity		Duration	Intensity
min	mm/hr		min	mm/hr
0:00	0		0:00	0
0:10	6.05		0:10	6:14
0:20	7.54		0:20	9.05
0:30	10.16		0:30	12.19
0:40	15.97		0:40	19.16
0:50	40.65		0:50	48.78
1:00	178.56		1:00	214.27
1:10	54.05		1:10	64.86
1:20	27.32		1:20	32.78
1:30	18.24		1:30	21.89
1:40	13.74		1:40	16.49
1:50	11.06		1:50	13.27
2:00	9.29		2:00	11.15
2:10	8.02		2:10	9.62
2:20	7.08		2:20	8.5
2:30	6.35		2:30	7.62
2:40	5.76		2:40	6.91
2:50	5.28		2:50	6.34
3:00	4.88		3:00	5.86

The Commons - Medium Density (Phase 4)
Design Storm Time Series Data
SCS Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

S2-12.stm		S5-12.stm		S100-12.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0.00	0:00	0	0:00	0
0:30	1.27	0:30	1.69	0:30	2.82
1:00	0.59	1:00	0.79	1:00	1.31
1:30	1.10	1:30	1.46	1:30	2.44
2:00	1.10	2:00	1.46	2:00	2.44
2:30	1.44	2:30	1.91	2:30	3.19
3:00	1.27	3:00	1.69	3:00	2.82
3:30	1.69	3:30	2.25	3:30	3.76
4:00	1.69	4:00	2.25	4:00	3.76
4:30	2.29	4:30	3.03	4:30	5.07
5:00	2.88	5:00	3.82	5:00	6.39
5:30	4.57	5:30	6.07	5:30	10.14
6:00	36.24	6:00	48.08	6:00	80.38
6:30	9.23	6:30	12.25	6:30	20.47
7:00	4.06	7:00	5.39	7:00	9.01
7:30	2.71	7:30	3.59	7:30	6.01
8:00	2.37	8:00	3.15	8:00	5.26
8:30	1.86	8:30	2.47	8:30	4.13
9:00	1.95	9:00	2.58	9:00	4.32
9:30	1.27	9:30	1.69	9:30	2.82
10:00	1.02	10:00	1.35	10:00	2.25
10:30	1.44	10:30	1.91	10:30	3.19
11:00	0.93	11:00	1.24	11:00	2.07
11:30	0.85	11:30	1.12	11:30	1.88
12:00	0.85	12:00	1.12	12:00	1.88

The Commons - Medium Density (Phase 4)
Design Storm Time Series Data
SCS Design Storms

S2-24.stm		S5-24.stm		S100-24.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0.00	0:00	0	0:00	0
1:00	0.72	1:00	0.44	1:00	0.6
2:00	0.34	2:00	0.44	2:00	0.75
3:00	0.63	3:00	0.81	3:00	1.39
4:00	0.63	4:00	0.81	4:00	1.39
5:00	0.81	5:00	1.06	5:00	1.81
6:00	0.72	6:00	0.94	6:00	1.6
7:00	0.96	7:00	1.25	7:00	2.13
8:00	0.96	8:00	1.25	8:00	2.13
9:00	1.30	9:00	1.68	9:00	2.88
10:00	1.63	10:00	2.12	10:00	3.63
11:00	2.59	11:00	3.37	11:00	5.76
12:00	20.55	12:00	26.71	12:00	45.69
13:00	5.23	13:00	6.8	13:00	11.64
14:00	2.30	14:00	2.99	14:00	5.12
15:00	1.54	15:00	2	15:00	3.42
16:00	1.34	16:00	1.75	16:00	2.99
17:00	1.06	17:00	1.37	17:00	2.35
18:00	1.11	18:00	1.44	18:00	2.46
19:00	0.72	19:00	0.94	19:00	1.6
20:00	0.58	20:00	0.75	20:00	1.28
21:00	0.81	21:00	1.06	21:00	1.81
22:00	0.53	22:00	0.68	22:00	1.17
23:00	0.48	23:00	0.63	23:00	1.07
0:00	0.48	0:00	0.63	0:00	1.07

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
--------------------------------------------------------------

Base_Model_v1.5 from the Model Build (GIS) folder.
20220413 - Additional CB added, minor changes to drainage areas
20230406 - Revised inverts as as-built profiles + CB56 added. Memo provided
(Vahid Mehdipour).

WARNING 03: negative offset ignored for Link 14
WARNING 03: negative offset ignored for Link 39
WARNING 03: negative offset ignored for Link 48
WARNING 03: negative offset ignored for Link C2
WARNING 03: negative offset ignored for Link OR-52
WARNING 10: crest elevation raised to downstream invert for regulator Link
PH4_ICD21
WARNING 10: crest elevation raised to downstream invert for regulator Link
PH4_ICD22
WARNING 03: negative offset ignored for Link PH4_ICD90
WARNING 03: negative offset ignored for Link PH4_ICD91
WARNING 02: maximum depth increased for Node 29_(RYCB)
WARNING 02: maximum depth increased for Node 38_(RYCB)
WARNING 02: maximum depth increased for Node ELB_20_(RYCB)
WARNING 02: maximum depth increased for Node ELB_6_(RYCB)
WARNING 02: maximum depth increased for Node Maj-12
WARNING 02: maximum depth increased for Node Maj-14
WARNING 02: maximum depth increased for Node Maj-23
WARNING 02: maximum depth increased for Node Maj-30
WARNING 02: maximum depth increased for Node Maj-33
WARNING 02: maximum depth increased for Node Maj-34
WARNING 02: maximum depth increased for Node Maj-35
WARNING 02: maximum depth increased for Node Maj-39
WARNING 02: maximum depth increased for Node Maj-52
WARNING 02: maximum depth increased for Node PH4_CB52-53
WARNING 02: maximum depth increased for Node PH4_CB60-61
WARNING 02: maximum depth increased for Node PH4_CB64-65
WARNING 02: maximum depth increased for Node PH4_CB70-71
WARNING 02: maximum depth increased for Node PH4_CB74-75
WARNING 02: maximum depth increased for Node PH4_RYCB151
WARNING 02: maximum depth increased for Node PH4_RYCB155
WARNING 02: maximum depth increased for Node PH4_RYCB21
WARNING 02: maximum depth increased for Node PH4_RYCB23
WARNING 02: maximum depth increased for Node RYCB_1_(RYCB)
WARNING 02: maximum depth increased for Node Structure_-_(18)_(RYCB)
WARNING 02: maximum depth increased for Node TEE_14_(RYCB)

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 120
Number of nodes ........... 371
Number of links ........... 503
Number of pollutants ...... 0
Number of land uses ....... 0
```

```
****************
Raingage Summary
****************
                                                           Data       Recording
Name                 Data Source                           Type       Interval
-------------------------------------------------------------------------------
Raingage             100yrChicago3hr                       INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                        Area     Width   %Imperv    %Slope Rain Gage
Outlet
--------------------------------------------------------------------------------
--------------------------
A10                         0.20    105.00     42.90    0.5000 Raingage
RYCB_14_(RYCB)
A11                         0.29    105.00     42.90    0.5000 Raingage
RYCB_12_(RYCB)
A12i                        0.19     76.00     71.40    0.5000 Raingage
Slope1
A12ii                       0.09     76.00     71.40    0.5000 Raingage
Slope1
A13                         0.23     76.00     42.90    0.5000 Raingage
RYCB_11_(RYCB)
A14                         0.32     75.00     42.90    0.5000 Raingage
TEE_23_(RYCB)
A15i                        0.25    103.00     71.40    0.5000 Raingage
Maj-20
A15ii                       0.27    103.00     71.40    0.5000 Raingage
Maj-20
A16i                        0.06     24.00     71.40    0.5000 Raingage
Maj-19_2
A16ii                       0.07     25.00     71.40    0.5000 Raingage
Maj-19_2
A17                         0.09     68.00     42.90    0.5000 Raingage
TEE_39_(RYCB)
A17ii                       0.09     77.00     71.40    0.5000 Raingage
Maj-24
A18i                        0.19     77.00     71.40    0.5000 Raingage
Maj-24
A19                         0.19    128.00     42.90    0.5000 Raingage
RYCB_9_(RYCB)
A1i                         0.16    148.99     71.40    0.5000 Raingage
Maj-03
A1ii                        0.20    148.98     71.40    0.5000 Raingage
Maj-03
A20i                        0.20     99.80     71.40    0.9000 Raingage
Maj-26
A20ii                       0.21     99.80     71.40    0.9000 Raingage
Maj-26
A21                         0.33    112.00     50.00    0.5000 Raingage
RYCB_7_(RYCB)
A22                         0.03     47.70     42.90    0.5000 Raingage
TEE_14_(RYCB)
A23                         0.17     72.00     50.00    0.5000 Raingage
TEE_14_(RYCB)
A24i                        0.11     90.00     71.40    0.9000 Raingage
Maj-28
```

A24ii	0.24	130.00	71.40	0.9000	Raingage
Maj-28					
A25	0.29	102.00	50.00	0.5000	Raingage
RYCB_8_(RYCB)					
A26i	0.06	73.00	71.40	0.5000	Raingage
Maj-33					
A26ii	0.17	73.00	71.40	0.5000	Raingage
Maj-33					
A27i	0.09	47.78	71.40	0.5000	Raingage
Maj-32					
A27ii	0.18	84.80	71.40	0.5000	Raingage
Maj-32					
A28i	0.14	63.18	71.40	1.0000	Raingage
Maj-30					
A28ii	0.14	65.08	71.40	1.0000	Raingage
Maj-30					
A29	0.12	78.57	50.00	0.5000	Raingage
TEE_11_(RYCB)					
A2i	0.12	119.74	71.40	0.5000	Raingage
Maj-06_2					
A2ii	0.12	119.74	71.40	0.5000	Raingage
Maj-06_2					
A3	0.15	110.55	42.90	0.5000	Raingage
ELB_23_(RYCB)					
A30	0.01	17.98	42.90	0.5000	Raingage
RYCB_6_(RYCB)					
A31	0.19	128.81	50.00	0.5000	Raingage
TEE_5_(RYCB)					
A32i	0.15	73.09	71.40	1.0000	Raingage
Maj-35					
A32ii	0.08	72.69	71.40	1.0000	Raingage
Maj-35					
A33i	0.11	163.52	71.40	1.0000	Raingage
Maj-37					
A33ii	0.16	75.74	71.40	1.0000	Raingage
Maj-37					
A34i	0.21	124.53	71.40	0.5000	Raingage
Maj-41					
A34ii	0.28	133.75	71.40	0.5000	Raingage
Maj-41					
A35i	0.23	116.15	71.40	0.5000	Raingage
Maj-42					
A35ii	0.20	117.20	71.40	0.5000	Raingage
Maj-42					
A36	0.29	98.91	50.00	0.5000	Raingage
TEE_32_(RYCB)					
A37	0.03	47.34	42.90	0.5000	Raingage
RYCB_18_(RYCB)					
A38	0.24	95.00	50.00	0.5000	Raingage
TEE_34_(RYCB)					
A39i	0.21	113.59	71.40	1.0000	Raingage
Maj-44					
A39ii	0.07	74.54	71.40	1.0000	Raingage
Maj-44					
A4	0.09	60.00	71.40	0.5000	Raingage
Maj-09					
A40	0.22	80.06	50.00	0.5000	Raingage
RYCB_5_(RYCB)					
A41	0.07	54.99	50.00	0.5000	Raingage
TEE_7_(RYCB)					
A42i	0.15	72.33	71.40	0.5000	Raingage
Maj-46					
A42ii	0.08	72.44	71.40	0.5000	Raingage
Maj-46					
A42iii	0.03	30.00	71.40	0.5000	Raingage
Maj-48_3					
A43	0.24	80.93	50.00	0.5000	Raingage
RYCB_2_(RYCB)					
A44	0.20	72.05	50.00	0.5000	Raingage
RYCB_3_(RYCB)					
A45i	0.17	77.61	71.40	0.5000	Raingage
Maj-50					
A45ii	0.07	77.67	71.40	0.5000	Raingage
Maj-50					
A46i	0.16	73.07	71.40	0.5000	Raingage
Maj-52					
A46ii	0.14	87.03	71.40	0.5000	Raingage
Maj-52					
A47	0.14	93.00	50.00	0.5000	Raingage
RYCB_4_(RYCB)					
A48	0.20	57.13	71.40	0.5000	Raingage
Maj-54					
A49	0.07	57.99	50.00	0.5000	Raingage
RYCB_1_(RYCB)					
A50	0.07	32.22	71.40	0.5000	Raingage
Maj-55					
A51	0.19	72.72	71.40	0.5000	Raingage
Maj-58					
A52	0.02	23.67	42.90	1.2000	Raingage
Maj-58					
A53	0.18	121.36	50.00	0.5000	Raingage
ELB_25_(RYCB)					
A54	0.17	80.07	50.00	0.5000	Raingage
TEE_43_(RYCB)					
A5i	0.10	65.00	71.40	0.5000	Raingage
Maj-10					
A5ii	0.26	121.97	71.40	0.5000	Raingage
Maj-10					
A6	0.13	112.31	42.90	0.5000	Raingage
RYCB_13_(RYCB)					
A7i	0.23	120.00	71.40	0.7000	Raingage
Maj-16					
A7ii	0.28	130.00	71.40	0.7000	Raingage
Maj-16					
A8i	0.22	105.00	71.40	0.5000	Raingage
Maj-12					
A8ii	0.19	87.00	71.40	0.5000	Raingage
Maj-12					
A9i	0.19	85.00	71.40	0.7000	Raingage
Maj-14					
A9ii	0.07	72.00	71.40	0.7000	Raingage
Maj-14					
B2	3.43	226.89	100.00	1.0000	Raingage
B2_Stor					
B4i	0.95	148.99	28.60	0.5000	Raingage
58_(CB)					
B4ii	0.05	77.57	28.60	0.5000	Raingage
Maj-50					
B4iii	0.01	14.24	28.60	0.5000	Raingage
Maj-51					

```
  C1                               0.11      54.68      71.40     0.5000 Raingage
Maj-01
  C2                               0.09      60.00      71.40     0.5000 Raingage
Maj-21
  PH4_A01                          0.11     130.43      16.00     3.0000 Raingage
Maj-07
  PH4_A02                          0.00      15.34       3.00     1.5000 Raingage
PH4_RYCB20
  PH4_A03                          0.01       7.76      84.00     1.5000 Raingage
PH4_CB82-83
  PH4_A04                          0.08      49.00      87.00     4.4000 Raingage
PH4_CB60-61
  PH4_A05                          0.02      25.05       3.00     1.5000 Raingage
PH4_RYCB21
  PH4_A06                          0.07      48.66      23.00     1.5000 Raingage
PH4_RYCB22
  PH4_A07                          0.12      65.62      86.00     3.8500 Raingage
PH4_CB58-59
  PH4_A08                          0.02      10.47      76.00     2.2000 Raingage
PH4_CB84-85
  PH4_A09                          0.02      10.00      69.00     2.0000 Raingage
PH4_CB86-87
  PH4_A10                          0.12      66.16      86.00     3.5000 Raingage
PH4_CB64-65
  PH4_A11                          0.04      42.68       3.00     1.5000 Raingage
PH4_RYCB23
  PH4_A12                          0.13      67.05      80.00     3.5000 Raingage
PH4_CB62-63
  PH4_A13                          0.03      14.45      77.00     2.5000 Raingage
PH4_CB88-89
  PH4_A14                          0.03      15.02      67.00     5.6000 Raingage
PH4_CB90-91
  PH4_A15                          0.10      56.59      83.00     5.5000 Raingage
PH4_CB68-69
  PH4_A16                          0.05      29.48      84.00     4.2500 Raingage
PH4_CB66-67
  PH4_A17                          0.03      47.99       3.00     1.5000 Raingage
PH4_RYCB24
  PH4_A18                          0.02      13.64      53.00     4.0000 Raingage
PH4_CB92-93
  PH4_B01                          0.02      23.79       0.00     1.5000 Raingage
PH4_RYCB158
  PH4_B02                          0.07      47.54      87.00     4.5000 Raingage
PH4_CB56-57
  PH4_B03                          0.03      27.58       3.00     1.5000 Raingage
PH4_RYCB154
  PH4_B04                          0.06      38.17      90.00     3.9000 Raingage
PH4_CB54-55
  PH4_B05                          0.02      25.51       3.00     1.5000 Raingage
PH4_RYCB153
  PH4_B06                          0.09      58.85      79.00     3.0000 Raingage
PH4_CB70-71
  PH4_B07                          0.10      59.42      83.00     4.2000 Raingage
PH4_CB72-73
  PH4_B08                          0.01      71.86       3.00     1.5000 Raingage
PH4_RYCB155
  PH4_B09                          0.03      40.85      91.00     0.5000 Raingage
PH4_CB52-53
  PH4_B10                          0.03      33.42       3.00     1.5000 Raingage
PH4_RYCB150
  PH4_B11                          0.20     131.54      80.00     4.0000 Raingage
PH4_CB74-75
  PH4_B12                          0.04      29.35      91.00     1.6000 Raingage
PH4_CB50-51
  PH4_B13                          0.02      24.85       3.00     1.5000 Raingage
PH4_RYCB156
  PH4_B14                          0.07      45.22      86.00     4.1000 Raingage
PH4_CB80-81
  PH4_B15                          0.03      49.94       3.00     1.5000 Raingage
PH4_RYCB151
  PH4_B16                          0.04      55.81      84.00     1.5000 Raingage
PH4_CB78-79
  PH4_B17                          0.14      44.24       3.00     1.4000 Raingage
Maj-07
  PH4_B18                          0.00      13.81       3.00     0.5000 Raingage
Maj-06


  ************
  Node Summary
  ************
                                          Invert      Max.    Ponded    External
  Name                 Type                Elev.     Depth      Area    Inflow
  -------------------------------------------------------------------------------
  02_(CB)              JUNCTION            85.60      2.60       0.0
  03_(CB)              JUNCTION            85.60      2.60       0.0
  04_(CB)              JUNCTION            85.53      2.60       0.0
  05_(CB)              JUNCTION            85.53      2.60       0.0
  06_(CB)              JUNCTION            85.39      2.60       0.0
  08_(CB)              JUNCTION            85.44      2.60       0.0
  09_(CB)              JUNCTION            85.42      2.60       0.0
  1                    JUNCTION            91.15      0.35       0.0
  1_(RYCB)             JUNCTION            85.42      2.99       1.0
  10                   JUNCTION            91.07      0.35       0.0
  10_(CB)              JUNCTION            86.17      2.00       0.0
  100_(STM)            JUNCTION            81.27      6.31       0.0
  102_(STM)            JUNCTION            81.34      6.23       0.0
  104_(STM)            JUNCTION            81.38      6.23       0.0
  106_(STM)            JUNCTION            83.54      4.12       0.0
  108_(STM)            JUNCTION            83.62      3.89       0.0
  11                   JUNCTION            90.95      0.35       0.0
  11_(CB)              JUNCTION            86.02      2.13       0.0
  110_(STM)            JUNCTION            83.94      3.81       0.0
  112_(STM)            JUNCTION            81.90      6.01       0.0
  114_(STM)            JUNCTION            83.37      4.63       0.0
  116_(STM)            JUNCTION            83.50      4.67       0.0
  118_(STM)            JUNCTION            83.88      4.48       0.0
  12                   JUNCTION            90.73      0.35       0.0
  12_(CB)              JUNCTION            85.64      2.60       0.0
  120_(STM)            JUNCTION            82.66      5.41       0.0
  122_(STM)            JUNCTION            82.74      5.50       0.0
  124_(STM)            JUNCTION            82.83      5.36       0.0
  126_(STM)            JUNCTION            82.97      5.49       0.0
  128_(STM)            JUNCTION            83.17      5.46       0.0
  13                   JUNCTION            90.78      0.35       0.0
  13_(CB)              JUNCTION            85.79      2.44       0.0
  130_(STM)            JUNCTION            84.27      4.78       0.0
  132_(STM)            JUNCTION            84.48      4.70       0.0
```

134_(STM)	JUNCTION	84.80	4.52	1.0
136_(STM)	JUNCTION	83.34	5.31	0.0
138_(STM)	JUNCTION	83.42	5.35	0.0
14	JUNCTION	90.51	0.61	0.0
14_(CB)	JUNCTION	86.01	2.60	0.0
140_(STM)	JUNCTION	83.71	5.54	0.0
142_(STM)	JUNCTION	84.91	4.25	0.0
144_(STM)	JUNCTION	84.13	5.32	0.0
146_(STM)	JUNCTION	85.00	4.12	0.0
148_(STM)	JUNCTION	85.14	4.07	1.0
15	JUNCTION	90.55	0.30	0.0
15_(CB)	JUNCTION	86.02	2.60	0.0
15_RYCB	JUNCTION	86.59	2.18	1.0
150_(STM)	JUNCTION	84.38	5.42	0.0
152_(STM)	JUNCTION	85.26	4.74	0.0
154_(STM)	JUNCTION	85.35	4.74	0.0
156_(STM)	JUNCTION	85.73	4.21	0.0
158_(STM)	JUNCTION	84.91	5.16	0.0
16	JUNCTION	90.58	0.30	0.0
16_(CB)	JUNCTION	86.17	2.60	0.0
160_(STM)	JUNCTION	84.99	5.17	0.0
162_(STM)	JUNCTION	85.35	4.96	0.0
164_(STM)	JUNCTION	85.60	4.67	0.0
166_(STM)	JUNCTION	86.17	4.26	0.0
168_(STM)	JUNCTION	86.50	3.89	1.0
17	JUNCTION	90.58	0.30	0.0
17_(CB)	JUNCTION	86.18	2.60	0.0
170_(STM)	JUNCTION	87.06	4.00	0.0
18	JUNCTION	90.79	0.30	0.0
18_(CB)	JUNCTION	86.97	1.91	0.0
19	JUNCTION	90.34	0.30	0.0
19_(CB)	JUNCTION	86.28	2.60	0.0
2	JUNCTION	91.10	0.35	0.0
20	JUNCTION	90.35	0.30	0.0
20_(CB)	JUNCTION	86.62	2.60	0.0
21	JUNCTION	90.00	0.30	0.0
21_(CB)	JUNCTION	86.77	2.45	0.0
2121_(STM)	JUNCTION	80.23	7.26	0.0
2142_(STM)	JUNCTION	80.10	7.27	0.0
2143_(STM)	JUNCTION	79.93	6.39	0.0
2144_(STM)	JUNCTION	79.85	6.15	0.0
22_(RYCB)	JUNCTION	87.08	2.82	1.0
23_(CB)	JUNCTION	86.92	2.60	0.0
24_(CB)	JUNCTION	86.92	2.60	0.0
25_(CB)	JUNCTION	86.78	3.21	0.0
26_(CB)	JUNCTION	86.78	3.33	0.0
27_(CB)	JUNCTION	86.78	2.38	0.0
28_(CB)	JUNCTION	86.78	2.46	0.0
29_(RYCB)	JUNCTION	85.31	5.13	1.0
3	JUNCTION	91.06	0.35	0.0
30_(CB)	JUNCTION	86.93	2.74	0.0
31_(CB)	JUNCTION	86.90	2.77	0.0
32_(CB)	JUNCTION	88.28	1.92	0.0
33_(CB)	JUNCTION	87.47	2.60	0.0
34_(CB)	JUNCTION	87.51	2.60	0.0
35_(CB)	JUNCTION	87.51	2.60	0.0
36_(CB)	JUNCTION	87.79	2.60	0.0
37_(CB)	JUNCTION	87.79	2.60	0.0
38_(RYCB)	JUNCTION	87.38	3.08	1.0
39_(RYCB)	JUNCTION	88.67	2.28	1.0
4	JUNCTION	90.53	0.30	0.0
40_(CB)	JUNCTION	88.23	2.50	0.0
41_(CB)	JUNCTION	88.13	2.60	0.0
42_(CB)	JUNCTION	88.30	2.60	0.0
43_(CB)	JUNCTION	88.29	2.60	0.0
44_(CB)	JUNCTION	86.92	2.60	0.0
45_(CB)	JUNCTION	86.92	2.60	0.0
46_(CB)	JUNCTION	86.88	2.60	0.0
47_(CB)	JUNCTION	87.03	2.45	0.0
48_(CB)	JUNCTION	86.37	2.60	0.0
49_(CB)	JUNCTION	86.52	2.45	0.0
5	JUNCTION	90.56	0.30	0.0
50_(CB)	JUNCTION	86.03	2.44	0.0
51_(CB)	JUNCTION	86.06	2.41	0.0
52_(CB)	JUNCTION	85.21	5.20	0.0
53_(CB)	JUNCTION	87.66	2.60	0.0
54_(CB)	JUNCTION	87.71	2.55	0.0
55_(CB)	JUNCTION	85.27	2.60	0.0
56	JUNCTION	90.74	0.35	0.0
56_(CB)	JUNCTION	85.27	2.60	0.0
57_(CB)	JUNCTION	85.21	2.79	0.0
58_(CB)	JUNCTION	85.40	2.60	0.0
59_(CB)	JUNCTION	85.85	2.40	0.0
6	JUNCTION	90.80	0.30	0.0
60	JUNCTION	90.61	0.35	0.0
61	JUNCTION	90.75	0.35	0.0
62	JUNCTION	90.77	0.35	0.0
63	JUNCTION	90.83	0.35	0.0
64	JUNCTION	90.91	0.35	0.0
65	JUNCTION	90.86	0.35	0.0
66	JUNCTION	90.55	0.30	0.0
67	JUNCTION	90.69	0.35	0.0
7	JUNCTION	90.46	0.30	0.0
8	JUNCTION	89.84	0.30	0.0
9	JUNCTION	91.15	0.35	0.0
98_(STM)	JUNCTION	81.17	6.33	0.0
ELB_1_(RYCB)	JUNCTION	86.51	1.14	1.0
ELB_10_(RYCB)	JUNCTION	87.65	1.31	1.0
ELB_11_(RYCB)	JUNCTION	87.60	1.30	1.0
ELB_12_(RYCB)	JUNCTION	88.00	1.45	1.0
ELB_13_(RYCB)	JUNCTION	87.56	1.30	1.0
ELB_14_(RYCB)	JUNCTION	87.78	1.30	1.0
ELB_15_(RYCB)	JUNCTION	87.20	1.26	1.0
ELB_16_(RYCB)	JUNCTION	88.68	1.30	1.0
ELB_17_(RYCB)	JUNCTION	87.55	1.30	1.0
ELB_18_(RYCB)	JUNCTION	87.58	1.30	1.0
ELB_19_(RYCB)	JUNCTION	86.97	1.33	1.0
ELB_2_(RYCB)	JUNCTION	86.27	1.41	1.0
ELB_20_(RYCB)	JUNCTION	86.38	1.91	1.0
ELB_21_(RYCB)	JUNCTION	88.06	1.54	1.0
ELB_22_(RYCB)	JUNCTION	88.54	1.30	1.0
ELB_23_(RYCB)	JUNCTION	88.99	1.31	1.0
ELB_24_(RYCB)	JUNCTION	86.55	1.00	1.0
ELB_25_(RYCB)	JUNCTION	86.43	1.00	1.0

ELB_3_(RYCB)	JUNCTION	86.48	1.32	1.0
ELB_4_(RYCB)	JUNCTION	86.53	1.22	1.0
ELB_5_(RYCB)	JUNCTION	86.53	1.17	1.0
ELB_6_(RYCB)	JUNCTION	86.55	1.91	1.0
ELB_7_(RYCB)	JUNCTION	86.80	1.31	1.0
ELB_8_(RYCB)	JUNCTION	86.93	1.00	1.0
ELB_9_(RYCB)	JUNCTION	87.05	1.30	1.0
J1	JUNCTION	88.48	0.60	0.0
Maj-01_2	JUNCTION	90.90	0.62	0.0
Maj-02	JUNCTION	90.67	0.61	0.0
Maj-02_2	JUNCTION	90.42	0.62	0.0
Maj-03	JUNCTION	90.27	0.62	0.0
Maj-04	JUNCTION	90.61	0.61	0.0
Maj-04_2	JUNCTION	90.51	0.62	0.0
Maj-05	JUNCTION	90.40	0.61	0.0
Maj-05_2	JUNCTION	90.37	0.62	0.0
Maj-06	JUNCTION	90.23	0.61	0.0
Maj-06_2	JUNCTION	90.09	0.63	0.0
Maj-07	JUNCTION	90.28	0.61	0.0
Maj-08	JUNCTION	90.15	0.60	0.0
Maj-09	JUNCTION	89.85	0.60	0.0
Maj-10	JUNCTION	89.78	0.60	0.0
Maj-11	JUNCTION	89.82	0.90	0.0
Maj-12	JUNCTION	89.66	0.60	0.0
Maj-13	JUNCTION	89.97	0.64	0.0
Maj-14	JUNCTION	89.48	0.60	0.0
Maj-15	JUNCTION	89.67	0.70	0.0
Maj-15_2	JUNCTION	89.36	0.65	0.0
Maj-16	JUNCTION	89.42	0.60	0.0
Maj-17	JUNCTION	90.06	0.62	0.0
Maj-18_2	JUNCTION	89.51	0.64	0.0
Maj-19	JUNCTION	89.39	0.60	0.0
Maj-19_2	JUNCTION	89.53	0.69	0.0
Maj-20	JUNCTION	89.17	0.60	0.0
Maj-21	JUNCTION	88.59	0.61	0.0
Maj-23	JUNCTION	89.24	0.60	0.0
Maj-24	JUNCTION	88.90	0.62	0.0
Maj-25	JUNCTION	89.15	0.62	0.0
Maj-26	JUNCTION	88.61	0.61	0.0
Maj-27	JUNCTION	88.85	0.63	0.0
Maj-28	JUNCTION	88.25	0.69	0.0
Maj-29	JUNCTION	88.59	0.61	0.0
Maj-30	JUNCTION	88.40	0.60	0.0
Maj-31	JUNCTION	89.03	0.60	0.0
Maj-32	JUNCTION	88.87	0.62	0.0
Maj-33	JUNCTION	88.92	0.60	0.0
Maj-34	JUNCTION	89.07	0.60	0.0
Maj-34_2	JUNCTION	89.16	0.64	0.0
Maj-35	JUNCTION	88.15	0.60	0.0
Maj-36	JUNCTION	88.41	0.67	0.0
Maj-37	JUNCTION	87.99	0.62	0.0
Maj-38	JUNCTION	88.19	0.62	0.0
Maj-39	JUNCTION	88.07	0.60	0.0
Maj-40	JUNCTION	87.97	0.63	0.0
Maj-41	JUNCTION	87.62	0.62	0.0
Maj-42	JUNCTION	87.88	0.62	0.0
Maj-43	JUNCTION	88.07	0.64	0.0
Maj-44	JUNCTION	87.54	0.61	0.0
Maj-45	JUNCTION	87.81	0.69	0.0
Maj-46	JUNCTION	87.41	0.61	0.0
Maj-48_2	JUNCTION	87.74	0.64	0.0
Maj-48_3	JUNCTION	87.65	0.62	0.0
Maj-50	JUNCTION	87.42	0.61	0.0
Maj-51	JUNCTION	87.71	0.63	0.0
Maj-52	JUNCTION	87.47	0.60	0.0
Maj-53	JUNCTION	87.59	0.61	0.0
Maj-54	JUNCTION	87.25	0.61	0.0
Maj-55	JUNCTION	87.49	0.63	0.0
Maj-56	JUNCTION	88.80	0.60	0.0
Maj-58	JUNCTION	87.16	0.61	0.0
Maj-59	JUNCTION	87.53	0.72	0.0
Maj-60	JUNCTION	88.62	0.68	0.0
Maj-61	JUNCTION	88.70	0.60	0.0
Maj-62	JUNCTION	89.85	0.60	0.0
Maj-63	JUNCTION	87.72	1.09	0.0
Maj-64	JUNCTION	88.80	0.60	0.0
Maj-65	JUNCTION	87.80	1.18	0.0
Maj-66	JUNCTION	87.65	0.60	0.0
Maj-67	JUNCTION	87.95	0.60	0.0
Maj-Park	JUNCTION	86.50	0.60	0.0
PH4_CB50-51	JUNCTION	88.34	2.43	0.0
PH4_CB52-53	JUNCTION	88.41	2.40	0.0
PH4_CB54-55	JUNCTION	88.43	2.42	0.0
PH4_CB56-57	JUNCTION	88.51	2.43	0.0
PH4_CB58-59	JUNCTION	89.06	2.11	0.0
PH4_CB60-61	JUNCTION	89.09	2.07	0.0
PH4_CB62-63	JUNCTION	88.95	2.14	0.0
PH4_CB64-65	JUNCTION	89.05	2.14	0.0
PH4_CB66-67	JUNCTION	88.64	2.11	0.0
PH4_CB68-69	JUNCTION	88.76	2.11	0.0
PH4_CB70-71	JUNCTION	88.57	2.32	0.0
PH4_CB72-73	JUNCTION	88.45	2.38	0.0
PH4_CB74-75	JUNCTION	88.35	2.36	0.0
PH4_CB78-79	JUNCTION	90.43	0.35	0.0
PH4_CB80-81	JUNCTION	88.35	2.41	0.0
PH4_CB82-83	JUNCTION	90.88	0.35	0.0
PH4_CB84-85	JUNCTION	90.86	0.35	0.0
PH4_CB86-87	JUNCTION	90.96	0.35	0.0
PH4_CB88-89	JUNCTION	90.69	0.35	0.0
PH4_CB90-91	JUNCTION	90.52	0.35	0.0
PH4_CB92-93	JUNCTION	90.41	0.35	0.0
PH4_MH100	JUNCTION	88.48	2.38	0.0
PH4_MH100_dummy	JUNCTION	88.48	2.38	0.0
PH4_MH102	JUNCTION	88.69	2.33	0.0
PH4_MH104	JUNCTION	88.78	2.34	0.0
PH4_MH106	JUNCTION	88.90	2.17	0.0
PH4_MH108	JUNCTION	89.00	1.99	0.0
PH4_MH110	JUNCTION	89.19	1.60	0.0
PH4_MH202	JUNCTION	88.25	2.43	0.0
PH4_MH202_dummy	JUNCTION	88.25	2.43	0.0
PH4_MH204	JUNCTION	88.46	2.39	0.0
PH4_MH206	JUNCTION	88.57	2.44	0.0
PH4_MH208	JUNCTION	88.69	2.39	0.0
PH4_MH210	JUNCTION	88.79	2.20	0.0

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PH4_MH212           JUNCTION            88.98      1.98       0.0
PH4_MH302           JUNCTION            86.34      4.12       0.0
PH4_MH302_dummy     JUNCTION            86.34      4.12       0.0
PH4_MH304           JUNCTION            86.46      4.14       0.0
PH4_MH306           JUNCTION            86.95      3.59       0.0
PH4_MH308           JUNCTION            87.15      3.40       0.0
PH4_MH310           JUNCTION            87.26      3.34       0.0
PH4_MH312           JUNCTION            87.44      2.94       0.0
PH4_MH402           JUNCTION            87.13      3.54       0.0
PH4_MH404           JUNCTION            87.24      3.30       0.0
PH4_MH406           JUNCTION            87.34      3.47       0.0
PH4_MH408           JUNCTION            87.50      3.37       0.0
PH4_MH410           JUNCTION            87.66      2.92       0.0
PH4_MH412           JUNCTION            87.78      2.84       0.0
PH4_MH414           JUNCTION            88.00      2.69       0.0
PH4_MH502           JUNCTION            86.87      3.33       0.0
PH4_MH504           JUNCTION            86.88      3.41       0.0
PH4_MH506           JUNCTION            86.93      3.71       0.0
PH4_MH508           JUNCTION            86.98      3.81       0.0
PH4_MH510           JUNCTION            87.71      2.91       0.0
PH4_MH512           JUNCTION            87.52      3.04       0.0
PH4_MH602           JUNCTION            87.60      3.09       0.0
PH4_MH604           JUNCTION            87.81      2.84       0.0
PH4_RYCB150         JUNCTION            88.29      2.30       0.0
PH4_RYCB151         JUNCTION            88.20      2.30       0.0
PH4_RYCB153         JUNCTION            88.35      2.30       0.0
PH4_RYCB154         JUNCTION            87.95      2.30       0.0
PH4_RYCB155         JUNCTION            88.44      1.80       0.0
PH4_RYCB156         JUNCTION            87.93      2.30       0.0
PH4_RYCB158         JUNCTION            88.25      2.30       0.0
PH4_RYCB20          JUNCTION            89.20      1.45       0.0
PH4_RYCB21          JUNCTION            88.72      1.50       0.0
PH4_RYCB22          JUNCTION            88.59      1.80       0.0
PH4_RYCB23          JUNCTION            88.79      1.80       0.0
PH4_RYCB24          JUNCTION            87.65      1.50       0.0
RYCB_1_(RYCB)       JUNCTION            86.00      2.10       1.0
RYCB_10_(RYCB)      JUNCTION            87.02      2.38       1.0
RYCB_11_(RYCB)      JUNCTION            87.35      2.55       1.0
RYCB_12_(RYCB)      JUNCTION            88.00      2.28       1.0
RYCB_13_(RYCB)      JUNCTION            87.54      2.11       1.0
RYCB_14_(RYCB)      JUNCTION            88.14      2.31       1.0
RYCB_15_(RYCB)      JUNCTION            88.70      2.15       1.0
RYCB_18_(RYCB)      JUNCTION            85.76      2.34       1.0
RYCB_2_(RYCB)       JUNCTION            86.01      3.14       1.0
RYCB_3_(RYCB)       JUNCTION            86.18      2.27       1.0
RYCB_4_(RYCB)       JUNCTION            86.12      3.11       1.0
RYCB_5_(RYCB)       JUNCTION            86.04      2.29       1.0
RYCB_6_(RYCB)       JUNCTION            85.72      3.21       1.0
RYCB_7_(RYCB)       JUNCTION            86.49      2.90       1.0
RYCB_8_(RYCB)       JUNCTION            86.97      2.23       1.0
RYCB_9_(RYCB)       JUNCTION            87.54      1.54       1.0
Slope1              JUNCTION            89.07      1.10       0.0
StartNullStruct2    JUNCTION            86.62      1.40       1.0
StartNullStruct3    JUNCTION            84.09      3.71       0.0
STM-251_(STM)       JUNCTION            85.31      4.33       0.0
Structure_-_(18)_(RYCB) JUNCTION            85.58      3.21       1.0
TEE_1_(RYCB)        JUNCTION            86.21      1.44       1.0
TEE_10_(RYCB)       JUNCTION            86.80      1.01       1.0
TEE_11_(RYCB)       JUNCTION            86.59      1.46       1.0
TEE_12_(RYCB)       JUNCTION            86.85      1.33       1.0
TEE_13_(RYCB)       JUNCTION            87.00      1.29       1.0
TEE_14_(RYCB)       JUNCTION            86.86      2.64       1.0
TEE_15_(RYCB)       JUNCTION            87.38      1.98       1.0
TEE_16_(RYCB)       JUNCTION            87.27      1.61       1.0
TEE_17_(RYCB)       JUNCTION            87.39      1.45       1.0
TEE_18_(RYCB)       JUNCTION            87.54      1.41       1.0
TEE_19_(RYCB)       JUNCTION            87.44      1.34       1.0
TEE_2_(RYCB)        JUNCTION            86.35      1.36       1.0
TEE_20_(RYCB)       JUNCTION            87.29      1.33       1.0
TEE_21_(RYCB)       JUNCTION            87.17      1.44       1.0
TEE_22_(RYCB)       JUNCTION            87.78      1.42       1.0
TEE_23_(RYCB)       JUNCTION            87.40      1.38       1.0
TEE_24_(RYCB)       JUNCTION            87.69      1.32       1.0
TEE_25_(RYCB)       JUNCTION            87.53      1.55       1.0
TEE_26_(RYCB)       JUNCTION            88.39      1.32       1.0
TEE_27_(RYCB)       JUNCTION            88.23      1.40       1.0
TEE_28_(RYCB)       JUNCTION            87.47      1.32       1.0
TEE_29_(RYCB)       JUNCTION            86.87      1.44       1.0
TEE_3_(RYCB)        JUNCTION            86.25      1.37       1.0
TEE_30_(RYCB)       JUNCTION            86.75      1.48       1.0
TEE_31_(RYCB)       JUNCTION            86.62      1.53       1.0
TEE_32_(RYCB)       JUNCTION            86.78      1.45       1.0
TEE_33_(RYCB)       JUNCTION            86.13      2.09       1.0
TEE_34_(RYCB)       JUNCTION            85.98      2.08       1.0
TEE_35_(RYCB)       JUNCTION            86.04      2.10       1.0
TEE_36_(RYCB)       JUNCTION            88.30      1.52       1.0
TEE_37_(RYCB)       JUNCTION            88.65      1.30       1.0
TEE_38_(RYCB)       JUNCTION            88.52      1.30       1.0
TEE_39_(RYCB)       JUNCTION            88.28      1.38       1.0
TEE_4_(RYCB)        JUNCTION            86.02      1.86       1.0
TEE_40_(RYCB)       JUNCTION            88.83      1.49       1.0
TEE_41_(RYCB)       JUNCTION            88.64      1.67       1.0
TEE_42_(RYCB)       JUNCTION            86.35      1.40       1.0
TEE_43_(RYCB)       JUNCTION            86.11      1.64       1.0
TEE_44_(RYCB)       JUNCTION            86.04      1.71       1.0
TEE_5_(RYCB)        JUNCTION            86.09      1.93       1.0
TEE_6_(RYCB)        JUNCTION            86.35      1.52       1.0
TEE_7_(RYCB)        JUNCTION            86.46      1.43       1.0
TEE_8_(RYCB)        JUNCTION            86.34      1.52       1.0
TEE_9_(RYCB)        JUNCTION            86.22      1.66       1.0
Maj-01              OUTFALL             91.06      0.60       0.0
Maj-18              OUTFALL             89.55      0.60       0.0
Maj-22              OUTFALL             88.83      0.60       0.0
Maj-48              OUTFALL             87.75      0.60       0.0
Maj-49              OUTFALL             87.67      0.60       0.0
Maj-57              OUTFALL             89.06      0.60       0.0
OF1                 OUTFALL             85.00      0.60       0.0
STM-111_(STM)       OUTFALL             80.14      1.80       0.0
B2_Stor             STORAGE             90.50      1.50       0.0


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Link Summary
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Name	From Node	To Node	Type	Length	% Slope	Roughness
1	1	PH4_CB82-83	CONDUIT	8.7	3.0946	0.0160
1_(STM)	156_(STM)	154_(STM)	CONDUIT	100.7	0.3456	0.0130
10	10	PH4_CB64-65	CONDUIT	31.8	0.7222	0.0160
10_(STM)	124_(STM)	122_(STM)	CONDUIT	16.9	0.4734	0.0130
11	10	PH4_CB62-63	CONDUIT	36.7	0.9003	0.0160
11_(STM)	122_(STM)	120_(STM)	CONDUIT	24.6	0.2439	0.0130
12	11	PH4_CB62-63	CONDUIT	19.9	1.0545	0.0160
12_(STM)	120_(STM)	112_(STM)	CONDUIT	91.6	0.2293	0.0130
13	11	PH4_CB88-89	CONDUIT	8.3	3.1186	0.0160
13_(STM)	112_(STM)	104_(STM)	CONDUIT	73.8	0.2710	0.0130
14	13	PH4_CB90-91	CONDUIT	12.0	2.1614	0.0160
14_(STM)	104_(STM)	102_(STM)	CONDUIT	41.9	0.1672	0.0130
15	13	PH4_CB68-69	CONDUIT	24.6	1.0590	0.0160
15_(10)_(STM)	138_(STM)	136_(STM)	CONDUIT	14.8	0.4730	0.0130
15_(11)_(STM)	136_(STM)	128_(STM)	CONDUIT	62.5	0.2128	0.0130
15_(12)_(STM)	148_(STM)	146_(STM)	CONDUIT	78.5	0.1273	0.0130
15_(13)_(STM)	146_(STM)	144_(STM)	CONDUIT	78.7	0.1653	0.0130
15_(14)_(STM)	162_(STM)	160_(STM)	CONDUIT	106.3	0.3284	0.0130
15_(15)_(STM)	160_(STM)	158_(STM)	CONDUIT	14.3	0.5036	0.0130
15_(16)_(STM)	158_(STM)	150_(STM)	CONDUIT	108.0	0.3499	0.0130
15_(19)_(STM)	170_(STM)	168_(STM)	CONDUIT	93.9	0.3504	0.0130
15_(20)_(STM)	168_(STM)	166_(STM)	CONDUIT	101.1	0.3253	0.0130
15_(21)_(STM)	166_(STM)	164_(STM)	CONDUIT	29.2	0.3830	0.0130
15_(22)_(STM)	164_(STM)	162_(STM)	CONDUIT	60.1	0.4074	0.0130
15_(3)_(STM)	118_(STM)	116_(STM)	CONDUIT	99.6	0.3081	0.0130
15_(4)_(STM)	116_(STM)	114_(STM)	CONDUIT	11.9	0.5026	0.0130
15_(5)_(STM)	114_(STM)	112_(STM)	CONDUIT	64.6	0.3713	0.0130
15_(9)_(STM)	140_(STM)	138_(STM)	CONDUIT	113.1	0.2564	0.0130
16	12	PH4_CB68-69	CONDUIT	20.2	1.0375	0.0160
17	12	PH4_CB66-67	CONDUIT	16.0	2.0623	0.0160
18	PH4_CB78-79	Maj-07	CONDUIT	31.2	0.4961	0.0160
18_1	67	PH4_CB66-67	CONDUIT	12.6	2.2951	0.0160
18_2	67	PH4_CB92-93	CONDUIT	12.1	2.3206	0.0160
19	60	PH4_CB78-79	CONDUIT	26.5	0.6786	0.0160
2	1	PH4_CB60-61	CONDUIT	21.1	1.6123	0.0160
2_(STM)	154_(STM)	152_(STM)	CONDUIT	12.6	0.5011	0.0130
20	60	PH4_CB80-81	CONDUIT	15.9	1.2557	0.0160
21	56	PH4_CB80-81	CONDUIT	20.4	1.6142	0.0160
22	56	PH4_CB50-51	CONDUIT	13.3	2.3991	0.0160
23	61	PH4_CB50-51	CONDUIT	19.9	1.6566	0.0160
24	61	PH4_CB52-53	CONDUIT	17.5	1.6582	0.0160
25	62	PH4_CB52-53	CONDUIT	16.3	1.8971	0.0160
26	62	PH4_CB54-55	CONDUIT	26.7	1.0104	0.0160
27	65	PH4_CB54-55	CONDUIT	18.2	1.9821	0.0160
28	65	PH4_CB56-57	CONDUIT	27.4	1.2783	0.0160
29	64	PH4_CB56-57	CONDUIT	17.0	2.3589	0.0160
3	2	PH4_CB60-61	CONDUIT	37.0	0.7831	0.0160
3_(STM)	152_(STM)	150_(STM)	CONDUIT	59.4	0.3505	0.0130
30	64	PH4_CB70-71	CONDUIT	28.5	1.2984	0.0160
31	63	PH4_CB70-71	CONDUIT	25.3	1.1465	0.0160
32	63	PH4_CB72-73	CONDUIT	11.6	3.0291	0.0160
33	62	PH4_CB72-73	CONDUIT	21.5	1.3491	0.0160
34	61	PH4_CB74-75	CONDUIT	35.7	1.0930	0.0160
35	PH4_CB82-83	43_(CB)	CONDUIT	11.7	5.0596	0.0160
36	PH4_CB84-85	14	CONDUIT	12.5	2.8202	0.0160
37	PH4_CB86-87	Maj-04	CONDUIT	13.4	2.6203	0.0160
38	PH4_CB88-89	Maj-05_2	CONDUIT	12.5	2.5748	0.0160
39	PH4_CB90-91	41_(CB)	CONDUIT	7.3	5.3849	0.0160

4	2	PH4_CB58-59	CONDUIT	32.3	0.8663	0.0160	
4_(STM)	150_(STM)	144_(STM)	CONDUIT	76.3	0.2477	0.0130	
40	PH4_CB92-93	Maj-08	CONDUIT	13.4	1.9434	0.0160	
41	4	PH4_RYCB21	CONDUIT	41.0	1.4866	0.0350	
42	5	PH4_RYCB21	CONDUIT	21.0	3.0552	0.0350	
43	5	PH4_RYCB22	CONDUIT	32.4	1.4511	0.0350	
44	6	PH4_RYCB22	CONDUIT	49.3	1.4398	0.0350	
45	6	PH4_RYCB23	CONDUIT	36.9	1.3805	0.0350	
46	7	PH4_RYCB23	CONDUIT	10.6	1.6070	0.0350	
47	7	PH4_RYCB24	CONDUIT	49.5	3.2549	0.0350	
48	8	PH4_RYCB24	CONDUIT	18.8	5.2874	0.0350	
49	66	PH4_RYCB151	CONDUIT	24.4	1.4370	0.0350	
5	3	PH4_CB58-59	CONDUIT	21.5	1.1141	0.0160	
5_(STM)	144_(STM)	140_(STM)	CONDUIT	77.3	0.2845	0.0130	
50	15	PH4_RYCB151	CONDUIT	23.7	1.4748	0.0350	
51	15	PH4_RYCB150	CONDUIT	17.4	1.4965	0.0350	
52	16	PH4_RYCB150	CONDUIT	20.0	1.4481	0.0350	
53	16	PH4_RYCB153	CONDUIT	15.4	1.4955	0.0350	
54	17	PH4_RYCB153	CONDUIT	15.7	1.4678	0.0350	
55	17	PH4_RYCB158	CONDUIT	22.2	1.4889	0.0350	
56	18	PH4_RYCB158	CONDUIT	33.3	1.6213	0.0350	
57	18	PH4_RYCB154	CONDUIT	45.2	1.8600	0.0350	
58	19	PH4_RYCB154	CONDUIT	26.3	1.4831	0.0350	
59	19	PH4_RYCB155	CONDUIT	26.7	1.5007	0.0350	
6	3	PH4_CB84-85	CONDUIT	7.9	2.5476	0.0160	
6_(STM)	142_(STM)	132_(STM)	CONDUIT	53.4	0.6550	0.0130	
60	20	PH4_RYCB155	CONDUIT	24.6	1.6652	0.0350	
61	20	PH4_RYCB156	CONDUIT	28.7	1.4632	0.0350	
62	21	PH4_RYCB156	CONDUIT	17.6	0.3978	0.0350	
63	60	PH4_CB74-75	CONDUIT	39.8	0.6276	0.0160	
7	4	PH4_RYCB20	CONDUIT	11.9	1.5151	0.0350	
7_(1)_(STM)	130_(STM)	128_(STM)	CONDUIT	88.3	0.2038	0.0130	
7_(STM)	132_(STM)	130_(STM)	CONDUIT	37.4	0.2085	0.0130	
8	9	PH4_CB86-87	CONDUIT	6.6	2.8600	0.0160	
8_(STM)	128_(STM)	126_(STM)	CONDUIT	76.0	0.2501	0.0130	
9	9	PH4_CB64-65	CONDUIT	22.4	1.3824	0.0160	
9_(STM)	126_(STM)	124_(STM)	CONDUIT	53.4	0.2622	0.0130	
C1	Maj-55	Maj-58	CONDUIT	15.7	2.1103	0.0130	
C1_1	Maj-01	Maj-01_2	CONDUIT	15.3	1.0526	0.0130	
C1_2	Maj-01_2	Maj-02	CONDUIT	24.8	0.9309	0.0130	
C10	Maj-17	Maj-10	CONDUIT	54.7	0.5249	0.0130	
C11	Maj-17	Maj-16	CONDUIT	86.7	0.7437	0.0130	
C12	Maj-11	Maj-09	CONDUIT	11.0	0.2457	0.0130	-
C13	Maj-11	Maj-12	CONDUIT	60.3	0.2570	0.0130	
C14	Maj-13	Maj-12	CONDUIT	46.5	0.6647	0.0130	
C15	Maj-15	Maj-16	CONDUIT	38.8	0.6360	0.0130	
C16	Maj-13	Maj-14	CONDUIT	44.2	1.1056	0.0130	
C17	Maj-15	Maj-14	CONDUIT	29.3	0.6217	0.0130	
C18	29_(RYCB)	Maj-18_2	CONDUIT	4.8	6.0833	0.0350	
C18_2	Maj-34_2	Maj-57	CONDUIT	7.8	1.3458	0.0130	
C18_3	Maj-15	Slope1	CONDUIT	36.4	1.6479	0.0130	
C18_4	Slope1	Maj-15_2	CONDUIT	37.3	0.7872	0.0130	-
C18_5	Maj-19_2	Maj-15_2	CONDUIT	13.8	1.2091	0.0130	
C18_6	Maj-19_2	Maj-19	CONDUIT	27.3	0.5101	0.0130	
C18_7	Maj-34_2	Maj-34	CONDUIT	28.1	0.3306	0.0130	
C18_8	Maj-18	Maj-18_2	CONDUIT	5.0	0.7400	0.0130	
C18_9	Maj-18_2	Maj-15_2	CONDUIT	31.9	0.4696	0.0130	
C19	Maj-15_2	Maj-23	CONDUIT	11.3	1.0645	0.0130	
C2	Maj-59	Maj-58	CONDUIT	9.1	4.0326	0.0130	
C2_1	Maj-02	Maj-02_2	CONDUIT	25.4	0.9936	0.0130	

C2_2	0.9862	0.0130	Maj-02_2	Maj-03	CONDUIT	14.6	
C20	0.8796	0.0130	Maj-19	Maj-20	CONDUIT	24.9	
C21	0.8922	0.0130	Maj-20	Maj-21	CONDUIT	64.3	
C22	1.7746	0.0130	Maj-22	Maj-21	CONDUIT	13.5	
C23	1.0747	0.0130	Maj-23	Maj-24	CONDUIT	31.3	
C24	0.6904	0.0130	Maj-25	Maj-24	CONDUIT	35.9	
C25	0.9129	0.0130	Maj-25	Maj-26	CONDUIT	59.9	
C26	0.6006	0.0130	Maj-27	Maj-26	CONDUIT	40.5	
C27	0.8302	0.0350	22_(RYCB)	Maj-25	CONDUIT	17.8	
C27_1	1.1335	0.0130	Maj-27	Maj-60	CONDUIT	20.3	
C27_2	0.9257	0.0130	Maj-60	Maj-28	CONDUIT	39.6	
C28	1.0998	0.0130	Maj-29	Maj-28	CONDUIT	31.3	
C29	0.4959	0.0130	Maj-25	Maj-33	CONDUIT	47.2	
C3_1	0.4832	0.0130	Maj-04	14	CONDUIT	20.9	
C3_2	0.4822	0.0130	14	Maj-03	CONDUIT	49.1	
C30	0.6061	0.0130	Maj-34	Maj-33	CONDUIT	24.6	
C31	3.1494	0.0350	Maj-Park	OF1	CONDUIT	47.7	
C31_1	5.6975	0.0350	RYCB_8_(RYCB)	Maj-61	CONDUIT	1.8	-
C31_2	2.5837	0.0350	Maj-61	Maj-28	CONDUIT	17.4	
C32	0.7460	0.0130	Maj-34	Maj-32	CONDUIT	25.9	
C33	0.6567	0.0130	Maj-31	Maj-32	CONDUIT	23.0	
C34	1.3196	0.0130	Maj-31	Maj-30	CONDUIT	47.5	
C35	0.7064	0.0130	Maj-29	Maj-30	CONDUIT	27.9	
C36	1.2672	0.0130	Maj-29	Maj-35	CONDUIT	35.2	
C37	0.6936	0.0130	Maj-36	Maj-35	CONDUIT	37.3	
C38	0.6952	0.0130	Maj-36	Maj-42	CONDUIT	75.8	
C39	0.4850	0.0130	Maj-43	Maj-42	CONDUIT	39.8	
C4	0.6954	0.0350	Maj-59	Maj-Park	CONDUIT	148.1	
C4_1	0.6839	0.0130	Maj-04	Maj-04_2	CONDUIT	15.1	
C4_2	0.5281	0.0130	Maj-04_2	Maj-05	CONDUIT	20.6	
C4_3	2.8017	0.0350	RYCB_12_(RYCB)	Maj-62	CONDUIT	9.6	-
C4_4	3.3554	0.0350	Maj-62	Maj-14	CONDUIT	10.9	
C40	1.2848	0.0130	Maj-43	Maj-44	CONDUIT	41.6	
C41	0.8025	0.0130	Maj-45	Maj-44	CONDUIT	34.0	
C42	0.5816	0.0130	Maj-45	Maj-41	CONDUIT	33.0	
C43	0.6334	0.0130	Maj-40	Maj-41	CONDUIT	55.3	
C44	0.7013	0.0130	Maj-40	Maj-39	CONDUIT	14.4	-
C45	0.6075	0.0130	Maj-38	Maj-39	CONDUIT	19.6	
C46	1.1043	0.0130	Maj-36	Maj-37	CONDUIT	37.6	
C47	0.8322	0.0130	Maj-38	Maj-37	CONDUIT	23.7	
C48	1.0246	0.0130	Maj-45	Maj-46	CONDUIT	39.5	
C49	0.5385	0.0130	Maj-53	Maj-46	CONDUIT	33.6	
C5	0.7000	0.0350	58_(CB)	Maj-Park	CONDUIT	30.0	
C5_1	0.6217	0.0130	Maj-05	Maj-05_2	CONDUIT	4.7	
C5_2	0.5766	0.0130	Maj-05_2	Maj-06	CONDUIT	24.6	
C50	0.5375	0.0130	ELB_20_(RYCB)	ELB_6_(RYCB)	CONDUIT	31.3	-
C50_1	0.1200	0.0130	Maj-48	Maj-48_2	CONDUIT	5.0	
C50_3	0.4974	0.0130	Maj-48_2	Maj-48_3	CONDUIT	19.5	
C50_4	0.4944	0.0130	Maj-48_3	Maj-53	CONDUIT	11.9	
C51	0.3413	0.0130	Maj-53	Maj-52	CONDUIT	34.0	
C52	0.4456	0.0130	Maj-51	Maj-52	CONDUIT	53.4	
C53	0.8492	0.0130	Maj-51	Maj-50	CONDUIT	33.6	
C54	0.5667	0.0130	Maj-49	Maj-50	CONDUIT	43.8	
C55	1.4769	0.0130	Maj-53	Maj-54	CONDUIT	22.8	
C56	0.9301	0.0350	Maj-21	Maj-56	CONDUIT	22.0	-
C57	0.5769	0.0130	Maj-55	Maj-54	CONDUIT	42.1	
C58	0.6565	0.0350	TEE_14_(RYCB)	Maj-60	CONDUIT	43.0	
C58_1	2.7515	0.0350	RYCB_2_(RYCB)	Maj-63	CONDUIT	5.1	-
C58_2	2.5842	0.0350	Maj-63	Maj-46	CONDUIT	12.1	
C59_1	0.2868	0.0350	RYCB_4_(RYCB)	Maj-65	CONDUIT	3.5	-

C59_2	Maj-65	Maj-48_2	CONDUIT	8.2		0.6860	0.0350
C6	39_(RYCB)	Maj-08	CONDUIT	6.4		3.1110	0.0350
C6_1	Maj-07	Maj-06_2	CONDUIT	34.1		0.5273	0.0130
C6_2	Maj-06	Maj-06_2	CONDUIT	20.2		0.6523	0.0130
C60	Maj-56	TEE_14_(RYCB)	CONDUIT	23.6	-	0.4232	0.0350
C61_1	RYCB_1_(RYCB)	Maj-66	CONDUIT	2.4	-	6.2833	0.0350
C61_2	Maj-66	Maj-55	CONDUIT	19.9		0.7849	0.0350
C62	1_(RYCB)	Maj-50	CONDUIT	27.0		1.4347	0.0350
C63_1	RYCB_5_(RYCB)	Maj-67	CONDUIT	3.6	-	5.9357	0.0350
C63_2	Maj-67	Maj-44	CONDUIT	7.2		5.7272	0.0350
C64	Structure_-_(18)_(RYCB)	Maj-43	CONDUIT	5.0		2.3206	0.0350
C65_1	RYCB_6_(RYCB)	J1	CONDUIT	22.2	-	0.6802	0.0350
C65_2	J1	Maj-35	CONDUIT	15.7		2.1144	0.0350
C66_1	RYCB_10_(RYCB)	Maj-64	CONDUIT	14.5	-	0.4885	0.0350
C66_2	Maj-64	Maj-21	CONDUIT	36.9		0.5557	0.0350
C67	RYCB_11_(RYCB)	Slope1	CONDUIT	10.4		0.5471	0.0350
C68	38_(RYCB)	Maj-09	CONDUIT	5.0		0.2600	0.0350
C69	32_(CB)	Maj-14	CONDUIT	5.0		2.3206	0.0350
C7	Maj-07	Maj-08	CONDUIT	17.2		0.7280	0.0130
C8	Maj-08	Maj-09	CONDUIT	40.6		0.7482	0.0130
C9	Maj-09	Maj-10	CONDUIT	9.0		0.7689	0.0130
PH4_100-168	PH4_MH100_dummy	168_(STM)	CONDUIT	12.5		0.4000	0.0130
PH4_102-100	PH4_MH102	PH4_MH100	CONDUIT	41.4		0.3383	0.0130
PH4_104-102	PH4_MH104	PH4_MH102	CONDUIT	10.0		0.5005	0.0130
PH4_106-104	PH4_MH106	PH4_MH104	CONDUIT	19.2		0.3653	0.0130
PH4_108-106	PH4_MH108	PH4_MH106	CONDUIT	9.4		0.5297	0.0130
PH4_110-108	PH4_MH110	PH4_MH108	CONDUIT	42.1		0.3329	0.0130
PH4_202-166	PH4_MH202_dummy	166_(STM)	CONDUIT	14.4		0.2079	0.0130
PH4_204-202	PH4_MH204	PH4_MH202	CONDUIT	38.9		0.3344	0.0130
PH4_206-204	PH4_MH206	PH4_MH204	CONDUIT	12.4		0.4819	0.0130
PH4_208-206	PH4_MH208	PH4_MH206	CONDUIT	20.3		0.3450	0.0130
PH4_210-208	PH4_MH210	PH4_MH208	CONDUIT	10.4		0.4808	0.0130
PH4_212-210	PH4_MH212	PH4_MH210	CONDUIT	42.0		0.3332	0.0130
PH4_302-162	PH4_MH302_dummy	162_(STM)	CONDUIT	12.4		0.1613	0.0130
PH4_304-302	PH4_MH304	PH4_MH302	CONDUIT	15.3		0.3274	0.0130
PH4_306-304	PH4_MH306	PH4_MH304	CONDUIT	11.5		0.3466	0.0130
PH4_308-306	PH4_MH308	PH4_MH306	CONDUIT	43.0		0.3488	0.0130
PH4_310-308	PH4_MH310	PH4_MH308	CONDUIT	11.7		0.5133	0.0130
PH4_312-310	PH4_MH312	PH4_MH310	CONDUIT	38.0		0.3417	0.0130
PH4_402-508	PH4_MH402	PH4_MH508	CONDUIT	51.2		0.1952	0.0130
PH4_404-402	PH4_MH404	PH4_MH402	CONDUIT	11.6		0.5172	0.0130
PH4_406-404	PH4_MH406	PH4_MH404	CONDUIT	25.3		0.1978	0.0130
PH4_410-408	PH4_MH410	PH4_MH408	CONDUIT	25.7		0.3498	0.0130
PH4_412-410	PH4_MH412	PH4_MH410	CONDUIT	13.2		0.5291	0.0130
PH4_414-412	PH4_MH414	PH4_MH412	CONDUIT	49.1		0.3464	0.0130
PH4_502-162	PH4_MH502	162_(STM)	CONDUIT	8.1		0.2481	0.0130
PH4_504-502	PH4_MH504	PH4_MH502	CONDUIT	9.2		0.1089	0.0130
PH4_506-504	PH4_MH506	PH4_MH504	CONDUIT	23.5		0.2129	0.0130
PH4_508-506	PH4_MH508	PH4_MH506	CONDUIT	10.6		0.1885	0.0130
PH4_510-512	PH4_MH510	PH4_MH512	CONDUIT	47.9		0.3340	0.0130
PH4_512-406	PH4_MH512	PH4_MH406	CONDUIT	10.0		0.2991	0.0130
PH4_602-408	PH4_MH602	PH4_MH408	CONDUIT	8.9		0.3363	0.0130
PH4_604-602	PH4_MH604	PH4_MH602	CONDUIT	52.9		0.3402	0.0130
PH4_STM-71_(STM)	PH4_MH408	PH4_MH406	CONDUIT	32.9		0.2429	0.0130
Pipe_-_(1)_(RYCB)_1	TEE_43_(RYCB)	98_(STM)	CONDUIT	40.7		1.0001	0.0130
Pipe_-_(10)_(RYCB)	TEE_32_(RYCB)	RYCB_18_(RYCB)	CONDUIT	4.0		0.4964	0.0130
Pipe_-_(100)_(RYCB)	TEE_6_(RYCB)	RYCB_4_(RYCB)	CONDUIT	43.1		0.5011	0.0130
Pipe_-_(101)_(RYCB)	ELB_20_(RYCB)	TEE_35_(RYCB)	CONDUIT	58.1		0.5006	0.0130
Pipe_-_(103)_(1)_(RYCB)	TEE_33_(RYCB)	RYCB_18_(RYCB)	CONDUIT	4.0		0.5015	0.0130
Pipe_-_(103)_(RYCB)	TEE_34_(RYCB)	TEE_33_(RYCB)	CONDUIT	29.3		0.4983	0.0130

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  Pipe_-_(109)_(RYCB) ELB_21_(RYCB)    RYCB_9_(RYCB)    CONDUIT           42.6
0.4999    0.0130
  Pipe_-_(11)_(RYCB) RYCB_18_(RYCB)   Structure_-_(18)_(RYCB) CONDUIT
37.0    0.4998    0.0130
  Pipe_-_(110)_(RYCB) ELB_12_(RYCB)    TEE_22_(RYCB)    CONDUIT           42.8
0.5001    0.0130
  Pipe_-_(111)_(RYCB) TEE_22_(RYCB)    RYCB_9_(RYCB)    CONDUIT           36.1
0.5009    0.0130
  Pipe_-_(114)_(RYCB) ELB_10_(RYCB)    TEE_18_(RYCB)    CONDUIT           20.2
0.5010    0.0130
  Pipe_-_(117)_(RYCB) ELB_14_(RYCB)    TEE_24_(RYCB)    CONDUIT           14.2
0.5007    0.0130
  Pipe_-_(118)_(RYCB) TEE_24_(RYCB)    TEE_25_(RYCB)    CONDUIT           29.7
0.4989    0.0130
  Pipe_-_(119)_(RYCB) ELB_13_(RYCB)    TEE_23_(RYCB)    CONDUIT           29.5
0.5010    0.0130
  Pipe_-_(120)_(RYCB) ELB_17_(RYCB)    TEE_28_(RYCB)    CONDUIT           13.5
0.4968    0.0130
  Pipe_-_(121)_(RYCB) TEE_28_(RYCB)    RYCB_13_(RYCB)   CONDUIT           35.7
0.4987    0.0130
  Pipe_-_(122)_(RYCB) ELB_18_(RYCB)    RYCB_13_(RYCB)   CONDUIT           34.9
0.4990    0.0130
  Pipe_-_(123)_(RYCB) ELB_16_(RYCB)    TEE_26_(RYCB)    CONDUIT           27.7
1.0006    0.0130
  Pipe_-_(124)_(RYCB) TEE_26_(RYCB)    TEE_27_(RYCB)    CONDUIT           29.4
0.4999    0.0130
  Pipe_-_(125)_(RYCB) TEE_27_(RYCB)    RYCB_12_(RYCB)   CONDUIT           39.4
0.5000    0.0130
  Pipe_-_(126)_(RYCB) ELB_23_(RYCB)    TEE_40_(RYCB)    CONDUIT           30.5
0.5011    0.0130
  Pipe_-_(127)_(RYCB) TEE_40_(RYCB)    TEE_41_(RYCB)    CONDUIT           35.8
0.5005    0.0130
  Pipe_-_(128)_(RYCB) TEE_41_(RYCB)    RYCB_15_(RYCB)   CONDUIT           32.6
0.5000    0.0130
  Pipe_-_(129)_(RYCB) ELB_22_(RYCB)    TEE_36_(RYCB)    CONDUIT           47.1
0.4992    0.0130
  Pipe_-_(130)_(RYCB) TEE_36_(RYCB)    RYCB_14_(RYCB)   CONDUIT           21.1
0.5020    0.0130
  Pipe_-_(131)_(RYCB) TEE_37_(RYCB)    RYCB_14_(RYCB)   CONDUIT           21.2
0.4993    0.0130
  Pipe_-_(132)_(RYCB) TEE_37_(RYCB)    TEE_38_(RYCB)    CONDUIT           21.0
0.4993    0.0130
  Pipe_-_(133)_(RYCB) TEE_38_(RYCB)    TEE_39_(RYCB)    CONDUIT           46.6
0.5000    0.0130
  Pipe_-_(134)_(RYCB) TEE_10_(RYCB)    TEE_11_(RYCB)    CONDUIT           40.4
0.5202    0.0130
  Pipe_-_(137)_(RYCB) TEE_7_(RYCB)     TEE_8_(RYCB)     CONDUIT           22.5
0.4982    0.0130
  Pipe_-_(138)_(RYCB) TEE_8_(RYCB)     TEE_9_(RYCB)     CONDUIT           22.0
0.5003    0.0130
  Pipe_-_(139)_(RYCB) ELB_3_(RYCB)     TEE_2_(RYCB)     CONDUIT           20.2
0.4894    0.0130
  Pipe_-_(14)_(RYCB) TEE_15_(RYCB)    RYCB_7_(RYCB)    CONDUIT           4.8
0.5045    0.0130
  Pipe_-_(140)_(RYCB) TEE_2_(RYCB)     RYCB_3_(RYCB)    CONDUIT           20.8
0.5102    0.0130
  Pipe_-_(141)_(RYCB) ELB_11_(RYCB)    TEE_19_(RYCB)    CONDUIT           18.5
0.7995    0.0130
  Pipe_-_(142)_(RYCB) TEE_19_(RYCB)    TEE_20_(RYCB)    CONDUIT           27.4
0.5004    0.0130
  Pipe_-_(143)_(RYCB) TEE_20_(RYCB)    TEE_21_(RYCB)    CONDUIT           22.1
0.4981    0.0130
  Pipe_-_(144)_(RYCB) TEE_21_(RYCB)    RYCB_8_(RYCB)    CONDUIT           33.3
0.4992    0.0130
  Pipe_-_(145)_(RYCB) ELB_19_(RYCB)    TEE_29_(RYCB)    CONDUIT           18.5
0.4974    0.0130
  Pipe_-_(146)_(RYCB) TEE_29_(RYCB)    TEE_30_(RYCB)    CONDUIT           21.9
0.5017    0.0130
  Pipe_-_(147)_(RYCB) TEE_30_(RYCB)    TEE_31_(RYCB)    CONDUIT           23.1
0.5011    0.0130
  Pipe_-_(148)_(RYCB) TEE_31_(RYCB)    TEE_32_(RYCB)    CONDUIT           26.3
0.5011    0.0130
  Pipe_-_(149)_(RYCB) TEE_35_(RYCB)    TEE_34_(RYCB)    CONDUIT           12.1
0.4953    0.0130
  Pipe_-_(15)_(RYCB) RYCB_7_(RYCB)    15_RYCB          CONDUIT           39.0
0.4999    0.0130
  Pipe_-_(150)_(RYCB) TEE_18_(RYCB)    TEE_17_(RYCB)    CONDUIT           22.0
0.5004    0.0130
  Pipe_-_(151)_(RYCB) TEE_17_(RYCB)    TEE_16_(RYCB)    CONDUIT           22.1
0.5019    0.0130
  Pipe_-_(152)_(RYCB) TEE_16_(RYCB)    TEE_15_(RYCB)    CONDUIT           36.0
0.4996    0.0130
  Pipe_-_(153)_(RYCB) ELB_8_(RYCB)     TEE_10_(RYCB)    CONDUIT           17.2
0.7563    0.0130
  Pipe_-_(154)_(RYCB) ELB_9_(RYCB)     TEE_12_(RYCB)    CONDUIT           38.1
0.4987    0.0130
  Pipe_-_(155)_(RYCB) TEE_12_(RYCB)    TEE_13_(RYCB)    CONDUIT           17.9
0.5020    0.0130
  Pipe_-_(156)_(1)_(RYCB) TEE_14_(RYCB)    RYCB_7_(RYCB)    CONDUIT           3.2
0.4937    0.0130
  Pipe_-_(156)_(RYCB) TEE_13_(RYCB)    TEE_14_(RYCB)    CONDUIT           27.8
0.5002    0.0130
  Pipe_-_(157)_(RYCB) ELB_25_(RYCB)    TEE_44_(RYCB)    CONDUIT           64.5
0.4992    0.0130
  Pipe_-_(159)_(RYCB) ELB_24_(RYCB)    TEE_42_(RYCB)    CONDUIT           38.3
0.4987    0.0130
  Pipe_-_(16)_(RYCB) TEE_5_(RYCB)     RYCB_6_(RYCB)    CONDUIT           3.1
0.4854    0.0130
  Pipe_-_(160)_(RYCB) TEE_42_(RYCB)    TEE_43_(RYCB)    CONDUIT           36.9
0.5014    0.0130
  Pipe_-_(161)_(RYCB) ELB_1_(RYCB)     RYCB_1_(RYCB)    CONDUIT           36.5
0.5008    0.0130
  Pipe_-_(162)_(RYCB) ELB_15_(RYCB)    RYCB_10_(RYCB)   CONDUIT           33.0
0.5149    0.0130
  Pipe_-_(164)_(RYCB) TEE_23_(RYCB)    RYCB_10_(RYCB)   CONDUIT           28.6
0.5007    0.0130
  Pipe_-_(165)_(RYCB) TEE_25_(RYCB)    RYCB_11_(RYCB)   CONDUIT           31.0
0.5007    0.0130
  Pipe_-_(17)_(RYCB) TEE_11_(RYCB)    RYCB_6_(RYCB)    CONDUIT           5.4
0.5545    0.0130
  Pipe_-_(19)_(RYCB) RYCB_9_(RYCB)    22_(RYCB)        CONDUIT           31.3
0.5010    0.0130
  Pipe_-_(2)_(RYCB) TEE_44_(RYCB)    98_(STM)         CONDUIT           58.2
1.0001    0.0130
  Pipe_-_(22)_(RYCB) RYCB_14_(RYCB)   32_(CB)          CONDUIT           31.3
0.5013    0.0130
  Pipe_-_(23)_(RYCB) RYCB_12_(RYCB)   33_(CB)          CONDUIT           11.4
0.5002    0.0130
  Pipe_-_(24)_(RYCB) TEE_39_(RYCB)    29_(RYCB)        CONDUIT           8.2
0.5008    0.0130
```

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  Pipe_-_(25)_(RYCB) RYCB_11_(RYCB)   31_(CB)          CONDUIT            6.0
0.4959    0.0130
  Pipe_-_(27)_(RYCB) RYCB_3_(RYCB)    1_(RYCB)         CONDUIT           30.6
0.5000    0.0130
  Pipe_-_(73)_(RYCB) RYCB_8_(RYCB)    18_(CB)          CONDUIT            9.7
0.4970    0.0130
  Pipe_-_(74)_(RYCB) RYCB_15_(RYCB)   39_(RYCB)        CONDUIT            5.7
0.5049    0.0130
  Pipe_-_(77)_(RYCB) RYCB_13_(RYCB)   38_(RYCB)        CONDUIT           32.4
0.4995    0.0130
  Pipe_-_(87)_(RYCB) StartNullStruct2 TEE_1_(RYCB)     CONDUIT           21.1
0.4968    0.0130
  Pipe_-_(88)_(RYCB) TEE_1_(RYCB)     RYCB_2_(RYCB)    CONDUIT           36.1
0.4991    0.0130
  Pipe_-_(89)_(RYCB) ELB_4_(RYCB)     RYCB_3_(RYCB)    CONDUIT           30.5
0.4914    0.0130
  Pipe_-_(9)_(RYCB) RYCB_5_(RYCB)    11_(CB)          CONDUIT            5.8
0.5044    0.0130
  Pipe_-_(90)_(RYCB) StartNullStruct2 ELB_2_(RYCB)     CONDUIT           11.0
0.4993    0.0130
  Pipe_-_(93)_(RYCB) ELB_5_(RYCB)     TEE_3_(RYCB)     CONDUIT           39.7
0.4788    0.0130
  Pipe_-_(94)_(RYCB) TEE_3_(RYCB)     TEE_4_(RYCB)     CONDUIT           44.0
0.5001    0.0130
  Pipe_-_(95)_(RYCB) TEE_4_(RYCB)     TEE_5_(RYCB)     CONDUIT           43.2
0.4995    0.0130
  Pipe_-_(96)_(RYCB) ELB_7_(RYCB)     TEE_7_(RYCB)     CONDUIT           25.1
1.1149    0.0130
  Pipe_-_(98)_(RYCB) TEE_9_(RYCB)     RYCB_5_(RYCB)    CONDUIT           35.1
0.5012    0.0130
  Pipe_-_(99)_(RYCB) ELB_6_(RYCB)     TEE_6_(RYCB)     CONDUIT           39.0
0.5004    0.0130
  STM-23_(STM)     106_(STM)        104_(STM)        CONDUIT           97.6
0.2500    0.0130
  STM-24_(STM)     108_(STM)        106_(STM)        CONDUIT           26.2
0.2515    0.0130
  STM-27_(STM)     134_(STM)        132_(STM)        CONDUIT           36.0
0.6498    0.0130
  STM-28_(STM)     110_(STM)        108_(STM)        CONDUIT           29.1
0.4192    0.0130
  STM-34_(1)_(1)_(STM) 98_(STM)         2121_(STM)       CONDUIT           40.0
0.1250    0.0130
  STM-34_(1)_(STM) 100_(STM)        98_(STM)         CONDUIT           39.5
0.1013    0.0130
  STM-34_(STM)     102_(STM)        100_(STM)        CONDUIT           12.1
0.0826    0.0130
  STM-35_(STM)     2121_(STM)       2142_(STM)       CONDUIT           84.0
0.1190    0.0130
  STM-36_(STM)     2142_(STM)       2143_(STM)       CONDUIT           17.7
0.1695    0.0130
  STM-37_(STM)     2143_(STM)       2144_(STM)       CONDUIT           20.1
0.0994    0.0130
  STM-38_(STM)     2144_(STM)       STM-111_(STM)    CONDUIT           17.2
0.0990    0.0130
  STM-81_(STM)     142_(STM)        140_(STM)        CONDUIT           20.7
0.4350    0.0130
  STM-82_(STM)     StartNullStruct3 104_(STM)        CONDUIT           37.6
0.5001    0.0130
  STM-83_(STM)     STM-251_(STM)    144_(STM)        CONDUIT           37.8
1.0167    0.0130
```

```
  CB-02            02_(CB)          106_(STM)        ORIFICE
  CB-03            03_(CB)          106_(STM)        ORIFICE
  CB-04            04_(CB)          104_(STM)        ORIFICE
  CB-05            05_(CB)          104_(STM)        ORIFICE
  CB-06            06_(CB)          104_(STM)        ORIFICE
  CB-08            08_(CB)          112_(STM)        ORIFICE
  CB-09            09_(CB)          112_(STM)        ORIFICE
  CB-10            10_(CB)          114_(STM)        ORIFICE
  CB-11            11_(CB)          114_(STM)        ORIFICE
  CB-12            12_(CB)          120_(STM)        ORIFICE
  CB-13            13_(CB)          120_(STM)        ORIFICE
  CB-14            14_(CB)          126_(STM)        ORIFICE
  CB-15            15_(CB)          126_(STM)        ORIFICE
  CB-16            16_(CB)          128_(STM)        ORIFICE
  CB-17            17_(CB)          128_(STM)        ORIFICE
  CB-18            18_(CB)          136_(STM)        ORIFICE
  CB-19            19_(CB)          136_(STM)        ORIFICE
  CB-20            20_(CB)          140_(STM)        ORIFICE
  CB-21            21_(CB)          140_(STM)        ORIFICE
  CB-23            23_(CB)          144_(STM)        ORIFICE
  CB-24            24_(CB)          144_(STM)        ORIFICE
  CB-25            25_(CB)          146_(STM)        ORIFICE
  CB-26            26_(CB)          146_(STM)        ORIFICE
  CB-27            27_(CB)          148_(STM)        ORIFICE
  CB-28            28_(CB)          148_(STM)        ORIFICE
  CB-30            30_(CB)          150_(STM)        ORIFICE
  CB-31            31_(CB)          150_(STM)        ORIFICE
  CB-32            32_(CB)          152_(STM)        ORIFICE
  CB-33            33_(CB)          152_(STM)        ORIFICE
  CB-34            34_(CB)          158_(STM)        ORIFICE
  CB-35            35_(CB)          158_(STM)        ORIFICE
  CB-36            36_(CB)          162_(STM)        ORIFICE
  CB-37            37_(CB)          162_(STM)        ORIFICE
  CB-40            40_(CB)          164_(STM)        ORIFICE
  CB-41            41_(CB)          164_(STM)        ORIFICE
  CB-42            42_(CB)          170_(STM)        ORIFICE
  CB-43            43_(CB)          170_(STM)        ORIFICE
  CB-44            44_(CB)          142_(STM)        ORIFICE
  CB-45            45_(CB)          142_(STM)        ORIFICE
  CB-46            46_(CB)          132_(STM)        ORIFICE
  CB-47            47_(CB)          132_(STM)        ORIFICE
  CB-48            48_(CB)          130_(STM)        ORIFICE
  CB-49            49_(CB)          130_(STM)        ORIFICE
  CB-50            50_(CB)          118_(STM)        ORIFICE
  CB-51            51_(CB)          118_(STM)        ORIFICE
  CB-52            52_(CB)          162_(STM)        ORIFICE
  CB-53            53_(CB)          156_(STM)        ORIFICE
  CB-54            54_(CB)          156_(STM)        ORIFICE
  CB-55            55_(CB)          104_(STM)        ORIFICE
  CB-56            56_(CB)          104_(STM)        ORIFICE
  CB-57            57_(CB)          100_(STM)        ORIFICE
  OR-02            Maj-50           02_(CB)          ORIFICE
  OR-03            Maj-50           03_(CB)          ORIFICE
  OR-04            Maj-52           04_(CB)          ORIFICE
  OR-05            Maj-52           05_(CB)          ORIFICE
  OR-06            Maj-55           06_(CB)          ORIFICE
  OR-08            Maj-46           08_(CB)          ORIFICE
```

OR-09	Maj-46	09_(CB)	ORIFICE
OR1	59_(CB)	112_(STM)	ORIFICE
OR-10	Maj-44	10_(CB)	ORIFICE
OR-11	Maj-44	11_(CB)	ORIFICE
OR-12	Maj-41	12_(CB)	ORIFICE
OR-13	Maj-41	13_(CB)	ORIFICE
OR-14	Maj-37	14_(CB)	ORIFICE
OR-15	Maj-37	15_(CB)	ORIFICE
OR-16	Maj-35	16_(CB)	ORIFICE
OR-17	Maj-35	17_(CB)	ORIFICE
OR-18	Maj-28	18_(CB)	ORIFICE
OR-19	Maj-28	19_(CB)	ORIFICE
OR2	Maj-48_3	59_(CB)	ORIFICE
OR-20	Maj-26	20_(CB)	ORIFICE
OR-21	Maj-26	21_(CB)	ORIFICE
OR-23	Maj-24	23_(CB)	ORIFICE
OR-24	Maj-24	24_(CB)	ORIFICE
OR-25	Maj-19	25_(CB)	ORIFICE
OR-26	Maj-19	26_(CB)	ORIFICE
OR-27	Maj-21	27_(CB)	ORIFICE
OR-28	Maj-21	28_(CB)	ORIFICE
OR-30	Slope1	30_(CB)	ORIFICE
OR-31	Slope1	31_(CB)	ORIFICE
OR-32	Maj-14	32_(CB)	ORIFICE
OR-33	Maj-14	33_(CB)	ORIFICE
OR-34	Maj-16	34_(CB)	ORIFICE
OR-35	Maj-16	35_(CB)	ORIFICE
OR-36	Maj-10	36_(CB)	ORIFICE
OR-37	Maj-10	37_(CB)	ORIFICE
OR-40	Maj-06_2	40_(CB)	ORIFICE
OR-41	Maj-06_2	41_(CB)	ORIFICE
OR-42	Maj-03	42_(CB)	ORIFICE
OR-43	Maj-03	43_(CB)	ORIFICE
OR-44	Maj-33	44_(CB)	ORIFICE
OR-45	Maj-33	45_(CB)	ORIFICE
OR-46	Maj-32	46_(CB)	ORIFICE
OR-47	Maj-32	47_(CB)	ORIFICE
OR-48	Maj-30	48_(CB)	ORIFICE
OR-49	Maj-30	49_(CB)	ORIFICE
OR-50	Maj-42	50_(CB)	ORIFICE
OR-51	Maj-42	51_(CB)	ORIFICE
OR-52	Maj-09	52_(CB)	ORIFICE
OR-53	Maj-12	53_(CB)	ORIFICE
OR-54	Maj-12	54_(CB)	ORIFICE
OR-55	Maj-54	55_(CB)	ORIFICE
OR-56	Maj-54	56_(CB)	ORIFICE
OR-57	Maj-58	57_(CB)	ORIFICE
PH4_ICD150	PH4_RYCB150	PH4_MH510	ORIFICE
PH4_ICD151	PH4_RYCB151	PH4_MH506	ORIFICE
PH4_ICD153	PH4_RYCB153	PH4_MH604	ORIFICE
PH4_ICD154	PH4_RYCB154	PH4_MH410	ORIFICE
PH4_ICD155	PH4_RYCB155	PH4_MH408	ORIFICE
PH4_ICD156	PH4_RYCB156	PH4_MH402	ORIFICE
PH4_ICD158	PH4_RYCB158	PH4_MH414	ORIFICE
PH4_ICD20	PH4_RYCB20	PH4_MH110	ORIFICE
PH4_ICD21	PH4_RYCB21	PH4_MH106	ORIFICE
PH4_ICD22	PH4_RYCB22	PH4_MH104	ORIFICE

PH4_ICD23	PH4_RYCB23	PH4_MH308	ORIFICE
PH4_ICD24	PH4_RYCB24	PH4_MH304	ORIFICE
PH4_ICD50	PH4_CB50-51	PH4_MH404	ORIFICE
PH4_ICD51	PH4_CB50-51	PH4_MH404	ORIFICE
PH4_ICD52	PH4_CB52-53	PH4_MH408	ORIFICE
PH4_ICD53	PH4_CB52-53	PH4_MH408	ORIFICE
PH4_ICD54	PH4_CB54-55	PH4_MH412	ORIFICE
PH4_ICD55	PH4_CB54-55	PH4_MH412	ORIFICE
PH4_ICD56	PH4_CB56-57	PH4_MH414	ORIFICE
PH4_ICD57	PH4_CB56-57	PH4_MH414	ORIFICE
PH4_ICD58	PH4_CB58-59	PH4_MH102	ORIFICE
PH4_ICD59	PH4_CB58-59	PH4_MH102	ORIFICE
PH4_ICD60	PH4_CB60-61	PH4_MH108	ORIFICE
PH4_ICD61	PH4_CB60-61	PH4_MH108	ORIFICE
PH4_ICD62	PH4_CB62-63	PH4_MH204	ORIFICE
PH4_ICD63	PH4_CB62-63	PH4_MH204	ORIFICE
PH4_ICD64	PH4_CB64-65	PH4_MH210	ORIFICE
PH4_ICD65	PH4_CB64-65	PH4_MH210	ORIFICE
PH4_ICD66	PH4_CB66-67	PH4_MH306	ORIFICE
PH4_ICD67	PH4_CB66-67	PH4_MH306	ORIFICE
PH4_ICD68	PH4_CB68-69	PH4_MH310	ORIFICE
PH4_ICD69	PH4_CB68-69	PH4_MH310	ORIFICE
PH4_ICD70	PH4_CB70-71	PH4_MH604	ORIFICE
PH4_ICD71	PH4_CB70-71	PH4_MH604	ORIFICE
PH4_ICD72	PH4_CB72-73	PH4_MH602	ORIFICE
PH4_ICD73	PH4_CB72-73	PH4_MH602	ORIFICE
PH4_ICD74	PH4_CB74-75	PH4_MH510	ORIFICE
PH4_ICD75	PH4_CB74-75	PH4_MH510	ORIFICE
PH4_ICD80	PH4_CB80-81	PH4_MH402	ORIFICE
PH4_ICD81	PH4_CB80-81	PH4_MH402	ORIFICE
PH4_ST1	PH4_MH100	PH4_MH100_dummy	ORIFICE
PH4_ST2	PH4_MH202	PH4_MH202_dummy	ORIFICE
PH4_ST3	PH4_MH302	PH4_MH302_dummy	ORIFICE
RYCB-01	RYCB_1_(RYCB)	06_(CB)	ORIFICE
RYCB-02	RYCB_2_(RYCB)	112_(STM)	ORIFICE
RYCB-03	1_(RYCB)	110_(STM)	ORIFICE
RYCB-04	RYCB_4_(RYCB)	StartNullStruct3	ORIFICE
RYCB-06	RYCB_6_(RYCB)	128_(STM)	ORIFICE
RYCB-07	15_RYCB	138_(STM)	ORIFICE
RYCB-10	RYCB_10_(RYCB)	148_(STM)	ORIFICE
RYCB-18	Structure_-_(18)_(RYCB)	116_(STM)	ORIFICE
RYCB-22	22_(RYCB)	142_(STM)	ORIFICE
RYCB-29	29_(RYCB)	STM-251_(STM)	ORIFICE
RYCB-38	38_(RYCB)	162_(STM)	ORIFICE
RYCB-39	39_(RYCB)	162_(STM)	ORIFICE
B2-Out	B2_Stor	164_(STM)	OUTLET
B4-Out	58_(CB)	2142_(STM)	OUTLET
PH4_ICD78	PH4_CB78-79	PH4_MH506	OUTLET
PH4_ICD79	PH4_CB78-79	PH4_MH506	OUTLET
PH4_ICD82	PH4_CB82-83	PH4_MH110	OUTLET
PH4_ICD83	PH4_CB82-83	PH4_MH110	OUTLET
PH4_ICD84	PH4_CB84-85	PH4_MH100	OUTLET
PH4_ICD85	PH4_CB84-85	PH4_MH100	OUTLET
PH4_ICD86	PH4_CB86-87	PH4_MH212	OUTLET
PH4_ICD87	PH4_CB86-87	PH4_MH212	OUTLET
PH4_ICD88	PH4_CB88-89	PH4_MH202	OUTLET
PH4_ICD89	PH4_CB88-89	PH4_MH202	OUTLET

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  PH4_ICD90        PH4_CB90-91      PH4_MH312        OUTLET
  PH4_ICD91        PH4_CB90-91      PH4_MH312        OUTLET
  PH4_ICD92        PH4_CB92-93      PH4_MH302        OUTLET
  PH4_ICD93        PH4_CB92-93      PH4_MH302        OUTLET


  *********************
  Cross Section Summary
  *********************
                                      Full     Full     Hyd.     Max.   No. of
Full
  Conduit          Shape             Depth     Area     Rad.    Width  Barrels
Flow
  ---------------------------------------------------------------------------------
------
  1                6.0mROW            0.35     3.20     0.18    18.00        1
11.04
  1_(STM)          CIRCULAR           0.38     0.11     0.09     0.38        1
0.10
  10               6.0mROW            0.35     3.20     0.18    18.00        1
5.34
  10_(STM)         CIRCULAR           1.35     1.43     0.34     1.35        1
3.67
  11               6.0mROW            0.35     3.20     0.18    18.00        1
5.96
  11_(STM)         CIRCULAR           1.35     1.43     0.34     1.35        1
2.64
  12               6.0mROW            0.35     3.20     0.18    18.00        1
6.45
  12_(STM)         CIRCULAR           1.35     1.43     0.34     1.35        1
2.56
  13               6.0mROW            0.35     3.20     0.18    18.00        1
11.09
  13_(STM)         CIRCULAR           1.35     1.43     0.34     1.35        1
2.78
  14               6.0mROW            0.35     3.20     0.18    18.00        1
9.23
  14_(STM)         CIRCULAR           1.65     2.14     0.41     1.65        1
3.73
  15               6.0mROW            0.35     3.20     0.18    18.00        1
6.46
  15_(10)_(STM)    CIRCULAR           1.35     1.43     0.34     1.35        1
3.67
  15_(11)_(STM)    CIRCULAR           1.35     1.43     0.34     1.35        1
2.46
  15_(12)_(STM)    CIRCULAR           0.75     0.44     0.19     0.75        1
0.40
  15_(13)_(STM)    CIRCULAR           0.75     0.44     0.19     0.75        1
0.45
  15_(14)_(STM)    CIRCULAR           1.05     0.87     0.26     1.05        1
1.57
  15_(15)_(STM)    CIRCULAR           1.05     0.87     0.26     1.05        1
1.94
  15_(16)_(STM)    CIRCULAR           1.05     0.87     0.26     1.05        1
1.62
  15_(19)_(STM)    CIRCULAR           0.38     0.11     0.09     0.38        1
0.10
  15_(20)_(STM)    CIRCULAR           0.60     0.28     0.15     0.60        1
0.35
  15_(21)_(STM)    CIRCULAR           0.60     0.28     0.15     0.60        1
0.38
  15_(22)_(STM)    CIRCULAR           1.05     0.87     0.26     1.05        1
1.74
  15_(3)_(STM)     CIRCULAR           0.38     0.11     0.09     0.38        1
0.10
  15_(4)_(STM)     CIRCULAR           0.45     0.16     0.11     0.45        1
0.20
  15_(5)_(STM)     CIRCULAR           0.53     0.22     0.13     0.53        1
0.26
  15_(9)_(STM)     CIRCULAR           1.35     1.43     0.34     1.35        1
2.70
  16               6.0mROW            0.35     3.20     0.18    18.00        1
6.39
  17               6.0mROW            0.35     3.20     0.18    18.00        1
9.02
  18               6.0mROW            0.35     3.20     0.18    18.00        1
4.42
  18_1             6.0mROW            0.35     3.20     0.18    18.00        1
9.51
  18_2             6.0mROW            0.35     3.20     0.18    18.00        1
9.56
  19               6.0mROW            0.35     3.20     0.18    18.00        1
5.17
  2                6.0mROW            0.35     3.20     0.18    18.00        1
7.97
  2_(STM)          CIRCULAR           0.38     0.11     0.09     0.38        1
0.12
  20               6.0mROW            0.35     3.20     0.18    18.00        1
7.04
  21               6.0mROW            0.35     3.20     0.18    18.00        1
7.98
  22               6.0mROW            0.35     3.20     0.18    18.00        1
9.72
  23               6.0mROW            0.35     3.20     0.18    18.00        1
8.08
  24               6.0mROW            0.35     3.20     0.18    18.00        1
8.08
  25               6.0mROW            0.35     3.20     0.18    18.00        1
8.65
  26               6.0mROW            0.35     3.20     0.18    18.00        1
6.31
  27               6.0mROW            0.35     3.20     0.18    18.00        1
8.84
  28               6.0mROW            0.35     3.20     0.18    18.00        1
7.10
  29               6.0mROW            0.35     3.20     0.18    18.00        1
9.64
  3                6.0mROW            0.35     3.20     0.18    18.00        1
5.56
  3_(STM)          CIRCULAR           0.53     0.22     0.13     0.53        1
0.25
  30               6.0mROW            0.35     3.20     0.18    18.00        1
7.15
  31               6.0mROW            0.35     3.20     0.18    18.00        1
6.72
  32               6.0mROW            0.35     3.20     0.18    18.00        1
10.93
  33               6.0mROW            0.35     3.20     0.18    18.00        1
7.29
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34	6.0mROW	0.35	3.20	0.18	18.00	1	6.56
35	6.0mROW	0.35	3.20	0.18	18.00	1	14.12
36	6.0mROW	0.35	3.20	0.18	18.00	1	10.54
37	6.0mROW	0.35	3.20	0.18	18.00	1	10.16
38	6.0mROW	0.35	3.20	0.18	18.00	1	10.07
39	6.0mROW	0.35	3.20	0.18	18.00	1	14.57
4	6.0mROW	0.35	3.20	0.18	18.00	1	5.84
4_(STM)	CIRCULAR	1.20	1.13	0.30	1.20	1	1.94
40	6.0mROW	0.35	3.20	0.18	18.00	1	8.75
41	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
42	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.37
43	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
44	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
45	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
46	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.27
47	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.38
48	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.48
49	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
5	6.0mROW	0.35	3.20	0.18	18.00	1	6.63
5_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2.85
50	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
51	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
52	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
53	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
54	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
55	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
56	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.27
57	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.29
58	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
59	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26

6	6.0mROW	0.35	3.20	0.18	18.00	1	10.02
6_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.05
60	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.27
61	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.25
62	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.13
63	6.0mROW	0.35	3.20	0.18	18.00	1	4.97
7	TRIANGULAR	0.30	0.27	0.14	1.80	1	0.26
7_(1)_(STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
7_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	0.08
8	6.0mROW	0.35	3.20	0.18	18.00	1	10.62
8_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2.67
9	6.0mROW	0.35	3.20	0.18	18.00	1	7.38
9_(STM)	CIRCULAR	1.35	1.43	0.34	1.35	1	2.73
C1	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	46.46
C1_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	41.73
C1_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	39.24
C10	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	30.78
C11	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	36.64
C12	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	15.85
C13	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	16.21
C14	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.07
C15	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	33.88
C16	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	33.63
C17	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	25.22
C18	TRIANGULAR	0.60	1.08	0.28	3.60	1	3.29
C18_2	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	37.10
C18_3	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	54.54
C18_4	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	37.69
C18_5	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	50.22
C18_6	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	32.62

C18_7	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	18.39
C18_8	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	39.29
C18_9	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	31.30
C19	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	33.00
C2	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	64.23
C2_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	40.54
C2_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	40.39
C20	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	42.83
C21	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	43.14
C22	24mROW-Dbl-Sidewalk	0.60	14.13	0.27	42.60	1	60.84
C23	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	33.16
C24	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.57
C25	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	30.56
C26	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	24.79
C27	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.22
C27_1	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	34.05
C27_2	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	30.77
C28	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	33.54
C29	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	22.52
C3_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	28.27
C3_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	28.24
C30	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	24.90
C31	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.37
C31_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	3.19
C31_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.15
C32	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	27.62
C33	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	25.92
C34	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	36.74
C35	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.88
C36	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	36.00

C37	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.64
C38	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.67
C39	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	22.27
C4	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.11
C4_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	33.64
C4_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	29.56
C4_3	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.24
C4_4	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.45
C40	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	36.25
C41	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	28.65
C42	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	24.39
C43	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	25.45
C44	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	26.78
C45	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	24.93
C46	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	33.61
C47	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	29.18
C48	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	32.37
C49	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	23.47
C5	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.12
C5_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	32.07
C5_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	30.88
C50	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.64
C50_1	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	14.72
C50_3	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	29.96
C50_4	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	29.87
C51	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	24.82
C52	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	28.36
C53	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	39.15
C54	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	31.98
C55	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	38.87

C56	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.29
C57	18mROW-No-Sidewalk	0.60	12.54	0.19	39.25	1	24.29
C58	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.08
C58_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.22
C58_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.15
C59_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	0.72
C59_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.11
C6	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.36
C6_1	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	29.53
C6_2	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	32.85
C60	TRIANGULAR	0.60	1.08	0.28	3.60	1	0.87
C61_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	3.35
C61_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.18
C62	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.60
C63_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	3.25
C63_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	3.20
C64	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.03
C65_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.10
C65_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.94
C66_1	TRIANGULAR	0.60	1.08	0.28	3.60	1	0.93
C66_2	TRIANGULAR	0.60	1.08	0.28	3.60	1	1.00
C67	TRIANGULAR	0.60	1.08	0.28	3.60	1	0.99
C68	TRIANGULAR	0.60	1.08	0.28	3.60	1	0.68
C69	TRIANGULAR	0.60	1.08	0.28	3.60	1	2.03
C7	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	34.70
C8	18mROW-Dbl-Sidewalk	0.60	13.43	0.25	39.25	1	35.18
C9	18mROWwSidewalk	0.60	13.69	0.26	39.25	1	37.25
PH4_100-168	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_102-100	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_104-102	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
PH4_106-104	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_108-106	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
PH4_110-108	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_202-166	CIRCULAR	0.38	0.11	0.09	0.38	1	0.08
PH4_204-202	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_206-204	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
PH4_208-206	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_210-208	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
PH4_212-210	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_302-162	CIRCULAR	0.38	0.11	0.09	0.38	1	0.07
PH4_304-302	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_306-304	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_308-306	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_310-308	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
PH4_312-310	CIRCULAR	0.30	0.07	0.07	0.30	1	0.06
PH4_402-508	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
PH4_404-402	CIRCULAR	0.45	0.16	0.11	0.45	1	0.21
PH4_406-404	CIRCULAR	0.38	0.11	0.09	0.38	1	0.08
PH4_410-408	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_412-410	CIRCULAR	0.38	0.11	0.09	0.38	1	0.13
PH4_414-412	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_502-162	CIRCULAR	0.45	0.16	0.11	0.45	1	0.14
PH4_504-502	CIRCULAR	0.45	0.16	0.11	0.45	1	0.09
PH4_506-504	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
PH4_508-506	CIRCULAR	0.45	0.16	0.11	0.45	1	0.12
PH4_510-512	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_512-406	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_602-408	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_604-602	CIRCULAR	0.38	0.11	0.09	0.38	1	0.10
PH4_STM-71_(STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	0.09

Pipe_-_(1)_(RYCB)_1	CIRCULAR	0.25	0.05	0.06	0.25	1	0.06
Pipe_-_(10)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(100)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(101)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(103)_(1)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(103)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(109)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(11)_(RYCB)	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
Pipe_-_(110)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(111)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(114)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(117)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(118)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(119)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(120)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(121)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(122)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(123)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.06
Pipe_-_(124)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(125)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(126)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(127)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(128)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(129)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(130)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(131)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(132)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(133)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(134)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(137)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(138)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(139)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(14)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(140)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(141)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.05
Pipe_-_(142)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(143)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(144)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(145)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(146)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(147)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(148)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(149)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(15)_(RYCB)	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
Pipe_-_(150)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(151)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(152)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(153)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.05
Pipe_-_(154)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(155)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(156)_(1)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(156)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(157)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(159)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(16)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(160)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(161)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(162)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(164)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04
Pipe_-_(165)_(RYCB)	CIRCULAR	0.25	0.05	0.06	0.25	1	0.04

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  Pipe_-_(17)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(19)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(2)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.06
  Pipe_-_(22)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(23)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(24)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(25)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(27)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(73)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(74)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(77)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(87)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(88)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(89)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(9)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(90)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(93)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(94)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(95)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(96)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.06
  Pipe_-_(98)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  Pipe_-_(99)_(RYCB) CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  STM-23_(STM)     CIRCULAR            0.45     0.16     0.11     0.45        1
0.14
  STM-24_(STM)     CIRCULAR            0.45     0.16     0.11     0.45        1
0.14
  STM-27_(STM)     CIRCULAR            0.25     0.05     0.06     0.25        1
0.05
  STM-28_(STM)     CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  STM-34_(1)_(1)_(STM) CIRCULAR            1.65     2.14     0.41     1.65
1     3.22
  STM-34_(1)_(STM) CIRCULAR            1.65     2.14     0.41     1.65        1
2.90
  STM-34_(STM)     CIRCULAR            1.65     2.14     0.41     1.65        1
2.62
  STM-35_(STM)     CIRCULAR            1.65     2.14     0.41     1.65        1
3.15
  STM-36_(STM)     CIRCULAR            1.65     2.14     0.41     1.65        1
3.75
  STM-37_(STM)     CIRCULAR            1.80     2.54     0.45     1.80        1
3.62
  STM-38_(STM)     CIRCULAR            1.80     2.54     0.45     1.80        1
3.62
  STM-81_(STM)     CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  STM-82_(STM)     CIRCULAR            0.25     0.05     0.06     0.25        1
0.04
  STM-83_(STM)     CIRCULAR            0.25     0.05     0.06     0.25        1
0.06


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

  Transect 16.5mROW-Dbl-Sidewalk
  Area:
             0.0004     0.0016     0.0036     0.0064     0.0100
             0.0144     0.0196     0.0256     0.0325     0.0401
             0.0485     0.0571     0.0680     0.0814     0.0955
             0.1102     0.1256     0.1416     0.1583     0.1756
             0.1936     0.2123     0.2316     0.2516     0.2722
             0.2934     0.3154     0.3379     0.3612     0.3851
             0.4096     0.4348     0.4606     0.4871     0.5143
             0.5421     0.5705     0.5996     0.6294     0.6598
             0.6909     0.7226     0.7550     0.7881     0.8217
             0.8561     0.8911     0.9267     0.9630     1.0000
  Hrad:
             0.0229     0.0458     0.0686     0.0915     0.1144
             0.1373     0.1602     0.1831     0.2059     0.2288
             0.2554     0.3003     0.2443     0.2872     0.3273
             0.3650     0.4003     0.4336     0.4651     0.4949
             0.5231     0.5499     0.5754     0.5997     0.6228
             0.6450     0.6662     0.6866     0.7062     0.7250
             0.7431     0.7605     0.7773     0.7936     0.8094
             0.8246     0.8394     0.8538     0.8677     0.8813
             0.8945     0.9073     0.9199     0.9321     0.9440
             0.9557     0.9671     0.9783     0.9893     1.0000
  Width:
             0.0215     0.0430     0.0645     0.0860     0.1074
             0.1289     0.1504     0.1719     0.1934     0.2149
             0.2328     0.2329     0.3512     0.3688     0.3863
             0.4038     0.4214     0.4389     0.4564     0.4740
             0.4915     0.5090     0.5266     0.5441     0.5616
             0.5792     0.5967     0.6142     0.6318     0.6493
             0.6668     0.6844     0.7019     0.7195     0.7370
             0.7545     0.7721     0.7896     0.8071     0.8247
             0.8422     0.8597     0.8773     0.8948     0.9123
             0.9299     0.9474     0.9649     0.9825     1.0000

  Transect 16.5mROW-No-Sidewalk
  Area:
             0.0004     0.0018     0.0040     0.0071     0.0112
             0.0161     0.0219     0.0286     0.0362     0.0447
```

0.0541	0.0637	0.0737	0.0847	0.0964
0.1089	0.1221	0.1362	0.1511	0.1667
0.1831	0.2003	0.2183	0.2370	0.2566
0.2769	0.2980	0.3199	0.3426	0.3661
0.3903	0.4153	0.4412	0.4678	0.4952
0.5233	0.5523	0.5820	0.6125	0.6438
0.6759	0.7088	0.7425	0.7769	0.8121
0.8481	0.8849	0.9225	0.9609	1.0000

Hrad:

0.0266	0.0531	0.0797	0.1062	0.1328
0.1593	0.1859	0.2124	0.2390	0.2655
0.2964	0.3485	0.3839	0.4313	0.4738
0.5120	0.5466	0.5779	0.6064	0.6324
0.6563	0.6783	0.6988	0.7177	0.7355
0.7521	0.7677	0.7825	0.7965	0.8098
0.8225	0.8346	0.8463	0.8574	0.8682
0.8786	0.8887	0.8985	0.9080	0.9173
0.9263	0.9351	0.9438	0.9522	0.9605
0.9687	0.9767	0.9846	0.9923	1.0000

Width:

0.0226	0.0452	0.0678	0.0904	0.1130
0.1356	0.1582	0.1808	0.2034	0.2260
0.2449	0.2449	0.2664	0.2862	0.3061
0.3259	0.3457	0.3655	0.3854	0.4052
0.4250	0.4448	0.4647	0.4845	0.5043
0.5241	0.5440	0.5638	0.5836	0.6035
0.6233	0.6431	0.6629	0.6828	0.7026
0.7224	0.7422	0.7621	0.7819	0.8017
0.8216	0.8414	0.8612	0.8810	0.9009
0.9207	0.9405	0.9603	0.9802	1.0000

Transect 16.5mROWwSidewalk
Area:

0.0004	0.0017	0.0037	0.0066	0.0104
0.0149	0.0203	0.0266	0.0336	0.0415
0.0502	0.0592	0.0694	0.0815	0.0943
0.1078	0.1220	0.1370	0.1526	0.1691
0.1862	0.2041	0.2227	0.2420	0.2621
0.2828	0.3043	0.3266	0.3496	0.3732
0.3977	0.4228	0.4487	0.4753	0.5026
0.5307	0.5595	0.5890	0.6193	0.6502
0.6819	0.7144	0.7475	0.7814	0.8160
0.8514	0.8874	0.9242	0.9617	1.0000

Hrad:

0.0249	0.0499	0.0748	0.0997	0.1247
0.1496	0.1746	0.1995	0.2244	0.2494
0.2783	0.3273	0.3057	0.3513	0.3932
0.4317	0.4672	0.5001	0.5307	0.5591
0.5857	0.6106	0.6340	0.6561	0.6770
0.6967	0.7155	0.7333	0.7504	0.7666
0.7822	0.7972	0.8116	0.8254	0.8388
0.8517	0.8642	0.8763	0.8881	0.8995
0.9107	0.9215	0.9321	0.9424	0.9525
0.9624	0.9721	0.9815	0.9909	1.0000

Width:

0.0215	0.0430	0.0645	0.0860	0.1074
0.1289	0.1504	0.1719	0.1934	0.2149
0.2328	0.2329	0.3026	0.3214	0.3403
0.3591	0.3780	0.3968	0.4157	0.4345
0.4534	0.4722	0.4911	0.5099	0.5288
0.5476	0.5665	0.5853	0.6042	0.6230
0.6419	0.6607	0.6796	0.6984	0.7173
0.7361	0.7550	0.7738	0.7927	0.8115
0.8304	0.8492	0.8681	0.8869	0.9058
0.9246	0.9435	0.9623	0.9812	1.0000

Transect 18mROW-Dbl-Sidewalk
Area:

0.0004	0.0014	0.0032	0.0056	0.0088
0.0126	0.0174	0.0258	0.0359	0.0472
0.0599	0.0733	0.0873	0.1018	0.1169
0.1326	0.1488	0.1656	0.1830	0.2009
0.2194	0.2384	0.2580	0.2782	0.2989
0.3202	0.3421	0.3645	0.3875	0.4110
0.4351	0.4598	0.4850	0.5108	0.5372
0.5641	0.5916	0.6196	0.6482	0.6774
0.7071	0.7374	0.7683	0.7997	0.8317
0.8642	0.8973	0.9310	0.9652	1.0000

Hrad:

0.0235	0.0469	0.0704	0.0939	0.1173
0.1408	0.1300	0.1329	0.1661	0.1956
0.2244	0.2622	0.2981	0.3322	0.3647
0.3956	0.4252	0.4535	0.4805	0.5065
0.5314	0.5554	0.5784	0.6007	0.6221
0.6428	0.6628	0.6821	0.7009	0.7191
0.7367	0.7538	0.7704	0.7866	0.8024
0.8177	0.8327	0.8473	0.8616	0.8755
0.8891	0.9025	0.9155	0.9283	0.9408
0.9531	0.9651	0.9770	0.9886	1.0000

Width:

0.0200	0.0400	0.0600	0.0800	0.1000
0.1199	0.1807	0.2699	0.3059	0.3419
0.3746	0.3906	0.4067	0.4227	0.4387
0.4548	0.4708	0.4868	0.5029	0.5189
0.5350	0.5510	0.5670	0.5831	0.5991
0.6151	0.6312	0.6472	0.6632	0.6793
0.6953	0.7114	0.7274	0.7434	0.7595
0.7755	0.7915	0.8076	0.8236	0.8396
0.8557	0.8717	0.8877	0.9038	0.9198
0.9359	0.9519	0.9679	0.9840	1.0000

Transect 18mROW-No-Sidewalk
Area:

0.0004	0.0015	0.0034	0.0060	0.0094
0.0135	0.0184	0.0246	0.0323	0.0413
0.0518	0.0632	0.0753	0.0881	0.1015
0.1156	0.1304	0.1459	0.1621	0.1789
0.1965	0.2147	0.2336	0.2531	0.2734
0.2943	0.3159	0.3381	0.3611	0.3847
0.4091	0.4340	0.4597	0.4861	0.5131
0.5408	0.5692	0.5983	0.6280	0.6584
0.6895	0.7213	0.7538	0.7869	0.8207
0.8552	0.8904	0.9263	0.9628	1.0000

Hrad:

0.0304	0.0608	0.0911	0.1215	0.1519
0.1823	0.2123	0.2363	0.2557	0.2730
0.2937	0.3332	0.3698	0.4038	0.4356
0.4654	0.4933	0.5197	0.5446	0.5682
0.5906	0.6120	0.6324	0.6520	0.6707
0.6887	0.7060	0.7228	0.7389	0.7546
0.7697	0.7845	0.7988	0.8127	0.8262
0.8395	0.8524	0.8651	0.8774	0.8896
0.9014	0.9131	0.9246	0.9359	0.9469
0.9579	0.9686	0.9792	0.9897	1.0000

Width:

0.0200	0.0400	0.0600	0.0800	0.1000
0.1199	0.1460	0.1840	0.2221	0.2602
0.2949	0.3130	0.3311	0.3491	0.3672
0.3853	0.4034	0.4215	0.4395	0.4576
0.4757	0.4938	0.5119	0.5299	0.5480
0.5661	0.5842	0.6023	0.6203	0.6384
0.6565	0.6746	0.6927	0.7107	0.7288
0.7469	0.7650	0.7830	0.8011	0.8192
0.8373	0.8554	0.8734	0.8915	0.9096
0.9277	0.9458	0.9638	0.9819	1.0000

Transect 18mROWwSidewalk

Area:

0.0003	0.0014	0.0031	0.0055	0.0086
0.0124	0.0171	0.0261	0.0369	0.0488
0.0620	0.0760	0.0905	0.1055	0.1211
0.1372	0.1538	0.1709	0.1886	0.2068
0.2255	0.2448	0.2646	0.2850	0.3058
0.3272	0.3491	0.3716	0.3946	0.4181
0.4422	0.4667	0.4918	0.5175	0.5437
0.5704	0.5976	0.6254	0.6537	0.6825
0.7119	0.7418	0.7722	0.8031	0.8346
0.8666	0.8992	0.9323	0.9659	1.0000

Hrad:

0.0226	0.0452	0.0679	0.0905	0.1131
0.1357	0.1264	0.1305	0.1583	0.1852
0.2118	0.2484	0.2834	0.3169	0.3489
0.3796	0.4090	0.4372	0.4643	0.4905
0.5156	0.5399	0.5633	0.5859	0.6078
0.6290	0.6495	0.6694	0.6887	0.7074
0.7257	0.7434	0.7606	0.7774	0.7938
0.8097	0.8253	0.8405	0.8554	0.8699
0.8841	0.8980	0.9117	0.9250	0.9381
0.9509	0.9635	0.9759	0.9881	1.0000

Width:

0.0200	0.0400	0.0600	0.0800	0.1000
0.1199	0.1909	0.2951	0.3306	0.3660
0.3981	0.4135	0.4290	0.4444	0.4598
0.4753	0.4907	0.5061	0.5216	0.5370
0.5524	0.5679	0.5833	0.5987	0.6142
0.6296	0.6450	0.6605	0.6759	0.6913
0.7068	0.7222	0.7376	0.7531	0.7685
0.7839	0.7994	0.8148	0.8302	0.8457
0.8611	0.8765	0.8920	0.9074	0.9228
0.9383	0.9537	0.9691	0.9846	1.0000

Transect 18mROWwSidewalk-Half

Area:

0.0003	0.0012	0.0027	0.0047	0.0074
0.0106	0.0149	0.0255	0.0381	0.0518
0.0665	0.0819	0.0977	0.1139	0.1306
0.1478	0.1654	0.1835	0.2020	0.2210
0.2404	0.2602	0.2806	0.3013	0.3226
0.3442	0.3664	0.3890	0.4120	0.4355
0.4594	0.4838	0.5086	0.5339	0.5597
0.5859	0.6125	0.6396	0.6672	0.6952
0.7236	0.7525	0.7819	0.8117	0.8419
0.8726	0.9038	0.9354	0.9675	1.0000

Hrad:

0.0197	0.0394	0.0591	0.0788	0.0985
0.1182	0.0853	0.0859	0.1193	0.1501
0.1798	0.2143	0.2476	0.2798	0.3108
0.3409	0.3700	0.3981	0.4254	0.4519
0.4776	0.5025	0.5267	0.5502	0.5731
0.5954	0.6171	0.6382	0.6588	0.6789
0.6985	0.7176	0.7363	0.7545	0.7724
0.7898	0.8068	0.8235	0.8399	0.8559
0.8715	0.8869	0.9020	0.9168	0.9313
0.9455	0.9595	0.9732	0.9867	1.0000

Width:

0.0180	0.0361	0.0541	0.0721	0.0902
0.1082	0.2136	0.3696	0.4014	0.4332
0.4621	0.4759	0.4897	0.5034	0.5172
0.5310	0.5448	0.5586	0.5724	0.5862
0.6000	0.6138	0.6276	0.6414	0.6552
0.6690	0.6828	0.6966	0.7103	0.7241
0.7379	0.7517	0.7655	0.7793	0.7931
0.8069	0.8207	0.8345	0.8483	0.8621
0.8759	0.8897	0.9034	0.9172	0.9310
0.9448	0.9586	0.9724	0.9862	1.0000

Transect 24mROW-Dbl-Sidewalk

Area:

0.0004	0.0014	0.0032	0.0056	0.0088
0.0127	0.0173	0.0226	0.0286	0.0353
0.0427	0.0503	0.0613	0.0762	0.0916
0.1076	0.1242	0.1414	0.1592	0.1776
0.1965	0.2160	0.2361	0.2568	0.2781
0.3000	0.3224	0.3455	0.3691	0.3933
0.4181	0.4434	0.4694	0.4959	0.5231
0.5508	0.5790	0.6079	0.6374	0.6674
0.6981	0.7293	0.7611	0.7934	0.8264
0.8600	0.8941	0.9288	0.9641	1.0000

Hrad:

0.0214	0.0427	0.0641	0.0854	0.1068
0.1282	0.1495	0.1709	0.1922	0.2136
0.2384	0.2804	0.1850	0.2258	0.2646
0.3015	0.3366	0.3702	0.4023	0.4330
0.4625	0.4907	0.5179	0.5440	0.5691
0.5933	0.6166	0.6392	0.6610	0.6821
0.7025	0.7222	0.7414	0.7600	0.7780
0.7956	0.8126	0.8292	0.8454	0.8612
0.8765	0.8915	0.9062	0.9205	0.9344

```
            0.9481     0.9615     0.9746     0.9874     1.0000
Width:
            0.0195     0.0390     0.0585     0.0780     0.0975
            0.1170     0.1365     0.1560     0.1755     0.1950
            0.2112     0.2112     0.4024     0.4186     0.4347
            0.4509     0.4670     0.4832     0.4993     0.5155
            0.5316     0.5478     0.5639     0.5801     0.5962
            0.6124     0.6285     0.6447     0.6608     0.6770
            0.6931     0.7093     0.7254     0.7416     0.7577
            0.7739     0.7900     0.8062     0.8223     0.8385
            0.8546     0.8708     0.8869     0.9031     0.9192
            0.9354     0.9515     0.9677     0.9838     1.0000

Transect 6.0mROW
Area:
            0.0005     0.0018     0.0041     0.0073     0.0115
            0.0165     0.0225     0.0294     0.0372     0.0459
            0.0555     0.0661     0.0776     0.0900     0.1030
            0.1161     0.1293     0.1424     0.1555     0.1686
            0.1817     0.1975     0.2158     0.2349     0.2548
            0.2754     0.2968     0.3189     0.3418     0.3655
            0.3900     0.4152     0.4412     0.4679     0.4954
            0.5237     0.5528     0.5826     0.6131     0.6445
            0.6766     0.7095     0.7431     0.7775     0.8127
            0.8486     0.8853     0.9228     0.9610     1.0000
Hrad:
            0.0192     0.0384     0.0576     0.0768     0.0961
            0.1153     0.1345     0.1537     0.1729     0.1921
            0.2113     0.2305     0.2497     0.2689     0.3014
            0.3390     0.3764     0.4137     0.4508     0.4877
            0.5245     0.4313     0.4671     0.5009     0.5327
            0.5628     0.5913     0.6184     0.6441     0.6685
            0.6918     0.7141     0.7353     0.7557     0.7752
            0.7940     0.8120     0.8294     0.8461     0.8623
            0.8780     0.8931     0.9078     0.9221     0.9360
            0.9494     0.9626     0.9753     0.9878     1.0000
Width:
            0.0233     0.0466     0.0699     0.0932     0.1165
            0.1398     0.1632     0.1865     0.2098     0.2331
            0.2564     0.2797     0.3030     0.3263     0.3330
            0.3331     0.3331     0.3332     0.3332     0.3333
            0.3333     0.4556     0.4750     0.4944     0.5139
            0.5333     0.5528     0.5722     0.5917     0.6111
            0.6306     0.6500     0.6694     0.6889     0.7083
            0.7278     0.7472     0.7667     0.7861     0.8056
            0.8250     0.8444     0.8639     0.8833     0.9028
            0.9222     0.9417     0.9611     0.9806     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 ............... CMS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 01/01/2019 00:00:00
Ending Date .............. 01/02/2019 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 2.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 21
Number of Threads ........ 6
Head Tolerance ........... 0.000100 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         1.374        71.665
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.303        15.824
Surface Runoff ...........         1.052        54.886
Final Storage ............         0.020         1.024
Continuity Error (%) .....        -0.097


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.052        10.522
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.016         0.164
External Outflow .........         1.033        10.331
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.003
Final Stored Volume ......         0.042         0.416
Continuity Error (%) .....        -0.547


*************************
Highest Continuity Errors
*************************
```

Node Maj-04 (100.00%)
Node 14 (99.84%)
Node Maj-34 (57.37%)
Node Maj-56 (52.21%)
Node Maj-48_2 (31.02%)

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***************************
Time-Step Critical Elements
***************************
Link Pipe_-_(156)_(1)_(RYCB) (1.54%)


********************************
Highest Flow Instability Indexes
********************************
Link CB-52 (78)
Link B4-Out (30)
Link STM-38_(STM) (28)
Link STM-37_(STM) (28)
Link STM-36_(STM) (26)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.96 sec
Maximum Time Step           :     2.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     5.17
Percent Not Converging      :    10.63
Time Step Frequencies       :
    2.000 -  1.516 sec      :    96.05 %
    1.516 -  1.149 sec      :     1.54 %
    1.149 -  0.871 sec      :     0.80 %
    0.871 -  0.660 sec      :     0.46 %
    0.660 -  0.500 sec      :     1.15 %


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

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A10	71.66	0.00	0.00	29.92	30.11	41.15	41.15	0.08	0.07	0.574
A11	71.66	0.00	0.00	30.29	30.11	40.78	40.78	0.12	0.09	0.569
A12i	71.66	0.00	0.00	12.90	50.10	7.61	57.71	0.11	0.09	0.805
A12ii	71.66	0.00	0.00	12.69	50.12	7.83	57.95	0.05	0.04	0.809
A13	71.66	0.00	0.00	30.39	30.11	40.67	40.67	0.09	0.07	0.567
A14	71.66	0.00	0.00	30.95	30.10	40.10	40.10	0.13	0.08	0.560
A15i	71.66	0.00	0.00	12.88	50.10	7.63	57.73	0.14	0.11	0.806
A15ii	71.66	0.00	0.00	12.91	50.10	7.59	57.69	0.16	0.12	0.805
A16i	71.66	0.00	0.00	12.89	50.10	7.62	57.72	0.03	0.03	0.805
A16ii	71.66	0.00	0.00	12.92	50.10	7.59	57.69	0.04	0.03	0.805
A17	71.66	0.00	0.00	29.65	30.12	41.43	41.43	0.04	0.04	0.578
A17ii	71.66	0.00	0.00	12.69	50.12	7.83	57.95	0.05	0.04	0.809
A18i	71.66	0.00	0.00	12.88	50.10	7.63	57.73	0.11	0.08	0.806
A19	71.66	0.00	0.00	29.72	30.12	41.36	41.36	0.08	0.08	0.577
A1i	71.66	0.00	0.00	12.67	50.12	7.85	57.97	0.09	0.07	0.809
A1ii	71.66	0.00	0.00	12.71	50.12	7.80	57.92	0.12	0.09	0.808
A20i	71.66	0.00	0.00	12.73	50.12	7.78	57.90	0.11	0.09	0.808
A20ii	71.66	0.00	0.00	12.74	50.11	7.77	57.88	0.12	0.09	0.808
A21	71.66	0.00	0.00	27.14	35.09	43.81	43.81	0.14	0.11	0.611
A22	71.66	0.00	0.00	25.32	30.12	15.64	45.75	0.01	0.01	0.638
A23	71.66	0.00	0.00	26.95	35.09	44.01	44.01	0.07	0.06	0.614
A24i	71.66	0.00	0.00	12.64	50.13	7.88	58.00	0.06	0.05	0.809
A24ii	71.66	0.00	0.00	12.71	50.12	7.80	57.92	0.14	0.11	0.808
A25	71.66	0.00	0.00	27.13	35.09	43.82	43.82	0.13	0.10	0.611
A26i	71.66	0.00	0.00	12.63	50.13	7.89	58.02	0.03	0.03	0.810
A26ii	71.66	0.00	0.00	12.87	50.10	7.64	57.74	0.10	0.08	0.806
A27i	71.66	0.00	0.00	12.79	50.11	7.72	57.83	0.05	0.04	0.807
A27ii	71.66	0.00	0.00	12.83	50.10	7.68	57.78	0.10	0.08	0.806
A28i	71.66	0.00	0.00	12.75	50.11	7.76	57.87	0.08	0.07	0.808
A28ii	71.66	0.00	0.00	12.74	50.11	7.77	57.88	0.08	0.06	0.808
A29	71.66	0.00	0.00	26.66	35.10	44.32	44.32	0.05	0.05	0.618
A2i	71.66	0.00	0.00	12.66	50.12	7.86	57.98	0.07	0.06	0.809

A2ii	71.66	0.00	0.00	12.65	50.12	7.86	57.99	0.07	0.06	0.809
A3	71.66	0.00	0.00	29.68	30.12	41.41	41.41	0.06	0.06	0.578
A30	71.66	0.00	0.00	25.44	30.12	15.51	45.63	0.01	0.01	0.637
A31	71.66	0.00	0.00	26.65	35.10	44.33	44.33	0.08	0.08	0.619
A32i	71.66	0.00	0.00	12.74	50.11	7.78	57.89	0.09	0.07	0.808
A32ii	71.66	0.00	0.00	12.62	50.13	7.90	58.03	0.05	0.04	0.810
A33i	71.66	0.00	0.00	12.57	50.13	7.96	58.09	0.06	0.05	0.811
A33ii	71.66	0.00	0.00	12.73	50.11	7.78	57.90	0.09	0.07	0.808
A34i	71.66	0.00	0.00	12.77	50.11	7.74	57.85	0.12	0.10	0.807
A34ii	71.66	0.00	0.00	12.82	50.11	7.69	57.79	0.16	0.12	0.806
A35i	71.66	0.00	0.00	12.81	50.11	7.70	57.81	0.13	0.10	0.807
A35ii	71.66	0.00	0.00	12.77	50.11	7.74	57.85	0.12	0.09	0.807
A36	71.66	0.00	0.00	27.16	35.09	43.79	43.79	0.13	0.10	0.611
A37	71.66	0.00	0.00	25.34	30.12	15.62	45.74	0.01	0.01	0.638
A38	71.66	0.00	0.00	27.01	35.09	43.95	43.95	0.11	0.09	0.613
A39i	71.66	0.00	0.00	12.71	50.12	7.80	57.92	0.12	0.10	0.808
A39ii	71.66	0.00	0.00	12.61	50.13	7.91	58.04	0.04	0.03	0.810
A4	71.66	0.00	0.00	12.74	50.11	7.77	57.88	0.05	0.04	0.808
A40	71.66	0.00	0.00	27.08	35.09	43.87	43.87	0.10	0.08	0.612
A41	71.66	0.00	0.00	26.62	35.10	44.36	44.36	0.03	0.03	0.619
A42i	71.66	0.00	0.00	12.82	50.11	7.69	57.80	0.08	0.07	0.807
A42ii	71.66	0.00	0.00	12.68	50.12	7.84	57.96	0.05	0.04	0.809
A42iii	71.66	0.00	0.00	12.63	50.13	7.89	58.02	0.01	0.01	0.810
A43	71.66	0.00	0.00	27.14	35.09	43.81	43.81	0.10	0.08	0.611
A44	71.66	0.00	0.00	27.09	35.09	43.86	43.86	0.09	0.07	0.612
A45i	71.66	0.00	0.00	12.84	50.10	7.67	57.77	0.10	0.07	0.806
A45ii	71.66	0.00	0.00	12.65	50.13	7.87	57.99	0.04	0.04	0.809
A46i	71.66	0.00	0.00	12.84	50.10	7.67	57.78	0.09	0.07	0.806
A46ii	71.66	0.00	0.00	12.75	50.11	7.77	57.88	0.08	0.06	0.808
A47	71.66	0.00	0.00	26.65	35.10	44.32	44.32	0.06	0.06	0.618

A48	71.66	0.00	0.00	13.05	50.09	7.46	57.55	0.12	0.09	0.803
A49	71.66	0.00	0.00	26.59	35.10	44.39	44.39	0.03	0.03	0.619
A50	71.66	0.00	0.00	12.82	50.11	7.69	57.79	0.04	0.03	0.806
A51	71.66	0.00	0.00	12.90	50.10	7.61	57.71	0.11	0.08	0.805
A52	71.66	0.00	0.00	25.31	30.12	15.64	45.76	0.01	0.01	0.639
A53	71.66	0.00	0.00	26.67	35.10	44.31	44.31	0.08	0.08	0.618
A54	71.66	0.00	0.00	26.86	35.09	44.11	44.11	0.07	0.06	0.615
A5i	71.66	0.00	0.00	12.75	50.11	7.77	57.88	0.06	0.05	0.808
A5ii	71.66	0.00	0.00	12.83	50.10	7.68	57.78	0.15	0.12	0.806
A6	71.66	0.00	0.00	29.57	30.12	41.52	41.52	0.05	0.05	0.579
A7i	71.66	0.00	0.00	12.75	50.11	7.76	57.87	0.13	0.10	0.808
A7ii	71.66	0.00	0.00	12.79	50.11	7.72	57.83	0.16	0.13	0.807
A8i	71.66	0.00	0.00	12.83	50.11	7.68	57.79	0.13	0.10	0.806
A8ii	71.66	0.00	0.00	12.84	50.10	7.67	57.77	0.11	0.08	0.806
A9i	71.66	0.00	0.00	12.79	50.11	7.72	57.83	0.11	0.08	0.807
A9ii	71.66	0.00	0.00	12.62	50.13	7.90	58.03	0.04	0.03	0.810
B2	71.66	0.00	0.00	0.00	70.12	0.00	70.12	2.41	1.61	0.978
B4i	71.66	0.00	0.00	35.85	20.07	15.32	35.39	0.34	0.19	0.494
B4ii	71.66	0.00	0.00	31.80	20.07	19.41	39.48	0.02	0.02	0.551
B4iii	71.66	0.00	0.00	31.76	20.07	19.45	39.53	0.00	0.00	0.552
C1	71.66	0.00	0.00	12.83	50.11	7.68	57.79	0.07	0.05	0.806
C2	71.66	0.00	0.00	12.73	50.12	7.78	57.90	0.05	0.04	0.808
PH4_A01	71.66	0.00	0.00	37.20	11.35	23.06	34.41	0.04	0.05	0.480
PH4_A02	71.66	0.00	0.00	42.65	2.11	26.97	29.07	0.00	0.00	0.406
PH4_A03	71.66	0.00	0.00	7.04	59.49	4.44	63.94	0.01	0.01	0.892
PH4_A04	71.66	0.00	0.00	5.70	61.63	3.64	65.27	0.05	0.04	0.911
PH4_A05	71.66	0.00	0.00	43.39	2.11	26.17	28.27	0.01	0.01	0.395
PH4_A06	71.66	0.00	0.00	34.54	16.51	20.67	37.18	0.02	0.02	0.519
PH4_A07	71.66	0.00	0.00	6.14	60.92	3.91	64.83	0.08	0.06	0.905
PH4_A08	71.66	0.00	0.00	10.59	53.83	6.63	60.46	0.01	0.01	0.844

PH4_A09	71.66	0.00	0.00	13.72	48.87	8.51	57.39	0.01	0.01	0.801
PH4_A10	71.66	0.00	0.00	6.14	60.92	3.91	64.83	0.08	0.06	0.905
PH4_A11	71.66	0.00	0.00	43.28	2.10	26.29	28.40	0.01	0.01	0.396
PH4_A12	71.66	0.00	0.00	8.79	56.67	5.56	62.23	0.08	0.06	0.868
PH4_A13	71.66	0.00	0.00	10.14	54.54	6.37	60.91	0.02	0.01	0.850
PH4_A14	71.66	0.00	0.00	14.52	47.46	9.16	56.62	0.01	0.01	0.790
PH4_A15	71.66	0.00	0.00	7.45	58.80	4.75	63.55	0.06	0.05	0.887
PH4_A16	71.66	0.00	0.00	7.02	59.51	4.47	63.98	0.03	0.02	0.893
PH4_A17	71.66	0.00	0.00	43.07	2.11	26.51	28.61	0.01	0.01	0.399
PH4_A18	71.66	0.00	0.00	20.73	37.21	13.00	50.21	0.01	0.01	0.701
PH4_B01	71.66	0.00	0.00	44.69	0.00	27.03	27.03	0.01	0.01	0.377
PH4_B02	71.66	0.00	0.00	5.69	61.63	3.64	65.27	0.05	0.04	0.911
PH4_B03	71.66	0.00	0.00	43.49	2.11	26.07	28.18	0.01	0.01	0.393
PH4_B04	71.66	0.00	0.00	4.38	63.47	2.81	66.28	0.04	0.03	0.925
PH4_B05	71.66	0.00	0.00	43.30	2.10	26.27	28.38	0.01	0.01	0.396
PH4_B06	71.66	0.00	0.00	9.23	55.96	5.84	61.81	0.06	0.05	0.862
PH4_B07	71.66	0.00	0.00	7.46	58.80	4.75	63.55	0.06	0.05	0.887
PH4_B08	71.66	0.00	0.00	42.59	2.11	27.04	29.15	0.00	0.01	0.407
PH4_B09	71.66	0.00	0.00	3.94	63.88	2.52	66.40	0.02	0.02	0.927
PH4_B10	71.66	0.00	0.00	43.18	2.11	26.39	28.50	0.01	0.01	0.398
PH4_B11	71.66	0.00	0.00	8.78	56.67	5.58	62.25	0.12	0.09	0.869
PH4_B12	71.66	0.00	0.00	3.94	64.03	2.52	66.55	0.03	0.02	0.929
PH4_B13	71.66	0.00	0.00	43.07	2.11	26.51	28.62	0.00	0.01	0.399
PH4_B14	71.66	0.00	0.00	6.14	60.92	3.92	64.84	0.05	0.04	0.905
PH4_B15	71.66	0.00	0.00	42.92	2.10	26.67	28.78	0.01	0.01	0.402
PH4_B16	71.66	0.00	0.00	7.01	58.98	4.48	63.46	0.03	0.02	0.886
PH4_B17	71.66	0.00	0.00	45.56	2.10	23.97	26.07	0.04	0.03	0.364
PH4_B18	71.66	0.00	0.00	42.78	2.10	26.82	28.92	0.00	0.00	0.404

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min	Reported Max Depth Meters
02_(CB)	JUNCTION	0.09	1.97	87.57	0	01:12	1.97
03_(CB)	JUNCTION	0.08	1.96	87.56	0	01:12	1.96
04_(CB)	JUNCTION	0.10	2.08	87.61	0	01:11	2.08
05_(CB)	JUNCTION	0.10	2.08	87.61	0	01:11	2.08
06_(CB)	JUNCTION	0.79	1.71	87.10	0	01:10	1.70
08_(CB)	JUNCTION	0.08	2.07	87.51	0	01:15	2.07
09_(CB)	JUNCTION	0.08	2.09	87.51	0	01:15	2.09
1	JUNCTION	0.00	0.00	91.15	0	00:00	0.00
1_(RYCB)	JUNCTION	0.89	2.26	87.68	0	01:13	2.26
10	JUNCTION	0.00	0.00	91.07	0	00:00	0.00
10_(CB)	JUNCTION	0.10	1.58	87.75	0	01:22	1.58
100_(STM)	JUNCTION	1.13	1.73	83.00	0	01:16	1.73
102_(STM)	JUNCTION	1.06	1.79	83.13	0	01:15	1.79
104_(STM)	JUNCTION	1.03	1.89	83.28	0	01:15	1.89
106_(STM)	JUNCTION	0.31	0.65	84.19	0	01:16	0.65
108_(STM)	JUNCTION	0.30	0.58	84.20	0	01:16	0.58
11	JUNCTION	0.00	0.00	90.95	0	00:00	0.00
11_(CB)	JUNCTION	0.39	1.86	87.88	0	01:13	1.86
110_(STM)	JUNCTION	0.30	0.64	84.58	0	01:13	0.64
112_(STM)	JUNCTION	0.55	1.67	83.57	0	01:15	1.66
114_(STM)	JUNCTION	0.33	0.78	84.15	0	01:13	0.78
116_(STM)	JUNCTION	0.32	0.77	84.27	0	01:13	0.77
118_(STM)	JUNCTION	0.32	0.66	84.54	0	01:15	0.66
12	JUNCTION	0.00	0.00	90.73	0	00:00	0.00
12_(CB)	JUNCTION	0.09	2.10	87.75	0	01:10	2.10
120_(STM)	JUNCTION	0.36	1.86	84.53	0	01:15	1.83
122_(STM)	JUNCTION	0.38	1.89	84.63	0	01:15	1.86
124_(STM)	JUNCTION	0.36	1.91	84.74	0	01:15	1.87
126_(STM)	JUNCTION	0.38	2.00	84.98	0	01:15	1.96
128_(STM)	JUNCTION	0.39	2.05	85.22	0	01:15	1.99
13	JUNCTION	0.00	0.00	90.78	0	00:00	0.00
13_(CB)	JUNCTION	0.09	1.96	87.75	0	01:11	1.95
130_(STM)	JUNCTION	0.32	1.29	85.56	0	01:15	1.22
132_(STM)	JUNCTION	0.27	1.26	85.75	0	01:12	1.13
134_(STM)	JUNCTION	0.33	1.50	86.31	0	01:12	0.81
136_(STM)	JUNCTION	0.37	2.04	85.38	0	01:15	1.98
138_(STM)	JUNCTION	0.38	2.05	85.47	0	01:15	1.98
14	JUNCTION	0.00	0.00	90.51	0	01:12	0.00
14_(CB)	JUNCTION	0.09	2.12	88.13	0	01:11	2.12
140_(STM)	JUNCTION	0.39	2.05	85.76	0	01:15	1.97
142_(STM)	JUNCTION	0.31	1.17	86.07	0	01:15	1.06
144_(STM)	JUNCTION	0.34	1.93	86.06	0	01:15	1.85
146_(STM)	JUNCTION	0.19	1.55	86.55	0	01:15	1.17
148_(STM)	JUNCTION	0.19	1.60	86.74	0	01:15	0.91
15	JUNCTION	0.00	0.00	90.55	0	00:00	0.00
15_(CB)	JUNCTION	0.09	2.12	88.13	0	01:11	2.11
15_RYCB	JUNCTION	0.02	0.83	87.42	0	01:11	0.81
150_(STM)	JUNCTION	0.37	2.17	86.55	0	01:12	1.78
152_(STM)	JUNCTION	0.32	1.21	86.47	0	01:15	1.02
154_(STM)	JUNCTION	0.32	1.18	86.53	0	01:15	0.99

156_(STM)	JUNCTION	0.32	2.15	87.88	0	01:14	0.96
158_(STM)	JUNCTION	0.37	2.07	86.98	0	01:12	1.82
16	JUNCTION	0.00	0.00	90.58	0	00:00	0.00
16_(CB)	JUNCTION	0.09	2.10	88.27	0	01:12	2.10
160_(STM)	JUNCTION	0.37	2.07	87.06	0	01:12	1.84
162_(STM)	JUNCTION	0.37	1.87	87.22	0	01:18	1.87
164_(STM)	JUNCTION	0.36	1.72	87.33	0	01:18	1.72
166_(STM)	JUNCTION	0.33	1.19	87.36	0	01:18	1.19
168_(STM)	JUNCTION	0.32	0.91	87.41	0	01:17	0.91
17	JUNCTION	0.00	0.00	90.58	0	00:00	0.00
17_(CB)	JUNCTION	0.09	2.09	88.26	0	01:11	2.08
170_(STM)	JUNCTION	0.31	0.53	87.59	0	01:14	0.53
18	JUNCTION	0.00	0.00	90.79	0	00:00	0.00
18_(CB)	JUNCTION	0.31	1.57	88.54	0	01:12	1.57
19	JUNCTION	0.00	0.00	90.34	0	00:00	0.00
19_(CB)	JUNCTION	0.08	2.09	88.37	0	01:15	2.09
2	JUNCTION	0.00	0.00	91.10	0	00:00	0.00
20	JUNCTION	0.00	0.00	90.35	0	00:00	0.00
20_(CB)	JUNCTION	0.11	2.11	88.74	0	01:12	2.11
21	JUNCTION	0.00	0.00	90.00	0	00:00	0.00
21_(CB)	JUNCTION	0.10	1.97	88.74	0	01:12	1.96
2121_(STM)	JUNCTION	2.10	2.58	82.82	0	02:59	2.58
2142_(STM)	JUNCTION	2.23	2.72	82.83	0	02:40	2.71
2143_(STM)	JUNCTION	2.40	2.89	82.82	0	02:59	2.89
2144_(STM)	JUNCTION	2.47	2.96	82.82	0	02:59	2.96
22_(RYCB)	JUNCTION	0.61	1.91	88.99	0	01:13	1.91
23_(CB)	JUNCTION	0.05	2.05	88.97	0	01:11	2.04
24_(CB)	JUNCTION	0.05	2.05	88.97	0	01:11	2.04
25_(CB)	JUNCTION	0.00	0.07	86.84	0	01:10	0.07
26_(CB)	JUNCTION	0.00	0.04	86.82	0	01:10	0.04
27_(CB)	JUNCTION	0.08	1.96	88.73	0	01:13	1.95
28_(CB)	JUNCTION	0.08	1.96	88.73	0	01:13	1.95
29_(RYCB)	JUNCTION	3.11	4.42	89.73	0	01:10	4.41
3	JUNCTION	0.00	0.00	91.06	0	00:00	0.00
30_(CB)	JUNCTION	0.02	0.68	87.61	0	01:10	0.68
31_(CB)	JUNCTION	0.72	1.74	88.64	0	01:11	1.74
32_(CB)	JUNCTION	0.06	1.40	89.69	0	01:13	1.40
33_(CB)	JUNCTION	0.82	2.26	89.73	0	01:13	2.26
34_(CB)	JUNCTION	0.10	2.01	89.52	0	01:12	2.01
35_(CB)	JUNCTION	0.10	2.01	89.52	0	01:12	2.01
36_(CB)	JUNCTION	0.07	2.07	89.86	0	01:10	2.07
37_(CB)	JUNCTION	0.06	2.05	89.85	0	01:10	2.05
38_(RYCB)	JUNCTION	0.02	0.86	88.24	0	01:11	0.85
39_(RYCB)	JUNCTION	0.02	1.19	89.86	0	01:12	1.19
4	JUNCTION	0.00	0.00	90.53	0	00:00	0.00
40_(CB)	JUNCTION	0.05	1.92	90.15	0	01:11	1.92
41_(CB)	JUNCTION	0.05	2.02	90.15	0	01:10	2.02
42_(CB)	JUNCTION	0.10	2.11	90.41	0	01:12	2.11
43_(CB)	JUNCTION	0.10	2.10	90.40	0	01:13	2.10
44_(CB)	JUNCTION	0.08	2.09	89.01	0	01:10	2.09
45_(CB)	JUNCTION	0.08	2.10	89.02	0	01:11	2.10
46_(CB)	JUNCTION	0.08	2.11	88.99	0	01:11	2.11
47_(CB)	JUNCTION	0.08	1.97	89.00	0	01:10	1.96
48_(CB)	JUNCTION	0.11	2.16	88.53	0	01:14	2.16
49_(CB)	JUNCTION	0.10	2.01	88.53	0	01:14	2.01
5	JUNCTION	0.00	0.00	90.56	0	00:00	0.00
50_(CB)	JUNCTION	0.08	1.95	87.98	0	01:12	1.94

51_(CB)	JUNCTION	0.08	1.92	87.98	0	01:12	1.91
52_(CB)	JUNCTION	0.51	2.18	87.39	0	01:10	2.18
53_(CB)	JUNCTION	0.10	2.11	89.78	0	01:15	2.11
54_(CB)	JUNCTION	0.09	2.07	89.78	0	01:15	2.07
55_(CB)	JUNCTION	0.23	1.99	87.26	0	01:10	1.99
56	JUNCTION	0.00	0.00	90.74	0	00:00	0.00
56_(CB)	JUNCTION	0.23	1.99	87.26	0	01:10	1.99
57_(CB)	JUNCTION	0.09	2.14	87.35	0	01:12	2.14
58_(CB)	JUNCTION	0.00	0.11	85.51	0	01:10	0.10
59_(CB)	JUNCTION	0.01	0.18	86.03	0	01:09	0.18
6	JUNCTION	0.00	0.00	90.80	0	00:00	0.00
60	JUNCTION	0.00	0.00	90.61	0	00:00	0.00
61	JUNCTION	0.00	0.00	90.75	0	00:00	0.00
62	JUNCTION	0.00	0.00	90.77	0	00:00	0.00
63	JUNCTION	0.00	0.00	90.83	0	00:00	0.00
64	JUNCTION	0.00	0.00	90.91	0	00:00	0.00
65	JUNCTION	0.00	0.00	90.86	0	00:00	0.00
66	JUNCTION	0.00	0.00	90.55	0	00:00	0.00
67	JUNCTION	0.00	0.00	90.69	0	00:00	0.00
7	JUNCTION	0.00	0.00	90.46	0	00:00	0.00
8	JUNCTION	0.00	0.00	89.84	0	00:00	0.00
9	JUNCTION	0.00	0.00	91.15	0	00:00	0.00
98_(STM)	JUNCTION	1.22	1.75	82.92	0	01:16	1.74
ELB_1_(RYCB)	JUNCTION	0.01	1.18	87.69	0	01:10	1.18
ELB_10_(RYCB)	JUNCTION	0.29	1.35	89.00	0	01:11	1.35
ELB_11_(RYCB)	JUNCTION	0.31	1.34	88.94	0	01:05	1.32
ELB_12_(RYCB)	JUNCTION	0.29	1.45	89.45	0	01:09	1.41
ELB_13_(RYCB)	JUNCTION	0.30	1.34	88.90	0	01:13	1.33
ELB_14_(RYCB)	JUNCTION	0.29	1.30	89.08	0	01:09	0.94
ELB_15_(RYCB)	JUNCTION	0.30	1.29	88.49	0	01:14	1.29
ELB_16_(RYCB)	JUNCTION	0.31	1.32	90.00	0	01:05	1.24
ELB_17_(RYCB)	JUNCTION	0.29	0.94	88.49	0	01:10	0.83
ELB_18_(RYCB)	JUNCTION	0.29	1.30	88.88	0	01:10	0.80
ELB_19_(RYCB)	JUNCTION	0.29	1.44	88.41	0	01:09	1.43
ELB_2_(RYCB)	JUNCTION	0.36	1.62	87.88	0	01:10	1.60
ELB_20_(RYCB)	JUNCTION	0.31	1.62	88.00	0	01:14	1.62
ELB_21_(RYCB)	JUNCTION	0.29	1.55	89.61	0	01:09	1.20
ELB_22_(RYCB)	JUNCTION	0.32	1.36	89.90	0	01:10	1.36
ELB_23_(RYCB)	JUNCTION	0.30	1.71	90.70	0	01:11	1.71
ELB_24_(RYCB)	JUNCTION	0.00	0.00	86.55	0	00:00	0.00
ELB_25_(RYCB)	JUNCTION	0.02	1.12	87.55	0	01:10	1.12
ELB_3_(RYCB)	JUNCTION	0.30	1.49	87.97	0	01:12	1.49
ELB_4_(RYCB)	JUNCTION	0.22	1.43	87.96	0	01:12	1.43
ELB_5_(RYCB)	JUNCTION	0.21	1.18	87.71	0	01:09	0.89
ELB_6_(RYCB)	JUNCTION	0.29	1.45	88.00	0	01:14	1.45
ELB_7_(RYCB)	JUNCTION	0.33	1.38	88.18	0	01:11	1.37
ELB_8_(RYCB)	JUNCTION	0.00	1.00	87.93	0	01:09	0.48
ELB_9_(RYCB)	JUNCTION	0.30	1.53	88.58	0	01:12	1.52
J1	JUNCTION	0.00	0.00	88.48	0	00:00	0.00
Maj-01_2	JUNCTION	0.00	0.00	90.90	0	00:00	0.00
Maj-02	JUNCTION	0.00	0.00	90.67	0	00:00	0.00
Maj-02_2	JUNCTION	0.00	0.05	90.47	0	01:12	0.05
Maj-03	JUNCTION	0.01	0.20	90.47	0	01:12	0.20
Maj-04	JUNCTION	0.00	0.00	90.61	0	01:15	0.00
Maj-04_2	JUNCTION	0.00	0.00	90.51	0	00:00	0.00
Maj-05	JUNCTION	0.00	0.00	90.40	0	00:00	0.00
Maj-05_2	JUNCTION	0.00	0.00	90.37	0	01:20	0.00

Maj-06	JUNCTION	0.00	0.01	90.24	0	01:11	0.01
Maj-06_2	JUNCTION	0.00	0.13	90.23	0	01:10	0.13
Maj-07	JUNCTION	0.00	0.05	90.32	0	01:10	0.05
Maj-08	JUNCTION	0.00	0.05	90.20	0	01:10	0.05
Maj-09	JUNCTION	0.00	0.07	89.92	0	01:10	0.07
Maj-10	JUNCTION	0.00	0.15	89.92	0	01:10	0.15
Maj-11	JUNCTION	0.00	0.07	89.89	0	01:11	0.07
Maj-12	JUNCTION	0.01	0.19	89.86	0	01:15	0.19
Maj-13	JUNCTION	0.00	0.00	89.97	0	00:00	0.00
Maj-14	JUNCTION	0.01	0.21	89.69	0	01:16	0.21
Maj-15	JUNCTION	0.00	0.03	89.69	0	01:16	0.03
Maj-15_2	JUNCTION	0.00	0.03	89.39	0	01:10	0.03
Maj-16	JUNCTION	0.01	0.18	89.60	0	01:12	0.18
Maj-17	JUNCTION	0.00	0.00	90.06	0	00:00	0.00
Maj-18_2	JUNCTION	0.00	0.00	89.51	0	00:00	0.00
Maj-19	JUNCTION	0.00	0.02	89.41	0	01:10	0.02
Maj-19_2	JUNCTION	0.00	0.04	89.57	0	01:10	0.04
Maj-20	JUNCTION	0.01	0.09	89.26	0	01:10	0.09
Maj-21	JUNCTION	0.01	0.21	88.81	0	01:13	0.21
Maj-23	JUNCTION	0.00	0.03	89.27	0	01:10	0.03
Maj-24	JUNCTION	0.00	0.14	89.05	0	01:11	0.14
Maj-25	JUNCTION	0.00	0.00	89.15	0	00:00	0.00
Maj-26	JUNCTION	0.01	0.20	88.81	0	01:13	0.20
Maj-27	JUNCTION	0.00	0.00	88.85	0	00:00	0.00
Maj-28	JUNCTION	0.01	0.22	88.47	0	01:15	0.22
Maj-29	JUNCTION	0.00	0.00	88.59	0	00:00	0.00
Maj-30	JUNCTION	0.01	0.19	88.59	0	01:14	0.19
Maj-31	JUNCTION	0.00	0.03	89.06	0	01:11	0.03
Maj-32	JUNCTION	0.01	0.18	89.06	0	01:10	0.18
Maj-33	JUNCTION	0.00	0.15	89.07	0	01:11	0.15
Maj-34	JUNCTION	0.00	0.01	89.07	0	01:12	0.01
Maj-34_2	JUNCTION	0.00	0.00	89.16	0	00:00	0.00
Maj-35	JUNCTION	0.01	0.17	88.32	0	01:11	0.17
Maj-36	JUNCTION	0.00	0.00	88.41	0	00:00	0.00
Maj-37	JUNCTION	0.01	0.20	88.19	0	01:11	0.20
Maj-38	JUNCTION	0.00	0.00	88.19	0	01:12	0.00
Maj-39	JUNCTION	0.00	0.00	88.07	0	01:58	0.00
Maj-40	JUNCTION	0.00	0.00	87.97	0	00:00	0.00
Maj-41	JUNCTION	0.01	0.21	87.83	0	01:11	0.21
Maj-42	JUNCTION	0.01	0.17	88.05	0	01:11	0.17
Maj-43	JUNCTION	0.00	0.00	88.07	0	00:00	0.00
Maj-44	JUNCTION	0.01	0.28	87.82	0	01:21	0.28
Maj-45	JUNCTION	0.00	0.02	87.83	0	01:12	0.02
Maj-46	JUNCTION	0.01	0.16	87.57	0	01:14	0.16
Maj-48_2	JUNCTION	0.00	0.00	87.75	0	01:25	0.00
Maj-48_3	JUNCTION	0.00	0.03	87.67	0	01:09	0.03
Maj-50	JUNCTION	0.01	0.15	87.58	0	01:12	0.15
Maj-51	JUNCTION	0.00	0.01	87.72	0	01:11	0.01
Maj-52	JUNCTION	0.01	0.15	87.62	0	01:11	0.15
Maj-53	JUNCTION	0.00	0.03	87.62	0	01:12	0.03
Maj-54	JUNCTION	0.00	0.07	87.33	0	01:10	0.07
Maj-55	JUNCTION	0.00	0.03	87.52	0	01:10	0.03
Maj-56	JUNCTION	0.00	0.01	88.81	0	01:12	0.01
Maj-58	JUNCTION	0.01	0.26	87.42	0	01:12	0.26
Maj-59	JUNCTION	0.00	0.00	87.53	0	00:00	0.00
Maj-60	JUNCTION	0.00	0.00	88.62	0	00:00	0.00
Maj-61	JUNCTION	0.00	0.06	88.76	0	01:11	0.06
Maj-62	JUNCTION	0.00	0.06	89.91	0	01:12	0.06
Maj-63	JUNCTION	0.00	0.13	87.85	0	01:11	0.13
Maj-64	JUNCTION	0.00	0.01	88.81	0	01:13	0.01
Maj-65	JUNCTION	0.00	0.04	87.84	0	01:14	0.03
Maj-66	JUNCTION	0.00	0.04	87.69	0	01:11	0.03
Maj-67	JUNCTION	0.00	0.06	88.01	0	01:11	0.06
Maj-Park	JUNCTION	0.00	0.00	86.50	0	00:00	0.00
PH4_CB50-51	JUNCTION	0.05	2.16	90.50	0	01:10	2.16
PH4_CB52-53	JUNCTION	0.04	2.09	90.50	0	01:10	2.09
PH4_CB54-55	JUNCTION	0.09	2.19	90.62	0	01:10	2.19
PH4_CB56-57	JUNCTION	0.11	2.15	90.66	0	01:11	2.15
PH4_CB58-59	JUNCTION	0.10	1.94	91.00	0	01:11	1.94
PH4_CB60-61	JUNCTION	0.10	1.86	90.95	0	01:11	1.86
PH4_CB62-63	JUNCTION	0.10	1.97	90.92	0	01:12	1.97
PH4_CB64-65	JUNCTION	0.10	1.98	91.03	0	01:11	1.98
PH4_CB66-67	JUNCTION	0.07	1.88	90.52	0	01:10	1.88
PH4_CB68-69	JUNCTION	0.09	1.93	90.69	0	01:11	1.93
PH4_CB70-71	JUNCTION	0.12	2.13	90.70	0	01:12	2.13
PH4_CB72-73	JUNCTION	0.11	2.23	90.68	0	01:11	2.23
PH4_CB74-75	JUNCTION	0.09	2.19	90.54	0	01:11	2.19
PH4_CB78-79	JUNCTION	0.00	0.01	90.44	0	01:10	0.01
PH4_CB80-81	JUNCTION	0.11	2.22	90.57	0	01:11	2.22
PH4_CB82-83	JUNCTION	0.00	0.00	90.88	0	01:10	0.00
PH4_CB84-85	JUNCTION	0.00	0.00	90.86	0	01:10	0.00
PH4_CB86-87	JUNCTION	0.00	0.00	90.96	0	01:10	0.00
PH4_CB88-89	JUNCTION	0.00	0.00	90.69	0	01:10	0.00
PH4_CB90-91	JUNCTION	0.00	0.00	90.52	0	01:10	0.00
PH4_CB92-93	JUNCTION	0.00	0.00	90.41	0	01:10	0.00
PH4_MH100	JUNCTION	0.12	1.20	89.68	0	01:10	1.20
PH4_MH100_dummy	JUNCTION	0.02	0.32	88.80	0	01:10	0.32
PH4_MH102	JUNCTION	0.04	1.12	89.81	0	01:10	1.12
PH4_MH104	JUNCTION	0.04	1.05	89.83	0	01:10	1.05
PH4_MH106	JUNCTION	0.03	0.95	89.85	0	01:10	0.94
PH4_MH108	JUNCTION	0.03	0.85	89.85	0	01:10	0.85
PH4_MH110	JUNCTION	0.02	0.66	89.85	0	01:10	0.66
PH4_MH202	JUNCTION	0.14	1.58	89.83	0	01:09	1.58
PH4_MH202_dummy	JUNCTION	0.02	0.21	88.46	0	01:04	0.21
PH4_MH204	JUNCTION	0.06	1.46	89.92	0	01:09	1.46
PH4_MH206	JUNCTION	0.05	1.37	89.94	0	01:10	1.37
PH4_MH208	JUNCTION	0.05	1.35	90.04	0	01:03	1.27
PH4_MH210	JUNCTION	0.04	1.28	90.07	0	01:03	1.18
PH4_MH212	JUNCTION	0.03	1.98	90.96	0	01:03	0.99
PH4_MH302	JUNCTION	0.17	2.79	89.13	0	01:10	2.79
PH4_MH302_dummy	JUNCTION	0.03	0.90	87.24	0	01:18	0.90
PH4_MH304	JUNCTION	0.10	2.70	89.16	0	01:10	2.70
PH4_MH306	JUNCTION	0.07	2.25	89.20	0	01:10	2.25
PH4_MH308	JUNCTION	0.07	2.13	89.28	0	01:10	2.13
PH4_MH310	JUNCTION	0.06	2.04	89.30	0	01:10	2.04
PH4_MH312	JUNCTION	0.05	2.94	90.38	0	01:05	1.86
PH4_MH402	JUNCTION	0.04	0.68	87.81	0	01:12	0.67
PH4_MH404	JUNCTION	0.03	0.62	87.86	0	01:12	0.61
PH4_MH406	JUNCTION	0.03	0.71	88.05	0	01:12	0.70
PH4_MH408	JUNCTION	0.03	0.63	88.13	0	01:14	0.63
PH4_MH410	JUNCTION	0.02	0.48	88.14	0	01:13	0.48
PH4_MH412	JUNCTION	0.01	0.37	88.15	0	01:13	0.37
PH4_MH414	JUNCTION	0.01	0.16	88.16	0	01:13	0.16
PH4_MH502	JUNCTION	0.03	0.49	87.36	0	01:10	0.49

PH4_MH504	JUNCTION	0.03	0.52	87.40	0	01:10	0.52
PH4_MH506	JUNCTION	0.03	0.58	87.51	0	01:10	0.58
PH4_MH508	JUNCTION	0.03	0.57	87.55	0	01:12	0.57
PH4_MH510	JUNCTION	0.02	0.44	88.15	0	01:12	0.39
PH4_MH512	JUNCTION	0.02	0.56	88.08	0	01:12	0.54
PH4_MH602	JUNCTION	0.02	0.54	88.14	0	01:13	0.54
PH4_MH604	JUNCTION	0.01	0.34	88.15	0	01:12	0.34
PH4_RYCB150	JUNCTION	0.01	0.36	88.65	0	01:10	0.35
PH4_RYCB151	JUNCTION	0.01	0.42	88.62	0	01:10	0.42
PH4_RYCB153	JUNCTION	0.00	0.27	88.62	0	01:10	0.26
PH4_RYCB154	JUNCTION	0.01	0.39	88.34	0	01:10	0.39
PH4_RYCB155	JUNCTION	0.00	0.22	88.66	0	01:10	0.22
PH4_RYCB156	JUNCTION	0.00	0.19	88.12	0	01:10	0.19
PH4_RYCB158	JUNCTION	0.00	0.24	88.49	0	01:10	0.23
PH4_RYCB20	JUNCTION	0.01	0.66	89.86	0	01:10	0.66
PH4_RYCB21	JUNCTION	0.21	1.26	89.98	0	01:11	1.26
PH4_RYCB22	JUNCTION	0.24	1.69	90.28	0	01:13	1.69
PH4_RYCB23	JUNCTION	0.01	0.95	89.74	0	01:10	0.94
PH4_RYCB24	JUNCTION	0.05	1.44	89.09	0	01:17	1.44
RYCB_1_(RYCB)	JUNCTION	0.31	1.69	87.69	0	01:11	1.68
RYCB_10_(RYCB)	JUNCTION	0.33	1.47	88.49	0	01:14	1.47
RYCB_11_(RYCB)	JUNCTION	0.31	1.36	88.71	0	01:11	1.36
RYCB_12_(RYCB)	JUNCTION	0.35	1.91	89.91	0	01:12	1.91
RYCB_13_(RYCB)	JUNCTION	0.01	0.87	88.41	0	01:11	0.84
RYCB_14_(RYCB)	JUNCTION	0.34	1.76	89.90	0	01:11	1.75
RYCB_15_(RYCB)	JUNCTION	0.02	1.21	89.91	0	01:11	1.20
RYCB_18_(RYCB)	JUNCTION	0.34	2.32	88.08	0	01:11	2.32
RYCB_2_(RYCB)	JUNCTION	0.05	1.86	87.87	0	01:11	1.86
RYCB_3_(RYCB)	JUNCTION	0.31	1.78	87.96	0	01:13	1.78
RYCB_4_(RYCB)	JUNCTION	0.31	1.73	87.85	0	01:13	1.73
RYCB_5_(RYCB)	JUNCTION	0.39	1.97	88.01	0	01:11	1.96
RYCB_6_(RYCB)	JUNCTION	0.36	1.71	87.43	0	01:10	1.66
RYCB_7_(RYCB)	JUNCTION	0.33	2.07	88.56	0	01:11	2.00
RYCB_8_(RYCB)	JUNCTION	0.35	1.79	88.76	0	01:11	1.79
RYCB_9_(RYCB)	JUNCTION	0.31	1.72	89.26	0	01:12	1.72
Slope1	JUNCTION	0.00	0.10	89.17	0	01:10	0.10
StartNullStruct2	JUNCTION	0.02	1.40	88.02	0	01:07	1.24
StartNullStruct3	JUNCTION	0.01	0.50	84.59	0	01:14	0.47
STM-251_(STM)	JUNCTION	0.30	0.95	86.26	0	01:15	0.95
Structure_-_(18)_(RYCB)	JUNCTION	0.33	1.79	87.37	0	01:12	1.79
TEE_1_(RYCB)	JUNCTION	0.31	1.66	87.87	0	01:10	1.66
TEE_10_(RYCB)	JUNCTION	0.01	0.92	87.72	0	01:09	0.61
TEE_11_(RYCB)	JUNCTION	0.01	0.87	87.46	0	01:10	0.82
TEE_12_(RYCB)	JUNCTION	0.30	1.73	88.58	0	01:12	1.72
TEE_13_(RYCB)	JUNCTION	0.02	1.58	88.58	0	01:12	1.57
TEE_14_(RYCB)	JUNCTION	0.03	1.74	88.60	0	01:11	1.72
TEE_15_(RYCB)	JUNCTION	0.01	1.21	88.59	0	01:11	1.11
TEE_16_(RYCB)	JUNCTION	0.29	1.61	88.88	0	01:08	1.40
TEE_17_(RYCB)	JUNCTION	0.29	1.42	88.81	0	01:11	1.39
TEE_18_(RYCB)	JUNCTION	0.29	1.36	88.90	0	01:11	1.36
TEE_19_(RYCB)	JUNCTION	0.32	1.36	88.80	0	01:05	1.34
TEE_2_(RYCB)	JUNCTION	0.30	1.61	87.96	0	01:13	1.61
TEE_20_(RYCB)	JUNCTION	0.32	1.48	88.77	0	01:11	1.48
TEE_21_(RYCB)	JUNCTION	0.33	1.60	88.77	0	01:11	1.60
TEE_22_(RYCB)	JUNCTION	0.30	1.49	89.27	0	01:12	1.48
TEE_23_(RYCB)	JUNCTION	0.31	1.50	88.90	0	01:12	1.50
TEE_24_(RYCB)	JUNCTION	0.29	1.32	89.01	0	01:09	1.02
TEE_25_(RYCB)	JUNCTION	0.29	1.19	88.72	0	01:11	1.19
TEE_26_(RYCB)	JUNCTION	0.33	1.53	89.92	0	01:11	1.53
TEE_27_(RYCB)	JUNCTION	0.33	1.69	89.92	0	01:12	1.69
TEE_28_(RYCB)	JUNCTION	0.29	1.00	88.47	0	01:10	0.91
TEE_29_(RYCB)	JUNCTION	0.30	1.53	88.40	0	01:12	1.52
TEE_3_(RYCB)	JUNCTION	0.29	1.32	87.57	0	01:08	1.18
TEE_30_(RYCB)	JUNCTION	0.30	1.65	88.40	0	01:12	1.64
TEE_31_(RYCB)	JUNCTION	0.30	1.77	88.39	0	01:12	1.77
TEE_32_(RYCB)	JUNCTION	0.03	1.60	88.38	0	01:12	1.60
TEE_33_(RYCB)	JUNCTION	0.04	2.02	88.15	0	01:11	2.02
TEE_34_(RYCB)	JUNCTION	0.33	2.32	88.30	0	01:11	2.31
TEE_35_(RYCB)	JUNCTION	0.32	2.21	88.25	0	01:11	2.20
TEE_36_(RYCB)	JUNCTION	0.33	1.60	89.90	0	01:11	1.60
TEE_37_(RYCB)	JUNCTION	0.31	1.21	89.86	0	01:11	1.21
TEE_38_(RYCB)	JUNCTION	0.31	1.32	89.84	0	01:11	1.32
TEE_39_(RYCB)	JUNCTION	0.32	1.51	89.79	0	01:10	1.51
TEE_4_(RYCB)	JUNCTION	0.30	1.86	87.88	0	01:06	1.41
TEE_40_(RYCB)	JUNCTION	0.30	1.61	90.44	0	01:11	1.61
TEE_41_(RYCB)	JUNCTION	0.30	1.52	90.16	0	01:11	1.52
TEE_42_(RYCB)	JUNCTION	0.00	0.00	86.35	0	00:00	0.00
TEE_43_(RYCB)	JUNCTION	0.01	0.22	86.33	0	01:10	0.22
TEE_44_(RYCB)	JUNCTION	0.01	0.65	86.69	0	01:09	0.44
TEE_5_(RYCB)	JUNCTION	0.02	1.39	87.48	0	01:10	1.34
TEE_6_(RYCB)	JUNCTION	0.30	1.57	87.92	0	01:13	1.57
TEE_7_(RYCB)	JUNCTION	0.35	1.72	88.18	0	01:11	1.71
TEE_8_(RYCB)	JUNCTION	0.36	1.79	88.13	0	01:11	1.79
TEE_9_(RYCB)	JUNCTION	0.36	1.86	88.08	0	01:11	1.86
Maj-01	OUTFALL	0.00	0.00	91.06	0	00:00	0.00
Maj-18	OUTFALL	0.00	0.00	89.55	0	00:00	0.00
Maj-22	OUTFALL	0.00	0.00	88.83	0	00:00	0.00
Maj-48	OUTFALL	0.00	0.00	87.75	0	00:00	0.00
Maj-49	OUTFALL	0.00	0.00	87.67	0	00:00	0.00
Maj-57	OUTFALL	0.00	0.00	89.06	0	00:00	0.00
OF1	OUTFALL	0.00	0.00	85.00	0	00:00	0.00
STM-111_(STM)	OUTFALL	2.19	2.68	82.81	0	03:00	2.68
B2_Stor	STORAGE	0.00	0.19	90.69	0	01:14	0.19

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  *******************
  Node Inflow Summary
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  ---------------------------------------------------------------------------------
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                                  Maximum  Maximum                  Lateral
Total        Flow
                                  Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                   Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                 Type           CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
  ---------------------------------------------------------------------------------
----------------
  02_(CB)              JUNCTION     0.000    0.027     0  01:11           0
0.0766      0.009
  03_(CB)              JUNCTION     0.000    0.031     0  01:12           0      0.
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04_(CB)	JUNCTION	0.000	0.027	0	01:11	0	0.0814	0.016
05_(CB)	JUNCTION	0.000	0.027	0	01:11	0	0.0814	0.013
06_(CB)	JUNCTION	0.000	0.032	0	01:10	0	0.0453	2.084
08_(CB)	JUNCTION	0.000	0.032	0	01:02	0	0.078	0.033
09_(CB)	JUNCTION	0.000	0.028	0	01:01	0	0.0704	0.048
1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
1_(RYCB)	JUNCTION	0.000	0.075	0	01:09	0	0.0851	0.814
10	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
10_(CB)	JUNCTION	0.000	0.031	0	01:22	0	0.124	0.103
100_(STM)	JUNCTION	0.000	3.791	0	01:15	0	10	0.185
102_(STM)	JUNCTION	0.000	3.739	0	01:15	0	9.88	0.138
104_(STM)	JUNCTION	0.000	3.742	0	01:15	0	9.83	-0.119
106_(STM)	JUNCTION	0.000	0.113	0	01:14	0	0.245	0.192
108_(STM)	JUNCTION	0.000	0.056	0	01:13	0	0.0849	0.397
11	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
11_(CB)	JUNCTION	0.000	0.094	0	01:10	0	0.208	0.219
110_(STM)	JUNCTION	0.000	0.056	0	01:13	0	0.0844	0.420
112_(STM)	JUNCTION	0.000	3.445	0	01:15	0	9.15	0.346
114_(STM)	JUNCTION	0.000	0.301	0	01:12	0	0.775	-0.020
116_(STM)	JUNCTION	0.000	0.228	0	01:12	0	0.479	-0.120
118_(STM)	JUNCTION	0.000	0.095	0	01:11	0	0.249	1.440
12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
12_(CB)	JUNCTION	0.000	0.050	0	01:01	0	0.141	0.011
120_(STM)	JUNCTION	0.000	3.034	0	01:15	0	8.1	-0.006
122_(STM)	JUNCTION	0.000	2.935	0	01:15	0	7.82	0.016
124_(STM)	JUNCTION	0.000	2.935	0	01:15	0	7.82	-0.030
126_(STM)	JUNCTION	0.000	2.935	0	01:15	0	7.82	-0.061
128_(STM)	JUNCTION	0.000	2.880	0	01:15	0	7.67	0.078
13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
13_(CB)	JUNCTION	0.000	0.048	0	01:11	0	0.137	0.011
130_(STM)	JUNCTION	0.000	0.162	0	01:10	0	0.445	0.538
132_(STM)	JUNCTION	0.000	0.108	0	01:10	0	0.277	0.141
134_(STM)	JUNCTION	0.000	0.017	0	01:11	0	0.00122	29.719
136_(STM)	JUNCTION	0.000	2.596	0	01:16	0	6.95	0.006
138_(STM)	JUNCTION	0.000	2.470	0	01:16	0	6.62	-0.073
14	JUNCTION	0.000	0.000	0	01:10	0	6.41e-06	6.399 ltr
14_(CB)	JUNCTION	0.000	0.029	0	01:01	0	0.0774	0.069
140_(STM)	JUNCTION	0.000	2.406	0	01:11	0	6.38	-0.105
142_(STM)	JUNCTION	0.000	0.109	0	01:12	0	0.21	0.557
144_(STM)	JUNCTION	0.000	2.314	0	01:12	0	6.07	0.022
146_(STM)	JUNCTION	0.000	0.218	0	01:15	0	0.501	-0.132
148_(STM)	JUNCTION	0.000	0.207	0	01:14	0	0.483	0.446
15	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
15_(CB)	JUNCTION	0.000	0.029	0	01:01	0	0.0773	0.067
15_RYCB	JUNCTION	0.000	0.150	0	01:11	0	0.227	-0.011
150_(STM)	JUNCTION	0.000	2.002	0	01:12	0	5.29	-0.186
152_(STM)	JUNCTION	0.000	0.203	0	01:26	0	0.556	0.030
154_(STM)	JUNCTION	0.000	0.104	0	01:25	0	0.274	0.266
156_(STM)	JUNCTION	0.000	0.099	0	01:15	0	0.276	0.932
158_(STM)	JUNCTION	0.000	1.637	0	01:12	0	4.46	0.314
16	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
16_(CB)	JUNCTION	0.000	0.023	0	01:01	0	0.0632	0.080
160_(STM)	JUNCTION	0.000	1.540	0	01:12	0	4.16	-0.061
162_(STM)	JUNCTION	0.000	1.566	0	01:12	0	4.16	0.075
164_(STM)	JUNCTION	0.000	1.112	0	01:12	0	3.15	0.047
166_(STM)	JUNCTION	0.000	0.206	0	01:23	0	0.574	0.111
168_(STM)	JUNCTION	0.000	0.132	0	01:10	0	0.389	0.053
17	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
17_(CB)	JUNCTION	0.000	0.028	0	01:01	0	0.074	0.059
170_(STM)	JUNCTION	0.000	0.068	0	01:12	0	0.208	0.193

18	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
18_(CB)	JUNCTION	0.000	0.092	0	01:11	0	0.188	0.175
19	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
19_(CB)	JUNCTION	0.000	0.071	0	01:15	0	0.16	-0.014
2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
20	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
20_(CB)	JUNCTION	0.000	0.036	0	01:01	0	0.117	-0.011
21	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
21_(CB)	JUNCTION	0.000	0.035	0	01:01	0	0.114	-0.008
2121_(STM)	JUNCTION	0.000	3.860	0	01:16	0	10.2	0.785
2142_(STM)	JUNCTION	0.000	4.011	0	01:16	0	10.5	0.819
2143_(STM)	JUNCTION	0.000	3.943	0	01:16	0	10.4	0.398
2144_(STM)	JUNCTION	0.000	3.940	0	01:16	0	10.4	0.409
22_(RYCB)	JUNCTION	0.000	0.072	0	01:10	0	0.0769	0.403
23_(CB)	JUNCTION	0.000	0.049	0	01:11	0	0.0943	-0.005
24_(CB)	JUNCTION	0.000	0.049	0	01:11	0	0.0943	-0.005
25_(CB)	JUNCTION	0.000	0.009	0	01:10	0	0.0136	0.003
26_(CB)	JUNCTION	0.000	0.004	0	01:10	0	0.00668	0.004
27_(CB)	JUNCTION	0.000	0.068	0	01:13	0	0.178	0.005
28_(CB)	JUNCTION	0.000	0.068	0	01:13	0	0.178	0.005
29_(RYCB)	JUNCTION	0.000	0.077	0	01:06	0	0.087	4.355
3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
30_(CB)	JUNCTION	0.000	0.087	0	01:10	0	0.129	-0.002
31_(CB)	JUNCTION	0.000	0.109	0	01:10	0	0.154	0.558
32_(CB)	JUNCTION	0.000	0.069	0	01:31	0	0.134	0.269
33_(CB)	JUNCTION	0.000	0.075	0	01:11	0	0.173	0.559
34_(CB)	JUNCTION	0.000	0.049	0	01:14	0	0.15	-0.008
35_(CB)	JUNCTION	0.000	0.049	0	01:14	0	0.15	-0.008
36_(CB)	JUNCTION	0.000	0.037	0	01:01	0	0.0941	0.063
37_(CB)	JUNCTION	0.000	0.050	0	01:02	0	0.11	0.037
38_(RYCB)	JUNCTION	0.000	0.053	0	01:10	0	0.0536	0.002
39_(RYCB)	JUNCTION	0.000	0.054	0	01:07	0	0.0627	0.006
4	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
40_(CB)	JUNCTION	0.000	0.048	0	01:10	0	0.0863	0.000
41_(CB)	JUNCTION	0.000	0.056	0	01:05	0	0.0876	0.001
42_(CB)	JUNCTION	0.000	0.034	0	01:01	0	0.0995	0.001
43_(CB)	JUNCTION	0.000	0.058	0	01:02	0	0.108	0.015
44_(CB)	JUNCTION	0.000	0.032	0	01:02	0	0.0749	0.035
45_(CB)	JUNCTION	0.000	0.023	0	01:01	0	0.0588	0.078
46_(CB)	JUNCTION	0.000	0.033	0	01:01	0	0.0797	0.026
47_(CB)	JUNCTION	0.000	0.027	0	01:01	0	0.0708	0.057
48_(CB)	JUNCTION	0.000	0.028	0	01:01	0	0.0861	-0.005
49_(CB)	JUNCTION	0.000	0.027	0	01:01	0	0.0839	0.010
5	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
50_(CB)	JUNCTION	0.000	0.048	0	01:12	0	0.125	0.007
51_(CB)	JUNCTION	0.000	0.047	0	01:12	0	0.124	0.011
52_(CB)	JUNCTION	0.000	0.052	0	01:10	0	0.0607	0.502
53_(CB)	JUNCTION	0.000	0.050	0	01:15	0	0.139	-0.011
54_(CB)	JUNCTION	0.000	0.049	0	01:15	0	0.138	-0.011
55_(CB)	JUNCTION	0.000	0.046	0	01:10	0	0.0675	0.319
56	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
56_(CB)	JUNCTION	0.000	0.046	0	01:10	0	0.0675	0.319
57_(CB)	JUNCTION	0.000	0.050	0	01:12	0	0.133	0.070
58_(CB)	JUNCTION	0.191	0.191	0	01:10	0.335	0.335	-12.230
59_(CB)	JUNCTION	0.000	0.006	0	01:09	0	0.00954	-0.007
6	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
60	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
61	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
62	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
63	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr

64	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
65	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
66	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
67	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
8	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
98_(STM)	JUNCTION	0.000	3.870	0	01:15	0	10.2	0.494
ELB_1_(RYCB)	JUNCTION	0.000	0.009	0	01:05	0	0.00104	0.388
ELB_10_(RYCB)	JUNCTION	0.000	0.028	0	01:10	0	0.000879	33.593
ELB_11_(RYCB)	JUNCTION	0.000	0.033	0	01:04	0	0.000799	41.826
ELB_12_(RYCB)	JUNCTION	0.000	0.018	0	01:09	0	0.00111	0.583
ELB_13_(RYCB)	JUNCTION	0.000	0.018	0	01:09	0	0.00106	23.142
ELB_14_(RYCB)	JUNCTION	0.000	0.018	0	01:09	0	0.000721	76.868
ELB_15_(RYCB)	JUNCTION	0.000	0.011	0	01:07	0	0.0011	18.882
ELB_16_(RYCB)	JUNCTION	0.000	0.029	0	01:05	0	0.000933	20.845
ELB_17_(RYCB)	JUNCTION	0.000	0.011	0	01:10	0	0.00072	86.943
ELB_18_(RYCB)	JUNCTION	0.000	0.014	0	01:10	0	0.00103	20.086
ELB_19_(RYCB)	JUNCTION	0.000	0.036	0	01:09	0	0.00113	30.919
ELB_2_(RYCB)	JUNCTION	0.000	0.026	0	01:07	0	0.00117	0.000
ELB_20_(RYCB)	JUNCTION	0.000	0.136	0	01:10	0	0.0189	5.350
ELB_21_(RYCB)	JUNCTION	0.000	0.029	0	01:09	0	0.00112	2.210
ELB_22_(RYCB)	JUNCTION	0.000	0.027	0	01:05	0	0.00149	-3.579
ELB_23_(RYCB)	JUNCTION	0.062	0.062	0	01:10	0.0638	0.0638	1.095
ELB_24_(RYCB)	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
ELB_25_(RYCB)	JUNCTION	0.077	0.077	0	01:10	0.0807	0.0807	-0.009
ELB_3_(RYCB)	JUNCTION	0.000	0.024	0	01:09	0	0.00114	30.631
ELB_4_(RYCB)	JUNCTION	0.000	0.013	0	01:08	0	0.00138	7.272
ELB_5_(RYCB)	JUNCTION	0.000	0.016	0	01:08	0	0.001	-3.511
ELB_6_(RYCB)	JUNCTION	0.000	0.042	0	01:10	0	0.0132	-3.951
ELB_7_(RYCB)	JUNCTION	0.000	0.049	0	01:03	0	0.00105	18.442
ELB_8_(RYCB)	JUNCTION	0.000	0.022	0	01:09	0	0.000439	0.969
ELB_9_(RYCB)	JUNCTION	0.000	0.023	0	01:07	0	0.00173	2.606
J1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-01_2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-02	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-02_2	JUNCTION	0.000	0.016	0	01:10	0	0.00345	5.664
Maj-03	JUNCTION	0.166	0.166	0	01:10	0.208	0.211	-0.012
Maj-04	JUNCTION	0.000	0.000	0	01:10	0	5.12e-06	5.123 ltr
Maj-04_2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-05	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-05_2	JUNCTION	0.000	0.000	0	01:10	0	1.77e-05	2.662 ltr
Maj-06	JUNCTION	0.001	0.001	0	01:10	0.000868	0.000883	13.400
Maj-06_2	JUNCTION	0.111	0.144	0	01:10	0.138	0.174	-0.041
Maj-07	JUNCTION	0.072	0.072	0	01:10	0.0765	0.0766	0.093
Maj-08	JUNCTION	0.000	0.037	0	01:10	0	0.0414	0.611
Maj-09	JUNCTION	0.042	0.133	0	01:10	0.0532	0.115	-0.215
Maj-10	JUNCTION	0.162	0.162	0	01:10	0.209	0.225	0.024
Maj-11	JUNCTION	0.000	0.074	0	01:10	0	0.0398	-3.761
Maj-12	JUNCTION	0.183	0.235	0	01:10	0.237	0.278	0.668
Maj-13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-14	JUNCTION	0.116	0.137	0	01:10	0.148	0.158	-0.296
Maj-15	JUNCTION	0.000	0.038	0	01:12	0	0.0124	17.821
Maj-15_2	JUNCTION	0.000	0.035	0	01:10	0	0.0479	-0.055
Maj-16	JUNCTION	0.231	0.231	0	01:10	0.295	0.299	-0.273
Maj-17	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-18_2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-19	JUNCTION	0.000	0.021	0	01:10	0	0.0254	0.209
Maj-19_2	JUNCTION	0.056	0.056	0	01:10	0.0733	0.0733	-0.033
Maj-20	JUNCTION	0.229	0.236	0	01:10	0.301	0.306	-0.907

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  Maj-21              JUNCTION     0.040    0.272     0  01:10      0.0504
0.36      0.817
  Maj-23              JUNCTION     0.000    0.018     0  01:10           0
0.0257      -0.227
  Maj-24              JUNCTION     0.126    0.144     0  01:10       0.163
0.189       0.079
  Maj-25              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-26              JUNCTION     0.183    0.183     0  01:10       0.232
0.232       0.065
  Maj-27              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-28              JUNCTION     0.161    0.195     0  01:10       0.201
0.219       0.064
  Maj-29              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-30              JUNCTION     0.130    0.138     0  01:10       0.165
0.17       0.083
  Maj-31              JUNCTION     0.000    0.030     0  01:10           0
0.00652       4.772
  Maj-32              JUNCTION     0.120    0.120     0  01:10       0.155
0.157      -0.242
  Maj-33              JUNCTION     0.104    0.104     0  01:10       0.134
0.134      -0.038
  Maj-34              JUNCTION     0.000    0.007     0  01:11           0
0.000515     134.557
  Maj-34_2            JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-35              JUNCTION     0.109    0.109     0  01:10       0.137
0.137       0.056
  Maj-36              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-37              JUNCTION     0.124    0.124     0  01:10       0.155
0.155       0.033
  Maj-38              JUNCTION     0.000    0.002     0  01:11           0
6.68e-05      56.111 ltr
  Maj-39              JUNCTION     0.000    0.000     0  01:12           0
2.15e-06       0.000 ltr
  Maj-40              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-41              JUNCTION     0.220    0.220     0  01:10       0.282
0.283      -0.134
  Maj-42              JUNCTION     0.194    0.194     0  01:10       0.249
0.249       0.041
  Maj-43              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-44              JUNCTION     0.133    0.188     0  01:10       0.167
0.202       0.087
  Maj-45              JUNCTION     0.000    0.042     0  01:10           0
0.00518      20.597
  Maj-46              JUNCTION     0.104    0.125     0  01:10       0.132
0.148      -0.005
  Maj-48_2            JUNCTION     0.000    0.000     0  01:14           0
2.12e-05       6.571 ltr
  Maj-48_3            JUNCTION     0.012    0.012     0  01:10      0.0147
0.0147      -0.154
  Maj-50              JUNCTION     0.129    0.130     0  01:10       0.159
0.161       0.037
  Maj-51              JUNCTION     0.003    0.003     0  01:10     0.00316
0.00316       2.227
  Maj-52              JUNCTION     0.132    0.133     0  01:10       0.169
0.171      -0.023
  Maj-53              JUNCTION     0.000    0.031     0  01:10           0
0.0138       0.755
  Maj-54              JUNCTION     0.087    0.102     0  01:10       0.118
0.135      -0.047
  Maj-55              JUNCTION     0.030    0.030     0  01:10      0.0381
0.0382      -1.254
  Maj-56              JUNCTION     0.000    0.001     0  01:11           0
3.79e-05      19.775 ltr
  Maj-58              JUNCTION     0.091    0.106     0  01:10       0.117
0.134       0.381
  Maj-59              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-60              JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  Maj-61              JUNCTION     0.000    0.005     0  01:11           0
0.000712      -0.562
  Maj-62              JUNCTION     0.000    0.006     0  01:11           0
0.00106       1.162
  Maj-63              JUNCTION     0.000    0.034     0  01:11           0
0.00949      -0.041
  Maj-64              JUNCTION     0.000    0.001     0  01:11           0
7.59e-05     145.853
  Maj-65              JUNCTION     0.000    0.001     0  01:13           0
5.03e-05       6.408
  Maj-66              JUNCTION     0.000    0.002     0  01:10           0
9.83e-05       4.783
  Maj-67              JUNCTION     0.000    0.006     0  01:11           0
0.00123      -0.772
  Maj-Park            JUNCTION     0.000    0.000     0  00:00           0
0       0.000 ltr
  PH4_CB50-51         JUNCTION     0.020    0.020     0  01:10      0.0273
0.0273       0.095
  PH4_CB52-53         JUNCTION     0.016    0.016     0  01:10      0.0219
0.0219       0.069
  PH4_CB54-55         JUNCTION     0.030    0.030     0  01:10      0.0404
0.0404       0.156
  PH4_CB56-57         JUNCTION     0.037    0.037     0  01:10      0.0489
0.0489       0.106
  PH4_CB58-59         JUNCTION     0.058    0.058     0  01:10      0.0778
0.0778       0.131
  PH4_CB60-61         JUNCTION     0.038    0.038     0  01:10      0.0516
0.0516       0.177
  PH4_CB62-63         JUNCTION     0.060    0.060     0  01:10      0.0778
0.0778       0.163
  PH4_CB64-65         JUNCTION     0.060    0.060     0  01:10      0.0804
0.0804       0.155
  PH4_CB66-67         JUNCTION     0.024    0.024     0  01:10       0.032
0.032       0.100
  PH4_CB68-69         JUNCTION     0.046    0.046     0  01:10       0.061
0.061       0.148
  PH4_CB70-71         JUNCTION     0.045    0.045     0  01:10      0.0581
0.0581       0.141
  PH4_CB72-73         JUNCTION     0.047    0.047     0  01:10      0.0616
0.0616       0.064
  PH4_CB74-75         JUNCTION     0.094    0.094     0  01:10       0.121
0.121       0.058
  PH4_CB78-79         JUNCTION     0.021    0.021     0  01:10      0.0279
0.0279      -0.128
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PH4_CB80-81	JUNCTION	0.035	0.035	0	01:10	0.0467	0.0467	0.057
PH4_CB82-83	JUNCTION	0.006	0.006	0	01:10	0.00831	0.00831	-0.752
PH4_CB84-85	JUNCTION	0.009	0.009	0	01:10	0.0121	0.0121	-0.185
PH4_CB86-87	JUNCTION	0.009	0.009	0	01:10	0.0109	0.0109	-0.544
PH4_CB88-89	JUNCTION	0.013	0.013	0	01:10	0.0164	0.0164	-0.123
PH4_CB90-91	JUNCTION	0.012	0.012	0	01:10	0.0142	0.0142	-0.254
PH4_CB92-93	JUNCTION	0.008	0.008	0	01:10	0.00853	0.00853	-0.078
PH4_MH100	JUNCTION	0.000	0.064	0	01:10	0	0.182	0.019
PH4_MH100_dummy	JUNCTION	0.000	0.064	0	01:10	0	0.182	-0.043
PH4_MH102	JUNCTION	0.000	0.057	0	01:11	0	0.17	0.021
PH4_MH104	JUNCTION	0.000	0.036	0	01:11	0	0.0918	-0.120
PH4_MH106	JUNCTION	0.000	0.026	0	01:10	0	0.0681	0.084
PH4_MH108	JUNCTION	0.000	0.021	0	01:04	0	0.0617	0.044
PH4_MH110	JUNCTION	0.000	0.017	0	01:05	0	0.0106	-0.016
PH4_MH202	JUNCTION	0.000	0.059	0	01:10	0	0.185	0.025
PH4_MH202_dummy	JUNCTION	0.000	0.059	0	01:10	0	0.185	-0.011
PH4_MH204	JUNCTION	0.000	0.046	0	01:11	0	0.169	0.001
PH4_MH206	JUNCTION	0.000	0.028	0	01:10	0	0.0912	-0.078
PH4_MH208	JUNCTION	0.000	0.034	0	01:02	0	0.0913	-0.029
PH4_MH210	JUNCTION	0.000	0.043	0	01:02	0	0.0921	0.134
PH4_MH212	JUNCTION	0.000	0.027	0	01:03	0	0.0117	-0.414
PH4_MH302	JUNCTION	0.000	0.053	0	01:10	0	0.135	0.048
PH4_MH302_dummy	JUNCTION	0.000	0.053	0	01:10	0	0.135	-0.062
PH4_MH304	JUNCTION	0.000	0.052	0	01:06	0	0.128	-0.034
PH4_MH306	JUNCTION	0.000	0.052	0	01:06	0	0.117	-0.332
PH4_MH308	JUNCTION	0.000	0.039	0	01:10	0	0.0852	0.314
PH4_MH310	JUNCTION	0.000	0.032	0	01:06	0	0.0756	0.099
PH4_MH312	JUNCTION	0.000	0.029	0	01:05	0	0.0147	-0.101
PH4_MH402	JUNCTION	0.000	0.170	0	01:14	0	0.462	0.024
PH4_MH404	JUNCTION	0.000	0.152	0	01:14	0	0.411	-0.014
PH4_MH406	JUNCTION	0.000	0.140	0	01:14	0	0.384	0.068
PH4_MH408	JUNCTION	0.000	0.092	0	01:15	0	0.255	-0.145
PH4_MH410	JUNCTION	0.000	0.041	0	01:16	0	0.103	-0.026
PH4_MH412	JUNCTION	0.000	0.035	0	01:10	0	0.0948	-0.064
PH4_MH414	JUNCTION	0.000	0.021	0	01:10	0	0.0546	0.157
PH4_MH502	JUNCTION	0.000	0.185	0	01:10	0	0.497	0.000
PH4_MH504	JUNCTION	0.000	0.184	0	01:10	0	0.497	-0.001
PH4_MH506	JUNCTION	0.000	0.184	0	01:10	0	0.497	0.042
PH4_MH508	JUNCTION	0.000	0.170	0	01:14	0	0.462	0.025
PH4_MH510	JUNCTION	0.000	0.052	0	01:10	0	0.128	0.184
PH4_MH512	JUNCTION	0.000	0.051	0	01:12	0	0.128	-0.173
PH4_MH602	JUNCTION	0.000	0.041	0	01:13	0	0.126	-0.008
PH4_MH604	JUNCTION	0.000	0.023	0	01:10	0	0.0642	-0.016
PH4_RYCB150	JUNCTION	0.009	0.009	0	01:10	0.00713	0.00713	-0.005
PH4_RYCB151	JUNCTION	0.010	0.010	0	01:10	0.0072	0.0072	-0.007
PH4_RYCB153	JUNCTION	0.008	0.008	0	01:10	0.00624	0.00624	-0.005
PH4_RYCB154	JUNCTION	0.010	0.010	0	01:10	0.00817	0.00817	-0.004
PH4_RYCB155	JUNCTION	0.006	0.006	0	01:10	0.00437	0.00437	-0.011
PH4_RYCB156	JUNCTION	0.006	0.006	0	01:10	0.00458	0.00458	-0.005
PH4_RYCB158	JUNCTION	0.007	0.007	0	01:10	0.00568	0.00568	-0.003
PH4_RYCB20	JUNCTION	0.002	0.010	0	01:06	0.00116	0.00157	-0.003
PH4_RYCB21	JUNCTION	0.008	0.008	0	01:10	0.00679	0.00735	3.265
PH4_RYCB22	JUNCTION	0.024	0.024	0	01:10	0.0245	0.0246	1.039
PH4_RYCB23	JUNCTION	0.013	0.013	0	01:10	0.0102	0.0102	-0.003
PH4_RYCB24	JUNCTION	0.012	0.019	0	01:05	0.00887	0.0104	0.496
RYCB_1_(RYCB)	JUNCTION	0.032	0.032	0	01:10	0.0329	0.0339	1.054
RYCB_10_(RYCB)	JUNCTION	0.000	0.077	0	01:10	0	0.128	0.443
RYCB_11_(RYCB)	JUNCTION	0.068	0.073	0	01:09	0.0919	0.096	0.794
RYCB_12_(RYCB)	JUNCTION	0.090	0.090	0	01:10	0.117	0.126	0.942
RYCB_13_(RYCB)	JUNCTION	0.055	0.055	0	01:10	0.0544	0.0569	1.150

RYCB_14_(RYCB)	JUNCTION	0.074	0.074	0	01:10	0.0831	0.0988	1.190
RYCB_15_(RYCB)	JUNCTION	0.000	0.054	0	01:07	0	0.0625	-0.323
RYCB_18_(RYCB)	JUNCTION	0.012	0.137	0	01:09	0.0133	0.235	0.359
RYCB_2_(RYCB)	JUNCTION	0.081	0.083	0	01:08	0.103	0.107	0.560
RYCB_3_(RYCB)	JUNCTION	0.070	0.075	0	01:09	0.0873	0.0913	1.518
RYCB_4_(RYCB)	JUNCTION	0.058	0.072	0	01:11	0.0603	0.0744	1.238
RYCB_5_(RYCB)	JUNCTION	0.077	0.101	0	01:11	0.0961	0.137	0.804
RYCB_6_(RYCB)	JUNCTION	0.006	0.135	0	01:09	0.00639	0.141	0.293
RYCB_7_(RYCB)	JUNCTION	0.112	0.170	0	01:09	0.142	0.234	0.157
RYCB_8_(RYCB)	JUNCTION	0.102	0.102	0	01:10	0.129	0.138	0.817
RYCB_9_(RYCB)	JUNCTION	0.075	0.090	0	01:09	0.0786	0.0831	1.818
Slope1	JUNCTION	0.127	0.143	0	01:10	0.164	0.192	-0.143
StartNullStruct2	JUNCTION	0.000	0.040	0	01:07	0	0.00283	4.715
StartNullStruct3	JUNCTION	0.000	0.058	0	01:13	0	0.0687	0.005
STM-251_(STM)	JUNCTION	0.000	0.053	0	01:10	0	0.0833	-0.122
Structure_-_(18)_(RYCB)	JUNCTION	0.000	0.137	0	01:09	0	0.234	-0.074
TEE_1_(RYCB)	JUNCTION	0.000	0.032	0	01:07	0	0.00573	-0.347
TEE_10_(RYCB)	JUNCTION	0.000	0.027	0	01:09	0	0.00198	-14.164
TEE_11_(RYCB)	JUNCTION	0.049	0.050	0	01:09	0.0514	0.0533	0.280
TEE_12_(RYCB)	JUNCTION	0.000	0.029	0	01:06	0	0.00662	4.764
TEE_13_(RYCB)	JUNCTION	0.000	0.034	0	01:11	0	0.012	2.836
TEE_14_(RYCB)	JUNCTION	0.075	0.079	0	01:08	0.0872	0.0939	0.056
TEE_15_(RYCB)	JUNCTION	0.000	0.044	0	01:08	0	0.011	1.912
TEE_16_(RYCB)	JUNCTION	0.000	0.044	0	01:08	0	0.00828	1.250
TEE_17_(RYCB)	JUNCTION	0.000	0.038	0	01:08	0	0.00559	8.208
TEE_18_(RYCB)	JUNCTION	0.000	0.031	0	01:10	0	0.00296	13.073
TEE_19_(RYCB)	JUNCTION	0.000	0.039	0	01:04	0	0.00268	5.533
TEE_2_(RYCB)	JUNCTION	0.000	0.026	0	01:09	0	0.00434	13.751
TEE_20_(RYCB)	JUNCTION	0.000	0.041	0	01:03	0	0.00601	6.786
TEE_21_(RYCB)	JUNCTION	0.000	0.041	0	01:03	0	0.0101	3.215
TEE_22_(RYCB)	JUNCTION	0.000	0.018	0	01:09	0	0.0047	3.752
TEE_23_(RYCB)	JUNCTION	0.078	0.078	0	01:11	0.128	0.129	0.718
TEE_24_(RYCB)	JUNCTION	0.000	0.020	0	01:09	0	0.00255	13.264
TEE_25_(RYCB)	JUNCTION	0.000	0.020	0	01:09	0	0.00563	8.279
TEE_26_(RYCB)	JUNCTION	0.000	0.035	0	01:05	0	0.00395	-1.920
TEE_27_(RYCB)	JUNCTION	0.000	0.035	0	01:05	0	0.00941	2.565
TEE_28_(RYCB)	JUNCTION	0.000	0.015	0	01:10	0	0.00257	10.717
TEE_29_(RYCB)	JUNCTION	0.000	0.038	0	01:08	0	0.0036	9.821
TEE_3_(RYCB)	JUNCTION	0.000	0.021	0	01:07	0	0.00428	3.278
TEE_30_(RYCB)	JUNCTION	0.000	0.038	0	01:08	0	0.00691	5.800
TEE_31_(RYCB)	JUNCTION	0.000	0.038	0	01:08	0	0.0109	4.905
TEE_32_(RYCB)	JUNCTION	0.100	0.100	0	01:10	0.129	0.134	0.228
TEE_33_(RYCB)	JUNCTION	0.000	0.056	0	01:20	0	0.0943	-0.002
TEE_34_(RYCB)	JUNCTION	0.087	0.087	0	01:10	0.105	0.114	0.413
TEE_35_(RYCB)	JUNCTION	0.000	0.044	0	01:10	0	0.0267	1.176
TEE_36_(RYCB)	JUNCTION	0.000	0.032	0	01:04	0	0.0052	1.961
TEE_37_(RYCB)	JUNCTION	0.000	0.062	0	01:05	0	0.0502	1.077
TEE_38_(RYCB)	JUNCTION	0.000	0.056	0	01:06	0	0.0496	-0.051
TEE_39_(RYCB)	JUNCTION	0.037	0.077	0	01:06	0.0377	0.0873	0.425
TEE_4_(RYCB)	JUNCTION	0.000	0.023	0	01:05	0	0.00858	-0.089
TEE_40_(RYCB)	JUNCTION	0.000	0.058	0	01:10	0	0.0631	0.591
TEE_41_(RYCB)	JUNCTION	0.000	0.054	0	01:07	0	0.0627	0.418
TEE_42_(RYCB)	JUNCTION	0.000	0.000	0	00:00	0	0	0.000 ltr
TEE_43_(RYCB)	JUNCTION	0.065	0.065	0	01:10	0.0728	0.0728	0.004
TEE_44_(RYCB)	JUNCTION	0.000	0.074	0	01:09	0	0.0807	-0.195
TEE_5_(RYCB)	JUNCTION	0.080	0.086	0	01:09	0.0829	0.0883	0.151
TEE_6_(RYCB)	JUNCTION	0.000	0.028	0	01:13	0	0.0168	1.087
TEE_7_(RYCB)	JUNCTION	0.032	0.047	0	01:03	0.0333	0.0352	0.931
TEE_8_(RYCB)	JUNCTION	0.000	0.043	0	01:03	0	0.0355	-0.052
TEE_9_(RYCB)	JUNCTION	0.000	0.036	0	01:03	0	0.0379	0.880

Maj-01	OUTFALL	0.051	0.051	0	01:10	0.0659	0.0659	0.000
Maj-18	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-22	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-48	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-49	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
Maj-57	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
OF1	OUTFALL	0.000	0.000	0	00:00	0	0	0.000 ltr
STM-111_(STM)	OUTFALL	0.000	3.935	0	01:16	0	10.4	0.000
B2_Stor	STORAGE	1.609	1.609	0	01:10	2.41	2.41	-0.007

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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
02_(CB)	JUNCTION	0.85	1.838	0.632
03_(CB)	JUNCTION	0.81	1.833	0.637
04_(CB)	JUNCTION	0.89	1.950	0.520
05_(CB)	JUNCTION	0.89	1.949	0.521
06_(CB)	JUNCTION	0.40	0.780	0.893
08_(CB)	JUNCTION	0.49	1.723	0.527
09_(CB)	JUNCTION	0.50	1.739	0.511
10_(CB)	JUNCTION	0.96	1.233	0.412
11_(CB)	JUNCTION	1.07	1.310	0.274
116_(STM)	JUNCTION	0.10	0.016	3.907
12_(CB)	JUNCTION	0.62	1.754	0.496
120_(STM)	JUNCTION	0.35	0.218	3.548
122_(STM)	JUNCTION	0.36	0.250	3.601
124_(STM)	JUNCTION	0.35	0.270	3.455
126_(STM)	JUNCTION	0.36	0.346	3.489
128_(STM)	JUNCTION	0.33	0.386	3.415
13_(CB)	JUNCTION	0.62	1.607	0.480
130_(STM)	JUNCTION	0.41	0.541	3.487
132_(STM)	JUNCTION	0.36	0.591	3.434
134_(STM)	JUNCTION	0.22	0.916	3.014
136_(STM)	JUNCTION	0.30	0.380	3.266
138_(STM)	JUNCTION	0.29	0.393	3.300
14_(CB)	JUNCTION	0.61	1.770	0.480
140_(STM)	JUNCTION	0.15	0.244	3.487
142_(STM)	JUNCTION	0.22	0.408	3.086
144_(STM)	JUNCTION	0.17	0.276	3.398
146_(STM)	JUNCTION	0.08	0.599	2.574
148_(STM)	JUNCTION	0.01	0.688	2.472
15_(CB)	JUNCTION	0.61	1.766	0.484
15_RYCB	JUNCTION	0.33	0.529	1.349
150_(STM)	JUNCTION	0.20	0.668	3.251
152_(STM)	JUNCTION	0.09	0.288	3.528
154_(STM)	JUNCTION	0.19	0.476	3.560
156_(STM)	JUNCTION	0.17	1.474	2.062
158_(STM)	JUNCTION	0.32	0.709	3.090
16_(CB)	JUNCTION	0.65	1.746	0.504
160_(STM)	JUNCTION	0.33	0.711	3.102
164_(STM)	JUNCTION	0.23	0.374	2.950
17_(CB)	JUNCTION	0.54	1.736	0.514
18_(CB)	JUNCTION	0.74	1.068	0.337
19_(CB)	JUNCTION	0.52	1.739	0.511
20_(CB)	JUNCTION	0.77	1.764	0.486
21_(CB)	JUNCTION	0.77	1.616	0.481
2142_(STM)	JUNCTION	16.34	0.545	4.546
2143_(STM)	JUNCTION	22.57	0.770	3.500
2144_(STM)	JUNCTION	22.55	0.807	3.183
23_(CB)	JUNCTION	0.35	1.696	0.554
24_(CB)	JUNCTION	0.35	1.696	0.554
27_(CB)	JUNCTION	0.51	1.606	0.429
28_(CB)	JUNCTION	0.51	1.606	0.509
30_(CB)	JUNCTION	0.17	0.335	2.058
31_(CB)	JUNCTION	0.34	0.767	1.033
33_(CB)	JUNCTION	0.71	1.241	0.339
34_(CB)	JUNCTION	0.71	1.659	0.591
35_(CB)	JUNCTION	0.71	1.659	0.591
36_(CB)	JUNCTION	0.61	1.719	0.531
37_(CB)	JUNCTION	0.40	1.704	0.546
40_(CB)	JUNCTION	0.35	1.575	0.579
42_(CB)	JUNCTION	0.71	1.757	0.493
44_(CB)	JUNCTION	0.45	1.739	0.511
45_(CB)	JUNCTION	0.57	1.752	0.498
46_(CB)	JUNCTION	0.46	1.759	0.491
47_(CB)	JUNCTION	0.52	1.615	0.481
48_(CB)	JUNCTION	0.72	1.809	0.441
49_(CB)	JUNCTION	0.72	1.661	0.436
50_(CB)	JUNCTION	0.51	1.596	0.498
51_(CB)	JUNCTION	0.51	1.566	0.494
52_(CB)	JUNCTION	23.51	1.827	3.020
53_(CB)	JUNCTION	0.58	1.764	0.486
54_(CB)	JUNCTION	0.58	1.718	0.484
55_(CB)	JUNCTION	0.41	1.638	0.612
56_(CB)	JUNCTION	0.41	1.638	0.612
57_(CB)	JUNCTION	0.50	1.443	0.647
59_(CB)	JUNCTION	0.12	0.051	2.219
ELB_1_(RYCB)	JUNCTION	0.18	0.933	0.000
ELB_10_(RYCB)	JUNCTION	0.08	0.800	0.000
ELB_11_(RYCB)	JUNCTION	0.47	0.790	0.000
ELB_12_(RYCB)	JUNCTION	0.13	0.903	0.000
ELB_13_(RYCB)	JUNCTION	0.23	0.792	0.000
ELB_14_(RYCB)	JUNCTION	0.08	0.750	0.000
ELB_15_(RYCB)	JUNCTION	0.34	0.740	0.000
ELB_16_(RYCB)	JUNCTION	0.48	0.775	0.000
ELB_17_(RYCB)	JUNCTION	0.05	0.391	0.364
ELB_18_(RYCB)	JUNCTION	0.05	0.751	0.000
ELB_19_(RYCB)	JUNCTION	0.19	0.887	0.000

ELB_2_(RYCB)	JUNCTION	0.31	1.069	0.000
ELB_21_(RYCB)	JUNCTION	0.12	0.996	0.000
ELB_22_(RYCB)	JUNCTION	0.48	0.810	0.000
ELB_23_(RYCB)	JUNCTION	0.14	1.158	0.000
ELB_25_(RYCB)	JUNCTION	0.15	0.869	0.000
ELB_3_(RYCB)	JUNCTION	0.18	0.939	0.000
ELB_4_(RYCB)	JUNCTION	0.20	0.959	0.000
ELB_5_(RYCB)	JUNCTION	0.06	0.706	0.000
ELB_7_(RYCB)	JUNCTION	0.90	0.827	0.000
ELB_8_(RYCB)	JUNCTION	0.03	0.750	0.000
ELB_9_(RYCB)	JUNCTION	0.21	0.977	0.000
PH4_MH100	JUNCTION	0.71	0.828	1.182
PH4_MH100_dummy	JUNCTION	0.07	0.017	2.063
PH4_MH102	JUNCTION	0.66	0.781	1.209
PH4_MH104	JUNCTION	0.63	0.699	1.291
PH4_MH106	JUNCTION	0.57	0.596	1.224
PH4_MH108	JUNCTION	0.42	0.501	1.139
PH4_MH110	JUNCTION	0.32	0.364	0.936
PH4_MH202	JUNCTION	0.85	1.205	0.845
PH4_MH204	JUNCTION	0.75	1.113	0.927
PH4_MH206	JUNCTION	0.72	1.017	1.073
PH4_MH208	JUNCTION	0.69	0.999	1.041
PH4_MH210	JUNCTION	0.66	0.931	0.919
PH4_MH212	JUNCTION	0.63	1.680	0.000
PH4_MH302	JUNCTION	0.67	2.419	1.331
PH4_MH302_dummy	JUNCTION	0.32	0.523	3.222
PH4_MH304	JUNCTION	0.58	1.953	1.437
PH4_MH306	JUNCTION	0.55	1.904	1.336
PH4_MH308	JUNCTION	0.50	1.783	1.267
PH4_MH310	JUNCTION	0.46	1.688	1.302
PH4_MH312	JUNCTION	0.44	2.640	0.000
PH4_MH402	JUNCTION	0.35	0.183	2.857
PH4_MH404	JUNCTION	0.30	0.174	2.676
PH4_MH406	JUNCTION	0.28	0.189	2.756
PH4_MH408	JUNCTION	0.27	0.181	2.744
PH4_MH410	JUNCTION	0.12	0.056	2.439
PH4_MH502	JUNCTION	0.29	0.044	2.836
PH4_MH504	JUNCTION	0.38	0.074	2.886
PH4_MH506	JUNCTION	0.35	0.102	3.128
PH4_MH508	JUNCTION	0.24	0.070	3.240
PH4_MH510	JUNCTION	0.05	0.062	2.473
PH4_MH512	JUNCTION	0.22	0.156	2.479
PH4_MH602	JUNCTION	0.21	0.134	2.551
RYCB_13_(RYCB)	JUNCTION	0.12	0.452	1.242
RYCB_14_(RYCB)	JUNCTION	0.49	0.802	0.554
RYCB_15_(RYCB)	JUNCTION	0.27	0.879	0.944
RYCB_18_(RYCB)	JUNCTION	0.29	1.072	0.021
RYCB_3_(RYCB)	JUNCTION	0.28	1.111	0.489
RYCB_7_(RYCB)	JUNCTION	0.21	0.957	0.827
RYCB_9_(RYCB)	JUNCTION	0.20	0.863	0.000
StartNullStruct2	JUNCTION	0.30	1.150	0.000
StartNullStruct3	JUNCTION	0.05	0.051	3.206
TEE_1_(RYCB)	JUNCTION	0.34	1.108	0.000
TEE_10_(RYCB)	JUNCTION	0.05	0.656	0.094
TEE_11_(RYCB)	JUNCTION	0.11	0.612	0.585
TEE_12_(RYCB)	JUNCTION	0.26	1.170	0.000
TEE_13_(RYCB)	JUNCTION	0.30	1.270	0.000
TEE_15_(RYCB)	JUNCTION	0.20	0.947	0.773
TEE_16_(RYCB)	JUNCTION	0.16	1.051	0.000
TEE_17_(RYCB)	JUNCTION	0.13	0.826	0.034
TEE_18_(RYCB)	JUNCTION	0.11	0.800	0.051
TEE_19_(RYCB)	JUNCTION	0.50	0.796	0.000
TEE_2_(RYCB)	JUNCTION	0.22	1.034	0.000
TEE_20_(RYCB)	JUNCTION	0.54	0.918	0.000
TEE_21_(RYCB)	JUNCTION	0.59	1.039	0.000
TEE_22_(RYCB)	JUNCTION	0.24	0.930	0.000
TEE_23_(RYCB)	JUNCTION	0.29	0.936	0.000
TEE_24_(RYCB)	JUNCTION	0.10	0.754	0.000
TEE_25_(RYCB)	JUNCTION	0.19	0.625	0.359
TEE_26_(RYCB)	JUNCTION	0.52	0.963	0.000
TEE_27_(RYCB)	JUNCTION	0.56	1.123	0.000
TEE_28_(RYCB)	JUNCTION	0.08	0.435	0.320
TEE_29_(RYCB)	JUNCTION	0.21	0.969	0.000
TEE_3_(RYCB)	JUNCTION	0.12	0.762	0.048
TEE_30_(RYCB)	JUNCTION	0.25	1.088	0.000
TEE_31_(RYCB)	JUNCTION	0.27	1.206	0.000
TEE_32_(RYCB)	JUNCTION	0.34	1.347	0.000
TEE_33_(RYCB)	JUNCTION	0.44	1.767	0.076
TEE_34_(RYCB)	JUNCTION	0.40	1.765	0.000
TEE_35_(RYCB)	JUNCTION	0.36	1.608	0.000
TEE_36_(RYCB)	JUNCTION	0.58	1.045	0.000
TEE_37_(RYCB)	JUNCTION	0.46	0.663	0.088
TEE_38_(RYCB)	JUNCTION	0.46	0.745	0.000
TEE_39_(RYCB)	JUNCTION	0.49	0.952	0.000
TEE_4_(RYCB)	JUNCTION	0.19	1.300	0.000
TEE_40_(RYCB)	JUNCTION	0.16	1.057	0.000
TEE_41_(RYCB)	JUNCTION	0.21	0.962	0.142
TEE_44_(RYCB)	JUNCTION	0.05	0.327	1.065
TEE_5_(RYCB)	JUNCTION	0.30	1.125	0.545
TEE_6_(RYCB)	JUNCTION	0.22	1.020	0.000
TEE_7_(RYCB)	JUNCTION	0.92	1.106	0.000
TEE_8_(RYCB)	JUNCTION	0.95	1.231	0.000
TEE_9_(RYCB)	JUNCTION	0.98	1.304	0.000

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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 CMS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Depth Meters
ELB_1_(RYCB)	0.05	0.004	0 01:10	0.000	0.043
ELB_10_(RYCB)	0.01	0.023	0 01:10	0.000	0.039
ELB_11_(RYCB)	0.01	0.022	0 01:05	0.000	0.038
ELB_12_(RYCB)	0.01	0.013	0 01:09	0.000	0.003
ELB_13_(RYCB)	0.06	0.013	0 01:09	0.000	0.041
ELB_15_(RYCB)	0.07	0.002	0 01:12	0.000	0.034
ELB_16_(RYCB)	0.01	0.020	0 01:05	0.000	0.021
ELB_18_(RYCB)	0.01	0.008	0 01:10	0.000	0.000

ELB_19_(RYCB)	0.08	0.033	0	01:09	0.000	0.105
ELB_2_(RYCB)	0.22	0.015	0	01:07	0.000	0.207
ELB_21_(RYCB)	0.01	0.022	0	01:09	0.000	0.006
ELB_22_(RYCB)	0.07	0.023	0	01:05	0.000	0.058
ELB_23_(RYCB)	0.12	0.008	0	01:09	0.001	0.399
ELB_25_(RYCB)	0.06	0.012	0	01:05	0.001	0.119
ELB_3_(RYCB)	0.11	0.020	0	01:09	0.000	0.165
ELB_4_(RYCB)	0.12	0.008	0	01:10	0.001	0.209
ELB_5_(RYCB)	0.01	0.012	0	01:09	0.000	0.006
ELB_7_(RYCB)	0.08	0.028	0	01:04	0.000	0.068
ELB_9_(RYCB)	0.10	0.020	0	01:08	0.001	0.229
PH4_MH212	0.01	0.011	0	01:03	0.000	0.000
PH4_MH312	0.01	0.019	0	01:05	0.000	0.000
RYCB_9_(RYCB)	0.10	0.016	0	01:10	0.001	0.180
StartNullStruct2	0.01	0.017	0	01:07	0.000	0.000
TEE_1_(RYCB)	0.22	0.017	0	01:09	0.001	0.219
TEE_12_(RYCB)	0.13	0.020	0	01:07	0.002	0.396
TEE_13_(RYCB)	0.11	0.018	0	01:11	0.001	0.289
TEE_16_(RYCB)	0.01	0.023	0	01:08	0.000	0.000
TEE_19_(RYCB)	0.01	0.009	0	01:05	0.000	0.018
TEE_2_(RYCB)	0.13	0.010	0	01:10	0.001	0.250
TEE_20_(RYCB)	0.16	0.007	0	01:05	0.001	0.150
TEE_21_(RYCB)	0.16	0.005	0	01:08	0.001	0.161
TEE_22_(RYCB)	0.06	0.008	0	01:11	0.000	0.066
TEE_23_(RYCB)	0.10	0.006	0	01:11	0.000	0.118
TEE_24_(RYCB)	0.01	0.013	0	01:09	0.000	0.003
TEE_26_(RYCB)	0.26	0.026	0	01:05	0.001	0.207
TEE_27_(RYCB)	0.35	0.017	0	01:06	0.001	0.287
TEE_29_(RYCB)	0.08	0.005	0	01:10	0.000	0.085
TEE_30_(RYCB)	0.10	0.012	0	01:10	0.001	0.171
TEE_31_(RYCB)	0.11	0.022	0	01:09	0.001	0.239
TEE_32_(RYCB)	0.09	0.015	0	01:09	0.000	0.158
TEE_34_(RYCB)	0.11	0.013	0	01:09	0.001	0.242
TEE_35_(RYCB)	0.08	0.010	0	01:10	0.000	0.106
TEE_36_(RYCB)	0.08	0.004	0	01:09	0.000	0.081
TEE_38_(RYCB)	0.04	0.008	0	01:06	0.000	0.018
TEE_39_(RYCB)	0.10	0.004	0	01:08	0.000	0.125
TEE_4_(RYCB)	0.01	0.015	0	01:06	0.000	0.000
TEE_40_(RYCB)	0.08	0.006	0	01:10	0.001	0.128
TEE_6_(RYCB)	0.07	0.007	0	01:13	0.000	0.050
TEE_7_(RYCB)	0.31	0.034	0	01:04	0.001	0.289
TEE_8_(RYCB)	0.32	0.029	0	01:03	0.001	0.266
TEE_9_(RYCB)	0.27	0.004	0	01:07	0.001	0.204

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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 CMS
B2_Stor	0.008	1	0	0	0.342	62	0 01:14	0.855

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Maj-01	15.72	0.007	0.051	0.066
Maj-18	0.00	0.000	0.000	0.000
Maj-22	0.00	0.000	0.000	0.000
Maj-48	0.00	0.000	0.000	0.000
Maj-49	0.00	0.000	0.000	0.000
Maj-57	0.00	0.000	0.000	0.000
OF1	0.00	0.000	0.000	0.000
STM-111_(STM)	99.80	0.184	3.935	10.429
System	14.44	0.192	3.952	10.495

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Link Flow Summary
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Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
1_(STM)	CONDUIT	0.104	0 01:25	1.10	1.01	1.00
10	CHANNEL	0.000	0 00:00	0.00	0.00	0.27
10_(STM)	CONDUIT	2.935	0 01:15	2.05	0.80	1.00
11	CHANNEL	0.000	0 00:00	0.00	0.00	0.26
11_(STM)	CONDUIT	2.937	0 01:15	2.05	1.11	1.00
12	CHANNEL	0.000	0 00:00	0.00	0.00	0.26
12_(STM)	CONDUIT	3.038	0 01:15	2.35	1.19	0.85
13	CHANNEL	0.000	0 00:00	0.00	0.00	0.01
13_(STM)	CONDUIT	3.446	0 01:15	2.42	1.24	0.98
14	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
14_(STM)	CONDUIT	3.739	0 01:15	1.79	1.00	0.94
15	CHANNEL	0.000	0 00:00	0.00	0.00	0.24
15_(10)_(STM)	CONDUIT	2.470	0 01:16	1.83	0.67	1.00
15_(11)_(STM)	CONDUIT	2.596	0 01:16	1.85	1.05	1.00
15_(12)_(STM)	CONDUIT	0.212	0 01:15	0.96	0.53	1.00
15_(13)_(STM)	CONDUIT	0.231	0 01:22	0.89	0.51	1.00
15_(14)_(STM)	CONDUIT	1.540	0 01:12	1.82	0.98	1.00
15_(15)_(STM)	CONDUIT	1.540	0 01:12	1.78	0.79	1.00
15_(16)_(STM)	CONDUIT	1.637	0 01:12	1.91	1.01	1.00
15_(19)_(STM)	CONDUIT	0.070	0 01:15	1.08	0.68	0.80

15_(20)_(STM)	CONDUIT	0.158	0	01:23	1.03	0.45	1.00
15_(21)_(STM)	CONDUIT	0.235	0	01:23	1.37	0.62	1.00
15_(22)_(STM)	CONDUIT	1.112	0	01:12	1.70	0.64	1.00
15_(3)_(STM)	CONDUIT	0.097	0	01:17	1.07	0.99	0.98
15_(4)_(STM)	CONDUIT	0.228	0	01:12	1.47	1.13	0.95
15_(5)_(STM)	CONDUIT	0.301	0	01:13	1.61	1.15	0.81
15_(9)_(STM)	CONDUIT	2.349	0	01:17	1.82	0.87	1.00
16	CHANNEL	0.000	0	00:00	0.00	0.00	0.24
17	CHANNEL	0.000	0	00:00	0.00	0.00	0.18
18	CHANNEL	0.000	0	01:10	0.01	0.00	0.08
18_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.18
18_2	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
19	CHANNEL	0.000	0	00:00	0.00	0.00	0.01
2	CHANNEL	0.000	0	00:00	0.00	0.00	0.20
2_(STM)	CONDUIT	0.108	0	01:26	1.07	0.87	1.00
20	CHANNEL	0.000	0	00:00	0.00	0.00	0.23
21	CHANNEL	0.000	0	00:00	0.00	0.00	0.23
22	CHANNEL	0.000	0	00:00	0.00	0.00	0.12
23	CHANNEL	0.000	0	00:00	0.00	0.00	0.12
24	CHANNEL	0.000	0	00:00	0.00	0.00	0.06
25	CHANNEL	0.000	0	00:00	0.00	0.00	0.06
26	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
27	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
28	CHANNEL	0.000	0	00:00	0.00	0.00	0.22
29	CHANNEL	0.000	0	00:00	0.00	0.00	0.22
3	CHANNEL	0.000	0	00:00	0.00	0.00	0.20
3_(STM)	CONDUIT	0.208	0	01:26	1.41	0.82	1.00
30	CHANNEL	0.000	0	00:00	0.00	0.00	0.23
31	CHANNEL	0.000	0	00:00	0.00	0.00	0.23
32	CHANNEL	0.000	0	00:00	0.00	0.00	0.28
33	CHANNEL	0.000	0	00:00	0.00	0.00	0.28
34	CHANNEL	0.000	0	00:00	0.00	0.00	0.25
35	CHANNEL	0.000	0	01:10	0.03	0.00	0.16
36	CHANNEL	0.000	0	01:10	0.00	0.00	0.00
37	CHANNEL	0.000	0	01:10	0.00	0.00	0.00
38	CHANNEL	0.000	0	01:10	0.00	0.00	0.01
39	CHANNEL	0.000	0	01:10	0.21	0.00	0.04
4	CHANNEL	0.000	0	00:00	0.00	0.00	0.26
4_(STM)	CONDUIT	1.978	0	01:12	1.87	1.02	1.00
40	CHANNEL	0.000	0	01:10	0.00	0.00	0.07
41	CONDUIT	0.000	0	00:00	0.00	0.00	0.10
42	CONDUIT	0.000	0	00:00	0.00	0.00	0.10
43	CONDUIT	0.000	0	00:00	0.00	0.00	0.31
44	CONDUIT	0.000	0	00:00	0.00	0.00	0.31
45	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
46	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
47	CONDUIT	0.000	0	00:00	0.00	0.00	0.40
48	CONDUIT	0.000	0	00:00	0.00	0.00	0.40
49	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
5	CHANNEL	0.000	0	00:00	0.00	0.00	0.26
5_(STM)	CONDUIT	2.273	0	01:11	1.83	0.80	1.00
50	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
51	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
52	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
57	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
58	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
59	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
6	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
6_(STM)	CONDUIT	0.048	0	01:11	0.99	1.01	1.00
60	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
61	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
62	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
63	CHANNEL	0.000	0	00:00	0.00	0.00	0.25
7	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
7_(1)_(STM)	CONDUIT	0.162	0	01:10	1.13	1.26	1.00
7_(STM)	CONDUIT	0.108	0	01:10	0.99	1.35	1.00
8	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
8_(STM)	CONDUIT	2.880	0	01:15	2.01	1.08	1.00
9	CHANNEL	0.000	0	00:00	0.00	0.00	0.27
9_(STM)	CONDUIT	2.935	0	01:15	2.05	1.07	1.00
C1	CHANNEL	0.015	0	01:10	0.17	0.00	0.24
C1_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C1_2	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C10	CHANNEL	0.000	0	00:00	0.00	0.00	0.12
C11	CHANNEL	0.000	0	00:00	0.00	0.00	0.15
C12	CHANNEL	0.074	0	01:10	0.47	0.00	0.12
C13	CHANNEL	0.063	0	01:11	0.11	0.00	0.21
C14	CHANNEL	0.000	0	00:00	0.00	0.00	0.16
C15	CHANNEL	0.007	0	01:16	0.02	0.00	0.17
C16	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
C17	CHANNEL	0.038	0	01:12	0.10	0.00	0.19
C18	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C18_2	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C18_3	CHANNEL	0.011	0	01:16	0.16	0.00	0.09
C18_4	CHANNEL	0.016	0	01:10	0.18	0.00	0.12
C18_5	CHANNEL	0.035	0	01:10	0.72	0.00	0.06
C18_6	CHANNEL	0.021	0	01:10	0.56	0.00	0.05
C18_7	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C18_8	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C18_9	CHANNEL	0.000	0	00:00	0.00	0.00	0.03
C19	CHANNEL	0.018	0	01:10	0.51	0.00	0.05
C2	CHANNEL	0.000	0	00:00	0.00	0.00	0.22
C2_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.04
C2_2	CHANNEL	0.016	0	01:10	0.06	0.00	0.21
C20	CHANNEL	0.007	0	01:10	0.06	0.00	0.09
C21	CHANNEL	0.233	0	01:10	0.85	0.01	0.24
C22	CHANNEL	0.000	0	00:00	0.00	0.00	0.18
C23	CHANNEL	0.018	0	01:10	0.28	0.00	0.15
C24	CHANNEL	0.000	0	00:00	0.00	0.00	0.12
C25	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
C26	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
C27	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C27_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C27_2	CHANNEL	0.000	0	00:00	0.00	0.00	0.18
C28	CHANNEL	0.000	0	00:00	0.00	0.00	0.18
C29	CHANNEL	0.000	0	00:00	0.00	0.00	0.13
C3_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C3_2	CHANNEL	0.000	0	01:12	0.00	0.00	0.16
C30	CHANNEL	0.007	0	01:11	0.04	0.00	0.13
C31	CONDUIT	0.000	0	00:00	0.00	0.00	0.00

C31_1	CONDUIT	0.005	0	01:11	0.18	0.00	0.19
C31_2	CONDUIT	0.005	0	01:11	0.08	0.00	0.23
C32	CHANNEL	0.000	0	01:12	0.01	0.00	0.15
C33	CHANNEL	0.030	0	01:10	0.10	0.00	0.18
C34	CHANNEL	0.016	0	01:11	0.04	0.00	0.18
C35	CHANNEL	0.000	0	00:00	0.00	0.00	0.16
C36	CHANNEL	0.000	0	00:00	0.00	0.00	0.14
C37	CHANNEL	0.000	0	00:00	0.00	0.00	0.14
C38	CHANNEL	0.000	0	00:00	0.00	0.00	0.14
C39	CHANNEL	0.000	0	00:00	0.00	0.00	0.14
C4	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C4_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C4_2	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C4_3	CONDUIT	0.006	0	01:11	0.07	0.00	0.33
C4_4	CONDUIT	0.005	0	01:12	0.10	0.00	0.22
C40	CHANNEL	0.000	0	00:00	0.00	0.00	0.23
C41	CHANNEL	0.004	0	01:12	0.01	0.00	0.24
C42	CHANNEL	0.042	0	01:10	0.10	0.00	0.19
C43	CHANNEL	0.000	0	00:00	0.00	0.00	0.17
C44	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C45	CHANNEL	0.000	0	01:12	0.00	0.00	0.00
C46	CHANNEL	0.000	0	00:00	0.00	0.00	0.16
C47	CHANNEL	0.002	0	01:11	0.00	0.00	0.17
C48	CHANNEL	0.004	0	01:12	0.04	0.00	0.15
C49	CHANNEL	0.009	0	01:12	0.03	0.00	0.16
C5	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C5_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C5_2	CHANNEL	0.000	0	01:20	0.00	0.00	0.01
C50	CONDUIT	0.102	0	01:10	0.76	0.04	0.37
C50_1	CHANNEL	0.000	0	00:00	0.00	0.00	0.00
C50_3	CHANNEL	0.000	0	01:25	0.01	0.00	0.02
C50_4	CHANNEL	0.007	0	01:10	0.44	0.00	0.04
C51	CHANNEL	0.025	0	01:10	0.09	0.00	0.15
C52	CHANNEL	0.001	0	01:11	0.02	0.00	0.14
C53	CHANNEL	0.001	0	01:11	0.04	0.00	0.14
C54	CHANNEL	0.000	0	00:00	0.00	0.00	0.13
C55	CHANNEL	0.015	0	01:12	0.25	0.00	0.08
C56	CONDUIT	0.001	0	01:11	0.02	0.00	0.19
C57	CHANNEL	0.008	0	01:10	0.12	0.00	0.08
C58	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C58_1	CONDUIT	0.034	0	01:11	0.27	0.02	0.34
C58_2	CONDUIT	0.034	0	01:11	0.59	0.02	0.23
C59_1	CONDUIT	0.001	0	01:13	0.16	0.00	0.07
C59_2	CONDUIT	0.000	0	01:14	0.13	0.00	0.03
C6	CONDUIT	0.000	0	00:00	0.00	0.00	0.04
C6_1	CHANNEL	0.032	0	01:10	0.31	0.00	0.15
C6_2	CHANNEL	0.001	0	01:11	0.02	0.00	0.12
C60	CONDUIT	0.000	0	00:00	0.00	0.00	0.01
C61_1	CONDUIT	0.002	0	01:10	0.19	0.00	0.19
C61_2	CONDUIT	0.001	0	01:11	0.16	0.00	0.05
C62	CONDUIT	0.000	0	00:00	0.00	0.00	0.13
C63_1	CONDUIT	0.006	0	01:11	0.08	0.00	0.27
C63_2	CONDUIT	0.006	0	01:11	0.09	0.00	0.25
C64	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C65_1	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C65_2	CONDUIT	0.000	0	00:00	0.00	0.00	0.14
C66_1	CONDUIT	0.000	0	01:13	0.05	0.00	0.01
C66_2	CONDUIT	0.001	0	01:11	0.03	0.00	0.19
C67	CONDUIT	0.001	0	01:10	0.10	0.00	0.12
C68	CONDUIT	0.001	0	01:10	0.18	0.00	0.09
C69	CONDUIT	0.016	0	01:31	0.49	0.01	0.24
C7	CHANNEL	0.037	0	01:10	0.54	0.00	0.08
C8	CHANNEL	0.035	0	01:10	0.49	0.00	0.10
C9	CHANNEL	0.058	0	01:10	0.20	0.00	0.18
PH4_100-168	CONDUIT	0.064	0	01:10	1.03	1.05	0.83
PH4_102-100	CONDUIT	0.057	0	01:11	0.80	1.01	1.00
PH4_104-102	CONDUIT	0.036	0	01:11	0.63	0.53	1.00
PH4_106-104	CONDUIT	0.027	0	01:41	0.72	0.46	1.00
PH4_108-106	CONDUIT	0.022	0	01:40	0.83	0.32	1.00
PH4_110-108	CONDUIT	0.011	0	01:05	0.46	0.19	1.00
PH4_202-166	CONDUIT	0.059	0	01:10	1.04	0.73	0.51
PH4_204-202	CONDUIT	0.046	0	01:11	0.66	0.83	1.00
PH4_206-204	CONDUIT	0.028	0	01:44	0.71	0.41	1.00
PH4_208-206	CONDUIT	0.028	0	01:10	0.70	0.48	1.00
PH4_210-208	CONDUIT	0.031	0	01:02	0.89	0.46	1.00
PH4_212-210	CONDUIT	0.020	0	01:03	0.38	0.35	1.00
PH4_302-162	CONDUIT	0.053	0	01:08	0.76	0.75	1.00
PH4_304-302	CONDUIT	0.047	0	01:12	0.67	0.85	1.00
PH4_306-304	CONDUIT	0.052	0	01:06	0.85	0.91	1.00
PH4_308-306	CONDUIT	0.039	0	01:10	0.80	0.69	1.00
PH4_310-308	CONDUIT	0.032	0	01:05	0.93	0.47	1.00
PH4_312-310	CONDUIT	0.018	0	01:05	0.54	0.31	1.00
PH4_402-508	CONDUIT	0.170	0	01:14	1.07	1.35	1.00
PH4_404-402	CONDUIT	0.152	0	01:14	0.96	0.74	1.00
PH4_406-404	CONDUIT	0.140	0	01:14	1.26	1.79	1.00
PH4_410-408	CONDUIT	0.041	0	01:22	0.66	0.39	1.00
PH4_412-410	CONDUIT	0.036	0	01:17	0.91	0.28	0.99
PH4_414-412	CONDUIT	0.021	0	01:10	0.74	0.20	0.63
PH4_502-162	CONDUIT	0.185	0	01:10	1.30	1.30	0.91
PH4_504-502	CONDUIT	0.185	0	01:10	1.16	1.96	1.00
PH4_506-504	CONDUIT	0.184	0	01:10	1.16	1.40	1.00
PH4_508-506	CONDUIT	0.170	0	01:14	1.07	1.37	1.00
PH4_510-512	CONDUIT	0.051	0	01:12	0.89	0.50	1.00
PH4_512-406	CONDUIT	0.051	0	01:12	0.80	0.53	1.00
PH4_602-408	CONDUIT	0.043	0	01:24	0.72	0.42	1.00
PH4_604-602	CONDUIT	0.022	0	01:13	0.64	0.21	0.95
PH4_STM-71_(STM)	CONDUIT	0.092	0	01:15	0.97	1.06	1.00
Pipe_-_(1)_(RYCB)_1	CONDUIT	0.063	0	01:10	1.41	1.05	0.85
Pipe_-_(10)_(RYCB)	CONDUIT	0.089	0	01:13	1.82	2.13	1.00
Pipe_-_(100)_(RYCB)	CONDUIT	0.030	0	01:16	0.60	0.70	1.00
Pipe_-_(101)_(RYCB)	CONDUIT	0.037	0	01:11	0.76	0.89	1.00
Pipe_-_(103)_(1)_(RYCB)	CONDUIT	0.056	0	01:20	1.14	1.33	1.00
Pipe_-_(103)_(RYCB)	CONDUIT	0.056	0	01:20	1.14	1.33	1.00
Pipe_-_(109)_(RYCB)	CONDUIT	0.029	0	01:09	0.61	0.68	1.00
Pipe_-_(11)_(RYCB)	CONDUIT	0.137	0	01:09	1.94	2.01	1.00
Pipe_-_(110)_(RYCB)	CONDUIT	0.018	0	01:09	0.45	0.44	1.00
Pipe_-_(111)_(RYCB)	CONDUIT	0.018	0	01:09	0.42	0.44	1.00
Pipe_-_(114)_(RYCB)	CONDUIT	0.028	0	01:10	0.67	0.66	1.00
Pipe_-_(117)_(RYCB)	CONDUIT	0.018	0	01:09	0.49	0.42	1.00
Pipe_-_(118)_(RYCB)	CONDUIT	0.020	0	01:09	0.43	0.47	1.00
Pipe_-_(119)_(RYCB)	CONDUIT	0.018	0	01:09	0.40	0.43	1.00
Pipe_-_(120)_(RYCB)	CONDUIT	0.011	0	01:10	0.37	0.27	1.00
Pipe_-_(121)_(RYCB)	CONDUIT	0.014	0	01:09	0.30	0.33	1.00
Pipe_-_(122)_(RYCB)	CONDUIT	0.014	0	01:10	0.30	0.33	1.00

Pipe_-_(123)_(RYCB)	CONDUIT	0.029	0	01:05	0.69	0.48	1.00
Pipe_-_(124)_(RYCB)	CONDUIT	0.035	0	01:05	0.73	0.83	1.00
Pipe_-_(125)_(RYCB)	CONDUIT	0.035	0	01:05	0.71	0.83	1.00
Pipe_-_(126)_(RYCB)	CONDUIT	0.058	0	01:10	1.18	1.38	1.00
Pipe_-_(127)_(RYCB)	CONDUIT	0.054	0	01:07	1.11	1.29	1.00
Pipe_-_(128)_(RYCB)	CONDUIT	0.054	0	01:07	1.11	1.29	1.00
Pipe_-_(129)_(RYCB)	CONDUIT	0.027	0	01:05	0.57	0.63	1.00
Pipe_-_(130)_(RYCB)	CONDUIT	0.032	0	01:04	0.70	0.76	1.00
Pipe_-_(131)_(RYCB)	CONDUIT	0.062	0	01:05	1.31	1.48	1.00
Pipe_-_(132)_(RYCB)	CONDUIT	0.056	0	01:06	1.22	1.33	1.00
Pipe_-_(133)_(RYCB)	CONDUIT	0.048	0	01:06	0.98	1.15	1.00
Pipe_-_(134)_(RYCB)	CONDUIT	0.027	0	01:09	0.56	0.63	1.00
Pipe_-_(137)_(RYCB)	CONDUIT	0.033	0	01:03	0.79	0.79	1.00
Pipe_-_(138)_(RYCB)	CONDUIT	0.031	0	01:03	0.70	0.74	1.00
Pipe_-_(139)_(RYCB)	CONDUIT	0.024	0	01:09	0.55	0.59	1.00
Pipe_-_(14)_(RYCB)	CONDUIT	0.044	0	01:08	0.89	1.04	1.00
Pipe_-_(140)_(RYCB)	CONDUIT	0.026	0	01:09	0.53	0.62	1.00
Pipe_-_(141)_(RYCB)	CONDUIT	0.033	0	01:04	0.79	0.61	1.00
Pipe_-_(142)_(RYCB)	CONDUIT	0.039	0	01:04	0.83	0.92	1.00
Pipe_-_(143)_(RYCB)	CONDUIT	0.041	0	01:03	0.84	0.97	1.00
Pipe_-_(144)_(RYCB)	CONDUIT	0.041	0	01:03	0.83	0.97	1.00
Pipe_-_(145)_(RYCB)	CONDUIT	0.036	0	01:09	0.83	0.87	1.00
Pipe_-_(146)_(RYCB)	CONDUIT	0.038	0	01:08	0.81	0.89	1.00
Pipe_-_(147)_(RYCB)	CONDUIT	0.038	0	01:08	0.77	0.89	1.00
Pipe_-_(148)_(RYCB)	CONDUIT	0.038	0	01:08	0.77	0.89	1.00
Pipe_-_(149)_(RYCB)	CONDUIT	0.044	0	01:10	0.90	1.06	1.00
Pipe_-_(15)_(RYCB)	CONDUIT	0.150	0	01:11	2.12	2.19	1.00
Pipe_-_(150)_(RYCB)	CONDUIT	0.031	0	01:10	0.73	0.74	1.00
Pipe_-_(151)_(RYCB)	CONDUIT	0.038	0	01:08	0.87	0.89	1.00
Pipe_-_(152)_(RYCB)	CONDUIT	0.044	0	01:08	0.93	1.04	1.00
Pipe_-_(153)_(RYCB)	CONDUIT	0.022	0	01:09	0.53	0.43	1.00
Pipe_-_(154)_(RYCB)	CONDUIT	0.023	0	01:07	0.55	0.54	1.00
Pipe_-_(155)_(RYCB)	CONDUIT	0.029	0	01:06	0.64	0.68	1.00
Pipe_-_(156)_(1)_(RYCB)	CONDUIT	0.068	0	01:08	1.38	1.62	1.00
Pipe_-_(156)_(RYCB)	CONDUIT	0.034	0	01:11	0.70	0.82	1.00
Pipe_-_(157)_(RYCB)	CONDUIT	0.074	0	01:09	1.52	1.77	1.00
Pipe_-_(159)_(RYCB)	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
Pipe_-_(16)_(RYCB)	CONDUIT	0.086	0	01:09	1.75	2.07	1.00
Pipe_-_(160)_(RYCB)	CONDUIT	0.000	0	00:00	0.00	0.00	0.33
Pipe_-_(161)_(RYCB)	CONDUIT	0.009	0	01:05	0.27	0.21	1.00
Pipe_-_(162)_(RYCB)	CONDUIT	0.011	0	01:07	0.30	0.26	1.00
Pipe_-_(164)_(RYCB)	CONDUIT	0.077	0	01:10	1.57	1.84	1.00
Pipe_-_(165)_(RYCB)	CONDUIT	0.020	0	01:09	0.40	0.47	1.00
Pipe_-_(17)_(RYCB)	CONDUIT	0.050	0	01:09	1.11	1.13	1.00
Pipe_-_(19)_(RYCB)	CONDUIT	0.072	0	01:10	1.47	1.71	1.00
Pipe_-_(2)_(RYCB)	CONDUIT	0.071	0	01:11	1.50	1.20	0.93
Pipe_-_(22)_(RYCB)	CONDUIT	0.049	0	01:11	1.01	1.17	1.00
Pipe_-_(23)_(RYCB)	CONDUIT	0.075	0	01:11	1.53	1.79	1.00
Pipe_-_(24)_(RYCB)	CONDUIT	0.077	0	01:06	1.56	1.82	1.00
Pipe_-_(25)_(RYCB)	CONDUIT	0.068	0	01:11	1.39	1.63	1.00
Pipe_-_(27)_(RYCB)	CONDUIT	0.075	0	01:09	1.53	1.79	1.00
Pipe_-_(73)_(RYCB)	CONDUIT	0.092	0	01:11	1.87	2.19	1.00
Pipe_-_(74)_(RYCB)	CONDUIT	0.054	0	01:07	1.28	1.28	1.00
Pipe_-_(77)_(RYCB)	CONDUIT	0.051	0	01:10	1.04	1.22	1.00
Pipe_-_(87)_(RYCB)	CONDUIT	0.032	0	01:07	0.71	0.76	1.00
Pipe_-_(88)_(RYCB)	CONDUIT	0.032	0	01:07	0.65	0.76	1.00
Pipe_-_(89)_(RYCB)	CONDUIT	0.013	0	01:08	0.34	0.32	1.00
Pipe_-_(9)_(RYCB)	CONDUIT	0.094	0	01:10	1.92	2.23	1.00
Pipe_-_(90)_(RYCB)	CONDUIT	0.026	0	01:07	0.87	0.63	1.00
Pipe_-_(93)_(RYCB)	CONDUIT	0.016	0	01:08	0.42	0.38	1.00
Pipe_-_(94)_(RYCB)	CONDUIT	0.021	0	01:07	0.50	0.50	1.00
Pipe_-_(95)_(RYCB)	CONDUIT	0.023	0	01:05	0.50	0.55	1.00
Pipe_-_(96)_(RYCB)	CONDUIT	0.049	0	01:03	1.12	0.78	1.00
Pipe_-_(98)_(RYCB)	CONDUIT	0.036	0	01:03	0.73	0.85	1.00
Pipe_-_(99)_(RYCB)	CONDUIT	0.028	0	01:13	0.66	0.67	1.00
STM-23_(STM)	CONDUIT	0.112	0	01:16	1.02	0.78	0.65
STM-24_(STM)	CONDUIT	0.056	0	01:14	0.52	0.39	0.69
STM-27_(STM)	CONDUIT	0.017	0	01:11	0.41	0.36	1.00
STM-28_(STM)	CONDUIT	0.056	0	01:13	1.22	1.46	0.89
STM-34_(1)_(1)_(STM)	CONDUIT	3.860	0	01:16	2.23	1.20	0.86
STM-34_(1)_(STM)	CONDUIT	3.792	0	01:15	1.89	1.31	0.89
STM-34_(STM)	CONDUIT	3.741	0	01:15	1.83	1.43	0.91
STM-35_(STM)	CONDUIT	3.849	0	01:16	2.01	1.22	1.00
STM-36_(STM)	CONDUIT	3.943	0	01:16	1.96	1.05	1.00
STM-37_(STM)	CONDUIT	3.940	0	01:16	1.72	1.09	1.00
STM-38_(STM)	CONDUIT	3.935	0	01:16	1.74	1.09	1.00
STM-81_(STM)	CONDUIT	0.068	0	01:12	1.39	1.72	1.00
STM-82_(STM)	CONDUIT	0.058	0	01:14	1.26	1.38	0.89
STM-83_(STM)	CONDUIT	0.051	0	01:12	1.19	0.86	1.00
CB-02	ORIFICE	0.026	0	01:12			1.00
CB-03	ORIFICE	0.031	0	01:12			1.00
CB-04	ORIFICE	0.027	0	01:11			1.00
CB-05	ORIFICE	0.027	0	01:11			1.00
CB-06	ORIFICE	0.032	0	01:10			1.00
CB-08	ORIFICE	0.032	0	01:15			1.00
CB-09	ORIFICE	0.027	0	01:14			1.00
CB-10	ORIFICE	0.031	0	01:21			1.00
CB-11	ORIFICE	0.043	0	01:13			1.00
CB-12	ORIFICE	0.050	0	01:11			1.00
CB-13	ORIFICE	0.048	0	01:11			1.00
CB-14	ORIFICE	0.027	0	01:11			1.00
CB-15	ORIFICE	0.027	0	01:11			1.00
CB-16	ORIFICE	0.021	0	01:12			1.00
CB-17	ORIFICE	0.027	0	01:11			1.00
CB-18	ORIFICE	0.056	0	01:12			1.00
CB-19	ORIFICE	0.071	0	01:15			1.00
CB-20	ORIFICE	0.036	0	01:13			1.00
CB-21	ORIFICE	0.035	0	01:13			1.00
CB-23	ORIFICE	0.049	0	01:10			1.00
CB-24	ORIFICE	0.049	0	01:10			1.00
CB-25	ORIFICE	0.009	0	01:10			0.27
CB-26	ORIFICE	0.004	0	01:10			0.17
CB-27	ORIFICE	0.068	0	01:13			1.00
CB-28	ORIFICE	0.068	0	01:13			1.00
CB-30	ORIFICE	0.087	0	01:10			1.00
CB-31	ORIFICE	0.109	0	01:11			1.00
CB-32	ORIFICE	0.040	0	01:13			1.00
CB-33	ORIFICE	0.059	0	01:13			1.00
CB-34	ORIFICE	0.049	0	01:13			1.00
CB-35	ORIFICE	0.049	0	01:13			1.00
CB-36	ORIFICE	0.036	0	01:10			1.00
CB-37	ORIFICE	0.049	0	01:10			1.00
CB-40	ORIFICE	0.047	0	01:11			1.00
CB-41	ORIFICE	0.049	0	01:10			1.00

CB-42	ORIFICE	0.032	0	01:12	1.00
CB-43	ORIFICE	0.036	0	01:13	1.00
CB-44	ORIFICE	0.032	0	01:11	1.00
CB-45	ORIFICE	0.021	0	01:11	1.00
CB-46	ORIFICE	0.032	0	01:11	1.00
CB-47	ORIFICE	0.026	0	01:11	1.00
CB-48	ORIFICE	0.028	0	01:14	1.00
CB-49	ORIFICE	0.027	0	01:13	1.00
CB-50	ORIFICE	0.048	0	01:11	1.00
CB-51	ORIFICE	0.047	0	01:11	1.00
CB-52	ORIFICE	0.051	0	01:10	1.00
CB-53	ORIFICE	0.050	0	01:15	1.00
CB-54	ORIFICE	0.049	0	01:15	1.00
CB-55	ORIFICE	0.046	0	01:10	1.00
CB-56	ORIFICE	0.046	0	01:10	1.00
CB-57	ORIFICE	0.050	0	01:12	1.00
OR-02	ORIFICE	0.027	0	01:11	1.00
OR-03	ORIFICE	0.031	0	01:12	1.00
OR-04	ORIFICE	0.027	0	01:11	1.00
OR-05	ORIFICE	0.027	0	01:11	1.00
OR-06	ORIFICE	0.006	0	01:10	0.21
OR-08	ORIFICE	0.032	0	01:02	
OR-09	ORIFICE	0.028	0	01:01	
OR1	ORIFICE	0.006	0	01:09	1.00
OR-10	ORIFICE	0.031	0	01:22	
OR-11	ORIFICE	0.060	0	01:03	
OR-12	ORIFICE	0.050	0	01:01	
OR-13	ORIFICE	0.048	0	01:11	
OR-14	ORIFICE	0.029	0	01:01	
OR-15	ORIFICE	0.029	0	01:01	
OR-16	ORIFICE	0.023	0	01:01	
OR-17	ORIFICE	0.028	0	01:01	
OR-18	ORIFICE	0.062	0	01:04	
OR-19	ORIFICE	0.071	0	01:15	
OR2	ORIFICE	0.006	0	01:09	0.21
OR-20	ORIFICE	0.036	0	01:01	
OR-21	ORIFICE	0.035	0	01:01	
OR-23	ORIFICE	0.049	0	01:11	
OR-24	ORIFICE	0.049	0	01:11	
OR-25	ORIFICE	0.009	0	01:10	
OR-26	ORIFICE	0.004	0	01:10	0.18
OR-27	ORIFICE	0.068	0	01:13	
OR-28	ORIFICE	0.068	0	01:13	
OR-30	ORIFICE	0.087	0	01:10	
OR-31	ORIFICE	0.043	0	01:10	0.81
OR-32	ORIFICE	0.069	0	01:31	
OR-33	ORIFICE	0.050	0	01:05	
OR-34	ORIFICE	0.049	0	01:14	
OR-35	ORIFICE	0.049	0	01:14	
OR-36	ORIFICE	0.037	0	01:01	
OR-37	ORIFICE	0.050	0	01:02	
OR-40	ORIFICE	0.048	0	01:10	
OR-41	ORIFICE	0.056	0	01:05	
OR-42	ORIFICE	0.034	0	01:01	
OR-43	ORIFICE	0.058	0	01:02	
OR-44	ORIFICE	0.032	0	01:02	
OR-45	ORIFICE	0.023	0	01:01	
OR-46	ORIFICE	0.033	0	01:01	
OR-47	ORIFICE	0.027	0	01:01	
OR-48	ORIFICE	0.028	0	01:01	
OR-49	ORIFICE	0.027	0	01:01	
OR-50	ORIFICE	0.048	0	01:12	
OR-51	ORIFICE	0.047	0	01:12	
OR-52	ORIFICE	0.052	0	01:10	
OR-53	ORIFICE	0.050	0	01:15	
OR-54	ORIFICE	0.049	0	01:15	
OR-55	ORIFICE	0.046	0	01:10	
OR-56	ORIFICE	0.046	0	01:10	
OR-57	ORIFICE	0.050	0	01:12	
PH4_ICD150	ORIFICE	0.008	0	01:10	1.00
PH4_ICD151	ORIFICE	0.009	0	01:10	1.00
PH4_ICD153	ORIFICE	0.007	0	01:10	1.00
PH4_ICD154	ORIFICE	0.008	0	01:10	1.00
PH4_ICD155	ORIFICE	0.006	0	01:10	1.00
PH4_ICD156	ORIFICE	0.006	0	01:10	1.00
PH4_ICD158	ORIFICE	0.007	0	01:10	1.00
PH4_ICD20	ORIFICE	0.008	0	01:06	1.00
PH4_ICD21	ORIFICE	0.007	0	01:12	1.00
PH4_ICD22	ORIFICE	0.012	0	01:22	1.00
PH4_ICD23	ORIFICE	0.011	0	01:11	1.00
PH4_ICD24	ORIFICE	0.013	0	01:30	1.00
PH4_ICD50	ORIFICE	0.006	0	01:10	1.00
PH4_ICD51	ORIFICE	0.006	0	01:10	1.00
PH4_ICD52	ORIFICE	0.006	0	01:10	1.00
PH4_ICD53	ORIFICE	0.006	0	01:10	1.00
PH4_ICD54	ORIFICE	0.008	0	01:10	1.00
PH4_ICD55	ORIFICE	0.006	0	01:10	1.00
PH4_ICD56	ORIFICE	0.008	0	01:11	1.00
PH4_ICD57	ORIFICE	0.006	0	01:11	1.00
PH4_ICD58	ORIFICE	0.012	0	01:03	1.00
PH4_ICD59	ORIFICE	0.012	0	01:03	1.00
PH4_ICD60	ORIFICE	0.007	0	01:03	1.00
PH4_ICD61	ORIFICE	0.009	0	01:03	1.00
PH4_ICD62	ORIFICE	0.012	0	01:02	1.00
PH4_ICD63	ORIFICE	0.012	0	01:02	1.00
PH4_ICD64	ORIFICE	0.012	0	01:02	1.00
PH4_ICD65	ORIFICE	0.012	0	01:02	1.00
PH4_ICD66	ORIFICE	0.007	0	01:06	1.00
PH4_ICD67	ORIFICE	0.006	0	01:06	1.00
PH4_ICD68	ORIFICE	0.011	0	01:06	1.00
PH4_ICD69	ORIFICE	0.011	0	01:06	1.00
PH4_ICD70	ORIFICE	0.008	0	01:12	1.00
PH4_ICD71	ORIFICE	0.008	0	01:12	1.00
PH4_ICD72	ORIFICE	0.010	0	01:11	1.00
PH4_ICD73	ORIFICE	0.010	0	01:11	1.00
PH4_ICD74	ORIFICE	0.022	0	01:11	1.00
PH4_ICD75	ORIFICE	0.022	0	01:11	1.00
PH4_ICD80	ORIFICE	0.008	0	01:11	1.00
PH4_ICD81	ORIFICE	0.006	0	01:11	1.00
PH4_ST1	ORIFICE	0.064	0	01:10	1.00
PH4_ST2	ORIFICE	0.059	0	01:10	1.00
PH4_ST3	ORIFICE	0.053	0	01:10	1.00
RYCB-01	ORIFICE	0.027	0	01:12	1.00
RYCB-02	ORIFICE	0.047	0	01:11	1.00

RYCB-03	ORIFICE	0.056	0	01:13	1.00
RYCB-04	ORIFICE	0.058	0	01:13	1.00
RYCB-06	ORIFICE	0.128	0	01:10	1.00
RYCB-07	ORIFICE	0.150	0	01:11	1.00
RYCB-10	ORIFICE	0.071	0	01:14	1.00
RYCB-18	ORIFICE	0.134	0	01:12	1.00
RYCB-22	ORIFICE	0.055	0	01:13	1.00
RYCB-29	ORIFICE	0.053	0	01:10	1.00
RYCB-38	ORIFICE	0.044	0	01:11	1.00
RYCB-39	ORIFICE	0.053	0	01:12	1.00
B2-Out	DUMMY	0.855	0	01:14	
B4-Out	DUMMY	0.188	0	01:10	
PH4_ICD78	DUMMY	0.011	0	01:10	
PH4_ICD79	DUMMY	0.011	0	01:10	
PH4_ICD82	DUMMY	0.003	0	01:10	
PH4_ICD83	DUMMY	0.003	0	01:10	
PH4_ICD84	DUMMY	0.005	0	01:10	
PH4_ICD85	DUMMY	0.005	0	01:10	
PH4_ICD86	DUMMY	0.004	0	01:10	
PH4_ICD87	DUMMY	0.004	0	01:10	
PH4_ICD88	DUMMY	0.006	0	01:10	
PH4_ICD89	DUMMY	0.006	0	01:10	
PH4_ICD90	DUMMY	0.006	0	01:10	
PH4_ICD91	DUMMY	0.006	0	01:10	
PH4_ICD92	DUMMY	0.004	0	01:10	
PH4_ICD93	DUMMY	0.004	0	01:10	

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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	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1_(STM)	1.00	0.02	0.00	0.00	0.05	0.00	0.00	0.93	0.00	0.00
10	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10_(STM)	1.00	0.02	0.00	0.00	0.41	0.00	0.00	0.56	0.00	0.00
11	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11_(STM)	1.00	0.02	0.00	0.00	0.15	0.00	0.00	0.83	0.00	0.00
12	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
13	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13_(STM)	1.00	0.02	0.00	0.00	0.95	0.00	0.00	0.03	0.03	0.00
14	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14_(STM)	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.01	0.00	0.00
15	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15_(10)_(STM)	1.00	0.02	0.00	0.00	0.11	0.02	0.00	0.85	0.00	0.00
15_(11)_(STM)	1.00	0.02	0.00	0.00	0.41	0.00	0.00	0.57	0.00	0.00
15_(12)_(STM)	1.00	0.02	0.00	0.00	0.08	0.00	0.00	0.90	0.00	0.00
15_(13)_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
15_(14)_(STM)	1.00	0.02	0.00	0.00	0.10	0.08	0.00	0.80	0.00	0.00
15_(15)_(STM)	1.00	0.02	0.00	0.00	0.32	0.04	0.00	0.62	0.00	0.00
15_(16)_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
15_(19)_(STM)	1.00	0.02	0.00	0.00	0.01	0.00	0.00	0.97	0.00	0.00
15_(20)_(STM)	1.00	0.02	0.00	0.00	0.16	0.00	0.00	0.82	0.10	0.00
15_(21)_(STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
15_(22)_(STM)	1.00	0.02	0.00	0.00	0.38	0.00	0.00	0.60	0.09	0.00
15_(3)_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.93	0.00	0.00
15_(4)_(STM)	1.00	0.02	0.00	0.00	0.06	0.00	0.00	0.92	0.00	0.00
15_(5)_(STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
15_(9)_(STM)	1.00	0.02	0.00	0.00	0.21	0.00	0.00	0.77	0.00	0.00
16	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	1.00	0.01	0.85	0.00	0.14	0.00	0.00	0.00	0.98	0.00
18_1	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18_2	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2_(STM)	1.00	0.02	0.00	0.00	0.09	0.00	0.00	0.89	0.00	0.00
20	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00

22	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3_(STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
30	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	1.00	0.85	0.00	0.00	0.04	0.00	0.00	0.11	0.96	0.00
36	1.00	0.01	0.84	0.00	0.13	0.01	0.00	0.00	0.00	0.00
37	1.00	0.01	0.84	0.00	0.13	0.02	0.00	0.00	0.95	0.00
38	1.00	0.01	0.84	0.00	0.13	0.02	0.00	0.00	0.95	0.00
39	1.00	0.85	0.00	0.00	0.01	0.00	0.00	0.14	0.00	0.00
4	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4_(STM)	1.00	0.02	0.00	0.00	0.06	0.00	0.00	0.92	0.00	0.00
40	1.00	0.01	0.85	0.00	0.14	0.00	0.00	0.00	0.98	0.00
41	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
50	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6_(STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.00	0.00
60	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7_(1)_(STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
7_(STM)	1.00	0.02	0.00	0.00	0.05	0.00	0.00	0.93	0.00	0.00
8	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8_(STM)	1.00	0.02	0.00	0.00	0.17	0.05	0.00	0.76	0.00	0.00
9	1.00	0.95	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9_(STM)	1.00	0.02	0.00	0.00	0.20	0.00	0.00	0.78	0.00	0.00
C1	1.00	0.41	0.10	0.00	0.44	0.05	0.00	0.00	0.12	0.00
C1_1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1_2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C10	1.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11	1.00	0.49	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	0.02	0.40	0.00	0.57	0.02	0.00	0.00	0.95	0.00
C13	1.00	0.02	0.00	0.00	0.61	0.37	0.00	0.00	0.11	0.00
C14	1.00	0.42	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.02	0.04	0.00	0.92	0.03	0.00	0.00	0.11	0.00
C16	1.00	0.58	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C17	1.00	0.02	0.04	0.00	0.93	0.02	0.00	0.00	0.09	0.00
C18	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18_2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18_3	1.00	0.02	0.04	0.00	0.91	0.03	0.00	0.00	0.11	0.00
C18_4	1.00	0.02	0.00	0.00	0.80	0.18	0.00	0.00	0.11	0.00
C18_5	1.00	0.02	0.00	0.00	0.37	0.61	0.00	0.00	0.86	0.00
C18_6	1.00	0.02	0.00	0.00	0.73	0.25	0.00	0.00	0.00	0.00
C18_7	1.00	0.05	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18_8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18_9	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C19	1.00	0.02	0.00	0.00	0.35	0.64	0.00	0.00	0.95	0.00
C2	1.00	0.52	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2_1	1.00	0.05	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2_2	1.00	0.02	0.03	0.00	0.93	0.02	0.00	0.00	0.09	0.00
C20	1.00	0.02	0.73	0.00	0.25	0.00	0.00	0.00	0.98	0.00
C21	1.00	0.02	0.00	0.00	0.42	0.56	0.00	0.00	0.05	0.00
C22	1.00	0.40	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C23	1.00	0.02	0.01	0.00	0.51	0.46	0.00	0.00	0.22	0.00
C24	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C25	1.00	0.51	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C26	1.00	0.51	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C27	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C27_1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C27_2	1.00	0.57	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C28	1.00	0.57	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C29	1.00	0.56	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C3_1	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00
C3_2	1.00	0.02	0.03	0.00	0.95	0.00	0.00	0.00	0.96	0.00
C30	1.00	0.02	0.04	0.00	0.92	0.03	0.00	0.00	0.10	0.00
C31	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C31_1	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
C31_2	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C32	1.00	0.02	0.04	0.00	0.92	0.03	0.00	0.00	0.10	0.00
C33	1.00	0.02	0.03	0.00	0.93	0.02	0.00	0.00	0.10	0.00
C34	1.00	0.02	0.03	0.00	0.93	0.02	0.00	0.00	0.10	0.00
C35	1.00	0.58	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C36	1.00	0.60	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C37	1.00	0.60	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C38	1.00	0.45	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C39	1.00	0.45	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4_1	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00
C4_2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4_3	1.00	0.05	0.01	0.00	0.03	0.00	0.00	0.92	0.01	0.00
C4_4	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C40	1.00	0.61	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C41	1.00	0.02	0.04	0.00	0.92	0.03	0.00	0.00	0.10	0.00
C42	1.00	0.02	0.04	0.00	0.91	0.04	0.00	0.00	0.10	0.00
C43	1.00	0.48	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C44	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00
C45	1.00	0.05	0.00	0.00	0.90	0.05	0.00	0.00	0.00	0.00
C46	1.00	0.63	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	0.02	0.04	0.00	0.94	0.01	0.00	0.00	0.10	0.00

C48	1.00	0.02	0.04	0.00	0.92	0.03	0.00	0.00	0.10	0.00
C49	1.00	0.02	0.01	0.00	0.91	0.07	0.00	0.00	0.12	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5_1	1.00	0.04	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5_2	1.00	0.02	0.02	0.00	0.96	0.00	0.00	0.00	0.96	0.00
C50	1.00	0.99	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
C50_1	1.00	0.06	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C50_3	1.00	0.02	0.04	0.00	0.93	0.02	0.00	0.00	0.10	0.00
C50_4	1.00	0.02	0.68	0.00	0.19	0.11	0.00	0.00	0.87	0.00
C51	1.00	0.02	0.01	0.00	0.89	0.09	0.00	0.00	0.12	0.00
C52	1.00	0.02	0.00	0.00	0.88	0.10	0.00	0.00	0.13	0.00
C53	1.00	0.02	0.00	0.00	0.88	0.10	0.00	0.00	0.13	0.00
C54	1.00	0.52	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	0.02	0.01	0.00	0.90	0.08	0.00	0.00	0.12	0.00
C56	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C57	1.00	0.40	0.11	0.00	0.46	0.03	0.00	0.00	0.12	0.00
C58	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58_1	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
C58_2	1.00	0.02	0.03	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C59_1	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
C59_2	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6_1	1.00	0.01	0.00	0.00	0.90	0.09	0.00	0.00	0.07	0.00
C6_2	1.00	0.01	0.01	0.00	0.89	0.09	0.00	0.00	0.14	0.00
C60	1.00	0.05	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C61_1	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
C61_2	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C62	1.00	0.47	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C63_1	1.00	0.05	0.01	0.00	0.03	0.00	0.00	0.92	0.01	0.00
C63_2	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C64	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C65_1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C65_2	1.00	0.60	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C66_1	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
C66_2	1.00	0.02	0.04	0.00	0.95	0.00	0.00	0.00	0.95	0.00
C67	1.00	0.49	0.49	0.00	0.00	0.00	0.02	0.00	0.00	0.00
C68	1.00	0.42	0.52	0.00	0.00	0.00	0.06	0.00	0.00	0.00
C69	1.00	0.58	0.39	0.00	0.01	0.00	0.02	0.00	0.00	0.00
C7	1.00	0.01	0.00	0.00	0.95	0.04	0.00	0.00	0.95	0.00
C8	1.00	0.01	0.00	0.00	0.57	0.41	0.00	0.00	0.09	0.00
C9	1.00	0.34	0.07	0.00	0.56	0.02	0.00	0.00	0.13	0.00
PH4_100-168	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
PH4_102-100	1.00	0.01	0.00	0.00	0.54	0.00	0.00	0.46	0.09	0.00
PH4_104-102	1.00	0.01	0.00	0.00	0.06	0.00	0.00	0.93	0.00	0.00
PH4_106-104	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_108-106	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_110-108	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_202-166	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
PH4_204-202	1.00	0.01	0.00	0.00	0.59	0.00	0.00	0.40	0.09	0.00
PH4_206-204	1.00	0.01	0.00	0.00	0.06	0.00	0.00	0.93	0.00	0.00
PH4_208-206	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_210-208	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_212-210	1.00	0.01	0.00	0.00	0.06	0.00	0.00	0.93	0.01	0.00
PH4_302-162	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.95	0.00	0.00
PH4_304-302	1.00	0.01	0.00	0.00	0.47	0.00	0.00	0.52	0.08	0.00
PH4_306-304	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
PH4_308-306	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
PH4_310-308	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
PH4_312-310	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_402-508	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00

PH4_404-402	1.00	0.01	0.00	0.00	0.07	0.00	0.00	0.92	0.00	0.00
PH4_406-404	1.00	0.01	0.00	0.00	0.04	0.00	0.00	0.95	0.00	0.00
PH4_410-408	1.00	0.01	0.00	0.00	0.06	0.00	0.00	0.93	0.01	0.00
PH4_412-410	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00
PH4_414-412	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.97	0.01	0.00
PH4_502-162	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
PH4_504-502	1.00	0.01	0.05	0.00	0.94	0.00	0.00	0.00	0.84	0.00
PH4_506-504	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.31	0.00
PH4_508-506	1.00	0.01	0.00	0.00	0.07	0.00	0.00	0.92	0.00	0.00
PH4_510-512	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.01	0.00
PH4_512-406	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
PH4_602-408	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
PH4_604-602	1.00	0.01	0.00	0.00	0.07	0.00	0.00	0.92	0.03	0.00
PH4_STM-71_(STM)	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
Pipe_-_(1)_(RYCB)_1	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
Pipe_-_(10)_(RYCB)	1.00	0.04	0.00	0.00	0.02	0.00	0.00	0.94	0.00	0.00
Pipe_-_(100)_(RYCB)	1.00	0.04	0.00	0.00	0.08	0.00	0.00	0.87	0.94	0.00
Pipe_-_(101)_(RYCB)	1.00	0.05	0.00	0.00	0.03	0.00	0.00	0.92	0.00	0.00
Pipe_-_(103)_(1)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.91	0.00	0.00
Pipe_-_(103)_(RYCB)	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.94	0.00
Pipe_-_(109)_(RYCB)	1.00	0.05	0.00	0.00	0.02	0.00	0.00	0.93	0.00	0.00
Pipe_-_(11)_(RYCB)	1.00	0.03	0.00	0.00	0.15	0.00	0.00	0.82	0.04	0.00
Pipe_-_(110)_(RYCB)	1.00	0.05	0.00	0.00	0.03	0.00	0.00	0.91	0.01	0.00
Pipe_-_(111)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.90	0.01	0.00
Pipe_-_(114)_(RYCB)	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
Pipe_-_(117)_(RYCB)	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
Pipe_-_(118)_(RYCB)	1.00	0.05	0.00	0.00	0.03	0.00	0.00	0.92	0.00	0.00
Pipe_-_(119)_(RYCB)	1.00	0.89	0.02	0.00	0.09	0.00	0.00	0.00	0.94	0.00
Pipe_-_(120)_(RYCB)	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.93	0.00	0.00
Pipe_-_(121)_(RYCB)	1.00	0.04	0.01	0.00	0.04	0.00	0.00	0.91	0.02	0.00
Pipe_-_(122)_(RYCB)	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.93	0.00	0.00
Pipe_-_(123)_(RYCB)	1.00	0.05	0.00	0.00	0.04	0.00	0.00	0.91	0.00	0.00
Pipe_-_(124)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.91	0.00	0.00
Pipe_-_(125)_(RYCB)	1.00	0.04	0.00	0.00	0.08	0.00	0.00	0.87	0.03	0.00
Pipe_-_(126)_(RYCB)	1.00	0.04	0.00	0.00	0.03	0.00	0.00	0.93	0.00	0.00
Pipe_-_(127)_(RYCB)	1.00	0.04	0.00	0.00	0.02	0.00	0.00	0.94	0.00	0.00
Pipe_-_(128)_(RYCB)	1.00	0.04	0.00	0.00	0.03	0.00	0.00	0.93	0.00	0.00
Pipe_-_(129)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.90	0.01	0.00
Pipe_-_(130)_(RYCB)	1.00	0.04	0.00	0.00	0.06	0.00	0.00	0.90	0.01	0.00
Pipe_-_(131)_(RYCB)	1.00	0.04	0.00	0.00	0.04	0.00	0.00	0.91	0.00	0.00
Pipe_-_(132)_(RYCB)	1.00	0.05	0.00	0.00	0.04	0.00	0.00	0.91	0.00	0.00
Pipe_-_(133)_(RYCB)	1.00	0.04	0.00	0.00	0.09	0.00	0.00	0.86	0.93	0.00
Pipe_-_(134)_(RYCB)	1.00	0.04	0.01	0.00	0.09	0.00	0.00	0.86	0.95	0.00
Pipe_-_(137)_(RYCB)	1.00	0.04	0.00	0.00	0.06	0.00	0.00	0.89	0.00	0.00
Pipe_-_(138)_(RYCB)	1.00	0.04	0.00	0.00	0.06	0.00	0.00	0.89	0.00	0.00
Pipe_-_(139)_(RYCB)	1.00	0.05	0.00	0.00	0.03	0.00	0.00	0.92	0.00	0.00
Pipe_-_(14)_(RYCB)	1.00	0.05	0.00	0.00	0.02	0.00	0.00	0.93	0.00	0.00
Pipe_-_(140)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.90	0.01	0.00
Pipe_-_(141)_(RYCB)	1.00	0.04	0.00	0.00	0.04	0.00	0.00	0.91	0.00	0.00
Pipe_-_(142)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.91	0.00	0.00
Pipe_-_(143)_(RYCB)	1.00	0.04	0.00	0.00	0.05	0.00	0.00	0.90	0.00	0.00
Pipe_-_(144)_(RYCB)	1.00	0.03	0.01	0.00	0.09	0.00	0.00	0.87	0.04	0.00
Pipe_-_(145)_(RYCB)	1.00	0.05	0.00	0.00	0.02	0.00	0.00	0.93	0.00	0.00
Pipe_-_(146)_(RYCB)	1.00	0.05	0.00	0.00	0.02	0.00	0.00	0.93	0.00	0.00
Pipe_-_(147)_(RYCB)	1.00	0.05	0.00	0.00	0.04	0.00	0.00	0.91	0.01	0.00
Pipe_-_(148)_(RYCB)	1.00	0.04	0.00	0.00	0.11	0.00	0.00	0.85	0.93	0.00
Pipe_-_(149)_(RYCB)	1.00	0.04	0.00	0.00	0.11	0.00	0.00	0.85	0.92	0.00
Pipe_-_(15)_(RYCB)	1.00	0.03	0.00	0.00	0.92	0.05	0.00	0.00	0.00	0.00
Pipe_-_(150)_(RYCB)	1.00	0.05	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
Pipe_-_(151)_(RYCB)	1.00	0.05	0.00	0.00	0.02	0.00	0.00	0.93	0.00	0.00

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  Pipe_-_(152)_(RYCB)     1.00   0.05  0.00  0.00  0.02  0.00  0.00  0.93  0.00
0.00
  Pipe_-_(153)_(RYCB)     1.00   0.05  0.89  0.00  0.06  0.00  0.00  0.00  0.95
0.00
  Pipe_-_(154)_(RYCB)     1.00   0.05  0.00  0.00  0.03  0.00  0.00  0.92  0.00
0.00
  Pipe_-_(155)_(RYCB)     1.00   0.04  0.00  0.00  0.03  0.00  0.00  0.93  0.00
0.00
  Pipe_-_(156)_(1)_(RYCB)    1.00   0.02  0.00  0.00  0.05  0.00  0.00  0.94  0.00
0.00
  Pipe_-_(156)_(RYCB)     1.00   0.02  0.87  0.00  0.11  0.00  0.00  0.00  0.94
0.00
  Pipe_-_(157)_(RYCB)     1.00   0.04  0.00  0.00  0.01  0.00  0.00  0.96  0.00
0.00
  Pipe_-_(159)_(RYCB)     1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(16)_(RYCB)      1.00   0.04  0.00  0.00  0.21  0.00  0.00  0.75  0.88
0.00
  Pipe_-_(160)_(RYCB)     1.00   0.95  0.05  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(161)_(RYCB)     1.00   0.04  0.00  0.00  0.07  0.00  0.00  0.89  0.94
0.00
  Pipe_-_(162)_(RYCB)     1.00   0.85  0.05  0.00  0.10  0.00  0.00  0.00  0.93
0.00
  Pipe_-_(164)_(RYCB)     1.00   0.04  0.00  0.00  0.03  0.00  0.00  0.93  0.00
0.00
  Pipe_-_(165)_(RYCB)     1.00   0.04  0.00  0.00  0.08  0.00  0.00  0.87  0.94
0.00
  Pipe_-_(17)_(RYCB)      1.00   0.04  0.00  0.00  0.01  0.00  0.00  0.95  0.00
0.00
  Pipe_-_(19)_(RYCB)      1.00   0.04  0.00  0.00  0.13  0.00  0.00  0.83  0.04
0.00
  Pipe_-_(2)_(RYCB)       1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00
0.00
  Pipe_-_(22)_(RYCB)      1.00   0.27  0.59  0.00  0.15  0.00  0.00  0.00  0.93
0.00
  Pipe_-_(23)_(RYCB)      1.00   0.32  0.52  0.00  0.16  0.00  0.01  0.00  0.92
0.00
  Pipe_-_(24)_(RYCB)      1.00   0.04  0.00  0.00  0.12  0.00  0.00  0.84  0.02
0.00
  Pipe_-_(25)_(RYCB)      1.00   0.42  0.42  0.00  0.16  0.00  0.01  0.00  0.91
0.00
  Pipe_-_(27)_(RYCB)      1.00   0.04  0.00  0.00  0.14  0.00  0.00  0.82  0.05
0.00
  Pipe_-_(73)_(RYCB)      1.00   0.29  0.54  0.00  0.16  0.00  0.01  0.00  0.91
0.00
  Pipe_-_(74)_(RYCB)      1.00   0.04  0.00  0.00  0.95  0.00  0.00  0.00  0.02
0.00
  Pipe_-_(77)_(RYCB)      1.00   0.04  0.00  0.00  0.96  0.00  0.00  0.00  0.04
0.00
  Pipe_-_(87)_(RYCB)      1.00   0.05  0.00  0.00  0.05  0.00  0.00  0.91  0.01
0.00
  Pipe_-_(88)_(RYCB)      1.00   0.04  0.00  0.00  0.04  0.00  0.00  0.91  0.00
0.00
  Pipe_-_(89)_(RYCB)      1.00   0.04  0.00  0.00  0.03  0.00  0.00  0.92  0.00
0.00
  Pipe_-_(9)_(RYCB)       1.00   0.02  0.00  0.00  0.65  0.00  0.01  0.32  0.87
0.00
  Pipe_-_(90)_(RYCB)      1.00   0.05  0.00  0.00  0.95  0.00  0.00  0.00  0.03
0.00
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  Pipe_-_(93)_(RYCB)      1.00   0.05  0.00  0.00  0.02  0.00  0.00  0.93  0.00
0.00
  Pipe_-_(94)_(RYCB)      1.00   0.05  0.00  0.00  0.03  0.00  0.00  0.93  0.01
0.00
  Pipe_-_(95)_(RYCB)      1.00   0.04  0.00  0.00  0.09  0.00  0.00  0.86  0.94
0.00
  Pipe_-_(96)_(RYCB)      1.00   0.04  0.00  0.00  0.06  0.00  0.00  0.90  0.00
0.00
  Pipe_-_(98)_(RYCB)      1.00   0.03  0.80  0.00  0.17  0.00  0.00  0.00  0.91
0.00
  Pipe_-_(99)_(RYCB)      1.00   0.05  0.00  0.00  0.03  0.00  0.00  0.91  0.01
0.00
  STM-23_(STM)            1.00   0.02  0.00  0.00  0.00  0.00  0.00  0.98  0.00
0.00
  STM-24_(STM)            1.00   0.02  0.01  0.00  0.16  0.00  0.01  0.80  0.10
0.00
  STM-27_(STM)            1.00   0.04  0.01  0.00  0.03  0.00  0.00  0.92  0.00
0.00
  STM-28_(STM)            1.00   0.05  0.00  0.00  0.00  0.00  0.00  0.95  0.00
0.00
  STM-34_(1)_(1)_(STM)    1.00   0.02  0.00  0.00  0.93  0.00  0.00  0.05  0.00
0.00
  STM-34_(1)_(STM)        1.00   0.02  0.00  0.00  0.97  0.00  0.00  0.01  0.00
0.00
  STM-34_(STM)            1.00   0.02  0.00  0.00  0.97  0.00  0.00  0.01  0.00
0.00
  STM-35_(STM)            1.00   0.01  0.01  0.00  0.98  0.00  0.00  0.00  0.00
0.00
  STM-36_(STM)            1.00   0.00  0.00  0.00  1.00  0.00  0.00  0.00  0.00
0.00
  STM-37_(STM)            1.00   0.00  0.00  0.00  1.00  0.00  0.00  0.00  0.00
0.00
  STM-38_(STM)            1.00   0.00  0.00  0.00  1.00  0.00  0.00  0.00  0.00
0.00
  STM-81_(STM)            1.00   0.88  0.00  0.00  0.03  0.00  0.00  0.09  0.00
0.00
  STM-82_(STM)            1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00
0.00
  STM-83_(STM)            1.00   0.05  0.00  0.00  0.04  0.00  0.00  0.92  0.00
0.00


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

  ----------------------------------------------------------------------------
                                                            Hours        Hours
                         --------- Hours Full --------   Above Full   Capacity
  Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ----------------------------------------------------------------------------
  1_(STM)                     0.17      0.17      0.19       0.02        0.01
  10_(STM)                    0.35      0.36      0.36       0.01        0.35
  11_(STM)                    0.35      0.37      0.35       0.29        0.35
  12_(STM)                    0.01      0.39      0.01       0.39        0.01
  13_(STM)                    0.01      0.08      0.01       0.40        0.01
  14_(STM)                    0.01      0.01      0.01       0.01        0.01
  15_(10)_(STM)               0.30      0.30      0.30       0.01        0.30
  15_(11)_(STM)               0.32      0.32      0.33       0.19        0.24
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15_(12)_(STM)	0.01	0.01	0.07	0.01	0.01
15_(13)_(STM)	0.11	0.11	0.17	0.01	0.01
15_(14)_(STM)	0.31	0.31	0.33	0.01	0.26
15_(15)_(STM)	0.32	0.34	0.32	0.01	0.32
15_(16)_(STM)	0.20	0.34	0.20	0.02	0.20
15_(19)_(STM)	0.01	0.01	0.02	0.01	0.01
15_(20)_(STM)	0.02	0.02	0.18	0.01	0.01
15_(21)_(STM)	0.19	0.19	0.23	0.01	0.01
15_(22)_(STM)	0.23	0.23	0.31	0.01	0.01
15_(3)_(STM)	0.01	0.01	0.11	0.01	0.01
15_(4)_(STM)	0.01	0.10	0.01	0.23	0.01
15_(5)_(STM)	0.01	0.01	0.01	0.28	0.01
15_(9)_(STM)	0.26	0.26	0.29	0.01	0.01
2_(STM)	0.21	0.21	0.22	0.01	0.02
3_(STM)	0.15	0.15	0.20	0.01	0.01
4_(STM)	0.20	0.20	0.23	0.02	0.01
5_(STM)	0.15	0.19	0.15	0.01	0.15
6_(STM)	0.37	0.37	0.41	0.01	0.11
7_(1)_(STM)	0.33	0.43	0.34	0.40	0.30
7_(STM)	0.39	0.41	0.41	0.43	0.36
8_(STM)	0.34	0.34	0.36	0.22	0.26
9_(STM)	0.35	0.37	0.35	0.21	0.35
PH4_100-168	0.01	0.07	0.01	0.06	0.01
PH4_102-100	0.67	0.67	0.71	0.04	0.03
PH4_104-102	0.65	0.65	0.66	0.01	0.01
PH4_106-104	0.60	0.60	0.63	0.01	0.01
PH4_108-106	0.49	0.49	0.57	0.01	0.01
PH4_110-108	0.32	0.32	0.42	0.01	0.01
PH4_204-202	0.76	0.76	0.85	0.01	0.01
PH4_206-204	0.74	0.74	0.75	0.01	0.01
PH4_208-206	0.71	0.71	0.72	0.01	0.01
PH4_210-208	0.68	0.68	0.69	0.01	0.01
PH4_212-210	0.63	0.63	0.66	0.01	0.01
PH4_302-162	0.31	0.32	0.31	0.01	0.25
PH4_304-302	0.65	0.65	0.67	0.01	0.01
PH4_306-304	0.57	0.57	0.58	0.01	0.05
PH4_308-306	0.52	0.52	0.55	0.01	0.01
PH4_310-308	0.48	0.48	0.50	0.01	0.01
PH4_312-310	0.44	0.44	0.46	0.01	0.01
PH4_402-508	0.24	0.43	0.24	0.48	0.24
PH4_404-402	0.30	0.30	0.35	0.01	0.01
PH4_406-404	0.35	0.46	0.35	0.54	0.35
PH4_410-408	0.18	0.18	0.27	0.01	0.01
PH4_412-410	0.01	0.01	0.12	0.01	0.01
PH4_502-162	0.01	0.29	0.01	0.46	0.01
PH4_504-502	0.29	0.38	0.29	0.56	0.29
PH4_506-504	0.38	0.43	0.38	0.48	0.38
PH4_508-506	0.35	0.39	0.35	0.48	0.35
PH4_510-512	0.05	0.05	0.22	0.01	0.01
PH4_512-406	0.27	0.27	0.28	0.01	0.01
PH4_602-408	0.24	0.24	0.27	0.01	0.01
PH4_604-602	0.01	0.01	0.21	0.01	0.01
PH4_STM-71_(STM)	0.35	0.35	0.38	0.19	0.18
Pipe_-_(1)_(RYCB)_1	0.01	0.01	0.01	0.04	0.01
Pipe_-_(10)_(RYCB)	0.29	0.34	0.29	0.34	0.29
Pipe_-_(100)_(RYCB)	0.22	0.22	0.34	0.01	0.01
Pipe_-_(101)_(RYCB)	0.32	0.32	0.36	0.01	0.01

Pipe_-_(103)_(1)_(RYCB)	0.44	0.44	0.44	0.16	0.43
Pipe_-_(103)_(RYCB)	0.41	0.41	0.44	0.17	0.17
Pipe_-_(109)_(RYCB)	0.11	0.11	0.20	0.01	0.01
Pipe_-_(11)_(RYCB)	0.44	0.44	0.48	0.38	0.38
Pipe_-_(110)_(RYCB)	0.13	0.13	0.24	0.01	0.01
Pipe_-_(111)_(RYCB)	0.24	0.24	0.36	0.01	0.01
Pipe_-_(114)_(RYCB)	0.08	0.08	0.11	0.01	0.01
Pipe_-_(117)_(RYCB)	0.08	0.08	0.10	0.01	0.01
Pipe_-_(118)_(RYCB)	0.10	0.10	0.19	0.01	0.01
Pipe_-_(119)_(RYCB)	0.23	0.23	0.29	0.01	0.01
Pipe_-_(120)_(RYCB)	0.05	0.05	0.08	0.01	0.01
Pipe_-_(121)_(RYCB)	0.09	0.09	0.23	0.01	0.01
Pipe_-_(122)_(RYCB)	0.05	0.05	0.12	0.01	0.01
Pipe_-_(123)_(RYCB)	0.48	0.48	0.51	0.01	0.01
Pipe_-_(124)_(RYCB)	0.52	0.52	0.56	0.01	0.01
Pipe_-_(125)_(RYCB)	0.57	0.57	0.67	0.01	0.01
Pipe_-_(126)_(RYCB)	0.14	0.14	0.16	0.14	0.13
Pipe_-_(127)_(RYCB)	0.17	0.17	0.21	0.13	0.13
Pipe_-_(128)_(RYCB)	0.22	0.22	0.27	0.13	0.13
Pipe_-_(129)_(RYCB)	0.48	0.48	0.58	0.01	0.01
Pipe_-_(130)_(RYCB)	0.58	0.58	0.64	0.01	0.01
Pipe_-_(131)_(RYCB)	0.46	0.46	0.49	0.02	0.01
Pipe_-_(132)_(RYCB)	0.46	0.46	0.46	0.01	0.01
Pipe_-_(133)_(RYCB)	0.47	0.47	0.49	0.01	0.01
Pipe_-_(134)_(RYCB)	0.05	0.05	0.11	0.01	0.01
Pipe_-_(137)_(RYCB)	0.93	0.93	0.95	0.01	0.01
Pipe_-_(138)_(RYCB)	0.95	0.95	0.98	0.01	0.01
Pipe_-_(139)_(RYCB)	0.18	0.18	0.22	0.01	0.01
Pipe_-_(14)_(RYCB)	0.21	0.21	0.21	0.01	0.01
Pipe_-_(140)_(RYCB)	0.25	0.25	0.33	0.01	0.01
Pipe_-_(141)_(RYCB)	0.47	0.47	0.50	0.01	0.01
Pipe_-_(142)_(RYCB)	0.50	0.50	0.54	0.01	0.01
Pipe_-_(143)_(RYCB)	0.54	0.54	0.59	0.01	0.01
Pipe_-_(144)_(RYCB)	0.59	0.59	0.70	0.01	0.01
Pipe_-_(145)_(RYCB)	0.19	0.19	0.21	0.01	0.01
Pipe_-_(146)_(RYCB)	0.22	0.22	0.25	0.01	0.01
Pipe_-_(147)_(RYCB)	0.25	0.25	0.27	0.01	0.01
Pipe_-_(148)_(RYCB)	0.28	0.28	0.34	0.01	0.01
Pipe_-_(149)_(RYCB)	0.38	0.38	0.40	0.01	0.01
Pipe_-_(15)_(RYCB)	0.33	0.36	0.33	0.37	0.33
Pipe_-_(150)_(RYCB)	0.11	0.11	0.13	0.01	0.01
Pipe_-_(151)_(RYCB)	0.14	0.14	0.16	0.01	0.01
Pipe_-_(152)_(RYCB)	0.17	0.17	0.20	0.01	0.01
Pipe_-_(153)_(RYCB)	0.03	0.03	0.05	0.01	0.01
Pipe_-_(154)_(RYCB)	0.21	0.21	0.26	0.01	0.01
Pipe_-_(155)_(RYCB)	0.27	0.27	0.30	0.01	0.01
Pipe_-_(156)_(1)_(RYCB)	0.36	0.37	0.36	0.14	0.34
Pipe_-_(156)_(RYCB)	0.32	0.32	0.37	0.01	0.01
Pipe_-_(157)_(RYCB)	0.05	0.15	0.05	0.15	0.05
Pipe_-_(16)_(RYCB)	0.31	0.31	0.32	0.21	0.21
Pipe_-_(161)_(RYCB)	0.18	0.18	0.30	0.01	0.01
Pipe_-_(162)_(RYCB)	0.34	0.34	0.47	0.01	0.01
Pipe_-_(164)_(RYCB)	0.30	0.30	0.30	0.32	0.28
Pipe_-_(165)_(RYCB)	0.20	0.20	0.31	0.01	0.01
Pipe_-_(17)_(RYCB)	0.11	0.11	0.12	0.02	0.03
Pipe_-_(19)_(RYCB)	0.38	0.38	0.43	0.11	0.11
Pipe_-_(2)_(RYCB)	0.01	0.09	0.01	0.11	0.01

Pipe_-_(22)_(RYCB)	0.67	0.67	0.76	0.09	0.09
Pipe_-_(23)_(RYCB)	0.69	0.69	0.71	0.29	0.29
Pipe_-_(24)_(RYCB)	0.49	0.50	0.50	0.24	0.23
Pipe_-_(25)_(RYCB)	0.33	0.33	0.34	0.20	0.20
Pipe_-_(27)_(RYCB)	0.38	0.38	0.46	0.13	0.13
Pipe_-_(73)_(RYCB)	0.71	0.71	0.74	0.30	0.30
Pipe_-_(74)_(RYCB)	0.30	0.30	0.31	0.13	0.13
Pipe_-_(77)_(RYCB)	0.26	0.26	0.33	0.02	0.02
Pipe_-_(87)_(RYCB)	0.30	0.30	0.34	0.01	0.01
Pipe_-_(88)_(RYCB)	0.35	0.35	0.47	0.01	0.01
Pipe_-_(89)_(RYCB)	0.20	0.20	0.28	0.01	0.01
Pipe_-_(9)_(RYCB)	1.06	1.06	1.07	0.31	0.31
Pipe_-_(90)_(RYCB)	0.30	0.30	0.31	0.01	0.01
Pipe_-_(93)_(RYCB)	0.06	0.06	0.12	0.01	0.01
Pipe_-_(94)_(RYCB)	0.12	0.12	0.19	0.01	0.01
Pipe_-_(95)_(RYCB)	0.20	0.20	0.30	0.01	0.01
Pipe_-_(96)_(RYCB)	0.90	0.90	0.92	0.01	0.01
Pipe_-_(98)_(RYCB)	0.98	0.98	1.06	0.01	0.01
Pipe_-_(99)_(RYCB)	0.16	0.16	0.22	0.01	0.01
STM-27_(STM)	0.22	0.22	0.36	0.01	0.01
STM-28_(STM)	0.01	0.14	0.01	0.17	0.01
STM-34_(1)_(1)_(STM)	0.01	0.01	0.01	0.33	0.01
STM-34_(1)_(STM)	0.01	0.01	0.01	0.41	0.01
STM-34_(STM)	0.01	0.01	0.01	0.46	0.01
STM-35_(STM)	11.15	11.17	16.34	0.35	0.11
STM-36_(STM)	22.57	22.59	22.57	0.14	0.24
STM-37_(STM)	22.55	22.58	22.55	0.19	0.27
STM-38_(STM)	22.57	22.57	22.57	0.19	0.08
STM-81_(STM)	0.25	0.35	0.25	0.34	0.25
STM-82_(STM)	0.01	0.15	0.01	0.14	0.01
STM-83_(STM)	0.30	0.30	0.41	0.01	0.01

```
Analysis begun on:  Thu Oct 31 12:39:35 2024
Analysis ended on:  Thu Oct 31 12:39:45 2024
Total elapsed time: 00:00:10
```

Appendix D
Sanitary Sewer Design Sheets and Sanitary Calculations

SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons (Phase 4) A
Date: 10/31/2024
Input By: Brad Smith
Reviewed By:
Drawing Reference: 118224-GP-MD, 118224-SAN-MD

Legend:
Design Input by User
As-Built Input by User
Cumulative Cell
Calculated Design Cell Output
Calculated Annual Cell Output
Calculated Rare Cell Output
MOE - Design Guidelines for Sewage Works (2008)

Location				Demand																				Design Capacity							
				Residential Flow											Industrial / Commercial / Institutional (ICI) Flow						Extraneous Flow Area Method		Total Design Flow	Proposed Sewer Pipe Sizing / Design							
Street	Area ID	From MH	To MH	Singles	Semis / Towns	Apts	Park Area	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)	Commercial / Institutional Area (ha.)	Cumulative Commercial / Institutional Area (ha.)	Average Design Commercial / Institutional Flow (L/s)	Commercial / Institutional Peaking Factor	Cumulative ICI Area (ha.)	Peak Design ICI Flow Q (ici) (L/s)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Q(D) / Qfull
STREET 1	A-1	111	109		6			0.016	0.016	0.05	3.71	0.19	0.096	0.096	0.000	0.000	0.00	1.00	0.000	0.00	0.096	0.03	0.23	39.9	200 PVC	0.203	0.013	0.65	27.6	0.85	0.8%
STREET 1	A-2	109	107		0			0.000	0.016	0.05	3.71	0.19	0.014	0.110	0.000	0.000	0.00	1.00	0.000	0.00	0.110	0.04	0.23	8.2	200 PVC	0.203	0.013	0.50	24.2	0.75	1.0%
STREET 1	A-3	107	105		0			0.000	0.016	0.05	3.71	0.19	0.025	0.135	0.000	0.000	0.00	1.00	0.000	0.00	0.135	0.04	0.24	17.9	200 PVC	0.203	0.013	0.32	19.4	0.60	1.2%
STREET 1	A-4	105	103		1			0.003	0.019	0.06	3.71	0.23	0.033	0.168	0.000	0.000	0.00	1.00	0.000	0.00	0.168	0.06	0.28	8.8	200 PVC	0.203	0.013	0.50	24.2	0.75	1.2%
STREET 1	A-5	103	101		11			0.030	0.049	0.16	3.65	0.58	0.128	0.296	0.000	0.000	0.00	1.00	0.000	0.00	0.296	0.10	0.67	37.9	200 PVC	0.203	0.013	0.32	19.4	0.60	3.5%
	A-6	101	201		0			0.000	0.049	0.16	3.65	0.58	0.016	0.312	0.000	0.000	0.00	1.00	0.000	0.00	0.296	0.10	0.67	31.3	200 PVC	0.203	0.013	0.32	19.4	0.60	3.5%
STREET 2	A-7	205	203		12			0.032	0.032	0.11	3.68	0.39	0.179	0.179	0.000	0.000	0.00	1.00	0.000	0.00	0.179	0.06	0.45	39.4	200 PVC	0.203	0.013	0.32	19.4	0.60	2.3%
STREET 2	-	203	201		0			0.000	0.032	0.11	3.68	0.39	0.000	0.179	0.000	0.000	0.00	1.00	0.000	0.00	0.179	0.06	0.45	3.1	200 PVC	0.203	0.013	0.50	24.2	0.75	1.8%
STREET 2	-	201	169		0			0.000	0.081	0.26	3.61	0.95	0.000	0.491	0.000	0.000	0.00	1.00	0.000	0.00	0.491	0.16	1.11	13.0	200 PVC	0.203	0.013	0.32	19.4	0.60	5.7%
STREET 2	A-8	209	207		12			0.032	0.032	0.11	3.68	0.39	0.183	0.183	0.000	0.000	0.00	1.00	0.000	0.00	0.183	0.06	0.45	43.4	200 PVC	0.203	0.013	0.32	19.4	0.60	2.3%
STREET 2	-	207	167		0			0.000	0.032	0.11	3.68	0.39	0.000	0.183	0.000	0.000	0.00	1.00	0.000	0.00	0.183	0.06	0.45	11.0	200 PVC	0.203	0.013	0.30	18.7	0.58	2.4%
STREET 3	A-9	313	311		5			0.014	0.014	0.04	3.72	0.16	0.081	0.081	0.000	0.000	0.00	1.00	0.000	0.00	0.081	0.03	0.19	36.2	200 PVC	0.203	0.013	0.65	27.6	0.85	0.7%
STREET 3	A-10	311	307		1			0.003	0.016	0.05	3.71	0.19	0.032	0.113	0.000	0.000	0.00	1.00	0.000	0.00	0.113	0.04	0.23	10.4	200 PVC	0.203	0.013	0.50	24.2	0.75	1.0%
STREET 3	A-11	307	305		5			0.014	0.030	0.10	3.68	0.35	0.084	0.198	0.000	0.000	0.00	1.00	0.000	0.00	0.198	0.07	0.42	41.8	200 PVC	0.203	0.013	0.32	19.4	0.60	2.2%
STREET 3	A-12	305	303		0			0.000	0.030	0.10	3.68	0.35	0.020	0.218	0.000	0.000	0.00	1.00	0.000	0.00	0.218	0.07	0.43	10.3	200 PVC	0.203	0.013	0.50	24.2	0.75	1.8%
STREET 3	A-13	303	301		0			0.000	0.030	0.10	3.68	0.35	0.035	0.253	0.000	0.000	0.00	1.00	0.000	0.00	0.253	0.08	0.44	15.7	200 PVC	0.203	0.013	0.33	19.7	0.61	2.2%
STREET 3	-	301	163		0			0.000	0.030	0.10	3.68	0.35	0.000	0.253	0.000	0.000	0.00	1.00	0.000	0.00	0.253	0.08	0.44	9.9	200 PVC	0.203	0.013	0.30	18.7	0.58	2.3%
VENTUS	A-14	165	163		5			0.014	0.043	0.14	3.66	0.51	0.065	0.065	0.000	0.000	0.00	1.00	0.000	0.00	0.065	0.02	0.53	56.2	200 PVC	0.203	0.013	0.32	19.4	0.60	2.8%
STREET 4	B-1	413	411		7			0.019	0.019	0.06	3.71	0.23	0.136	0.136	0.000	0.000	0.00	1.00	0.000	0.00	0.136	0.04	0.27	50.0	200 PVC	0.203	0.013	0.65	27.6	0.85	1.0%
STREET 4	B-2	411	409		0			0.000	0.019	0.06	3.71	0.23	0.023	0.159	0.000	0.000	0.00	1.00	0.000	0.00	0.159	0.05	0.28	11.9	200 PVC	0.203	0.013	0.50	24.2	0.75	1.2%
STREET 4	B-3	409	407		0			0.000	0.019	0.06	3.71	0.23	0.031	0.191	0.000	0.000	0.00	1.00	0.000	0.00	0.191	0.06	0.29	26.9	200 PVC	0.203	0.013	0.32	19.4	0.60	1.5%
STREET 6	B-4	601	603		14			0.038	0.038	0.12	3.67	0.45	0.206	0.396	0.000	0.000	0.00	1.00	0.000	0.00	0.396	0.13	0.58	52.9	200 PVC	0.203	0.013	0.32	19.4	0.60	3.0%
STREET 6	B-5	603	407		0			0.000	0.038	0.12	3.67	0.45	0.011	0.408	0.000	0.000	0.00	1.00	0.000	0.00	0.408	0.13	0.58	8.8	200 PVC	0.203	0.013	0.32	19.4	0.60	3.0%
STREET 4	B-6	407	405		0			0.000	0.019	0.06	3.71	0.23	0.035	0.634	0.000	0.000	0.00	1.00	0.000	0.00	0.634	0.21	0.44	32.6	200 PVC	0.203	0.013	0.32	19.4	0.60	2.3%
STREET 5	B-7	509	511		12			0.032	0.032	0.11	3.68	0.39	0.194	0.194	0.000	0.000	0.00	1.00	0.000	0.00	0.194	0.06	0.45	47.3	200 PVC	0.203	0.013	0.32	19.4	0.60	2.3%
STREET 5	B-8	511	405		1			0.003	0.035	0.11	3.67	0.42	0.013	0.207	0.000	0.000	0.00	1.00	0.000	0.00	0.207	0.07	0.49	9.9	200 PVC	0.203	0.013	0.32	19.4	0.60	2.5%
STREET 4	B-9	405	403		0			0.000	0.019	0.06	3.71	0.23	0.025	0.867	0.000	0.000	0.00	1.00	0.000	0.00	0.867	0.29	0.51	23.3	200 PVC	0.203	0.013	0.32	19.4	0.60	2.7%
STREET 4	B-10	403	401		0			0.000	0.019	0.06	3.71	0.23	0.019	0.886	0.000	0.000	0.00	1.00	0.000	0.00	0.886	0.29	0.52	10.5	200 PVC	0.203	0.013	0.50	24.2	0.75	2.1%
STREET 4	B-11	401	507		6			0.016	0.035	0.11	3.67	0.42	0.106	0.992	0.000	0.000	0.00	1.00	0.000	0.00	0.992	0.33	0.75	49.2	200 PVC	0.203	0.013	0.32	19.4	0.60	3.9%
STREET 5	B-12	507	505		0			0.000	0.035	0.11	3.67	0.42	0.013	1.005	0.000	0.000	0.00	1.00	0.000	0.00	1.005	0.33	0.75	12.0	200 PVC	0.203	0.013	0.32	19.4	0.60	3.9%
STREET 5	B-13	505	503		0			0.000	0.035	0.11	3.67	0.42	0.033	1.038	0.000	0.000	0.00	1.00	0.000	0.00	1.038	0.34	0.76	22.2	200 PVC	0.203	0.013	0.32	19.4	0.60	3.9%
STREET 5	B-14	503	501		0			0.000	0.035	0.11	3.67	0.42	0.018	1.055	0.000	0.000	0.00	1.00	0.000	0.00	1.055	0.35	0.77	8.4	200 PVC	0.203	0.013	0.32	19.4	0.60	4.0%
STREET 5	-	501	163		0			0.000	0.035	0.11	3.67	0.42	0.000	1.055	0.000	0.000	0.00	1.00	0.000	0.00	1.055	0.35	0.77	11.7	200 PVC	0.203	0.013	0.32	19.4	0.60	4.0%
PUBLIC PARK	B-15	701	EX				0.143	0.001	0.001	0.00	3.78	0.01	0.166	0.166	0.000	0.000	0.00	1.00	0.000	0.00	0.166	0.05	0.06	9.8	150 PVC	0.152	0.013	1.00	15.9	0.87	0.4%
Totals				**0**	**110**	**0**	**0.143**	**0.298**	**0.298**	**0.96**	**3.46**	**3.34**	**2.203**	**2.203**	**0.000**	**0.000**	**0.00**	**1.00**	**0.000**	**0.00**	**2.203**	**0.73**	**4.07**	**867.3**							

Demand Equation / Parameters

1. **Q(D), Q(A), Q(R) =** Q(p) + Q(fd) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day (design)
   200 L/per person/day (annual and rare)
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8 (design)
   0.6 (annual and rare)
6. **Park flow is considered equivalent to a single unit / ha**
   Park Demand = 4 single unit equivalent / park ha (~ 3,600 L/ha/day)
7. **Q(fd) =** 0.45 L/s/unit
8. **Q(ici) =** ICI Area x ICI Flow x ICI Peak
9. **Q(e) =** 0.33 L/s/ha (design)
   0.30 L/s/ha (annual)
   0.55 L/s/ha (rare)

Definitions

Q(D) = Peak Design Flow (L/s)
Q(A) = Peak Annual Flow (L/s)
Q(R) = Peak Rare Flow (L/s)
Q(p) = Peak Design Population Flow (L/s)
Q(q) = Average Population Flow (L/s)

	Singles	Semis / Towns	Apts
P = Residential Population =	3.4	2.7	2.1

q = Average Capita Flow
M = Harmon Formula
K = Harmon Correction Factor

Typ. Service Diameter (mm) =	135	
Typ. Service Length (m) =	15	15
I/I Pipe Rate (L/mm dia/m/hr) =	0.007	

Q(fd) = Foundation Flow (L/s)
Q(ici) = Industrial / Commercial / Institutional Flow (L/s)
Q(e) = Extraneous Flow (L/s)

Institutional / Commercial / Industrial	Industrial	Commercial / Institutional	
Design =	35000	28000	L/gross ha/day
Annual / Rare =	10000	17000	L/gross ha/day
ICI Peak *			
Design =	1.0	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)
Annual / Rare =		1.0	

Capacity Equation

Q full = (1/n) Ap R^(2/3) So^(1/2)

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
Ap = Pipe flow area (m^2)
R = Wetted perimeter (m)
So = Pipe slope/gradient

LEGEND

DRAINAGE AREA BOUNDARY

AREA NUMBER

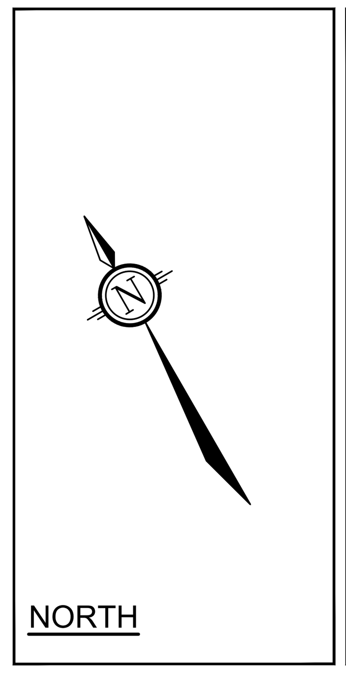
MANHOLE TO MANHOLE

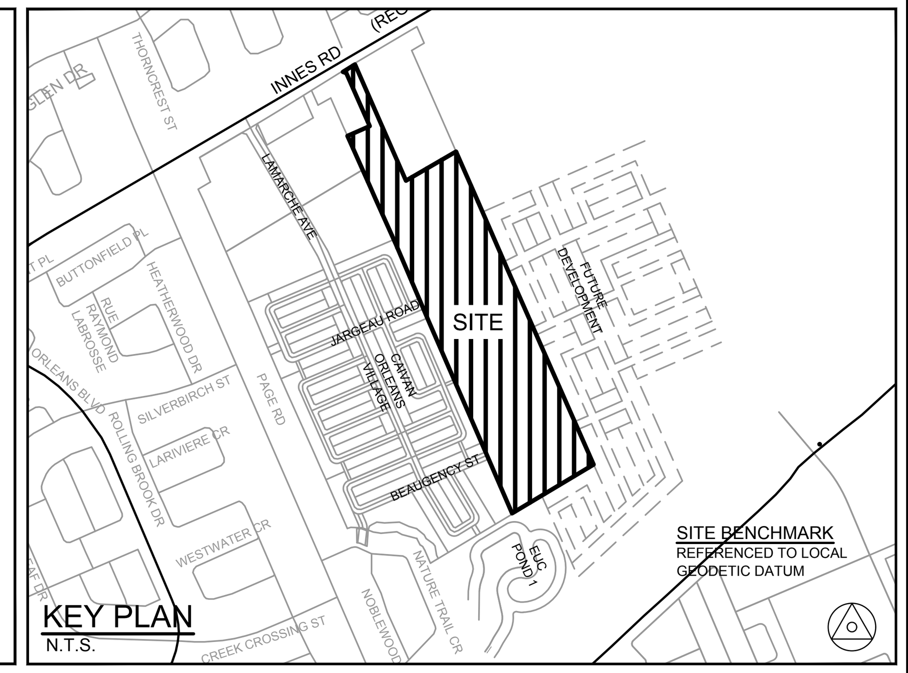
POPULATION

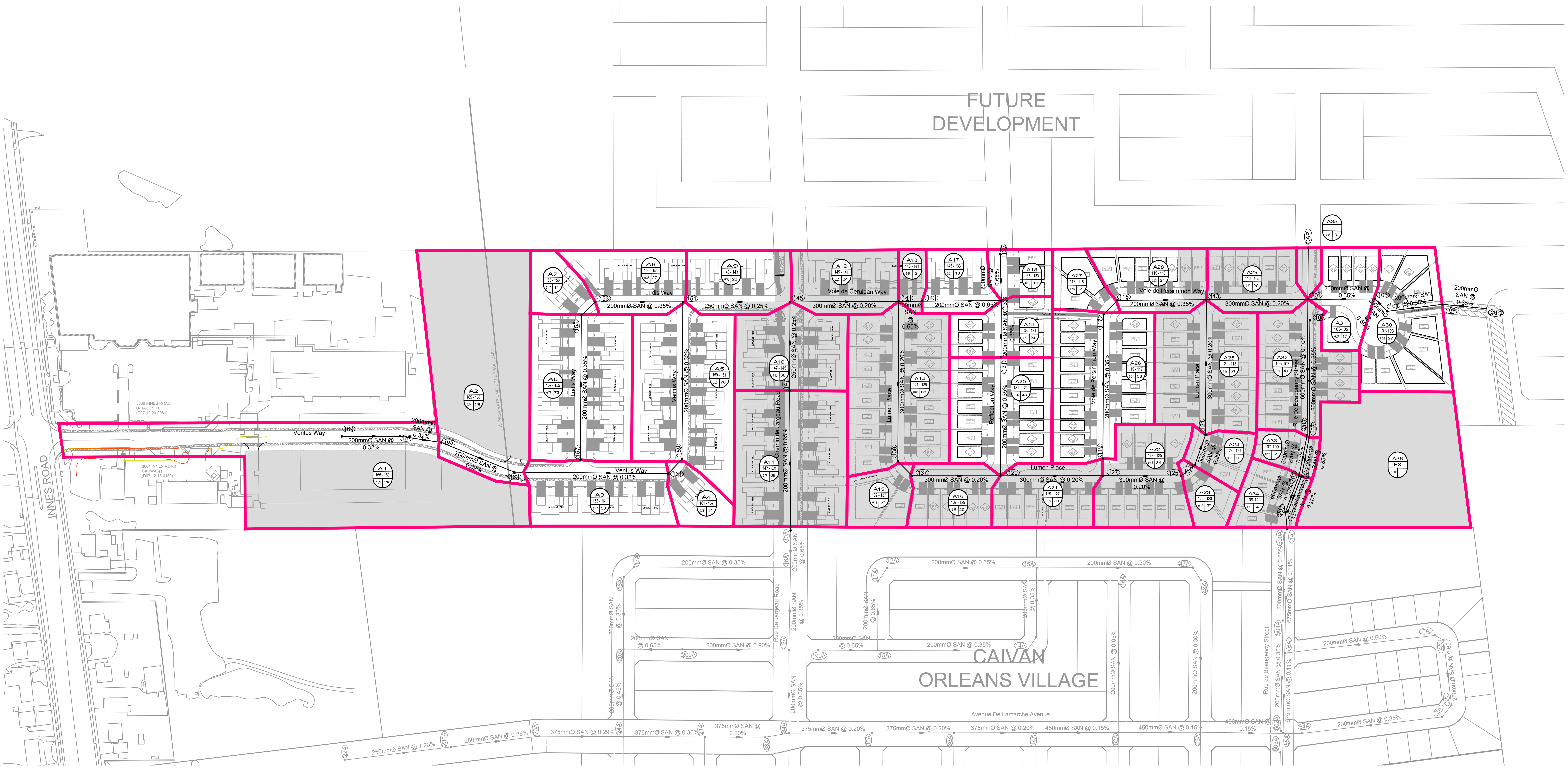
AREA (ha)

PROPOSED SANITARY SEWER C/W FLOW DIRECTION

PROPOSED SAN MH







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	No.	REVISION	DATE	BY
				8.	ISSUED FOR REVIEW PHASE 2 & 3	APRIL 3/23	BHB
				7.	ISSUED FOR FINAL CITY APPROVAL AND ECA	MAY 11/22	BHB
				6.	REVISED AND REISSUED FOR REVIEW	MAR 10/22	BHB
				5.	REVISED AND REISSUED FOR REVIEW	NOV 25/21	BHB
				4.	ISSUED FOR REVIEW	JUNE 18/21	BHB
				3.	REVISED AND REISSUED FOR DRAFT PLAN APPROVAL	NOV 27/20	BHB
10.	FINAL REVIEW, ECA, CLI AND MATERIAL ORDER	MAR 21/24	BHB	2.	REVISED AND REISSUED FOR DRAFT PLAN APPROVAL	APR 3/20	BHB
9.	REVISED AND ISSUED FOR REVIEW AND TENDER	JAN 17/24	BHB	1.	DRAFT PLAN	OCT 4/19	BHB

SCALE
1:1500

1:1500
0 15 30 45 60

DESIGN DJC
CHECKED BCS
DRAWN DJC
CHECKED BCS
APPROVED BHB

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
THE COMMONS

DRAWING NAME
SANITARY DRAINAGE AREA PLAN

PROJECT No. 118224-00
REV REV # 9
DRAWING No. 118224-SAN

PLANA1.DWG - 841mmx594mm

M:\2018\118224\CAD\Design\118224-SAN.dwg, 118224-SAN, Mar 21, 2024 - 12:46pm, bsmith

D07-16-19-0027

#18535

SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons
Date: 1/17/2024
Input By: Bradley Reed
Reviewed By: Sam Bahia
Drawing Reference: 118224-GP1-4, 118224-SAN

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Annual Cell Output
- Calculated Rare Cell Output
- MOE - Design Guidelines for Sewage Works (2008)

Location / Demand – Residential Flow

Street	Area ID	From MH	To MH	Singles	Semis / Towns	Apts	Park Area	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)
Ventus Way	A1	169	167			84		0.176	0.176	0.57	3.53	2.02	1.590	1.590
	-	167	165					0.000	0.176	0.57	3.53	2.02	0.000	1.590
	A2	165	163			84		0.176	0.353	1.14	3.44	3.93	1.140	2.730
	A3	163	161		14			0.038	0.214	0.69	3.51	2.44	0.470	2.060
	A4	161	159		4			0.011	0.225	0.73	3.50	2.55	0.150	2.210
	A5	159	151		28			0.076	0.301	0.97	3.46	3.37	0.830	3.040
Ludis Way	A6	157	155		27			0.073	0.073	0.24	3.62	0.86	0.760	0.760
	A7	155	153		4			0.011	0.084	0.27	3.61	0.98	0.170	0.930
	A8	153	151		10			0.027	0.111	0.36	3.58	1.29	0.330	1.260
Ludis Way	A9	151	145		8			0.022	0.433	1.40	3.40	4.78	0.330	4.630
Chemin de Jargeau Road	A10	147	145		14			0.038	0.038	0.12	3.67	0.45	0.450	0.450
	A11	147	EX		25			0.068	0.068	0.22	3.63	0.79	0.780	0.780
Voie de Cerulean Way	A12	145	141		9			0.024	0.495	1.60	3.38	5.42	0.330	5.410
	A13	143	141		2			0.005	0.005	0.02	3.75	0.07	0.080	0.080
Lumen Place	A14	141	139	20				0.068	0.568	1.84	3.36	6.18	0.800	6.290
	A15	139	137	2				0.007	0.575	1.86	3.35	6.25	0.180	6.470
	A16	137	129	6				0.020	0.596	1.93	3.35	6.46	0.270	6.740
Voie de Cerulean Way	A17	143	133		6			0.016	0.016	0.05	3.71	0.19	0.210	0.210
Reflection Way	A18	135	133	3				0.010	0.010	0.03	3.73	0.12	0.150	0.150
Reflection Way	A19	133	131	7				0.024	0.050	0.16	3.65	0.59	0.280	0.640
	A20	131	129	14				0.048	0.098	0.32	3.60	1.14	0.560	1.200
Lumen Place	A21	129	127	6				0.020	0.714	2.31	3.31	7.66	0.330	8.270
	A22	127	125	10				0.034	0.748	2.42	3.30	8.00	0.440	8.710
	A23	125	123	2				0.007	0.755	2.45	3.30	8.07	0.120	8.830
	A24	123	121	3				0.010	0.765	2.48	3.30	8.17	0.150	8.980
	A25	121	113	15				0.051	0.816	2.64	3.28	8.68	0.620	9.600
Voie de Persimmon Way	A26	119	117	17				0.058	0.058	0.19	3.64	0.68	0.710	0.710
	A27	117	115	2				0.007	0.065	0.21	3.63	0.76	0.160	0.870
	A28	115	113	7				0.024	0.088	0.29	3.61	1.03	0.330	1.200
Voie de Persimmon Way	A29	113	201	6				0.020	0.925	3.00	3.26	9.76	0.290	11.090
Voie de Persimmon Way	FUTURE	CAP	99					0.375	0.375	1.22	3.43	4.17	3.090	3.090
	-	99	101					0.000	0.375	1.22	3.43	4.17	0.000	3.090
	A30	101	103	8				0.027	0.402	1.30	3.42	4.45	0.550	3.640
	A31	103	201	5				0.017	0.419	1.36	3.41	4.63	0.270	3.910
Rue de Beaugency Street	A32	105	107	12				0.041	0.041	0.13	3.67	0.48	0.500	0.500
	A33	107	109	2				0.007	0.048	0.15	3.66	0.56	0.120	0.620
	A34	109	111	4				0.014	0.061	0.20	3.64	0.72	0.210	0.830
	-	111	207	0				0.000	0.061	0.20	3.64	0.72	0.000	0.830
Rue de Beaugency Street	FUTURE, A35	CAP1	201				6.550	5.545	5.545	17.97	2.76	49.64	54.930	54.930
	-	201	203					0.000	6.889	22.32	2.69	60.07	0.500	70.430
	-	203	205					0.000	6.889	22.32	2.69	60.07	0.120	70.550
	-	205	207					0.000	6.889	22.32	2.69	60.07	0.000	70.550
	A36	207	1A				1.000	0.011	6.961	22.56	2.69	60.62	1.000	72.380
Totals				**151**	**151**	**168**	**7.550**	**7.205**	**7.205**	**23.35**	**2.68**	**62.47**	**74.300**	**74.300**

Demand – Industrial / Commercial / Institutional (ICI) Flow, Extraneous Flow (Area Method), Total Design Flow; Design Capacity – Proposed Sewer Pipe Sizing / Design

Area ID	From MH	To MH	Commercial / Institutional Area (ha.)	Cumulative Commercial / Institutional Area (ha.)	Average Design Commercial / Institutional Flow (L/s)	Commercial / Institutional Peaking Factor	Cumulative ICI Area (ha.)	Peak Design ICI Flow Q (ici) (L/s)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Q(D) / Qfull
A1	169	167	0.000	0.000	0.00	1.00	0.000	0.00	1.590	0.52	2.54	113.8	200 PVC	0.203	0.013	0.32	19.4	0.60	13.1%
-	167	165	0.000	0.000	0.00	1.00	0.000	0.00	1.590	0.52	2.54	20.1	200 PVC	0.203	0.013	0.32	19.4	0.60	13.1%
A2	165	163	0.000	0.000	0.00	1.00	0.000	0.00	2.730	0.90	4.83	57.8	200 PVC	0.203	0.013	0.32	19.4	0.60	25.0%
A3	163	161	0.000	0.000	0.00	1.00	0.000	0.00	2.060	0.68	3.12	109.4	200 PVC	0.203	0.013	0.32	19.4	0.60	16.1%
A4	161	159	0.000	0.000	0.00	1.00	0.000	0.00	2.210	0.73	3.28	14.1	200 PVC	0.203	0.013	0.50	24.2	0.75	13.6%
A5	159	151	0.000	0.000	0.00	1.00	0.000	0.00	3.040	1.00	4.38	112.1	200 PVC	0.203	0.013	0.32	19.4	0.60	22.6%
A6	157	155	0.000	0.000	0.00	1.00	0.000	0.00	0.760	0.25	1.11	102.8	200 PVC	0.203	0.013	0.35	20.2	0.62	5.5%
A7	155	153	0.000	0.000	0.00	1.00	0.000	0.00	0.930	0.31	1.29	13.8	200 PVC	0.203	0.013	0.50	24.2	0.75	5.3%
A8	153	151	0.000	0.000	0.00	1.00	0.000	0.00	1.260	0.42	1.70	62.5	200 PVC	0.203	0.013	0.35	20.2	0.62	8.4%
A9	151	145	0.000	0.000	0.00	1.00	0.000	0.00	4.630	1.53	6.30	76.3	250 PVC	0.254	0.013	0.25	31.0	0.61	20.3%
A10	147	145	0.000	0.000	0.00	1.00	0.000	0.00	0.450	0.15	0.60	63.2	250 PVC	0.254	0.013	0.25	31.0	0.61	1.9%
A11	147	EX	0.000	0.000	0.00	1.00	0.000	0.00	0.780	0.26	1.05	99.4	200 PVC	0.203	0.013	0.65	27.6	0.85	3.8%
A12	145	141	0.000	0.000	0.00	1.00	0.000	0.00	5.410	1.79	7.21	77.3	300 PVC	0.305	0.013	0.20	45.1	0.62	16.0%
A13	143	141	0.000	0.000	0.00	1.00	0.000	0.00	0.080	0.03	0.09	16.6	200 PVC	0.203	0.013	0.65	27.6	0.85	0.3%
A14	141	139	0.000	0.000	0.00	1.00	0.000	0.00	6.290	2.08	8.26	113.9	300 PVC	0.305	0.013	0.20	45.1	0.62	18.3%
A15	139	137	0.000	0.000	0.00	1.00	0.000	0.00	6.470	2.14	8.39	14.6	300 PVC	0.305	0.013	0.50	71.3	0.98	11.8%
A16	137	129	0.000	0.000	0.00	1.00	0.000	0.00	6.740	2.22	8.68	62.8	300 PVC	0.305	0.013	0.20	45.1	0.62	19.3%
A17	143	133	0.000	0.000	0.00	1.00	0.000	0.00	0.210	0.07	0.26	56.5	200 PVC	0.203	0.013	0.65	27.6	0.85	1.0%
A18	135	133	0.000	0.000	0.00	1.00	0.000	0.00	0.150	0.05	0.17	33.1	200 PVC	0.203	0.013	0.65	27.6	0.85	0.6%
A19	133	131	0.000	0.000	0.00	1.00	0.000	0.00	0.640	0.21	0.81	40.4	200 PVC	0.203	0.013	0.35	20.2	0.62	4.0%
A20	131	129	0.000	0.000	0.00	1.00	0.000	0.00	1.200	0.40	1.54	84.3	200 PVC	0.203	0.013	0.35	20.2	0.62	7.6%
A21	129	127	0.000	0.000	0.00	1.00	0.000	0.00	8.270	2.73	10.39	73.0	300 PVC	0.305	0.013	0.20	45.1	0.62	23.0%
A22	127	125	0.000	0.000	0.00	1.00	0.000	0.00	8.710	2.87	10.88	55.7	300 PVC	0.305	0.013	0.20	45.1	0.62	24.1%
A23	125	123	0.000	0.000	0.00	1.00	0.000	0.00	8.830	2.91	10.98	12.4	300 PVC	0.305	0.013	0.50	71.3	0.98	15.4%
A24	123	121	0.000	0.000	0.00	1.00	0.000	0.00	8.980	2.96	11.14	23.0	300 PVC	0.305	0.013	0.20	45.1	0.62	24.7%
A25	121	113	0.000	0.000	0.00	1.00	0.000	0.00	9.600	3.17	11.85	96.2	300 PVC	0.305	0.013	0.20	45.1	0.62	26.3%
A26	119	117	0.000	0.000	0.00	1.00	0.000	0.00	0.710	0.23	0.92	103.0	200 PVC	0.203	0.013	0.35	20.2	0.62	4.5%
A27	117	115	0.000	0.000	0.00	1.00	0.000	0.00	0.870	0.29	1.05	14.0	200 PVC	0.203	0.013	0.50	24.2	0.75	4.3%
A28	115	113	0.000	0.000	0.00	1.00	0.000	0.00	1.200	0.40	1.43	63.2	200 PVC	0.203	0.013	0.35	20.2	0.62	7.1%
A29	113	201	0.000	0.000	0.00	1.00	0.000	0.00	11.090	3.66	13.42	73.8	300 PVC	0.305	0.013	0.20	45.1	0.62	29.7%
FUTURE	CAP	99	0.000	0.000	0.00	1.00	0.000	0.00	3.090	1.02	5.19	31.6	200 PVC	0.203	0.013	0.35	20.2	0.62	25.6%
-	99	101	0.000	0.000	0.00	1.00	0.000	0.00	3.090	1.02	5.19	39.6	200 PVC	0.203	0.013	0.35	20.2	0.62	25.6%
A30	101	103	0.000	0.000	0.00	1.00	0.000	0.00	3.640	1.20	5.65	12.3	200 PVC	0.203	0.013	0.50	24.2	0.75	23.4%
A31	103	201	0.000	0.000	0.00	1.00	0.000	0.00	3.910	1.29	5.92	47.9	200 PVC	0.203	0.013	0.35	20.2	0.62	29.3%
A32	105	107	0.000	0.000	0.00	1.00	0.000	0.00	0.500	0.17	0.65	83.4	200 PVC	0.203	0.013	0.35	20.2	0.62	3.2%
A33	107	109	0.000	0.000	0.00	1.00	0.000	0.00	0.620	0.20	0.77	28.3	200 PVC	0.203	0.013	0.35	20.2	0.62	3.8%
A34	109	111	0.000	0.000	0.00	1.00	0.000	0.00	0.830	0.27	1.00	26.6	200 PVC	0.203	0.013	0.35	20.2	0.62	4.9%
-	111	207	0.000	0.000	0.00	1.00	0.000	0.00	0.830	0.27	1.00	1.8	200 PVC	0.203	0.013	0.50	24.2	0.75	4.1%
FUTURE, A35	CAP1	201	24.320	24.320	7.88	1.50	24.320	11.82	79.250	26.15	87.62	36.6	525 CONC	0.533	0.013	0.10	141.9	0.63	61.8%
-	201	203	0.000	24.320	7.88	1.50	24.320	11.82	94.750	31.27	103.16	96.7	600 CONC	0.610	0.013	0.10	202.6	0.69	50.9%
-	203	205	0.000	24.320	7.88	1.50	24.320	11.82	94.870	31.31	103.20	29.2	600 CONC	0.610	0.013	0.10	202.6	0.69	50.9%
-	205	207	0.000	24.320	7.88	1.50	24.320	11.82	94.870	31.31	103.20	27.7	600 CONC	0.610	0.013	0.10	202.6	0.69	50.9%
A36	207	1A	0.000	24.320	7.88	1.50	24.320	11.82	96.700	31.91	104.35	11.9	600 CONC	0.610	0.013	0.10	202.6	0.69	51.5%
Totals			**24.320**	**24.320**	**7.88**	**1.50**	**24.320**	**11.82**	**98.620**	**32.54**	**106.84**	**2332.7**							

Proposed Sewer Partial Pipe Flow / Design Partial Pipe Flow Checks

Area ID	From MH	To MH	d / D	V / Vfull	Partial Flow Velocity (m/s)	Design Check Summary	Design Check 1: Pipe Capacity Q < Qfull	Design Check 2: Full Flow Velocity Vfull > 0.6m/s	Design Check 3: Number of Units > 10 N/A, if slope > 0.65%	Design Check 4a: d/D > 0.30 N/A, if slope > 0.65%	Design Check 4b: Partial Flow Velocity Vactual > 0.6m/s N/A, if slope > 0.65%	Design Check 5: Pipe Length < 15m N/A, if slope > 0.65%
A1	169	167	24.0%	68.4%	0.41	OK	OK	OK	N/A	N/A	N/A	OK
-	167	165	24.0%	68.4%	0.41	OK	OK	OK	N/A	N/A	N/A	OK
A2	165	163	34.0%	83.0%	0.50	OK	OK	OK	N/A	N/A	N/A	OK
A3	163	161	27.0%	73.2%	0.44	OK	OK	OK	N/A	N/A	N/A	OK
A4	161	159	24.0%	68.4%	0.51	SHORT RUN	OK	OK	N/A	N/A	N/A	SHORT RUN
A5	159	151	32.0%	80.4%	0.48	OK	OK	OK	N/A	N/A	N/A	OK
A6	157	155	15.0%	51.7%	0.32	OK	OK	OK	N/A	N/A	N/A	OK
A7	155	153	15.0%	51.7%	0.39	SHORT RUN	OK	OK	N/A	N/A	N/A	SHORT RUN
A8	153	151	19.0%	59.7%	0.37	OK	OK	OK	N/A	N/A	N/A	OK
A9	151	145	30.0%	77.6%	0.48	OK	OK	OK	N/A	N/A	N/A	OK
A10	147	145	9.0%	37.5%	0.23							
A11	147	EX	13.0%	47.3%	0.40							
A12	145	141	27.0%	73.2%	0.45							
A13	143	141	4.0%	22.2%	0.19							
A14	141	139	28.0%	74.7%	0.46							
A15	139	137	23.0%	66.8%	0.65							
A16	137	129	29.0%	76.2%	0.47							
A17	143	133	6.0%	28.9%	0.25	OK	OK	OK	N/A	N/A	N/A	OK
A18	135	133	5.0%	25.7%	0.22	OK	OK	OK	N/A	N/A	N/A	OK
A19	133	131	13.0%	47.3%	0.30	OK	OK	OK	N/A	N/A	N/A	OK
A20	131	129	18.0%	57.7%	0.36	OK	OK	OK	N/A	N/A	N/A	OK
A21	129	127	32.0%	80.4%	0.50							
A22	127	125	33.0%	81.7%	0.51							
A23	125	123	26.0%	71.7%	0.70							
A24	123	121	33.0%	81.7%	0.51							
A25	121	113	34.0%	83.0%	0.51							
A26	119	117	14.0%	49.5%	0.31	OK	OK	OK	N/A	N/A	N/A	OK
A27	117	115	14.0%	49.5%	0.37	SHORT RUN	OK	OK	N/A	N/A	N/A	SHORT RUN
A28	115	113	17.0%	55.8%	0.35	OK	OK	OK	N/A	N/A	N/A	OK
A29	113	201	37.0%	86.8%	0.54							
FUTURE	CAP	99	34.0%	83.0%	0.52							
-	99	101	34.0%	83.0%	0.52							
A30	101	103	32.0%	80.4%	0.60							
A31	103	201	37.0%	86.8%	0.54							
A32	105	107	12.0%	45.0%	0.28							
A33	107	109	13.0%	47.3%	0.30							
A34	109	111	15.0%	51.7%	0.32							
-	111	207	13.0%	47.3%	0.35							
FUTURE, A35	CAP1	201	56.0%	104.6%	0.66							
-	201	203	50.0%	100.0%	0.69							
-	203	205	50.0%	100.0%	0.69							
-	205	207	50.0%	100.0%	0.69							
A36	207	1A	50.0%	100.0%	0.69							
Totals												

Demand Equation / Parameters

1. **Q(D), Q(A), Q(R) =** Q(p) + Q(fd) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day (design); 200 L/per person/day (annual and rare)
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8 (design); 0.6 (annual and rare)
6. **Park flow is considered equivalent to a single unit / ha**
   Park Demand = 4 single unit equivalent / park ha (~ 3,600 L/ha/day)
7. **Q(fd) =** 0.45 L/s/unit
8. **Q(ici) =** ICI Area x ICI Flow x ICI Peak
9. **Q(e) =** 0.33 L/s/ha (design); 0.30 L/s/ha (annual); 0.55 L/s/ha (rare)

NOTES

Sewers constructed as a part of Phase 1 - ECA Number 4837-CFLPU5

Definitions

Q(D) = Peak Design Flow (L/s)
Q(A) = Peak Annual Flow (L/s)
Q(R) = Peak Rare Flow (L/s)
Q(p) = Peak Design Population Flow (L/s)
Q(q) = Average Population Flow (L/s)

	Singles	Semis / Towns	Apts
P = Residential Population =	3.4	2.7	2.1
q = Average Capita Flow			
M = Harmon Formula			
K = Harmon Correction Factor			
Typ. Service Diameter (mm) =	135		
Typ. Service Length (m) =	15	15	
I/I Pipe Rate (L/mm dia/m/hr) =	0.007		

Q(fd) = Foundation Flow (L/s)
Q(ici) = Industrial / Commercial / Institutional Flow (L/s)
Q(e) = Extraneous Flow (L/s)

Institutional / Commercial / Industrial	Industrial	Commercial / Institutional	
Design =	35000	28000	L/gross ha/day
Annual / Rare =	10000	17000	L/gross ha/day
ICI Peak *			
Design =	1.5	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)
Annual / Rare =		1.0	

Capacity Equation

Q full = (1/n) Ap R^(2/3) So^(1/2)

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
Ap = Pipe flow area (m^2)
R = Wetted perimeter (m)
So = Pipe slope/gradient

Partial Pipe Flow

d / D = Partial pipe flow depth / pipe diameter
Q actual = Open channel hydraulics (1/n) Ap R^(2/3) So^(1/2) and uniform dimensional lookup chart for pipe flow depth (d)
V actual = Q actual / A actual and uniform dimensional lookup chart for pipe flow depth (d)

Partial Pipe Flow Check Rationale

Check Rationale, in order of importance:

- **1** Pipe Capacity Check; Q < Qfull
- **2** Min. Slope Check; Full Flow Velocity, Vfull > 0.6m/s
- **3** U/S Run Check; N/A if Number of Units > 10, Cumulative Population > 30, or Slope > 0.65%
- **4a** Flow Depth Check; d/D > 0.30. N/A, if slope > 0.65%
- **4b** Partial Flow Velocity Check; Vactual > 0.6m/s. N/A, if slope > 0.65%
- **5** Constructability Tolerance Check; Pipe Length <15m. N/A, if slope > 0.65%

Output:

	Good	Design / Constructability Issue	
1	OK	No Good (NG)	NG Increase Capacity
2	OK		NG Vfull
3	OK		NG U/S Run 0.65% Min
4a	OK		Check Vactual
4b	OK		NG Vactual
5	OK		Short Run

Appendix E
Boundary Conditions, Water Demand Calculations and Hydraulic Modeling

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Boundary Condition Request

Novatech Project #:	118224	**Legend:**	Input by User / No Input Required
Project Name:	The Commons - Phase 4		Calculated Cells →
Date:	9/19/2024	**Reference:**	Ottawa Design Guidelines - Water Distribution (2010 and TBs)
Input By:	BCS		MOE Design Guidelines for Drinking-Water Systems (2008)
Reviewed By:	BHB		Fire Underwriter's Survey Guideline (2020)
Drawing Reference:	118224-PH mkup		Ontario Building Code, Part 3 (2012)

Small System = NO

	# of Dwellings	Area (ha.)	Pop. Equiv.	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Residential Input						
Singles			0.00	0.00	0.00	0.00
Semis / Townhomes	98		264.60	0.86	2.14	4.72
Apartments (2-BR)			0.00	0.00	0.00	0.00
Apartments (1-BR)			0.00	0.00	0.00	0.00
Apartments (Avg)			0.00	0.00	0.00	0.00
Industrial / Commercial / Institutional (ICI) Input						
Industrial Area - Light				0.00	0.00	0.00
Industrial Area - Heavy				0.00	0.00	0.00
Commercial Area				0.00	0.00	0.00
Institutional Area				0.00	0.00	0.00
Other Area		0.17		0.02	0.03	0.05
Totals	**98**	**0.17**	**264.60**	**0.88**	**2.17**	**4.77**

Summary

i. Type of Development and Units:	Residential (98 Back-to-Back Townhomes) and Park		
ii. Site Address:	3610 Innes Road		
iii. Proposed Water Service Connection Location(s):	Refer to 118224-PH mkup Connection 1 - Innes Road, existing 305mm stub Connection 2 - Ventus Way, existing 203mm stub		
iv. Average Day Flow Demand:		0.88	L/s
v. Peak Hour Flow Demand:		4.77	L/s
vi. Maximum Day Flow Demand:		2.17	L/s
vii. Required Fire Flow #1:		10000	L/min
viii. Required Fire Flow #2:		12000	L/min
ix. Required Fire Flow #3:		13000	L/min
x. Required Fire Flow #4:		14000	L/min
xi. Required Fire Flow #5:		16000	L/min

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Design Parameters

Residential					
Unit Type Population Equiv.	**Singles**	**Semis/ Towns**	**Apts (2-BR)**	**Apts (1-BR)**	**Apts (Avg)**
	3.4	2.7	2.1	1.4	1.8
Dailly Demand	L/per person/day				
Average Demand	280				

Residential Peaking Factors	**Pop.**	**Max Day (x Avg Day)**	**Peak Hour (x Avg Day)**
Small System (If Applicable) *Modified*	0	9.50	14.30
	30	9.50	14.30
	150	4.90	7.40
	300	3.60	*5.50*
	450	3.00	*5.50*
	500	2.90	*5.50*
Large System (Default)	> 500	2.50	5.50

Institutional / Commercial / Industrial				
Industrial		**Commercial**	**Institutional**	**Other Use [1]**
Light	**Heavy**			
L/gross ha/day				L/gross ha/day
35,000	55,000	28,000	28,000	9,300

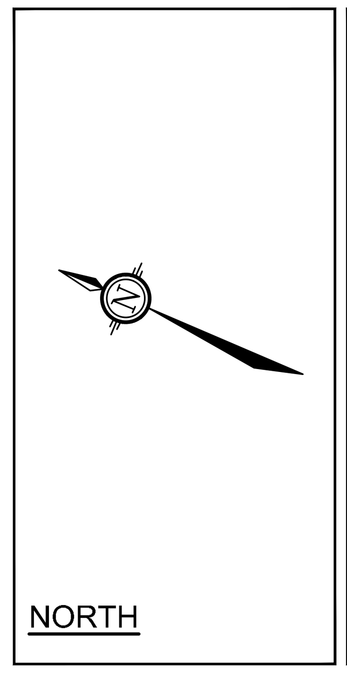
[1] Park flow based on EUC Ph3 CDP MSS by DSEL dated 2020-06-25

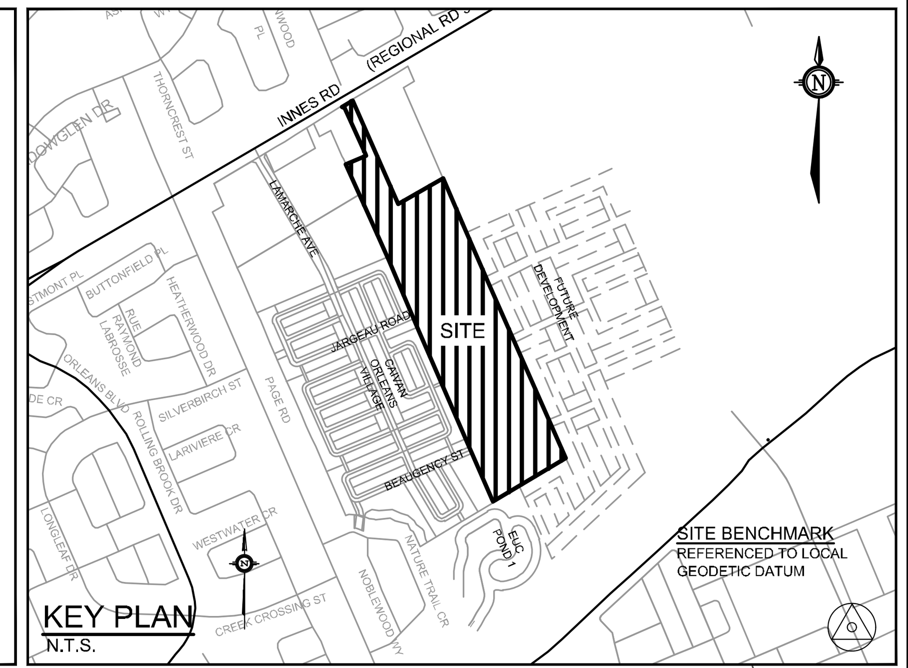
ICI Peaking Factors	**Max Day (x Avg Day)**	**Peak Hour (x Avg Day)**
	1.50	2.70

UNIT MIX BREAKDOWN

PHASING	SINGLES	TOWNHOMES	MEDIUM DENSITY
PHASE 1A	59		
PHASE 1B	31	50	
PHASE 2A		46	
PHASE 2B	48	6	
PHASE 3A		49	
PHASE 3B	13		
PHASE 4A			~~84~~ → 40 Back-to-back Townhomes
PHASE 4B			~~84~~ → 58 Back-to-back Townhomes
Total	151	151	~~168~~ → 98 Back-to-back Townhomes

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed
Date May 13 2024
Plan Number # 18535





REFER TO ____________ FOR ADDITIONAL NOTES

#18535

D07-16-19-0027

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
11.	FINAL REVIEW, ECA, CLI AND MATERIAL ORDER	MAR 21/24	BHB
10.	REVISED AND ISSUED FOR REVIEW AND TENDER	JAN 17/24	BHB
9.	REVISED PHASING	JUNE 3/23	BHB
8.	ISSUED FOR REVIEW PHASE 2 & 3	APRIL 6/23	BHB
7.	PARK PHASING	FEB 1/23	BHB
6.	ISSUED FOR CONSTRUCTION	JUNE 27/22	BHB
5.	ISSUED FOR FINAL CITY APPROVAL AND ECA	MAY 11/22	BHB
4.	ISSUED FOR ECA AND TENDER	MAR 18/22	BHB
3.	REVISED AND REISSUED FOR REVIEW	MAR 10/22	BHB
2.	REVISED AND REISSUED FOR REVIEW	NOV 25/21	BHB
1.	ISSUED FOR REVIEW	JUNE 18/21	BHB

SCALE 1:1500

DESIGN BR
CHECKED BCS
DRAWN BR
CHECKED BCS
APPROVED BHB

LICENSED PROFESSIONAL ENGINEER
B. W. A. REED
100545780
03/21/24
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
THE COMMONS

DRAWING NAME
PHASING PLAN

PROJECT No. 118224-00
REV REV #11
DRAWING No. 118224-PH

PLANA1.DWG - 841mmx594mm

Miro Savic

From: Unrau, Derek <derek.unrau@ottawa.ca>
Sent: Tuesday, October 1, 2024 2:03 PM
To: Sam Bahia; Ben Sweet
Cc: Miro Savic; Polyak, Alex
Subject: RE: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)
Attachments: R1_3610 Innes Boundary Condition(24September2024).pdf

Good afternoon Sam and Ben,

Please see attached boundary condition request results.
Note scenario connection 2 #5 is below the City's minimum pressure.

As the watermain in the area is not in place and operational, we may be requiring another boundary condition request once it is constructed, and when the specific connections to that watermain are identified by a future application submission with the necessary plans and reports.

Let me know if you have any questions.

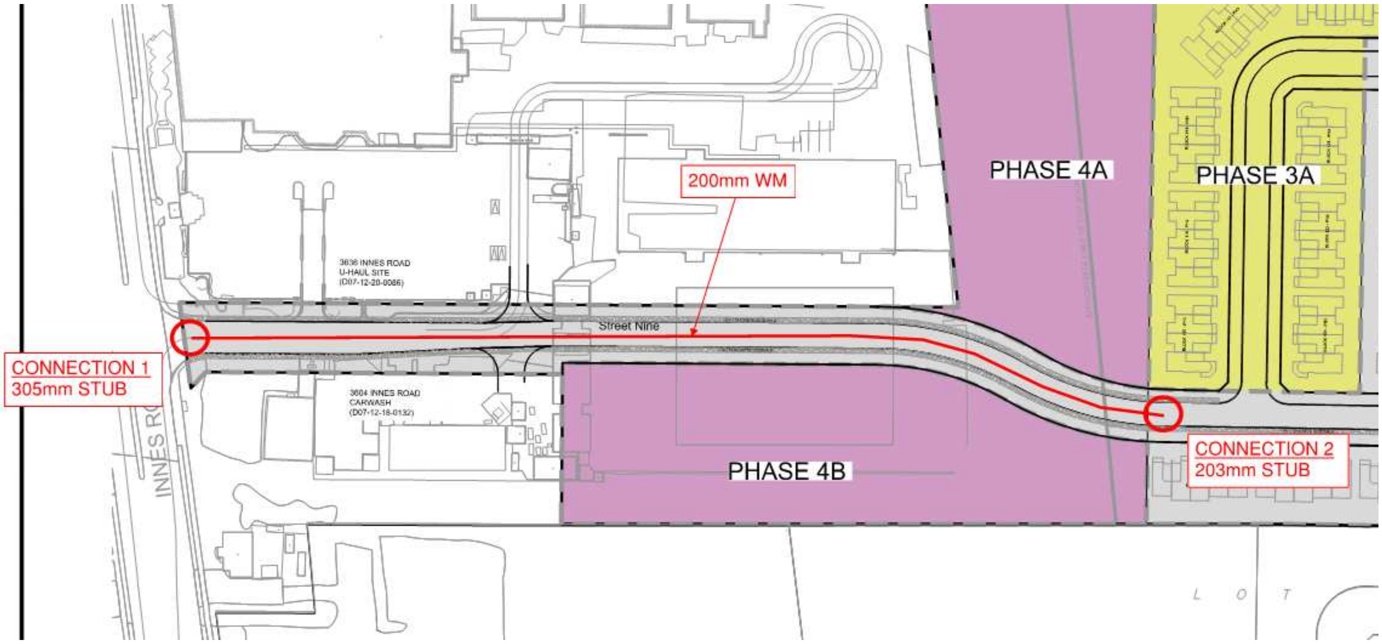
Regards,

Derek Unrau, C.E.T.
Project Manager
Planning, Development and Building Services Department (PDBS)
Development Review - East Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 27670, Derek.Unrau@ottawa.ca

From: Sam Bahia <s.bahia@novatech-eng.com>
Sent: September 24, 2024 1:51 PM
To: Unrau, Derek <derek.unrau@ottawa.ca>; Ben Sweet <b.sweet@novatech-eng.com>
Cc: Miro Savic <m.savic@novatech-eng.com>; Polyak, Alex <alex.polyak@ottawa.ca>
Subject: RE: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)

Hello
Ben had indicated the connection locations within the Ventus Public WM (that is currently under construction).

The reason for this, is that there is 2/3 public hydrants along that section that we'd like to include for the model, in-lieu of just the private Watermains on site. Is it possible to obtain the BCs based on Ben's WM demands at those locations?



Sam Bahia, P.Eng., Senior Project Manager | Land Development
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 285

From: Unrau, Derek <derek.unrau@ottawa.ca>
Sent: Tuesday, September 24, 2024 1:37 PM
To: Sam Bahia <s.bahia@novatech-eng.com>; Ben Sweet <b.sweet@novatech-eng.com>
Cc: Miro Savic <m.savic@novatech-eng.com>; Polyak, Alex <alex.polyak@ottawa.ca>
Subject: RE: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)

Hi Sam,

Apologies, the plan dated July 30, 2024, with 'U' shape internal road design I understand to be the latest concept. Please let us know if there is a newer version.

The reason we need to see the proposed connection locations is so that we could provide you with appropriate boundary conditions. The connections shown on your request do not indicate where your site will be making a connection to the watermain on Ventus Way.

Do you have any specific questions or concerns that you wish to discuss?

Regards,

Derek Unrau, C.E.T.
Project Manager
Planning, Development and Building Services Department (PDBS)
Development Review - East Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2424 ext./poste 27670, Derek.Unrau@ottawa.ca

From: Sam Bahia <s.bahia@novatech-eng.com>
Sent: September 24, 2024 11:46 AM
To: Unrau, Derek <derek.unrau@ottawa.ca>; Ben Sweet <b.sweet@novatech-eng.com>
Cc: Miro Savic <m.savic@novatech-eng.com>; Polyak, Alex <alex.polyak@ottawa.ca>
Subject: RE: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)

Hi Derek
Do you have a few minutes to discuss – in light of the attached and revised concept within the attached email?
Regards

Sam Bahia, P.Eng., Senior Project Manager | Land Development
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 285

From: Unrau, Derek <derek.unrau@ottawa.ca>
Sent: Tuesday, September 24, 2024 10:32 AM
To: Ben Sweet <b.sweet@novatech-eng.com>
Cc: Sam Bahia <s.bahia@novatech-eng.com>; Miro Savic <m.savic@novatech-eng.com>; Polyak, Alex <alex.polyak@ottawa.ca>
Subject: RE: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)

Hi Ben,

Thank you for your email requesting boundary conditions for this application.

Each block may only have a maximum of 2 connections into Ventus Way. Please provide a plan indicating the specific watermain connection locations to be proposed for block 1 and 2. I have attached the latest concept plan we have been provided. Once that is received, I will review and send it to Asset Management for confirmation.

Please let me know if you have any questions.

Regards,

Derek Unrau, C.E.T.
Project Manager
Planning, Development and Building Services Department (PDBS)
Development Review - East Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2424 ext./poste 27670, Derek.Unrau@ottawa.ca

From: Ben Sweet <b.sweet@novatech-eng.com>
Sent: September 19, 2024 1:23 PM
To: Unrau, Derek <derek.unrau@ottawa.ca>
Cc: Sam Bahia <s.bahia@novatech-eng.com>; Miro Savic <m.savic@novatech-eng.com>
Subject: 3610 Innes Road / PC2024-0252 - Water Boundary Conditions Request (118224)

Hi Derek,

Please find attached Water Demand Design Sheet and Phasing Plan markup in support of the water boundary conditions request for the above noted file.

Based on GeoOttawa, there is an existing 305mm stub at Innes Road (Connection 1) and an existing 203mm stub at Ventus Way (Connection 2). We are proposing to model the proposed 200mm watermain link between the two connections, along with the Phase 4A and 4B medium density blocks proposed onsite watermain. This will allow us to model the hydrants along the proposed 200mm watermain link and consider available fire flow from these hydrants, as well as the onsite hydrants, for firefighting purposes.

Let us know if you would like us to model different connections points so we can update the Water Demand Design Sheet accordingly.

Thanks,

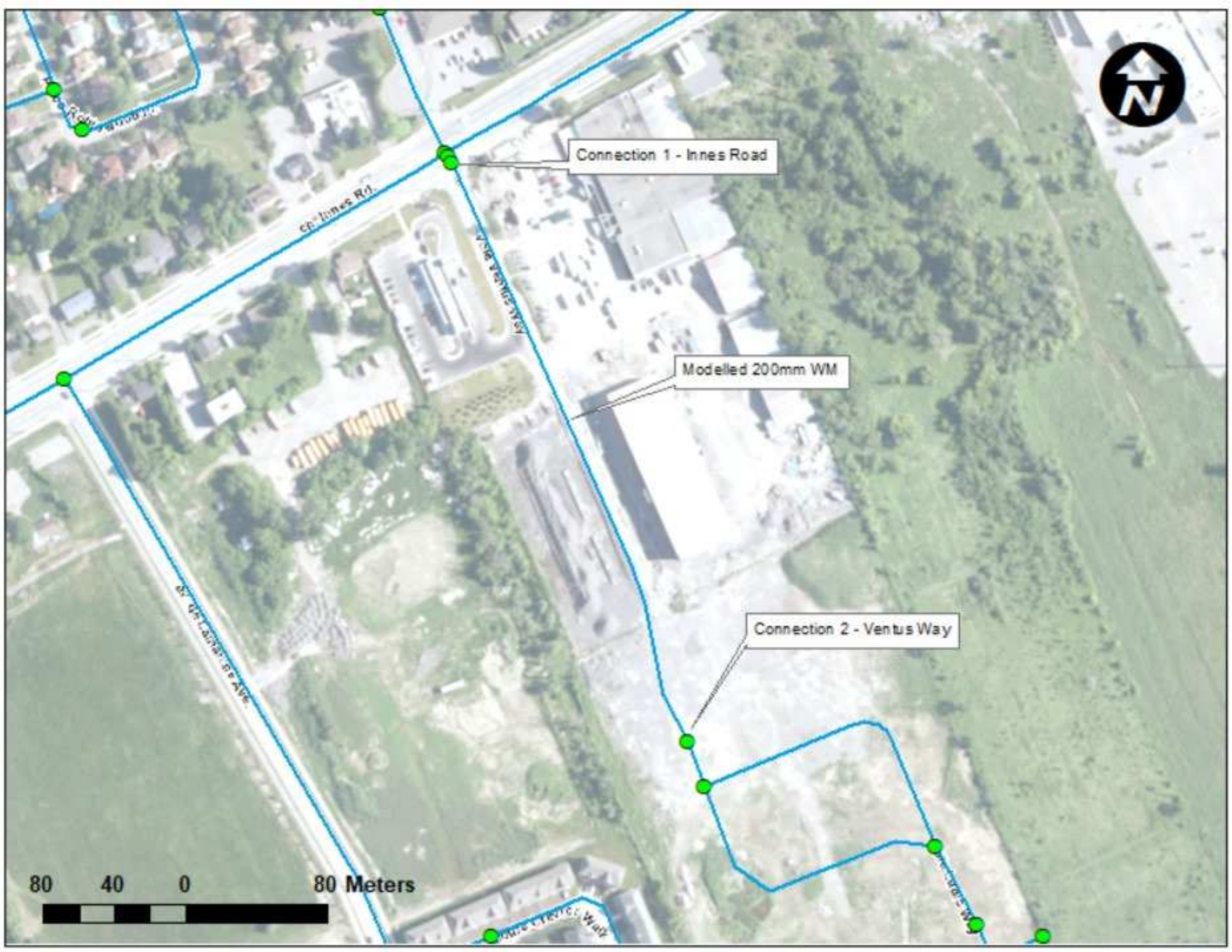
Ben Sweet, P.Eng., Project Manager | Land Development Engineering
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 250

Boundary Conditions
3610 Innes Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	53	0.88
Maximum Daily Demand	130	2.17
Peak Hour	286	4.77
Fire Flow Demand #1	10,000	166.67
Fire Flow Demand #2	12,000	200.00
Fire Flow Demand #3	13,000	216.67
Fire Flow Demand #4	14,000	233.33
Fire Flow Demand #5	16,000	266.67

Location



Results

Connection 1 - Innes Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.7	56.5
Peak Hour	127.3	51.7
Max Day plus Fire Flow #1	127.4	51.9
Max Day plus Fire Flow #2	126.5	50.5
Max Day plus Fire Flow #3	125.9	49.8
Max Day plus Fire Flow #4	125.8	49.6
Max Day plus Fire Flow #5	125.2	48.7
[1] Ground Elevation =	90.9	m

Connection 2 - Ventus Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.8	58.6
Peak Hour	127.2	53.6
Max Day plus Fire Flow #1	117.7	40.1
Max Day plus Fire Flow #2	112.9	33.2
Max Day plus Fire Flow #3	110.2	29.4
Max Day plus Fire Flow #4	107.7	25.9
Max Day plus Fire Flow #5	102.1	17.9
[1] Ground Elevation =	89.5	m

Notes

1. *Per the OWDG Section 4.2.2:*
    a. *During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 20 psi.*

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

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #:	118224	**Legend:**	Input by User
Project Name:	The Commons - Phase 4		No Input Required
Date:	9/13/2024	**Reference:**	Fire Underwriter's Survey Guideline (2020)
Input By:	MS		Formula Method
Reviewed By:	SB		
Drawing Reference:			

Building Description: 3-Storey Townhouse Block 1 (12-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	551.00			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,653**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**13,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**11,050**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**3,315**
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**30%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**14,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 2 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
	Base Fire Flow					
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	378.67			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,136**	
	F	**Base fire flow without reductions** $F = 220\,C\,(A)^{0.5}$				**11,000**
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	9,350
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		0
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	2,805
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	2Hr Firewall		0%	
				Cumulative Total	**30%**	
	Results					
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 2 (4-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	189.33			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			568	
	F	**Base fire flow without reductions**				8,000
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	6,800
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		0
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	3,060
		East Side	2Hr Firewall		0%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**45%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #:	118224	**Legend:**	Input by User
Project Name:	The Commons - Phase 4		No Input Required
Date:	9/13/2024	**Reference:**	Fire Underwriter's Survey Guideline (2020)
Input By:	MS		Formula Method
Reviewed By:	SB		
Drawing Reference:			

Building Description: 3-Storey Townhouse Block 3 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	367.33			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,102**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**11,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**2,805**
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	2Hr Firewall		0%	
				Cumulative Total	**30%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 3 (4-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
			Base Fire Flow			
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	183.67			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**551**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**8,000**
			Reductions or Surcharges			
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%	-15%	**6,800**
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**3,060**
		East Side	2Hr Firewall		0%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**45%**	
			Results			
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #:	118224	**Legend:**	Input by User
Project Name:	The Commons - Phase 4		No Input Required
Date:	9/13/2024	**Reference:**	Fire Underwriter's Survey Guideline (2020)
Input By:	MS		Formula Method
Reviewed By:	SB		
Drawing Reference:			

Building Description: 3-Storey Townhouse Block 4 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	378.67			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,136**	
	F	**Base fire flow without reductions**				**11,000**
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
		Cumulative Sub-Total			**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
		Cumulative Total			**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**2,805**
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	2Hr Firewall		0%	
		Cumulative Total			**30%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 4 (4-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m²)	189.33			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m²)			**568**	
	F	**Base fire flow without reductions**				**8,000**
		$F = 220\, C\, (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**6,800**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
		Cumulative Sub-Total			**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
		Cumulative Total			**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**3,060**
		East Side	2Hr Firewall		0%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
		Cumulative Total			**45%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 5 (10-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	477			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,431**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**12,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**4,080**
		East Side	>30m		0%	
		South Side	20.1 - 30 m		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**40%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**14,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 6 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	378.67			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,136**	
	F	**Base fire flow without reductions** $F = 220\,C\,(A)^{0.5}$				**11,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	2Hr Firewall		0%	**2,805**
		East Side	10.1 - 20 m		15%	
		South Side	10.1 - 20 m		15%	
		West Side	>30m		0%	
				Cumulative Total	**30%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #:	118224	**Legend:**	Input by User
Project Name:	The Commons - Phase 4		No Input Required
Date:	9/13/2024	**Reference:**	Fire Underwriter's Survey Guideline (2020)
Input By:	MS		Formula Method
Reviewed By:	SB		
Drawing Reference:			

Building Description: 3-Storey Townhouse Block 6 (4-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m²)	378.67			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m²)			**1,136**	
	F	**Base fire flow without reductions**				**11,000**
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**1,403**
		East Side	10.1 - 20 m		15%	
		South Side	2Hr Firewall		0%	
		West Side	>30m		0%	
				Cumulative Total	**15%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**11,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**183**
				or	USGPM	2,906

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #:	118224	**Legend:**	Input by User
Project Name:	The Commons - Phase 4		No Input Required
Date:	9/13/2024	**Reference:**	Fire Underwriter's Survey Guideline (2020)
Input By:	MS		Formula Method
Reviewed By:	SB		
Drawing Reference:			

Building Description: 3-Storey Townhouse Block 7 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	386			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**1,158**	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				**11,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**2,805**
		East Side	10.1 - 20 m		15%	
		South Side	2Hr Firewall		0%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**30%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 8 (6-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	277			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			**831**	
	F	**Base fire flow without reductions** $F = 220\,C\,(A)^{0.5}$				**10,000**
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**8,500**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinkler Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	2Hr Firewall		0%	**3,825**
		East Side	10.1 - 20 m		15%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**45%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User; No Input Required
Reference: Fire Underwriter's Survey Guideline (2020) Formula Method

Building Description: 3-Storey Townhouse Block 9 (8-units)
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m²)	386			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m²)			**1,158**	
	F	**Base fire flow without reductions**				**11,000**
		$F = 220\, C\, (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**9,350**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**2,805**
		East Side	10.1 - 20 m		15%	
		South Side	2Hr Firewall		0%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**30%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: The Commons - Phase 4
Date: 9/13/2024
Input By: MS
Reviewed By: SB
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 3-Storey Townhouse Block 10
Type V - Wood frame

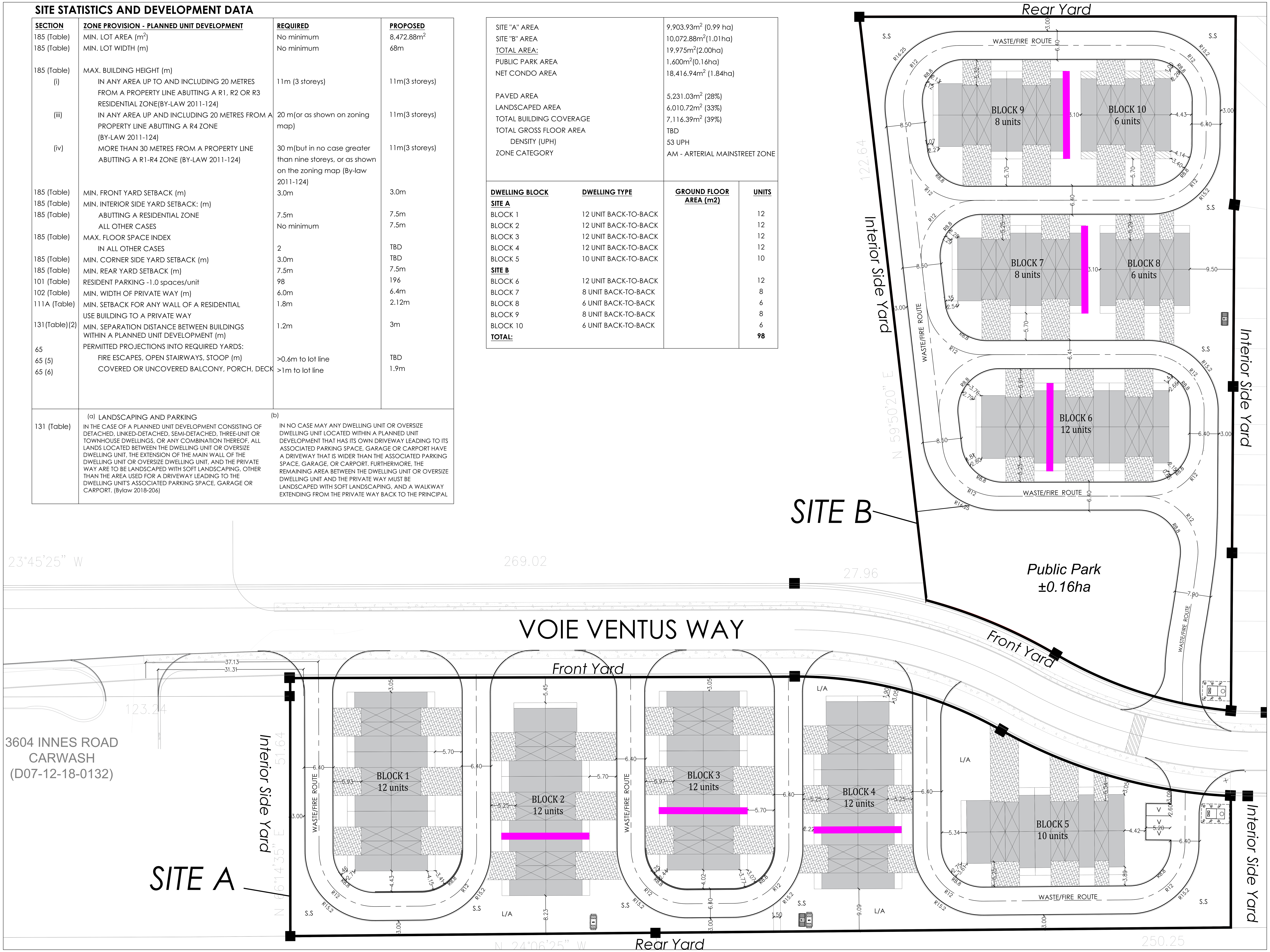
Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	277			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0				
		Area of structure considered (m^2)			831	
	F	**Base fire flow without reductions** $F = 220\ C\ (A)^{0.5}$				10,000
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	8,500
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		0
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	0%	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	0%	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	2Hr Firewall		0%	3,400
		East Side	10.1 - 20 m		15%	
		South Side	20.1 - 30 m		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	40%	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

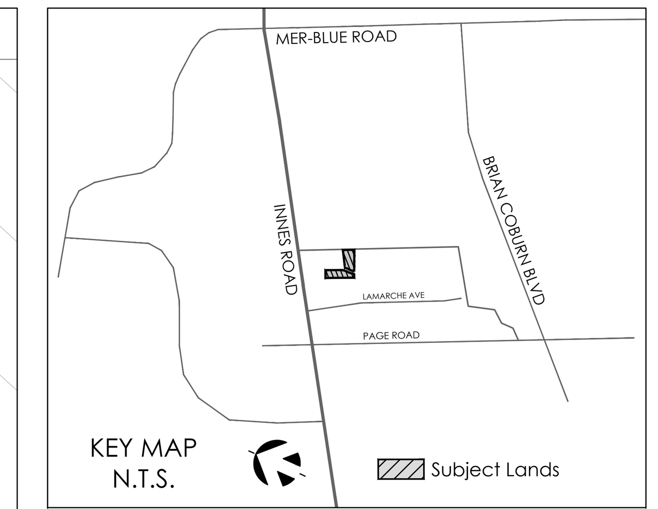
SITE STATISTICS AND DEVELOPMENT DATA

SECTION	ZONE PROVISION - PLANNED UNIT DEVELOPMENT	REQUIRED	PROPOSED
185 (Table)	MIN. LOT AREA (m^2)	No minimum	8,472.88m^2
185 (Table)	MIN. LOT WIDTH (m)	No minimum	68m
185 (Table)	MAX. BUILDING HEIGHT (m)		
(i)	IN ANY AREA UP TO AND INCLUDING 20 METRES FROM A PROPERTY LINE ABUTTING A R1, R2 OR R3 RESIDENTIAL ZONE(BY-LAW 2011-124)	11m (3 storeys)	11m(3 storeys)
(iii)	IN ANY AREA UP AND INCLUDING 20 METRES FROM A PROPERTY LINE ABUTTING A R4 ZONE (BY-LAW 2011-124)	20 m(or as shown on zoning map)	11m(3 storeys)
(iv)	MORE THAN 30 METRES FROM A PROPERTY LINE ABUTTING A R1-R4 ZONE (BY-LAW 2011-124)	30 m(but in no case greater than nine storeys, or as shown on the zoning map (By-law 2011-124)	11m(3 storeys)
185 (Table)	MIN. FRONT YARD SETBACK (m)	3.0m	3.0m
185 (Table)	MIN. INTERIOR SIDE YARD SETBACK: (m)		
185 (Table)	ABUTTING A RESIDENTIAL ZONE	7.5m	7.5m
	ALL OTHER CASES	No minimum	7.5m
185 (Table)	MAX. FLOOR SPACE INDEX		
	IN ALL OTHER CASES	2	TBD
185 (Table)	MIN. CORNER SIDE YARD SETBACK (m)	3.0m	TBD
185 (Table)	MIN. REAR YARD SETBACK (m)	7.5m	7.5m
101 (Table)	RESIDENT PARKING -1.0 spaces/unit	98	196
102 (Table)	MIN. WIDTH OF PRIVATE WAY (m)	6.0m	6.4m
111A (Table)	MIN. SETBACK FOR ANY WALL OF A RESIDENTIAL USE BUILDING TO A PRIVATE WAY	1.8m	2.12m
131(Table)(2)	MIN. SEPARATION DISTANCE BETWEEN BUILDINGS WITHIN A PLANNED UNIT DEVELOPMENT (m)	1.2m	3m
65	PERMITTED PROJECTIONS INTO REQUIRED YARDS:		
65 (5)	FIRE ESCAPES, OPEN STAIRWAYS, STOOP (m)	>0.6m to lot line	TBD
65 (6)	COVERED OR UNCOVERED BALCONY, PORCH, DECK	>1m to lot line	1.9m
131 (Table)	(a) LANDSCAPING AND PARKING IN THE CASE OF A PLANNED UNIT DEVELOPMENT CONSISTING OF DETACHED, LINKED-DETACHED, SEMI-DETACHED, THREE-UNIT OR TOWNHOUSE DWELLINGS, OR ANY COMBINATION THEREOF, ALL LANDS LOCATED BETWEEN THE DWELLING UNIT OR OVERSIZE DWELLING UNIT, THE EXTENSION OF THE MAIN WALL OF THE DWELLING UNIT OR OVERSIZE DWELLING UNIT, AND THE PRIVATE WAY ARE TO BE LANDSCAPED WITH SOFT LANDSCAPING, OTHER THAN THE AREA USED FOR A DRIVEWAY LEADING TO THE DWELLING UNIT'S ASSOCIATED PARKING SPACE, GARAGE OR CARPORT. (Bylaw 2018-206)	(b) IN NO CASE MAY ANY DWELLING UNIT OR OVERSIZE DWELLING UNIT LOCATED WITHIN A PLANNED UNIT DEVELOPMENT THAT HAS ITS OWN DRIVEWAY LEADING TO ITS ASSOCIATED PARKING SPACE, GARAGE OR CARPORT HAVE A DRIVEWAY THAT IS WIDER THAN THE ASSOCIATED PARKING SPACE, GARAGE, OR CARPORT. FURTHERMORE, THE REMAINING AREA BETWEEN THE DWELLING UNIT OR OVERSIZE DWELLING UNIT AND THE PRIVATE WAY MUST BE LANDSCAPED WITH SOFT LANDSCAPING, AND A WALKWAY EXTENDING FROM THE PRIVATE WAY BACK TO THE PRINCIPAL	

SITE "A" AREA	9,903.93m^2 (0.99 ha)
SITE "B" AREA	10,072.88m^2(1.01ha)
TOTAL AREA:	19,975m^2(2.00ha)
PUBLIC PARK AREA	1,600m^2(0.16ha)
NET CONDO AREA	18,416.94m^2 (1.84ha)
PAVED AREA	5,231.03m^2 (28%)
LANDSCAPED AREA	6,010.72m^2 (33%)
TOTAL BUILDING COVERAGE	7,116.39m^2 (39%)
TOTAL GROSS FLOOR AREA	TBD
DENSITY (UPH)	53 UPH
ZONE CATEGORY	AM - ARTERIAL MAINSTREET ZONE

DWELLING BLOCK	DWELLING TYPE	GROUND FLOOR AREA (m2)	UNITS
SITE A			
BLOCK 1	12 UNIT BACK-TO-BACK		12
BLOCK 2	12 UNIT BACK-TO-BACK		12
BLOCK 3	12 UNIT BACK-TO-BACK		12
BLOCK 4	12 UNIT BACK-TO-BACK		12
BLOCK 5	10 UNIT BACK-TO-BACK		10
SITE B			
BLOCK 6	12 UNIT BACK-TO-BACK		12
BLOCK 7	8 UNIT BACK-TO-BACK		8
BLOCK 8	6 UNIT BACK-TO-BACK		6
BLOCK 9	8 UNIT BACK-TO-BACK		8
BLOCK 10	6 UNIT BACK-TO-BACK		6
TOTAL:			98





SCALE 1:300

LEGEND

- BACK TO BACK TOWNHOUSE DWELLING
- DRIVEWAY
- PATHWAY
- CROSSWALK
- CURB (0.2m)
- DEPRESSED CURB
- PORCH
- S.S SNOW STORAGE AREA
- L/A LANDSCAPED AREA
- PROPOSED LOT BOUNDARY
- BLOCK BOUNDARY
- V VISITOR PARKING
- SWITCHBOARD
- MINI SUB
- SWITCHGEAR
- FIREWALL LOCATIONS

NOVATECH MARKUP

DATE [D.M.Y]	REVISION	BY
12/09/24	Revision 1	JH
12/08/24	Draft for review	WS

GENERAL NOTES

1. DO NOT SCALE DRAWINGS FOR PRINT.
2. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF KORSIAK URBAN PLANNING AND MATTAMY HOMES. COPYRIGHT RESERVED.
3. WALKWAYS AND CURBS TO BE TIED INTO PUBLIC ROW WHERE APPLICABLE.
4. REFERENCES CITY OF OTTAWA T.W.S.I. DETAIL SC7.3

PROJECT TEAM

SITE PLAN DESIGN: KORSIAK Urban Planning
LANDSCAPE ARCHITECTURE: NAK design strategies
MECHANICAL/ ELECTRICAL: LRL
PLANNING: NOVATECH
TRANSPORTATION: NOVATECH
ARCHITECTURE: Glenview homes
GEOTECHNICAL & STRUCTURAL: patersongroup
CIVIL ENGINEER: NOVATECH

GLENVIEW
THE COMMONS SITE PLAN

PART OF LOT 4
CONCESSION 3 (OTTAWA FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
REGISTERED PLAN #
CITY OF OTTAWA

TITLE: SITE PLAN

DATE: OCTOBER 7, 2024
DRAWN BY: JH
CHECKED BY: CR
DRAWING NO.
FILE NO.:
JOB NO.:

Water Demand
Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required
Calculated Cells →
Reference: Ottawa Design Guidelines - Water Distribution (2010 and TBs)
MOE Design Guidelines for Drinking-Water Systems (2008)
Fire Underwriter's Survey Guideline (2020)
Ontario Building Code, Part 3 (2012)

Small System = NO

Location	Total Water Demand																				
Node	Residential Input & Average Demand							Industrial / Commercial / Institutional (ICI) Input & Average Demand						Maximum Day & Peak Hour Demand						Design Fire Demand	
								Indust. Area						Maximum Day Demand			Peak Hour Demand			Required Fire Flow (RFF)	
	Singles	Semis / Towns	Apts (2-BR)	Apts (1-BR)	Apts (Avg)	Pop. Equiv.	Res. Average Day Flow Demand (L/s)	Light (ha.)	Heavy (ha.)	Comm. Area (ha.)	Inst. Area (ha.)	Other Area (ha.)	ICI Average Day Flow Demand (L/s)	Res. Peaking Factor	ICI Peaking Factor	Max Day Flow Demand (L/s)	Res. Peaking Factor	ICI Peaking Factor	Peak Hour Flow Demand (L/s)	FUS (L/min)	Max Day + RFF (L/s)
3						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
4		6				16.20	0.05						0.00	2.50	1.50	0.13	5.50	2.70	0.29	14,000	233.46
5		12				32.40	0.11						0.00	2.50	1.50	0.26	5.50	2.70	0.58	14,000	233.60
6						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
7						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
8		12				32.40	0.11						0.00	2.50	1.50	0.26	5.50	2.70	0.58	14,000	233.60
9		12				32.40	0.11						0.00	2.50	1.50	0.26	5.50	2.70	0.58	14,000	233.60
10						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
11						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
12						0.00	0.00					0.170	0.02	2.50	1.50	0.03	5.50	2.70	0.05	14,000	233.36
13						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
14		16				43.20	0.14						0.00	2.50	1.50	0.35	5.50	2.70	0.77	14,000	233.68
15						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
16						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
17						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
18		9				24.30	0.08						0.00	2.50	1.50	0.20	5.50	2.70	0.43	12,000	200.20
19						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
20						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
21		10				27.00	0.09						0.00	2.50	1.50	0.22	5.50	2.70	0.48	12,000	200.22
22						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
23						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
24		12				32.40	0.11						0.00	2.50	1.50	0.26	5.50	2.70	0.58	12,000	200.26
25		9				24.30	0.08						0.00	2.50	1.50	0.20	5.50	2.70	0.43	12,000	200.20
26						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
27						0.00	0.00						0.00	2.50	1.50	0.00	5.50	2.70	0.00		0.00
Totals	**0**	**98**	**0**	**0**	**0**	**264.60**	**0.86**	**0.00**	**0.00**	**0.00**	**0.00**	**0.170**	**0.02**	**2.50**	**1.50**	**2.17**	**5.50**	**2.70**	**4.77**		

Demand Parameters

Residential					
Unit Type Population Equiv.	Singles	Semis/ Towns	Apts (2-BR)	Apts (1-BR)	Apts (Avg)
	3.4	2.7	2.1	1.4	1.8
Daily Demand	L/per person/day				
Average Demand	280				
Basic Demand	200				

Institutional / Commercial / Industrial				
Indust.		Comm.	Inst.	Other Use [1]
Light	Heavy			
L/gross ha/day				
35,000	55,000	28,000	28,000	9,300
10,000	17,000	17,000	17,000	

[1] Park flow based on EUC Ph3 CDP MSS by DSEL dated 2020-06-25

Residential Peaking Factors		Max Day (x Avg Day)	Peak Hour (x Avg Day)
	Pop.		
Small System (If Applicable)	0	9.50	14.30
	30	9.50	14.30
	150	4.90	7.40
Modified	300	3.60	*5.50*
	450	3.00	*5.50*
	500	2.90	*5.50*
Large System (Default)	> 500	2.50	5.50

ICI Peaking Factors	Max Day (x Avg Day)	Peak Hour (x Avg Day)
	1.50	2.70

Quick Fire Flow Reference Guide			
FUS (L/min)	Comments	OBC (L/min)	Comments
> 2,000	Min FUS	< 9,000	Unsprinklered Non- Combustible
	Low Density - Singles/Towns		
10,000	Complies w/ TB2014-01 Cap. (10m rear spacing, 6 units max, <600 m²)		
13,000	Non-complying w/TB2014-01. Calculate.		
15,000	**Medium Density** Back-to-back Towns.		
	High Density		
20,000	Wood Frame 4-Storey		
5,000	Fire-Resisitve Podium/Multi-Storey		
30,000	**High Contiguous / Hazard Areas**		
< 45,000	**Max FUS**		

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Maximum Pressure During Average Day (AVDY) Conditions

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required
Acceptable (40psi - 80psi)
Acceptable w/ PRV (81psi - 100psi)
Unacceptable (< 40psi or > 100psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)	Age (hrs)
3	90.56	0.00	130.75	40.19	57	0.91
4	90.97	0.05	130.75	39.78	57	1.03
5	91.00	0.11	130.75	39.75	57	0.90
6	90.73	0.00	130.76	40.03	57	0.66
7	90.76	0.00	130.77	40.01	57	0.62
8	91.02	0.11	130.77	39.75	57	0.74
9	90.88	0.11	130.77	39.89	57	0.63
10	90.53	0.00	130.77	40.24	57	0.41
11	90.41	0.00	130.78	40.37	57	0.40
12	90.47	0.02	130.79	40.32	57	0.38
13	90.61	0.00	130.79	40.18	57	0.28
14	90.43	0.14	130.79	40.36	57	0.10
15	90.26	0.00	130.79	40.53	58	0.26
16	90.25	0.00	130.79	40.54	58	0.02
17	90.35	0.00	130.79	40.44	58	0.27
18	90.98	0.08	130.79	39.81	57	1.64
19	90.54	0.00	130.79	40.25	57	2.27
20	90.97	0.00	130.79	39.82	57	6.27
21	90.80	0.09	130.79	39.99	57	7.02
22	90.55	0.00	130.79	40.24	57	4.12
23	91.01	0.00	130.79	39.78	57	16.16
24	90.90	0.11	130.79	39.89	57	21.68
25	91.18	0.08	130.79	39.61	56	5.41
26	90.65	0.00	130.75	40.10	57	0.70
27	90.23	0.00	130.79	40.56	58	0.01

Water Demand Design Sheet

NOVATECH
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Minimum Pressure During Peak Hour (PKHR) Conditions

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required
Acceptable (=> 40psi)
Unacceptable (< 40psi)
Note: Hydraulic modelling completed using EPANET 2.0.

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
3	90.56	0.00	127.24	36.68	52
4	90.97	0.29	127.23	36.26	52
5	91.00	0.58	127.23	36.23	52
6	90.73	0.00	127.23	36.50	52
7	90.76	0.00	127.22	36.46	52
8	91.02	0.58	127.21	36.19	51
9	90.88	0.58	127.21	36.33	52
10	90.53	0.00	127.21	36.68	52
11	90.41	0.00	127.21	36.80	52
12	90.47	0.05	127.21	36.74	52
13	90.61	0.00	127.20	36.59	52
14	90.43	0.77	127.20	36.77	52
15	90.26	0.00	127.20	36.94	53
16	90.25	0.00	127.20	36.95	53
17	90.35	0.00	127.20	36.85	52
18	90.98	0.43	127.20	36.22	52
19	90.54	0.00	127.20	36.66	52
20	90.97	0.00	127.20	36.23	52
21	90.80	0.48	127.20	36.40	52
22	90.55	0.00	127.20	36.65	52
23	91.01	0.00	127.20	36.19	51
24	90.90	0.58	127.20	36.30	52
25	91.18	0.43	127.20	36.02	51
26	90.65	0.00	127.23	36.58	52
27	90.23	0.00	127.20	36.97	53

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Max Day Plus Fire Flow (MXDY+FF #2) Condition

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required | Acceptable (=> 20psi) | Unacceptable (< 20psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Run 1 (12000 L/min)

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
3	90.56	0.00	118.66	28.10	40
4	90.97	0.13	118.25	27.28	39
5	91.00	0.26	118.03	27.03	38
6	90.73	0.00	117.60	26.87	38
7	90.76	0.00	115.66	24.90	35
8	91.02	0.26	115.32	24.30	35
9	90.88	0.26	115.15	24.27	35
10	90.53	0.00	114.81	24.28	35
11	90.41	0.00	114.06	23.65	34
12	90.47	0.03	113.23	22.76	32
13	90.61	0.00	112.92	22.31	32
14	90.43	0.35	112.45	22.02	31
15	90.26	0.00	112.02	21.76	31
16	90.25	0.00	112.04	21.79	31
17	90.35	0.00	112.19	21.84	31
18	90.98	0.20	109.29	18.31	26
19	90.54	0.00	108.46	17.92	25
20	90.97	0.00	108.42	17.45	25
21	90.80	52.72	108.64	17.84	25
22	90.55	0.00	107.36	16.81	24
23	91.01	0.00	107.36	16.35	23
24	90.90	95.26	106.54	15.64	22
25	91.18	52.70	106.82	15.64	22
26	90.65	0.00	118.07	27.42	39
27	90.23	0.00	112.23	22.00	31

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Max Day Plus Fire Flow (MXDY+FF #2) Condition

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required
Acceptable (=> 20psi)
Unacceptable (< 20psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Run 2 (12000 L/min)

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
3	90.56	0.00	118.66	28.10	40
4	90.97	0.13	118.25	27.28	39
5	91.00	0.26	118.03	27.03	38
6	90.73	0.00	117.60	26.87	38
7	90.76	0.00	115.66	24.90	35
8	91.02	0.26	115.32	24.30	35
9	90.88	0.26	115.15	24.27	35
10	90.53	0.00	114.81	24.28	35
11	90.41	0.00	114.06	23.65	34
12	90.47	0.03	113.23	22.76	32
13	90.61	0.00	112.92	22.31	32
14	90.43	0.35	112.45	22.02	31
15	90.26	0.00	112.03	21.77	31
16	90.25	0.00	112.04	21.79	31
17	90.35	0.00	112.20	21.85	31
18	90.98	95.20	108.72	17.74	25
19	90.54	0.00	108.72	18.18	26
20	90.97	0.00	108.94	17.97	26
21	90.80	52.72	109.11	18.31	26
22	90.55	0.00	108.61	18.06	26
23	91.01	0.00	108.71	17.70	25
24	90.90	0.26	108.66	17.76	25
25	91.18	52.70	108.48	17.30	25
26	90.65	0.00	118.07	27.42	39
27	90.23	0.00	112.23	22.00	31

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Max Day Plus Fire Flow (MXDY+FF #4) Condition

Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required
Acceptable (=> 20psi)
Unacceptable (< 20psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Run 1 (14000 L/min)

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
3	90.56	0.00	107.57	17.01	24
4	90.97	0.13	106.64	15.67	22
5	91.00	46.26	106.14	15.14	22
6	90.73	0.00	106.13	15.40	22
7	90.76	0.00	106.05	15.29	22
8	91.02	46.26	105.82	14.80	21
9	90.88	0.26	105.90	15.02	21
10	90.53	0.00	106.07	15.54	22
11	90.41	46.00	106.14	15.73	22
12	90.47	0.03	106.62	16.15	23
13	90.61	0.00	106.84	16.23	23
14	90.43	0.35	107.15	16.72	24
15	90.26	0.00	107.27	17.01	24
16	90.25	0.00	107.28	17.03	24
17	90.35	0.00	107.18	16.83	24
18	90.98	0.20	107.27	16.29	23
19	90.54	0.00	107.27	16.73	24
20	90.97	0.00	107.27	16.30	23
21	90.80	0.22	107.27	16.47	23
22	90.55	0.00	107.27	16.72	24
23	91.01	0.00	107.27	16.26	23
24	90.90	0.26	107.27	16.37	23
25	91.18	0.20	107.27	16.09	23
26	90.65	95.00	106.15	15.50	22
27	90.23	0.00	107.31	17.08	24

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Max Day Plus Fire Flow (MXDY+FF #4) Condition

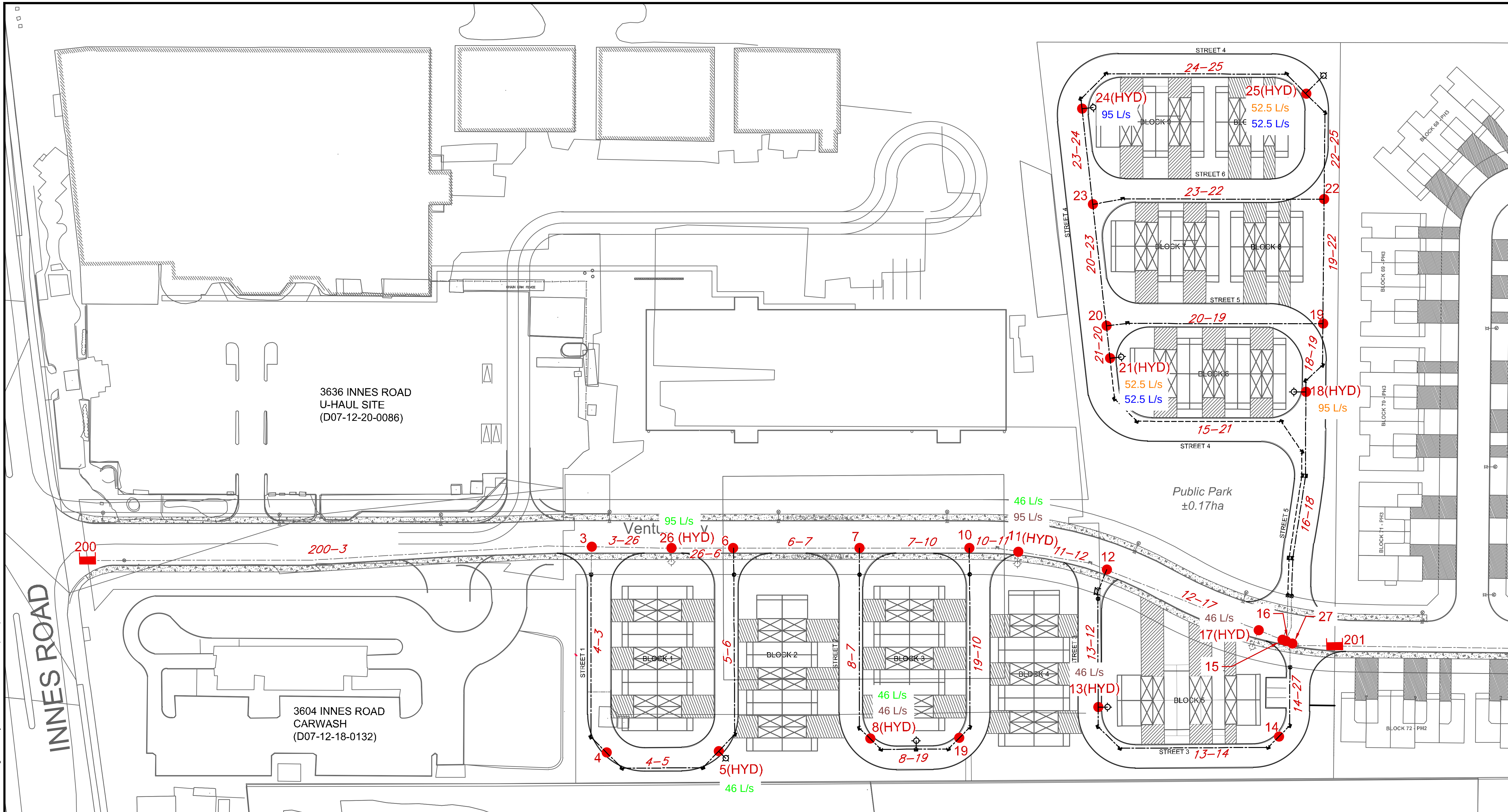
Novatech Project #: 118224
Project Name: THE COMMONS PHASE 4
Date: 9/10/2024
Input By: VBP
Reviewed By: BCS
Drawing Reference: 118224 - WM

Legend: Input by User | No Input Required | Acceptable (=> 20psi) | Unacceptable (< 20psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Run 2 (14000 L/min)

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
3	90.56	0.00	112.99	22.43	32
4	90.97	0.13	112.32	21.35	30
5	91.00	0.26	111.95	20.95	30
6	90.73	0.00	111.26	20.53	29
7	90.76	0.00	108.08	17.32	25
8	91.02	46.26	107.11	16.09	23
9	90.88	0.26	107.09	16.21	23
10	90.53	0.00	107.06	16.53	24
11	90.41	95.00	106.51	16.10	23
12	90.47	0.03	106.53	16.06	23
13	90.61	46.00	106.47	15.86	23
14	90.43	0.35	106.82	16.39	23
15	90.26	0.00	106.92	16.66	24
16	90.25	0.00	106.94	16.69	24
17	90.35	46.00	106.71	16.36	23
18	90.98	0.20	106.93	15.95	23
19	90.54	0.00	106.93	16.39	23
20	90.97	0.00	106.92	15.95	23
21	90.80	0.22	106.92	16.12	23
22	90.55	0.00	106.92	16.37	23
23	91.01	0.00	106.92	15.91	23
24	90.90	0.26	106.92	16.02	23
25	91.18	0.20	106.92	15.74	22
26	90.65	0.00	112.02	21.37	30
27	90.23	0.00	107.00	16.77	24



LEGEND

5–4 EXISTING 200mmØ WATERMAIN

5–4 PROPOSED 200mmØ WATERMAIN

5–4 PROPOSED 250mmØ WATERMAIN

4 WATERMAIN NODE

400 RESERVOIR

MD + FF #2 RUN 1 - 12000 L/min COMBINED FLOW

MD + FF #2 RUN 2 - 12000 L/min COMBINED FLOW

MD + FF #4 RUN 1 - 14000 L/min COMBINED FLOW

MD + FF #4 RUN 2 - 14000 L/min COMBINED FLOW

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

THE COMMONS PHASE 4

WATERMAIN LAYOUT PLAN

SCALE	DATE	JOB	FIGURE
1 : 1000	OCT 2024	118224	WM

1. Background

On behalf of the City of Ottawa, the National Research Council of Canada (NRC) evaluated the City's hydrant spacing guidelines in relation to Required Fire Flow (RFF) as calculated using the Fire Underwriters Survey (FUS) methodology. This work lead to the development of a procedure to be used to establish the appropriate sizing of, and hydrant spacing on, dead-end watermains. This procedure may also be used as an optional watermain network design method to optimize watermain sizing based on RFF and standard hydrant spacing.

The procedure is partially based on the NFPA 1: Fire Code (NFPA1) and the City of Ottawa existing hydrant classification practice (refer to **Attachment A** at the end of this appendix for relevant excerpts of the Fire Code).

2. Rationale for Guideline

Given a Required Fire Flow (RFF) for a certain asset/structure/building, proper planning must ensure that there is a sufficient number of hydrants at sufficient proximities to actually provide the RFF. Both the capacity of the hydrants and their proximity to the asset/structure/building must be considered. Pressure losses (due to friction) in firehoses are proportional to the firehose length. Therefore, the actual fire flow delivered by the nozzle at the end of a very long firehose will be less compared to a short firehose connected to the same hydrant. Table 1 provides conservative values for hydrant fire flow capacity adjusted for firehose length.

3. Hydrant Capacity Requirement

For the purposes of this guidelines, the aggregate fire flow capacity of all contributing fire hydrants within 150 m of a building/asset/structure[1], measured in accordance with Table 1, shall be not less than the RFF.

4. Standard Practice

For the vast majority of developments, hydrant spacing as indicated in Section 4.5, Table 4.9, Ottawa Design Guidelines – Water Distribution, are sufficient to meet the RFF. This has been verified by evaluating approved development plans representing a

[1] Although NFPA 1 considers hydrant contribution at distances of up to 1000ft (305 m), Ottawa Fire Services (OFS) would need two pumpers to deliver flow from such a distance (one pumper midway – acting as a booster). Moreover, OFS cautioned that some redundancy is advisable to account for accessibility limitations in emergency situations, wind effects, etc. Therefore 150 m was considered as the maximum contributing distance

range of land uses and configurations. However, in some instances involving dead-end watermains, standard spacing requirements may not be sufficient to meet RFF.

Standard design practice involves systematic checking of design fire flows at every node in hydraulic models of proposed water distribution systems. Normally the entire design fire flow is applied to each node in succession. Nodes are typically at water main junctions rather than actual hydrant locations. This significantly simplifies the design process and the current software packages that are normally used for this purpose have been developed based on this practice. The "point load assumption" produces a conservative design.

Table 1. Maximum flow to be considered from a given hydrant

Hydrant Class	Distance to asset/structure/building (m)[a]	Contribution to required fire flow (L/min)[b]
AA	≤ 75	5,700
	> 75 and ≤ 150	3,800
A	≤ 75	3,800
	> 75 and ≤ 150	2,850
B	≤ 75	1,900
	> 75 and ≤ 150	1,500
C	≤ 75	800
	> 75 and ≤ 150	800

[a] Distance of contributing hydrant from the structure, measured in accordance with NFPA 1 (Appendix A).

[b] Maximum flow contribution to be considered for a given asset/structure/building, at a residual pressure of 20 psi, measured at the location of the main, at ground level.

4. Intended Application of Guideline

The intent of this procedure is to:

- Determine the appropriate sizing of dead end watermains and associated hydrant requirements.
- Provide an optional approach to local watermain network sizing that will assist the designer in determining the minimum pipe sizing needed to meet RFF.

The procedure permits the designer to: (a) reconcile available hydrant flow with computed RFFs, and (b) allow the distribution of RFFs along multiple hydrants, rather than consider RFF to be a point flow. The application of this protocol may result in reduced watermain diameters compared to those determined based on a traditional design approach. Caution is required in the application of the procedure to ensure that the transmission function of any watermains identified in a Master Servicing Study is not compromised. Normally, watermains 300mm in diameter and larger that are identified in such studies would not be considered for resizing.

5. Application Procedure

5.1 Rated hydrants

The procedure described here would apply to an existing watermain network with existing hydrants (i.e., re-development or infill in existing neighborhoods):

- Identify critical zones within the (re)development area, e.g., high RFF, dead ends, small diameter watermains, low C factor, and/or high geographic elevation zones.
- For the critical zones use Table 1 to examine if there are sufficient hydrants to deliver the RFF (following procedure described in 5.3).
- If hydrant capacity is insufficient, then consider either:
    - adding hydrants as appropriate;
    - determine if the existing hydrants can be upgraded to higher rating; or
    - upgrade existing watermains.

5.2 Un-rated hydrants

There are currently about 24,800 hydrants in the City of Ottawa, of which about 78% are rated. Of the rated hydrants, 96% are AA (Blue), 3% are A (Green). Many of the un-rated hydrants are located in old parts of the City, often installed on water mains with minimum diameter of 6" (150 mm), and would be likely to have a low rating.

Based on a review of hydrants that have been installed as part of recent urban development, approximately 99% of those which were rated are rated AA, and only 1% are rated A.

5.2.1 Un-rated Existing Hydrants

In cases where fire flow is to be evaluated in areas with an established water distribution network and with existing fire hydrants (i.e., re-development or infill in existing neighborhoods), all un-rated hydrants should be tested and rated in accordance with NFPA standard 291. The procedure described in Section 5.1 can then be followed to complete the design.

5.2.2 Planned hydrants

Planned hydrants cannot be tested for rating because they have not been installed yet. Moreover, the rating of a hydrant is an intrinsic property of the hydrant and can therefore not be directly evaluated by simulation. Based on the statistics cited previously, it can be assumed for design purposes that all planned hydrants are AA. However, there could be a situation where the proposed network might not have sufficient capacity to supply 5,700 L/min to a AA-rated hydrant in a specific area. Hydraulic analysis is required to confirm that the distribution network is capable of providing the hydrants with the fire flows in Table 1.

5.3 Hydrant Placement and Watermain Size Optimization

Ottawa design guidelines for watermain sizing and hydrant placement (Section 4) stipulate that the RFF be added to the average hourly rate of a peak day demand. This fire flow is added to hydraulic nodes in the vicinity of the planned development, while ensuring that the residual pressure is at least 140 kPa (measured at the location of the main, at ground level).[2] The following procedure is used to optimize watermain sizing and hydrant placement based on the RFF.

- Place hydrants throughout the development area according to the current Ottawa design guidelines.
- Size water mains and locate hydrants according to standard design procedures. Assume all hydrants are AA-rated.
- Identify the most critical zones in the development area, e.g. highest required fire flows, dead ends, longest distances between junctions, and/or highest elevation. Within these critical zones identify critical structures, i.e. those with highest RFF or greatest distance from proposed hydrant locations. Identify the closest hydrants to these buildings.
- For each critical structure, distribute the RFF according to Table 1 (i.e., assign a flow of 5,700 L/min to all hydrants with a distance of less or equal to 75 m from the test property and 3,800 L/min to all hydrants with a distance of more than 75 m but less or equal to 150 m from the test property) These hydrants are to be represented as hydrant-nodes in the network model, where the hydrant lateral would connect to the proposed water main.

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[2] At the time when this protocol was proposed, the City of Ottawa had in effect Technical Bulletin ISDTB 2014-02, whereby RFF may be capped at 10,000 L/min for single detached dwellings (with a minimum 10 m separation between the backs of adjacent units and for side-by-side town and row houses that comply with the OBC Div. B, subsection 3.1.10 requirement (compartments of no more than 600 m^2 area).

- For each critical structure, run a single fire flow simulation ensuring that the RFF is provided by hydrants within 150 m distance from the test property, with a minimum residual pressure of 140 kPa.
- If the required residual pressure cannot be achieved, consider either re-sizing of pipes, and/or re-spacing of hydrants.

The above procedure is optional except for dead-end watermains servicing cul-de-sacs because (a) based on standard spacing requirements, there would often be insufficient fire flow provided and (b) the watermain would otherwise could be sized larger than necessary and lead to excessive water age and on-going flushing requirements.

Irrespective of the above, if the RFF is equal to or less than 10,000 L/min, then:

- where the distance between two adjacent hydraulic nodes is greater than the inter-hydrant spacing allowed in the guideline, a hydraulic node should be added halfway between the two nodes, and proceed with fire flow simulations to verify watermain sizing, ensuring that the simulation considers RFF at the new hydraulic node.

Attachment A—Excerpts from NFPA 1 Fire Code (2015 Edition)

18.5 Fire Hydrants.

18.5.1 Fire Hydrant Locations and Distribution. Fire hydrants shall be provided in accordance with Section 18.5 for all new buildings, or buildings relocated into the jurisdiction unless otherwise permitted by 18.5.1.1 or 18.5.1.2.

18.5.1.4* The distances specified in Section 18.5 shall be measured along fire department access roads in accordance with 18.2.3.

18.5.1.5 Where fire department access roads are provided with median dividers incapable of being crossed by fire apparatus, or where fire department access roads have traffic counts of more than 30,000 vehicles per day, hydrants shall be placed on both sides of the fire department access road on an alternating basis, and the distances specified by Section 18.5 shall be measured independently of the hydrants on the opposite side of the fire department access road.

18.5.1.6 Fire hydrants shall be located not more than 12 ft (3.7 m) from the fire department access road.

18.5.2 Detached One- and Two-Family Dwellings. Fire hydrants shall be provided for detached one- and two-family dwellings in accordance with both of the following:

(1) The maximum distance to a fire hydrant from the closest point on the building shall not exceed 600 ft (183 m).

(2) The maximum distance between fire hydrants shall not exceed 800 ft (244 m).

18.5.3 Buildings Other than Detached One- and Two-Family Dwellings. Fire hydrants shall be provided for buildings other than detached one- and two-family dwellings in accordance with both of the following:

(1) The maximum distance to a fire hydrant from the closest point on the building shall not exceed 400 ft (122 m).

(2) The maximum distance between fire hydrants shall not exceed 500 ft (152 m).

18.5.4 Minimum Number of Fire Hydrants for Fire Flow.

18.5.4.1 The minimum number of fire hydrants needed to deliver the required fire flow for new buildings in accordance with Section 18.4 shall be determined in accordance with Section 18.5.4.

18.5.4.2 The aggregate fire flow capacity of all fire hydrants within 1000 ft (305 m) of the building, measured in accordance with 18.5.1.4 and 18.5.1.5, shall be not less than the required fire flow determined in accordance with Section 18.4.

18.5.4.3* The maximum fire flow capacity for which a fire hydrant shall be credited shall be as specified by Table 18.5.4.3. Capacities exceeding the values specified in Table 18.5.4.3 shall be permitted when local fire department operations have the ability to accommodate such values as determined by the fire department.

Table 18.5.4.3 Maximum fire flow hydrant capacity

Distance to buildings[a]		Maximum capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

[a] Measured in accordance with 18.5.1.4 and 18.5.1.5.

[b] Minimum 20 psi (139.9 kPa) residual pressure.

18.5.4.4 Fire hydrants required by **18.5.2** and **18.5.3** shall be included in the minimum number of fire hydrants for fire flow required by **18.5.4**.

The City of Ottawa design guidelines on hydrant classification conform to the NFPA Standard #291, which recommends the following:

5.1 Classification of Hydrants. Hydrants should be classified in accordance with their rated capacities [at 20 psi (1.4 bar) residual pressure or other designated value as follows:

(1) Class AA — Rated capacity of 1500 gpm (5700L/min) or greater

(2) Class A — Rated capacity of 1000–1499 gpm (3800– 5699 L/min)

(3) Class B — Rated capacity of 500–999 gpm (1900–3799 L/min)

(4) Class C — Rated capacity of less than 500 gpm (1900 L/min)

Appendix F
Development Servicing Study Checklist

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

- ☐ Executive Summary (for larger reports only).
- ☒ Date and revision number of the report.
- ☒ Location map and plan showing municipal address, boundary, and layout of proposed development.
- ☒ Plan showing the site and location of all existing services.
- ☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
- ☒ Summary of Pre-consultation Meetings with City and other approval agencies.
- ☒ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.
- ☒ Statement of objectives and servicing criteria.
- ☒ Identification of existing and proposed infrastructure available in the immediate area.
- ☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).
- ☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.
- ☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.
- ☐ Proposed phasing of the development, if applicable.

☒ Reference to geotechnical studies and recommendations concerning servicing.

☒ All preliminary and formal site plan submissions should have the following information:
- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

☒ Confirm consistency with Master Servicing Study, if available

☒ Availability of public infrastructure to service proposed development

☒ Identification of system constraints

☒ Identify boundary conditions

☒ Confirmation of adequate domestic supply and pressure

☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.

☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.

☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

☒ Address reliability requirements such as appropriate location of shut-off valves

☐ Check on the necessity of a pressure zone boundary modification.

☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

- ☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.
- ☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- ☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- ☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

- ☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
- ☒ Confirm consistency with Master Servicing Study and/or justifications for deviations.
- ☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.
- ☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- ☒ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)
- ☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix ‘C’) format.
- ☒ Description of proposed sewer network including sewers, pumping stations, and forcemains.
- ☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
- ☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- ☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- ☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- ☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

- ☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- ☐ Analysis of available capacity in existing public infrastructure.
- ☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- ☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.
- ☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- ☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- ☐ Set-back from private sewage disposal systems.
- ☐ Watercourse and hazard lands setbacks.
- ☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- ☒ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- ☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- ☐ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- ☒ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.
- ☐ Identification of potential impacts to receiving watercourses
- ☐ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

- ☒ Inclusion of hydraulic analysis including hydraulic grade line elevations.
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

- ☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.
- ☒ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- ☐ Changes to Municipal Drains.
- ☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- ☒ Clearly stated conclusions and recommendations
- ☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
- ☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario