

FUNCTIONAL SERVICING REPORT FOR

Kettle Creek Subdivision
37719 Lake Line
Port Stanley ON

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SBM-18-0530

1. INTRODUCTION

This Functional Servicing Report (report) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) to address the second draft plan submission comments received via email from the Municipality of Central Elgin and from the Kettle Creek Conservation Authority dated September/October 2022, and all subsequent communications and conversations for the proposed Kettle Creek Subdivision development located at 37719 Lake Line in Port Stanley, Ontario (Subject Site).

This report is intended to represent a component of the overall site design submission to the Municipality of Central Elgin and should be read in conjunction with all other submitted documents. The following, along with the Site Engineering Drawings 1-19, provided separately, have been prepared to address the Municipality's requirements for the subject site.

The proposed subject site is 14.89 ha site in area and is bordered by the Lake Line Right-of-way (R.O.W) to the north and east. Kettle Creek Golf and County Club, and a Public School to the south, and River Road R.O.W to the west. It is our understanding that the proposed development is to include approximately 70 single family residential units, 18 semi-detached units, and 9 townhouse units (totalling 97 dwellings) with 6 additional blocks allotted for open space and walkways.

The work has been executed following the most recent Municipality of Central Elgin Infrastructure Design Guidelines and Construction Standards (IDGCS) 2004, per the discussions and request during the subdivision consultation meeting on (December 3, 2019), The City of St Thomas Design Guidelines Manual (DGM) 2022, Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Drinking-Water Systems, 2008 (DGDWS), MECP Design Guidelines for Stormwater Management Planning and Design Manual (SWMP&DM), and Ministry of Transportation Drainage Management Manual (MTO DMM).

1.1 EXISTING (PRE-DEVELOPMENT) CONDITIONS

Under pre-development conditions, the subject site is an open field consisting of an existing creek (open channel portion of the Marr Drain) located adjacent to the southeast boundary line, within the subject site property. Additionally, there is an existing municipality drain located within the property, as well as, an existing building, and silo located on the west side of the property. As shown on the Existing Conditions, Removals, and Sediment & Erosion Control Plan Sheets 3A & 3B, by SBM provided separately, the entire site drains to the southeast of the property, towards the existing open channel portion of the Marr Drain. The pre-development runoff coefficient (C) for the site is calculated to be 0.21.

1.2 PROPOSED (POST-DEVELOPMENT) CONDITIONS

Post-development conditions were obtained from Engineering Drawings by SBM, provided separately (see Master Servicing Plan, Sheet 4A & 4B). Under the post-development conditions, the site will be comprised of 70 single family residential units, 18 semi-detached units, and 9 townhouse units (totalling 97 dwellings) with 6 additional blocks allotted for open space and walkways. As per the municipality's IDGCS for single family/semi-detached dwellings, the runoff coefficient (C) for single family residential ranges from 0.35 - 0.75. Therefore, 0.5 was used for the post-development runoff coefficient for both the single family and semi-detached residential dwellings on this site. When also considering the imperviousness of the R.O.W. which was calculated to be 0.57, the composite runoff coefficient for both the single family/semi-detached dwellings and the right of way is 0.52 as shown in stormwater management (SWM) calculations provided in Appendix E.

2. SANITARY SERVICING

According to the Carlow Road watermain replacement – Phase 1 drawing, dated February 2012, and provided in Appendix A, there is an existing 200 mm diameter combined sewer in the Carlow Road R.O.W., that is directed to an existing pumping station that ultimately pumps the flows up Lake Line and discharges into the treatment facility on Scotch Line. According to the Master Servicing Plan Sheets 4A & 4B of the engineering drawings, provided separately, the site's sanitary sewer is proposed to extend southeast through the existing Kettle Creek Golf and Country Club lands (same ownership as development), then extend easterly through the existing arena located southeast of the proposed site, and ultimately discharging into the existing 200mm diameter combined sewer in the Carlow Road R.O.W. The 200 mm diameter combined sewer currently does not have enough capacity from the proposed connection to the existing pumping station for the proposed flows, therefore the existing 200 mm diameter combined sewer downstream of the proposed sanitary sewer connection in the Carlow Road R.O.W. will be replaced with a 375 mm diameter and 450 mm diameter sewer to convey existing and proposed sanitary flows to the pumping station. The existing pumping station has been confirmed by the Municipality to have sufficient capacity for the additional flows.

The site was divided into eighteen (18) sanitary catchments areas (A201 to A218). Four (4) external catchment areas (EX201 to EX204) which are currently discharging sanitary flows to the existing 200 mm diameter combined sewer in the Carlow Road R.O.W. were also included in the Sanitary Design Sheet as shown on the Sanitary Catchment Areas Plan, Sheet 7, provided separately. The population for each sanitary catchment was calculated using the low-density population of 3.5 people per unit, as per Municipality's IDGCS. For EX202, the population of 707 is calculated by adding 600 (for elementary school from the DSRM 2022 section 3.8.1) plus 82 (for the arena) plus 25 (number of lots $7 * 3.5$ people/unit). The sanitary peak flow was calculated by multiplying population in each sanitary catchment area by the average usage of 400 litres per day per capita. The sanitary peak design flow for the entire site area was calculated by adding residential peak flow and the infiltration allowance of 0.20 litres per second per hectare. These calculations are provided in the Sanitary Design Sheet, Sheet #8, provided separately.

The sanitary design sheet shows that the proposed sanitary sewers at the proposed slopes have sufficient capacity to convey the subject site's proposed sanitary peak design flow of 8.5 L/s to the sanitary sewer in the Carlow Road R.O.W., and ultimately to the existing pumping station. Refer to the Sanitary catchment Areas Plan and Sanitary Design Sheet on Sheets 7 and 8 respectively, provided separately.

Additional to the values calculated from the above, the storm portion of the existing 200 mm combined sewer (EX 203) was accounted for with approximately 0.08 ha tributary to the existing catch basin on the SAMH 2 to SAMH 15 pipe section, this was calculated assuming a time of concentration of 20.0 minutes (inlet time according to Municipality of Central Elgin) and runoff coefficient 'C' of 0.7 to add approximately 8 L/s to catchment EX202 under the 2-year design storm.

The storm portion of the existing 200 mm diameter combined sewer north of SAMH 15 has been estimated with a catchment area of 0.78 ha of storm drainage that is tributary to the existing 200 mm diameter combined sewer north of SAMH 15 based on the catch basins in Carlow Road R.O.W. north of SAMH 15. The storm flows were calculated assuming a time of concentration of 22.9 minutes (approximately 175 m from top of assumed catchment, limited at 1 m/s adjustment from 20.0 minutes) and runoff coefficient 'C' of 0.7 to add approximately 74 L/s to catchment EX203 under the 2-year design storm.

The existing 200 mm diameter combined sewer north of SAMH 15 was calculated to have a capacity of 46.3 L/s and an estimated design flow of 75.35 L/s. Therefore, in a conservative scenario, the 200 mm diameter combined sewer north of SAMH 15 is assumed not to meet the existing capacity requirements. To compensate

for the non-compliance, it is assumed that the excess flows under the 2-year design storm from Catchment EX203 will flow overland from the catch basins north of SAMH 15 to the catch basins within EX202 (south of SAMH15). Therefore, the difference between the design flow of 75.35 L/s and the assumed pipe capacity of 46.3 L/s were added to Catchment EX202 to ensure sufficient capacity has been provided in the combined sewer. The section of pipes between SAMH 9, SAMH 2, and SAMH 15 has been upsized to 375mm @ 0.15% and 450mm @ 0.16% respectively to accommodate these flows. Under existing conditions, the excess flows that are not currently captured (in the conservative scenario) continue to flow overland to the south and ultimately outlet at the Marr Drain crossing of the Carlow Road R.O.W.

Based on the above assumption, adequate capacity has been provided in the combined sewer upgrade in the Carlow Road R.O.W. during the 2-year storm event and the overall design. Please see design sheet #8 in the drawings.

3. WATER SERVICING

According to scan showing the existing watermain information in the Lake Line R.O.W., provided in Appendix B, there is currently a 200mm diameter watermain in the Lake Line R.O.W., available to service the subject site. A 200 mm watermain is proposed to be connected to the existing 200 mm diameter watermain in the Lake Line R.O.W. The subject site is proposed to be serviced by a 150 mm diameter watermain connected to the proposed 200 mm diameter watermain connected to the 200 mm watermain in the Lake Line R.O.W.

The hydraulic grade line (HGL) for the watermain connection was calculated by adding the residual pressure (for each demand scenario) to the estimated elevation of watermain connection at Lake Line R.O.W., based on hydrant flow test done on January 18, 2021, and water demand calculations provided in Appendix B. These conditions were applied to review the available water supply in the analysis.

Hydraulic demand calculations were considered with the normal water usage of residential occupancy as per the municipality's IDGCS Section 5 and MECP DGDWS Section 3. The design parameters are presented in the Section 5.1 below. Water servicing for the site is shown on Sheet 9, provided separately.

3.1. Design Criteria

The design parameters outlined below are based on the Municipality's water design standards found in Section 5 of the IDGCS, dated June 2004, The City of St Thomas DGM, and Section 3 of the MECP DGDWS:

- An average demand of 400 L/person per day
- Low & medium density residential of 3.5 persons per unit
- Minimum water pressures to be maintained in the distribution system of:
 - Minimum of 140 kPa (20 psi) at maximum day demand flow plus fire flow
 - Minimum of 275 kPa (40 psi) at maximum hourly demand flow
 - Minimum of 275 kPa (40 psi) at average day demand flow
- Maximum residual pressure in the distribution system should not exceed 700 kPa (100 psi)
- Peaking factors of 3.6 for maximum day and 5.4 for maximum hour
- Minimum 150mm diameter watermain size for systems designed to provide fire protection according to the City of St Thomas DGM.
- 1.5 m/s and 3 m/s maximum velocity during maximum hour domestic flow and fire flow conditions respectively (based on MECP DGDWS)

- Hazen Williams C factor of 100 for 150 mm and 110 for 200 mm diameter watermain according to section 5.4 of IDGCS

3.2. *Design Software*

The modeling software, EPANET V2, was used to calculate the hydraulic loads and aging of the system. In this case, the network consists of pipes, nodes (pipe junctions), and sources. EPANET calculates the flow rate and velocity of water in each pipe and the pressure at each node based on the total head at the connection points (source) and design demands assigned to select nodes. The network map with nodes and links (Water Distribution System Layout) for the average day and maximum hour is provided in Appendix C. The network map with nodes and links (Water Distribution System Layout) for the maximum day plus fire flow is provided in Appendix D.

3.3. *Design Assumptions*

The EPANET watermain maximum day plus fire flow conditions model was designed with a conservative approach analyzing only the most conservative scenario hydrant (Node H4) located furthest from the watermain source (Node 1). The assumption to this design was that the point furthest from the sources will produce the lowest pressure in the watermain during maximum day plus fire demand scenario. If the most conservative hydrant meets the pressure conditions, then the other proposed hydrants that are located closer to the source (Node 1) will have sufficient pressure.

3.4. *Domestic Water Demand*

Hydraulic demand calculations were considered with the normal water usage of residential occupancy as per municipality's IDGCS, Section 5, presented in the section 5.1 above. An average daily water demand for selected nodes was determined based on the number of units for each node, the low & medium density residential (3.5 persons per unit), and the average day domestic (residential) demand per capita (400 L/person per day). Maximum day and maximum hour flows were determined by multiplying the average daily flow by the established peaking factors. The water demand calculations are provided in Appendix B.

3.5. *Fire Flow Demand*

Hydrant maximum separation of 150m in accordance with the municipality's IDGCS was used in the design. The proposed site servicing plan attached separately shows that the seven (7) hydrants proposed for the site are sufficient.

The fire-fighting demand was calculated in accordance with the Water Supply for Public Fire Protection (Fire Underwriters Survey). Refer to fire flow calculation in Appendix B for detailed information. The design parameters of the conceptual building area of 300 m² per dwelling (single family dwelling), wood-frame construction, and combustible fire hazard contents. Fire flow + max day flow rate of about 4,626 L/min was calculated. The calculations must be verified after flow tests to confirm available firefighting flow.

3.6. *Project Design Results*

The detailed EPANET results tables for average day, maximum hour, and maximum day plus fire flow demand scenarios are presented in Appendices C and D, respectively. The EPANET V2 modeling software output results (Appendices C and D) show that the proposed water distribution system is in compliance with the

municipality's IDGCS requirements for water supply, pressure in the system and MECP DGDWS requirements for velocities in the system.

The average day demand flow results presented in Appendix C show that the proposed water distribution system has a maximum pressure of 70.55 m (100.3 psi or 691.7 kPa) at Node J11, which is marginally less than 700 kPa as specified by MECP DGDWS. To address quality concerns, current standards dictate that water shall not remain unused in the watermain for more than 72 hours under average day demand. The results show that the maximum age of water in the watermain is 24.09 hours at Node J7, which is less than the 72 hours requirement.

The maximum hourly flow results presented in Appendix C show that the minimum pressure in the system is 65.48 m (93.1 psi or 642.0 kPa) at Node HYD1, which is greater than 275 kPa (40 psi) required by the Municipality's IDGCS. The maximum velocity during the maximum hour demand is 0.27 m/s at Link 1, which is less than the maximum velocity under maximum hourly flow scenario of 1.5 m/s required by MECP DGDWS.

The maximum day flow plus fire flow demand were calculated for the most conservative hydrant (Node HYD4). Result presented in Appendix D shows that the lowest pressure in the system is 25.7 m or 251.91 kPa (36.5 psi) at Node HYD4, which is higher than minimum required pressure of 140 kPa (20 psi) during maximum day demand plus fire flow as per the IDGCS. The maximum velocity in the system during the maximum day plus fire-flow demand is 2.45 m/s at Link 1, which is less than the maximum velocity of 3 m/s required by MECP DGDWS.

The maximum day plus fire flow scenario was modelled to determine the maximum flow that could be drawn from most conservative scenario hydrant at minimum of 20 psi throughout the proposed development. Result presented in Appendix D shows the most conservative scenario hydrant (Node HYD4) could provide a flow of 5,147.4 L/min (1,359.8 GPM) at 20psi. The above confirms that the other hydrants in the site will have a flow greater than 5,147.4 L/min (1,359.8 GPM) at 20psi. A proposed fire hydrant colour class table per NFPA 291 has been included in Table 1 for consideration. As these results are computed through modelling (EPANET V2), flow tests should be completed once the lands have been developed to confirm the hydrant colour coding that should be applied.

Hydrant	Flowrate @ 20 psi	Class	Colour
Hydrant Node HYD4	5,147.4 L/min (1,359.8 GPM)	Class A*	Green*

* To be confirmed by Ontario Clean Water Agency after buildout of the subdivision

Table 1: Hydrant Colour Class Table

4. STORM SERVICING AND STORMWATER MANAGEMENT

4.1. Storm Servicing

Under pre-development conditions, there are no existing storm sewers on site. According to the Marr Drain plan and details by Spriet Associates, dated May 23, 1991, provided in Appendix E, the Marr Drain passes through the subject site and advances southeast of the subject site towards the open-channel portion of the Marr Drain. Under post-development conditions, a storm sewer system will be installed to collect and convey minor runoff (2-year storm) from the subject site to a proposed stormwater management (SWM) dry pond located southeast of the subject site. Major flows will be conveyed to the proposed SWM pond by site grading. The portion of the Marr Drain located within the site will be removed and relocated to tie into the subject site's

storm sewer. The proposed SWM dry pond will discharge flows to the downstream open channel portion of the Marr Drain.

The site was divided into twenty-one storm catchments areas (A201 to A219, U201, and U202), as per the Major Flows Catchment Areas Plan Sheet 11 provided separately. The proposed site collects flows from external areas and discharges to the open channel portion of the Marr Drain located southeast of the site. Therefore, external areas (Ext201 to Ext208) will discharge minor and major storm flows through the site's storm sewer system and overland flow route, see Major Flows Catchment Areas Plan Sheet 11 provided separately. The storm sewer design sheet (Sheets 6A & 6B provided separately) shows that the proposed storm sewers at the proposed sizes and slopes have sufficient capacity to convey the proposed sites and external lands' minor flows (2-year storm) to the proposed SWM dry pond.

The major flows from the subject site and external lands will be safely conveyed by site grading to the overland flow route and discharge to the SWM dry pond (Block 90). See Subdivision Grading Plan Sheets 10A – 10D provided separately. For the storm servicing drawings and additional information, refer to the Site Master Servicing Plan (Sheets 4A & 4B), Storm Sewer Catchment Area Plan & Design Sheet (Sheets 5, 6A & 6B), and Site Grading Plan (Sheets 10A - 10D), provided separately.

4.2. Stormwater Management

4.2.1. Rainfall Data

SBM compared the Chicago distribution derived from the IDF values found in the City of St Thomas Design Standard to the City of London Chicago distribution. Comparison showed that the Chicago distribution derived from the IDF values found in the City of St Thomas Design Standard, produced half the rainfall as City of London Chicago distribution, which does not seem appropriate due to the proximity of the 2 cities.

The Chicago distribution on Table 2 was derived from the Intensity-Duration-Frequency (IDF) Parameters obtained from Environment and Climate Change Canada Rain Gauge Information dated 27th of February 2019 for The St Thomas WPCP ID ON_6137362 (Table 2b) from 1926 - 2007 provided in Appendix E, which shows similar rainfall to the City of London.

The Intensity from Table 2b of the above rain gauge information was inputted in Miduss IDF Curve Fit tools (as shown in MIDUSS IDF to Chicago Conversion) to produce the Chicago Distribution parameters. The St Thomas WPCP Chicago Rainfall Distribution Parameters are shown in Table 2 below:

Return Period (Years)	Parameters		
	a	b	c
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

Table 2: St. Thomas WPCP Chicago Distribution from MIDUSS IDF Curve Fit Tools

Hyetographs for the 2 to 100-year rainfall events were created using the Ministry of Transportation of Ontario Drainage Management Manual (MTO DMM) intensity equations (Appendix E). The time and intensity values obtained from the hyetographs were inputted into the stormwater management model as a time series.

4.2.2. PCSWMM Pre-Development Modelling

Personal Computer Storm Water Management Model (PCSWMM) software was used for stormwater quantity modelling. Under pre-development conditions, the site was shown as three (3) catchment areas. External areas Ext101 & Ext102 were also modelled to discharge flows to the open channel portion of the Marr Drain. These areas are shown on Sheets 3A & 3B of the engineering drawings provided separately. The sub-catchment parameters are shown in the pre-development sub-catchment parameter table (Table 1) of the SWM calculation provided in Appendix E.

From the sub-catchment parameter table, the flow length is the approximate distance from the highest to the lowest point of a sub-catchment. The percent impervious was obtained by converting the runoff coefficient value for each sub-catchment. The Manning's n coefficient and depression storage values were obtained from the Storm Water Management Model User's Manual Version 5.1 (SWMMUM), and the CN numbers were obtained from A.4 of Storm Water Management Model User's Manual Version 5.1 with an average hydrologic soil group of C for the entire site as confirmed by EXP geotechnical engineers via email dated July 5, 2021. The sub-catchment parameters were inputted into the PCSWMM pre-development condition model.

The existing condition model contains 1 outfall, matching the existing condition runoff outlet resulting from the existing site topography. The peak runoff from the outfall for each rainfall event is tabulated in Table 3 of the SWM calculations provided in Appendix E.

The PCSWMM pre-development model layout provided in Appendix F shows the sub-catchment and the associated outlet and outfall. The modelling results for each rainfall event are also provided in Appendix F.

4.2.3. PCSWMM Post-Development Modelling

PCSWMM modelling software was used to quantify post-development runoff into the SWM dry pond and two (2) orifice flow controls were used to discharge to the open channel portion of the Marr Drain located southeast of the site to match pre-development flow rates. This model was used to verify that post-development flow rates and volumes did not exceed the allowable values for all outlets, and to calculate the required SWM dry pond storage and restricted flow rates. The post-development model was produced according to the Storm Catchment Area Plan Sheet 5 by SBM (provided separately), which were also used for the catchment area identification numbers. As previously mentioned, the stormwater management quantity objective for the site is to attenuate the post-development flows to the pre-development levels. Catchment parameters have been provided in Table 2 of the SWM calculation provided in Appendix E.

The PCSWMM post-development model includes catchments (defined catchment areas), junctions (structures), links (culverts), and storage nodes (ponding areas), matching parameters shown in the Storm Sewer Catchment Area Plan Sheet 5, and the Subdivision Grading Plan, Sheets 10A-10D. The post-development modelling layout provided in Appendix G shows each sub-catchment and the associated outlet and outfall. The post-development modelling results for each rainfall event are also provided in Appendix G.

"Minor and major" storm event flows will be directed to different storage areas and discharge points on the site by various means. Storm water runoff from the front of residential lots will be directed to the R.O.W and

flows within the asphalt surface in the R.O.W. will be captured by catchbasins and outletted to roadside ditches. Residential lot flows will typically be directed to the rear yard, and will either be stored in a spreader swale, or directed to another storage area via weir. Flows collected in spreader swale will pond until they reach the crest of the spreader swale and will overflow into their respective outlet. Each storage is linked to the rear yard catchbasin, catchbasin, or junction by a 0.6x0.6 orifice which will not affect the model since the downstream conduit is smaller in size. The minor (2-Year Storm) and major (100-Year Storm) flows will be discharged through the 2 orifices located within the SWM dry pond outlet structure. The 2 orifices have been designed to restrict the 2 to 100-year post-development flows to the pre-development levels. A weir has been provided to outlet excess runoff during major storm event (greater than the 100-year storm). A minimum 0.3m freeboard has been provided between the weir elevation and the lowest elevation between the SWM pond and the abutting Lots. As shown in the Table 3 of the SWM Calculations, sufficient storage is provided in the proposed SWM dry pond to meet the SWM objectives for this site. As shown on the engineering drawings provided separately, road accesses to the pond are proposed for cleaning and maintenance of the pond. Branch A is only for the subsurface flow and we are passing through external flows that are ultimately tributary to the same outlet.

The proposed dry SWM pond has a maximum depth (from bottom of pond to the weir) of 1.51m. The volumetric storage capacity of the dry SWM pond is approximately 4,263.15 m³ as shown in stage-storage table provided in Appendix E. The storm flows discharged from the dry SWM pond will be controlled by a 310mm and 625mm orifices, installed at an elevation of 176.8m and 177.2m, respectively, which is proposed to be installed in the dry SWM pond outlet structure.

4.3. *Quality Controls*

It is proposed to install an Oil and Grit Separator (OGS) Stormceptor EFO10 upstream of the SWM dry pond to provide at least 70% TSS removal for the subject site in accordance with Table 3.2 of the MECP SWMP&DM for a “normal” protection level. See Appendix E for all details and calculations for the EFO10 Stormwater Treatment Unit. OGS inspection and maintenance schedule is recommended to be maintained by the Contractor during construction and by the owner after construction as it is the owner’s responsibility to maintain these devices in accordance with current standards and policies.

5. **SEDIMENT AND EROSION CONTROL MEASURES**

Complementary to the site servicing and grading design for the site, sediment and erosion control details and notes have been included with the Site Engineering design. This should alleviate the off-site migration of sediments by incorporation of various best management practices and control measures. Such controls may include but are not limited to silt fencing, silt sacks for inlet grate protection (catch basins, and catch basin maintenance holes), tree preservation fencing and erosion control blanket treatment of significant fill/cut slopes. Suitable precautions should be undertaken in maintaining and monitoring these controls during the construction phase. The control measures to be implemented on site should include:

- Protect all exposed surfaces and control all runoff during construction;
- Sediment and erosion control measures to be removed at completion of project (following completion of base asphalt and sod);
- Maintain erosion control measures during construction;
- All collected sediment to be disposed of at an approved location;
- Minimize area disturbed during construction;
- All dewatering to be disposed of in an approved sedimentation basin;

- Protect all catch basins, maintenance holes and pipe ends from sediment intrusion with geotextile fabric (Terrafix 270R), silt sacks, or approved equal;
- Keep all sumps clean during construction;
- Prevent wind-blown dust;
- Straw bales to be used in localized areas as directed by the engineer during construction for works which are in or adjacent to flood lines, fill lines and hazardous slopes;
- Straw bales to be terminated by rounding bales to contain and filter runoff;
- Contractor to supply sediment erosion control measures and emergency plan (including emergency contacts) in case of SEC measures failure, extreme weather conditions, or spills. Any spills are to be reported to the MECP at 1-866-6638477 toll free;
- Sediment and Erosion Control measures shall be repaired without delay by the owner's contractor as instructed by the contract administrator/engineer at no expense to the owner;
- On-site sediment and erosion control measures are to be reviewed and modified to meet the changing site;
- Sediment and Erosion Control measures are to be inspected weekly or following significant rainfall events;
- Obtain approval from the governing Conservation Authority prior to construction for works which are in, or adjacent to flood lines, fill lines and hazardous slopes; and
- All of the above notes and any sediment and erosion control measures are at the minimum to be in accordance with the ministry of natural resources guidelines on sediment and erosion control for urban construction sites.
- Sediment and erosion control measures to be removed at completion of project (following completion of base asphalt and sod).

The above noted items have also been placed on the Engineering Drawing Sheets 3A & 3B under the Sediment & Erosion Control Measures for reference on-site.

6. LIMITATIONS

This report was prepared by SBM for Strathroy Turf farms Inc. and the Corporation of the Municipality of Central Elgin. Use of this report by any third party, or any reliance upon its findings, is solely the responsibility of that party. SBM accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions undertaken as a result of this report. Third party use of this report, without the express written consent of the Consultant, denies any claims, whether in contract, tort, and/or any other cause of action in law, against the Consultant.

All findings and conclusions presented in this report are based on information as it appeared during the period of the investigation. This report is not intended to be exhaustive in scope, or to imply a risk-free facility. It should be recognized that the passage of time may alter the opinions, conclusions, and recommendations provided herein.

The design was limited to the documents referenced above and on SBM's drawings, provided separately. SBM accepts no responsibility for the accuracy of the information provided by others. All designs and recommendations presented in this report are based on the information available at the time of the review.

7. CLOSURE

We trust this report meets your satisfaction. Should you have any questions or require further information, please do not hesitate to contact us.

Respectfully submitted,

Strik, Baldinelli, Moniz Ltd.

Planning • Civil • Structural • Mechanical • Electrical



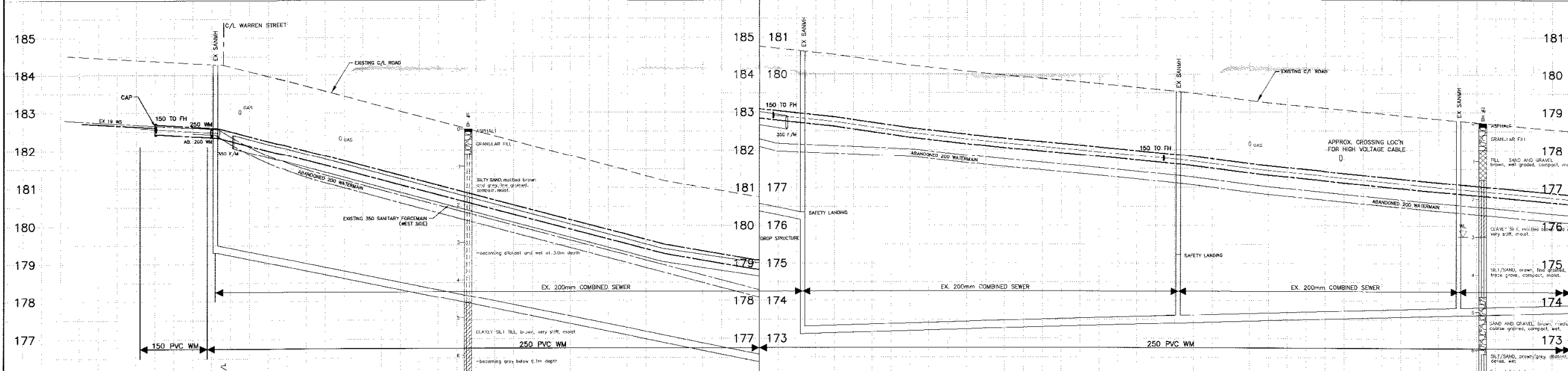
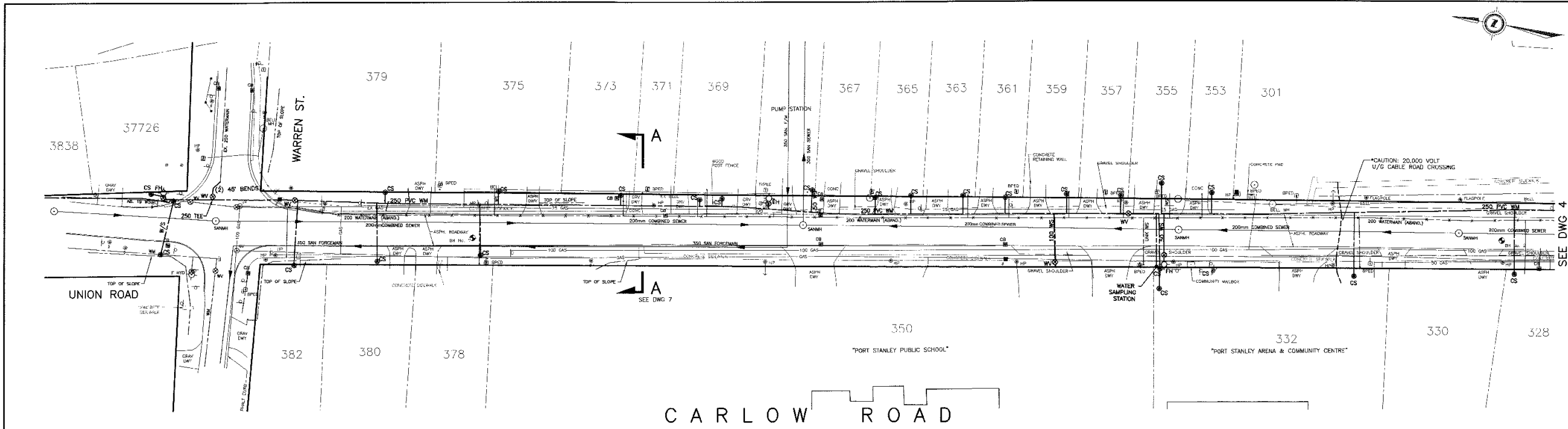
Kevin Moniz, P.Eng
Principle Engineer



Rawan Safieddine, M.Eng
Civil EIT I

APPENDIX A

Carlow Road Watermain Replacement As-Constructed Drawing – Phase 1 Drawing



C/L WATER MAIN ELEVATION	182.52	182.46	181.25	179.52	178.07	177.83	176.77
SANITARY INVERT	179.52 (APPROX.)	182.24 (APPROX.)			176.15 (APPROX.)	173.11 (APPROX.)	173.67 (APPROX.)
C/L ROAD ELEVATION	2+401.9	2+400.0	2+385.4	2+300.0	2+245.5	2+210.0	2+130.0

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN	1	SUBMITTED FOR REVIEW	14/02/10	AECOM
					DRAWN BY	2	ISSUED FOR TENDER	21/02/10	AECOM
					CHECKED	3	ISSUED FOR TENDER	16/03/11	AECOM
					APPROVED	4	AS CONSTRUCTED	15/07/10	AECOM
					DATE				

AECOM

London, Ontario 613-873-0916

ENGINEER'S STAMP

MUNICIPALITY OF CENTRAL ELGIN

The Corporation of the Municipality of Central Elgin

SCALE

HORIZ. 1:500

VERT. 1:50

CARLOW ROAD WATERMAIN REPLACEMENT - PHASE 1

MUNICIPALITY OF CENTRAL ELGIN

CARLOW ROAD

STA 2+050 TO 2+430

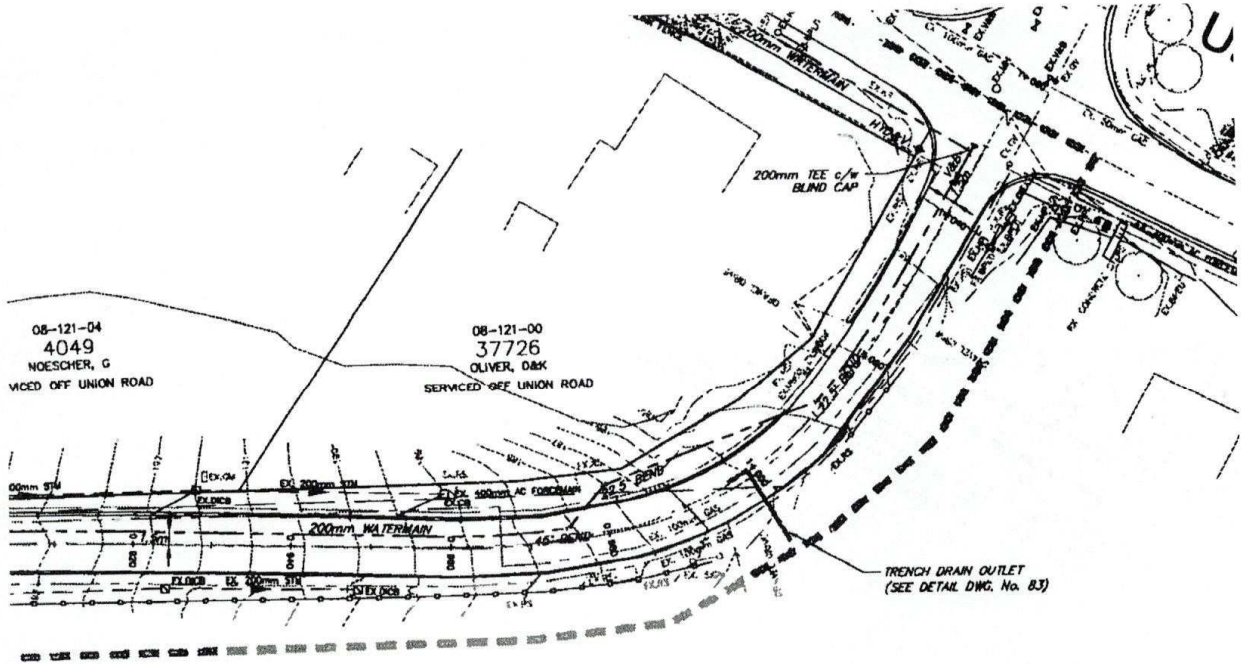
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SHEET No. **3**

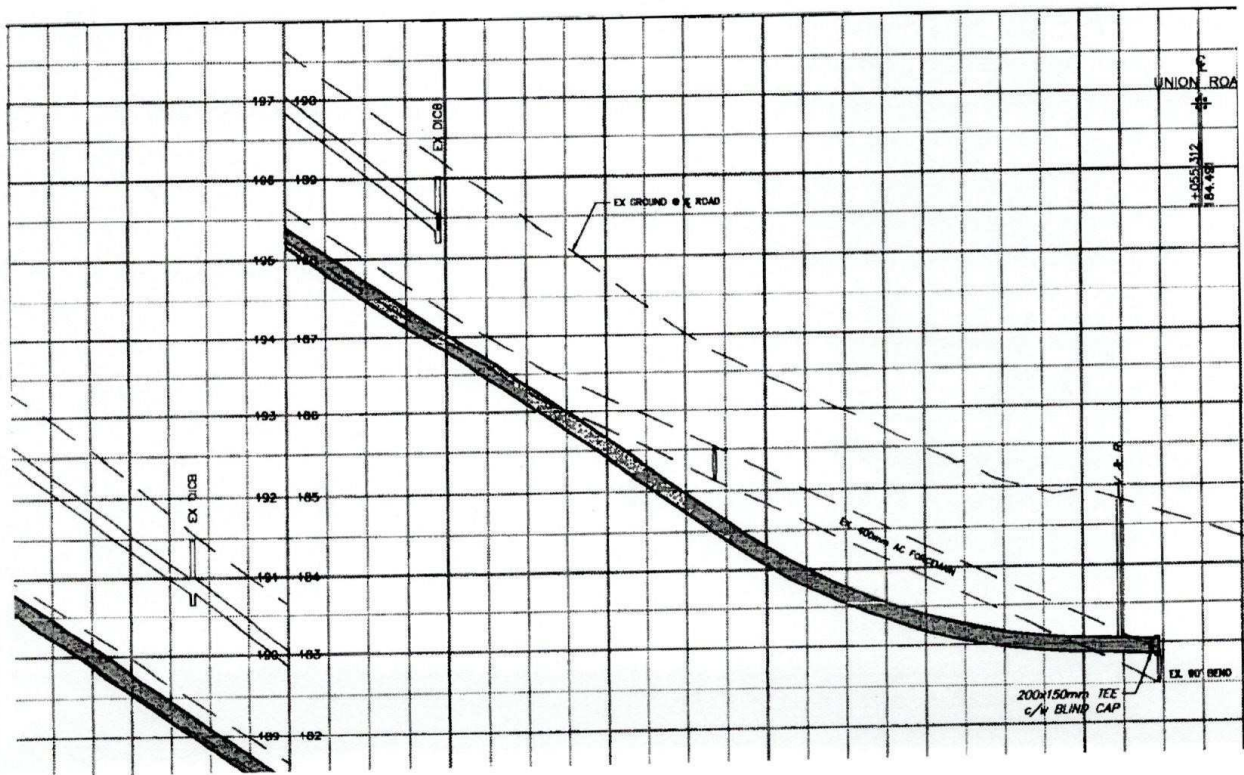
PLAN FILE No.

APPENDIX B

Scan Showing Watermain Information in The Lake Line R.O.W
Hydrant Flow Test
Water Demand Calculations (Average Day, Max. Hour and Max. Day plus Fire flow)
Average Day and Max. Hour HGL Calculations
Fire Flow Calculation



LAKE LINE (E)





Central Elgin (Port Stanley) Hydrant Flow Test Report

Date: 18-Jan-21 Time: 11:12 AM Operator: Lucas/Hodder

Test Hydrant Information:

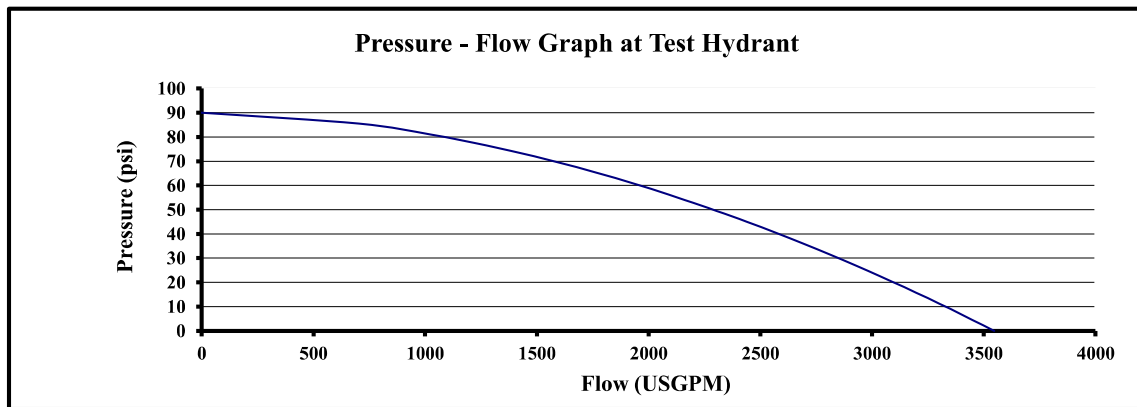
Number: 1 Elevation: n/a
 N.F.P.A. Colour Code: BLUE Location: 3830 Union Road

STATIC PRESSURE: 90 psi Hyd# 1
 RESIDUAL PRESSURE: 76 psi
 HPR S/N: 1199

Flow Hydrants Information:

Hydrant No.	HPR No.	Outlet Dia. (in.)	Coefficient (~0.9)	Pitot Gauge Reading (psi)	Flow (USGPM)
#1	n/a	2.5	0.9	60	1298
Total Flow (USGPM)					1298

Available Flow At Test Hydrant at 20 psi 3096 USGPM 2559 IGPM
 Available Flow At Test Hydrant at 10 psi 3328 USGPM 2750 IGPM



Comments/Discrepancies/Diagram:

Fire Hydrant is located at northeast corner of Carlow Road & Warren Street

*NOTE: Graph updated by SBM to show Flow on X axis and Pressure on Y axis.

DOMESTIC WATER DEMAND CALCULATION

	For data entry
	Calculated, not for data entry

DATE:	July 14, 2022
JOB No.:	SBM-18-0530

Client:	Strathroy Turf Farms Ltd.
Project:	Kettle Creek Subdivision
Location:	37719 Lake Line, Port Stanley, Ontario

Values as per MECP Design Guidelines for Drinking Water System (DGDWS) and Central Elgin Infrastructure Design Guidelines and Construction

	Standards (IDGCS)		
Avg. Residential Day Demand = 400 L/D/cap =	0.00462963	L/s/cap	As per Chapter 5.2.2 of IDGCS
Max. Day Peaking Factor =	3.6		As per Table 3-3 of MECP DGDWS
Max. Hour Peaking Factor =	5.4		As per Table 3-3 of MECP DGDWS
Residential Population Density =	3.5	ppl/unit	As per Chapter 4.2.1 A of IDGCS

Note: Peaking Factors from MECP DGDWS was used as per Section 5.2.2 of IDGCS

Domestic Water Demand

Node	Units	Population	Avg. Day (L/s)	Max. Hour (L/s)	Max. Day (L/s)
1 - Source 1	0	0	0.000	0.000	0.000
2 - Units 44-51	8	28	0.130	0.700	0.467
3 - Units 1-9 & 52-59	17	60	0.275	1.488	0.992
4 - Units 10-17 & 60-63	12	42	0.194	1.050	0.700
5 - Unit 18-23 & 64-68	11	39	0.178	0.963	0.642
6 - Units 24-28 & 69-70	7	25	0.113	0.613	0.408
7 - Units 29-34 & 81	10	35	0.162	0.875	0.583
8 - Units 35-43	9	32	0.146	0.788	0.525
9 - Units 76-79 (Semi-Detached) & 80	13	46	0.211	1.138	0.758
10 - Units 71-75 (Semi-Detached)	10	35	0.162	0.875	0.583
TOTAL:	97	340	1.572	8.488	5.658

Average Day and Max Hour HGL

	For data entry
	Calculated, not for data entry

DATE:

July 14, 2022

JOB NO.:

SBM-18-0530

Client:

Strathroy Turf Farms Ltd.

Project:

Kettle Creek Subdivision

Location:

37719 Lake Line, Port Stanley, Ontario
--

Average Day Demand (L/s) =

1.57

Average Day Demand (L/min) = 94.31

Max Hour Demand (L/s) =

8.49

Max Hour Demand (L/min) = 509.25

Average Day Pressures

Provided Supply Flow Rate @	90.00	*psi (620.53 kPa) =	0	*L/min (0 USGPM)
	20.00	*psi (137.9 kPa) =	11719.6	*L/min (3096 USGPM)
	Using linear interpolation, residual pressure at required flow=	89.44	psi (616.64 kPa) =	94

Pressure @ Average Day Demand = 89.44 psi
Pressure @ Average Day Demand = 62.90 m head of water

Approximate Watermain Elevation @ Node 1 (Lake Line) Connection:

186.39

 m

Approximate HGL Elevation @ Node 1 (Lake Line) Connection: **249.29** m

Max Hour Pressures

Provided Supply Flow Rate @	90.00	*psi (620.53 kPa) =	0	*L/min (0 USGPM)
	20.00	*psi (137.9 kPa) =	11720	*L/min (3096 USGPM)
	Using linear interpolation, residual pressure at required flow=	86.96	psi (599.56 kPa) =	509

Pressure @ Max Hour Demand = 86.96 psi
Pressure @ Max Hour Demand = 61.15 m head of water

Approximate Watermain Elevation @ Node 1 (Lake Line) Connection:

186.39

 m

Approximate HGL Elevation @ Node 1 (Lake Line) Connection: **247.54** m

*Refer to the Provided Hydrant Flow Tests by Hetek Solutions Inc. Dated January 18, 2021



PLANNING • CIVIL • STRUCTURAL • MECHANICAL • ELECTRICAL

LONDON LOCATION
 1599 Adelaide St. N., Units 301 & 203
 London, ON N5X 4E8
 P: 519-471-6667

www.sbmltd.ca

KITCHENER LOCATION
 1415 Huron Rd., Unit 225
 Kitchener, ON N2R 0L3
 P: 519-725-8093

sbm@sbmltd.ca

Water Supply for Public Fire Protection (Fire Underwriters Survey)

	For data entry
	Calculated, not for data entry

DATE: July 14, 2022
 JOB NO.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

$$F = 220 \times C \times \sqrt{A}$$

Type of Construction:	Wood-Frame	1.5
Fire Hazard of Contents:	Combustible	1.00
Total Floor Area, m ² :		300.00
Sprinklered:	No	1.0
Separation, Side 1:	0 to 3m	25%
Separation, Side 2:	0 to 3m	25%
Separation, Side 3:	20.1 to 30m	15%
Separation, Side 4:	20.1 to 30m	15%
Sum of Separation Coefficients (Shall Not Exceed 75%:)		75%

F, L/min (Shall not exceed 45,000 L/min or be less than 2,000 L/min) = 4287 L/min
 Maximum Day Demand = 339 L/min

Required Supply Flow Rate, L/min = 4626

Provided Supply Flow Rate @ 90.00 psi* = 0 L/min*
20.00 psi* = 11720.0 L/min*
 Using linear interpolation, residual pressure at hydrant = 59.26 @ 5147 L/min

Pressure @ Max Hour Demand = 59.26 psi
 Pressure @ Max Hour Demand = 41.67 m head of water

Approximate Watermain Elevation @ Node 1 (Lake Line) Connection: 186.39

Approximate HGL Elevation @ Node 1 (Lake Line) Connection: 228.06

*Refer to the Provided Hydrant Flow Tests by Hetek Solution Dated January 18, 2021

APPENDIX C

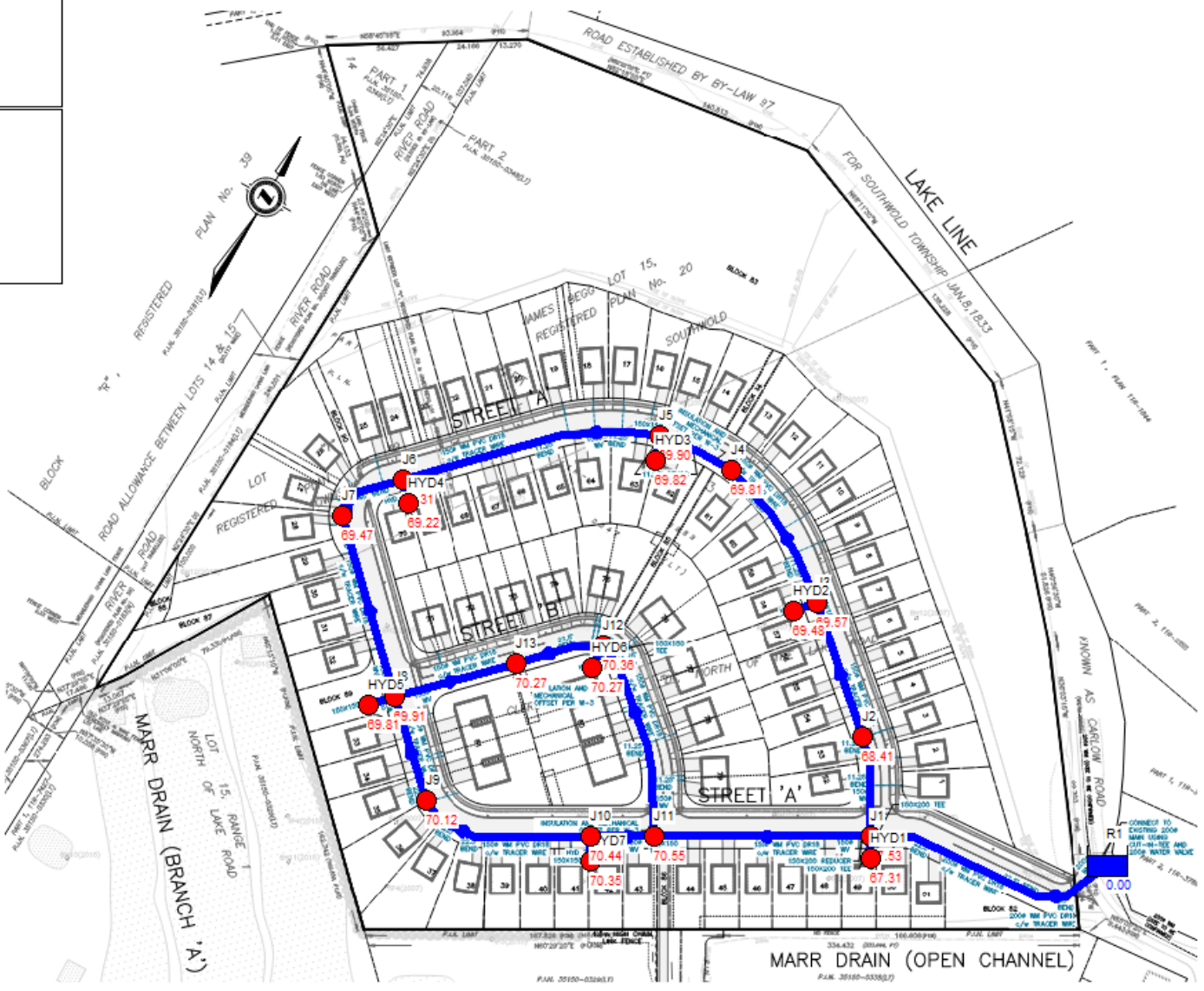
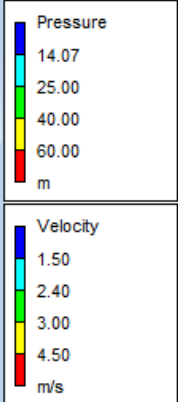
EPANET V2:

Average Day Demand Layout

Average Day Demand Results

Max Hour Demand Layout

Max Hour Demand Results



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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.2                                 *
*****
    
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Input File: 2022-07-13 - Average Day.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	R1	J1	118.91	200
2	J1	HYD1	5	150
3	J1	J11	101.69	150
4	J11	J10	30.24	150
5	J10	HYD7	5	150
6	J10	J9	85.32	150
7	J9	J8	49.72	150
8	J8	HYD5	5	150
9	J8	J13	58.13	150
10	J13	J12	45.02	150
11	J12	HYD6	5	150
12	J12	J11	89.84	150
13	J7	J8	88.82	150
14	J7	J6	33.57	150
15	J6	HYD4	5	100
16	J6	J5	125.21	150
17	J5	HYD3	5	150
18	J5	J4	26.66	150
19	J4	J3	82.76	150
20	J3	HYD2	5	150
21	J3	J2	67.91	150
22	J2	J1	45.91	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J1	0.13	249.29	67.53	0.66
J3	0.00	249.28	69.57	1.69
HYD2	0.00	249.28	69.48	72.00
J11	0.00	249.28	70.55	1.37
J8	0.16	249.28	69.91	4.79

J7	0.00	249.28	69.47	24.09
J6	0.11	249.28	69.31	14.16
HYD4	0.00	249.28	69.22	72.00
HYD7	0.00	249.28	70.35	72.00



Page 2

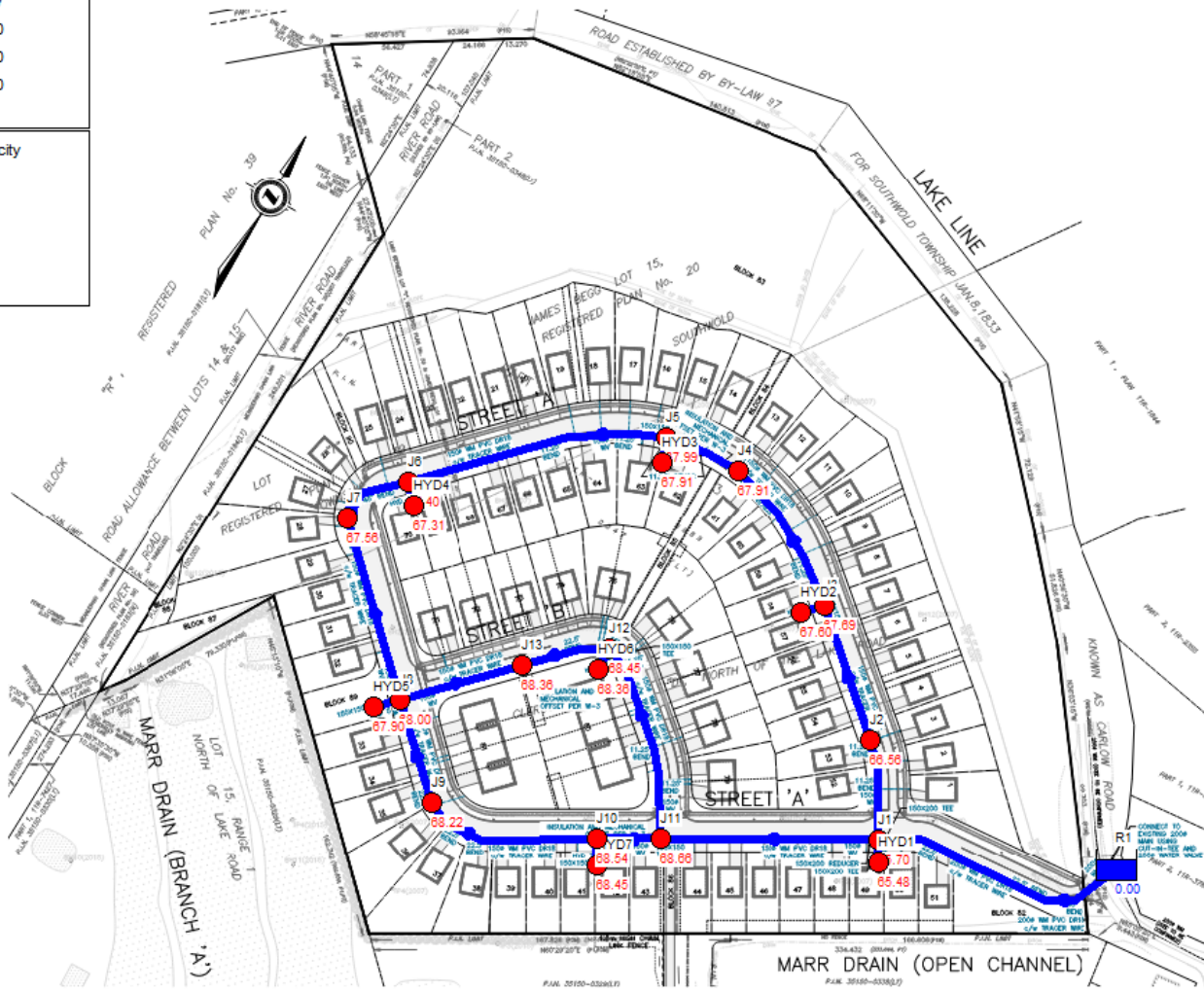
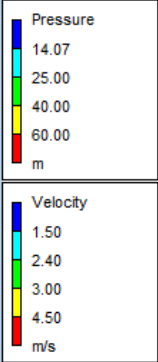
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J10	0.15	249.28	70.44	1.78
J9	0.00	249.28	70.12	3.68
HYD5	0.00	249.28	69.81	72.00
J13	0.16	249.28	70.27	6.26
J12	0.21	249.28	70.36	2.68
HYD6	0.00	249.28	70.27	72.00
J2	0.28	249.28	68.41	0.97
J4	0.19	249.28	69.81	2.57
J5	0.18	249.28	69.90	3.05
HYD3	0.00	249.28	69.82	72.00
HYD1	0.00	249.29	67.31	72.00
R1	-1.57	249.29	0.00	0.00 Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Headloss m/km	Status
1	1.57	0.05	0.03	Open
2	0.00	0.00	0.00	Open
3	0.70	0.04	0.03	Open
4	0.37	0.02	0.01	Open
5	0.00	0.00	0.00	Open
6	0.22	0.01	0.00	Open
7	0.22	0.01	0.00	Open
8	0.00	0.00	0.00	Open
9	0.04	0.00	0.00	Open
10	-0.13	0.01	0.00	Open
11	0.00	0.00	0.00	Open
12	-0.34	0.02	0.01	Open
13	-0.02	0.00	0.00	Open
14	0.02	0.00	0.00	Open
15	0.00	0.00	0.00	Open
16	-0.09	0.01	0.00	Open
17	0.00	0.00	0.00	Open
18	-0.27	0.02	0.00	Open
19	-0.46	0.03	0.01	Open
20	0.00	0.00	0.00	Open

21	-0.46	0.03	0.01	Open
22	-0.74	0.04	0.03	Open



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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.2                                 *
*****
    
```

Input File: 2022-07-13 - Max. Hour.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	R1	J1	118.91	200
2	J1	HYD1	5	150
3	J1	J11	101.69	150
4	J11	J10	30.24	150
5	J10	HYD7	5	150
6	J10	J9	85.32	150
7	J9	J8	49.72	150
8	J8	HYD5	5	150
9	J8	J13	58.13	150
10	J13	J12	45.02	150
11	J12	HYD6	5	150
12	J12	J11	89.84	150
13	J7	J8	88.82	150
14	J7	J6	33.57	150
15	J6	HYD4	5	100
16	J6	J5	125.21	150
17	J5	HYD3	5	150
18	J5	J4	26.66	150
19	J4	J3	82.76	150
20	J3	HYD2	5	150
21	J3	J2	67.91	150
22	J2	J1	45.91	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J1	0.70	247.46	65.70	0.12
J3	0.00	247.40	67.69	0.31
HYD2	0.00	247.40	67.60	72.00
J11	0.00	247.39	68.66	0.25
J8	0.88	247.37	68.00	0.89

J7	0.00	247.37	67.56	4.33
J6	0.61	247.37	67.40	2.61
HYD4	0.00	247.37	67.31	72.00
HYD7	0.00	247.38	68.45	72.00



Page 2

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J10	0.79	247.38	68.54	0.33
J9	0.00	247.38	68.22	0.68
HYD5	0.00	247.37	67.90	72.00
J13	0.88	247.37	68.36	1.16
J12	1.14	247.37	68.45	0.50
HYD6	0.00	247.37	68.36	72.00
J2	1.49	247.43	66.56	0.18
J4	1.05	247.38	67.91	0.47
J5	0.96	247.37	67.99	0.56
HYD3	0.00	247.37	67.91	72.00
HYD1	0.00	247.46	65.48	72.00
R1	-8.49	247.54	0.00	0.00 Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Headloss m/km	Status
1	8.49	0.27	0.66	Open
2	0.00	0.00	0.00	Open
3	3.80	0.22	0.72	Open
4	1.98	0.11	0.21	Open
5	0.00	0.00	0.00	Open
6	1.19	0.07	0.08	Open
7	1.19	0.07	0.08	Open
8	0.00	0.00	0.00	Open
9	0.19	0.01	0.00	Open
10	-0.69	0.04	0.03	Open
11	0.00	0.00	0.00	Open
12	-1.82	0.10	0.18	Open
13	-0.13	0.01	0.00	Open
14	0.13	0.01	0.00	Open
15	0.00	0.00	0.00	Open
16	-0.49	0.03	0.02	Open
17	0.00	0.00	0.00	Open
18	-1.45	0.08	0.12	Open
19	-2.50	0.14	0.33	Open
20	0.00	0.00	0.00	Open

21	-2.50	0.14	0.33	Open
22	-3.99	0.23	0.78	Open

APPENDIX D

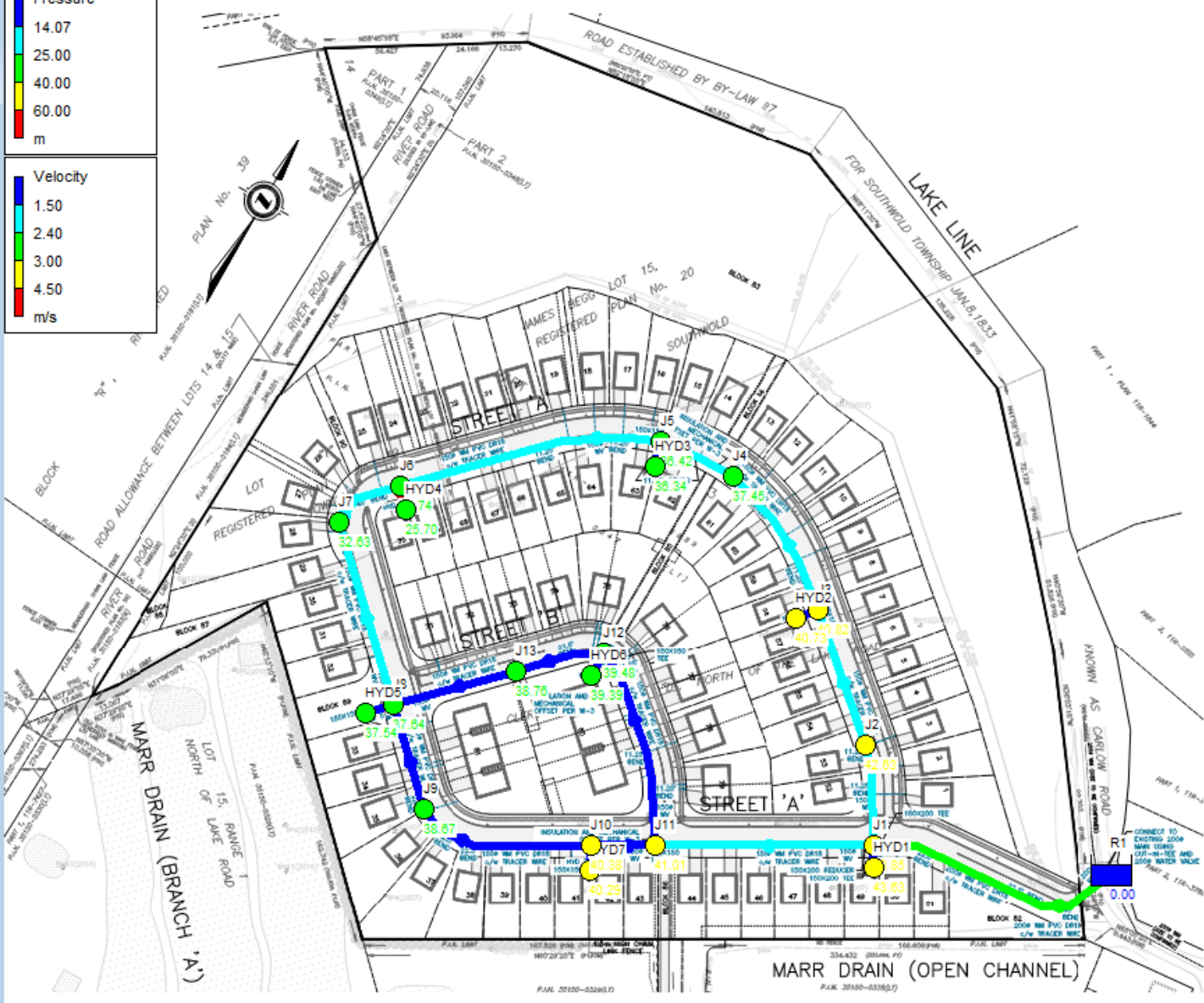
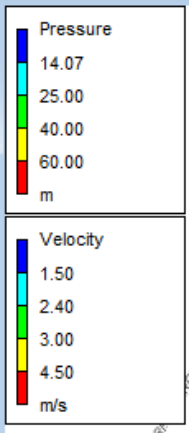
EPANET V2:

Max Day Plus Fire Flow Demand Layout (HYD4)

Max Day plus Fire Flow Demand Results (HYD4)

Max Day Plus Fire Flow Demand @20 psi Layout (HYD4)

Max Day plus Fire Flow Demand @20 psi Results (HYD4)



MARR DRAIN (OPEN CHANNEL)

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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.2                                 *
*****
    
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Input File: 2022-07-13 - Max. Day + Fire Flow.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	R1	J1	118.91	200
2	J1	HYD1	5	150
3	J1	J11	101.69	150
4	J11	J10	30.24	150
5	J10	HYD7	5	150
6	J10	J9	85.32	150
7	J9	J8	49.72	150
8	J8	HYD5	5	150
9	J8	J13	58.13	150
10	J13	J12	45.02	150
11	J12	HYD6	5	150
12	J12	J11	89.84	150
13	J7	J8	88.82	150
14	J7	J6	33.57	150
15	J6	HYD4	5	100
16	J6	J5	125.21	150
17	J5	HYD3	5	150
18	J5	J4	26.66	150
19	J4	J3	82.76	150
20	J3	HYD2	5	150
21	J3	J2	67.91	150
22	J2	J1	45.91	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J1	0.47	225.61	43.85	0.01
J3	0.00	220.53	40.82	0.03
HYD2	0.00	220.53	40.73	72.00
J11	0.00	219.74	41.01	0.03
J8	0.58	217.01	37.64	0.07

J7	0.00	212.44	32.63	0.08
J6	0.41	210.71	30.74	0.08
HYD4	71.45	205.76	25.70	0.08
HYD7	0.00	219.22	40.29	72.00



Page 2

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J10	0.52	219.22	40.38	0.03
J9	0.00	217.83	38.67	0.05
HYD5	0.00	217.01	37.54	72.00
J13	0.58	217.77	38.76	0.06
J12	0.76	218.40	39.48	0.05
HYD6	0.00	218.40	39.39	72.00
J2	0.99	223.50	42.63	0.02
J4	0.70	216.92	37.45	0.04
J5	0.64	215.80	36.42	0.04
HYD3	0.00	215.80	36.34	72.00
HYD1	0.00	225.61	43.63	72.00
R1	-77.11	230.25	0.00	0.00 Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Headloss m/km	Status
1	77.11	2.45	38.99	Open
2	0.00	0.00	0.00	Open
3	40.67	2.30	57.78	Open
4	21.09	1.19	17.13	Open
5	0.00	0.00	0.00	Open
6	20.57	1.16	16.34	Open
7	20.57	1.16	16.34	Open
8	0.00	0.00	0.00	Open
9	-18.24	1.03	13.08	Open
10	-18.82	1.07	13.87	Open
11	0.00	0.00	0.00	Open
12	-19.58	1.11	14.92	Open
13	-38.23	2.16	51.50	Open
14	38.23	2.16	51.50	Open
15	71.45	9.10	990.79	Open
16	-33.63	1.90	40.63	Open
17	0.00	0.00	0.00	Open
18	-34.27	1.94	42.08	Open
19	-34.97	1.98	43.68	Open
20	0.00	0.00	0.00	Open

21	-34.97	1.98	43.68	Open
22	-35.97	2.04	46.01	Open


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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.2                                 *
*****
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Input File: 2022-07-13 - Max. Day + Fire Flow @ 20 psi.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	R1	J1	118.91	200
2	J1	HYD1	5	150
3	J1	J11	101.69	150
4	J11	J10	30.24	150
5	J10	HYD7	5	150
6	J10	J9	85.32	150
7	J9	J8	49.72	150
8	J8	HYD5	5	150
9	J8	J13	58.13	150
10	J13	J12	45.02	150
11	J12	HYD6	5	150
12	J12	J11	89.84	150
13	J7	J8	88.82	150
14	J7	J6	33.57	150
15	J6	HYD4	5	100
16	J6	J5	125.21	150
17	J5	HYD3	5	150
18	J5	J4	26.66	150
19	J4	J3	82.76	150
20	J3	HYD2	5	150
21	J3	J2	67.91	150
22	J2	J1	45.91	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J1	0.47	221.70	39.94	0.01
J3	0.00	214.70	34.99	0.02
HYD2	0.00	214.70	34.90	72.00
J11	0.00	213.62	34.89	0.02
J8	0.58	209.85	30.48	0.06

J7	0.00	203.44	23.63	0.07
J6	0.41	201.01	21.04	0.06
HYD4	85.79	194.06	14.00	0.06
HYD7	0.00	212.91	33.98	72.00



Page 2

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality hours
J10	0.52	212.91	34.07	0.03
J9	0.00	210.97	31.81	0.04
HYD5	0.00	209.85	30.38	72.00
J13	0.58	210.91	31.90	0.05
J12	0.76	211.78	32.86	0.04
HYD6	0.00	211.78	32.77	72.00
J2	0.99	218.80	37.93	0.02
J4	0.70	209.70	30.23	0.03
J5	0.64	208.14	28.76	0.04
HYD3	0.00	208.14	28.68	72.00
HYD1	0.00	221.70	39.72	72.00
R1	-91.45	228.06	0.00	0.00 Reservoir

Link Results:

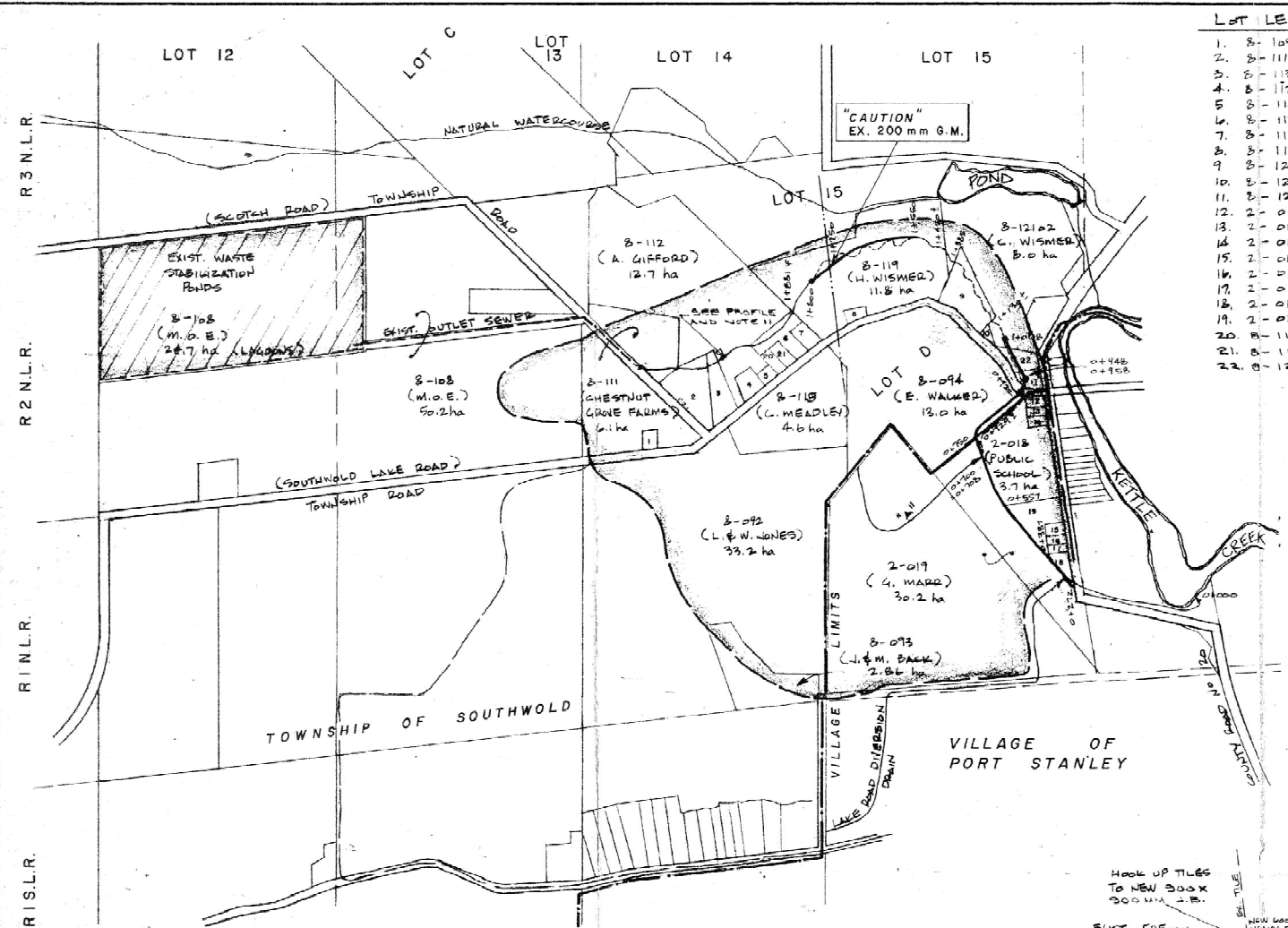
Link ID	Flow LPS	Velocity m/s	Headloss m/km	Status
1	91.45	2.91	53.47	Open
2	0.00	0.00	0.00	Open
3	48.31	2.73	79.46	Open
4	25.07	1.42	23.58	Open
5	0.00	0.00	0.00	Open
6	24.55	1.39	22.68	Open
7	24.55	1.39	22.68	Open
8	0.00	0.00	0.00	Open
9	-21.90	1.24	18.36	Open
10	-22.48	1.27	19.27	Open
11	0.00	0.00	0.00	Open
12	-23.24	1.32	20.49	Open
13	-45.86	2.60	72.17	Open
14	45.86	2.60	72.17	Open
15	85.79	10.92	1390.26	Open
16	-40.33	2.28	56.88	Open
17	0.00	0.00	0.00	Open
18	-40.98	2.32	58.57	Open
19	-41.68	2.36	60.44	Open
20	0.00	0.00	0.00	Open

21	-41.68	2.36	60.44	Open
22	-42.67	2.41	63.13	Open

APPENDIX E

Marr Drain Plan and Details by Spriet Associates
Marr Drain Profiles Drawing
SWM Calculations

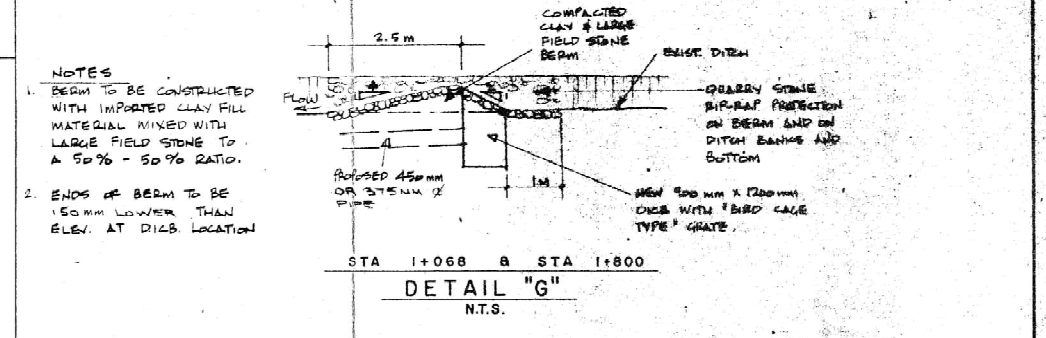
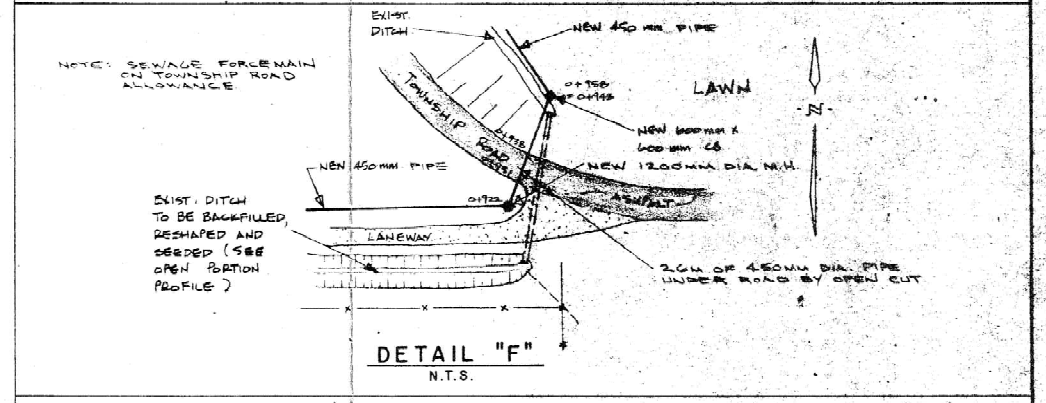
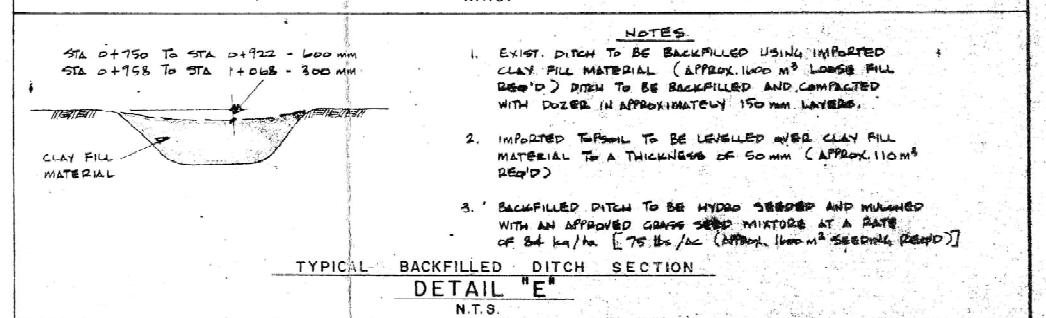
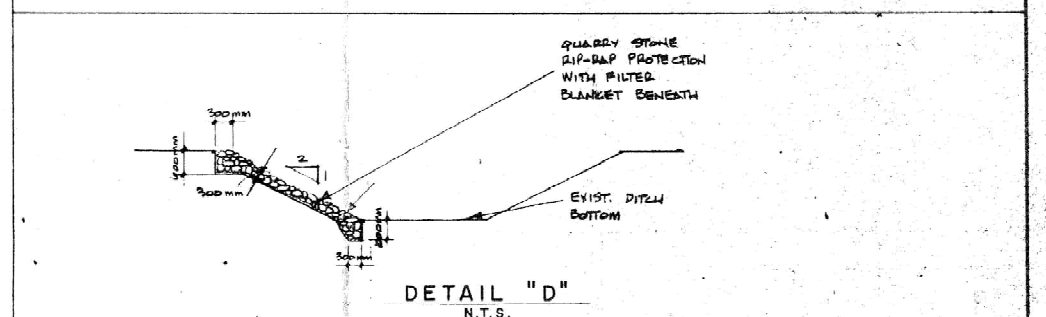
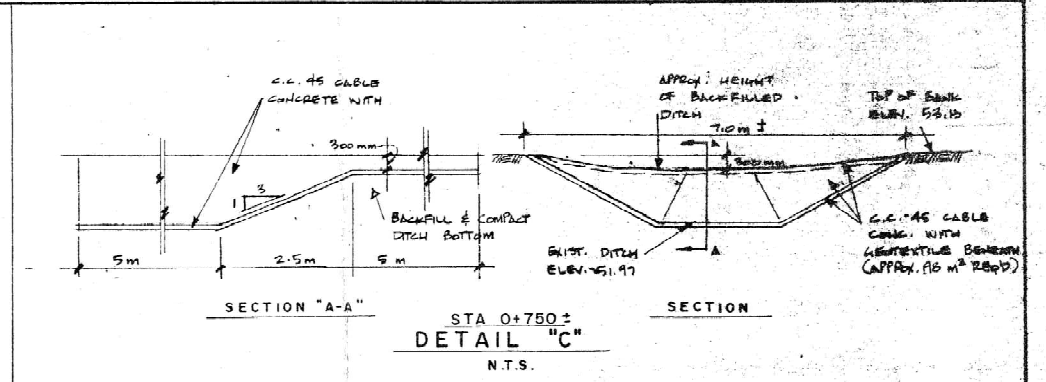
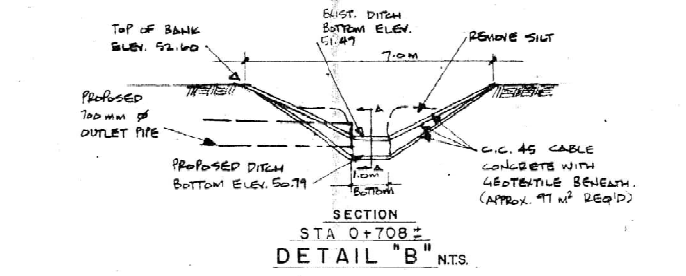
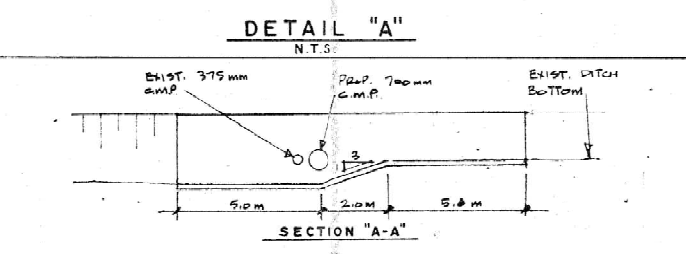
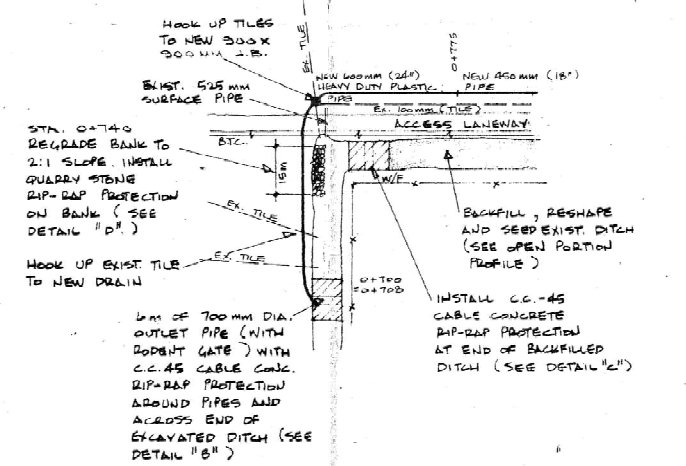
Environment and Climate Change Canada Rain Gauge Information for St Thomas WPCP ID ON_6137362
IDF to Chicago Conversion Using MIDUSS
Chicago Hyetograph Creation
Staged Storage Volume Calculations
Stormceptor EFO10 Stormwater Treatment Unit



LOT LEGEND

1.	8-109	C. & P. MAJOR	0.14 ha
2.	8-110	J. & C. JOHNSON	1.20 ha
3.	8-113	M. GIFFORD	0.29 ha
4.	8-120	K. GIFFORD	0.31 ha
5.	8-114	E. BEATTIE	0.13 ha
6.	8-117	D. GILBERT	0.71 ha
7.	8-117OR	D. & R. PEARSON	0.20 ha
8.	8-118	UNION GAS LTD.	0.10 ha
9.	8-121	J. & G. HURST	1.40 ha
10.	8-120	D. & M. SAVITZ	0.20 ha
11.	8-121	C. GIDMORE	0.24 ha
12.	2-012	B. & G. STORMES	0.09 ha
13.	2-013	R. & N. SMITH	0.09 ha
14.	2-014	G. S. ELLIOTT	0.09 ha
15.	2-01401	M. & D. MCKINNON	0.14 ha
16.	2-015	J. McLEATHY	0.09 ha
17.	2-016	S. & V. McTALLANTY	0.09 ha
18.	2-017	R. WALLS	1.10 ha
19.	2-01801	RECREATION CENTRE	0.20 ha
20.	8-11704	S. FRANK	0.20 ha
21.	8-11706	G. HINSCHBERGER	0.20 ha
22.	8-12104	G. NOESCHER	0.35 ha

- GENERAL NOTES**
- OUR SPECIFICATIONS DATED JANUARY 1983 APPLY TO THIS PROJECT.
 - ALL OWNERS OF LANDS WHERE THE DRAIN IS TO BE CONSTRUCTED SHALL MAKE AN ACCESS ROUTE AVAILABLE FROM THE NEAREST ROAD ALLOWANCE TO THE DRAIN LOCATION. THE AVERAGE WIDTH OF THIS ROUTE SHALL NOT EXCEED 8 METERS.
 - THE WORKING WIDTH AVAILABLE TO THE CONTRACTOR TO CONSTRUCT THE DRAIN AND CONNECTIONS CONSISTS OF THOSE LANDS IMMEDIATELY ADJACENT TO THE COURSE OF THE DRAIN AND CONNECTIONS AND SHALL NOT EXCEED AN AVERAGE WIDTH OF 15 METERS FOR TILING AND 15 METERS FOR BACKFILLING AND REGRADING.
 - CATCHBASINS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH OUR SPECIFICATIONS. EXACT LOCATION AND ELEVATION OF CATCHBASINS TO BE CONFIRMED BY ENGINEER OR DRAINAGE SUPERINTENDENT PRIOR TO CONSTRUCTION.
 - ALL TREES, BRUSH SCRUB ETC. TO BE CLEARED IN ACCORDANCE WITH OUR SPECIFICATIONS. ALL TREES AND BUSH TO BE REMOVED FROM BACKFILLED DITCH.
 - ALL QUARRY STONE TO RANGE IN SIZE FROM 100 MM TO 300 MM EVENLY DISTRIBUTED AND PLACED TO A 300 MM THICKNESS ON AN APPROVED GEOTEXTILE.
 - EXACT LOCATION OF NEW CLOSED DRAINS TO BE CONFIRMED BY ENGINEER OR DRAINAGE SUPERINTENDENT PRIOR TO CONSTRUCTION.
 - BACKFILLED DITCHES AND REGRADED DITCH BANKS TO BE HYDRO SEEDED AND MULCHED AT A RATE OF 65 kg/ha WITH THE FOLLOWING GRASS SEED MIXTURE:
 - CREEPING RED FESCUE 40%
 - KENTUCKY BLUE GRASS 20%
 - RED TOP 10%
 - TIMOTHY 20%
 - LADINO 10%
 - CABLE CONCRETE TO BE C.C.-45 AS MANUFACTURED BY WEST LOBNE PRECAST AND TO BE INSTALLED WITH GEOTEXTILE ATTACHED TO UNDERSIDE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
 - CONTRACTOR TO NOTIFY UNION GAS CO. 72 HRS. PRIOR TO CROSSING GAS LINE.
 - CONTRACTOR TO SUPPLY & INSTALL QUARRY STONE RIP-RAP WITH FILTER BANKS ON GIFFORD PROPERTY STA. 2+930

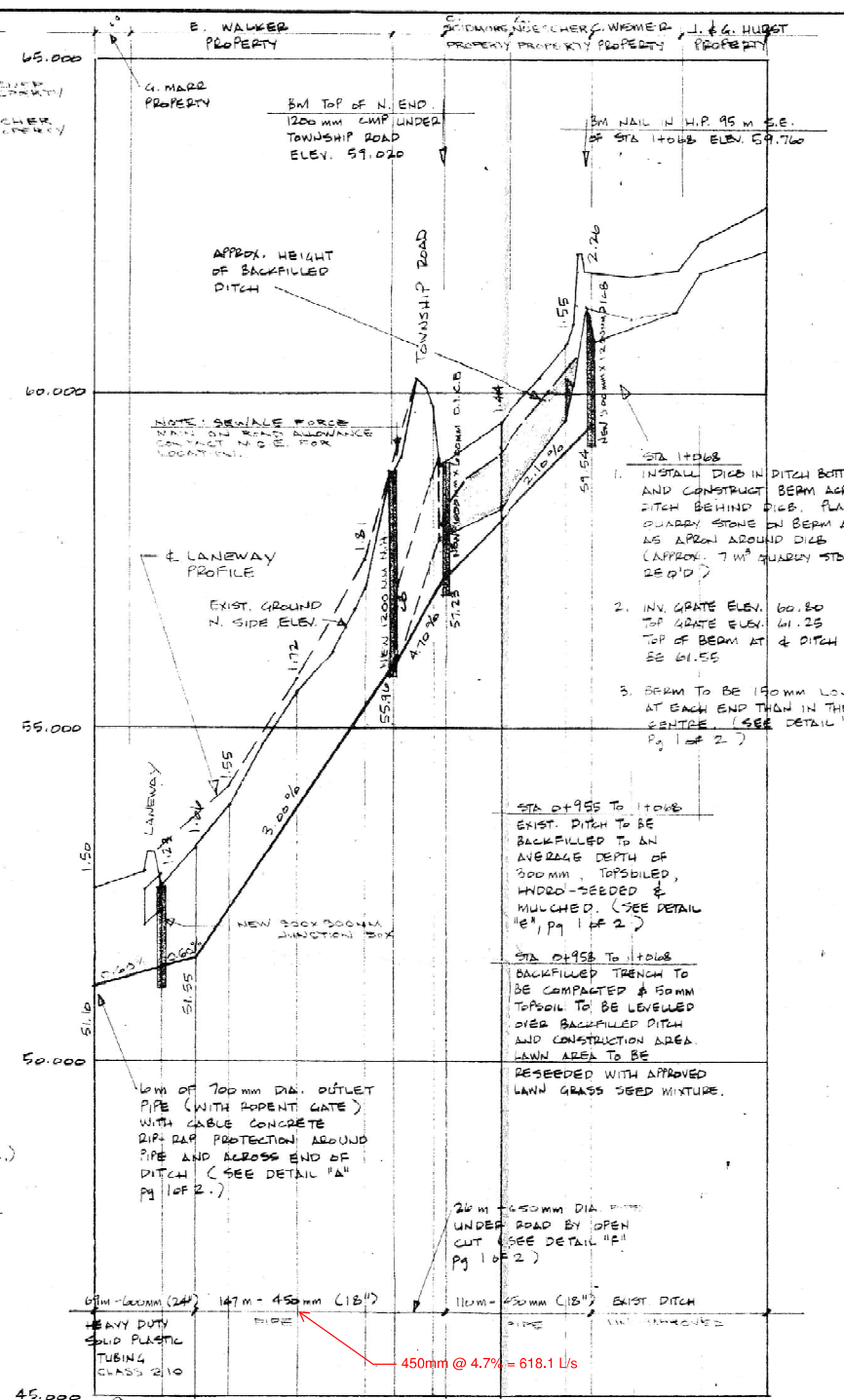
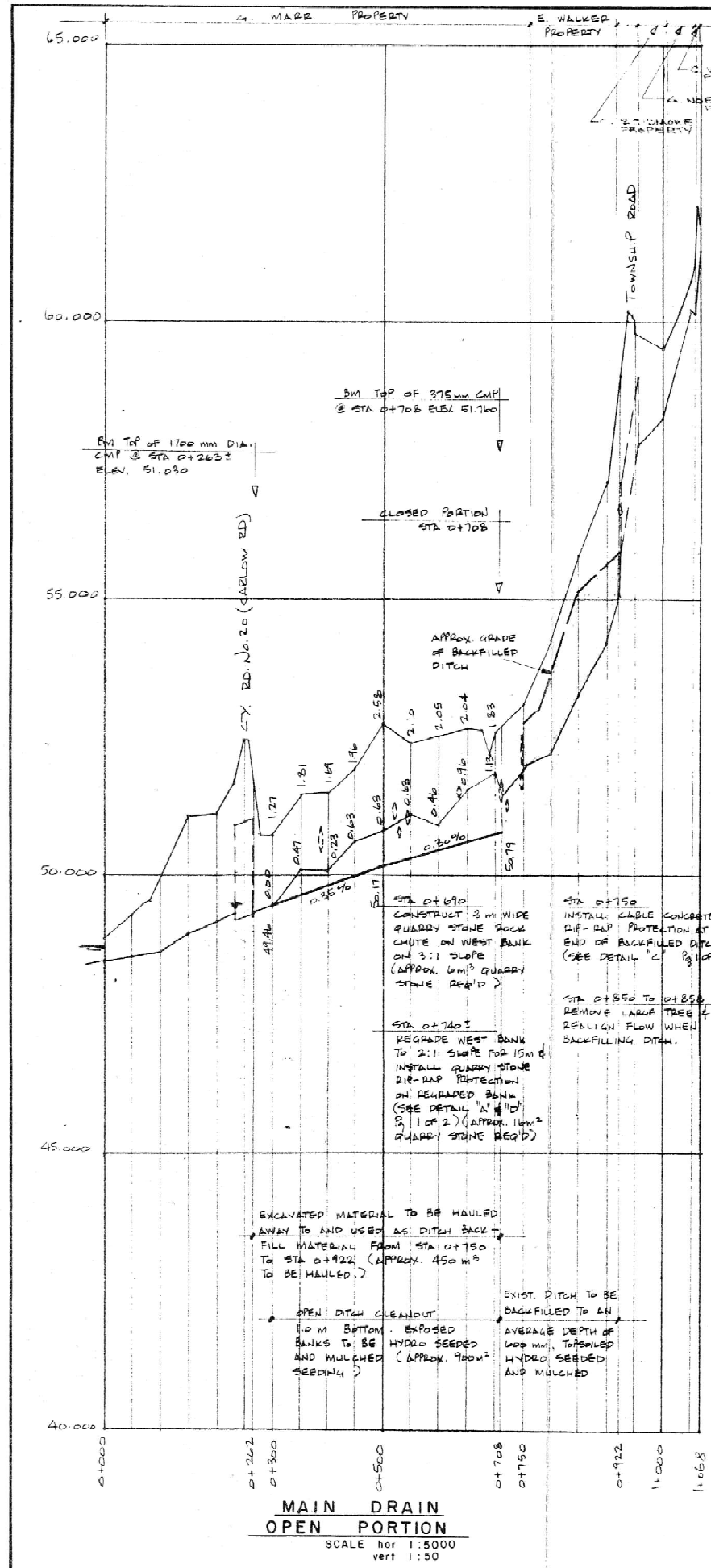


MARR DRAIN
VILLAGE OF PORT STANLEY

Scale: AS SHOWN Approved By: JOB NO. 67086 Drawing By: MD, AD
Date: MAY 23, 1991 F.B. D.142,146 Revised:

PLAN & DETAILS

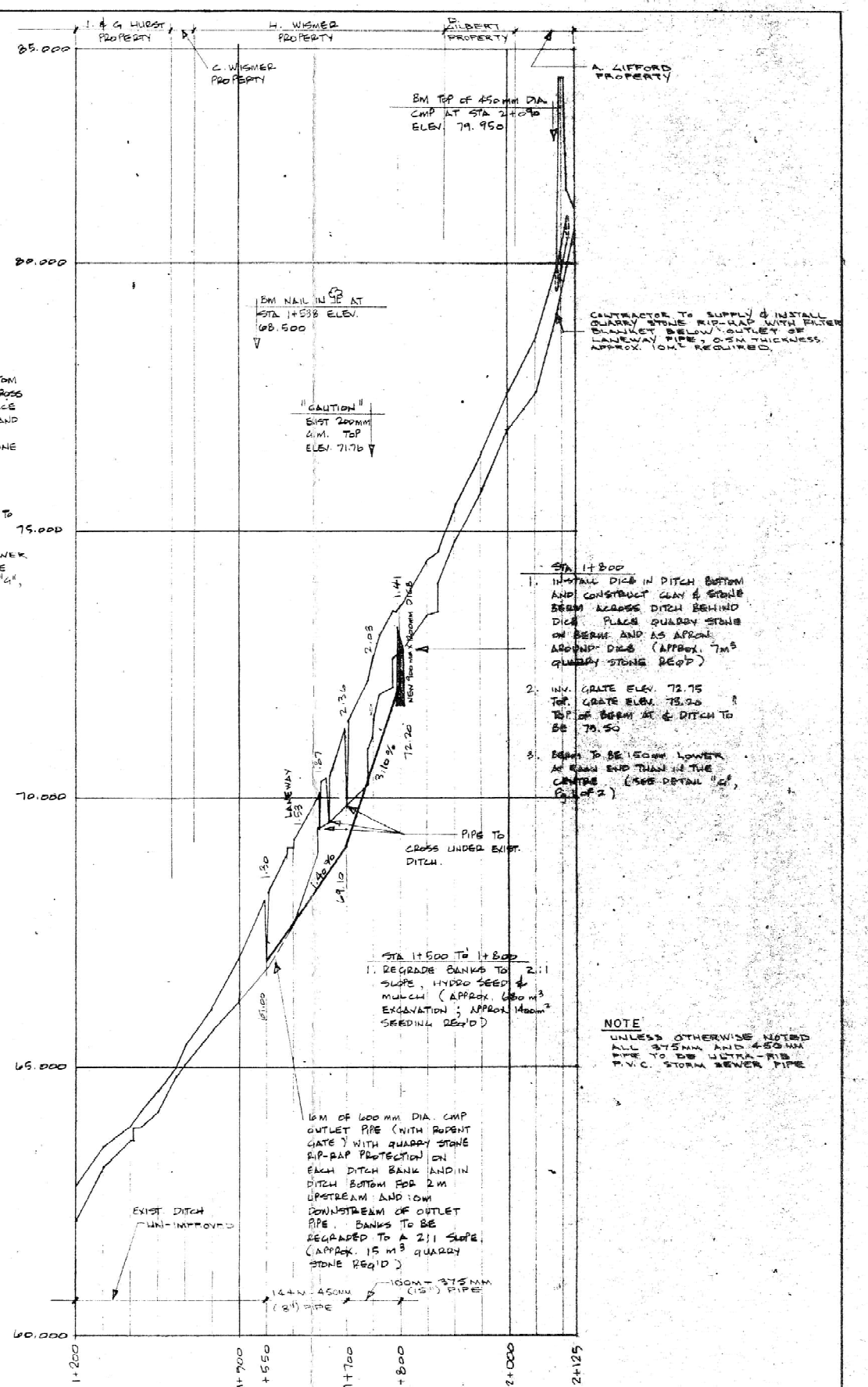
SPRIET ASSOCIATES CONSULTING ENGINEERS LONDON SUBURBY Drawing Number: 1 of 2



MAIN DRAIN MIDDLE PORTION
SCALE hor 1:2500
vert 1:50

APPROX. QUANTITIES

EXCAVATION	STA 0+300 TO 0+708	450 m ³
	STA 1+550 TO 1+800	680 m ³
HYDRO-SEEDING OF DITCH BANKS & BACKFILLED DITCH		3900 m ²
HAULING OF EXCAVATED MATERIAL		450 m ³
IMPORTED TOPSOIL		110 m ³
IMPORTED CLAY FILL MATERIAL FOR BACKFILLING DITCH AND BEAMS		1600 m ³
QUARRY STONE RIP-RAP PROTECTION		55 m ³
FILTER BLANKET		170 m ²
CABLE CONCRETE C.C.-45 (INCLUDING GEOTEXTILE)		195 m ²



MAIN DRAIN UPPER PORTION
SCALE hor 1:5000
vert 1:50

MARR DRAIN
VILLAGE OF PORT STANLEY

Scale: AS SHOWN	Approved By: [Signature]	JOB NO.	Drawn By: MD, AD
Date: MAY 23, 1991	F.B. D-142,146	87086	Revised:

PROFILES

SPRIET ASSOCIATES CONSULTING ENGINEERS LONDON SUBURBY
Drawing Number: 2 of 2

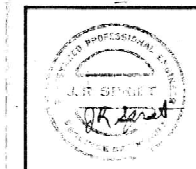
CONTRACTOR TO SUPPLY & INSTALL QUARRY STONE RIP-RAP WITH FILTER BLANKET BELOW OUTLET OF LANEWAY PIPE. 0.2M THICKNESS APPROX. 10M³ REQUIRED.

CAUTION
EXIST 200MM DIA. TOP ELEV. 71.76

STA 1+800
1. INSTALL DICE IN DITCH BOTTOM AND CONSTRUCT CLAY & GRADE BEAM ACROSS DITCH BEHIND DICE. PLACE QUARRY STONE ON BEAM AND AS APPROX. 7M³ QUARRY STONE REQ'D.
2. INV. GRATE ELEV. 72.75 TOP GRATE ELEV. 75.00 TOP OF BEAM AT & DITCH TO BE 70.50
3. BEAM TO BE 150MM LOWER AT EACH END THAN IN THE CENTRE (SEE DETAIL 'a', Pg 1 of 2)

STA 1+500 TO 1+800
1. REGRADE BANKS TO 2:1 SLOPE, HYDRO SEED & MULCH (APPROX. 680 m³ EXCAVATION; APPROX. 1400 m³ SEEDING REQ'D)
2. REGRADE BANKS TO 2:1 SLOPE, HYDRO SEED & MULCH (APPROX. 680 m³ EXCAVATION; APPROX. 1400 m³ SEEDING REQ'D)

NOTE
UNLESS OTHERWISE NOTED ALL 375MM AND 450MM PIPE TO BE LIGHT-WEIGHT P.V.C. STORM SEWER PIPE



SWM Calculations

DATE:	December 15, 2022
JOB No.:	005-10-000
Client:	Strikhey Turf Farms Ltd.
Project:	Battle Creek Subdivision
Location:	8775 Lake Line, Port Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A	B	C
2	737.970	7.882	0.8005
5	800.820	7.472	0.8005
10	1178.220	7.382	0.8049
25	1336.550	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

Note: Chicago Rainfall Distribution Parameters were derived from the IDF Parameters obtained from Environment and Climate Change Canada Rain Gauge Information dated 27th of February 2019 for The St Thomas WPCP ID CH_0137362 (Table 2b) from 1926 - 2007 provided in Appendix E. The intensity from Table 2b was inputted in HecRAS IDF Curve Fit tools to produce the Chicago Distribution parameters.

3.3.5 Runoff Coefficients

The value of runoff coefficients R_i is taken from the following:

Asphalt or Concrete Surface	0.9
Roof Areas	0.9
Single Family Residential	0.35 to 0.75
Semi-Detached Residential	0.40 to 0.75
Apartment	0.50 to 0.70
Light Industrial	0.50 to 0.80
Heavy Industrial	0.60 to 0.90
Neighbourhood Commercial	0.50 to 0.70
Pavement	0.2
Fuels	0.2

* Refer to Design Guidelines of the Municipality of Central Elgin Infrastructure Design Guidelines and Construction Standards

*Intensity in (mm/h) (mm/h)
 Post development flows to be kept at 2-100-year pre development levels

PRE-DEVELOPMENT CONDITIONS

Area (m ²)	C	A ² C
EXT105 (R.O.W.)	0.9	445.5386
EXT105 (Branch A)	0.2	94788.17
A102 (Slope)	0.2	12965.9844
A102 (Flat)	0.21	3449.4481
A103 (Golf Course)	0.2	1496.4288
Total Site Area		161115.3218
C _{eq} = 1/A ² Q _{eq}	0.21	

POST-DEVELOPMENT CONDITIONS

Area (Per 1m W.)	C	A ² C (per m of R.O.W.)
Total	0.9	7.272
Pavement	0.9	0.792
Curb & Gutter (0.4m per side)	0.9	0.9
Sidewalk (1.5m on one side)	0.2	1.908
Grass	0.2	11.3
Total		11.3
C _{eq} = 1/A ² Q _{eq}	0.27	

Area (m ²)	C	A ² C
R.O.W. - Street A	0.57	14172.3578
Single Family/Semi-Detached Lots	0.57	45138.3798
Total		59310.7376
C _{eq}	0.52	Not for design

TABLE 1: PRE-DEVELOPMENT SUBCATCHMENT PARAMETERS

Catchment Area	Total Area (m ²)	Total Area (ha)	Land Use 1 Runoff Coefficient 0.20	Land Use 2 Runoff Coefficient 0.35	Land Use 3 Runoff Coefficient 0.52	Land Use 4 Runoff Coefficient 0.70	Land Use 5 Runoff Coefficient 0.90	Weighted C Value	Flow Length (m)	Width (m)	% Slope	% Impervious	% N-Perp	% Distro - Imperv (mm)	% Distro - Perp (mm)	SCS Curve Numbers
Pre-Development																
A101 (Slope)	64829.417	6.48	64829.417				0.20	84	771	30	30	0.00	0.011	0.4	2	7.5
A102 (Flat)	88904.905	8.89	87467.905				0.21	199	456	3	1.95	0.011	0.2	2	3.8	
EXT105 (Branch A)	49100.000	49.10	3000.000				0.20	199	21	21	100.00	0.011	0.2	2	3.8	
EXT105 (R.O.W.)	49100.000	49.10					0.90	8	813	813	100.00	0.011	0.2	2	3.8	
EXT105 (Branch A)	49100.000	49.10	49100.000				0.20	872	823	18	0.00	0.011	0.2	2	3.8	

TABLE 2: POST-DEVELOPMENT SUBCATCHMENT PARAMETERS

Catchment Area	Total Area (m ²)	Total Area (ha)	Land Use 1 Runoff Coefficient 0.20	Land Use 2 Runoff Coefficient 0.35	Land Use 3 Runoff Coefficient 0.52	Land Use 4 Runoff Coefficient 0.65	Land Use 5 Runoff Coefficient 0.70	Weighted C Value	Flow Length (m)	Width (m)	% Slope	% Impervious	% N-Perp	% Distro - Imperv (mm)	% Distro - Perp (mm)	Previous CN
Post-Development																
A201 (Slope)	4269.961	0.43	4269.961				0.20	48	48	95	30	0.00	0.011	0.4	2	7.5
A202 (Slope)	2187.588	0.22			2187.588		0.52	88	24	24	42.71	0.011	0.2	2	3.8	
A203 (Slope)	5062.143	0.51	5062.143				0.20	38	38	67	0.00	0.011	0.4	2	7.5	
A204	783.916	0.08			783.916		0.52	18	48	2	45.71	0.011	0.2	2	3.8	
A205	477.764	0.05			477.764		0.52	8	96	2	45.71	0.011	0.2	2	3.8	
A206 (Branch A)	1203.622	0.12	1203.622				0.20	160	8	30	0.00	0.011	0.4	2	7.5	
A207	337.929	0.03			337.929		0.52	8	68	2	45.71	0.011	0.2	2	3.8	
A208 (Slope)	15237.531	1.52	15237.531				0.20	127	1220	30	0.00	0.011	0.4	2	7.5	
A209	480.640	0.05			480.640		0.52	38	48	2	45.71	0.011	0.2	2	3.8	
A210 (Slope)	13178.816	1.32	13178.816				0.20	38	413	30	0.00	0.011	0.4	2	7.5	
A211	1929.694	0.19			1929.694		0.52	38	64	2	45.71	0.011	0.2	2	3.8	
A212	24909.820	2.49			24909.820		0.52	170	142	2	45.71	0.011	0.2	2	3.8	
A213	5485.694	0.55			5485.694		0.52	78	78	2	45.71	0.011	0.2	2	3.8	
A214	5958.820	0.60			5958.820		0.52	120	82	2	45.71	0.011	0.2	2	3.8	
A215	10905.213	1.09			10927.343	578.87	0.53	152	83	2	46.75	0.011	0.2	2	3.8	
A216	2428.880	0.25			2428.880		0.65	28	28	2	64.29	0.011	0.2	2	3.8	
A217	1647.280	0.16			1647.280		0.54	199	48	2	46.25	0.011	0.2	2	3.8	
A218	8371.449	0.84			8371.449		0.52	138	48	2	45.71	0.011	0.2	2	3.8	
A219 (SWM Dry Pond)	6983.600	0.69			6983.600		0.20	38	208	8	0.00	0.011	0.2	2	3.8	
U201	4385.080	0.44	4385.080				0.20	100	44	3	0.00	0.011	0.2	2	3.8	
U202	814.844	0.08			814.844		0.52	11	208	8	0.00	0.011	0.2	2	3.8	
EXT105 (R.O.W.)	1100.173	0.11					1100.173	0.70	11	138	0	71.43	0.011	0.2	2	3.8
EXT105 (R.O.W.)	1162.363	0.12					1162.363	0.70	145	145	0	71.43	0.011	0.2	2	3.8
EXT105 (Slope)	3495.471	0.35	3495.471				0.20	138	70	30	0.00	0.011	0.4	2	7.5	
EXT105 (R.O.W.)	1225.287	0.12					1225.287	0.70	8	113	2	71.43	0.011	0.2	2	3.8
EXT105 (Slope)	1258.421	0.13	1258.421				0.20	160	79	30	0.00	0.011	0.4	2	7.5	
EXT105 (R.O.W.)	2028.576	0.20			2028.576		0.70	8	254	2	71.43	0.011	0.2	2	3.8	
EXT105 (R.O.W.)	3046.000	0.30			3046.000		0.70	8	381	2	71.43	0.011	0.2	2	3.8	
EXT105 (Branch A)	48000.000	48.00	48000.000				0.20	813	813	18	0.00	0.011	0.2	2	3.8	

Average Hydrological Soil Group of C for the site (Communication from Geotechnical engineers EXP dated 2021-07-05)

(1) Values from A.4 of Storm Water Management. Model User's Manual Version 5.1

(2) Values from A.6 of Storm Water Management. Model User's Manual Version 5.1

(3) Values from A.5 of Storm Water Management. Model User's Manual Version 5.1

(4) Sample Calculation to Convert from C to % Impervious:
 $C = (0.5) + (1 - 0.2) (\% \text{ Impervious} / 100)$
 $0.21 = (0.5) + (1 - 0.2) (\% \text{ Impervious} / 100)$
 $0.21 - 0.5 = -0.29 = (1 - 0.2) (\% \text{ Impervious} / 100)$
 $-0.29 / -0.8 = 0.3625 = \% \text{ Impervious}$

TABLE 3: Result Summary from EPA SWMM5.1 Modelling

Design Storm Event	Existing Conditions Peak Runoff for Entire Catchment (m ³ /s)	Proposed Conditions Peak Discharge - 625mm Orifice (m ³ /s)	Proposed Conditions Peak Discharge - 310mm Orifice (m ³ /s)	Proposed Conditions Peak Discharge - Weir (m ³ /s)	Proposed Conditions Peak Uncontrolled Flow U201 (m ³ /s)	Proposed Conditions Peak Uncontrolled Flow U202 (m ³ /s)	Proposed Conditions Peak Discharge (m ³ /s)	Dry-Basin Total Storage Volume(m ³)	Dry-Basin Peak Ponding Elev. (m)	Dry-Basin Peak Ponding Depth (m)
2-Year	0.30	0.112	0.150	0.05	0.001	0.012	0.205	654	177.44	0.61
5-Year	0.46	0.218	0.189	0.00	0.000	0.392	393	903	177.88	0.75
10-Year	0.58	0.332	0.185	0.00	0.005	0.523	1420	1777.71	177.71	0.88
50-Year	0.75	0.518	0.259	0.00	0.010	0.752	2271	1779.89	178.09	1.00
50-Year	0.68	0.628	0.224	0.00	0.013	0.639	3106	178.11	178.11	1.08
100-Year	1.21	0.738	0.243	0.00	0.018	0.844	4202	178.20	178.20	1.50

Environment and Climate Change Canada
 Environnement et Changement climatique Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
 Données sur l'intensité, la durée et la fréquence des chutes
 de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2019/02/27

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=====
ST THOMAS WPCP                                ON          6137362
(composite)
Latitude: 42 46'N   Longitude: 81 13'W   Elevation/Altitude: 209      m

Years/Années : 1926 - 2007           # Years/Années : 75
=====
    
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Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

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*****
Table 1 : Annual Maximum (mm)/Maximum annuel (mm)
*****

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Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1926	8.1	11.9	16.3	24.9	41.1	56.4	75.7	80.3	104.4
1927	7.1	9.4	10.2	15.5	18.3	29.7	40.9	46.2	56.6
1929	9.7	15.0	18.3	21.1	38.4	38.4	38.4	38.4	40.9
1930	8.1	16.0	18.3	24.4	29.0	35.6	49.5	50.3	51.6
1931	8.4	10.7	16.0	20.6	23.1	23.4	33.8	37.1	37.1
1932	7.1	9.9	12.2	22.6	39.4	59.4	64.3	65.3	65.5
1933	10.2	11.2	11.2	11.7	12.2	14.7	24.9	24.9	27.4
1934	7.1	8.4	10.4	12.2	15.2	16.0	25.9	27.2	27.2
1935	14.0	26.4	32.8	49.8	60.2	63.2	63.2	63.2	63.2
1936	6.3	11.4	12.2	14.2	19.0	20.3	30.2	32.8	32.8
1937	8.9	17.8	25.1	37.8	43.9	49.8	54.9	56.9	74.4
1938	10.7	14.0	15.0	17.0	17.8	24.9	46.0	47.5	47.5
1939	6.9	11.7	17.5	21.1	21.6	22.1	27.9	30.0	30.5
1940	6.6	12.4	18.3	25.4	33.5	35.3	38.9	50.5	72.9
1941	8.6	13.2	17.0	27.4	37.8	38.1	38.1	41.4	50.5
1942	15.0	20.3	22.6	23.6	32.0	41.7	47.2	52.8	54.9
1943	7.6	12.2	15.2	20.6	25.9	26.4	40.6	48.8	50.3
1944	8.1	14.5	17.3	21.8	26.4	26.7	33.5	33.5	33.5
1945	9.1	12.2	13.0	18.0	20.1	30.7	47.2	55.4	75.4
1946	9.4	15.0	16.8	17.8	24.6	24.9	27.9	36.3	42.2
1947	9.4	18.3	21.8	29.0	31.7	33.0	40.9	44.2	56.6

1948	10.2	14.7	19.6	19.8	19.8	19.8	26.7	28.2	39.1
1949	6.3	9.9	12.2	14.0	14.2	21.8	33.3	33.5	35.1
1952	8.1	13.7	15.5	23.9	33.0	38.6	44.2	71.4	76.7
1953	5.1	7.9	9.4	16.5	20.6	23.9	25.4	31.0	40.6
1954	5.3	8.9	10.9	16.0	16.3	25.1	33.8	47.2	69.3
1955	6.9	9.9	10.7	12.4	16.0	20.1	33.0	45.5	54.1
1956	10.7	14.7	19.3	23.1	38.1	41.4	51.3	57.7	60.7
1957	12.4	18.5	21.8	24.6	30.7	34.5	42.2	42.7	42.9
1958	6.9	9.7	10.9	18.5	21.1	28.7	36.3	36.3	36.8
1959	9.1	14.7	18.8	25.1	27.4	31.2	35.6	35.8	35.8
1960	8.9	16.0	17.3	21.6	27.4	27.7	31.5	38.6	46.2
1961	12.7	16.0	18.0	20.1	22.6	27.4	31.7	31.7	31.7
1962	12.2	15.7	18.8	18.8	20.8	21.3	36.6	42.7	48.0
1963	4.8	5.8	8.6	10.9	20.6	26.4	29.7	36.1	41.7
1964	11.9	15.0	16.8	23.1	37.1	67.3	86.4	86.9	86.9
1965	5.6	7.6	9.1	12.2	19.3	25.1	31.0	44.2	56.6
1967	6.3	9.4	13.2	23.6	38.1	58.4	66.8	76.2	78.5
1968	11.4	17.8	20.3	25.4	35.8	44.7	86.6	101.6	104.6
1969	29.2	30.5	38.1	45.0	48.5	49.5	49.5	49.5	52.6
1970	5.3	5.8	6.9	11.4	13.5	15.5	29.7	29.7	36.1
1971	10.4	12.7	14.7	22.4	22.4	22.4	26.7	26.7	30.2
1972	5.1	10.2	11.7	15.5	15.5	25.4	27.2	31.7	40.4
1973	6.1	7.4	7.4	8.9	10.2	14.0	23.6	28.4	33.8
1974	6.1	7.4	9.9	11.2	14.5	20.6	25.1	26.9	26.9
1975	10.9	21.8	27.2	35.8	39.4	61.0	66.8	75.9	79.0
1976	20.3	21.6	23.4	25.1	25.4	27.7	49.0	51.6	51.6
1977	11.7	17.3	20.3	22.6	22.6	30.5	45.0	46.0	48.8
1978	9.0	11.4	13.6	16.0	18.7	21.6	32.0	34.4	41.0
1979	5.0	5.8	6.6	8.6	14.0	17.2	27.0	42.8	51.8
1980	8.9	12.3	12.7	16.0	25.1	31.7	34.9	52.9	73.0
1981	-99.9	-99.9	-99.9	-99.9	34.0	36.9	49.2	66.8	73.9
1982	8.5	13.1	16.1	21.2	29.3	30.0	55.6	65.4	68.0
1983	10.7	13.9	18.0	30.6	42.8	50.1	82.2	99.4	108.7
1984	8.6	13.0	14.7	29.4	40.6	64.7	92.1	95.3	124.3
1985	6.5	10.2	14.9	18.4	27.6	34.6	34.8	47.4	52.8
1986	8.9	10.2	13.1	23.9	25.2	37.9	45.1	49.4	50.4
1987	6.1	8.1	8.6	16.3	23.0	27.8	39.4	51.6	51.8
1988	8.9	12.1	13.9	26.9	33.7	40.8	50.4	52.2	52.6
1989	6.1	7.7	9.3	15.4	25.7	26.2	27.2	27.2	27.4
1990	10.3	16.3	21.2	36.4	51.1	56.2	56.7	56.7	76.9
1991	6.1	10.4	13.2	21.4	25.6	27.6	36.9	44.0	46.0
1992	8.4	12.0	17.2	21.2	28.8	30.7	32.2	39.1	52.2
1993	4.0	4.4	5.8	9.0	12.8	13.4	27.5	29.0	34.4
1994	10.3	12.0	12.7	18.4	27.4	31.5	48.6	52.2	52.2
1995	8.1	11.3	12.1	17.4	20.6	31.4	60.0	69.5	72.0
1996	12.1	15.8	18.3	19.1	19.1	24.3	25.3	44.4	52.0
1997	11.4	12.3	16.4	27.2	30.7	31.3	43.4	43.4	46.7
1998	11.7	20.7	29.2	41.5	43.0	43.0	43.0	52.2	56.3
1999	8.5	12.2	16.2	23.0	24.2	25.8	32.9	36.6	36.6
2000	8.5	12.5	16.4	27.8	31.5	44.8	47.5	53.4	58.4

2001	6.1	10.7	11.9	21.4	24.5	24.5	34.8	38.6	40.4
2002	8.4	11.1	14.4	18.8	21.2	23.9	23.9	25.2	34.4
2003	8.1	14.4	16.3	20.6	32.9	38.0	38.4	38.4	38.4
2004	10.2	14.3	15.8	16.9	26.0	26.0	34.7	35.9	45.0
2005	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	66.6
2007	5.4	7.7	9.7	13.7	14.7	15.7	19.5	-99.9	-99.9

# Yrs.	75	75	75	75	76	76	76	75	76
Années									
Mean	8.9	12.9	15.7	21.3	27.1	32.5	41.7	47.5	53.5
Moyenne									
Std. Dev.	3.6	4.6	5.8	7.9	10.0	13.0	15.9	17.4	20.1
Écart-type									
Skew.	2.86	1.13	1.23	1.22	0.77	1.00	1.37	1.26	1.26
Dissymétrie									
Kurtosis	16.47	5.64	5.92	5.49	3.64	3.50	4.77	4.61	4.93

*-99.9 Indicates Missing Data/Données manquantes

Warning: annual maximum amount greater than 100-yr return period amount
 Avertissement : la quantité maximale annuelle excède la quantité
 pour une période de retour de 100 ans

Year/Année	Duration/Durée	Data/Données	100-yr/ans
1935	30 min	49.8	46.1
1935	1 h	60.2	58.5
1969	5 min	29.2	20.2
1969	10 min	30.5	27.3
1969	15 min	38.1	33.8
1976	5 min	20.3	20.2
1984	6 h	92.1	91.6
1984	24 h	124.3	116.4

Table 2a : Return Period Rainfall Amounts (mm)
 Quantité de pluie (mm) par période de retour

Duration/Durée	2	5	10	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
5 min	8.4	11.5	13.6	16.3	18.3	20.2	75
10 min	12.2	16.2	18.9	22.3	24.8	27.3	75
15 min	14.7	19.8	23.2	27.5	30.6	33.8	75
30 min	20.0	27.0	31.6	37.5	41.8	46.1	75
1 h	25.4	34.3	40.1	47.6	53.1	58.5	76
2 h	30.3	41.8	49.4	59.0	66.1	73.1	76
6 h	39.1	53.1	62.4	74.2	82.9	91.6	76
12 h	44.6	60.0	70.2	83.0	92.6	102.1	75
24 h	50.2	67.9	79.7	94.5	105.5	116.4	76

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence limits
 Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

Duration/Durée	2	5	10	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
5 min	100.3	138.4	163.7	195.6	219.3	242.8	75
	+/- 9.0	+/- 15.1	+/- 20.4	+/- 27.5	+/- 32.9	+/- 38.3	75
10 min	73.0	97.2	113.3	133.6	148.7	163.6	75
	+/- 5.7	+/- 9.6	+/- 13.0	+/- 17.5	+/- 20.9	+/- 24.4	75
15 min	59.0	79.4	92.8	109.9	122.6	135.1	75
	+/- 4.8	+/- 8.1	+/- 10.9	+/- 14.7	+/- 17.6	+/- 20.5	75
30 min	40.1	54.0	63.3	75.0	83.6	92.2	75
	+/- 3.3	+/- 5.5	+/- 7.5	+/- 10.1	+/- 12.0	+/- 14.0	75
1 h	25.4	34.3	40.1	47.6	53.1	58.5	76
	+/- 2.1	+/- 3.5	+/- 4.7	+/- 6.3	+/- 7.6	+/- 8.9	76
2 h	15.2	20.9	24.7	29.5	33.0	36.6	76
	+/- 1.3	+/- 2.3	+/- 3.0	+/- 4.1	+/- 4.9	+/- 5.7	76
6 h	6.5	8.9	10.4	12.4	13.8	15.3	76
	+/- 0.5	+/- 0.9	+/- 1.2	+/- 1.7	+/- 2.0	+/- 2.3	76
12 h	3.7	5.0	5.8	6.9	7.7	8.5	75
	+/- 0.3	+/- 0.5	+/- 0.7	+/- 0.9	+/- 1.1	+/- 1.3	75
24 h	2.1	2.8	3.3	3.9	4.4	4.9	76
	+/- 0.2	+/- 0.3	+/- 0.4	+/- 0.5	+/- 0.6	+/- 0.7	76

Table 3 : Interpolation Equation / Équation d'interpolation: $R = A \cdot T^B$

R = Interpolated Rainfall rate (mm/h)/Intensité interpolée de la pluie (mm/h)

RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)

T = Rainfall duration (h) / Durée de la pluie (h)

Statistics/Statistiques	2	5	10	25	50	100
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
Mean of RR/Moyenne de RR	36.1	49.0	57.5	68.3	76.2	84.2
Std. Dev. /Écart-type (RR)	34.7	47.4	55.8	66.3	74.2	82.0
Std. Error/Erreur-type	8.9	11.3	12.9	14.9	16.4	17.8
Coefficient (A)	21.9	29.7	34.8	41.3	46.2	50.9
Exponent/Exposant (B)	-0.694	-0.694	-0.694	-0.694	-0.694	-0.694
Mean % Error/% erreur moyenne	9.9	10.0	10.0	10.0	10.1	10.1

2-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years:

Storm number: of 1

Results

Coefficient A	737.97
Constant B	7.382
Exponent C	.8035
Error	.8297

Create Excel results file

Show sample data Symbol Size:

Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
				Depth	Intensity
	5	8.36	100.3	8.14	97.72
	10	12.17	73	12.40	74.40
	15	14.75	59	15.18	60.73
	30	20.05	40.1	20.11	40.21
1.00	60	25.40	25.4	25.05	25.05
2.00	120	30.40	15.2	30.03	15.02
3.00	180			33.04	11.01
4.00	240			35.24	8.81
6.00	360	39.00	6.5	38.47	6.41
12.00	720	44.40	3.7	44.44	3.70
18.00	1080			48.25	2.68
24.00	1440	50.40	2.10	51.13	2.13

5-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years:

Storm number: of 1

Results

Coefficient A	1009.82
Constant B	7.472
Exponent C	.8055
Error	1.3676

Create Excel results file

 Show sample data Symbol Size: %

	Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
					Depth	Intensity
	5	11.53	138.4	11.02	132.28	
	10	16.20	97.2	16.80	100.82	
	15	19.85	79.4	20.58	82.32	
	30	27.00	54	27.27	54.53	
1.00	60	34.30	34.3	33.96	33.96	
2.00	120	41.80	20.9	40.68	20.34	
3.00	180			44.72	14.91	
4.00	240			47.68	11.92	
6.00	360	53.40	8.9	52.02	8.67	
12.00	720	60.00	5	60.02	5.00	
18.00	1080			65.12	3.62	
24.00	1440	67.20	2.8	68.97	2.87	

10-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years:

Storm number: of 1

Results

Coefficient A	1178.22
Constant B	7.382
Exponent C	.8049
Error	1.5240

Create Excel results file

Show sample data Symbol Size:

Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
				Depth	Intensity
	5	13.64	163.7	12.95	155.45
	10	18.88	113.3	19.72	118.31
	15	23.20	92.8	24.13	96.53
	30	31.65	63.3	31.94	63.88
1.00	60	40.10	40.1	39.75	39.75
2.00	120	49.40	24.7	47.62	23.81
3.00	180			52.35	17.45
4.00	240			55.82	13.95
6.00	360	62.40	10.4	60.90	10.15
12.00	720	69.60	5.8	70.29	5.86
18.00	1080			76.28	4.24
24.00	1440	79.20	3.3	80.79	3.37

25-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years: 25

Storm number: 1 of 1

Results

Coefficient A	1398.35
Constant B	7.382
Exponent C	.8048
Error	1.7315

Create Excel results file:

Buttons: Optimize, Clear Storm, Keep Storm, Copy to Storm, Cancel, ACCEPT

Show sample data Symbol Size: 1.5%

Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
				Depth	Intensity
	5	16.30	195.6	15.38	184.56
	10	22.27	133.6	23.41	140.47
	15	27.48	109.9	28.65	114.61
	30	37.50	75	37.92	75.85
1.00	60	47.60	47.6	47.21	47.21
2.00	120	59.00	29.5	56.55	28.28
3.00	180			62.18	20.73
4.00	240			66.30	16.57
6.00	360	74.40	12.4	72.34	12.06
12.00	720	82.80	6.9	83.49	6.96
18.00	1080			90.62	5.03
24.00	1440	93.60	3.9	95.98	4.00

50-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years:

Storm number: of 1

Results

Coefficient A	1497.17
Constant B	6.876
Exponent C	.7978
Error	1.7590

Create Excel results file:

Show sample data Symbol Size:

Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
				Depth	Intensity
	5	18.27	219.3	17.33	207.92
	10	24.78	148.7	26.18	157.09
	15	30.65	122.6	31.93	127.72
	30	41.80	83.6	42.10	84.20
1.00	60	53.10	53.1	52.37	52.37
2.00	120	66.00	33	62.84	31.42
3.00	180			69.21	23.07
4.00	240			73.89	18.47
6.00	360	82.80	13.8	80.81	13.47
12.00	720	92.40	7.7	93.67	7.81
18.00	1080			101.93	5.66
24.00	1440	105.60	4.4	108.17	4.51

100-YEAR IDF TO CHICAGO CONVERSION USING MIDUSS

IDF CurveFit

Number of data pairs: 12 Optimize best fit:

Return period in years: 100

Storm number: 1 of 1

Results

Coefficient A	1634.38
Constant B	6.798
Exponent C	.7954
Error	1.8417

Create Excel results file

Show sample data Symbol Size: 1.5%

Time (hr)	Depth (min)	Intensity (mm)	Intensity (mm/hr)	Computed	
				Depth	Intensity
	5	20.23	242.8	19.13	229.53
	10	27.27	163.6	28.88	173.29
	15	33.78	135.1	35.21	140.86
	30	46.10	92.2	46.44	92.88
1.00	60	58.50	58.5	57.80	57.80
2.00	120	73.20	36.6	69.43	34.72
3.00	180			76.53	25.51
4.00	240			81.76	20.44
6.00	360	91.80	15.3	89.49	14.91
12.00	720	102.00	8.5	103.89	8.66
18.00	1080			113.16	6.29
24.00	1440	117.60	4.9	120.17	5.01



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sbm@sbmltd.ca

CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity = A/(t+B)^C (mm/hr)

Starting Time = 0:00

Time Step = 0:01

r = 0.38

t_p = 1

t_p * r = 0.38

t_p * (1-r) = 0.62

i_p = 133.70

peak rainfall intensity, mm/h

t_b = 68.4

time before the peak intensity, min

t_a = 111.6

time after the peak intensity, min

MTO DMM Section 8, Page 14

$$i_p = \frac{A}{(At + B)^C} = \text{peak rainfall intensity}$$

Before the peak:

$$i_b = \frac{A}{[t_b(1-r) + B]^C}$$

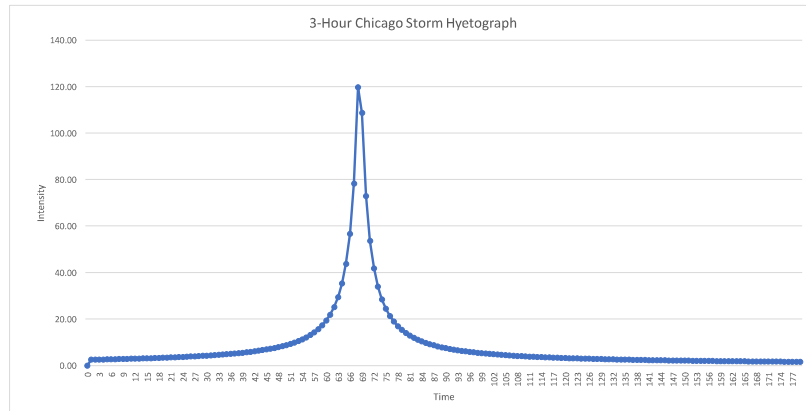
After the peak:

$$i_a = \frac{A}{[t_a/(1-r) + B]^C}$$

Return Period (Years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.804

2-Year Hyetograph

t _b , t _a , t _p	Time (min)	Time (h:m)	Intensity
	0	0:00	0.00
	1	0:01	2.55
	2	0:02	2.58
	3	0:03	2.62
	4	0:04	2.65
	5	0:05	2.69
	6	0:06	2.73
	7	0:07	2.77
	8	0:08	2.81
	9	0:09	2.86
	10	0:10	2.90
	11	0:11	2.95
	12	0:12	3.00
	13	0:13	3.05
	14	0:14	3.10
	15	0:15	3.15
	16	0:16	3.21
	17	0:17	3.26
	18	0:18	3.32
	19	0:19	3.39
	20	0:20	3.45
	21	0:21	3.52
	22	0:22	3.59
	23	0:23	3.67
	24	0:24	3.74
	25	0:25	3.82
	26	0:26	3.91
	27	0:27	4.00
	28	0:28	4.09
	29	0:29	4.19
	30	0:30	4.29
	31	0:31	4.40
	32	0:32	4.52
	33	0:33	4.64
	34	0:34	4.77
	35	0:35	4.91
	36	0:36	5.05
	37	0:37	5.21
	38	0:38	5.37
	39	0:39	5.55
	40	0:40	5.74
	41	0:41	5.95
	42	0:42	6.17
	43	0:43	6.41
	44	0:44	6.67
	45	0:45	6.95
	46	0:46	7.25
	47	0:47	7.59
	48	0:48	7.96
	49	0:49	8.37
	50	0:50	8.83
	51	0:51	9.33
	52	0:52	9.91
	53	0:53	10.55
	54	0:54	11.29
	55	0:55	12.14
	56	0:56	13.13
	57	0:57	14.28
	58	0:58	15.66
	59	0:59	17.32
	60	1:00	19.35
	61	1:01	21.89
	62	1:02	25.15





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5.40	63	1:03	29.45
4.40	64	1:04	35.34
3.40	65	1:05	43.79
2.40	66	1:06	56.72
1.40	67	1:07	78.34
0.40	68	1:08	119.69
0.60	69	1:09	108.77
1.60	70	1:10	72.96
2.60	71	1:11	53.63
3.60	72	1:12	41.83
4.60	73	1:13	34.00
5.60	74	1:14	28.49
6.60	75	1:15	24.43
7.60	76	1:16	21.34
8.60	77	1:17	18.91
9.60	78	1:18	16.96
10.60	79	1:19	15.36
11.60	80	1:20	14.04
12.60	81	1:21	12.92
13.60	82	1:22	11.96
14.60	83	1:23	11.14
15.60	84	1:24	10.42
16.60	85	1:25	9.79
17.60	86	1:26	9.23
18.60	87	1:27	8.73
19.60	88	1:28	8.28
20.60	89	1:29	7.88
21.60	90	1:30	7.52
22.60	91	1:31	7.19
23.60	92	1:32	6.89
24.60	93	1:33	6.61
25.60	94	1:34	6.36
26.60	95	1:35	6.12
27.60	96	1:36	5.91
28.60	97	1:37	5.70
29.60	98	1:38	5.52
30.60	99	1:39	5.34
31.60	100	1:40	5.18
32.60	101	1:41	5.02
33.60	102	1:42	4.88
34.60	103	1:43	4.74
35.60	104	1:44	4.62
36.60	105	1:45	4.49
37.60	106	1:46	4.38
38.60	107	1:47	4.27
39.60	108	1:48	4.17
40.60	109	1:49	4.07
41.60	110	1:50	3.98
42.60	111	1:51	3.89
43.60	112	1:52	3.81
44.60	113	1:53	3.73
45.60	114	1:54	3.65
46.60	115	1:55	3.58
47.60	116	1:56	3.51
48.60	117	1:57	3.44
49.60	118	1:58	3.37
50.60	119	1:59	3.31
51.60	120	2:00	3.25
52.60	121	2:01	3.20
53.60	122	2:02	3.14
54.60	123	2:03	3.09
55.60	124	2:04	3.04
56.60	125	2:05	2.99
57.60	126	2:06	2.94
58.60	127	2:07	2.89
59.60	128	2:08	2.85
60.60	129	2:09	2.81
61.60	130	2:10	2.76
62.60	131	2:11	2.72
63.60	132	2:12	2.68
64.60	133	2:13	2.65
65.60	134	2:14	2.61
66.60	135	2:15	2.57
67.60	136	2:16	2.54
68.60	137	2:17	2.51
69.60	138	2:18	2.47
70.60	139	2:19	2.44
71.60	140	2:20	2.41
72.60	141	2:21	2.38
73.60	142	2:22	2.35
74.60	143	2:23	2.32
75.60	144	2:24	2.30
76.60	145	2:25	2.27
77.60	146	2:26	2.24
78.60	147	2:27	2.22
79.60	148	2:28	2.19
80.60	149	2:29	2.17
81.60	150	2:30	2.14
82.60	151	2:31	2.12
83.60	152	2:32	2.10
84.60	153	2:33	2.08
85.60	154	2:34	2.05
86.60	155	2:35	2.03
87.60	156	2:36	2.01
88.60	157	2:37	1.99
89.60	158	2:38	1.97
90.60	159	2:39	1.95
91.60	160	2:40	1.93
92.60	161	2:41	1.92
93.60	162	2:42	1.90
94.60	163	2:43	1.88
95.60	164	2:44	1.86
96.60	165	2:45	1.85
97.60	166	2:46	1.83
98.60	167	2:47	1.81
99.60	168	2:48	1.80

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100.60	169	2:49	1.78
101.60	170	2:50	1.77
102.60	171	2:51	1.75
103.60	172	2:52	1.74
104.60	173	2:53	1.72
105.60	174	2:54	1.71
106.60	175	2:55	1.69
107.60	176	2:56	1.68
108.60	177	2:57	1.67
109.60	178	2:58	1.65
110.60	179	2:59	1.64
111.60	180	3:00	1.63

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Fort Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity $I = A / (t+B)^C$ (mm/hr)

Starting Time = 0:00
 Time Step = 0:01
 $r = 0.38$ MTO DMM Section 8, Page 14
 $t_p = 1$
 $t_d * r = 0.38$
 $t_d * (1-r) = 0.62$

$i_p = 180.61$ peak rainfall intensity, mm/h
 $t_p = 68.4$ time before the peak intensity, min
 $t_s = 111.6$ time after the peak intensity, min

$$i_p = \frac{A}{(\Delta t + B)^C} = \text{peak rainfall intensity}$$

Before the peak:

$$i_t = \frac{\Delta t((1-r)t_p/t + B)}{[t_p/r + B]^C}$$

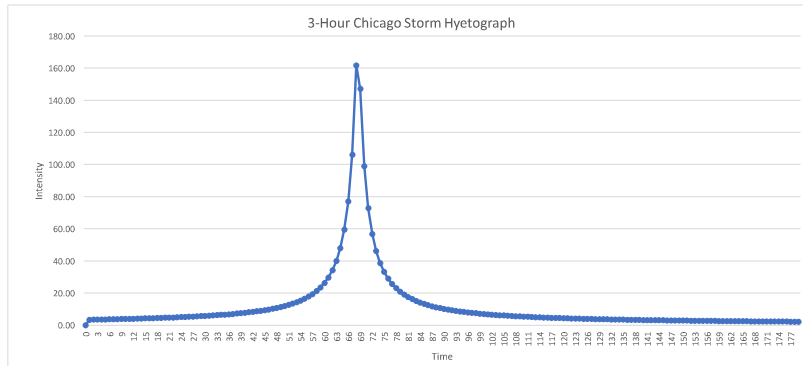
After the peak:

$$i_t = \frac{\Delta t((1-r)(t_p/t) + B)}{[t_p/(1-r) + B]^C}$$

Return Period (Years)	A,B,C Parameters		
	A	B	C
5	1009.820	7.472	0.806

5-Year Hyetograph

$t_s \Delta t$ t_e	Time (min)	Time (h:m)	Intensity
68.40	0	0:00	0.00
67.40	1	0:01	3.42
66.40	2	0:02	3.47
65.40	3	0:03	3.52
64.40	4	0:04	3.57
63.40	5	0:05	3.62
62.40	6	0:06	3.67
61.40	7	0:07	3.73
60.40	8	0:08	3.78
59.40	9	0:09	3.84
58.40	10	0:10	3.90
57.40	11	0:11	3.97
56.40	12	0:12	4.03
55.40	13	0:13	4.10
54.40	14	0:14	4.17
53.40	15	0:15	4.24
52.40	16	0:16	4.32
51.40	17	0:17	4.39
50.40	18	0:18	4.48
49.40	19	0:19	4.56
48.40	20	0:20	4.65
47.40	21	0:21	4.74
46.40	22	0:22	4.84
45.40	23	0:23	4.94
44.40	24	0:24	5.04
43.40	25	0:25	5.15
42.40	26	0:26	5.27
41.40	27	0:27	5.39
40.40	28	0:28	5.51
39.40	29	0:29	5.65
38.40	30	0:30	5.79
37.40	31	0:31	5.94
36.40	32	0:32	6.09
35.40	33	0:33	6.26
34.40	34	0:34	6.43
33.40	35	0:35	6.62
32.40	36	0:36	6.82
31.40	37	0:37	7.03
30.40	38	0:38	7.25
29.40	39	0:39	7.49
28.40	40	0:40	7.75
27.40	41	0:41	8.03
26.40	42	0:42	8.33
25.40	43	0:43	8.65
24.40	44	0:44	9.00
23.40	45	0:45	9.39
22.40	46	0:46	9.80
21.40	47	0:47	10.26
20.40	48	0:48	10.76
19.40	49	0:49	11.32
18.40	50	0:50	11.94
17.40	51	0:51	12.63
16.40	52	0:52	13.41
15.40	53	0:53	14.29
14.40	54	0:54	15.29
13.40	55	0:55	16.45
12.40	56	0:56	17.79
11.40	57	0:57	19.36
10.40	58	0:58	21.24
9.40	59	0:59	23.49
8.40	60	1:00	26.26
7.40	61	1:01	29.72
6.40	62	1:02	34.15





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5.40	63	1.03	40.00
4.40	64	1.04	48.00
3.40	65	1.05	59.47
2.40	66	1.06	76.99
1.40	67	1.07	106.21
0.40	68	1.08	161.84
0.60	69	1.09	147.18
1.60	70	1.10	98.95
2.60	71	1.11	72.80
3.60	72	1.12	56.80
4.60	73	1.13	46.17
5.60	74	1.14	38.68
6.60	75	1.15	33.17
7.60	76	1.16	28.96
8.60	77	1.17	25.66
9.60	78	1.18	23.00
10.60	79	1.19	20.83
11.60	80	1.20	19.03
12.60	81	1.21	17.50
13.60	82	1.22	16.20
14.60	83	1.23	15.08
15.60	84	1.24	14.10
16.60	85	1.25	13.25
17.60	86	1.26	12.49
18.60	87	1.27	11.81
19.60	88	1.28	11.21
20.60	89	1.29	10.66
21.60	90	1.30	10.17
22.60	91	1.31	9.72
23.60	92	1.32	9.31
24.60	93	1.33	8.93
25.60	94	1.34	8.59
26.60	95	1.35	8.27
27.60	96	1.36	7.97
28.60	97	1.37	7.70
29.60	98	1.38	7.44
30.60	99	1.39	7.21
31.60	100	1.40	6.98
32.60	101	1.41	6.78
33.60	102	1.42	6.58
34.60	103	1.43	6.40
35.60	104	1.44	6.22
36.60	105	1.45	6.06
37.60	106	1.46	5.91
38.60	107	1.47	5.76
39.60	108	1.48	5.62
40.60	109	1.49	5.49
41.60	110	1.50	5.36
42.60	111	1.51	5.24
43.60	112	1.52	5.13
44.60	113	1.53	5.02
45.60	114	1.54	4.92
46.60	115	1.55	4.82
47.60	116	1.56	4.72
48.60	117	1.57	4.63
49.60	118	1.58	4.54
50.60	119	1.59	4.46
51.60	120	2.00	4.38
52.60	121	2.01	4.30
53.60	122	2.02	4.23
54.60	123	2.03	4.15
55.60	124	2.04	4.09
56.60	125	2.05	4.02
57.60	126	2.06	3.95
58.60	127	2.07	3.89
59.60	128	2.08	3.83
60.60	129	2.09	3.77
61.60	130	2.10	3.72
62.60	131	2.11	3.66
63.60	132	2.12	3.61
64.60	133	2.13	3.56
65.60	134	2.14	3.51
66.60	135	2.15	3.46
67.60	136	2.16	3.41
68.60	137	2.17	3.37
69.60	138	2.18	3.33
70.60	139	2.19	3.28
71.60	140	2.20	3.24
72.60	141	2.21	3.20
73.60	142	2.22	3.16
74.60	143	2.23	3.12
75.60	144	2.24	3.09
76.60	145	2.25	3.05
77.60	146	2.26	3.01
78.60	147	2.27	2.98
79.60	148	2.28	2.95
80.60	149	2.29	2.91
81.60	150	2.30	2.88
82.60	151	2.31	2.85
83.60	152	2.32	2.82
84.60	153	2.33	2.79
85.60	154	2.34	2.76
86.60	155	2.35	2.73
87.60	156	2.36	2.70
88.60	157	2.37	2.68
89.60	158	2.38	2.65
90.60	159	2.39	2.62
91.60	160	2.40	2.60
92.60	161	2.41	2.57
93.60	162	2.42	2.55
94.60	163	2.43	2.52
95.60	164	2.44	2.50
96.60	165	2.45	2.48
97.60	166	2.46	2.46
98.60	167	2.47	2.43
99.60	168	2.48	2.41



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100.60	169	2:49	2:39
101.60	170	2:50	2:37
102.60	171	2:51	2:35
103.60	172	2:52	2:33
104.60	173	2:53	2:31
105.60	174	2:54	2:29
106.60	175	2:55	2:27
107.60	176	2:56	2:25
108.60	177	2:57	2:24
109.60	178	2:58	2:22
110.60	179	2:59	2:20
111.60	180	3:00	2:18

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (Years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity I=A/(t+B)^C (mm/hr)

Starting Time= 0:00
 Time Step= 0:01
 r= 0.38 MTO DMM Section 8, Page 14
 t_p= 1
 t_d * r= 0.38

t_d * (1-r)= 0.62
 i_p= 212.83 peak rainfall intensity, mm/h
 t_b= 68.4 time before the peak intensity, min
 t_a= 111.6 time after the peak intensity, min

$$i_p = \frac{A}{(\Delta t + B)^C} = \text{peak rainfall intensity}$$

Before the peak:

$$i_b = \frac{A((1-r)t_b(r) + B)}{[t_b r + B]^{1+r}}$$

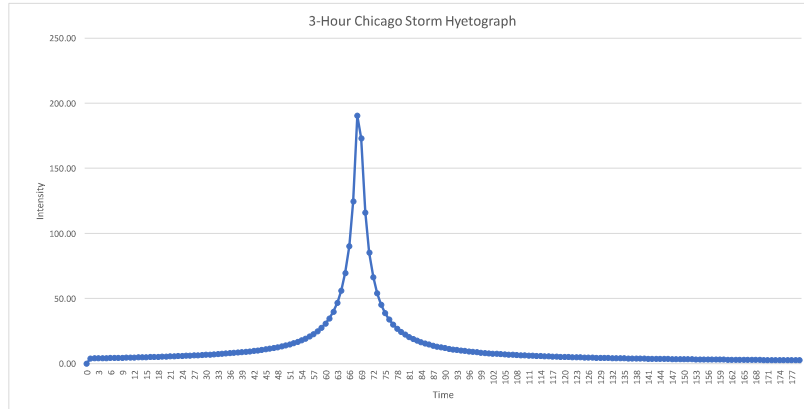
After the peak:

$$i_a = \frac{A((1-r)t_a((1-r) + B)}{[t_a((1-r) + B)]^{1+r}}$$

Return Period (Years)	A,B,C Parameters		
	A	B	C
10	1178.220	7.382	0.805

10-Year Hyetograph

t _b Δ t t _a	Time (min)	Time (h:m)	Intensity
68.40 0	0	0:00	0.00
67.40 1	1	0:01	4.01
66.40 2	2	0:02	4.87
65.40 3	3	0:03	4.12
64.40 4	4	0:04	4.18
63.40 5	5	0:05	4.24
62.40 6	6	0:06	4.30
61.40 7	7	0:07	4.37
60.40 8	8	0:08	4.43
59.40 9	9	0:09	4.50
58.40 10	10	0:10	4.57
57.40 11	11	0:11	4.65
56.40 12	12	0:12	4.72
55.40 13	13	0:13	4.80
54.40 14	14	0:14	4.88
53.40 15	15	0:15	4.97
52.40 16	16	0:16	5.06
51.40 17	17	0:17	5.15
50.40 18	18	0:18	5.24
49.40 19	19	0:19	5.34
48.40 20	20	0:20	5.44
47.40 21	21	0:21	5.55
46.40 22	22	0:22	5.66
45.40 23	23	0:23	5.78
44.40 24	24	0:24	5.90
43.40 25	25	0:25	6.03
42.40 26	26	0:26	6.17
41.40 27	27	0:27	6.31
40.40 28	28	0:28	6.45
39.40 29	29	0:29	6.61
38.40 30	30	0:30	6.77
37.40 31	31	0:31	6.95
36.40 32	32	0:32	7.13
35.40 33	33	0:33	7.32
34.40 34	34	0:34	7.53
33.40 35	35	0:35	7.75
32.40 36	36	0:36	7.98
31.40 37	37	0:37	8.22
30.40 38	38	0:38	8.49
29.40 39	39	0:39	8.77
28.40 40	40	0:40	9.07
27.40 41	41	0:41	9.39
26.40 42	42	0:42	9.74
25.40 43	43	0:43	10.12
24.40 44	44	0:44	10.53
23.40 45	45	0:45	10.98
22.40 46	46	0:46	11.46
21.40 47	47	0:47	12.00
20.40 48	48	0:48	12.58
19.40 49	49	0:49	13.23
18.40 50	50	0:50	13.96
17.40 51	51	0:51	14.76
16.40 52	52	0:52	15.67
15.40 53	53	0:53	16.70
14.40 54	54	0:54	17.87
13.40 55	55	0:55	19.22
12.40 56	56	0:56	20.78
11.40 57	57	0:57	22.62
10.40 58	58	0:58	24.80
9.40 59	59	0:59	27.44
8.40 60	60	1:00	30.67
7.40 61	61	1:01	34.71
6.40 62	62	1:02	39.89





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5.40	63	1.03	46.73
4.40	64	1.04	56.10
3.40	65	1.05	69.55
2.40	66	1.06	90.14
1.40	67	1.07	124.58
0.40	68	1.08	190.49
0.60	69	1.09	173.08
1.60	70	1.10	116.01
2.60	71	1.11	85.21
3.60	72	1.12	66.42
4.60	73	1.13	53.96
5.60	74	1.14	45.20
6.60	75	1.15	38.74
7.60	76	1.16	33.82
8.60	77	1.17	29.96
9.60	78	1.18	26.87
10.60	79	1.19	24.33
11.60	80	1.20	22.23
12.60	81	1.21	20.45
13.60	82	1.22	18.93
14.60	83	1.23	17.62
15.60	84	1.24	16.48
16.60	85	1.25	15.48
17.60	86	1.26	14.59
18.60	87	1.27	13.80
19.60	88	1.28	13.10
20.60	89	1.29	12.46
21.60	90	1.30	11.89
22.60	91	1.31	11.36
23.60	92	1.32	10.88
24.60	93	1.33	10.45
25.60	94	1.34	10.04
26.60	95	1.35	9.67
27.60	96	1.36	9.33
28.60	97	1.37	9.01
29.60	98	1.38	8.71
30.60	99	1.39	8.43
31.60	100	1.40	8.17
32.60	101	1.41	7.93
33.60	102	1.42	7.70
34.60	103	1.43	7.49
35.60	104	1.44	7.28
36.60	105	1.45	7.09
37.60	106	1.46	6.91
38.60	107	1.47	6.74
39.60	108	1.48	6.58
40.60	109	1.49	6.42
41.60	110	1.50	6.28
42.60	111	1.51	6.14
43.60	112	1.52	6.01
44.60	113	1.53	5.88
45.60	114	1.54	5.76
46.60	115	1.55	5.64
47.60	116	1.56	5.53
48.60	117	1.57	5.42
49.60	118	1.58	5.32
50.60	119	1.59	5.22
51.60	120	2.00	5.13
52.60	121	2.01	5.04
53.60	122	2.02	4.95
54.60	123	2.03	4.87
55.60	124	2.04	4.79
56.60	125	2.05	4.71
57.60	126	2.06	4.63
58.60	127	2.07	4.56
59.60	128	2.08	4.49
60.60	129	2.09	4.42
61.60	130	2.10	4.36
62.60	131	2.11	4.29
63.60	132	2.12	4.23
64.60	133	2.13	4.17
65.60	134	2.14	4.11
66.60	135	2.15	4.06
67.60	136	2.16	4.00
68.60	137	2.17	3.95
69.60	138	2.18	3.90
70.60	139	2.19	3.85
71.60	140	2.20	3.80
72.60	141	2.21	3.75
73.60	142	2.22	3.70
74.60	143	2.23	3.66
75.60	144	2.24	3.62
76.60	145	2.25	3.57
77.60	146	2.26	3.53
78.60	147	2.27	3.49
79.60	148	2.28	3.45
80.60	149	2.29	3.41
81.60	150	2.30	3.38
82.60	151	2.31	3.34
83.60	152	2.32	3.30
84.60	153	2.33	3.27
85.60	154	2.34	3.24
86.60	155	2.35	3.20
87.60	156	2.36	3.17
88.60	157	2.37	3.14
89.60	158	2.38	3.11
90.60	159	2.39	3.08
91.60	160	2.40	3.05
92.60	161	2.41	3.02
93.60	162	2.42	2.99
94.60	163	2.43	2.96
95.60	164	2.44	2.93
96.60	165	2.45	2.91
97.60	166	2.46	2.88
98.60	167	2.47	2.85
99.60	168	2.48	2.83



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100.60	169	2:49	2:80
101.60	170	2:50	2:78
102.60	171	2:51	2:76
103.60	172	2:52	2:73
104.60	173	2:53	2:71
105.60	174	2:54	2:69
106.60	175	2:55	2:67
107.60	176	2:56	2:64
108.60	177	2:57	2:62
109.60	178	2:58	2:60
110.60	179	2:59	2:58
111.60	180	3:00	2:56

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity $I = A / (t + B)^C$ (mm/hr)

Starting Time = 0:00
 Time Step = 0:01
 $r = 0.38$
 $t_p = 1$
 $t_d * r = 0.38$
 $t_d * (1-r) = 0.62$

MTO DMM Section 8, Page 14

$i_p = 252.64$ peak rainfall intensity, mm/h
 $t_p = 68.4$ time before the peak intensity, min
 $t_s = 111.6$ time after the peak intensity, min

$$i_p = \frac{A}{(\Delta t + B)^C} = \text{peak rainfall intensity}$$

Before the peak:

$$i_s = \frac{A[(1-r)t_p/t + B]}{[t + r + B]^C}$$

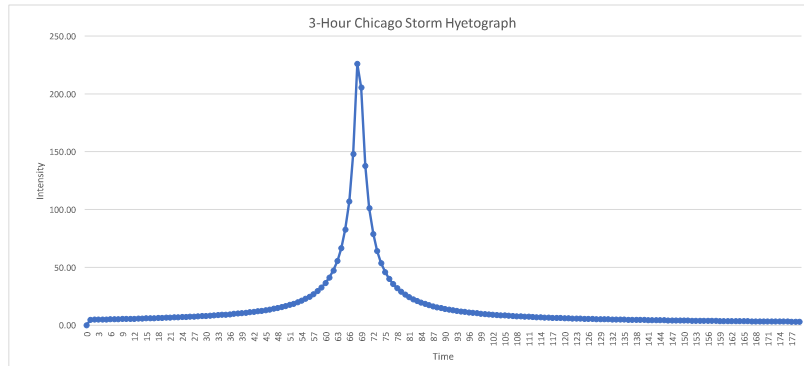
After the peak:

$$i_s = \frac{A[(1-r)t_p/(1-r) + B]}{[t_p/(1-r) + B]^C}$$

Return Period (Years)	A,B,C Parameters		
	A	B	C
25	1398.350	7.382	0.805

25-Year Hyetograph

t_s t_d t_p	Time (min)	Time (h:m)	Intensity
68.40	0	0:00	0.00
67.40	1	0:01	4.77
66.40	2	0:02	4.83
65.40	3	0:03	4.90
64.40	4	0:04	4.97
63.40	5	0:05	5.04
62.40	6	0:06	5.11
61.40	7	0:07	5.19
60.40	8	0:08	5.27
59.40	9	0:09	5.35
58.40	10	0:10	5.43
57.40	11	0:11	5.52
56.40	12	0:12	5.61
55.40	13	0:13	5.70
54.40	14	0:14	5.80
53.40	15	0:15	5.90
52.40	16	0:16	6.01
51.40	17	0:17	6.11
50.40	18	0:18	6.23
49.40	19	0:19	6.34
48.40	20	0:20	6.47
47.40	21	0:21	6.59
46.40	22	0:22	6.73
45.40	23	0:23	6.87
44.40	24	0:24	7.01
43.40	25	0:25	7.16
42.40	26	0:26	7.32
41.40	27	0:27	7.49
40.40	28	0:28	7.67
39.40	29	0:29	7.85
38.40	30	0:30	8.05
37.40	31	0:31	8.25
36.40	32	0:32	8.47
35.40	33	0:33	8.70
34.40	34	0:34	8.94
33.40	35	0:35	9.20
32.40	36	0:36	9.47
31.40	37	0:37	9.77
30.40	38	0:38	10.08
29.40	39	0:39	10.41
28.40	40	0:40	10.77
27.40	41	0:41	11.16
26.40	42	0:42	11.57
25.40	43	0:43	12.02
24.40	44	0:44	12.51
23.40	45	0:45	13.04
22.40	46	0:46	13.61
21.40	47	0:47	14.25
20.40	48	0:48	14.95
19.40	49	0:49	15.72
18.40	50	0:50	16.57
17.40	51	0:51	17.53
16.40	52	0:52	18.61
15.40	53	0:53	19.83
14.40	54	0:54	21.22
13.40	55	0:55	22.82
12.40	56	0:56	24.68
11.40	57	0:57	26.86
10.40	58	0:58	29.45
9.40	59	0:59	32.58
8.40	60	1:00	36.42
7.40	61	1:01	41.22
6.40	62	1:02	47.37





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5.40	63	1.03	55.49
4.40	64	1.04	66.61
3.40	65	1.05	82.58
2.40	66	1.06	107.01
1.40	67	1.07	147.90
0.40	68	1.08	226.13
0.60	69	1.09	205.47
1.60	70	1.10	137.72
2.60	71	1.11	101.17
3.60	72	1.12	78.86
4.60	73	1.13	64.07
5.60	74	1.14	53.66
6.60	75	1.15	46.00
7.60	76	1.16	40.16
8.60	77	1.17	35.58
9.60	78	1.18	31.90
10.60	79	1.19	28.90
11.60	80	1.20	26.39
12.60	81	1.21	24.28
13.60	82	1.22	22.48
14.60	83	1.23	20.93
15.60	84	1.24	19.57
16.60	85	1.25	18.38
17.60	86	1.26	17.33
18.60	87	1.27	16.40
19.60	88	1.28	15.56
20.60	89	1.29	14.80
21.60	90	1.30	14.12
22.60	91	1.31	13.49
23.60	92	1.32	12.93
24.60	93	1.33	12.41
25.60	94	1.34	11.93
26.60	95	1.35	11.49
27.60	96	1.36	11.08
28.60	97	1.37	10.70
29.60	98	1.38	10.34
30.60	99	1.39	10.02
31.60	100	1.40	9.71
32.60	101	1.41	9.42
33.60	102	1.42	9.15
34.60	103	1.43	8.89
35.60	104	1.44	8.65
36.60	105	1.45	8.43
37.60	106	1.46	8.21
38.60	107	1.47	8.01
39.60	108	1.48	7.81
40.60	109	1.49	7.63
41.60	110	1.50	7.46
42.60	111	1.51	7.29
43.60	112	1.52	7.13
44.60	113	1.53	6.98
45.60	114	1.54	6.84
46.60	115	1.55	6.70
47.60	116	1.56	6.57
48.60	117	1.57	6.44
49.60	118	1.58	6.32
50.60	119	1.59	6.20
51.60	120	2.00	6.09
52.60	121	2.01	5.98
53.60	122	2.02	5.88
54.60	123	2.03	5.78
55.60	124	2.04	5.69
56.60	125	2.05	5.59
57.60	126	2.06	5.50
58.60	127	2.07	5.42
59.60	128	2.08	5.33
60.60	129	2.09	5.25
61.60	130	2.10	5.17
62.60	131	2.11	5.10
63.60	132	2.12	5.02
64.60	133	2.13	4.95
65.60	134	2.14	4.89
66.60	135	2.15	4.82
67.60	136	2.16	4.75
68.60	137	2.17	4.69
69.60	138	2.18	4.63
70.60	139	2.19	4.57
71.60	140	2.20	4.51
72.60	141	2.21	4.46
73.60	142	2.22	4.40
74.60	143	2.23	4.35
75.60	144	2.24	4.30
76.60	145	2.25	4.25
77.60	146	2.26	4.20
78.60	147	2.27	4.15
79.60	148	2.28	4.10
80.60	149	2.29	4.06
81.60	150	2.30	4.01
82.60	151	2.31	3.97
83.60	152	2.32	3.93
84.60	153	2.33	3.88
85.60	154	2.34	3.84
86.60	155	2.35	3.80
87.60	156	2.36	3.77
88.60	157	2.37	3.73
89.60	158	2.38	3.69
90.60	159	2.39	3.65
91.60	160	2.40	3.62
92.60	161	2.41	3.58
93.60	162	2.42	3.55
94.60	163	2.43	3.52
95.60	164	2.44	3.48
96.60	165	2.45	3.45
97.60	166	2.46	3.42
98.60	167	2.47	3.39
99.60	168	2.48	3.36

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100.60	169	2:49	3:33
101.60	170	2:50	3:30
102.60	171	2:51	3:27
103.60	172	2:52	3:25
104.60	173	2:53	3:22
105.60	174	2:54	3:19
106.60	175	2:55	3:17
107.60	176	2:56	3:14
108.60	177	2:57	3:11
109.60	178	2:58	3:09
110.60	179	2:59	3:07
111.60	180	3:00	3:04

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity $I = A / (t + B)^C$ (mm/hr)

Starting Time = 0:00
 Time Step = 0:01
 $r = 0.38$
 $t_p = 1$
 $t_d * r = 0.38$
 $t_d * (1+r) = 0.62$

MTO DMM Section 8, Page 14

$i_p = 288.53$ peak rainfall intensity, mm/h
 $t_p = 68.4$ time before the peak intensity, min
 $t_s = 111.6$ time after the peak intensity, min

$i_p = \frac{A}{(\Delta t + B)^C}$ = peak rainfall intensity
 (Δt + B)^C

Before the peak:

$i_b = \frac{A[(1-r)t_p(r) + B]}{[t_p + B \cdot (1-r)^{1/C}]^C}$

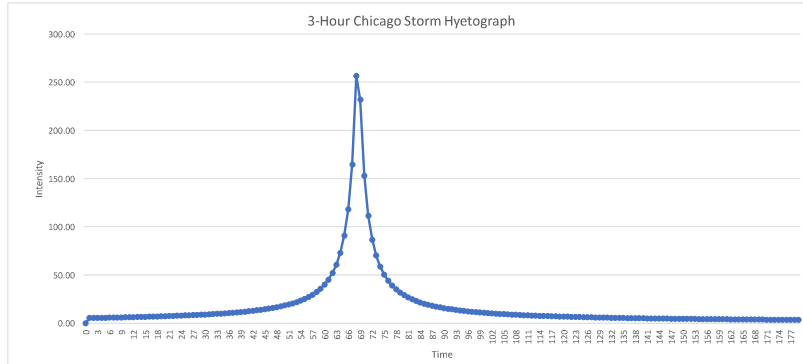
After the peak:

$i_s = \frac{A[(1-r)t_p(1-r) + B]}{[t_p(1-r) + B]^C}$

Return Period (Years)	A,B,C Parameters		
	A	B	C
50	1497.170	6.876	0.798

50-Year Hyetograph

$t_p \pm \Delta t$	Time (min)	Time (h:m)	Intensity
68.40	0	0:00	0.00
67.40	1	0:01	5.41
66.40	2	0:02	5.48
65.40	3	0:03	5.56
64.40	4	0:04	5.64
63.40	5	0:05	5.72
62.40	6	0:06	5.80
61.40	7	0:07	5.88
60.40	8	0:08	5.97
59.40	9	0:09	6.06
58.40	10	0:10	6.15
57.40	11	0:11	6.25
56.40	12	0:12	6.35
55.40	13	0:13	6.46
54.40	14	0:14	6.56
53.40	15	0:15	6.67
52.40	16	0:16	6.79
51.40	17	0:17	6.91
50.40	18	0:18	7.04
49.40	19	0:19	7.17
48.40	20	0:20	7.30
47.40	21	0:21	7.44
46.40	22	0:22	7.59
45.40	23	0:23	7.74
44.40	24	0:24	7.90
43.40	25	0:25	8.07
42.40	26	0:26	8.25
41.40	27	0:27	8.43
40.40	28	0:28	8.63
39.40	29	0:29	8.83
38.40	30	0:30	9.04
37.40	31	0:31	9.27
36.40	32	0:32	9.51
35.40	33	0:33	9.76
34.40	34	0:34	10.03
33.40	35	0:35	10.31
32.40	36	0:36	10.61
31.40	37	0:37	10.94
30.40	38	0:38	11.28
29.40	39	0:39	11.64
28.40	40	0:40	12.04
27.40	41	0:41	12.46
26.40	42	0:42	12.91
25.40	43	0:43	13.40
24.40	44	0:44	13.93
23.40	45	0:45	14.51
22.40	46	0:46	15.14
21.40	47	0:47	15.83
20.40	48	0:48	16.60
19.40	49	0:49	17.44
18.40	50	0:50	18.37
17.40	51	0:51	19.41
16.40	52	0:52	20.58
15.40	53	0:53	21.91
14.40	54	0:54	23.42
13.40	55	0:55	25.16
12.40	56	0:56	27.18
11.40	57	0:57	29.55
10.40	58	0:58	32.37
9.40	59	0:59	35.77
8.40	60	1:00	39.95
7.40	61	1:01	45.18
6.40	62	1:02	51.90





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5.40	63	1.03	60.81
4.40	64	1.04	73.06
3.40	65	1.05	90.77
2.40	66	1.06	118.17
1.40	67	1.07	164.79
0.40	68	1.08	256.61
0.60	69	1.09	232.04
1.60	70	1.10	153.10
2.60	71	1.11	111.58
3.60	72	1.12	86.63
4.60	73	1.13	70.26
5.60	74	1.14	58.81
6.60	75	1.15	50.41
7.60	76	1.16	44.03
8.60	77	1.17	39.04
9.60	78	1.18	35.04
10.60	79	1.19	31.77
11.60	80	1.20	29.05
12.60	81	1.21	26.75
13.60	82	1.22	24.79
14.60	83	1.23	23.10
15.60	84	1.24	21.63
16.60	85	1.25	20.34
17.60	86	1.26	19.19
18.60	87	1.27	18.17
19.60	88	1.28	17.26
20.60	89	1.29	16.44
21.60	90	1.30	15.69
22.60	91	1.31	15.01
23.60	92	1.32	14.39
24.60	93	1.33	13.82
25.60	94	1.34	13.30
26.60	95	1.35	12.82
27.60	96	1.36	12.37
28.60	97	1.37	11.96
29.60	98	1.38	11.57
30.60	99	1.39	11.21
31.60	100	1.40	10.87
32.60	101	1.41	10.55
33.60	102	1.42	10.26
34.60	103	1.43	9.97
35.60	104	1.44	9.71
36.60	105	1.45	9.46
37.60	106	1.46	9.22
38.60	107	1.47	9.00
39.60	108	1.48	8.79
40.60	109	1.49	8.59
41.60	110	1.50	8.39
42.60	111	1.51	8.21
43.60	112	1.52	8.04
44.60	113	1.53	7.87
45.60	114	1.54	7.71
46.60	115	1.55	7.56
47.60	116	1.56	7.41
48.60	117	1.57	7.27
49.60	118	1.58	7.14
50.60	119	1.59	7.01
51.60	120	2.00	6.89
52.60	121	2.01	6.77
53.60	122	2.02	6.65
54.60	123	2.03	6.54
55.60	124	2.04	6.43
56.60	125	2.05	6.33
57.60	126	2.06	6.23
58.60	127	2.07	6.14
59.60	128	2.08	6.04
60.60	129	2.09	5.95
61.60	130	2.10	5.87
62.60	131	2.11	5.78
63.60	132	2.12	5.70
64.60	133	2.13	5.62
65.60	134	2.14	5.54
66.60	135	2.15	5.47
67.60	136	2.16	5.40
68.60	137	2.17	5.33
69.60	138	2.18	5.26
70.60	139	2.19	5.19
71.60	140	2.20	5.13
72.60	141	2.21	5.07
73.60	142	2.22	5.01
74.60	143	2.23	4.95
75.60	144	2.24	4.89
76.60	145	2.25	4.83
77.60	146	2.26	4.78
78.60	147	2.27	4.72
79.60	148	2.28	4.67
80.60	149	2.29	4.62
81.60	150	2.30	4.57
82.60	151	2.31	4.52
83.60	152	2.32	4.47
84.60	153	2.33	4.43
85.60	154	2.34	4.38
86.60	155	2.35	4.34
87.60	156	2.36	4.29
88.60	157	2.37	4.25
89.60	158	2.38	4.21
90.60	159	2.39	4.17
91.60	160	2.40	4.13
92.60	161	2.41	4.09
93.60	162	2.42	4.05
94.60	163	2.43	4.02
95.60	164	2.44	3.98
96.60	165	2.45	3.94
97.60	166	2.46	3.91
98.60	167	2.47	3.87
99.60	168	2.48	3.84

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100.60	169	2:49	3.81
101.60	170	2:50	3.77
102.60	171	2:51	3.74
103.60	172	2:52	3.71
104.60	173	2:53	3.68
105.60	174	2:54	3.65
106.60	175	2:55	3.62
107.60	176	2:56	3.59
108.60	177	2:57	3.56
109.60	178	2:58	3.54
110.60	179	2:59	3.51
111.60	180	3:00	3.48

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Fort Stanley, Ontario

ST THOMAS WPCP CHICAGO RAINFALL DISTRIBUTION PARAMETERS*

Return Period (years)	A,B,C Parameters		
	A	B	C
2	737.970	7.382	0.8035
5	1009.820	7.472	0.8055
10	1178.220	7.382	0.8049
25	1398.350	7.382	0.8048
50	1497.170	6.876	0.7978
100	1634.380	6.798	0.7954

*Intensity $I = A / (t + B)^C$ (mm/hr)

Starting Time = 0:00
 Time Step = 0:01
 $r = 0.38$ MTO DMM Section 8, Page 14
 $t_p = 1$
 $t_b * r = 0.38$
 $t_a * (1+r) = 0.62$

$i_p = 319.06$ peak rainfall intensity, mm/h
 $t_b = 68.4$ time before the peak intensity, min
 $t_a = 111.6$ time after the peak intensity, min

$i_p = \frac{A}{(\Delta t + B)^C}$ = peak rainfall intensity
 $(\Delta t + B)^C$

Before the peak:

$i_b = \frac{A((1-r)t_b/r + B)}{[t_b/r + B]^{1+C}}$

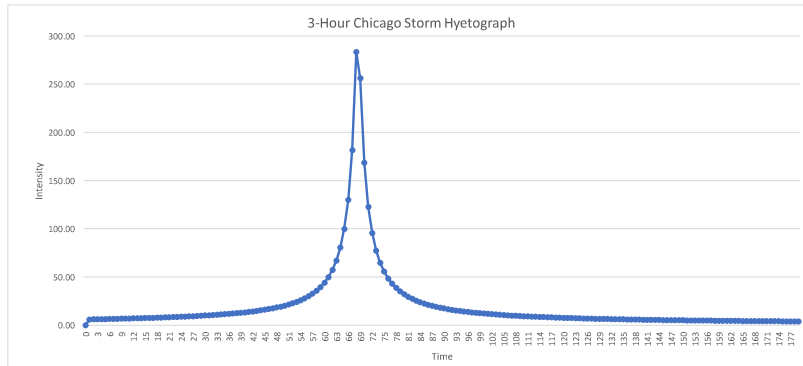
After the peak:

$i_a = \frac{A((1-r)t_a/r + B)}{[t_a/(1-r) + B]^{1+C}}$

Return Period (Years)	A,B,C Parameters		
	A	B	C
100	1634.380	6.798	0.795

100-Year Hyetograph

$t_b \pm \Delta t$	Time (min)	Time (h:m)	Intensity
68.40	0	0:00	0.00
67.40	1	0:01	6.04
66.40	2	0:02	6.12
65.40	3	0:03	6.20
64.40	4	0:04	6.29
63.40	5	0:05	6.37
62.40	6	0:06	6.46
61.40	7	0:07	6.56
60.40	8	0:08	6.66
59.40	9	0:09	6.76
58.40	10	0:10	6.86
57.40	11	0:11	6.97
56.40	12	0:12	7.08
55.40	13	0:13	7.19
54.40	14	0:14	7.31
53.40	15	0:15	7.43
52.40	16	0:16	7.56
51.40	17	0:17	7.70
50.40	18	0:18	7.83
49.40	19	0:19	7.98
48.40	20	0:20	8.13
47.40	21	0:21	8.28
46.40	22	0:22	8.45
45.40	23	0:23	8.62
44.40	24	0:24	8.80
43.40	25	0:25	8.98
42.40	26	0:26	9.18
41.40	27	0:27	9.38
40.40	28	0:28	9.60
39.40	29	0:29	9.82
38.40	30	0:30	10.06
37.40	31	0:31	10.31
36.40	32	0:32	10.57
35.40	33	0:33	10.85
34.40	34	0:34	11.15
33.40	35	0:35	11.46
32.40	36	0:36	11.79
31.40	37	0:37	12.15
30.40	38	0:38	12.53
29.40	39	0:39	12.93
28.40	40	0:40	13.36
27.40	41	0:41	13.83
26.40	42	0:42	14.33
25.40	43	0:43	14.87
24.40	44	0:44	15.46
23.40	45	0:45	16.10
22.40	46	0:46	16.79
21.40	47	0:47	17.55
20.40	48	0:48	18.39
19.40	49	0:49	19.32
18.40	50	0:50	20.34
17.40	51	0:51	21.49
16.40	52	0:52	22.78
15.40	53	0:53	24.24
14.40	54	0:54	25.91
13.40	55	0:55	27.82
12.40	56	0:56	30.04
11.40	57	0:57	32.65
10.40	58	0:58	35.75
9.40	59	0:59	39.49
8.40	60	1:00	44.08
7.40	61	1:01	49.83
6.40	62	1:02	57.22





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5.40	63	1.03	67.01
4.40	64	1.04	80.48
3.40	65	1.05	99.98
2.40	66	1.06	130.18
1.40	67	1.07	181.67
0.40	68	1.08	283.51
0.60	69	1.09	256.21
1.60	70	1.10	168.75
2.60	71	1.11	122.91
3.60	72	1.12	95.43
4.60	73	1.13	77.40
5.60	74	1.14	64.81
6.60	75	1.15	55.58
7.60	76	1.16	48.57
8.60	77	1.17	43.08
9.60	78	1.18	38.68
10.60	79	1.19	35.08
11.60	80	1.20	32.09
12.60	81	1.21	29.57
13.60	82	1.22	27.42
14.60	83	1.23	25.56
15.60	84	1.24	23.94
16.60	85	1.25	22.51
17.60	86	1.26	21.25
18.60	87	1.27	20.13
19.60	88	1.28	19.12
20.60	89	1.29	18.22
21.60	90	1.30	17.39
22.60	91	1.31	16.65
23.60	92	1.32	15.96
24.60	93	1.33	15.34
25.60	94	1.34	14.76
26.60	95	1.35	14.23
27.60	96	1.36	13.73
28.60	97	1.37	13.27
29.60	98	1.38	12.85
30.60	99	1.39	12.45
31.60	100	1.40	12.07
32.60	101	1.41	11.73
33.60	102	1.42	11.40
34.60	103	1.43	11.09
35.60	104	1.44	10.79
36.60	105	1.45	10.52
37.60	106	1.46	10.26
38.60	107	1.47	10.01
39.60	108	1.48	9.78
40.60	109	1.49	9.55
41.60	110	1.50	9.34
42.60	111	1.51	9.14
43.60	112	1.52	8.94
44.60	113	1.53	8.76
45.60	114	1.54	8.58
46.60	115	1.55	8.41
47.60	116	1.56	8.25
48.60	117	1.57	8.10
49.60	118	1.58	7.95
50.60	119	1.59	7.81
51.60	120	2.00	7.67
52.60	121	2.01	7.54
53.60	122	2.02	7.41
54.60	123	2.03	7.29
55.60	124	2.04	7.17
56.60	125	2.05	7.05
57.60	126	2.06	6.94
58.60	127	2.07	6.84
59.60	128	2.08	6.74
60.60	129	2.09	6.64
61.60	130	2.10	6.54
62.60	131	2.11	6.45
63.60	132	2.12	6.36
64.60	133	2.13	6.27
65.60	134	2.14	6.18
66.60	135	2.15	6.10
67.60	136	2.16	6.02
68.60	137	2.17	5.94
69.60	138	2.18	5.87
70.60	139	2.19	5.79
71.60	140	2.20	5.72
72.60	141	2.21	5.65
73.60	142	2.22	5.58
74.60	143	2.23	5.52
75.60	144	2.24	5.45
76.60	145	2.25	5.39
77.60	146	2.26	5.33
78.60	147	2.27	5.27
79.60	148	2.28	5.21
80.60	149	2.29	5.16
81.60	150	2.30	5.10
82.60	151	2.31	5.05
83.60	152	2.32	4.99
84.60	153	2.33	4.94
85.60	154	2.34	4.89
86.60	155	2.35	4.84
87.60	156	2.36	4.79
88.60	157	2.37	4.75
89.60	158	2.38	4.70
90.60	159	2.39	4.66
91.60	160	2.40	4.61
92.60	161	2.41	4.57
93.60	162	2.42	4.53
94.60	163	2.43	4.49
95.60	164	2.44	4.44
96.60	165	2.45	4.40
97.60	166	2.46	4.37
98.60	167	2.47	4.33
99.60	168	2.48	4.29

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100.60	169	2:49	4.25
101.60	170	2:50	4.22
102.60	171	2:51	4.18
103.60	172	2:52	4.15
104.60	173	2:53	4.11
105.60	174	2:54	4.08
106.60	175	2:55	4.05
107.60	176	2:56	4.01
108.60	177	2:57	3.98
109.60	178	2:58	3.95
110.60	179	2:59	3.92
111.60	180	3:00	3.89

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CHICAGO HYETOGRAPH CREATION

DATE: July 13, 2021
 JOB No.: SBM-18-0530

Client: Strathroy Turf Farms Ltd.
 Project: Kettle Creek Subdivision
 Location: 37719 Lake Line, Port Stanley, Ontario

CITY OF LONDON RAINFALL DISTRIBUTION PARAMETERS*

Return Period (Years)	A	B	C
250	3048.220	10.030	0.888

*Intensity = A/(t+B)*C (mm/hr)

Starting Time= 0:00
 Time Step= 0:01
 r= 0.38 MTO DMM Section 8, Page 14
 t_p= 1
 t_d * r= 0.38
 t_d * (1+r)= 0.62
 t_p= 361.61 peak rainfall intensity, mm/h
 t_b= 68.4 time before the peak intensity, min
 t_a= 111.6 time after the peak intensity, min

$i_p = \frac{A}{(\Delta t + B)}$ - peak rainfall intensity

Before the peak:

$i_b = \frac{A((1-r)t_p(t) + 1)}{[t_p + B]^{1+r}}$

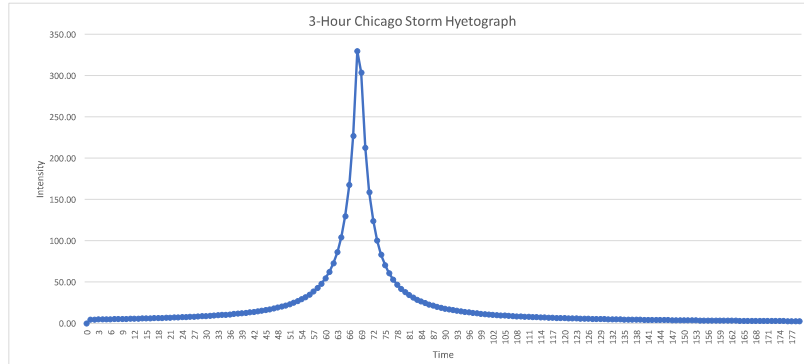
After the peak:

$i_a = \frac{A((1-r)t_p(t-r) + B)}{[t_p(1-r) + B]^{1+r}}$

Return Period (Years)	A	B	C
250	3048.220	10.030	0.888

250-Year Hyetograph

t _b Δt t _a	Time (min)	Time (h:m)	Intensity
68.40	0	0:00	0.00
67.40	1	0:01	4.66
66.40	2	0:02	4.74
65.40	3	0:03	4.82
64.40	4	0:04	4.91
63.40	5	0:05	5.00
62.40	6	0:06	5.09
61.40	7	0:07	5.18
60.40	8	0:08	5.28
59.40	9	0:09	5.38
58.40	10	0:10	5.48
57.40	11	0:11	5.59
56.40	12	0:12	5.71
55.40	13	0:13	5.82
54.40	14	0:14	5.95
53.40	15	0:15	6.08
52.40	16	0:16	6.21
51.40	17	0:17	6.35
50.40	18	0:18	6.50
49.40	19	0:19	6.65
48.40	20	0:20	6.81
47.40	21	0:21	6.98
46.40	22	0:22	7.15
45.40	23	0:23	7.34
44.40	24	0:24	7.53
43.40	25	0:25	7.73
42.40	26	0:26	7.95
41.40	27	0:27	8.18
40.40	28	0:28	8.42
39.40	29	0:29	8.67
38.40	30	0:30	8.94
37.40	31	0:31	9.22
36.40	32	0:32	9.52
35.40	33	0:33	9.85
34.40	34	0:34	10.19
33.40	35	0:35	10.56
32.40	36	0:36	10.95
31.40	37	0:37	11.37
30.40	38	0:38	11.82
29.40	39	0:39	12.31
28.40	40	0:40	12.83
27.40	41	0:41	13.40
26.40	42	0:42	14.02
25.40	43	0:43	14.69
24.40	44	0:44	15.43
23.40	45	0:45	16.23
22.40	46	0:46	17.12
21.40	47	0:47	18.10
20.40	48	0:48	19.18
19.40	49	0:49	20.39
18.40	50	0:50	21.75
17.40	51	0:51	23.27
16.40	52	0:52	24.99
15.40	53	0:53	26.96
14.40	54	0:54	29.22
13.40	55	0:55	31.84
12.40	56	0:56	34.90
11.40	57	0:57	38.51
10.40	58	0:58	42.82
9.40	59	0:59	48.03
8.40	60	1:00	54.45
7.40	61	1:01	62.47
6.40	62	1:02	72.72
5.40	63	1:03	86.16
4.40	64	1:04	104.32
3.40	65	1:05	129.84
2.40	66	1:06	167.51
1.40	67	1:07	226.92





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0.40	68	1.08	329.71
0.60	69	1.09	303.81
1.60	70	1.10	212.54
2.60	71	1.11	158.64
3.60	72	1.12	123.96
4.60	73	1.13	100.21
5.60	74	1.14	83.15
6.60	75	1.15	70.45
7.60	76	1.16	60.71
8.60	77	1.17	53.05
9.60	78	1.18	46.91
10.60	79	1.19	41.89
11.60	80	1.20	37.73
12.60	81	1.21	34.24
13.60	82	1.22	31.28
14.60	83	1.23	28.74
15.60	84	1.24	26.55
16.60	85	1.25	24.63
17.60	86	1.26	22.95
18.60	87	1.27	21.46
19.60	88	1.28	20.14
20.60	89	1.29	18.96
21.60	90	1.30	17.89
22.60	91	1.31	16.94
23.60	92	1.32	16.07
24.60	93	1.33	15.28
25.60	94	1.34	14.56
26.60	95	1.35	13.89
27.60	96	1.36	13.29
28.60	97	1.37	12.73
29.60	98	1.38	12.21
30.60	99	1.39	11.73
31.60	100	1.40	11.28
32.60	101	1.41	10.87
33.60	102	1.42	10.48
34.60	103	1.43	10.12
35.60	104	1.44	9.78
36.60	105	1.45	9.46
37.60	106	1.46	9.16
38.60	107	1.47	8.88
39.60	108	1.48	8.62
40.60	109	1.49	8.37
41.60	110	1.50	8.13
42.60	111	1.51	7.91
43.60	112	1.52	7.69
44.60	113	1.53	7.49
45.60	114	1.54	7.30
46.60	115	1.55	7.12
47.60	116	1.56	6.94
48.60	117	1.57	6.78
49.60	118	1.58	6.62
50.60	119	1.59	6.47
51.60	120	2.00	6.32
52.60	121	2.01	6.18
53.60	122	2.02	6.05
54.60	123	2.03	5.92
55.60	124	2.04	5.80
56.60	125	2.05	5.68
57.60	126	2.06	5.57
58.60	127	2.07	5.46
59.60	128	2.08	5.36
60.60	129	2.09	5.26
61.60	130	2.10	5.16
62.60	131	2.11	5.07
63.60	132	2.12	4.98
64.60	133	2.13	4.89
65.60	134	2.14	4.81
66.60	135	2.15	4.73
67.60	136	2.16	4.65
68.60	137	2.17	4.57
69.60	138	2.18	4.50
70.60	139	2.19	4.43
71.60	140	2.20	4.36
72.60	141	2.21	4.29
73.60	142	2.22	4.23
74.60	143	2.23	4.16
75.60	144	2.24	4.10
76.60	145	2.25	4.04
77.60	146	2.26	3.99
78.60	147	2.27	3.93
79.60	148	2.28	3.88
80.60	149	2.29	3.82
81.60	150	2.30	3.77
82.60	151	2.31	3.72
83.60	152	2.32	3.67
84.60	153	2.33	3.62
85.60	154	2.34	3.58
86.60	155	2.35	3.53
87.60	156	2.36	3.49
88.60	157	2.37	3.45
89.60	158	2.38	3.41
90.60	159	2.39	3.36
91.60	160	2.40	3.32
92.60	161	2.41	3.29
93.60	162	2.42	3.25
94.60	163	2.43	3.21
95.60	164	2.44	3.17
96.60	165	2.45	3.14
97.60	166	2.46	3.10
98.60	167	2.47	3.07
99.60	168	2.48	3.04
100.60	169	2.49	3.01
101.60	170	2.50	2.97
102.60	171	2.51	2.94
103.60	172	2.52	2.91
104.60	173	2.53	2.88

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105.60	174	2:54	2:85
106.60	175	2:55	2:82
107.60	176	2:56	2:80
108.60	177	2:57	2:77
109.60	178	2:58	2:74
110.60	179	2:59	2:72
111.60	180	3:00	2:69

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ELEV	AREA (sq. m)	STEP DEPTH (m)	AVG END INC. VOL. (cu. m)	AVG END TOTAL VOL. (cu. m)	CONIC INC. VOL. (cu. m)	CONIC TOTAL VOL. (cu. m)	DEPTH (m)
176.84	0.04	N/A	N/A	0	N/A	0	0
176.85	0.63	0.01	0	0	0	0	0.01
176.86	2.78	0.01	0.02	0.02	0.02	0.02	0.02
176.87	6.61	0.01	0.05	0.07	0.05	0.06	0.03
176.88	12.04	0.01	0.09	0.16	0.09	0.16	0.04
176.89	19.47	0.01	0.16	0.32	0.16	0.31	0.05
176.9	29.13	0.01	0.24	0.56	0.24	0.55	0.06
176.91	40.95	0.01	0.35	0.91	0.35	0.9	0.07
176.92	54.97	0.01	0.48	1.39	0.48	1.38	0.08
176.93	71.28	0.01	0.63	2.02	0.63	2.01	0.09
176.94	89.77	0.01	0.81	2.83	0.8	2.81	0.1
176.95	110.49	0.01	1	3.83	1	3.81	0.11
176.96	133.4	0.01	1.22	5.05	1.22	5.03	0.12
176.97	158.32	0.01	1.46	6.51	1.46	6.49	0.13
176.98	185.37	0.01	1.72	8.23	1.72	8.2	0.14
176.99	214.67	0.01	2	10.23	2	10.2	0.15
177	245.6	0.01	2.3	12.53	2.3	12.5	0.16
177.01	277.54	0.01	2.62	15.14	2.61	15.12	0.17
177.02	310.42	0.01	2.94	18.08	2.94	18.05	0.18
177.03	344.08	0.01	3.27	21.35	3.27	21.33	0.19
177.04	378.71	0.01	3.61	24.97	3.61	24.94	0.2
177.05	414.21	0.01	3.96	28.93	3.96	28.9	0.21
177.06	450.66	0.01	4.32	33.26	4.32	33.22	0.22
177.07	488.01	0.01	4.69	37.95	4.69	37.92	0.23
177.08	526.23	0.01	5.07	43.02	5.07	42.99	0.24
177.09	565.4	0.01	5.46	48.48	5.46	48.44	0.25
177.1	605.42	0.01	5.85	54.33	5.85	54.3	0.26
177.17	888.04	0.01	8.68	106.66	8.68	106.62	0.33
177.18	928.8	0.01	9.08	115.75	9.08	115.7	0.34
177.19	970.08	0.01	9.49	125.24	9.49	125.19	0.35
177.2	1016.79	0.01	9.93	135.17	9.93	135.13	0.36
177.21	1067.66	0.01	10.42	145.6	10.42	145.55	0.37
177.22	1118.74	0.01	10.93	156.53	10.93	156.48	0.38
177.23	1170.3	0.01	11.45	167.97	11.44	167.92	0.39
177.24	1222.09	0.01	11.96	179.94	11.96	179.88	0.4
177.25	1274.38	0.01	12.48	192.42	12.48	192.37	0.41
177.26	1327.04	0.01	13.01	205.43	13.01	205.37	0.42
177.27	1380.25	0.01	13.54	218.96	13.54	218.91	0.43
177.28	1433.71	0.01	14.07	233.03	14.07	232.98	0.44
177.29	1487.59	0.01	14.61	247.64	14.61	247.58	0.45
177.3	1541.92	0.01	15.15	262.79	15.15	262.73	0.46
177.31	1596.63	0.01	15.69	278.48	15.69	278.42	0.47
177.32	1651.86	0.01	16.24	294.72	16.24	294.66	0.48
177.33	1707.36	0.01	16.8	311.52	16.8	311.46	0.49
177.34	1763.36	0.01	17.35	328.87	17.35	328.81	0.5
177.35	1819.76	0.01	17.92	346.79	17.91	346.73	0.51
177.36	1876.41	0.01	18.48	365.27	18.48	365.21	0.52
177.37	1933.4	0.01	19.05	384.32	19.05	384.25	0.53
177.38	1990.68	0.01	19.62	403.94	19.62	403.87	0.54
177.39	2048.23	0.01	20.19	424.13	20.19	424.07	0.55
177.4	2106.09	0.01	20.77	444.9	20.77	444.84	0.56
177.41	2164.25	0.01	21.35	466.25	21.35	466.19	0.57
177.42	2222.64	0.01	21.93	488.19	21.93	488.12	0.58
177.43	2281.3	0.01	22.52	510.71	22.52	510.64	0.59
177.44	2340.28	0.01	23.11	533.82	23.11	533.75	0.6
177.45	2399.55	0.01	23.7	557.52	23.7	557.45	0.61
177.46	2459.12	0.01	24.29	581.81	24.29	581.74	0.62
177.47	2518.99	0.01	24.89	606.7	24.89	606.63	0.63
177.48	2579.16	0.01	25.49	632.19	25.49	632.12	0.64
177.49	2639.55	0.01	26.09	658.28	26.09	658.21	0.65
177.5	2700.27	0.01	26.7	684.98	26.7	684.91	0.66
177.51	2761.27	0.01	27.31	712.29	27.31	712.22	0.67
177.52	2821.94	0.01	27.92	740.21	27.92	740.14	0.68
177.53	2881.67	0.01	28.52	768.72	28.52	768.65	0.69
177.54	2940.4	0.01	29.11	797.84	29.11	797.76	0.7
177.55	2998.15	0.01	29.69	827.53	29.69	827.46	0.71
177.56	3054.86	0.01	30.27	857.79	30.26	857.72	0.72
177.57	3110.62	0.01	30.83	888.62	30.83	888.55	0.73
177.58	3165.43	0.01	31.38	920	31.38	919.93	0.74

177.7	3696.69	0.01	36.7	1333.97	36.7	1333.89	0.86
177.71	3760.31	0.01	37.29	1371.25	37.28	1371.17	0.87
177.72	3824.08	0.01	37.92	1409.17	37.92	1409.1	0.88
177.73	3881.4	0.01	38.53	1447.7	38.53	1447.62	0.89
177.74	3905.02	0.01	38.93	1486.63	38.93	1486.55	0.9
177.75	3928.38	0.01	39.17	1525.8	39.17	1525.72	0.91
177.76	3951.37	0.01	39.4	1565.2	39.4	1565.12	0.92
177.77	3974.09	0.01	39.63	1604.83	39.63	1604.75	0.93
177.78	3996.48	0.01	39.85	1644.68	39.85	1644.6	0.94
177.79	4018.58	0.01	40.08	1684.75	40.08	1684.68	0.95
177.8	4040.41	0.01	40.29	1725.05	40.29	1724.97	0.96
177.81	4061.99	0.01	40.51	1765.56	40.51	1765.48	0.97
177.82	4083.31	0.01	40.73	1806.29	40.73	1806.21	0.98
177.83	4104.43	0.01	40.94	1847.23	40.94	1847.15	0.99
177.84	4125.65	0.01	41.15	1888.38	41.15	1888.3	1
177.85	4146.39	0.01	41.36	1929.74	41.36	1929.66	1.01
177.86	4166.94	0.01	41.57	1971.3	41.57	1971.22	1.02
177.87	4187.36	0.01	41.77	2013.07	41.77	2013	1.03
177.88	4207.76	0.01	41.98	2055.05	41.98	2054.97	1.04
177.89	4228.23	0.01	42.18	2097.23	42.18	2097.15	1.05
177.9	4248.73	0.01	42.38	2139.61	42.38	2139.54	1.06
177.91	4269.25	0.01	42.59	2182.2	42.59	2182.13	1.07
177.92	4289.78	0.01	42.8	2225	42.8	2224.92	1.08
177.93	4310.34	0.01	43	2268	43	2267.92	1.09
177.94	4330.9	0.01	43.21	2311.21	43.21	2311.13	1.1
177.95	4351.47	0.01	43.41	2354.62	43.41	2354.54	1.11
177.96	4371.99	0.01	43.62	2398.24	43.62	2398.16	1.12
177.97	4392.87	0.01	43.82	2442.06	43.82	2441.98	1.13
177.98	4413.66	0.01	44.03	2486.09	44.03	2486.01	1.14
177.99	4434.47	0.01	44.24	2530.33	44.24	2530.25	1.15
178	4455.26	0.01	44.45	2574.78	44.45	2574.7	1.16
178.01	4476.14	0.01	44.66	2619.44	44.66	2619.36	1.17
178.02	4497.02	0.01	44.87	2664.3	44.87	2664.23	1.18
178.03	4517.9	0.01	45.07	2709.38	45.07	2709.3	1.19
178.04	4538.8	0.01	45.28	2754.66	45.28	2754.58	1.2
178.05	4559.7	0.01	45.49	2800.16	45.49	2800.08	1.21
178.06	4580.63	0.01	45.7	2845.86	45.7	2845.78	1.22
178.08	4622.55	0.01	46.12	2937.89	46.12	2937.81	1.24
178.13	4727.72	0.01	47.17	3171.64	47.17	3171.56	1.29
178.14	4748.82	0.01	47.38	3219.03	47.38	3218.95	1.3
178.15	4769.94	0.01	47.59	3266.62	47.59	3266.54	1.31
178.16	4791.09	0.01	47.81	3314.42	47.81	3314.34	1.32
178.17	4812.25	0.01	48.02	3362.44	48.02	3362.36	1.33
178.18	4833.56	0.01	48.23	3410.67	48.23	3410.59	1.34
178.19	4854.67	0.01	48.44	3459.11	48.44	3459.03	1.35
178.2	4875.93	0.01	48.65	3507.76	48.65	3507.68	1.36
178.21	4897.2	0.01	48.87	3556.63	48.87	3556.55	1.37
178.22	4918.51	0.01	49.08	3605.71	49.08	3605.63	1.38
178.23	4939.82	0.01	49.29	3655	49.29	3654.92	1.39
178.24	4961.2	0.01	49.51	3704.51	49.51	3704.43	1.4
178.25	4982.59	0.01	49.72	3754.22	49.72	3754.14	1.41
178.26	5004	0.01	49.93	3804.16	49.93	3804.08	1.42
178.27	5025.34	0.01	50.15	3854.3	50.15	3854.22	1.43
178.28	5046.82	0.01	50.36	3904.67	50.36	3904.58	1.44
178.29	5068.37	0.01	50.58	3955.24	50.58	3955.16	1.45
178.3	5089.9	0.01	50.79	4006.03	50.79	4005.95	1.46
178.31	5111.44	0.01	51.01	4057.04	51.01	4056.96	1.47
178.32	5133.02	0.01	51.22	4108.26	51.22	4108.18	1.48
178.33	5154.67	0.01	51.44	4159.7	51.44	4159.62	1.49
178.34	5176.35	0.01	51.66	4211.35	51.66	4211.27	1.5
178.35	5197.98	0.01	51.87	4263.23	51.87	4263.15	1.51

Stormceptor® EF Sizing Report

STORMCEPTOR®		07/26/2022															
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION																	
Province:	Ontario	Project Name:	Kettle Creek Subdivision (37719 Lake Line)														
City:	Port Stanley	Project Number:	SBM-18-0530														
Nearest Rainfall Station:	LONDON CS	Designer Name:	Brandon O'Leary														
Climate Station Id:	6144478	Designer Company:	Forterra														
Years of Rainfall Data:	20	Designer Email:	brandon.oleary@forterrabp.com														
Site Name:	Kettle Creek Subdivision (37719 Lake Line)	Designer Phone:	905-630-0359														
Drainage Area (ha):	14.8	EOR Name:	Rawan Safieddine														
Runoff Coefficient 'c':	0.40	EOR Company:	Strik Baldinelli Moniz Ltd.														
Particle Size Distribution:	Fine	EOR Email:															
Target TSS Removal (%):	70.0	EOR Phone:															
Required Water Quality Runoff Volume Capture (%):	85.0																
Oil / Fuel Spill Risk Site?	Yes	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Net Annual Sediment (TSS) Load Reduction Sizing Summary</th> </tr> <tr> <th style="width: 50%;">Stormceptor Model</th> <th style="width: 50%;">TSS Removal Provided (%)</th> </tr> </thead> <tbody> <tr> <td>EFO4</td> <td>35</td> </tr> <tr> <td>EFO6</td> <td>50</td> </tr> <tr> <td>EFO8</td> <td>62</td> </tr> <tr style="background-color: yellow;"> <td>EFO10</td> <td>71</td> </tr> <tr> <td>EFO12</td> <td>81</td> </tr> </tbody> </table>		Net Annual Sediment (TSS) Load Reduction Sizing Summary		Stormceptor Model	TSS Removal Provided (%)	EFO4	35	EFO6	50	EFO8	62	EFO10	71	EFO12	81
Net Annual Sediment (TSS) Load Reduction Sizing Summary																	
Stormceptor Model	TSS Removal Provided (%)																
EFO4	35																
EFO6	50																
EFO8	62																
EFO10	71																
EFO12	81																
Upstream Flow Control?	Yes																
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	1888																
Peak Conveyance (maximum) Flow Rate (L/s):	1888																
Recommended Stormceptor EFO Model:		EFO10															
Estimated Net Annual Sediment (TSS) Load Reduction (%):		71															
Water Quality Runoff Volume Capture (%):		> 90															



Stormceptor® **EF** Sizing Report

THIRD-PARTY TESTING AND VERIFICATION

► **Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

► **Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

PARTICLE SIZE DISTRIBUTION (PSD)

► The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5



Stormceptor®EF Sizing Report

Upstream Flow Controlled Results

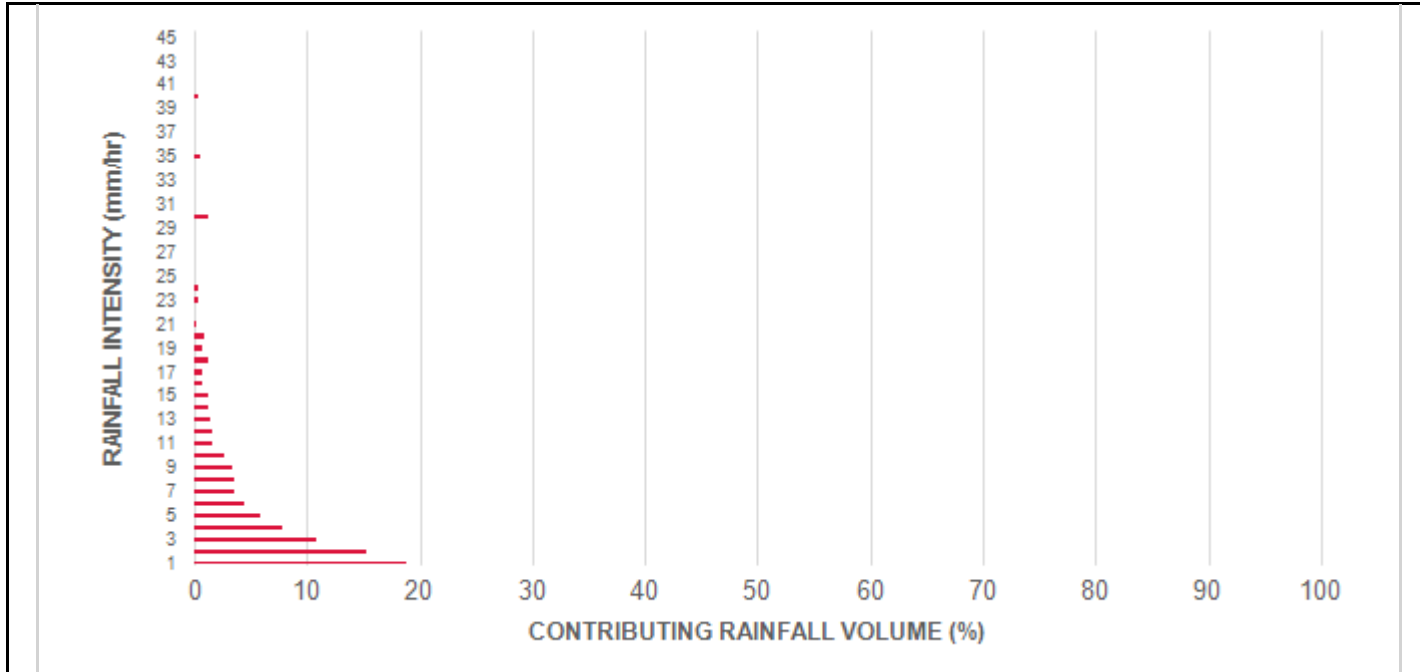
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m ²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	9.0	9.0	8.23	494.0	68.0	100	9.0	9.0
1	18.9	27.8	16.46	987.0	135.0	92	17.4	26.3
2	15.3	43.2	32.92	1975.0	271.0	80	12.3	38.6
3	10.8	53.9	49.37	2962.0	406.0	74	8.0	46.5
4	7.8	61.7	65.83	3950.0	541.0	67	5.2	51.8
5	5.8	67.5	82.29	4937.0	676.0	64	3.7	55.5
6	4.5	72.0	98.75	5925.0	812.0	63	2.8	58.3
7	3.6	75.6	115.20	6912.0	947.0	62	2.2	60.5
8	3.5	79.1	131.66	7900.0	1082.0	60	2.1	62.6
9	3.3	82.4	148.12	8887.0	1217.0	57	1.9	64.5
10	2.6	85.0	164.58	9875.0	1353.0	53	1.4	65.9
11	1.7	86.7	181.03	10862.0	1488.0	49	0.9	66.7
12	1.7	88.4	197.49	11849.0	1623.0	45	0.8	67.5
13	1.5	89.8	213.95	12837.0	1758.0	42	0.6	68.1
14	1.2	91.0	230.41	13824.0	1894.0	39	0.5	68.6
15	1.3	92.3	246.86	14812.0	2029.0	36	0.5	69.0
16	0.8	93.0	263.32	15799.0	2164.0	34	0.3	69.3
17	0.8	93.8	279.78	16787.0	2300.0	32	0.3	69.5
18	1.2	95.0	296.24	17774.0	2435.0	30	0.4	69.9
19	0.7	95.7	312.69	18762.0	2570.0	28	0.2	70.1
20	0.9	96.6	329.15	19749.0	2705.0	27	0.3	70.3
21	0.2	96.8	345.61	20737.0	2841.0	26	0.1	70.4
22	3.2	100.0	362.07	21724.0	2976.0	25	0.8	71.2
23	0.4	100.4	378.52	22711.0	3111.0	24	0.1	71.3
24	0.4	100.9	394.98	23699.0	3246.0	23	0.1	71.4
25	-0.9	100.0	411.44	24686.0	3382.0	22	0.0	71.2
30	1.3	101.3	493.73	29624.0	4058.0	18	0.2	71.4
35	0.6	101.9	576.02	34561.0	4734.0	16	0.1	71.5
40	0.4	102.3	658.30	39498.0	5411.0	14	0.1	71.6
45	-2.3	100.0	740.59	44436.0	6087.0	12	0.0	71.3
Estimated Net Annual Sediment (TSS) Load Reduction =								71 %

Climate Station ID: 6144478 Years of Rainfall Data: 20

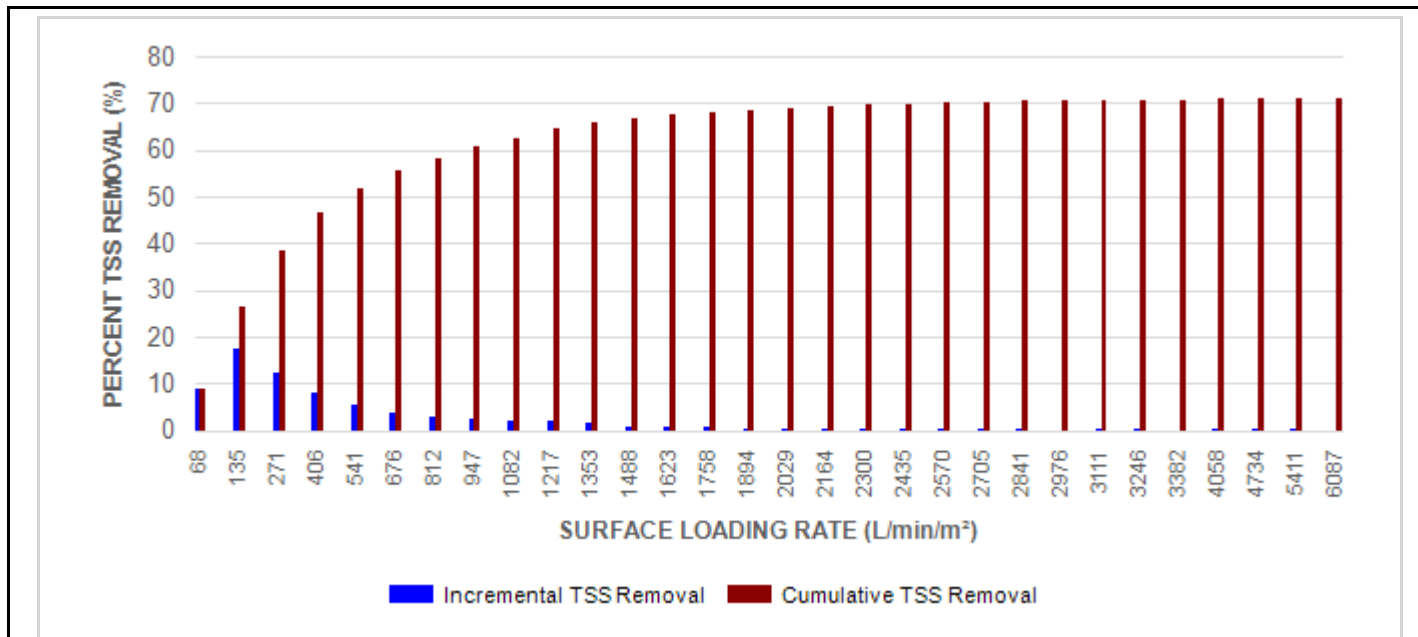


Stormceptor®EF Sizing Report

RAINFALL DATA FROM LONDON CS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Stormceptor® EF Sizing Report

Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

DESIGN FLEXIBILITY

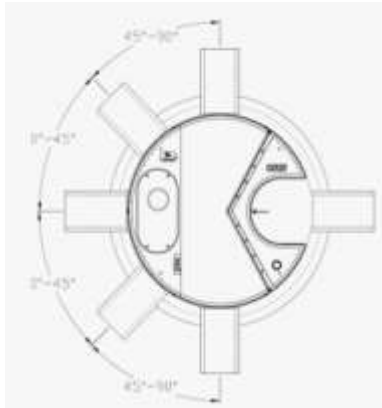
► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

► While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, Stormceptor® EFO has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.



Stormceptor® EF Sizing Report



INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1.

For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft ³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program’s **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m ³ sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m ³ sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m ³ sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m ³ sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m ³ sediment / 2,476 L oil

Stormceptor® EF Sizing Report

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m².

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in

Stormceptor[®] EF Sizing Report

accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

We've got you covered!

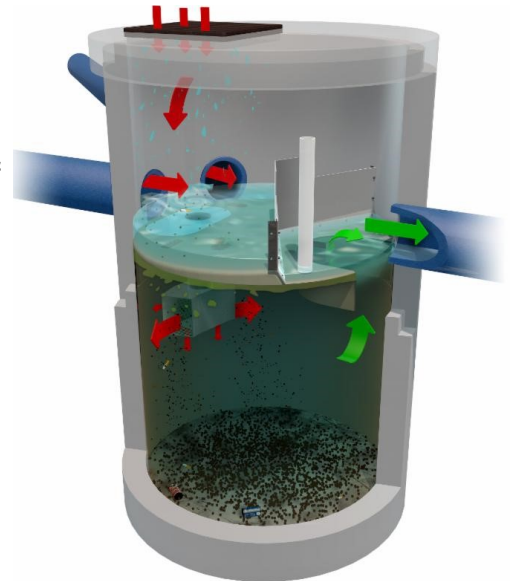
Forterra Stormceptor® Products now include a 5 year Quality Assurance Program.

Maintenance costs for Forterra's industry leading line of Stormceptor® products are already much lower than competitive stormwater quality devices. Now we've sweetened the deal by introducing a new Quality Assurance Program that covers maintenance for up to 5 years.

Improving products, improving service.

We've recently expanded our already impressive line of Stormceptor® products with the addition of the Stormceptor® EF series – *simply the most cost competitive stormwater quality device on the market.* Now we're improving our service by taking care of the maintenance on our entire Stormceptor product line for 5 years after installation.

At Forterra, we understand that maintaining a high standard of water quality is crucial to the environment and to our lives. That's why, for the past 10 years, we've included a 2 year maintenance plan with every Stormceptor unit sold. As maintenance becomes more of a focus for many municipalities, we felt it was time to strengthen the program even further. We are now offering a complimentary 5 year maintenance program with every Stormceptor unit to ensure water quality continues to be at its best.



Stormceptor® Quality Assurance Program

Based on initial inspection results, there are two ways to ensure Stormceptor® performance:

First way (5 years, no cleaning)

- Six inspections over a 5 year period, with no cleaning required
- First inspection at 6 months, inspections every 12 months thereafter for 5 years
- Oil and sediment levels are documented along with maintenance recommendations, if necessary

Second way (2.5 years, with cleaning)

- Initial inspection and one post construction sediment cleaning at 6 months
- Two additional annual inspections, resulting in the unit being maintained for the first 30 months (2.5 years)

We're taking care of your maintenance needs so you can focus on your next project. Trust Forterra to help you weather the storm.



STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program’s **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4ft (1219mm) Diameter OGS Units:	1.19m ³ sediment / 265L oil
	6ft (1829mm) Diameter OGS Units:	3.48m ³ sediment / 609L oil
	8ft (2438mm) Diameter OGS Units:	8.78m ³ sediment / 1,071L oil
	10ft (3048mm) Diameter OGS Units:	17.78m ³ sediment / 1,673L oil
	12ft (3657mm) Diameter OGS Units:	31.23m ³ sediment / 2,476L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality

treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

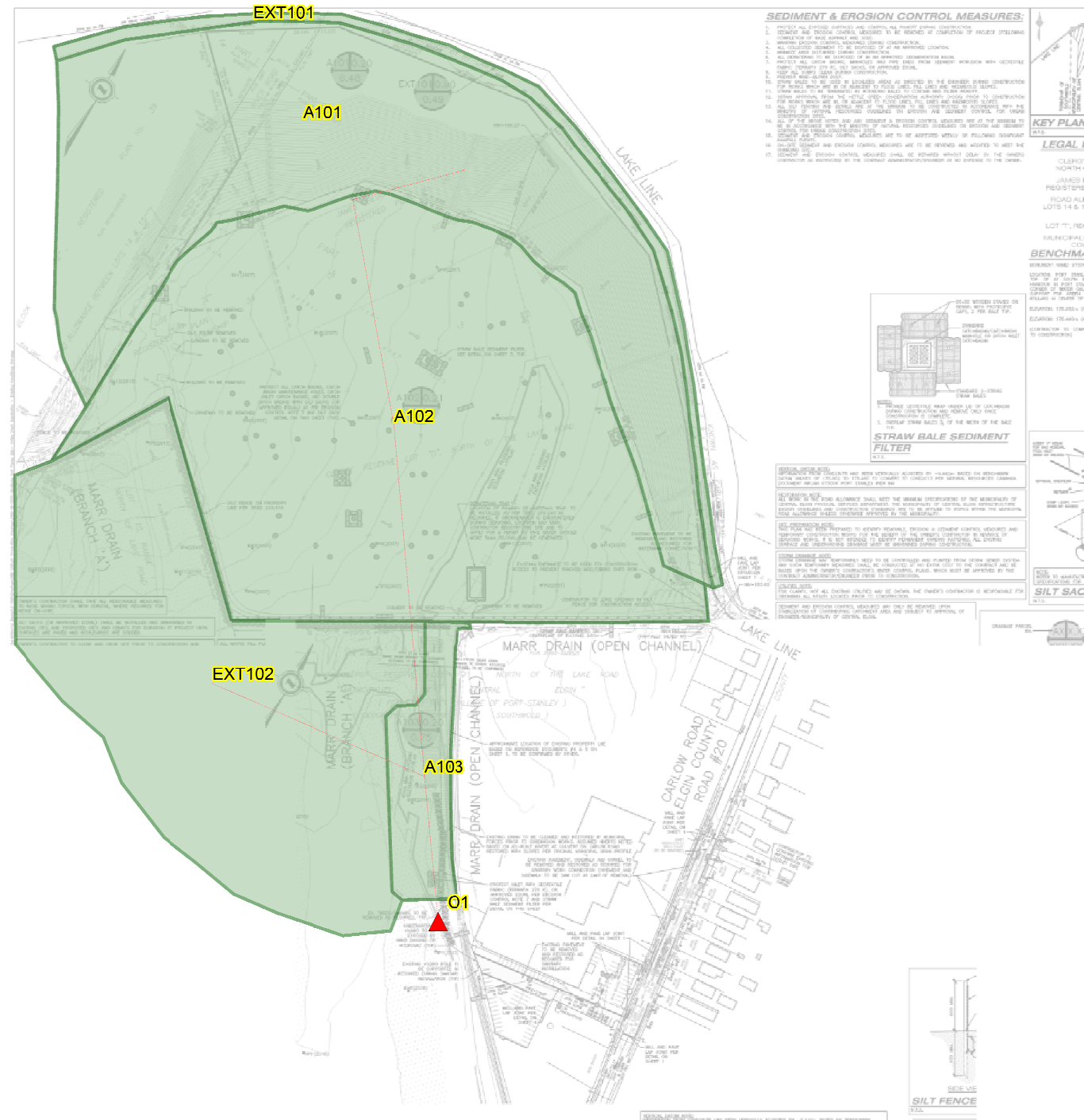
3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

APPENDIX F

PCSWMM Pre-Development Conditions Layout
PCSWMM Pre-Development Modelling Results

Legend

- ▲ Outfalls
- Subcatchments



250 m

Kettle Creek

 Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	St.Thomas-2yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
Total Precipitation	1.727	26.441
Evaporation Loss	0.000	0.000
Infiltration Loss	1.561	23.902
Surface Runoff	0.083	1.272
Final Storage	0.083	1.268

Continuity Error (%) -0.005

```

*****
Flow Routing Continuity
*****

```

	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.083	0.831
Groundwater Inflow	0.000	0.000
RDI Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.083	0.831
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume ...	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```

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

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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
A101	26.44	1.89	0.00	27.06	0.00	0.00	0.00	0.00	0.00	0.000
A102	26.44	0.00	0.00	18.28	6.24	0.60	6.84	0.61	0.61	0.259
A103	26.44	233.00	0.00	20.77	64.52	172.88	237.40	0.83	0.30	0.915
EXTI01	26.44	0.00	0.00	0.00	24.97	0.00	24.97	0.12	0.15	0.944
EXTI02	26.44	0.00	0.00	24.76	0.00	0.42	0.42	0.21	0.04	0.016

Analysis begun on: Thu Dec 15 10:37:44 2022
 Analysis ended on: Thu Dec 15 10:37:44 2022
 Total elapsed time: < 1 sec

Kettle Creek

 Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	StThomas-5yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
Total Precipitation	2.337	35.777
Evaporation Loss	0.000	0.000
Infiltration Loss	1.995	30.547
Surface Runoff	0.258	3.956
Final Storage	0.083	1.275

Continuity Error (%) -0.005

```

*****
Flow Routing Continuity
*****
Volume      Volume
hectare-m   10^6 ltr
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 0.258 2.584
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 0.258 2.584
Flooding Loss ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume ... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000

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

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Subcatchment      Total Precip      Total Runon      Total Evap      Total Infil      Imperv Runoff      Perv Runoff      Total Runoff      Total Runoff      Peak Runoff      Runoff
mm                mm                mm                mm                mm                mm                mm                mm                10^6 ltr          CMS          Coeff
-----
A101              35.78            2.59             0.00             34.44            0.00             2.68             2.68             0.17             0.03          0.070
A102              35.78            1.95             0.00             23.17            9.07             4.18             13.25            1.18             0.85          0.351
A103              35.78            729.86           0.00             26.13            191.07           547.19           738.26           2.58             0.46          0.964
EXTI01            35.78            0.00             0.00             0.00             34.31            0.00             34.31            0.17             0.21          0.959
EXTI02            35.78            0.00             0.00             31.71            0.00             2.80             2.80             1.38             0.15          0.078

```

Analysis begun on: Thu Dec 15 10:36:26 2022
 Analysis ended on: Thu Dec 15 10:36:27 2022
 Total elapsed time: 00:00:01

Kettle Creek

 Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	St.Thomas-10yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
*****	-----	-----
Total Precipitation	2.736	41.892
Evaporation Loss	0.000	0.000
Infiltration Loss	2.227	34.106
Surface Runoff	0.426	6.521
Final Storage	0.083	1.267

Continuity Error (%) -0.006

```

*****
Flow Routing Continuity
*****

```

	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.426	4.259
Groundwater Inflow	0.000	0.000
RDI Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.426	4.259
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume ...	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```

*****
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
A101	41.89	3.06	0.00	37.95	0.00	5.74	5.74	0.37	0.07	0.128
A102	41.89	4.18	0.00	25.76	11.15	7.86	19.01	1.69	1.02	0.413
A103	41.89	1205.24	0.00	29.03	311.45	905.41	1216.85	4.26	0.58	0.976
EXTI01	41.89	0.00	0.00	0.00	40.43	0.00	40.43	0.20	0.25	0.965
EXTI02	41.89	0.00	0.00	35.49	0.00	5.15	5.15	2.53	0.27	0.123

Analysis begun on: Thu Dec 15 10:35:07 2022
 Analysis ended on: Thu Dec 15 10:35:08 2022
 Total elapsed time: 00:00:01

Kettle Creek

Element Count

 Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	St.Thomas-25yr	INTENSITY	1 min.

Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
Total Precipitation	3.249	49.745
Evaporation Loss	0.000	0.000
Infiltration Loss	2.486	38.063
Surface Runoff	0.680	10.417
Final Storage	0.083	1.269

Continuity Error (%) -0.007

```

*****
Flow Routing Continuity
*****
Volume      Volume
hectare-m   10^6 ltr
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 0.680 6.804
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 0.680 6.804
Flooding Loss ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume ... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000
  
```

```

*****
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
A101	49.75	3.65	0.00	42.02	0.00	10.13	10.13	0.66	0.14	0.190
A102	49.75	7.38	0.00	28.61	13.92	13.30	27.22	2.42	1.24	0.476
A103	49.75	1927.59	0.00	32.26	494.01	1449.86	1943.87	6.80	0.76	0.983
EXTI01	49.75	0.00	0.00	0.00	48.29	0.00	48.29	0.24	0.30	0.971
EXTI02	49.75	0.00	0.00	39.67	0.00	8.81	8.81	4.33	0.46	0.177

Analysis begun on: Thu Dec 15 10:33:47 2022
 Analysis ended on: Thu Dec 15 10:33:47 2022
 Total elapsed time: < 1 sec

Kettle Creek

Element Count

 Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	St.Thomas-50yr	INTENSITY	1 min.

Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
Total Precipitation	3.619	55.420
Evaporation Loss	0.000	0.000
Infiltration Loss	2.655	40.647
Surface Runoff	0.882	13.511
Final Storage	0.083	1.267

Continuity Error (%) -0.008

```

*****
Flow Routing Continuity
*****

```

	Volume hectare-m	Volume 10 ⁶ ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.882	8.824
Groundwater Inflow	0.000	0.000
RDI Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.882	8.824
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume ...	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```

*****
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
A101	55.42	4.08	0.00	44.72	0.00	13.54	13.54	0.88	0.22	0.227
A102	55.42	9.87	0.00	30.46	15.96	17.56	33.52	2.98	1.42	0.513
A103	55.42	2501.25	0.00	34.39	638.86	1882.25	2521.11	8.82	0.98	0.986
EXT101	55.42	0.00	0.00	0.00	53.97	0.00	53.97	0.26	0.34	0.974
EXT102	55.42	0.00	0.00	42.40	0.00	11.76	11.76	5.77	0.63	0.212

Analysis begun on: Thu Dec 15 10:20:40 2022
 Analysis ended on: Thu Dec 15 10:20:40 2022
 Total elapsed time: < 1 sec

Kettle Creek

Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 1
 Number of links 0
 Number of pollutants 0
 Number of land uses 0

Raingage Summary

Name	Data Source	Data Type	Recording Interval
StThomas	St.Thomas-100yr	INTENSITY	1 min.

Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A101	6.48	771.43	0.00	30.0000	StThomas	A102
A102	8.89	455.90	25.00	3.0000	StThomas	A103
A103	0.35	20.58	25.00	3.0000	StThomas	O1
EXT101	0.49	612.50	100.00	2.0000	StThomas	A101
EXT102	49.10	563.26	0.00	16.0000	StThomas	A103

Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
O1	OUTFALL	176.73	0.00	0.0	

 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 NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 01/01/2015 00:00:00
 Ending Date 01/02/2015 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

	Volume	Depth
	hectare-m	mm
Runoff Quantity Continuity	-----	-----
Total Precipitation	4.005	61.315
Evaporation Loss	0.000	0.000
Infiltration Loss	2.812	43.057
Surface Runoff	1.110	16.990
Final Storage	0.083	1.274
Continuity Error (%)	-0.009	

	Volume	Volume
	hectare-m	10^6 ltr
Flow Routing Continuity	-----	-----

```

Dry Weather Inflow ..... 0.000      0.000
Wet Weather Inflow ..... 1.110     11.096
Groundwater Inflow ..... 0.000      0.000
RDII Inflow ..... 0.000      0.000
External Inflow ..... 0.000      0.000
External Outflow ..... 1.110     11.096
Flooding Loss ..... 0.000      0.000
Evaporation Loss ..... 0.000      0.000
Exfiltration Loss ..... 0.000      0.000
Initial Stored Volume .... 0.000      0.000
Final Stored Volume ..... 0.000      0.000
Continuity Error (%) ..... 0.000

```

```

*****
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
A101	61.32	4.53	0.00	47.32	0.00	17.28	17.28	1.12	0.31	0.263
A102	61.32	12.60	0.00	32.21	18.12	22.28	40.40	3.59	1.60	0.547
A103	61.32	3146.43	0.00	36.33	801.65	2368.62	3170.27	11.10	1.31	0.988
EXT101	61.32	0.00	0.00	0.00	59.87	0.00	59.87	0.29	0.38	0.976
EXT102	61.32	0.00	0.00	44.94	0.00	15.11	15.11	7.42	0.85	0.247

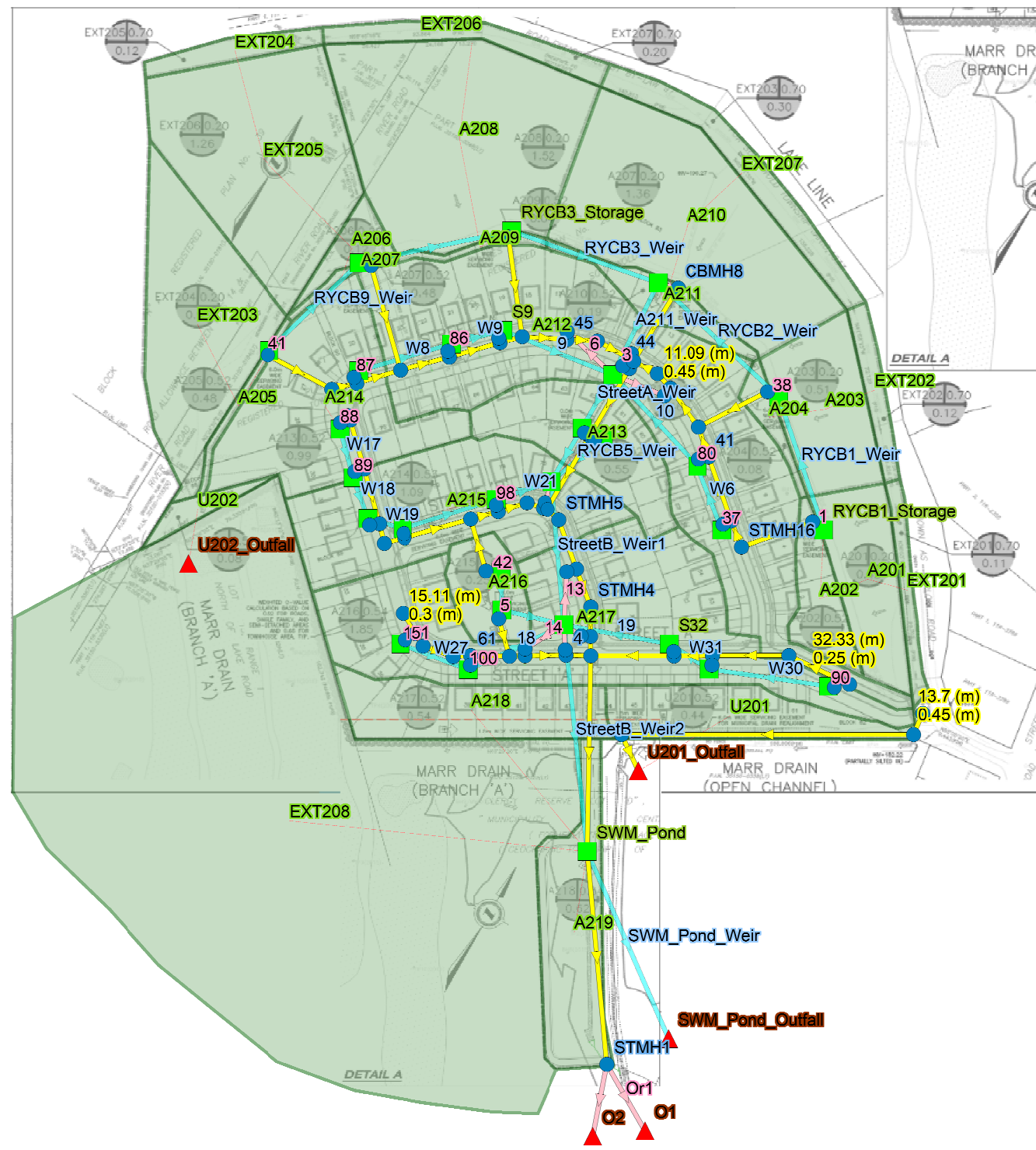
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Analysis begun on: Thu Dec 15 10:10:03 2022
Analysis ended on: Thu Dec 15 10:10:03 2022
Total elapsed time: < 1 sec

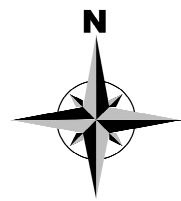
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APPENDIX G

PCSWMM Post-Development Conditions Layout
PCSWMM Post-Development Modelling Results



- Junctions
- ▲ Outfalls
- Storages
- Conduits
- Orifices
- Weirs
- Subcatchments



250 m

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas2Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	01	ORIFICE			
Or2	STMH1	02	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	1.725	26.414
Evaporation Loss	0.000	0.000
Infiltration Loss	1.191	18.231
Surface Runoff	0.165	2.527
Final Storage	0.370	5.662
Continuity Error (%)	-0.022	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.165	1.648
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.141	1.410
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.023	0.235
Continuity Error (%)	0.148	

Highest Continuity Errors

Node CB2 (-2.00%)

Time-Step Critical Elements

Link C40 (92.32%)

Link C24 (3.71%)

Link C69 (2.38%)

Link C70 (1.01%)

Highest Flow Instability Indexes

Link C45 (22)

Link C58 (17)

Link C44 (16)

Link C40 (6)

Link C39 (4)

Routing Time Step Summary

Minimum Time Step : 0.50 sec

Average Time Step : 1.18 sec

Maximum Time Step : 30.00 sec

Percent in Steady State : 0.00

Average Iterations per Step : 2.10

Percent Not Converging : 0.94

Time Step Frequencies :

30.000 - 13.228 sec : 0.07 %

13.228 - 5.833 sec : 0.01 %

5.833 - 2.572 sec : 2.37 %

2.572 - 1.134 sec : 45.88 %

1.134 - 0.500 sec : 51.68 %

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
A201	26.41	5.85	0.00	21.26	0.00	2.41	2.41	0.01	0.00	0.075
A202	26.41	4.67	0.00	7.41	13.29	5.41	18.70	0.04	0.03	0.602
A203	26.41	5.38	0.00	21.26	0.00	1.81	1.81	0.01	0.00	0.057
A204	26.41	11.38	0.00	7.41	16.47	9.88	26.35	0.02	0.01	0.697
A205	26.41	0.00	0.00	7.41	11.38	4.72	16.10	0.01	0.01	0.609
A206	26.41	0.00	0.00	15.94	6.20	0.00	6.20	0.01	0.01	0.235
A207	26.41	24.79	0.00	7.41	22.70	18.09	40.79	0.01	0.01	0.797
A208	26.41	3.01	0.00	15.94	6.96	0.05	7.01	0.11	0.13	0.238
A209	26.41	266.01	0.00	7.41	132.93	148.55	281.48	0.11	0.13	0.963
A210	26.41	5.05	0.00	15.94	7.47	1.03	8.51	0.12	0.12	0.270
A211	26.41	60.73	0.00	7.41	38.98	36.11	75.09	0.14	0.12	0.862
A212	26.41	0.00	0.00	7.41	11.18	3.02	14.20	0.35	0.27	0.538
A213	26.41	0.00	0.00	7.41	11.28	3.88	15.16	0.08	0.07	0.574
A214	26.41	0.00	0.00	7.41	11.22	3.36	14.58	0.14	0.12	0.552
A215	26.41	0.00	0.00	7.27	11.46	3.26	14.72	0.16	0.13	0.557
A216	26.41	0.00	0.00	4.87	15.93	2.98	18.90	0.05	0.05	0.716
A217	26.41	0.00	0.00	7.01	11.87	2.79	14.67	0.27	0.21	0.555
A218	26.41	0.00	0.00	7.41	11.21	3.28	14.49	0.08	0.06	0.549
A219	26.41	0.00	0.00	16.01	5.33	1.32	6.65	0.04	0.05	0.252
EXT201	26.41	0.00	0.00	1.24	17.75	5.15	22.90	0.03	0.03	0.867
EXT202	26.41	0.00	0.00	1.24	17.75	5.15	22.90	0.03	0.03	0.867
EXT203	26.41	0.00	0.00	21.26	0.00	0.00	0.00	0.00	0.00	0.000
EXT204	26.41	0.00	0.00	1.24	17.75	5.15	22.90	0.03	0.03	0.867
EXT205	26.41	2.18	0.00	21.26	0.00	0.00	0.00	0.00	0.00	0.000
EXT206	26.41	0.00	0.00	1.24	17.75	5.15	22.90	0.05	0.06	0.867
EXT207	26.41	0.00	0.00	1.24	17.75	5.15	22.90	0.07	0.09	0.867
EXT208	26.41	0.00	0.00	20.38	0.00	0.24	0.24	0.12	0.03	0.009
U201	26.41	0.00	0.00	20.38	0.00	0.71	0.71	0.00	0.00	0.027
U202	26.41	0.00	0.00	7.41	11.37	4.63	16.00	0.01	0.01	0.606

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
0	JUNCTION	0.17	0.58	178.72	0 01:12	0.58
4	JUNCTION	0.00	0.00	178.17	0 00:00	0.00
41	JUNCTION	0.02	0.05	179.10	0 01:11	0.05
42	JUNCTION	0.03	0.06	179.41	0 01:11	0.06
43	JUNCTION	0.05	0.21	178.89	0 01:12	0.21
44	JUNCTION	0.07	0.49	178.95	0 01:12	0.44
45	JUNCTION	0.06	0.31	178.89	0 01:12	0.29
46	JUNCTION	0.03	0.10	179.02	0 01:11	0.10
47	JUNCTION	0.03	0.08	178.88	0 01:12	0.08
48	JUNCTION	0.18	0.61	178.89	0 01:12	0.58
49	JUNCTION	0.13	0.85	178.85	0 01:09	0.58
50	JUNCTION	0.13	0.73	178.80	0 01:10	0.57
51	JUNCTION	0.09	0.77	179.36	0 01:10	0.56
52	JUNCTION	0.11	0.93	180.17	0 01:11	0.92
53	JUNCTION	0.10	0.76	179.82	0 01:11	0.73
54	JUNCTION	0.08	0.79	179.66	0 01:10	0.54
55	JUNCTION	0.22	0.66	178.52	0 01:13	0.65
56	JUNCTION	0.21	0.66	178.45	0 01:13	0.62
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.00	0.00	178.27	0 00:00	0.00
61	JUNCTION	0.00	0.00	178.42	0 00:00	0.00
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.01	0.04	179.16	0 01:11	0.04
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.00	0.23	179.82	0 01:11	0.21
CB19	JUNCTION	0.08	1.02	180.76	0 01:11	1.01
CB2	JUNCTION	0.00	0.00	179.18	0 01:10	0.00
CB21	JUNCTION	0.00	0.00	179.77	0 00:00	0.00
CB23	JUNCTION	0.00	0.00	179.61	0 00:00	0.00
CB25	JUNCTION	0.00	0.00	179.41	0 00:00	0.00
CB28	JUNCTION	0.00	0.00	179.35	0 00:00	0.00
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.00	0.00	179.60	0 00:00	0.00
CB33	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
CB39	JUNCTION	0.00	0.00	178.83	0 00:00	0.00
CB42	JUNCTION	0.00	0.00	178.74	0 00:00	0.00
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.00	0.00	179.86	0 00:00	0.00
CB5	JUNCTION	0.00	0.00	178.89	0 00:00	0.00
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.08	0.26	179.08	0 01:11	0.26
DCB15	JUNCTION	0.00	0.16	179.44	0 01:11	0.13
DCB26	JUNCTION	0.05	0.15	179.37	0 01:11	0.14
DCB27	JUNCTION	0.05	0.16	179.38	0 01:11	0.14
DCB37	JUNCTION	0.04	0.14	178.75	0 01:11	0.14
DCB40	JUNCTION	0.03	0.09	178.85	0 01:09	0.09
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.12	0.34	178.12	0 01:12	0.33
RYCB1	JUNCTION	0.02	0.06	180.09	0 01:10	0.06
RYCB2	JUNCTION	0.04	0.11	179.54	0 01:10	0.11
RYCB3	JUNCTION	0.03	0.11	179.78	0 01:11	0.11
RYCB4	JUNCTION	0.00	0.00	178.86	0 00:00	0.00
RYCB5	JUNCTION	0.00	0.03	178.88	0 01:11	0.03
RYCB6	JUNCTION	0.00	0.00	178.50	0 00:00	0.00
RYCB7	JUNCTION	0.05	0.28	178.79	0 01:11	0.26
RYCB8	JUNCTION	0.02	0.08	180.40	0 01:10	0.08
RYCB9	JUNCTION	0.01	0.02	181.83	0 01:10	0.02
STMH1	JUNCTION	0.44	0.63	177.43	0 01:26	0.63
STMH10	JUNCTION	0.12	0.81	178.93	0 01:10	0.56
STMH11	JUNCTION	0.00	0.00	178.32	0 00:00	0.00
STMH12	JUNCTION	0.00	0.00	178.47	0 00:00	0.00
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.13	0.61	178.64	0 01:10	0.57
STMH16	JUNCTION	0.02	0.06	179.54	0 01:10	0.06
STMH17	JUNCTION	0.09	0.72	179.42	0 01:10	0.57
STMH18	JUNCTION	0.09	0.91	180.17	0 01:11	0.90
STMH19	JUNCTION	0.06	0.38	178.90	0 01:12	0.35
STMH2	JUNCTION	0.00	0.00	183.83	0 00:00	0.00
STMH20	JUNCTION	0.05	0.23	178.89	0 01:13	0.23
STMH21	JUNCTION	0.01	0.04	179.20	0 01:10	0.04

STMH22	JUNCTION	0.05	0.32	178.91	0	01:11	0.30
STMH23	JUNCTION	0.05	0.13	178.96	0	01:10	0.13
STMH3	JUNCTION	0.03	0.10	179.14	0	01:11	0.10
STMH4	JUNCTION	0.23	0.70	178.51	0	01:12	0.70
STMH5	JUNCTION	0.24	0.69	178.58	0	01:12	0.68
STMH6	JUNCTION	0.20	0.64	178.58	0	01:12	0.63
STMH7	JUNCTION	0.17	0.63	178.93	0	01:11	0.62
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.03	0.12	180.69	0	01:11	0.12
RYCB1_Storage	STORAGE	0.00	0.02	181.65	0	01:10	0.02
RYCB2_Storage	STORAGE	0.01	0.04	181.12	0	01:10	0.04
RYCB3_Storage	STORAGE	0.01	0.05	181.58	0	01:11	0.05
RYCB4_Storage	STORAGE	0.00	0.01	180.12	0	01:11	0.01
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.00	180.05	0	00:00	0.00
RYCB7_Storage	STORAGE	0.01	0.05	180.00	0	01:10	0.05
RYCB8_Storage	STORAGE	0.01	0.03	182.47	0	01:10	0.03
RYCB9_Storage	STORAGE	0.00	0.01	183.37	0	01:10	0.01
S12	STORAGE	0.00	0.00	181.05	0	00:00	0.00
S13	STORAGE	0.00	0.00	180.85	0	00:00	0.00
S19	STORAGE	0.02	0.09	181.08	0	01:10	0.09
S20	STORAGE	0.00	0.00	180.84	0	00:00	0.00
S21	STORAGE	0.00	0.00	180.53	0	00:00	0.00
S22	STORAGE	0.00	0.00	180.43	0	00:00	0.00
S23	STORAGE	0.00	0.00	180.14	0	00:00	0.00
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.00	181.11	0	00:00	0.00
S8	STORAGE	0.00	0.00	181.02	0	00:00	0.00
S9	STORAGE	0.00	0.00	180.86	0	00:00	0.00
StreetA_Storage	STORAGE	0.03	0.10	180.57	0	01:11	0.10
StreetB_Storage1	STORAGE	0.02	0.06	180.07	0	01:10	0.06
StreetB_Storage2	STORAGE	0.02	0.08	179.94	0	01:10	0.08
SWM_Pond	STORAGE	0.42	0.61	177.44	0	01:26	0.61

Node Inflow Summary

Node	Type	Maximum	Maximum	Time of Max Occurrence	Lateral Inflow Volume	Total Inflow Volume	Flow Balance Error Percent
		Lateral Inflow CMS	Total Inflow CMS				
0	JUNCTION	0.000	0.514	0 01:12	0	0.682	0.272
4	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
41	JUNCTION	0.000	0.009	0 01:11	0	0.0133	0.540
42	JUNCTION	0.000	0.009	0 01:10	0	0.0134	0.531
43	JUNCTION	0.000	0.036	0 01:10	0	0.0613	0.300
44	JUNCTION	0.000	0.215	0 01:10	0	0.233	-0.017
45	JUNCTION	0.000	0.059	0 01:12	0	0.0567	0.214
46	JUNCTION	0.000	0.020	0 01:11	0	0.0201	0.327
47	JUNCTION	0.000	0.020	0 01:11	0	0.02	0.212
48	JUNCTION	0.000	0.585	0 01:11	0	0.682	0.144
49	JUNCTION	0.000	0.201	0 01:10	0	0.275	-0.392
50	JUNCTION	0.000	0.139	0 01:11	0	0.19	0.134
51	JUNCTION	0.000	0.111	0 01:10	0	0.143	0.132
52	JUNCTION	0.000	0.117	0 01:10	0	0.145	0.120
53	JUNCTION	0.000	0.118	0 01:10	0	0.144	0.196
54	JUNCTION	0.000	0.118	0 01:10	0	0.144	0.103
55	JUNCTION	0.000	0.687	0 01:12	0	0.949	0.177
56	JUNCTION	0.000	0.825	0 01:12	0	1.09	0.091
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	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
63	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
64	JUNCTION	0.000	0.002	0 01:10	0	0.00263	0.625
CB1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
CB12	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
CB14	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
CB17	JUNCTION	0.000	0.010	0 01:10	0	0.000273	0.436
CB19	JUNCTION	0.000	0.117	0 01:10	0	0.144	-0.041

CB2	JUNCTION	0.000	0.004	0	01:10	0	5.17e-06	-0.103	ltr
CB21	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB23	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB25	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB28	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB33	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB39	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB42	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB5	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.186	0	01:11	0	0.214	0.131	
DCB15	JUNCTION	0.000	0.013	0	01:10	0	0.000182	0.897	
DCB26	JUNCTION	0.000	0.138	0	01:11	0	0.176	0.017	
DCB27	JUNCTION	0.000	0.138	0	01:11	0	0.176	0.021	
DCB37	JUNCTION	0.000	0.109	0	01:10	0	0.143	0.018	
DCB40	JUNCTION	0.000	0.066	0	01:10	0	0.08	0.028	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	1.073	0	01:13	0	1.09	0.071	
RYCB1	JUNCTION	0.000	0.009	0	01:10	0	0.0135	0.320	
RYCB2	JUNCTION	0.000	0.030	0	01:10	0	0.0486	0.250	
RYCB3	JUNCTION	0.000	0.044	0	01:11	0	0.037	0.070	
RYCB4	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB5	JUNCTION	0.000	0.008	0	01:11	0	0.000819	0.002	
RYCB6	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7	JUNCTION	0.000	0.049	0	01:10	0	0.0472	0.082	
RYCB8	JUNCTION	0.000	0.020	0	01:10	0	0.0176	0.116	
RYCB9	JUNCTION	0.000	0.003	0	01:10	0	0.00264	0.135	
STMH1	JUNCTION	0.000	0.263	0	01:25	0	1.4	0.422	
STMH10	JUNCTION	0.000	0.141	0	01:10	0	0.19	0.139	
STMH11	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.139	0	01:11	0	0.19	0.032	
STMH16	JUNCTION	0.000	0.009	0	01:10	0	0.0134	0.505	
STMH17	JUNCTION	0.000	0.115	0	01:10	0	0.144	0.059	
STMH18	JUNCTION	0.000	0.008	0	01:09	0	0.000395	5.489	
STMH19	JUNCTION	0.000	0.074	0	01:13	0	0.0567	0.179	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.061	0	01:11	0	0.0569	0.393	
STMH21	JUNCTION	0.000	0.003	0	01:10	0	0.00264	0.489	
STMH22	JUNCTION	0.000	0.054	0	01:12	0	0.0612	0.146	
STMH23	JUNCTION	0.000	0.036	0	01:10	0	0.0617	0.599	
STMH3	JUNCTION	0.000	0.021	0	01:10	0	0.0202	0.523	
STMH4	JUNCTION	0.000	0.696	0	01:12	0	0.947	0.167	
STMH5	JUNCTION	0.000	0.678	0	01:12	0	0.95	0.139	
STMH6	JUNCTION	0.000	0.678	0	01:12	0	0.957	0.153	
STMH7	JUNCTION	0.000	0.573	0	01:11	0	0.508	0.186	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.112	0	01:26	0	0.395	0.000	
O2	OUTFALL	0.000	0.150	0	01:26	0	0.999	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.001	0.001	0	03:00	0.00312	0.00312	0.000	
U202_Outfall	OUTFALL	0.012	0.012	0	01:09	0.0128	0.0128	0.000	
A211_Storage	STORAGE	0.124	0.214	0	01:11	0.142	0.218	0.007	
RYCB1_Storage	STORAGE	0.028	0.028	0	01:10	0.0411	0.0411	0.008	
RYCB2_Storage	STORAGE	0.011	0.030	0	01:10	0.021	0.0486	0.021	
RYCB3_Storage	STORAGE	0.135	0.135	0	01:11	0.113	0.113	0.005	
RYCB4_Storage	STORAGE	0.000	0.008	0	01:11	0	0.000819	0.001	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7_Storage	STORAGE	0.049	0.049	0	01:10	0.0472	0.0472	0.007	
RYCB8_Storage	STORAGE	0.014	0.020	0	01:10	0.0122	0.0176	0.013	
RYCB9_Storage	STORAGE	0.008	0.008	0	01:10	0.00804	0.00804	0.004	
S12	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S13	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S19	STORAGE	0.118	0.118	0	01:10	0.144	0.144	-0.000	
S20	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S21	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S22	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S23	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S8	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S9	STORAGE	0.000	0.000	0	00:00	0	0	0.000 ltr
StreetA_Storage	STORAGE	0.273	0.298	0	01:10	0.349	0.353	0.002
StreetB_Storage1	STORAGE	0.203	0.203	0	01:10	0.244	0.244	0.001
StreetB_Storage2	STORAGE	0.208	0.344	0	01:10	0.271	0.435	0.002
SWM_Pond	STORAGE	0.106	1.073	0	01:12	0.239	1.62	0.592

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
49	JUNCTION	0.12	0.397	1.223
50	JUNCTION	0.10	0.283	1.387
51	JUNCTION	0.08	0.471	1.119
52	JUNCTION	0.08	0.634	0.866
53	JUNCTION	0.07	0.457	1.073
54	JUNCTION	0.05	0.488	0.922
CB19	JUNCTION	0.04	0.418	0.232
STMH10	JUNCTION	0.09	0.359	1.351
STMH15	JUNCTION	0.10	0.164	1.446
STMH17	JUNCTION	0.07	0.421	1.229
STMH18	JUNCTION	0.08	0.614	0.886

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CMS
A211_Storage	0.000	0	0	0	0.000	2	0 01:11	0.214
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.028
RYCB2_Storage	0.000	0	0	0	0.000	0	0 01:10	0.030
RYCB3_Storage	0.000	0	0	0	0.000	0	0 01:11	0.135
RYCB4_Storage	0.000	0	0	0	0.000	0	0 01:11	0.008
RYCB5_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB7_Storage	0.000	0	0	0	0.000	0	0 01:10	0.049
RYCB8_Storage	0.000	0	0	0	0.000	0	0 01:10	0.020
RYCB9_Storage	0.000	0	0	0	0.000	0	0 01:10	0.008
S12	0.000	0	0	0	0.000	0	0 00:00	0.000
S13	0.000	0	0	0	0.000	0	0 00:00	0.000
S19	0.000	6	0	0	0.001	29	0 01:10	0.117
S20	0.000	0	0	0	0.000	0	0 00:00	0.000
S21	0.000	0	0	0	0.000	0	0 00:00	0.000
S22	0.000	0	0	0	0.000	0	0 00:00	0.000
S23	0.000	0	0	0	0.000	0	0 00:00	0.000
S26	0.000	0	0	0	0.000	0	0 00:00	0.000
S27	0.000	0	0	0	0.000	0	0 00:00	0.000
S30	0.000	0	0	0	0.000	0	0 00:00	0.000
S31	0.000	0	0	0	0.000	0	0 00:00	0.000
S32	0.000	0	0	0	0.000	0	0 00:00	0.000
S7	0.000	0	0	0	0.000	0	0 00:00	0.000
S8	0.000	0	0	0	0.000	0	0 00:00	0.000
S9	0.000	0	0	0	0.000	0	0 00:00	0.000
StreetA_Storage	0.000	0	0	0	0.007	4	0 01:11	0.283
StreetB_Storage1	0.000	0	0	0	0.000	1	0 01:10	0.202
StreetB_Storage2	0.000	0	0	0	0.005	3	0 01:10	0.331
SWM_Pond	0.284	7	0	0	0.554	13	0 01:26	0.263

Outfall Loading Summary

Flow Freq	Avg Flow	Max Flow	Total Volume
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Outfall Node	Pcnt	CMS	CMS	10^6 ltr
O1	70.41	0.065	0.112	0.395
O2	99.80	0.108	0.150	0.999
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	55.54	0.001	0.001	0.003
U202_Outfall	99.91	0.002	0.012	0.013
System	65.13	0.175	0.265	1.410

Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
4	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.054	0 01:12	1.08	0.21	0.59
C11	CONDUIT	0.072	0 01:13	0.54	0.18	0.86
C12	CONDUIT	0.187	0 01:11	1.38	0.65	0.79
C13	CONDUIT	0.003	0 01:10	0.69	0.01	0.10
C14	CONDUIT	0.002	0 01:10	0.37	0.02	0.09
C15	CONDUIT	0.002	0 01:11	0.14	0.01	0.15
C16	CONDUIT	0.019	0 01:10	1.14	0.14	0.29
C17	CONDUIT	0.020	0 01:11	0.75	0.11	0.22
C18	CONDUIT	0.020	0 01:11	0.87	0.11	0.20
C19	CONDUIT	0.020	0 01:12	0.48	0.07	0.34
C2	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C20	CONDUIT	0.044	0 01:11	1.19	0.19	0.43
C21	CONDUIT	0.059	0 01:12	0.83	0.25	0.51
C22	CONDUIT	0.074	0 01:13	0.71	0.30	0.65
C23	CONDUIT	0.096	0 01:14	0.74	0.42	0.82
C24	CONDUIT	0.359	0 01:11	1.85	0.40	0.96
C25	CONDUIT	0.455	0 01:12	1.42	0.96	0.90
C26	CONDUIT	0.510	0 01:12	1.60	1.09	0.88
C27	CONDUIT	0.000	0 00:00	0.00	0.00	0.50
C28	CONDUIT	0.008	0 01:11	0.28	0.04	0.57
C29	CONDUIT	0.501	0 01:13	1.50	0.95	0.91
C3	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C30	CONDUIT	0.008	0 01:09	0.11	0.09	1.00
C31	CONDUIT	0.117	0 01:10	1.65	1.57	1.00
C32	CONDUIT	0.118	0 01:10	1.70	1.60	1.00
C33	CONDUIT	0.115	0 01:10	1.70	1.03	1.00
C34	CONDUIT	0.111	0 01:10	1.66	1.13	1.00
C35	CONDUIT	0.104	0 01:11	1.47	1.02	1.00
C36	CONDUIT	0.048	0 01:09	1.11	0.73	1.00
C37	CONDUIT	0.139	0 01:11	0.88	0.90	1.00
C38	CONDUIT	0.139	0 01:11	0.88	1.04	1.00
C39	CONDUIT	0.139	0 01:11	0.88	0.90	1.00
C4	CONDUIT	0.009	0 01:10	0.90	0.08	0.20
C40	CONDUIT	0.275	0 01:09	1.81	0.57	1.00
C41	CONDUIT	0.678	0 01:12	1.38	0.52	0.74
C42	CONDUIT	0.687	0 01:12	1.38	1.21	0.74
C43	CONDUIT	0.696	0 01:12	1.43	0.85	0.75
C44	CONDUIT	0.737	0 01:12	1.49	1.24	0.74
C45	CONDUIT	1.073	0 01:13	3.17	1.94	0.55
C46	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C48	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C49	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C5	CONDUIT	0.009	0 01:10	0.75	0.06	0.16
C50	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C51	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C52	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C53	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0 00:00	0.00	0.00	0.50
C58	CONDUIT	0.813	0 01:12	2.63	0.22	0.41
C59	CONDUIT	0.000	0 00:00	0.00	0.00	0.46
C6	CONDUIT	0.009	0 01:11	0.81	0.06	0.15
C60	CONDUIT	0.263	0 01:25	0.76	0.53	0.92
C62	CONDUIT	0.000	0 00:00	0.00	0.00	0.16
C63	CONDUIT	0.000	0 00:00	0.00	0.00	0.13
C64	CONDUIT	0.000	0 00:00	0.00	0.00	0.50
C65	CONDUIT	0.000	0 00:00	0.00	0.00	0.09
C66	CONDUIT	0.000	0 00:00	0.00	0.00	0.20
C67	CONDUIT	0.000	0 00:00	0.00	0.00	0.20

C68	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C69	CONDUIT	0.144	0	01:11	3.47	0.65	0.81
C7	CONDUIT	0.008	0	01:11	0.43	0.04	0.24
C70	CONDUIT	0.139	0	01:11	3.35	0.56	0.79
C71	CONDUIT	0.117	0	01:10	3.72	1.18	1.00
C72	CONDUIT	0.010	0	01:10	0.43	0.10	1.00
C73	CONDUIT	0.013	0	01:10	0.47	0.08	0.82
C74	CONDUIT	0.004	0	01:10	0.25	0.04	0.51
C75	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C76	CONDUIT	0.066	0	01:10	1.84	0.30	0.69
C77	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C78	CONDUIT	0.110	0	01:10	2.75	0.48	0.78
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.030	0	01:10	1.21	0.27	0.39
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C82	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.036	0	01:10	1.03	0.17	0.37
1	ORIFICE	0.009	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.008	0	01:11			
12	ORIFICE	0.000	0	00:00			
120	ORIFICE	0.000	0	00:00			
13	ORIFICE	0.000	0	00:00			
14	ORIFICE	0.000	0	00:00			
151	ORIFICE	0.000	0	00:00			
3	ORIFICE	0.138	0	01:11			
37	ORIFICE	0.000	0	00:00			
38	ORIFICE	0.030	0	01:10			
39	ORIFICE	0.044	0	01:11			
40	ORIFICE	0.020	0	01:10			
41	ORIFICE	0.003	0	01:10			
42	ORIFICE	0.049	0	01:10			
43	ORIFICE	0.186	0	01:11			
5	ORIFICE	0.000	0	00:00			
6	ORIFICE	0.000	0	00:00			
7	ORIFICE	0.138	0	01:11			
8	ORIFICE	0.000	0	00:00			
80	ORIFICE	0.000	0	00:00			
85	ORIFICE	0.000	0	00:00			
86	ORIFICE	0.000	0	00:00			
87	ORIFICE	0.000	0	00:00			
88	ORIFICE	0.117	0	01:10			
89	ORIFICE	0.000	0	00:00			
90	ORIFICE	0.000	0	00:00			
91	ORIFICE	0.000	0	00:00			
92	ORIFICE	0.000	0	00:00			
94	ORIFICE	0.109	0	01:10			
96	ORIFICE	0.066	0	01:10			
97	ORIFICE	0.000	0	00:00			
98	ORIFICE	0.000	0	00:00			
99	ORIFICE	0.000	0	00:00			
Or1	ORIFICE	0.112	0	01:26			0.37
Or2	ORIFICE	0.150	0	01:26			1.00
10	WEIR	0.000	0	00:00			0.00
18	WEIR	0.000	0	00:00			0.00
19	WEIR	0.000	0	00:00			0.00
9	WEIR	0.000	0	00:00			0.00
A211_Weir	WEIR	0.028	0	01:11			0.14
RYCB1_Weir	WEIR	0.019	0	01:10			0.11
RYCB2_Weir	WEIR	0.000	0	00:00			0.00
RYCB3_Weir	WEIR	0.090	0	01:11			0.31
RYCB4_Weir	WEIR	0.000	0	00:00			0.00
RYCB5_Weir	WEIR	0.000	0	00:00			0.00
RYCB6_Weir	WEIR	0.000	0	00:00			0.00
RYCB7_Weir	WEIR	0.000	0	00:00			0.00
RYCB8_Weir	WEIR	0.000	0	00:00			0.00
RYCB9_Weir	WEIR	0.005	0	01:10			0.05
StreetA_Weir	WEIR	0.008	0	01:11			0.06
StreetB_Weir1	WEIR	0.136	0	01:10			0.41
StreetB_Weir2	WEIR	0.223	0	01:10			0.57
SWM_Pond_Weir	WEIR	0.000	0	00:00			0.00
W17	WEIR	0.000	0	00:00			0.00
W18	WEIR	0.000	0	00:00			0.00
W19	WEIR	0.000	0	00:00			0.00
W20	WEIR	0.000	0	00:00			0.00
W21	WEIR	0.000	0	00:00			0.00
W27	WEIR	0.000	0	00:00			0.00
W30	WEIR	0.000	0	00:00			0.00
W31	WEIR	0.000	0	00:00			0.00
W6	WEIR	0.000	0	00:00			0.00

W8	WEIR	0.000	0	00:00	0.00
W9	WEIR	0.000	0	00:00	0.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class								
		Up Dry	Down Dry	Sub Dry	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl	
4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.00	0.00	0.00	0.07	0.92	0.00	0.00	0.03	0.00
C11	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.91	0.00
C12	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.96	0.00
C13	1.00	0.00	0.00	0.00	0.06	0.94	0.00	0.00	0.96	0.00
C14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.20	0.00
C15	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.97	0.00
C16	1.00	0.00	0.00	0.00	0.04	0.96	0.00	0.00	0.95	0.00
C17	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.77	0.00
C18	1.00	0.00	0.00	0.00	0.82	0.17	0.00	0.00	0.00	0.00
C19	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.96	0.00
C2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.95	0.00
C21	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.08	0.00
C22	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.67	0.00
C23	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.79	0.00
C24	1.00	0.00	0.00	0.00	0.98	0.01	0.00	0.00	0.92	0.00
C25	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.17	0.00
C26	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.00
C27	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C28	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.61	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.77	0.00
C3	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.00	0.03	0.00	0.97	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.89	0.11	0.00	0.00	0.70	0.00
C32	1.00	0.00	0.00	0.00	0.06	0.94	0.00	0.00	0.00	0.00
C33	1.00	0.01	0.00	0.00	0.05	0.95	0.00	0.00	0.85	0.00
C34	1.00	0.01	0.00	0.00	0.05	0.94	0.00	0.00	0.26	0.00
C35	1.00	0.00	0.01	0.00	0.59	0.40	0.00	0.00	0.92	0.00
C36	1.00	0.00	0.00	0.00	0.98	0.02	0.00	0.00	0.92	0.00
C37	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.64	0.00
C38	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.00
C39	1.00	0.00	0.01	0.00	0.69	0.30	0.00	0.00	0.05	0.00
C4	1.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.78	0.00
C40	1.00	0.00	0.00	0.00	0.95	0.05	0.00	0.00	0.37	0.00
C41	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.19	0.00
C42	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.13	0.00
C44	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.07	0.00
C45	1.00	0.00	0.00	0.00	0.24	0.76	0.00	0.00	0.05	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	0.19	0.80	0.00	0.00	0.71	0.00
C50	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C51	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C52	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.87	0.13	0.00	0.00	0.94	0.00
C59	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.00	0.00	0.10	0.89	0.00	0.00	0.00	0.00
C60	1.00	0.00	0.00	0.00	0.98	0.02	0.00	0.00	0.00	0.00
C62	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C63	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C64	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C65	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C66	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C67	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C68	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C69	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.95	0.00
C7	1.00	0.00	0.01	0.00	0.98	0.00	0.00	0.00	0.94	0.00
C70	1.00	0.00	0.00	0.00	0.79	0.21	0.00	0.00	0.96	0.00
C71	1.00	0.00	0.00	0.00	0.04	0.96	0.00	0.00	0.94	0.00
C72	1.00	0.00	0.79	0.00	0.21	0.00	0.00	0.00	0.60	0.00
C73	1.00	0.01	0.82	0.00	0.18	0.00	0.00	0.00	0.60	0.00

C74	1.00	0.01	0.81	0.00	0.17	0.00	0.00	0.00	0.61	0.00
C75	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C76	1.00	0.00	0.00	0.00	0.25	0.75	0.00	0.00	0.95	0.00
C77	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C78	1.00	0.00	0.00	0.00	0.84	0.16	0.00	0.00	0.95	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.06	0.94	0.00	0.00	0.93	0.00
C80	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.22	0.77	0.00	0.00	0.03	0.00

 Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C11	0.01	0.01	0.09	0.01	0.01
C12	0.01	0.01	0.09	0.01	0.01
C24	0.01	0.01	0.05	0.01	0.01
C26	0.01	0.01	0.01	0.05	0.01
C28	0.01	0.01	0.21	0.01	0.01
C30	0.08	0.08	0.08	0.01	0.01
C31	0.07	0.08	0.07	0.09	0.07
C32	0.05	0.07	0.05	0.10	0.05
C33	0.05	0.05	0.07	0.01	0.01
C34	0.07	0.07	0.08	0.04	0.03
C35	0.08	0.08	0.14	0.02	0.02
C36	0.02	0.02	0.18	0.01	0.01
C37	0.09	0.09	0.10	0.01	0.01
C38	0.10	0.10	0.10	0.03	0.02
C39	0.10	0.10	0.11	0.01	0.01
C40	0.11	0.11	0.15	0.01	0.01
C42	0.01	0.01	0.01	0.08	0.01
C44	0.01	0.01	0.01	0.07	0.01
C45	0.01	0.01	0.01	0.09	0.01
C69	0.01	0.01	0.10	0.01	0.01
C70	0.01	0.01	0.30	0.01	0.01
C71	0.07	0.07	0.13	0.04	0.04
C72	0.02	0.02	0.10	0.01	0.01
C73	0.01	0.01	0.06	0.01	0.01
C74	0.01	0.01	0.09	0.01	0.01
C76	0.01	0.01	0.27	0.01	0.01
C78	0.01	0.01	0.48	0.01	0.01

Analysis begun on: Thu Dec 15 12:01:43 2022
 Analysis ended on: Thu Dec 15 12:01:47 2022
 Total elapsed time: 00:00:04

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas5Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	01	ORIFICE			
Or2	STMH1	02	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	2.335	35.740
Evaporation Loss	0.000	0.000
Infiltration Loss	1.487	22.758
Surface Runoff	0.326	4.998
Final Storage	0.522	7.997
Continuity Error (%)	-0.035	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.326	3.257
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.250	2.497
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.075	0.750
Continuity Error (%)	0.295	

Highest Continuity Errors

Node CB23 (4.95%)
Node CB28 (2.61%)
Node 4 (2.18%)
Node STMH21 (1.45%)
Node STMH3 (1.29%)

Time-Step Critical Elements

Link C40 (79.42%)
Link C69 (6.63%)
Link C60 (6.47%)
Link C24 (2.62%)
Link C78 (2.28%)

Highest Flow Instability Indexes

Link C45 (30)
Link C58 (23)
Link C44 (21)
Link C40 (14)
Link C39 (10)

Routing Time Step Summary

Minimum Time Step : 0.16 sec
Average Time Step : 1.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 2.27
Percent Not Converging : 2.78
Time Step Frequencies :
30.000 - 13.228 sec : 0.05 %
13.228 - 5.833 sec : 0.04 %
5.833 - 2.572 sec : 1.46 %
2.572 - 1.134 sec : 23.93 %
1.134 - 0.500 sec : 74.53 %

Subcatchment Runoff Summary

Table with 11 columns: 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. Rows include subcatchments A201 through U201 and EXT201 through EXT208.

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
0	JUNCTION	0.23	0.89	179.03	0 01:12	0.86
4	JUNCTION	0.00	0.02	178.19	0 01:12	0.01
41	JUNCTION	0.03	0.30	179.35	0 01:12	0.28
42	JUNCTION	0.03	0.07	179.42	0 01:10	0.07
43	JUNCTION	0.09	1.01	179.69	0 01:11	0.58
44	JUNCTION	0.10	0.84	179.30	0 01:12	0.77
45	JUNCTION	0.09	0.99	179.57	0 01:12	0.65
46	JUNCTION	0.06	0.40	179.32	0 01:12	0.40
47	JUNCTION	0.05	1.01	179.81	0 01:12	0.44
48	JUNCTION	0.24	0.98	179.26	0 01:12	0.93
49	JUNCTION	0.19	0.79	178.79	0 01:08	0.77
50	JUNCTION	0.17	0.84	178.91	0 01:11	0.83
51	JUNCTION	0.13	1.45	180.04	0 01:10	1.33
52	JUNCTION	0.17	1.73	180.97	0 01:11	1.70
53	JUNCTION	0.17	1.80	180.86	0 01:11	1.78
54	JUNCTION	0.13	1.63	180.50	0 01:11	1.59
55	JUNCTION	0.27	0.83	178.69	0 01:12	0.83
56	JUNCTION	0.27	0.79	178.58	0 01:13	0.77
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.00	0.00	178.27	0 00:00	0.00
61	JUNCTION	0.00	0.00	178.42	0 00:00	0.00
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.02	0.20	179.32	0 01:14	0.18
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.05	1.38	180.97	0 01:11	1.37
CB19	JUNCTION	0.12	1.39	181.13	0 01:11	1.38
CB2	JUNCTION	0.02	1.03	180.21	0 01:10	0.74
CB21	JUNCTION	0.00	0.00	179.77	0 00:00	0.00
CB23	JUNCTION	0.00	0.00	179.61	0 01:12	0.00
CB25	JUNCTION	0.00	0.01	179.42	0 01:12	0.00
CB28	JUNCTION	0.00	0.01	179.36	0 01:11	0.00
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.00	0.00	179.60	0 00:00	0.00
CB33	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
CB39	JUNCTION	0.00	0.00	178.83	0 00:00	0.00
CB42	JUNCTION	0.00	0.00	178.74	0 00:00	0.00
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.00	0.00	179.86	0 00:00	0.00
CB5	JUNCTION	0.00	0.01	178.90	0 01:12	0.01
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.12	0.79	179.61	0 01:11	0.61
DCB15	JUNCTION	0.03	1.25	180.53	0 01:11	1.22
DCB26	JUNCTION	0.06	0.53	179.75	0 01:11	0.50
DCB27	JUNCTION	0.06	0.55	179.77	0 01:11	0.51
DCB37	JUNCTION	0.05	0.23	178.84	0 01:11	0.21
DCB40	JUNCTION	0.04	0.16	178.92	0 01:11	0.15
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.15	0.41	178.19	0 01:12	0.40
RYCB1	JUNCTION	0.03	0.07	180.10	0 01:10	0.07
RYCB2	JUNCTION	0.06	0.13	179.56	0 01:10	0.13
RYCB3	JUNCTION	0.04	0.13	179.80	0 01:10	0.13
RYCB4	JUNCTION	0.00	0.18	179.04	0 01:11	0.14
RYCB5	JUNCTION	0.00	0.19	179.04	0 01:11	0.16
RYCB6	JUNCTION	0.00	0.00	178.50	0 00:00	0.00
RYCB7	JUNCTION	0.07	0.84	179.35	0 01:10	0.82
RYCB8	JUNCTION	0.04	0.09	180.41	0 01:10	0.09
RYCB9	JUNCTION	0.01	0.03	181.84	0 01:10	0.03
STMH1	JUNCTION	0.58	0.76	177.56	0 01:41	0.76
STMH10	JUNCTION	0.16	0.87	178.99	0 01:10	0.85
STMH11	JUNCTION	0.00	0.00	178.32	0 00:00	0.00
STMH12	JUNCTION	0.00	0.00	178.47	0 00:00	0.00
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.18	0.80	178.83	0 01:11	0.79
STMH16	JUNCTION	0.03	0.07	179.55	0 01:10	0.07
STMH17	JUNCTION	0.14	1.52	180.22	0 01:10	1.47

STMH18	JUNCTION	0.15	1.70	180.96	0	01:11	1.69
STMH19	JUNCTION	0.10	0.93	179.45	0	01:12	0.71
STMH2	JUNCTION	0.00	0.00	183.83	0	00:00	0.00
STMH20	JUNCTION	0.09	1.26	179.92	0	01:12	0.58
STMH21	JUNCTION	0.02	0.17	179.33	0	01:13	0.16
STMH22	JUNCTION	0.08	0.93	179.52	0	01:11	0.66
STMH23	JUNCTION	0.09	0.93	179.76	0	01:12	0.48
STMH3	JUNCTION	0.05	0.26	179.30	0	01:12	0.25
STMH4	JUNCTION	0.29	0.86	178.67	0	01:11	0.78
STMH5	JUNCTION	0.30	0.86	178.75	0	01:12	0.86
STMH6	JUNCTION	0.25	0.83	178.77	0	01:11	0.81
STMH7	JUNCTION	0.23	0.98	179.28	0	01:12	0.92
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.04	0.14	180.71	0	01:11	0.14
RYCB1_Storage	STORAGE	0.01	0.02	181.65	0	01:10	0.02
RYCB2_Storage	STORAGE	0.02	0.05	181.13	0	01:10	0.05
RYCB3_Storage	STORAGE	0.01	0.06	181.59	0	01:10	0.06
RYCB4_Storage	STORAGE	0.00	0.05	180.16	0	01:11	0.05
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.00	180.05	0	00:00	0.00
RYCB7_Storage	STORAGE	0.01	0.06	180.01	0	01:10	0.06
RYCB8_Storage	STORAGE	0.01	0.04	182.48	0	01:10	0.04
RYCB9_Storage	STORAGE	0.00	0.01	183.37	0	01:10	0.01
S12	STORAGE	0.00	0.00	181.05	0	00:00	0.00
S13	STORAGE	0.00	0.00	180.85	0	00:00	0.00
S19	STORAGE	0.03	0.20	181.19	0	01:10	0.20
S20	STORAGE	0.00	0.18	181.02	0	01:11	0.18
S21	STORAGE	0.00	0.05	180.58	0	01:11	0.04
S22	STORAGE	0.00	0.00	180.43	0	00:00	0.00
S23	STORAGE	0.00	0.00	180.14	0	00:00	0.00
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.00	181.11	0	00:00	0.00
S8	STORAGE	0.00	0.00	181.02	0	00:00	0.00
S9	STORAGE	0.00	0.00	180.86	0	00:00	0.00
StreetA_Storage	STORAGE	0.03	0.12	180.59	0	01:11	0.12
StreetB_Storage1	STORAGE	0.02	0.08	180.09	0	01:10	0.08
StreetB_Storage2	STORAGE	0.03	0.11	179.97	0	01:10	0.11
SWM_Pond	STORAGE	0.56	0.75	177.58	0	01:40	0.75

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ ltr	Total Inflow Volume 10 ⁶ ltr	Flow Balance Error Percent
0	JUNCTION	0.000	0.624	0 01:12	0	1.15	0.255
4	JUNCTION	0.000	0.004	0 01:12	0	5.36e-05	2.226
41	JUNCTION	0.000	0.059	0 01:12	0	0.0283	0.375
42	JUNCTION	0.000	0.013	0 01:10	0	0.0267	0.326
43	JUNCTION	0.000	0.083	0 01:10	0	0.139	0.152
44	JUNCTION	0.000	0.238	0 01:16	0	0.385	0.017
45	JUNCTION	0.000	0.130	0 01:15	0	0.119	0.372
46	JUNCTION	0.000	0.130	0 01:11	0	0.055	0.781
47	JUNCTION	0.000	0.104	0 01:11	0	0.0585	0.402
48	JUNCTION	0.000	0.616	0 01:10	0	1.14	0.139
49	JUNCTION	0.000	0.293	0 01:10	0	0.441	-0.430
50	JUNCTION	0.000	0.204	0 01:11	0	0.288	0.116
51	JUNCTION	0.000	0.148	0 01:11	0	0.221	0.090
52	JUNCTION	0.000	0.127	0 01:08	0	0.203	0.102
53	JUNCTION	0.000	0.146	0 01:09	0	0.217	0.164
54	JUNCTION	0.000	0.148	0 01:11	0	0.221	0.080
55	JUNCTION	0.000	0.915	0 01:12	0	1.56	0.161
56	JUNCTION	0.000	1.142	0 01:11	0	1.77	0.064
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	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
63	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
64	JUNCTION	0.000	0.035	0 01:12	0	0.00777	1.195

CB1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB17	JUNCTION	0.000	0.068	0	01:09	0	0.0152	-0.029	
CB19	JUNCTION	0.000	0.130	0	01:09	0	0.202	-0.024	
CB2	JUNCTION	0.000	0.025	0	01:09	0	0.000725	-0.520	
CB21	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB23	JUNCTION	0.000	0.004	0	01:12	0	5.17e-06	0.256	ltr
CB25	JUNCTION	0.000	0.004	0	01:12	0	1.49e-05	0.119	ltr
CB28	JUNCTION	0.000	0.005	0	01:11	0	9.42e-06	0.246	ltr
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB33	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB39	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB42	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB5	JUNCTION	0.000	0.001	0	01:11	0	1.48e-05	0.065	ltr
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.231	0	01:11	0	0.362	0.119	
DCB15	JUNCTION	0.000	0.045	0	01:11	0	0.00451	-0.410	
DCB26	JUNCTION	0.000	0.191	0	01:11	0	0.27	0.014	
DCB27	JUNCTION	0.000	0.191	0	01:11	0	0.27	0.014	
DCB37	JUNCTION	0.000	0.155	0	01:10	0	0.217	0.016	
DCB40	JUNCTION	0.000	0.096	0	01:10	0	0.122	0.022	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	1.423	0	01:12	0	1.77	0.068	
RYCB1	JUNCTION	0.000	0.013	0	01:10	0	0.0269	0.221	
RYCB2	JUNCTION	0.000	0.045	0	01:10	0	0.11	0.163	
RYCB3	JUNCTION	0.000	0.061	0	01:10	0	0.0637	0.151	
RYCB4	JUNCTION	0.000	0.014	0	01:11	0	0.000462	0.226	
RYCB5	JUNCTION	0.000	0.055	0	01:11	0	0.011	-0.004	
RYCB6	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7	JUNCTION	0.000	0.072	0	01:10	0	0.0685	0.049	
RYCB8	JUNCTION	0.000	0.030	0	01:10	0	0.0443	0.459	
RYCB9	JUNCTION	0.000	0.005	0	01:10	0	0.00507	0.333	
STMH1	JUNCTION	0.000	0.387	0	01:40	0	2.48	0.637	
STMH10	JUNCTION	0.000	0.204	0	01:11	0	0.288	0.131	
STMH11	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.204	0	01:11	0	0.287	-0.075	
STMH16	JUNCTION	0.000	0.013	0	01:10	0	0.0268	0.347	
STMH17	JUNCTION	0.000	0.148	0	01:11	0	0.22	0.054	
STMH18	JUNCTION	0.000	0.008	0	01:08	0	0.000421	2.940	
STMH19	JUNCTION	0.000	0.136	0	01:16	0	0.121	0.315	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.162	0	01:11	0	0.121	0.667	
STMH21	JUNCTION	0.000	0.026	0	01:13	0	0.00597	1.472	
STMH22	JUNCTION	0.000	0.077	0	01:13	0	0.139	0.074	
STMH23	JUNCTION	0.000	0.072	0	01:11	0	0.139	0.341	
STMH3	JUNCTION	0.000	0.084	0	01:12	0	0.0532	1.310	
STMH4	JUNCTION	0.000	0.990	0	01:12	0	1.56	0.147	
STMH5	JUNCTION	0.000	0.893	0	01:12	0	1.56	0.117	
STMH6	JUNCTION	0.000	0.872	0	01:12	0	1.59	0.177	
STMH7	JUNCTION	0.000	0.539	0	01:09	0	0.878	0.150	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.218	0	01:41	0	1.23	0.000	
O2	OUTFALL	0.000	0.169	0	01:41	0	1.23	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.003	0.003	0	01:51	0.016	0.016	0.000	
U202_Outfall	OUTFALL	0.020	0.020	0	01:10	0.0193	0.0193	0.000	
A211_Storage	STORAGE	0.179	0.303	0	01:11	0.247	0.377	0.006	
RYCB1_Storage	STORAGE	0.040	0.040	0	01:10	0.0819	0.0819	0.006	
RYCB2_Storage	STORAGE	0.018	0.045	0	01:10	0.0546	0.11	0.013	
RYCB3_Storage	STORAGE	0.185	0.185	0	01:10	0.194	0.194	0.004	
RYCB4_Storage	STORAGE	0.000	0.055	0	01:11	0	0.011	0.000	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7_Storage	STORAGE	0.072	0.072	0	01:10	0.0685	0.0685	0.005	
RYCB8_Storage	STORAGE	0.021	0.030	0	01:10	0.0339	0.0443	0.032	
RYCB9_Storage	STORAGE	0.014	0.014	0	01:10	0.0155	0.0155	0.016	
S12	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S13	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S19	STORAGE	0.171	0.171	0	01:10	0.221	0.221	-0.001	
S20	STORAGE	0.000	0.096	0	01:10	0	0.0187	0.003	
S21	STORAGE	0.000	0.047	0	01:11	0	0.00382	0.163	
S22	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S23	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S8	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S9	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
StreetA_Storage	STORAGE	0.397	0.467	0	01:10	0.535	0.55	0.005	
StreetB_Storage1	STORAGE	0.294	0.294	0	01:10	0.372	0.372	0.001	
StreetB_Storage2	STORAGE	0.304	0.500	0	01:10	0.412	0.662	0.004	
SWM_Pond	STORAGE	0.159	1.501	0	01:12	0.986	3.2	0.533	

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
0	JUNCTION	0.10	0.212	1.103
43	JUNCTION	0.06	0.556	0.964
44	JUNCTION	0.11	0.312	1.223
45	JUNCTION	0.07	0.466	1.159
47	JUNCTION	0.02	0.557	1.103
48	JUNCTION	0.11	0.303	1.222
49	JUNCTION	0.21	0.344	1.276
50	JUNCTION	0.19	0.388	1.282
51	JUNCTION	0.16	1.152	0.438
52	JUNCTION	0.15	1.426	0.074
53	JUNCTION	0.14	1.500	0.030
54	JUNCTION	0.12	1.331	0.079
CB17	JUNCTION	0.08	0.781	0.000
CB19	JUNCTION	0.12	0.786	0.000
CB2	JUNCTION	0.03	0.428	0.222
CBMH8	JUNCTION	0.02	0.187	0.963
DCB15	JUNCTION	0.07	0.650	0.000
RYCB7	JUNCTION	0.05	0.236	0.604
STMH10	JUNCTION	0.18	0.425	1.285
STMH15	JUNCTION	0.19	0.350	1.260
STMH17	JUNCTION	0.15	1.223	0.427
STMH18	JUNCTION	0.14	1.403	0.097
STMH19	JUNCTION	0.09	0.410	1.135
STMH20	JUNCTION	0.05	0.734	0.911
STMH22	JUNCTION	0.09	0.481	1.049
STMH23	JUNCTION	0.01	0.481	1.019
STMH7	JUNCTION	0.11	0.308	1.247

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

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
A211_Storage	0.000	0	0	0	0.000	3	0 01:11	0.303
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.040
RYCB2_Storage	0.000	0	0	0	0.000	0	0 01:10	0.045
RYCB3_Storage	0.000	0	0	0	0.000	0	0 01:10	0.185
RYCB4_Storage	0.000	0	0	0	0.000	0	0 01:11	0.055
RYCB5_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB7_Storage	0.000	0	0	0	0.000	0	0 01:10	0.072
RYCB8_Storage	0.000	0	0	0	0.000	0	0 01:10	0.030
RYCB9_Storage	0.000	0	0	0	0.000	0	0 01:10	0.014
S12	0.000	0	0	0	0.000	0	0 00:00	0.000
S13	0.000	0	0	0	0.000	0	0 00:00	0.000
S19	0.000	9	0	0	0.002	65	0 01:10	0.171
S20	0.000	1	0	0	0.002	60	0 01:11	0.096
S21	0.000	0	0	0	0.000	14	0 01:11	0.045
S22	0.000	0	0	0	0.000	0	0 00:00	0.000
S23	0.000	0	0	0	0.000	0	0 00:00	0.000

S26	0.000	0	0	0	0.000	0	0	00:00	0.000
S27	0.000	0	0	0	0.000	0	0	00:00	0.000
S30	0.000	0	0	0	0.000	0	0	00:00	0.000
S31	0.000	0	0	0	0.000	0	0	00:00	0.000
S32	0.000	0	0	0	0.000	0	0	00:00	0.000
S7	0.000	0	0	0	0.000	0	0	00:00	0.000
S8	0.000	0	0	0	0.000	0	0	00:00	0.000
S9	0.000	0	0	0	0.000	0	0	00:00	0.000
StreetA_Storage	0.001	0	0	0	0.013	7	0	01:11	0.437
StreetB_Storage1	0.000	0	0	0	0.001	2	0	01:10	0.293
StreetB_Storage2	0.001	0	0	0	0.011	5	0	01:10	0.472
SWM_Pond	0.607	14	0	0	0.953	22	0	01:40	0.387

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
O1	74.05	0.179	0.218	1.233
O2	99.85	0.132	0.169	1.229
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	70.43	0.002	0.003	0.016
U202_Outfall	99.94	0.002	0.020	0.019
System	68.86	0.316	0.392	2.497

 Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
4	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.077	0 01:13	1.20	0.30	1.00
C11	CONDUIT	0.076	0 01:13	0.51	0.19	1.00
C12	CONDUIT	0.238	0 01:11	1.49	0.82	1.00
C13	CONDUIT	0.004	0 01:10	0.83	0.02	0.31
C14	CONDUIT	0.024	0 01:13	0.54	0.16	0.38
C15	CONDUIT	0.035	0 01:12	0.51	0.23	0.50
C16	CONDUIT	0.029	0 01:10	1.28	0.22	0.56
C17	CONDUIT	0.063	0 01:12	0.86	0.35	0.68
C18	CONDUIT	0.099	0 01:11	0.94	0.55	0.94
C19	CONDUIT	0.104	0 01:11	0.66	0.37	1.00
C2	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C20	CONDUIT	0.061	0 01:10	1.26	0.27	0.68
C21	CONDUIT	0.130	0 01:15	0.82	0.55	1.00
C22	CONDUIT	0.136	0 01:16	0.83	0.55	1.00
C23	CONDUIT	0.136	0 01:16	0.86	0.59	1.00
C24	CONDUIT	0.306	0 01:09	1.48	0.34	1.00
C25	CONDUIT	0.446	0 01:14	1.32	0.94	1.00
C26	CONDUIT	0.595	0 01:13	1.66	1.28	1.00
C27	CONDUIT	0.014	0 01:11	0.36	0.06	0.85
C28	CONDUIT	0.055	0 01:11	1.36	0.26	0.88
C29	CONDUIT	0.624	0 01:12	1.74	1.18	1.00
C3	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C30	CONDUIT	0.008	0 01:08	0.11	0.10	1.00
C31	CONDUIT	0.127	0 01:08	1.79	1.71	1.00
C32	CONDUIT	0.146	0 01:09	2.06	1.98	1.00
C33	CONDUIT	0.148	0 01:11	2.09	1.32	1.00
C34	CONDUIT	0.148	0 01:11	2.09	1.51	1.00
C35	CONDUIT	0.148	0 01:11	2.09	1.45	1.00
C36	CONDUIT	0.073	0 01:09	1.48	1.12	1.00
C37	CONDUIT	0.204	0 01:11	1.28	1.31	1.00
C38	CONDUIT	0.204	0 01:11	1.28	1.52	1.00
C39	CONDUIT	0.204	0 01:11	1.28	1.32	1.00
C4	CONDUIT	0.013	0 01:10	1.01	0.12	0.24
C40	CONDUIT	0.293	0 01:10	2.01	0.61	1.00
C41	CONDUIT	0.893	0 01:12	1.50	0.69	0.93
C42	CONDUIT	0.915	0 01:12	1.54	1.62	0.94
C43	CONDUIT	0.990	0 01:12	1.75	1.20	0.92
C44	CONDUIT	0.998	0 01:11	1.80	1.68	0.89
C45	CONDUIT	1.423	0 01:12	3.54	2.57	0.63
C46	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

C48	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C49	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.013	0	01:10	0.84	0.08	0.20
C50	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C51	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C52	CONDUIT	0.000	0	00:00	0.00	0.00	0.02
C53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C58	CONDUIT	1.104	0	01:12	2.90	0.31	0.49
C59	CONDUIT	0.004	0	01:12	0.08	0.02	0.52
C6	CONDUIT	0.013	0	01:11	0.90	0.08	0.49
C60	CONDUIT	0.387	0	01:40	1.08	0.78	1.00
C62	CONDUIT	0.000	0	00:00	0.00	0.00	0.19
C63	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C64	CONDUIT	0.005	0	01:11	0.34	0.05	0.52
C65	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C66	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C67	CONDUIT	0.004	0	01:12	0.24	0.03	0.51
C68	CONDUIT	0.004	0	01:12	0.22	0.03	0.52
C69	CONDUIT	0.193	0	01:11	4.11	0.87	1.00
C7	CONDUIT	0.048	0	01:12	0.56	0.25	0.90
C70	CONDUIT	0.193	0	01:11	3.98	0.78	1.00
C71	CONDUIT	0.127	0	01:08	4.04	1.28	1.00
C72	CONDUIT	0.066	0	01:09	2.09	0.64	1.00
C73	CONDUIT	0.046	0	01:11	0.93	0.28	1.00
C74	CONDUIT	0.025	0	01:09	0.81	0.24	1.00
C75	CONDUIT	0.001	0	01:11	0.09	0.01	0.53
C76	CONDUIT	0.096	0	01:10	2.33	0.43	0.81
C77	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C78	CONDUIT	0.165	0	01:11	3.56	0.72	0.97
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.044	0	01:10	1.36	0.40	0.70
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C82	CONDUIT	0.000	0	00:00	0.00	0.00	0.04
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.077	0	01:13	1.09	0.38	1.00
1	ORIFICE	0.013	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.055	0	01:11			
12	ORIFICE	0.000	0	00:00			
120	ORIFICE	0.000	0	00:00			
13	ORIFICE	0.000	0	00:00			
14	ORIFICE	0.000	0	00:00			
151	ORIFICE	0.000	0	00:00			
3	ORIFICE	0.191	0	01:11			
37	ORIFICE	0.000	0	00:00			
38	ORIFICE	0.045	0	01:10			
39	ORIFICE	0.061	0	01:10			
40	ORIFICE	0.030	0	01:10			
41	ORIFICE	0.005	0	01:10			
42	ORIFICE	0.072	0	01:10			
43	ORIFICE	0.231	0	01:11			
5	ORIFICE	0.000	0	00:00			
6	ORIFICE	0.000	0	00:00			
7	ORIFICE	0.191	0	01:11			
8	ORIFICE	0.000	0	00:00			
80	ORIFICE	0.000	0	00:00			
85	ORIFICE	0.000	0	00:00			
86	ORIFICE	0.000	0	00:00			
87	ORIFICE	0.000	0	00:00			
88	ORIFICE	0.130	0	01:09			
89	ORIFICE	0.068	0	01:09			
90	ORIFICE	0.000	0	00:00			
91	ORIFICE	0.000	0	00:00			
92	ORIFICE	0.000	0	00:00			
94	ORIFICE	0.155	0	01:10			
96	ORIFICE	0.096	0	01:10			
97	ORIFICE	0.000	0	00:00			
98	ORIFICE	0.000	0	00:00			
99	ORIFICE	0.045	0	01:11			
Or1	ORIFICE	0.218	0	01:41			0.58
Or2	ORIFICE	0.169	0	01:41			1.00
10	WEIR	0.000	0	00:00			0.00
18	WEIR	0.000	0	00:00			0.00
19	WEIR	0.000	0	00:00			0.00
9	WEIR	0.000	0	00:00			0.00
A211_Weir	WEIR	0.072	0	01:11			0.27
RYCB1_Weir	WEIR	0.027	0	01:10			0.14

C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.89	0.11	0.00	0.00	0.94	0.00
C59	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.60	0.00
C6	1.00	0.01	0.00	0.00	0.09	0.90	0.00	0.00	0.02	0.00
C60	1.00	0.00	0.00	0.00	0.98	0.02	0.00	0.00	0.00	0.00
C62	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C63	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C64	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.60	0.00
C65	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C66	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C67	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.60	0.00
C68	1.00	0.00	0.86	0.00	0.13	0.00	0.00	0.00	0.60	0.00
C69	1.00	0.00	0.00	0.00	0.03	0.97	0.00	0.00	0.93	0.00
C7	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.93	0.00
C70	1.00	0.00	0.00	0.00	0.77	0.23	0.00	0.00	0.93	0.00
C71	1.00	0.00	0.00	0.00	0.06	0.94	0.00	0.00	0.92	0.00
C72	1.00	0.00	0.77	0.00	0.22	0.00	0.00	0.00	0.58	0.00
C73	1.00	0.00	0.80	0.00	0.19	0.00	0.00	0.00	0.58	0.00
C74	1.00	0.01	0.78	0.00	0.21	0.00	0.00	0.00	0.58	0.00
C75	1.00	0.00	0.86	0.00	0.13	0.00	0.00	0.00	0.60	0.00
C76	1.00	0.00	0.00	0.00	0.59	0.41	0.00	0.00	0.92	0.00
C77	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C78	1.00	0.00	0.00	0.00	0.80	0.20	0.00	0.00	0.92	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.93	0.00
C80	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.82	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.02	0.00

 Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C10	0.06	0.06	0.09	0.01	0.01
C11	0.09	0.09	0.18	0.01	0.01
C12	0.06	0.06	0.18	0.01	0.01
C18	0.01	0.01	0.02	0.01	0.01
C19	0.02	0.02	0.08	0.01	0.01
C20	0.01	0.01	0.10	0.01	0.01
C21	0.05	0.05	0.07	0.01	0.01
C22	0.07	0.07	0.09	0.01	0.01
C23	0.09	0.09	0.11	0.01	0.01
C24	0.11	0.11	0.15	0.01	0.01
C25	0.11	0.11	0.11	0.01	0.01
C26	0.10	0.11	0.10	0.15	0.10
C27	0.01	0.01	1.83	0.01	0.01
C28	0.01	0.01	1.86	0.01	0.01
C29	0.10	0.10	0.11	0.11	0.09
C30	0.14	0.14	0.15	0.01	0.01
C31	0.14	0.15	0.14	0.10	0.07
C32	0.12	0.14	0.12	0.17	0.12
C33	0.12	0.12	0.15	0.09	0.08
C34	0.15	0.15	0.16	0.11	0.11
C35	0.16	0.16	0.23	0.10	0.11
C36	0.12	0.12	0.27	0.02	0.02
C37	0.18	0.18	0.19	0.08	0.08
C38	0.19	0.19	0.19	0.11	0.11
C39	0.19	0.19	0.21	0.08	0.08
C40	0.20	0.21	0.24	0.01	0.01
C42	0.01	0.01	0.01	0.17	0.01
C43	0.01	0.01	0.01	0.04	0.01
C44	0.01	0.01	0.01	0.15	0.01
C45	0.01	0.01	0.01	0.18	0.01
C59	0.01	0.01	0.03	0.01	0.01
C60	1.60	1.60	1.72	0.01	0.01
C64	0.01	0.01	0.11	0.01	0.01
C67	0.01	0.01	0.09	0.01	0.01
C68	0.01	0.01	0.13	0.01	0.01
C69	0.06	0.06	0.18	0.01	0.01
C7	0.01	0.01	0.04	0.01	0.01
C70	0.06	0.06	0.60	0.01	0.01

C71	0.14	0.14	0.21	0.04	0.04
C72	0.10	0.10	0.17	0.01	0.01
C73	0.10	0.10	0.14	0.01	0.01
C74	0.08	0.08	0.17	0.01	0.01
C75	0.01	0.01	1.82	0.01	0.01
C76	0.01	0.01	0.49	0.01	0.01
C78	0.01	0.01	0.99	0.01	0.01
C8	0.01	0.01	0.06	0.01	0.01
C9	0.01	0.01	0.06	0.01	0.01

Analysis begun on: Thu Dec 15 12:00:09 2022
Analysis ended on: Thu Dec 15 12:00:12 2022
Total elapsed time: 00:00:03

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas10Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	O1	ORIFICE			
Or2	STMH1	O2	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	2.734	41.849
Evaporation Loss	0.000	0.000
Infiltration Loss	1.657	25.369
Surface Runoff	0.467	7.151
Final Storage	0.611	9.347
Continuity Error (%)	-0.044	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.466	4.660
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.338	3.381
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.127	1.269
Continuity Error (%)	0.220	

Highest Continuity Errors

Node CB33 (8.27%)
Node CB21 (1.91%)
Node 4 (1.90%)
Node 64 (-1.23%)
Node CB44 (1.11%)

Time-Step Critical Elements

Link C40 (86.85%)
Link C24 (4.07%)
Link C69 (2.50%)
Link C70 (1.67%)
Link C78 (1.09%)

Highest Flow Instability Indexes

Link C45 (33)
Link C58 (24)
Link C44 (21)
Link C40 (14)
Link C39 (11)

Routing Time Step Summary

Minimum Time Step : 0.50 sec
Average Time Step : 0.95 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 2.41
Percent Not Converging : 4.46
Time Step Frequencies :
30.000 - 13.228 sec : 0.05 %
13.228 - 5.833 sec : 0.01 %
5.833 - 2.572 sec : 0.71 %
2.572 - 1.134 sec : 20.31 %
1.134 - 0.500 sec : 78.92 %

Subcatchment Runoff Summary

Table with 11 columns: 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. Rows include subcatchments A201 through U201 and EXT201 through EXT208.

U202 41.85 0.00 0.00 9.15 18.42 11.18 29.60 0.02 0.03 0.707

 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
0	JUNCTION	0.27	1.28	179.42	0 01:09	1.19
4	JUNCTION	0.00	0.09	178.26	0 01:11	0.06
41	JUNCTION	0.05	2.04	181.09	0 01:11	0.66
42	JUNCTION	0.04	0.70	180.05	0 01:13	0.35
43	JUNCTION	0.11	1.23	179.91	0 01:10	1.03
44	JUNCTION	0.14	1.34	179.80	0 01:12	1.23
45	JUNCTION	0.13	1.54	180.12	0 01:10	1.09
46	JUNCTION	0.09	1.77	180.69	0 01:12	0.68
47	JUNCTION	0.08	2.20	181.00	0 01:10	0.80
48	JUNCTION	0.29	1.48	179.76	0 01:12	1.37
49	JUNCTION	0.23	1.20	179.20	0 01:12	1.19
50	JUNCTION	0.20	1.19	179.26	0 01:10	1.15
51	JUNCTION	0.16	1.71	180.30	0 01:09	1.65
52	JUNCTION	0.19	1.78	181.02	0 01:10	1.76
53	JUNCTION	0.19	1.87	180.93	0 01:10	1.86
54	JUNCTION	0.16	1.79	180.66	0 01:11	1.79
55	JUNCTION	0.32	1.63	179.49	0 01:11	1.03
56	JUNCTION	0.31	0.87	178.66	0 01:10	0.75
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.00	0.00	178.27	0 00:00	0.00
61	JUNCTION	0.00	0.00	178.42	0 00:00	0.00
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.04	2.44	181.56	0 01:12	0.50
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.06	1.41	181.00	0 01:10	1.40
CB19	JUNCTION	0.14	1.40	181.14	0 01:10	1.39
CB2	JUNCTION	0.03	1.27	180.45	0 01:09	1.07
CB21	JUNCTION	0.00	0.33	180.10	0 01:12	0.08
CB23	JUNCTION	0.00	0.47	180.08	0 01:12	0.06
CB25	JUNCTION	0.00	0.50	179.91	0 01:12	0.29
CB28	JUNCTION	0.01	0.45	179.80	0 01:12	0.38
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.00	0.22	179.82	0 01:12	0.13
CB33	JUNCTION	0.00	0.01	179.81	0 01:12	0.01
CB39	JUNCTION	0.00	0.09	178.92	0 01:12	0.04
CB42	JUNCTION	0.00	0.00	178.74	0 00:00	0.00
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.00	0.38	180.24	0 01:12	0.01
CB5	JUNCTION	0.00	0.44	179.33	0 01:11	0.40
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.15	1.23	180.05	0 01:12	1.10
DCB15	JUNCTION	0.05	1.42	180.70	0 01:11	1.41
DCB26	JUNCTION	0.08	1.17	180.39	0 01:11	1.04
DCB27	JUNCTION	0.09	1.20	180.42	0 01:12	1.06
DCB37	JUNCTION	0.06	0.54	179.15	0 01:10	0.54
DCB40	JUNCTION	0.05	0.44	179.20	0 01:11	0.44
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.17	0.47	178.25	0 01:11	0.44
RYCB1	JUNCTION	0.04	0.08	180.11	0 01:10	0.08
RYCB2	JUNCTION	0.08	0.44	179.87	0 01:13	0.42
RYCB3	JUNCTION	0.05	0.20	179.87	0 01:13	0.20
RYCB4	JUNCTION	0.01	0.53	179.39	0 01:12	0.48
RYCB5	JUNCTION	0.01	0.62	179.47	0 01:11	0.57
RYCB6	JUNCTION	0.00	0.00	178.50	0 00:00	0.00
RYCB7	JUNCTION	0.09	1.30	179.81	0 01:10	1.24
RYCB8	JUNCTION	0.05	0.11	180.43	0 01:10	0.10
RYCB9	JUNCTION	0.01	0.03	181.84	0 01:10	0.03
STMH1	JUNCTION	0.67	0.88	177.68	0 01:59	0.88
STMH10	JUNCTION	0.19	1.21	179.33	0 01:10	1.19
STMH11	JUNCTION	0.00	0.00	178.32	0 00:00	0.00
STMH12	JUNCTION	0.00	0.00	178.47	0 00:00	0.00
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.22	1.19	179.22	0 01:12	1.18
STMH16	JUNCTION	0.04	0.29	179.77	0 01:13	0.24
STMH17	JUNCTION	0.16	1.74	180.44	0 01:09	1.73

STMH18	JUNCTION	0.17	1.75	181.01	0	01:10	1.75
STMH19	JUNCTION	0.14	1.35	179.87	0	01:10	1.16
STMH2	JUNCTION	0.00	0.00	183.83	0	00:00	0.00
STMH20	JUNCTION	0.13	2.32	180.98	0	01:10	0.98
STMH21	JUNCTION	0.04	3.03	182.19	0	01:12	0.44
STMH22	JUNCTION	0.11	1.19	179.78	0	01:12	1.11
STMH23	JUNCTION	0.11	2.15	180.98	0	01:10	0.89
STMH3	JUNCTION	0.08	3.29	182.33	0	01:12	0.57
STMH4	JUNCTION	0.33	1.77	179.58	0	01:12	0.93
STMH5	JUNCTION	0.34	1.27	179.16	0	01:12	1.25
STMH6	JUNCTION	0.30	1.25	179.19	0	01:12	1.23
STMH7	JUNCTION	0.28	1.48	179.78	0	01:12	1.38
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.05	0.15	180.72	0	01:10	0.15
RYCB1_Storage	STORAGE	0.01	0.02	181.65	0	01:10	0.02
RYCB2_Storage	STORAGE	0.02	0.05	181.13	0	01:10	0.05
RYCB3_Storage	STORAGE	0.02	0.07	181.60	0	01:11	0.07
RYCB4_Storage	STORAGE	0.00	0.08	180.19	0	01:11	0.08
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.00	180.05	0	00:00	0.00
RYCB7_Storage	STORAGE	0.01	0.07	180.02	0	01:10	0.07
RYCB8_Storage	STORAGE	0.02	0.04	182.48	0	01:10	0.04
RYCB9_Storage	STORAGE	0.00	0.01	183.37	0	01:10	0.01
S12	STORAGE	0.00	0.00	181.05	0	00:00	0.00
S13	STORAGE	0.00	0.00	180.85	0	00:00	0.00
S19	STORAGE	0.04	0.21	181.20	0	01:10	0.21
S20	STORAGE	0.01	0.20	181.04	0	01:10	0.20
S21	STORAGE	0.00	0.22	180.75	0	01:10	0.22
S22	STORAGE	0.00	0.02	180.45	0	01:10	0.02
S23	STORAGE	0.00	0.05	180.19	0	01:10	0.05
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.00	181.11	0	00:00	0.00
S8	STORAGE	0.00	0.00	181.02	0	00:00	0.00
S9	STORAGE	0.00	0.00	180.86	0	00:00	0.00
StreetA_Storage	STORAGE	0.04	0.14	180.61	0	01:11	0.14
StreetB_Storage1	STORAGE	0.02	0.09	180.10	0	01:10	0.09
StreetB_Storage2	STORAGE	0.03	0.12	179.98	0	01:10	0.12
SWM_Pond	STORAGE	0.66	0.88	177.71	0	01:59	0.88

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ ltr	Total Inflow Volume 10 ⁶ ltr	Flow Balance Error Percent
0	JUNCTION	0.000	0.811	0 01:12	0	1.53	0.230
4	JUNCTION	0.000	0.020	0 01:11	0	0.000792	1.942
41	JUNCTION	0.000	0.139	0 01:11	0	0.0452	0.195
42	JUNCTION	0.000	0.082	0 01:11	0	0.0406	0.119
43	JUNCTION	0.000	0.109	0 01:15	0	0.198	0.148
44	JUNCTION	0.000	0.315	0 01:12	0	0.534	0.030
45	JUNCTION	0.000	0.147	0 01:10	0	0.21	0.275
46	JUNCTION	0.000	0.196	0 01:10	0	0.128	0.295
47	JUNCTION	0.000	0.230	0 01:10	0	0.133	0.175
48	JUNCTION	0.000	0.740	0 01:12	0	1.51	0.126
49	JUNCTION	0.000	0.389	0 01:10	0	0.563	-0.878
50	JUNCTION	0.000	0.279	0 01:10	0	0.354	0.100
51	JUNCTION	0.000	0.152	0 01:10	0	0.268	0.089
52	JUNCTION	0.000	0.127	0 01:08	0	0.235	0.104
53	JUNCTION	0.000	0.150	0 01:09	0	0.253	0.155
54	JUNCTION	0.000	0.150	0 01:09	0	0.267	0.074
55	JUNCTION	0.000	1.104	0 01:11	0	2.03	0.141
56	JUNCTION	0.000	1.331	0 01:11	0	2.3	-0.067
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	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
63	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
64	JUNCTION	0.000	0.151	0 01:11	0	0.0222	-1.212

CB1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB17	JUNCTION	0.000	0.072	0	01:09	0	0.0188	-0.192	
CB19	JUNCTION	0.000	0.129	0	01:08	0	0.234	-0.006	
CB2	JUNCTION	0.000	0.032	0	01:09	0	0.00216	-0.833	
CB21	JUNCTION	0.000	0.048	0	01:10	0	0.000505	1.951	
CB23	JUNCTION	0.000	0.041	0	01:10	0	0.000729	0.381	
CB25	JUNCTION	0.000	0.022	0	01:10	0	0.000995	0.080	
CB28	JUNCTION	0.000	0.035	0	01:11	0	0.00121	0.116	
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.046	0	01:11	0	0.00055	0.776	
CB33	JUNCTION	0.000	0.006	0	01:12	0	1.75e-05	1.444	ltr
CB39	JUNCTION	0.000	0.018	0	01:11	0	0.000137	0.920	
CB42	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.065	0	01:12	0	0.000434	1.124	
CB5	JUNCTION	0.000	0.049	0	01:10	0	0.00489	-0.004	
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.260	0	01:10	0	0.47	0.109	
DCB15	JUNCTION	0.000	0.058	0	01:13	0	0.0149	-0.017	
DCB26	JUNCTION	0.000	0.225	0	01:11	0	0.333	0.013	
DCB27	JUNCTION	0.000	0.225	0	01:11	0	0.333	0.013	
DCB37	JUNCTION	0.000	0.188	0	01:10	0	0.268	0.014	
DCB40	JUNCTION	0.000	0.118	0	01:10	0	0.151	0.018	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	1.694	0	01:11	0	2.3	0.135	
RYCB1	JUNCTION	0.000	0.016	0	01:10	0	0.0365	0.170	
RYCB2	JUNCTION	0.000	0.056	0	01:10	0	0.154	0.132	
RYCB3	JUNCTION	0.000	0.074	0	01:10	0	0.0849	0.147	
RYCB4	JUNCTION	0.000	0.035	0	01:10	0	0.00116	0.141	
RYCB5	JUNCTION	0.000	0.094	0	01:11	0	0.0231	0.004	
RYCB6	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7	JUNCTION	0.000	0.089	0	01:10	0	0.0827	0.005	
RYCB8	JUNCTION	0.000	0.037	0	01:10	0	0.0944	0.345	
RYCB9	JUNCTION	0.000	0.006	0	01:10	0	0.0127	0.192	
STMH1	JUNCTION	0.000	0.517	0	01:58	0	3.35	0.673	
STMH10	JUNCTION	0.000	0.236	0	01:10	0	0.35	0.136	
STMH11	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.279	0	01:10	0	0.354	-0.088	
STMH16	JUNCTION	0.000	0.052	0	01:11	0	0.0378	0.294	
STMH17	JUNCTION	0.000	0.148	0	01:10	0	0.266	0.046	
STMH18	JUNCTION	0.000	0.006	0	01:07	0	0.00041	-0.678	
STMH19	JUNCTION	0.000	0.148	0	01:10	0	0.211	0.243	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.220	0	01:10	0	0.214	0.578	
STMH21	JUNCTION	0.000	0.142	0	01:12	0	0.0157	0.563	
STMH22	JUNCTION	0.000	0.109	0	01:15	0	0.197	0.089	
STMH23	JUNCTION	0.000	0.127	0	01:10	0	0.199	0.251	
STMH3	JUNCTION	0.000	0.177	0	01:11	0	0.122	0.848	
STMH4	JUNCTION	0.000	1.114	0	01:12	0	2.03	0.122	
STMH5	JUNCTION	0.000	1.104	0	01:11	0	2.03	0.108	
STMH6	JUNCTION	0.000	1.103	0	01:11	0	2.1	0.135	
STMH7	JUNCTION	0.000	0.551	0	01:09	0	1.18	0.142	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.332	0	01:59	0	1.97	0.000	
O2	OUTFALL	0.000	0.185	0	01:59	0	1.36	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.005	0.005	0	01:38	0.0273	0.0273	0.000	
U202_Outfall	OUTFALL	0.026	0.026	0	01:10	0.0237	0.0237	0.000	
A211_Storage	STORAGE	0.216	0.364	0	01:10	0.322	0.495	0.007	
RYCB1_Storage	STORAGE	0.049	0.049	0	01:10	0.111	0.111	0.005	
RYCB2_Storage	STORAGE	0.023	0.056	0	01:10	0.0792	0.154	0.011	
RYCB3_Storage	STORAGE	0.221	0.221	0	01:10	0.259	0.259	0.001	
RYCB4_Storage	STORAGE	0.000	0.094	0	01:11	0	0.023	0.000	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB7_Storage	STORAGE	0.089	0.089	0	01:10	0.0827	0.0827	0.004	
RYCB8_Storage	STORAGE	0.025	0.037	0	01:10	0.0685	0.0945	0.023	
RYCB9_Storage	STORAGE	0.018	0.018	0	01:10	0.0386	0.0386	0.011	
S12	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S13	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S19	STORAGE	0.209	0.209	0	01:10	0.273	0.273	-0.001	
S20	STORAGE	0.000	0.155	0	01:10	0	0.0387	0.029	
S21	STORAGE	0.000	0.114	0	01:10	0	0.0203	0.051	
S22	STORAGE	0.000	0.066	0	01:10	0	0.00614	0.177	
S23	STORAGE	0.000	0.050	0	01:10	0	0.0047	0.191	
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S8	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S9	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
StreetA_Storage	STORAGE	0.486	0.590	0	01:10	0.664	0.689	0.006	
StreetB_Storage1	STORAGE	0.361	0.361	0	01:10	0.459	0.459	0.001	
StreetB_Storage2	STORAGE	0.373	0.613	0	01:10	0.509	0.817	0.005	
SWM_Pond	STORAGE	0.276	1.902	0	01:11	1.74	4.59	0.475	

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
0	JUNCTION	0.15	0.606	0.709
41	JUNCTION	0.07	1.666	0.000
42	JUNCTION	0.01	0.320	1.055
43	JUNCTION	0.12	0.775	0.745
44	JUNCTION	0.16	0.818	0.717
45	JUNCTION	0.13	1.012	0.613
46	JUNCTION	0.08	1.320	0.380
47	JUNCTION	0.10	1.753	0.000
48	JUNCTION	0.16	0.801	0.724
49	JUNCTION	0.28	0.751	0.869
50	JUNCTION	0.24	0.736	0.934
51	JUNCTION	0.21	1.409	0.181
52	JUNCTION	0.19	1.476	0.024
53	JUNCTION	0.18	1.567	0.000
54	JUNCTION	0.17	1.492	0.000
55	JUNCTION	0.02	0.727	0.633
64	JUNCTION	0.03	1.991	0.000
CB17	JUNCTION	0.12	0.805	0.000
CB19	JUNCTION	0.16	0.803	0.000
CB2	JUNCTION	0.08	0.666	0.000
CBMH8	JUNCTION	0.09	0.631	0.519
DCB15	JUNCTION	0.11	0.816	0.000
DCB26	JUNCTION	0.07	0.565	0.085
DCB27	JUNCTION	0.08	0.600	0.050
RYCB5	JUNCTION	0.01	0.019	0.641
RYCB7	JUNCTION	0.10	0.699	0.141
STMH10	JUNCTION	0.23	0.763	0.947
STMH15	JUNCTION	0.25	0.743	0.867
STMH17	JUNCTION	0.20	1.441	0.209
STMH18	JUNCTION	0.19	1.450	0.050
STMH19	JUNCTION	0.14	0.830	0.715
STMH20	JUNCTION	0.11	1.794	0.000
STMH21	JUNCTION	0.01	2.577	0.000
STMH22	JUNCTION	0.15	0.743	0.787
STMH23	JUNCTION	0.09	1.703	0.000
STMH3	JUNCTION	0.05	2.840	0.000
STMH4	JUNCTION	0.01	0.866	0.404
STMH5	JUNCTION	0.06	0.367	0.943
STMH6	JUNCTION	0.04	0.351	0.879
STMH7	JUNCTION	0.16	0.806	0.749

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

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
A211_Storage	0.000	0	0	0	0.000	4	0 01:10	0.364
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.049
RYCB2_Storage	0.000	0	0	0	0.000	0	0 01:10	0.056
RYCB3_Storage	0.000	0	0	0	0.000	0	0 01:11	0.226

RYCB4_Storage	0.000	0	0	0	0.000	1	0	01:11	0.094
RYCB5_Storage	0.000	0	0	0	0.000	0	0	00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	0	0	00:00	0.000
RYCB7_Storage	0.000	0	0	0	0.000	1	0	01:10	0.089
RYCB8_Storage	0.000	0	0	0	0.000	0	0	01:10	0.037
RYCB9_Storage	0.000	0	0	0	0.000	0	0	01:10	0.018
S12	0.000	0	0	0	0.000	0	0	00:00	0.000
S13	0.000	0	0	0	0.000	0	0	00:00	0.000
S19	0.000	11	0	0	0.002	69	0	01:10	0.210
S20	0.000	2	0	0	0.002	66	0	01:10	0.154
S21	0.000	1	0	0	0.002	72	0	01:10	0.112
S22	0.000	0	0	0	0.000	6	0	01:10	0.065
S23	0.000	0	0	0	0.000	1	0	01:10	0.049
S26	0.000	0	0	0	0.000	0	0	00:00	0.000
S27	0.000	0	0	0	0.000	0	0	00:00	0.000
S30	0.000	0	0	0	0.000	0	0	00:00	0.000
S31	0.000	0	0	0	0.000	0	0	00:00	0.000
S32	0.000	0	0	0	0.000	0	0	00:00	0.000
S7	0.000	0	0	0	0.000	0	0	00:00	0.000
S8	0.000	0	0	0	0.000	0	0	00:00	0.000
S9	0.000	0	0	0	0.000	0	0	00:00	0.000
StreetA_Storage	0.001	1	0	0	0.019	10	0	01:11	0.547
StreetB_Storage1	0.000	0	0	0	0.001	3	0	01:10	0.359
StreetB_Storage2	0.001	0	0	0	0.016	7	0	01:10	0.571
SWM_Pond	0.926	21	0	0	1.420	33	0	01:59	0.517

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
O1	75.38	0.281	0.332	1.969
O2	99.93	0.145	0.185	1.361
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	71.26	0.004	0.005	0.027
U202_Outfall	99.95	0.003	0.026	0.024
System	69.30	0.433	0.523	3.381

 Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/Full Flow	Max/Full Depth
4	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.109	0 01:15	1.41	0.42	1.00
C11	CONDUIT	0.109	0 01:15	0.68	0.28	1.00
C12	CONDUIT	0.281	0 01:10	1.77	0.97	1.00
C13	CONDUIT	0.006	0 01:10	0.89	0.02	0.54
C14	CONDUIT	0.138	0 01:12	1.12	0.94	1.00
C15	CONDUIT	0.151	0 01:11	1.03	0.98	1.00
C16	CONDUIT	0.036	0 01:10	1.35	0.27	0.66
C17	CONDUIT	0.146	0 01:11	1.06	0.82	1.00
C18	CONDUIT	0.161	0 01:10	1.19	0.89	1.00
C19	CONDUIT	0.201	0 01:10	1.30	0.71	1.00
C2	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C20	CONDUIT	0.077	0 01:13	1.23	0.34	0.76
C21	CONDUIT	0.148	0 01:10	0.82	0.63	1.00
C22	CONDUIT	0.147	0 01:10	0.73	0.60	1.00
C23	CONDUIT	0.148	0 01:10	0.89	0.64	1.00
C24	CONDUIT	0.316	0 01:12	1.59	0.35	1.00
C25	CONDUIT	0.542	0 01:12	1.51	1.14	1.00
C26	CONDUIT	0.741	0 01:12	2.07	1.59	1.00
C27	CONDUIT	0.035	0 01:10	0.71	0.16	1.00
C28	CONDUIT	0.098	0 01:11	1.99	0.46	1.00
C29	CONDUIT	0.811	0 01:12	2.26	1.53	1.00
C3	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C30	CONDUIT	0.006	0 01:07	0.09	0.07	1.00
C31	CONDUIT	0.127	0 01:08	1.79	1.70	1.00
C32	CONDUIT	0.150	0 01:09	2.13	2.05	1.00
C33	CONDUIT	0.148	0 01:10	2.10	1.33	1.00
C34	CONDUIT	0.148	0 01:10	2.10	1.51	1.00
C35	CONDUIT	0.152	0 01:10	2.15	1.49	1.00

C36	CONDUIT	0.089	0	01:09	1.81	1.37	1.00
C37	CONDUIT	0.236	0	01:10	1.48	1.52	1.00
C38	CONDUIT	0.279	0	01:10	1.75	2.08	1.00
C39	CONDUIT	0.279	0	01:10	1.75	1.81	1.00
C4	CONDUIT	0.016	0	01:10	1.07	0.15	0.59
C40	CONDUIT	0.389	0	01:10	2.45	0.81	1.00
C41	CONDUIT	1.104	0	01:11	1.73	0.85	1.00
C42	CONDUIT	1.104	0	01:11	1.74	1.95	1.00
C43	CONDUIT	1.114	0	01:12	1.79	1.35	1.00
C44	CONDUIT	1.164	0	01:13	1.97	1.95	0.98
C45	CONDUIT	1.685	0	01:11	3.78	3.05	0.72
C46	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C48	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C49	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.042	0	01:12	0.89	0.27	0.88
C50	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C51	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C52	CONDUIT	0.000	0	00:00	0.00	0.00	0.12
C53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C58	CONDUIT	1.344	0	01:11	3.25	0.37	0.54
C59	CONDUIT	0.020	0	01:11	0.31	0.07	0.62
C6	CONDUIT	0.067	0	01:11	0.96	0.44	1.00
C60	CONDUIT	0.517	0	01:58	1.45	1.05	1.00
C62	CONDUIT	0.006	0	01:12	0.36	0.06	0.52
C63	CONDUIT	0.046	0	01:11	2.61	0.44	1.00
C64	CONDUIT	0.032	0	01:11	1.04	0.28	1.00
C65	CONDUIT	0.065	0	01:12	2.99	0.54	1.00
C66	CONDUIT	0.048	0	01:10	1.79	0.21	1.00
C67	CONDUIT	0.041	0	01:10	2.09	0.32	1.00
C68	CONDUIT	0.022	0	01:10	1.19	0.17	1.00
C69	CONDUIT	0.227	0	01:11	4.63	1.02	1.00
C7	CONDUIT	0.123	0	01:11	1.21	0.64	1.00
C70	CONDUIT	0.227	0	01:11	4.62	0.92	1.00
C71	CONDUIT	0.127	0	01:08	4.04	1.28	1.00
C72	CONDUIT	0.070	0	01:09	2.22	0.68	1.00
C73	CONDUIT	0.056	0	01:13	1.14	0.34	1.00
C74	CONDUIT	0.032	0	01:09	1.03	0.30	1.00
C75	CONDUIT	0.052	0	01:10	1.65	0.41	1.00
C76	CONDUIT	0.116	0	01:10	2.57	0.52	1.00
C77	CONDUIT	0.018	0	01:11	1.12	0.13	0.71
C78	CONDUIT	0.196	0	01:11	3.98	0.85	1.00
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.057	0	01:13	1.45	0.52	1.00
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C82	CONDUIT	0.000	0	00:00	0.00	0.00	0.22
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.105	0	01:14	1.12	0.52	1.00
1	ORIFICE	0.016	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.094	0	01:11			
12	ORIFICE	0.000	0	00:00			
120	ORIFICE	0.000	0	00:00			
13	ORIFICE	0.000	0	00:00			
14	ORIFICE	0.000	0	00:00			
151	ORIFICE	0.000	0	00:00			
3	ORIFICE	0.225	0	01:11			
37	ORIFICE	0.000	0	00:00			
38	ORIFICE	0.056	0	01:10			
39	ORIFICE	0.074	0	01:10			
40	ORIFICE	0.037	0	01:10			
41	ORIFICE	0.006	0	01:10			
42	ORIFICE	0.089	0	01:10			
43	ORIFICE	0.260	0	01:10			
5	ORIFICE	0.000	0	00:00			
6	ORIFICE	0.000	0	00:00			
7	ORIFICE	0.225	0	01:11			
8	ORIFICE	0.003	0	01:11			
80	ORIFICE	0.000	0	00:00			
85	ORIFICE	0.000	0	00:00			
86	ORIFICE	0.000	0	00:00			
87	ORIFICE	0.000	0	00:00			
88	ORIFICE	0.129	0	01:08			
89	ORIFICE	0.072	0	01:09			
90	ORIFICE	0.000	0	00:00			
91	ORIFICE	0.000	0	00:00			
92	ORIFICE	0.000	0	00:00			

94	ORIFICE	0.188	0	01:10	
96	ORIFICE	0.118	0	01:10	
97	ORIFICE	0.015	0	01:10	
98	ORIFICE	0.049	0	01:10	
99	ORIFICE	0.058	0	01:13	
Or1	ORIFICE	0.332	0	01:59	0.77
Or2	ORIFICE	0.185	0	01:59	1.00
10	WEIR	0.000	0	00:00	0.00
18	WEIR	0.000	0	00:00	0.00
19	WEIR	0.000	0	00:00	0.00
9	WEIR	0.000	0	00:00	0.00
A211_Weir	WEIR	0.105	0	01:11	0.35
RYCB1_Weir	WEIR	0.033	0	01:10	0.16
RYCB2_Weir	WEIR	0.000	0	00:00	0.00
RYCB3_Weir	WEIR	0.152	0	01:10	0.44
RYCB4_Weir	WEIR	0.000	0	00:00	0.00
RYCB5_Weir	WEIR	0.000	0	00:00	0.00
RYCB6_Weir	WEIR	0.000	0	00:00	0.00
RYCB7_Weir	WEIR	0.000	0	00:00	0.00
RYCB8_Weir	WEIR	0.000	0	00:00	0.00
RYCB9_Weir	WEIR	0.012	0	01:10	0.08
StreetA_Weir	WEIR	0.094	0	01:11	0.32
StreetB_Weir1	WEIR	0.241	0	01:10	0.60
StreetB_Weir2	WEIR	0.383	0	01:10	0.81
SWM_Pond_Weir	WEIR	0.000	0	00:00	0.00
W17	WEIR	0.155	0	01:10	1.40
W18	WEIR	0.114	0	01:10	1.14
W19	WEIR	0.066	0	01:10	0.79
W20	WEIR	0.050	0	01:10	0.65
W21	WEIR	0.000	0	00:00	0.00
W27	WEIR	0.000	0	00:00	0.00
W30	WEIR	0.000	0	00:00	0.00
W31	WEIR	0.000	0	00:00	0.00
W6	WEIR	0.000	0	00:00	0.00
W8	WEIR	0.000	0	00:00	0.00
W9	WEIR	0.000	0	00:00	0.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class								
		Up Dry	Down Dry	Sub Dry	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl	
4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.00	0.00	0.00	0.10	0.89	0.00	0.00	0.37	0.00
C11	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.87	0.00
C12	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
C13	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.97	0.00
C14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.06	0.00
C15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.92	0.00
C16	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.95	0.00
C17	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.20	0.00
C18	1.00	0.00	0.00	0.00	0.28	0.72	0.00	0.00	0.01	0.00
C19	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.91	0.00
C2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	0.00	0.00	0.00	0.77	0.23	0.00	0.00	0.94	0.00
C21	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.02	0.00
C22	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.14	0.00
C23	1.00	0.00	0.01	0.00	0.60	0.39	0.00	0.00	0.19	0.00
C24	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.82	0.00
C25	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.11	0.00
C26	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.00
C27	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.57	0.00
C28	1.00	0.00	0.83	0.00	0.16	0.00	0.00	0.00	0.57	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.43	0.00
C3	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.78	0.22	0.00	0.00	0.58	0.00
C32	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.00	0.00
C33	1.00	0.00	0.00	0.00	0.08	0.91	0.00	0.00	0.73	0.00
C34	1.00	0.01	0.00	0.00	0.09	0.91	0.00	0.00	0.44	0.00
C35	1.00	0.00	0.01	0.00	0.63	0.36	0.00	0.00	0.88	0.00
C36	1.00	0.00	0.00	0.00	0.98	0.01	0.00	0.00	0.88	0.00
C37	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.35	0.00
C38	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.03	0.00
C39	1.00	0.00	0.00	0.00	0.95	0.04	0.00	0.00	0.04	0.00
C4	1.00	0.00	0.00	0.00	0.02	0.98	0.00	0.00	0.83	0.00
C40	1.00	0.00	0.00	0.00	0.93	0.07	0.00	0.00	0.18	0.00
C41	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.13	0.00

C42	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.09	0.00
C44	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.04	0.00
C45	1.00	0.00	0.00	0.00	0.26	0.74	0.00	0.00	0.00	0.08	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	0.14	0.86	0.00	0.00	0.00	0.73	0.00
C50	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C51	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C52	1.00	0.79	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.90	0.10	0.00	0.00	0.00	0.93	0.00
C59	1.00	0.00	0.79	0.00	0.21	0.00	0.00	0.00	0.00	0.59	0.00
C6	1.00	0.01	0.00	0.00	0.09	0.91	0.00	0.00	0.00	0.02	0.00
C60	1.00	0.00	0.00	0.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00
C62	1.00	0.01	0.82	0.00	0.18	0.00	0.00	0.00	0.00	0.60	0.00
C63	1.00	0.01	0.81	0.00	0.17	0.00	0.00	0.00	0.00	0.59	0.00
C64	1.00	0.00	0.82	0.00	0.17	0.00	0.00	0.00	0.00	0.59	0.00
C65	1.00	0.00	0.86	0.00	0.14	0.00	0.00	0.00	0.00	0.60	0.00
C66	1.00	0.00	0.91	0.00	0.09	0.00	0.00	0.00	0.00	0.60	0.00
C67	1.00	0.01	0.86	0.00	0.14	0.00	0.00	0.00	0.00	0.60	0.00
C68	1.00	0.00	0.84	0.00	0.15	0.00	0.00	0.00	0.00	0.59	0.00
C69	1.00	0.00	0.00	0.00	0.04	0.96	0.00	0.00	0.00	0.91	0.00
C7	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.00	0.91	0.00
C70	1.00	0.00	0.00	0.00	0.71	0.29	0.00	0.00	0.00	0.91	0.00
C71	1.00	0.00	0.00	0.00	0.07	0.93	0.00	0.00	0.00	0.90	0.00
C72	1.00	0.00	0.76	0.00	0.23	0.00	0.00	0.00	0.00	0.57	0.00
C73	1.00	0.00	0.80	0.00	0.20	0.00	0.00	0.00	0.00	0.57	0.00
C74	1.00	0.01	0.77	0.00	0.22	0.00	0.00	0.00	0.00	0.57	0.00
C75	1.00	0.00	0.84	0.00	0.16	0.00	0.00	0.00	0.00	0.59	0.00
C76	1.00	0.00	0.00	0.00	0.69	0.31	0.00	0.00	0.00	0.90	0.00
C77	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.00	0.60	0.00
C78	1.00	0.00	0.00	0.00	0.77	0.23	0.00	0.00	0.00	0.90	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.00	0.91	0.00
C80	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.79	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.21	0.00	0.00

Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C10	0.12	0.12	0.15	0.01	0.01
C11	0.15	0.15	0.25	0.01	0.01
C12	0.12	0.12	0.25	0.01	0.01
C13	0.01	0.01	0.06	0.01	0.01
C14	0.01	0.01	0.03	0.01	0.01
C15	0.03	0.03	0.05	0.01	0.01
C16	0.01	0.01	0.09	0.01	0.01
C17	0.05	0.05	0.08	0.01	0.01
C18	0.08	0.08	0.10	0.01	0.01
C19	0.10	0.10	0.13	0.01	0.01
C20	0.01	0.01	0.15	0.01	0.01
C21	0.11	0.11	0.13	0.01	0.01
C22	0.13	0.13	0.14	0.01	0.01
C23	0.14	0.14	0.16	0.01	0.01
C24	0.16	0.16	0.21	0.01	0.01
C25	0.16	0.16	0.16	0.07	0.06
C26	0.15	0.16	0.15	0.20	0.15
C27	0.07	0.07	1.84	0.01	0.01
C28	0.08	0.08	1.87	0.01	0.01
C29	0.15	0.15	0.16	0.17	0.15
C30	0.19	0.19	0.19	0.01	0.01
C31	0.18	0.19	0.18	0.11	0.08
C32	0.17	0.18	0.17	0.22	0.17
C33	0.17	0.17	0.20	0.12	0.12
C34	0.20	0.20	0.21	0.15	0.15

C35	0.21	0.21	0.31	0.14	0.14
C36	0.17	0.17	0.38	0.05	0.04
C37	0.23	0.23	0.24	0.12	0.12
C38	0.24	0.24	0.25	0.15	0.14
C39	0.25	0.25	0.27	0.12	0.12
C40	0.26	0.27	0.32	0.01	0.01
C41	0.04	0.04	0.06	0.01	0.01
C42	0.02	0.06	0.02	0.23	0.01
C43	0.01	0.02	0.01	0.10	0.01
C44	0.01	0.01	0.01	0.21	0.01
C45	0.01	0.01	0.01	0.25	0.01
C5	0.01	0.01	0.01	0.01	0.01
C59	0.01	0.01	0.09	0.01	0.01
C6	0.01	0.01	0.07	0.01	0.01
C60	1.76	1.76	1.77	0.98	0.98
C62	0.01	0.01	0.04	0.01	0.01
C63	0.01	0.01	0.08	0.01	0.01
C64	0.04	0.04	0.17	0.01	0.01
C65	0.01	0.01	0.07	0.01	0.01
C66	0.01	0.01	0.12	0.01	0.01
C67	0.01	0.01	0.15	0.01	0.01
C68	0.02	0.02	0.19	0.01	0.01
C69	0.11	0.11	0.26	0.01	0.02
C7	0.07	0.07	0.10	0.01	0.01
C70	0.11	0.11	0.99	0.01	0.01
C71	0.19	0.19	0.29	0.04	0.04
C72	0.15	0.15	0.25	0.01	0.01
C73	0.14	0.14	0.19	0.01	0.01
C74	0.12	0.12	0.23	0.01	0.01
C75	0.03	0.03	1.84	0.01	0.01
C76	0.03	0.03	0.72	0.01	0.01
C77	0.01	0.01	1.82	0.01	0.01
C78	0.06	0.06	1.41	0.01	0.01
C8	0.01	0.01	0.12	0.01	0.01
C9	0.09	0.09	0.12	0.01	0.01

Analysis begun on: Thu Dec 15 11:58:20 2022
 Analysis ended on: Thu Dec 15 11:58:23 2022
 Total elapsed time: 00:00:03

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas25Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	01	ORIFICE			
Or2	STMH1	02	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	3.246	49.695
Evaporation Loss	0.000	0.000
Infiltration Loss	1.854	28.383
Surface Runoff	0.679	10.398
Final Storage	0.715	10.940
Continuity Error (%)	-0.054	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.678	6.776
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.465	4.654
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.211	2.112
Continuity Error (%)	0.141	

Highest Continuity Errors

Node S9 (29.57%)
Node S8 (27.85%)
Node 60 (10.84%)
Node CB44 (-10.58%)
Node CB25 (-8.14%)

Time-Step Critical Elements

Link C40 (83.89%)
Link C24 (5.89%)
Link C70 (1.92%)
Link C78 (1.73%)
Link C69 (1.61%)

Highest Flow Instability Indexes

Link C45 (34)
Link C58 (26)
Link C44 (23)
Link C40 (14)
Link C39 (10)

Routing Time Step Summary

Minimum Time Step : 0.50 sec
Average Time Step : 0.89 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 2.48
Percent Not Converging : 5.37
Time Step Frequencies :
30.000 - 13.228 sec : 0.04 %
13.228 - 5.833 sec : 0.01 %
5.833 - 2.572 sec : 0.44 %
2.572 - 1.134 sec : 16.44 %
1.134 - 0.500 sec : 83.07 %

Subcatchment Runoff Summary

Table with 11 columns: 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. Rows include subcatchments A201 through U201.

U202 49.69 0.00 0.00 9.77 22.00 14.78 36.78 0.03 0.03 0.740

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
0	JUNCTION	0.32	1.67	179.81	0 01:12	1.66
4	JUNCTION	0.00	0.12	178.29	0 01:12	0.10
41	JUNCTION	0.07	2.95	182.00	0 01:10	1.22
42	JUNCTION	0.06	1.47	180.82	0 01:11	0.90
43	JUNCTION	0.14	1.59	180.27	0 01:11	1.54
44	JUNCTION	0.18	1.80	180.26	0 01:11	1.74
45	JUNCTION	0.18	1.96	180.54	0 01:11	1.65
46	JUNCTION	0.13	1.99	180.91	0 01:11	1.38
47	JUNCTION	0.12	1.91	180.71	0 01:11	1.45
48	JUNCTION	0.34	1.93	180.21	0 01:11	1.88
49	JUNCTION	0.28	1.28	179.28	0 01:12	1.25
50	JUNCTION	0.25	1.47	179.54	0 01:11	1.45
51	JUNCTION	0.18	1.85	180.44	0 01:09	1.81
52	JUNCTION	0.22	1.79	181.03	0 01:10	1.78
53	JUNCTION	0.22	1.89	180.95	0 01:10	1.88
54	JUNCTION	0.18	1.84	180.71	0 01:10	1.83
55	JUNCTION	0.36	1.42	179.28	0 01:12	1.11
56	JUNCTION	0.34	1.28	179.07	0 01:15	1.08
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.00	0.02	178.29	0 01:12	0.02
61	JUNCTION	0.00	0.00	178.42	0 00:00	0.00
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.07	2.93	182.05	0 01:11	1.20
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.07	1.42	181.01	0 01:10	1.41
CB19	JUNCTION	0.16	1.42	181.16	0 01:10	1.40
CB2	JUNCTION	0.04	1.30	180.48	0 01:09	1.25
CB21	JUNCTION	0.01	1.29	181.06	0 01:11	0.57
CB23	JUNCTION	0.01	1.28	180.89	0 01:11	0.63
CB25	JUNCTION	0.02	1.27	180.68	0 01:11	0.84
CB28	JUNCTION	0.02	1.01	180.36	0 01:11	0.92
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.01	0.93	180.53	0 01:11	0.68
CB33	JUNCTION	0.01	0.61	180.41	0 01:12	0.45
CB39	JUNCTION	0.00	0.20	179.03	0 01:12	0.14
CB42	JUNCTION	0.00	0.03	178.77	0 01:11	0.03
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.01	1.27	181.13	0 01:11	0.41
CB5	JUNCTION	0.02	1.25	180.14	0 01:10	1.22
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.18	1.77	180.59	0 01:11	1.76
DCB15	JUNCTION	0.06	1.45	180.73	0 01:10	1.44
DCB26	JUNCTION	0.10	1.32	180.54	0 01:12	1.31
DCB27	JUNCTION	0.11	1.32	180.54	0 01:12	1.31
DCB37	JUNCTION	0.07	0.93	179.54	0 01:10	0.90
DCB40	JUNCTION	0.06	0.74	179.50	0 01:11	0.71
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.19	0.53	178.31	0 01:12	0.51
RYCB1	JUNCTION	0.04	0.34	180.37	0 01:12	0.32
RYCB2	JUNCTION	0.11	1.08	180.51	0 01:11	1.01
RYCB3	JUNCTION	0.06	1.87	181.54	0 01:11	0.57
RYCB4	JUNCTION	0.03	0.96	179.82	0 01:12	0.93
RYCB5	JUNCTION	0.04	1.36	180.21	0 01:12	1.36
RYCB6	JUNCTION	0.00	0.04	178.54	0 01:11	0.02
RYCB7	JUNCTION	0.11	1.71	180.22	0 01:11	1.70
RYCB8	JUNCTION	0.07	0.16	180.48	0 01:11	0.14
RYCB9	JUNCTION	0.02	0.04	181.85	0 01:10	0.04
STMH1	JUNCTION	0.79	1.06	177.86	0 02:13	1.06
STMH10	JUNCTION	0.22	1.51	179.63	0 01:11	1.49
STMH11	JUNCTION	0.00	0.02	178.34	0 01:12	0.02
STMH12	JUNCTION	0.00	0.00	178.47	0 00:00	0.00
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.26	1.35	179.38	0 01:11	1.32
STMH16	JUNCTION	0.06	2.05	181.53	0 01:11	0.79
STMH17	JUNCTION	0.19	1.85	180.55	0 01:10	1.85

STMH18	JUNCTION	0.20	1.77	181.03	0	01:10	1.77
STMH19	JUNCTION	0.19	1.89	180.41	0	01:11	1.70
STMH2	JUNCTION	0.00	0.00	183.83	0	00:00	0.00
STMH20	JUNCTION	0.18	1.93	180.59	0	01:11	1.58
STMH21	JUNCTION	0.07	2.57	181.73	0	01:11	1.16
STMH22	JUNCTION	0.14	1.66	180.25	0	01:11	1.62
STMH23	JUNCTION	0.14	2.27	181.10	0	01:10	1.42
STMH3	JUNCTION	0.13	2.01	181.05	0	01:10	1.28
STMH4	JUNCTION	0.37	1.47	179.28	0	01:12	1.06
STMH5	JUNCTION	0.38	1.33	179.22	0	01:12	1.26
STMH6	JUNCTION	0.34	1.31	179.25	0	01:12	1.27
STMH7	JUNCTION	0.33	1.94	180.24	0	01:11	1.88
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.06	0.17	180.74	0	01:11	0.17
RYCB1_Storage	STORAGE	0.01	0.03	181.66	0	01:10	0.03
RYCB2_Storage	STORAGE	0.03	0.07	181.15	0	01:10	0.07
RYCB3_Storage	STORAGE	0.02	0.08	181.61	0	01:10	0.07
RYCB4_Storage	STORAGE	0.00	0.22	180.33	0	01:12	0.22
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.01	180.06	0	01:11	0.01
RYCB7_Storage	STORAGE	0.02	0.36	180.31	0	01:11	0.35
RYCB8_Storage	STORAGE	0.02	0.05	182.49	0	01:10	0.05
RYCB9_Storage	STORAGE	0.01	0.01	183.37	0	01:10	0.01
S12	STORAGE	0.00	0.00	181.05	0	00:00	0.00
S13	STORAGE	0.00	0.00	180.85	0	00:00	0.00
S19	STORAGE	0.04	0.22	181.21	0	01:10	0.22
S20	STORAGE	0.01	0.21	181.05	0	01:10	0.21
S21	STORAGE	0.01	0.24	180.77	0	01:10	0.24
S22	STORAGE	0.00	0.04	180.47	0	01:10	0.04
S23	STORAGE	0.00	0.09	180.23	0	01:10	0.08
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.01	181.12	0	01:11	0.00
S8	STORAGE	0.00	0.01	181.03	0	01:11	0.00
S9	STORAGE	0.00	0.01	180.87	0	01:11	0.00
StreetA_Storage	STORAGE	0.04	0.17	180.64	0	01:12	0.17
StreetB_Storage1	STORAGE	0.02	0.10	180.11	0	01:10	0.10
StreetB_Storage2	STORAGE	0.04	0.14	180.00	0	01:11	0.14
SWM_Pond	STORAGE	0.80	1.09	177.92	0	02:13	1.09

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
0	JUNCTION	0.000	0.969	0 01:13	0	2.05	0.196
4	JUNCTION	0.000	0.018	0 01:15	0	0.00167	0.051
41	JUNCTION	0.000	0.179	0 01:10	0	0.0627	0.160
42	JUNCTION	0.000	0.122	0 01:10	0	0.0568	-0.075
43	JUNCTION	0.000	0.138	0 01:16	0	0.28	0.117
44	JUNCTION	0.000	0.284	0 01:15	0	0.726	0.016
45	JUNCTION	0.000	0.178	0 01:09	0	0.334	0.244
46	JUNCTION	0.000	0.254	0 01:10	0	0.221	0.371
47	JUNCTION	0.000	0.271	0 01:09	0	0.227	0.134
48	JUNCTION	0.000	0.785	0 01:13	0	1.99	0.114
49	JUNCTION	0.000	0.478	0 01:10	0	0.699	-0.939
50	JUNCTION	0.000	0.334	0 01:10	0	0.441	0.099
51	JUNCTION	0.000	0.153	0 01:09	0	0.322	0.089
52	JUNCTION	0.000	0.127	0 01:07	0	0.275	0.085
53	JUNCTION	0.000	0.150	0 01:08	0	0.299	0.154
54	JUNCTION	0.000	0.150	0 01:08	0	0.316	0.070
55	JUNCTION	0.000	1.382	0 01:12	0	2.68	0.127
56	JUNCTION	0.000	1.638	0 01:12	0	3.01	-0.290
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
60	JUNCTION	0.000	0.001	0 01:11	0	0.000115	12.158
61	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	0.241	0 01:11	0	0.0361	0.480

CB1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB17	JUNCTION	0.000	0.071	0	01:08	0	0.0245	-0.062	
CB19	JUNCTION	0.000	0.128	0	01:07	0	0.274	0.004	
CB2	JUNCTION	0.000	0.033	0	01:08	0	0.00629	-0.267	
CB21	JUNCTION	0.000	0.079	0	01:10	0	0.00167	-2.992	
CB23	JUNCTION	0.000	0.049	0	01:11	0	0.00132	-4.699	
CB25	JUNCTION	0.000	0.041	0	01:11	0	0.00131	-7.530	
CB28	JUNCTION	0.000	0.037	0	01:12	0	0.00828	0.036	
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.060	0	01:10	0	0.001	-0.726	
CB33	JUNCTION	0.000	0.044	0	01:11	0	0.00094	0.308	
CB39	JUNCTION	0.000	0.022	0	01:11	0	0.000598	0.342	
CB42	JUNCTION	0.000	0.004	0	01:11	0	0.000405	0.009	
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.104	0	01:11	0	0.00132	-9.570	
CB5	JUNCTION	0.000	0.115	0	01:10	0	0.0205	0.350	
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.296	0	01:10	0	0.607	0.127	
DCB15	JUNCTION	0.000	0.057	0	01:14	0	0.0185	-0.175	
DCB26	JUNCTION	0.000	0.244	0	01:09	0	0.403	0.015	
DCB27	JUNCTION	0.000	0.243	0	01:09	0	0.401	0.014	
DCB37	JUNCTION	0.000	0.229	0	01:11	0	0.336	0.019	
DCB40	JUNCTION	0.000	0.147	0	01:10	0	0.19	0.013	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	2.105	0	01:10	0	3.02	0.180	
RYCB1	JUNCTION	0.000	0.030	0	01:11	0	0.0498	0.113	
RYCB2	JUNCTION	0.000	0.074	0	01:10	0	0.214	0.101	
RYCB3	JUNCTION	0.000	0.118	0	01:11	0	0.115	0.171	
RYCB4	JUNCTION	0.000	0.027	0	01:10	0	0.000981	0.284	
RYCB5	JUNCTION	0.000	0.187	0	01:13	0	0.0643	0.023	
RYCB6	JUNCTION	0.000	0.004	0	01:11	0	9.6e-05	-4.050	
RYCB7	JUNCTION	0.000	0.104	0	01:09	0	0.101	0.057	
RYCB8	JUNCTION	0.000	0.046	0	01:10	0	0.174	0.255	
RYCB9	JUNCTION	0.000	0.007	0	01:10	0	0.0251	0.148	
STMH1	JUNCTION	0.000	0.724	0	02:13	0	4.61	0.623	
STMH10	JUNCTION	0.000	0.250	0	01:09	0	0.422	0.136	
STMH11	JUNCTION	0.000	0.002	0	01:11	0	0.0001	7.478	
STMH12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.334	0	01:10	0	0.441	-0.061	
STMH16	JUNCTION	0.000	0.097	0	01:10	0	0.0517	0.049	
STMH17	JUNCTION	0.000	0.147	0	01:09	0	0.315	0.040	
STMH18	JUNCTION	0.000	0.008	0	01:06	0	0.000451	2.292	
STMH19	JUNCTION	0.000	0.179	0	01:09	0	0.335	0.207	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.251	0	01:09	0	0.337	0.424	
STMH21	JUNCTION	0.000	0.223	0	01:11	0	0.0279	-0.225	
STMH22	JUNCTION	0.000	0.139	0	01:16	0	0.279	0.063	
STMH23	JUNCTION	0.000	0.160	0	01:10	0	0.275	0.170	
STMH3	JUNCTION	0.000	0.233	0	01:10	0	0.215	0.541	
STMH4	JUNCTION	0.000	1.384	0	01:12	0	2.67	0.074	
STMH5	JUNCTION	0.000	1.363	0	01:12	0	2.68	0.094	
STMH6	JUNCTION	0.000	1.364	0	01:12	0	2.75	0.106	
STMH7	JUNCTION	0.000	0.624	0	01:12	0	1.59	0.134	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.518	0	02:13	0	3.06	0.000	
O2	OUTFALL	0.000	0.206	0	02:13	0	1.52	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.010	0.010	0	01:29	0.044	0.044	0.000	
U202_Outfall	OUTFALL	0.033	0.033	0	01:10	0.0294	0.0294	0.000	
A211_Storage	STORAGE	0.268	0.451	0	01:10	0.422	0.655	0.005	
RYCB1_Storage	STORAGE	0.062	0.062	0	01:10	0.151	0.151	0.005	
RYCB2_Storage	STORAGE	0.036	0.072	0	01:10	0.113	0.214	0.009	
RYCB3_Storage	STORAGE	0.265	0.265	0	01:10	0.347	0.347	0.003	
RYCB4_Storage	STORAGE	0.000	0.210	0	01:12	0	0.0677	0.027	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.004	0	01:11	0	9.6e-05	0.040	
RYCB7_Storage	STORAGE	0.111	0.111	0	01:10	0.101	0.101	0.052	
RYCB8_Storage	STORAGE	0.031	0.046	0	01:10	0.123	0.175	0.016	
RYCB9_Storage	STORAGE	0.023	0.023	0	01:10	0.0763	0.0763	0.008	
S12	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S13	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S19	STORAGE	0.261	0.261	0	01:10	0.342	0.342	-0.001	
S20	STORAGE	0.000	0.214	0	01:10	0	0.0677	0.010	
S21	STORAGE	0.000	0.178	0	01:10	0	0.0437	0.028	
S22	STORAGE	0.000	0.148	0	01:10	0	0.0258	0.045	
S23	STORAGE	0.000	0.120	0	01:10	0	0.0203	0.153	
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.047	0	01:11	0	5.12e-05	-36.107	
S8	STORAGE	0.000	0.040	0	01:11	0	6.83e-05	38.593	
S9	STORAGE	0.000	0.029	0	01:11	0	5.81e-05	41.990	
StreetA_Storage	STORAGE	0.605	0.751	0	01:10	0.833	0.881	0.010	
StreetB_Storage1	STORAGE	0.450	0.450	0	01:10	0.574	0.577	0.001	
StreetB_Storage2	STORAGE	0.464	0.763	0	01:10	0.637	1.02	0.008	
SWM_Pond	STORAGE	0.479	2.444	0	01:12	2.98	6.68	0.406	

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
0	JUNCTION	0.24	0.993	0.322
41	JUNCTION	0.13	2.580	0.000
42	JUNCTION	0.10	1.090	0.285
43	JUNCTION	0.20	1.137	0.383
44	JUNCTION	0.24	1.273	0.262
45	JUNCTION	0.21	1.433	0.192
46	JUNCTION	0.15	1.536	0.164
47	JUNCTION	0.17	1.457	0.203
48	JUNCTION	0.25	1.252	0.273
49	JUNCTION	0.42	0.829	0.791
50	JUNCTION	0.35	1.017	0.653
51	JUNCTION	0.29	1.546	0.044
52	JUNCTION	0.27	1.493	0.007
53	JUNCTION	0.26	1.592	0.000
54	JUNCTION	0.24	1.544	0.000
55	JUNCTION	0.09	0.517	0.843
56	JUNCTION	0.01	0.382	0.838
64	JUNCTION	0.10	2.480	0.000
CB17	JUNCTION	0.17	0.821	0.000
CB19	JUNCTION	0.22	0.816	0.000
CB2	JUNCTION	0.13	0.701	0.000
CB21	JUNCTION	0.01	0.695	0.000
CB23	JUNCTION	0.02	0.683	0.000
CB25	JUNCTION	0.01	0.476	0.000
CB28	JUNCTION	0.05	0.279	0.241
CB31	JUNCTION	0.03	0.334	0.316
CB33	JUNCTION	0.01	0.006	0.644
CB44	JUNCTION	0.01	0.673	0.000
CB5	JUNCTION	0.05	0.655	0.000
CBMH8	JUNCTION	0.16	1.166	0.000
DCB15	JUNCTION	0.16	0.847	0.000
DCB26	JUNCTION	0.12	0.717	0.000
DCB27	JUNCTION	0.13	0.720	0.000
DCB37	JUNCTION	0.05	0.330	0.320
DCB40	JUNCTION	0.03	0.143	0.507
RYCB2	JUNCTION	0.09	0.478	0.572
RYCB3	JUNCTION	0.01	1.267	0.000
RYCB4	JUNCTION	0.08	0.360	0.290
RYCB5	JUNCTION	0.09	0.764	0.000
RYCB7	JUNCTION	0.14	1.113	0.000
STMH1	JUNCTION	1.08	0.031	1.524
STMH10	JUNCTION	0.32	1.059	0.651
STMH15	JUNCTION	0.37	0.896	0.714
STMH16	JUNCTION	0.08	1.672	0.000
STMH17	JUNCTION	0.28	1.550	0.100
STMH18	JUNCTION	0.27	1.473	0.027
STMH19	JUNCTION	0.23	1.364	0.181
STMH20	JUNCTION	0.18	1.406	0.239
STMH21	JUNCTION	0.09	2.117	0.000
STMH22	JUNCTION	0.23	1.213	0.317
STMH23	JUNCTION	0.17	1.821	0.000
STMH3	JUNCTION	0.11	1.564	0.166
STMH4	JUNCTION	0.04	0.572	0.698
STMH5	JUNCTION	0.12	0.433	0.877
STMH6	JUNCTION	0.11	0.411	0.819
STMH7	JUNCTION	0.24	1.267	0.288

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

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
A211_Storage	0.000	0	0	0	0.000	5	0 01:11	0.448
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.064
RYCB2_Storage	0.000	0	0	0	0.000	1	0 01:10	0.074
RYCB3_Storage	0.000	0	0	0	0.000	0	0 01:10	0.275
RYCB4_Storage	0.000	0	0	0	0.000	12	0 01:12	0.214
RYCB5_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	0	0 01:11	0.004
RYCB7_Storage	0.000	1	0	0	0.002	76	0 01:11	0.104
RYCB8_Storage	0.000	0	0	0	0.000	0	0 01:10	0.046
RYCB9_Storage	0.000	0	0	0	0.000	0	0 01:10	0.023
S12	0.000	0	0	0	0.000	0	0 00:00	0.000
S13	0.000	0	0	0	0.000	0	0 00:00	0.000
S19	0.000	12	0	0	0.002	73	0 01:10	0.263
S20	0.000	3	0	0	0.002	71	0 01:10	0.213
S21	0.000	2	0	0	0.002	79	0 01:10	0.177
S22	0.000	0	0	0	0.000	13	0 01:10	0.147
S23	0.000	0	0	0	0.001	3	0 01:10	0.115
S26	0.000	0	0	0	0.000	0	0 00:00	0.000
S27	0.000	0	0	0	0.000	0	0 00:00	0.000
S30	0.000	0	0	0	0.000	0	0 00:00	0.000
S31	0.000	0	0	0	0.000	0	0 00:00	0.000
S32	0.000	0	0	0	0.000	0	0 00:00	0.000
S7	0.000	0	0	0	0.000	3	0 01:11	0.006
S8	0.000	0	0	0	0.000	2	0 01:11	0.004
S9	0.000	0	0	0	0.000	1	0 01:11	0.004
StreetA_Storage	0.002	1	0	0	0.036	19	0 01:12	0.621
StreetB_Storage1	0.000	0	0	0	0.001	5	0 01:10	0.447
StreetB_Storage2	0.001	1	0	0	0.023	11	0 01:11	0.701
SWM_Pond	1.457	34	0	0	2.271	53	0 02:13	0.724

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
O1	77.10	0.430	0.518	3.063
O2	99.94	0.161	0.206	1.517
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	71.73	0.007	0.010	0.044
U202_Outfall	99.97	0.003	0.033	0.029
System	69.75	0.601	0.732	4.654

Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
4	CONDUIT	0.002	0 01:11	0.81	0.03	0.08
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.139	0 01:16	1.55	0.54	1.00
C11	CONDUIT	0.139	0 01:16	0.87	0.35	1.00
C12	CONDUIT	0.301	0 01:10	1.89	1.04	1.00
C13	CONDUIT	0.007	0 01:10	0.95	0.03	0.56
C14	CONDUIT	0.217	0 01:11	1.59	1.47	1.00
C15	CONDUIT	0.197	0 01:10	1.46	1.27	1.00
C16	CONDUIT	0.047	0 01:11	1.45	0.34	0.77
C17	CONDUIT	0.189	0 01:10	1.39	1.06	1.00
C18	CONDUIT	0.212	0 01:10	1.41	1.17	1.00
C19	CONDUIT	0.236	0 01:09	1.53	0.84	1.00
C2	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C20	CONDUIT	0.114	0 01:11	1.19	0.50	1.00

C21	CONDUIT	0.179	0	01:09	0.87	0.76	1.00
C22	CONDUIT	0.178	0	01:09	0.90	0.73	1.00
C23	CONDUIT	0.179	0	01:09	1.13	0.78	1.00
C24	CONDUIT	0.322	0	01:08	1.70	0.36	1.00
C25	CONDUIT	0.623	0	01:12	1.74	1.31	1.00
C26	CONDUIT	0.785	0	01:13	2.19	1.68	1.00
C27	CONDUIT	0.027	0	01:10	0.54	0.12	1.00
C28	CONDUIT	0.185	0	01:13	3.76	0.86	1.00
C29	CONDUIT	0.969	0	01:13	2.71	1.83	1.00
C3	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C30	CONDUIT	0.008	0	01:06	0.11	0.09	1.00
C31	CONDUIT	0.127	0	01:07	1.79	1.70	1.00
C32	CONDUIT	0.150	0	01:08	2.12	2.04	1.00
C33	CONDUIT	0.147	0	01:09	2.08	1.31	1.00
C34	CONDUIT	0.146	0	01:09	2.07	1.49	1.00
C35	CONDUIT	0.153	0	01:09	2.16	1.50	1.00
C36	CONDUIT	0.101	0	01:09	2.07	1.56	1.00
C37	CONDUIT	0.250	0	01:09	1.57	1.61	1.00
C38	CONDUIT	0.334	0	01:10	2.10	2.49	1.00
C39	CONDUIT	0.334	0	01:10	2.10	2.17	1.00
C4	CONDUIT	0.029	0	01:12	1.14	0.28	1.00
C40	CONDUIT	0.480	0	01:10	3.02	1.00	1.00
C41	CONDUIT	1.363	0	01:12	2.14	1.05	1.00
C42	CONDUIT	1.362	0	01:12	2.14	2.41	1.00
C43	CONDUIT	1.384	0	01:12	2.18	1.68	1.00
C44	CONDUIT	1.423	0	01:12	2.26	2.39	1.00
C45	CONDUIT	2.093	0	01:10	4.15	3.78	0.78
C46	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C48	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C49	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.078	0	01:10	0.96	0.51	1.00
C50	CONDUIT	0.000	0	00:00	0.00	0.00	0.03
C51	CONDUIT	0.001	0	01:12	0.38	0.01	0.05
C52	CONDUIT	0.001	0	01:10	0.12	0.01	0.19
C53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C58	CONDUIT	1.693	0	01:12	3.47	0.47	0.61
C59	CONDUIT	0.019	0	01:15	0.28	0.07	0.67
C6	CONDUIT	0.104	0	01:10	1.03	0.69	1.00
C60	CONDUIT	0.724	0	02:13	2.02	1.47	1.00
C62	CONDUIT	0.044	0	01:11	1.96	0.47	1.00
C63	CONDUIT	0.060	0	01:10	3.36	0.57	1.00
C64	CONDUIT	0.039	0	01:12	1.23	0.34	1.00
C65	CONDUIT	0.104	0	01:11	4.01	0.86	1.00
C66	CONDUIT	0.079	0	01:10	2.48	0.34	1.00
C67	CONDUIT	0.049	0	01:11	2.15	0.39	1.00
C68	CONDUIT	0.041	0	01:11	1.45	0.32	1.00
C69	CONDUIT	0.236	0	01:09	4.81	1.06	1.00
C7	CONDUIT	0.160	0	01:10	1.46	0.84	1.00
C70	CONDUIT	0.238	0	01:10	4.84	0.96	1.00
C71	CONDUIT	0.127	0	01:07	4.03	1.28	1.00
C72	CONDUIT	0.069	0	01:08	2.21	0.68	1.00
C73	CONDUIT	0.055	0	01:14	1.11	0.34	1.00
C74	CONDUIT	0.033	0	01:08	1.05	0.30	1.00
C75	CONDUIT	0.115	0	01:10	3.67	0.91	1.00
C76	CONDUIT	0.148	0	01:10	3.01	0.67	1.00
C77	CONDUIT	0.029	0	01:12	1.18	0.21	1.00
C78	CONDUIT	0.236	0	01:11	4.81	1.02	1.00
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.077	0	01:18	1.56	0.70	1.00
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.05
C82	CONDUIT	0.004	0	01:11	0.50	0.04	0.35
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.137	0	01:17	1.25	0.67	1.00
1	ORIFICE	0.022	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.187	0	01:13			
12	ORIFICE	0.004	0	01:11			
120	ORIFICE	0.000	0	00:00			
13	ORIFICE	0.000	0	00:00			
14	ORIFICE	0.000	0	00:00			
151	ORIFICE	0.000	0	00:00			
3	ORIFICE	0.243	0	01:09			
37	ORIFICE	0.000	0	00:00			
38	ORIFICE	0.074	0	01:10			
39	ORIFICE	0.090	0	01:10			
40	ORIFICE	0.046	0	01:10			

41	ORIFICE	0.007	0	01:10	
42	ORIFICE	0.104	0	01:09	
43	ORIFICE	0.296	0	01:10	
5	ORIFICE	0.004	0	01:11	
6	ORIFICE	0.086	0	01:11	
7	ORIFICE	0.244	0	01:09	
8	ORIFICE	0.037	0	01:12	
80	ORIFICE	0.000	0	00:00	
85	ORIFICE	0.029	0	01:11	
86	ORIFICE	0.040	0	01:11	
87	ORIFICE	0.047	0	01:11	
88	ORIFICE	0.128	0	01:07	
89	ORIFICE	0.071	0	01:08	
90	ORIFICE	0.000	0	00:00	
91	ORIFICE	0.000	0	00:00	
92	ORIFICE	0.000	0	00:00	
94	ORIFICE	0.229	0	01:11	
96	ORIFICE	0.147	0	01:10	
97	ORIFICE	0.039	0	01:09	
98	ORIFICE	0.115	0	01:10	
99	ORIFICE	0.057	0	01:14	
Or1	ORIFICE	0.518	0	02:13	1.00
Or2	ORIFICE	0.206	0	02:13	1.00
10	WEIR	0.000	0	00:00	0.00
18	WEIR	0.000	0	00:00	0.00
19	WEIR	0.000	0	00:00	0.00
9	WEIR	0.000	0	00:00	0.00
A211_Weir	WEIR	0.152	0	01:10	0.44
RYCB1_Weir	WEIR	0.043	0	01:10	0.19
RYCB2_Weir	WEIR	0.000	0	00:00	0.00
RYCB3_Weir	WEIR	0.185	0	01:10	0.50
RYCB4_Weir	WEIR	0.046	0	01:12	0.20
RYCB5_Weir	WEIR	0.000	0	00:00	0.00
RYCB6_Weir	WEIR	0.000	0	00:00	0.00
RYCB7_Weir	WEIR	0.004	0	01:11	0.12
RYCB8_Weir	WEIR	0.000	0	00:00	0.00
RYCB9_Weir	WEIR	0.015	0	01:10	0.09
StreetA_Weir	WEIR	0.210	0	01:12	0.54
StreetB_Weir1	WEIR	0.300	0	01:10	0.69
StreetB_Weir2	WEIR	0.468	0	01:11	0.93
SWM_Pond_Weir	WEIR	0.000	0	00:00	0.00
W17	WEIR	0.214	0	01:10	1.74
W18	WEIR	0.178	0	01:10	1.53
W19	WEIR	0.148	0	01:10	1.35
W20	WEIR	0.120	0	01:10	1.18
W21	WEIR	0.000	0	00:00	0.00
W27	WEIR	0.000	0	00:00	0.00
W30	WEIR	0.000	0	00:00	0.00
W31	WEIR	0.000	0	00:00	0.00
W6	WEIR	0.000	0	00:00	0.00
W8	WEIR	0.000	0	00:00	0.00
W9	WEIR	0.000	0	00:00	0.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	----- Fraction of Time in Flow Class -----									
		Up		Down	Sub	Sup	Up	Down	Norm	Inlet	
		Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl	
4	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.60	0.00	
C1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C10	1.00	0.00	0.00	0.00	0.12	0.88	0.00	0.00	0.41	0.00	
C11	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.81	0.00	
C12	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.87	0.00	
C13	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.97	0.00	
C14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.23	0.00	
C15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.67	0.00	
C16	1.00	0.00	0.00	0.00	0.07	0.93	0.00	0.00	0.95	0.00	
C17	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.14	0.00	
C18	1.00	0.00	0.00	0.00	0.29	0.71	0.00	0.00	0.01	0.00	
C19	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.88	0.00	
C2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C20	1.00	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.90	0.00	
C21	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
C22	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.11	0.00	
C23	1.00	0.00	0.01	0.00	0.53	0.46	0.00	0.00	0.14	0.00	
C24	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.66	0.00	
C25	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.09	0.00	
C26	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.01	0.00	
C27	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.55	0.00	

C28	1.00	0.00	0.83	0.00	0.16	0.00	0.00	0.00	0.55	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.35	0.00
C3	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.70	0.30	0.00	0.00	0.52	0.00
C32	1.00	0.00	0.00	0.00	0.10	0.90	0.00	0.00	0.00	0.00
C33	1.00	0.00	0.00	0.00	0.10	0.90	0.00	0.00	0.67	0.00
C34	1.00	0.01	0.00	0.00	0.10	0.89	0.00	0.00	0.48	0.00
C35	1.00	0.00	0.01	0.00	0.74	0.25	0.00	0.00	0.84	0.00
C36	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.85	0.00
C37	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.25	0.00
C38	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C39	1.00	0.00	0.00	0.00	0.96	0.03	0.00	0.00	0.03	0.00
C4	1.00	0.00	0.00	0.00	0.04	0.96	0.00	0.00	0.82	0.00
C40	1.00	0.00	0.00	0.00	0.96	0.04	0.00	0.00	0.15	0.00
C41	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.12	0.00
C42	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.07	0.00
C44	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.02	0.00
C45	1.00	0.00	0.00	0.00	0.26	0.74	0.00	0.00	0.08	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	0.13	0.87	0.00	0.00	0.71	0.00
C50	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C51	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.60	0.00
C52	1.00	0.29	0.00	0.00	0.70	0.00	0.00	0.00	0.04	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.90	0.09	0.00	0.00	0.91	0.00
C59	1.00	0.00	0.63	0.00	0.37	0.00	0.00	0.00	0.58	0.00
C6	1.00	0.01	0.00	0.00	0.08	0.91	0.00	0.00	0.02	0.00
C60	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.00	0.00
C62	1.00	0.01	0.81	0.00	0.18	0.00	0.00	0.00	0.58	0.00
C63	1.00	0.01	0.82	0.00	0.17	0.00	0.00	0.00	0.57	0.00
C64	1.00	0.00	0.82	0.00	0.17	0.00	0.00	0.00	0.57	0.00
C65	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.58	0.00
C66	1.00	0.00	0.90	0.00	0.09	0.00	0.00	0.00	0.58	0.00
C67	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.58	0.00
C68	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.57	0.00
C69	1.00	0.00	0.00	0.00	0.05	0.95	0.00	0.00	0.88	0.00
C7	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.89	0.00
C70	1.00	0.00	0.00	0.00	0.65	0.35	0.00	0.00	0.88	0.00
C71	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.88	0.00
C72	1.00	0.00	0.77	0.00	0.23	0.00	0.00	0.00	0.55	0.00
C73	1.00	0.00	0.80	0.00	0.20	0.00	0.00	0.00	0.55	0.00
C74	1.00	0.01	0.78	0.00	0.21	0.00	0.00	0.00	0.55	0.00
C75	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.57	0.00
C76	1.00	0.00	0.00	0.00	0.74	0.26	0.00	0.00	0.88	0.00
C77	1.00	0.00	0.89	0.00	0.11	0.00	0.00	0.00	0.59	0.00
C78	1.00	0.00	0.00	0.00	0.74	0.26	0.00	0.00	0.86	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.88	0.00
C80	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.63	0.25	0.00	0.13	0.00	0.00	0.00	0.61	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.23	0.00

 Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C10	0.20	0.20	0.23	0.01	0.01
C11	0.23	0.23	0.39	0.01	0.01
C12	0.20	0.20	0.39	0.02	0.02
C13	0.01	0.01	0.11	0.01	0.01
C14	0.09	0.09	0.10	0.01	0.01
C15	0.10	0.10	0.11	0.01	0.01
C16	0.01	0.01	0.15	0.01	0.01
C17	0.11	0.11	0.15	0.01	0.01
C18	0.15	0.15	0.17	0.01	0.01

C19	0.17	0.17	0.21	0.01	0.01
C20	0.05	0.05	0.23	0.01	0.01
C21	0.18	0.18	0.21	0.01	0.01
C22	0.21	0.21	0.23	0.01	0.01
C23	0.23	0.23	0.24	0.01	0.01
C24	0.24	0.24	0.31	0.01	0.01
C25	0.24	0.24	0.25	0.16	0.13
C26	0.24	0.25	0.24	0.30	0.23
C27	0.14	0.14	1.85	0.01	0.01
C28	0.14	0.14	1.88	0.01	0.01
C29	0.23	0.24	0.24	0.26	0.23
C30	0.27	0.27	0.27	0.01	0.01
C31	0.26	0.27	0.26	0.15	0.11
C32	0.24	0.26	0.24	0.31	0.24
C33	0.24	0.24	0.28	0.14	0.14
C34	0.28	0.28	0.29	0.21	0.21
C35	0.29	0.29	0.48	0.20	0.20
C36	0.23	0.23	0.60	0.09	0.09
C37	0.32	0.32	0.35	0.16	0.16
C38	0.35	0.35	0.37	0.21	0.20
C39	0.37	0.37	0.41	0.16	0.17
C4	0.01	0.01	0.09	0.01	0.01
C40	0.40	0.41	0.52	0.01	0.01
C41	0.11	0.11	0.12	0.04	0.04
C42	0.09	0.12	0.09	0.33	0.09
C43	0.04	0.09	0.04	0.17	0.04
C44	0.01	0.04	0.01	0.31	0.01
C45	0.01	0.01	0.01	0.38	0.01
C5	0.08	0.08	0.10	0.01	0.01
C58	0.01	0.01	1.15	0.01	0.01
C59	0.01	0.01	0.16	0.01	0.01
C6	0.10	0.10	0.13	0.01	0.01
C60	1.79	1.79	1.80	1.69	1.69
C62	0.06	0.06	0.12	0.01	0.01
C63	0.09	0.09	0.17	0.01	0.01
C64	0.11	0.11	0.27	0.01	0.01
C65	0.05	0.05	0.15	0.01	0.01
C66	0.06	0.06	0.19	0.01	0.01
C67	0.08	0.08	0.23	0.01	0.01
C68	0.11	0.11	0.30	0.01	0.01
C69	0.17	0.17	0.43	0.01	0.01
C7	0.13	0.13	0.18	0.01	0.01
C70	0.17	0.17	1.39	0.01	0.01
C71	0.26	0.26	0.41	0.04	0.04
C72	0.21	0.21	0.36	0.01	0.01
C73	0.20	0.20	0.26	0.01	0.01
C74	0.18	0.18	0.32	0.01	0.01
C75	0.09	0.09	1.85	0.01	0.01
C76	0.10	0.10	1.03	0.01	0.01
C77	0.01	0.01	1.83	0.01	0.01
C78	0.11	0.11	1.82	0.01	0.01
C8	0.13	0.13	0.21	0.01	0.01
C9	0.16	0.16	0.20	0.01	0.01

Analysis begun on: Thu Dec 15 11:57:00 2022
 Analysis ended on: Thu Dec 15 11:57:03 2022
 Total elapsed time: 00:00:03

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas50Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	O1	ORIFICE			
Or2	STMH1	O2	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	3.616	55.362
Evaporation Loss	0.000	0.000
Infiltration Loss	1.983	30.355
Surface Runoff	0.850	13.008
Final Storage	0.786	12.033
Continuity Error (%)	-0.060	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.848	8.476
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.545	5.453
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.301	3.010
Continuity Error (%)	0.150	

Highest Continuity Errors

Node S9 (-117.25%)
Node S8 (-14.81%)
Node 61 (12.65%)
Node CB33 (-11.95%)
Node CB44 (-11.52%)

Time-Step Critical Elements

Link C40 (80.83%)
Link C24 (6.61%)
Link C45 (2.13%)
Link C78 (2.10%)
Link C71 (1.93%)

Highest Flow Instability Indexes

Link C45 (24)
Link C44 (16)
Link C58 (15)
Link C40 (15)
Link C39 (11)

Routing Time Step Summary

Minimum Time Step : 0.50 sec
Average Time Step : 0.87 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 2.51
Percent Not Converging : 5.43
Time Step Frequencies :
30.000 - 13.228 sec : 0.04 %
13.228 - 5.833 sec : 0.00 %
5.833 - 2.572 sec : 0.32 %
2.572 - 1.134 sec : 15.15 %
1.134 - 0.500 sec : 84.49 %

Subcatchment Runoff Summary

Table with 11 columns: 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. Rows include subcatchments A201 through U201.

U202 55.36 0.00 0.00 10.15 24.59 17.45 42.04 0.03 0.04 0.759

 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
0	JUNCTION	0.35	1.77	179.91	0 01:11	1.71
4	JUNCTION	0.00	0.18	178.35	0 01:10	0.13
41	JUNCTION	0.09	4.29	183.34	0 01:09	1.39
42	JUNCTION	0.08	1.84	181.19	0 01:10	1.07
43	JUNCTION	0.17	1.79	180.47	0 01:11	1.73
44	JUNCTION	0.22	1.91	180.37	0 01:11	1.86
45	JUNCTION	0.22	1.99	180.57	0 01:09	1.85
46	JUNCTION	0.16	6.51	185.43	0 01:09	1.47
47	JUNCTION	0.16	2.87	181.67	0 01:09	1.60
48	JUNCTION	0.38	2.03	180.31	0 01:11	1.99
49	JUNCTION	0.31	1.36	179.36	0 01:11	1.25
50	JUNCTION	0.27	1.59	179.66	0 01:11	1.53
51	JUNCTION	0.20	1.85	180.44	0 01:09	1.83
52	JUNCTION	0.24	1.80	181.04	0 01:09	1.79
53	JUNCTION	0.23	1.90	180.96	0 01:10	1.89
54	JUNCTION	0.20	1.86	180.73	0 01:10	1.85
55	JUNCTION	0.38	1.36	179.22	0 01:09	1.13
56	JUNCTION	0.37	1.53	179.32	0 01:09	0.96
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.00	0.17	178.44	0 01:10	0.16
61	JUNCTION	0.00	0.04	178.46	0 01:11	0.03
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.10	7.01	186.13	0 01:10	1.31
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.08	1.43	181.02	0 01:10	1.42
CB19	JUNCTION	0.17	1.42	181.16	0 01:10	1.41
CB2	JUNCTION	0.05	1.30	180.48	0 01:08	1.27
CB21	JUNCTION	0.01	1.30	181.07	0 01:10	0.61
CB23	JUNCTION	0.02	1.28	180.89	0 01:10	0.75
CB25	JUNCTION	0.03	1.27	180.68	0 01:10	1.06
CB28	JUNCTION	0.04	1.27	180.62	0 01:11	1.26
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.02	1.21	180.81	0 01:11	0.84
CB33	JUNCTION	0.02	1.37	181.17	0 01:11	0.62
CB39	JUNCTION	0.00	0.24	179.07	0 01:11	0.19
CB42	JUNCTION	0.00	0.05	178.79	0 01:11	0.05
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.01	1.29	181.15	0 01:10	0.61
CB5	JUNCTION	0.03	1.33	180.22	0 01:11	1.33
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.21	1.81	180.63	0 01:11	1.79
DCB15	JUNCTION	0.07	1.46	180.74	0 01:10	1.45
DCB26	JUNCTION	0.12	1.35	180.57	0 01:12	1.34
DCB27	JUNCTION	0.12	1.36	180.58	0 01:11	1.35
DCB37	JUNCTION	0.09	1.24	179.85	0 01:11	1.12
DCB40	JUNCTION	0.07	1.12	179.88	0 01:11	1.03
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.25	0.55	178.33	0 01:11	0.53
RYCB1	JUNCTION	0.05	1.54	181.57	0 01:11	0.44
RYCB2	JUNCTION	0.13	1.52	180.95	0 01:11	1.35
RYCB3	JUNCTION	0.07	1.90	181.57	0 01:11	1.77
RYCB4	JUNCTION	0.04	1.12	179.98	0 01:09	0.99
RYCB5	JUNCTION	0.05	1.41	180.26	0 01:12	1.40
RYCB6	JUNCTION	0.00	0.18	178.68	0 01:10	0.13
RYCB7	JUNCTION	0.13	1.74	180.25	0 01:10	1.73
RYCB8	JUNCTION	0.08	0.35	180.67	0 01:11	0.27
RYCB9	JUNCTION	0.02	0.04	181.85	0 01:10	0.04
STMH1	JUNCTION	0.89	1.22	178.02	0 02:23	1.22
STMH10	JUNCTION	0.25	1.62	179.74	0 01:11	1.56
STMH11	JUNCTION	0.00	0.14	178.46	0 01:10	0.13
STMH12	JUNCTION	0.00	0.00	178.47	0 00:00	0.00
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.29	1.43	179.46	0 01:11	1.34
STMH16	JUNCTION	0.07	2.56	182.04	0 01:10	0.95
STMH17	JUNCTION	0.20	1.87	180.57	0 01:10	1.86

STMH18	JUNCTION	0.22	1.78	181.04	0	01:10	1.77
STMH19	JUNCTION	0.23	1.92	180.44	0	01:11	1.83
STMH2	JUNCTION	0.00	0.00	183.83	0	00:00	0.00
STMH20	JUNCTION	0.21	2.74	181.40	0	01:09	1.84
STMH21	JUNCTION	0.09	5.63	184.79	0	01:10	1.27
STMH22	JUNCTION	0.17	1.81	180.40	0	01:11	1.78
STMH23	JUNCTION	0.17	3.18	182.01	0	01:09	1.61
STMH3	JUNCTION	0.16	4.08	183.12	0	01:10	1.38
STMH4	JUNCTION	0.40	1.42	179.23	0	01:09	1.14
STMH5	JUNCTION	0.41	1.33	179.22	0	01:11	1.25
STMH6	JUNCTION	0.37	1.35	179.29	0	01:11	1.25
STMH7	JUNCTION	0.37	2.04	180.34	0	01:11	2.01
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.06	0.20	180.77	0	01:11	0.19
RYCB1_Storage	STORAGE	0.01	0.03	181.66	0	01:10	0.03
RYCB2_Storage	STORAGE	0.03	0.07	181.15	0	01:17	0.07
RYCB3_Storage	STORAGE	0.02	0.09	181.62	0	01:11	0.08
RYCB4_Storage	STORAGE	0.01	0.26	180.37	0	01:12	0.26
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.05	180.10	0	01:10	0.04
RYCB7_Storage	STORAGE	0.02	0.38	180.33	0	01:10	0.38
RYCB8_Storage	STORAGE	0.03	0.05	182.49	0	01:10	0.05
RYCB9_Storage	STORAGE	0.01	0.02	183.38	0	01:10	0.02
S12	STORAGE	0.00	0.03	181.08	0	01:11	0.00
S13	STORAGE	0.00	0.00	180.85	0	00:00	0.00
S19	STORAGE	0.04	0.23	181.22	0	01:10	0.23
S20	STORAGE	0.01	0.22	181.06	0	01:10	0.22
S21	STORAGE	0.01	0.25	180.78	0	01:10	0.25
S22	STORAGE	0.00	0.05	180.48	0	01:10	0.05
S23	STORAGE	0.00	0.17	180.31	0	01:11	0.17
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.02	181.13	0	01:10	0.01
S8	STORAGE	0.00	0.01	181.03	0	01:10	0.01
S9	STORAGE	0.00	0.02	180.88	0	01:10	0.01
StreetA_Storage	STORAGE	0.05	0.20	180.67	0	01:12	0.20
StreetB_Storage1	STORAGE	0.03	0.12	180.13	0	01:11	0.12
StreetB_Storage2	STORAGE	0.04	0.15	180.01	0	01:11	0.15
SWM_Pond	STORAGE	0.92	1.28	178.11	0	02:23	1.28

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ ltr	Total Inflow Volume 10 ⁶ ltr	Flow Balance Error Percent
0	JUNCTION	0.000	0.986	0 01:15	0	2.41	0.182
4	JUNCTION	0.000	0.059	0 01:11	0	0.00884	-0.043
41	JUNCTION	0.000	0.193	0 01:09	0	0.0738	0.140
42	JUNCTION	0.000	0.146	0 01:10	0	0.068	-0.200
43	JUNCTION	0.000	0.196	0 01:11	0	0.349	0.105
44	JUNCTION	0.000	0.289	0 01:17	0	0.861	0.009
45	JUNCTION	0.000	0.179	0 01:09	0	0.431	0.193
46	JUNCTION	0.000	0.267	0 01:09	0	0.294	0.288
47	JUNCTION	0.000	0.271	0 01:09	0	0.3	0.123
48	JUNCTION	0.000	0.809	0 01:12	0	2.32	0.100
49	JUNCTION	0.000	0.505	0 01:12	0	0.801	-0.521
50	JUNCTION	0.000	0.339	0 01:09	0	0.501	0.097
51	JUNCTION	0.000	0.155	0 01:09	0	0.356	0.090
52	JUNCTION	0.000	0.127	0 01:07	0	0.3	0.081
53	JUNCTION	0.000	0.149	0 01:08	0	0.329	0.158
54	JUNCTION	0.000	0.149	0 01:08	0	0.349	0.062
55	JUNCTION	0.000	1.487	0 01:11	0	3.13	0.138
56	JUNCTION	0.000	1.761	0 01:12	0	3.52	-0.274
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
60	JUNCTION	0.000	0.038	0 01:10	0	0.00397	1.559
61	JUNCTION	0.000	0.003	0 01:10	0	0.000138	14.478
63	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
64	JUNCTION	0.000	0.243	0 01:10	0	0.0453	0.126

CB1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB17	JUNCTION	0.000	0.070	0	01:08	0	0.0295	0.077	
CB19	JUNCTION	0.000	0.129	0	01:07	0	0.3	-0.005	
CB2	JUNCTION	0.000	0.034	0	01:09	0	0.00803	-0.509	
CB21	JUNCTION	0.000	0.107	0	01:09	0	0.00155	0.221	
CB23	JUNCTION	0.000	0.045	0	01:09	0	0.00138	-4.924	
CB25	JUNCTION	0.000	0.036	0	01:10	0	0.00197	-7.435	
CB28	JUNCTION	0.000	0.072	0	01:13	0	0.0222	-0.042	
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.068	0	01:09	0	0.00093	-1.660	
CB33	JUNCTION	0.000	0.056	0	01:10	0	0.00132	-10.673	
CB39	JUNCTION	0.000	0.026	0	01:11	0	0.00125	0.896	
CB42	JUNCTION	0.000	0.017	0	01:11	0	0.00341	0.001	
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.119	0	01:10	0	0.00119	-10.327	
CB5	JUNCTION	0.000	0.119	0	01:09	0	0.0363	0.129	
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.324	0	01:10	0	0.693	0.106	
DCB15	JUNCTION	0.000	0.054	0	01:16	0	0.0213	-0.429	
DCB26	JUNCTION	0.000	0.250	0	01:09	0	0.446	0.036	
DCB27	JUNCTION	0.000	0.249	0	01:09	0	0.442	0.037	
DCB37	JUNCTION	0.000	0.268	0	01:11	0	0.393	0.008	
DCB40	JUNCTION	0.000	0.187	0	01:11	0	0.228	0.010	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	2.196	0	01:11	0	3.54	0.272	
RYCB1	JUNCTION	0.000	0.047	0	01:10	0	0.0599	-0.095	
RYCB2	JUNCTION	0.000	0.090	0	01:17	0	0.26	0.076	
RYCB3	JUNCTION	0.000	0.126	0	01:10	0	0.136	0.221	
RYCB4	JUNCTION	0.000	0.048	0	01:09	0	0.000953	2.895	
RYCB5	JUNCTION	0.000	0.192	0	01:10	0	0.0903	-0.020	
RYCB6	JUNCTION	0.000	0.046	0	01:10	0	0.00385	-1.012	
RYCB7	JUNCTION	0.000	0.104	0	01:08	0	0.111	-0.053	
RYCB8	JUNCTION	0.000	0.054	0	01:10	0	0.238	0.203	
RYCB9	JUNCTION	0.000	0.017	0	01:10	0	0.0348	0.146	
STMH1	JUNCTION	0.000	0.852	0	02:23	0	5.39	0.535	
STMH10	JUNCTION	0.000	0.253	0	01:09	0	0.466	0.137	
STMH11	JUNCTION	0.000	0.052	0	01:10	0	0.00401	0.922	
STMH12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.338	0	01:09	0	0.501	-0.019	
STMH16	JUNCTION	0.000	0.137	0	01:10	0	0.0623	0.024	
STMH17	JUNCTION	0.000	0.146	0	01:08	0	0.348	0.040	
STMH18	JUNCTION	0.000	0.005	0	01:06	0	0.000464	-0.181	
STMH19	JUNCTION	0.000	0.179	0	01:09	0	0.432	0.177	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.249	0	01:09	0	0.433	0.339	
STMH21	JUNCTION	0.000	0.237	0	01:10	0	0.0377	0.149	
STMH22	JUNCTION	0.000	0.197	0	01:11	0	0.348	0.067	
STMH23	JUNCTION	0.000	0.173	0	01:09	0	0.331	0.188	
STMH3	JUNCTION	0.000	0.262	0	01:10	0	0.288	0.491	
STMH4	JUNCTION	0.000	1.487	0	01:12	0	3.13	0.080	
STMH5	JUNCTION	0.000	1.473	0	01:12	0	3.13	0.096	
STMH6	JUNCTION	0.000	1.472	0	01:12	0	3.21	0.109	
STMH7	JUNCTION	0.000	0.671	0	01:11	0	1.88	0.124	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.628	0	02:23	0	3.72	0.000	
O2	OUTFALL	0.000	0.224	0	02:23	0	1.64	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.013	0.013	0	01:26	0.0572	0.0572	0.000	
U202_Outfall	OUTFALL	0.039	0.039	0	01:10	0.0336	0.0336	0.000	
A211_Storage	STORAGE	0.314	0.566	0	01:11	0.497	0.775	0.005	
RYCB1_Storage	STORAGE	0.074	0.074	0	01:10	0.18	0.18	0.006	
RYCB2_Storage	STORAGE	0.050	0.090	0	01:17	0.139	0.26	0.008	
RYCB3_Storage	STORAGE	0.302	0.302	0	01:10	0.414	0.414	0.003	
RYCB4_Storage	STORAGE	0.000	0.340	0	01:12	0	0.128	0.012	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.046	0	01:10	0	0.00385	0.001	
RYCB7_Storage	STORAGE	0.129	0.129	0	01:10	0.115	0.115	0.072	
RYCB8_Storage	STORAGE	0.035	0.053	0	01:10	0.167	0.238	0.013	
RYCB9_Storage	STORAGE	0.026	0.026	0	01:10	0.106	0.106	0.007	
S12	STORAGE	0.000	0.157	0	01:11	0	0.000123	-57.317	
S13	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S19	STORAGE	0.304	0.304	0	01:10	0.393	0.393	0.000	
S20	STORAGE	0.000	0.255	0	01:10	0	0.093	-0.004	
S21	STORAGE	0.000	0.222	0	01:10	0	0.064	0.020	
S22	STORAGE	0.000	0.194	0	01:10	0	0.0435	0.017	
S23	STORAGE	0.000	0.173	0	01:10	0	0.0362	0.424	
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.021	0	01:10	0	7.33e-05	-52.391	
S8	STORAGE	0.000	0.029	0	01:10	0	8.27e-05	-12.901	
S9	STORAGE	0.000	0.034	0	01:10	0	7.26e-05	-53.971	
StreetA_Storage	STORAGE	0.704	0.953	0	01:10	0.957	1.04	0.012	
StreetB_Storage1	STORAGE	0.525	0.571	0	01:11	0.658	0.696	0.002	
StreetB_Storage2	STORAGE	0.539	0.887	0	01:10	0.731	1.2	0.011	
SWM_Pond	STORAGE	0.658	2.806	0	01:12	4.03	8.36	0.375	

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
0	JUNCTION	0.32	1.092	0.223
41	JUNCTION	0.20	3.915	0.000
42	JUNCTION	0.15	1.465	0.000
43	JUNCTION	0.29	1.340	0.180
44	JUNCTION	0.33	1.381	0.154
45	JUNCTION	0.29	1.464	0.161
46	JUNCTION	0.21	6.060	0.000
47	JUNCTION	0.24	2.419	0.000
48	JUNCTION	0.34	1.355	0.170
49	JUNCTION	0.54	0.906	0.714
50	JUNCTION	0.45	1.141	0.529
51	JUNCTION	0.36	1.547	0.043
52	JUNCTION	0.34	1.503	0.000
53	JUNCTION	0.32	1.604	0.000
54	JUNCTION	0.31	1.556	0.000
55	JUNCTION	0.13	0.457	0.903
56	JUNCTION	0.02	0.630	0.590
64	JUNCTION	0.15	6.560	0.000
CB17	JUNCTION	0.21	0.828	0.000
CB19	JUNCTION	0.27	0.823	0.000
CB2	JUNCTION	0.16	0.701	0.000
CB21	JUNCTION	0.02	0.698	0.000
CB23	JUNCTION	0.07	0.681	0.000
CB25	JUNCTION	0.07	0.484	0.000
CB28	JUNCTION	0.10	0.541	0.000
CB31	JUNCTION	0.09	0.609	0.041
CB33	JUNCTION	0.03	0.766	0.000
CB44	JUNCTION	0.01	0.693	0.000
CB5	JUNCTION	0.09	0.734	0.000
CBMH8	JUNCTION	0.23	1.207	0.000
DCB15	JUNCTION	0.19	0.857	0.000
DCB26	JUNCTION	0.17	0.749	0.000
DCB27	JUNCTION	0.18	0.759	0.000
DCB37	JUNCTION	0.09	0.644	0.006
DCB40	JUNCTION	0.09	0.515	0.135
RYCB1	JUNCTION	0.01	0.939	0.061
RYCB2	JUNCTION	0.16	0.920	0.130
RYCB3	JUNCTION	0.06	1.305	0.000
RYCB4	JUNCTION	0.13	0.523	0.127
RYCB5	JUNCTION	0.14	0.807	0.000
RYCB7	JUNCTION	0.17	1.137	0.000
STMH1	JUNCTION	1.54	0.192	1.363
STMH10	JUNCTION	0.41	1.171	0.539
STMH15	JUNCTION	0.48	0.983	0.627
STMH16	JUNCTION	0.13	2.184	0.000
STMH17	JUNCTION	0.35	1.572	0.078
STMH18	JUNCTION	0.33	1.481	0.019
STMH19	JUNCTION	0.32	1.394	0.151
STMH20	JUNCTION	0.27	2.214	0.000
STMH21	JUNCTION	0.14	5.180	0.000
STMH22	JUNCTION	0.32	1.364	0.166
STMH23	JUNCTION	0.24	2.731	0.000
STMH3	JUNCTION	0.17	3.634	0.000
STMH4	JUNCTION	0.09	0.524	0.746
STMH5	JUNCTION	0.17	0.432	0.878
STMH6	JUNCTION	0.15	0.451	0.779
STMH7	JUNCTION	0.34	1.370	0.185

Node Flooding Summary

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 Poned Depth Meters
64	0.01	0.149	0 01:10	0.000	5.000

Storage Volume Summary

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
A211_Storage	0.000	1	0	0	0.000	9	0 01:11	0.556
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.074
RYCB2_Storage	0.000	0	0	0	0.000	1	0 01:17	0.090
RYCB3_Storage	0.000	0	0	0	0.000	1	0 01:11	0.314
RYCB4_Storage	0.000	0	0	0	0.001	20	0 01:12	0.342
RYCB5_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	1	0 01:10	0.046
RYCB7_Storage	0.000	2	0	0	0.002	92	0 01:10	0.129
RYCB8_Storage	0.000	0	0	0	0.000	0	0 01:10	0.053
RYCB9_Storage	0.000	0	0	0	0.000	0	0 01:10	0.026
S12	0.000	0	0	0	0.000	9	0 01:11	0.021
S13	0.000	0	0	0	0.000	0	0 00:00	0.000
S19	0.000	13	0	0	0.002	76	0 01:10	0.304
S20	0.000	3	0	0	0.002	73	0 01:10	0.254
S21	0.000	3	0	0	0.002	82	0 01:10	0.221
S22	0.000	0	0	0	0.000	16	0 01:10	0.196
S23	0.000	0	0	0	0.006	20	0 01:11	0.119
S26	0.000	0	0	0	0.000	0	0 00:00	0.000
S27	0.000	0	0	0	0.000	0	0 00:00	0.000
S30	0.000	0	0	0	0.000	0	0 00:00	0.000
S31	0.000	0	0	0	0.000	0	0 00:00	0.000
S32	0.000	0	0	0	0.000	0	0 00:00	0.000
S7	0.000	0	0	0	0.000	5	0 01:10	0.011
S8	0.000	0	0	0	0.000	3	0 01:10	0.007
S9	0.000	0	0	0	0.000	5	0 01:10	0.011
StreetA_Storage	0.002	1	0	0	0.059	31	0 01:12	0.700
StreetB_Storage1	0.000	0	0	0	0.002	7	0 01:11	0.568
StreetB_Storage2	0.001	1	0	0	0.032	15	0 01:11	0.825
SWM_Pond	1.951	45	0	0	3.106	72	0 02:23	0.852

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
O1	78.02	0.518	0.628	3.725
O2	99.96	0.173	0.224	1.637
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	71.80	0.009	0.013	0.057
U202_Outfall	99.97	0.003	0.039	0.034
System	69.95	0.702	0.859	5.453

Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
4	CONDUIT	0.052	0 01:10	1.70	0.60	0.47
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.197	0 01:11	1.51	0.77	1.00
C11	CONDUIT	0.197	0 01:11	1.24	0.50	1.00
C12	CONDUIT	0.325	0 01:10	2.04	1.12	1.00
C13	CONDUIT	0.010	0 01:10	1.00	0.04	0.57

C14	CONDUIT	0.229	0	01:10	1.73	1.55	1.00
C15	CONDUIT	0.227	0	01:10	1.57	1.46	1.00
C16	CONDUIT	0.053	0	01:10	1.51	0.39	1.00
C17	CONDUIT	0.210	0	01:10	1.47	1.18	1.00
C18	CONDUIT	0.223	0	01:09	1.45	1.23	1.00
C19	CONDUIT	0.236	0	01:09	1.52	0.84	1.00
C2	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C20	CONDUIT	0.129	0	01:11	1.17	0.57	1.00
C21	CONDUIT	0.179	0	01:09	0.95	0.75	1.00
C22	CONDUIT	0.179	0	01:09	0.98	0.73	1.00
C23	CONDUIT	0.179	0	01:09	1.19	0.78	1.00
C24	CONDUIT	0.334	0	01:07	1.78	0.37	1.00
C25	CONDUIT	0.673	0	01:11	1.88	1.42	1.00
C26	CONDUIT	0.808	0	01:12	2.26	1.73	1.00
C27	CONDUIT	0.048	0	01:09	0.99	0.22	1.00
C28	CONDUIT	0.189	0	01:10	3.85	0.88	1.00
C29	CONDUIT	0.985	0	01:15	2.75	1.86	1.00
C3	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C30	CONDUIT	0.005	0	01:06	0.07	0.06	1.00
C31	CONDUIT	0.127	0	01:07	1.79	1.70	1.00
C32	CONDUIT	0.149	0	01:08	2.11	2.03	1.00
C33	CONDUIT	0.146	0	01:08	2.07	1.31	1.00
C34	CONDUIT	0.146	0	01:08	2.07	1.49	1.00
C35	CONDUIT	0.154	0	01:09	2.18	1.51	1.00
C36	CONDUIT	0.102	0	01:08	2.07	1.56	1.00
C37	CONDUIT	0.252	0	01:09	1.59	1.62	1.00
C38	CONDUIT	0.338	0	01:09	2.12	2.52	1.00
C39	CONDUIT	0.337	0	01:09	2.12	2.19	1.00
C4	CONDUIT	0.046	0	01:11	1.20	0.43	1.00
C40	CONDUIT	0.506	0	01:12	3.18	1.06	1.00
C41	CONDUIT	1.473	0	01:12	2.32	1.14	1.00
C42	CONDUIT	1.473	0	01:12	2.32	2.60	1.00
C43	CONDUIT	1.487	0	01:12	2.34	1.81	1.00
C44	CONDUIT	1.492	0	01:12	2.39	2.51	1.00
C45	CONDUIT	2.150	0	01:11	4.11	3.89	0.79
C46	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C48	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C49	CONDUIT	0.000	0	00:00	0.00	0.00	0.05
C5	CONDUIT	0.113	0	01:10	1.16	0.73	1.00
C50	CONDUIT	0.003	0	01:10	0.20	0.03	0.22
C51	CONDUIT	0.036	0	01:10	1.19	0.30	0.41
C52	CONDUIT	0.044	0	01:11	1.12	0.39	0.39
C53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C58	CONDUIT	1.838	0	01:12	3.59	0.51	0.69
C59	CONDUIT	0.065	0	01:11	0.82	0.23	0.74
C6	CONDUIT	0.127	0	01:10	1.17	0.84	1.00
C60	CONDUIT	0.852	0	02:23	2.38	1.72	1.00
C62	CONDUIT	0.056	0	01:10	2.61	0.59	1.00
C63	CONDUIT	0.068	0	01:09	3.94	0.65	1.00
C64	CONDUIT	0.071	0	01:13	2.25	0.62	1.00
C65	CONDUIT	0.119	0	01:10	5.26	0.99	1.00
C66	CONDUIT	0.107	0	01:09	4.13	0.46	1.00
C67	CONDUIT	0.045	0	01:09	2.32	0.36	1.00
C68	CONDUIT	0.036	0	01:10	1.52	0.28	1.00
C69	CONDUIT	0.241	0	01:09	4.90	1.08	1.00
C7	CONDUIT	0.173	0	01:09	1.57	0.90	1.00
C70	CONDUIT	0.241	0	01:09	4.90	0.97	1.00
C71	CONDUIT	0.127	0	01:07	4.03	1.28	1.00
C72	CONDUIT	0.069	0	01:08	2.18	0.67	1.00
C73	CONDUIT	0.053	0	01:16	1.08	0.32	1.00
C74	CONDUIT	0.033	0	01:09	1.04	0.30	1.00
C75	CONDUIT	0.114	0	01:10	3.64	0.90	1.00
C76	CONDUIT	0.191	0	01:11	3.89	0.86	1.00
C77	CONDUIT	0.026	0	01:11	1.01	0.19	1.00
C78	CONDUIT	0.275	0	01:11	5.61	1.19	1.00
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.104	0	01:10	1.57	0.94	1.00
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.10
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.43
C82	CONDUIT	0.017	0	01:11	1.51	0.16	0.55
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.142	0	01:20	1.25	0.70	1.00
1	ORIFICE	0.024	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.192	0	01:10			
12	ORIFICE	0.017	0	01:11			
120	ORIFICE	0.000	0	00:00			

C20	1.00	0.00	0.00	0.00	0.74	0.26	0.00	0.00	0.89	0.00
C21	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C22	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.12	0.00
C23	1.00	0.00	0.01	0.00	0.54	0.45	0.00	0.00	0.13	0.00
C24	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.43	0.00
C25	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.08	0.00
C26	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.01	0.00
C27	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.52	0.00
C28	1.00	0.00	0.81	0.00	0.19	0.00	0.00	0.00	0.53	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.31	0.00
C3	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.67	0.33	0.00	0.00	0.48	0.00
C32	1.00	0.00	0.00	0.00	0.11	0.89	0.00	0.00	0.00	0.00
C33	1.00	0.00	0.00	0.00	0.11	0.89	0.00	0.00	0.63	0.00
C34	1.00	0.01	0.00	0.00	0.12	0.87	0.00	0.00	0.49	0.00
C35	1.00	0.00	0.01	0.00	0.82	0.17	0.00	0.00	0.82	0.00
C36	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.82	0.00
C37	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.16	0.00
C38	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C39	1.00	0.00	0.00	0.00	0.97	0.03	0.00	0.00	0.03	0.00
C4	1.00	0.00	0.00	0.00	0.05	0.95	0.00	0.00	0.81	0.00
C40	1.00	0.00	0.00	0.00	0.96	0.03	0.00	0.00	0.13	0.00
C41	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.11	0.00
C42	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.07	0.00
C44	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.02	0.00
C45	1.00	0.00	0.00	0.00	0.49	0.51	0.00	0.00	0.06	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	0.13	0.87	0.00	0.00	0.70	0.00
C50	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.60	0.00
C51	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.60	0.00
C52	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.33	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.91	0.09	0.00	0.00	0.51	0.00
C59	1.00	0.00	0.40	0.00	0.60	0.00	0.00	0.00	0.56	0.00
C6	1.00	0.01	0.00	0.00	0.10	0.90	0.00	0.00	0.03	0.00
C60	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.00	0.00
C62	1.00	0.01	0.82	0.00	0.17	0.00	0.00	0.00	0.56	0.00
C63	1.00	0.01	0.82	0.00	0.17	0.00	0.00	0.00	0.56	0.00
C64	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.55	0.00
C65	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.57	0.00
C66	1.00	0.00	0.90	0.00	0.10	0.00	0.00	0.00	0.57	0.00
C67	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.56	0.00
C68	1.00	0.00	0.85	0.00	0.14	0.00	0.00	0.00	0.55	0.00
C69	1.00	0.00	0.00	0.00	0.07	0.93	0.00	0.00	0.85	0.00
C7	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.86	0.00
C70	1.00	0.00	0.00	0.00	0.63	0.37	0.00	0.00	0.85	0.00
C71	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.86	0.00
C72	1.00	0.00	0.77	0.00	0.23	0.00	0.00	0.00	0.54	0.00
C73	1.00	0.00	0.81	0.00	0.19	0.00	0.00	0.00	0.53	0.00
C74	1.00	0.01	0.79	0.00	0.21	0.00	0.00	0.00	0.54	0.00
C75	1.00	0.00	0.86	0.00	0.14	0.00	0.00	0.00	0.56	0.00
C76	1.00	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.86	0.00
C77	1.00	0.00	0.87	0.00	0.12	0.00	0.00	0.00	0.58	0.00
C78	1.00	0.00	0.00	0.00	0.72	0.28	0.00	0.00	0.83	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.85	0.00
C80	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	0.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.40	0.48	0.00	0.11	0.01	0.00	0.00	0.61	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.23	0.77	0.00	0.00	0.24	0.00

 Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C10	0.29	0.29	0.32	0.01	0.01

C11	0.32	0.32	0.52	0.01	0.01
C12	0.28	0.28	0.52	0.02	0.02
C13	0.01	0.01	0.18	0.01	0.01
C14	0.14	0.14	0.15	0.01	0.01
C15	0.15	0.15	0.17	0.01	0.01
C16	0.01	0.01	0.22	0.01	0.01
C17	0.17	0.17	0.21	0.01	0.01
C18	0.21	0.21	0.24	0.01	0.01
C19	0.24	0.24	0.29	0.01	0.01
C20	0.10	0.10	0.32	0.01	0.01
C21	0.27	0.27	0.29	0.01	0.01
C22	0.29	0.29	0.32	0.01	0.01
C23	0.32	0.32	0.33	0.01	0.01
C24	0.33	0.33	0.42	0.01	0.01
C25	0.34	0.34	0.34	0.27	0.24
C26	0.32	0.34	0.32	0.41	0.32
C27	0.19	0.19	1.86	0.01	0.01
C28	0.19	0.19	1.89	0.01	0.01
C29	0.31	0.32	0.31	0.36	0.31
C30	0.33	0.33	0.34	0.01	0.01
C31	0.32	0.34	0.32	0.18	0.13
C32	0.31	0.32	0.31	0.38	0.30
C33	0.31	0.31	0.35	0.13	0.14
C34	0.35	0.35	0.36	0.26	0.26
C35	0.36	0.36	0.62	0.25	0.25
C36	0.28	0.28	0.75	0.11	0.11
C37	0.41	0.41	0.45	0.20	0.20
C38	0.45	0.45	0.48	0.24	0.23
C39	0.48	0.48	0.53	0.20	0.20
C4	0.07	0.07	0.14	0.01	0.01
C40	0.52	0.53	0.65	0.06	0.06
C41	0.15	0.15	0.17	0.08	0.08
C42	0.13	0.17	0.13	0.43	0.13
C43	0.09	0.13	0.09	0.23	0.08
C44	0.01	0.09	0.01	0.41	0.01
C45	0.01	0.01	0.01	0.49	0.01
C5	0.13	0.13	0.15	0.01	0.01
C58	0.01	0.01	1.55	0.01	0.01
C59	0.01	0.01	0.25	0.01	0.01
C6	0.15	0.15	0.20	0.01	0.01
C60	1.81	1.81	1.81	1.74	1.75
C62	0.12	0.12	0.18	0.01	0.01
C63	0.14	0.14	0.25	0.01	0.01
C64	0.17	0.17	0.37	0.01	0.01
C65	0.10	0.10	0.22	0.01	0.01
C66	0.10	0.10	0.27	0.01	0.01
C67	0.13	0.13	0.33	0.01	0.01
C68	0.16	0.16	1.85	0.01	0.01
C69	0.24	0.24	0.55	0.01	0.01
C7	0.20	0.20	0.27	0.01	0.01
C70	0.23	0.23	1.61	0.01	0.01
C71	0.32	0.32	0.49	0.05	0.05
C72	0.26	0.26	0.43	0.01	0.01
C73	0.25	0.25	0.33	0.01	0.01
C74	0.22	0.22	0.39	0.01	0.01
C75	0.13	0.13	1.86	0.01	0.01
C76	0.14	0.14	1.23	0.01	0.01
C77	0.01	0.01	1.84	0.01	0.01
C78	0.14	0.14	2.13	0.07	0.07
C8	0.21	0.21	0.29	0.01	0.01
C9	0.24	0.24	0.29	0.01	0.01

Analysis begun on: Thu Dec 15 11:54:26 2022
Analysis ended on: Thu Dec 15 11:54:29 2022
Total elapsed time: 00:00:03

SBM-18-0530 Kettle Creek

WARNING 10: crest elevation raised to downstream invert for regulator Link SWM_Pond_Weir

 Element Count

Number of rain gages 1
 Number of subcatchments ... 29
 Number of nodes 119
 Number of links 150
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
St.ThomasRainGage	St.Thomas100Yr	INTENSITY	1 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A201	0.43	95.56	0.00	30.0000	St.ThomasRainGage	A202
A202	0.22	24.44	45.71	2.0000	St.ThomasRainGage	RYCB1_Storage
A203	0.51	87.93	0.00	30.0000	St.ThomasRainGage	A204
A204	0.08	42.11	45.71	2.0000	St.ThomasRainGage	RYCB2_Storage
A205	0.05	100.00	45.71	2.0000	St.ThomasRainGage	RYCB9_Storage
A206	0.12	7.50	25.00	30.0000	St.ThomasRainGage	A207
A207	0.03	60.00	45.71	2.0000	St.ThomasRainGage	RYCB8_Storage
A208	1.52	119.68	25.00	30.0000	St.ThomasRainGage	A209
A209	0.04	80.00	45.71	2.0000	St.ThomasRainGage	RYCB3_Storage
A210	1.36	143.16	25.00	30.0000	St.ThomasRainGage	A211
A211	0.19	63.33	45.71	2.0000	St.ThomasRainGage	A211_Storage
A212	2.46	144.71	45.71	2.0000	St.ThomasRainGage	StreetA_Storage
A213	0.55	78.57	45.71	2.0000	St.ThomasRainGage	StreetB_Storage1
A214	0.99	79.20	45.71	2.0000	St.ThomasRainGage	S19
A215	1.09	82.58	46.70	2.0000	St.ThomasRainGage	StreetB_Storage1
A216	0.25	100.00	64.29	2.0000	St.ThomasRainGage	RYCB7_Storage
A217	1.85	97.37	48.65	2.0000	St.ThomasRainGage	StreetB_Storage2
A218	0.54	40.00	45.71	2.0000	St.ThomasRainGage	SWM_Pond
A219	0.66	220.00	21.43	8.0000	St.ThomasRainGage	SWM_Pond
EXT201	0.11	137.50	71.43	2.0000	St.ThomasRainGage	A201
EXT202	0.12	150.00	71.43	2.0000	St.ThomasRainGage	A203
EXT203	0.95	73.08	0.00	30.0000	St.ThomasRainGage	A205
EXT204	0.12	150.00	71.43	2.0000	St.ThomasRainGage	EXT205
EXT205	1.26	78.75	0.00	30.0000	St.ThomasRainGage	A206
EXT206	0.20	250.00	71.43	2.0000	St.ThomasRainGage	A208
EXT207	0.30	375.00	71.43	2.0000	St.ThomasRainGage	A210
EXT208	48.80	552.91	0.00	16.0000	St.ThomasRainGage	SWM_Pond
U201	0.44	44.00	0.00	3.0000	St.ThomasRainGage	U201_Outfall
U202	0.08	47.06	45.71	6.0000	St.ThomasRainGage	U202_Outfall

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
0	JUNCTION	178.14	1.99	0.0	
4	JUNCTION	178.17	1.87	0.0	
41	JUNCTION	179.05	1.85	0.0	
42	JUNCTION	179.35	1.75	0.0	
43	JUNCTION	178.68	1.97	0.0	
44	JUNCTION	178.46	2.06	0.0	
45	JUNCTION	178.58	2.15	0.0	
46	JUNCTION	178.92	2.15	0.0	
47	JUNCTION	178.80	2.11	0.0	
48	JUNCTION	178.28	2.20	0.0	
49	JUNCTION	178.00	2.07	0.0	
50	JUNCTION	178.07	2.12	0.0	
51	JUNCTION	178.59	1.89	0.0	
52	JUNCTION	179.24	1.80	0.0	

53	JUNCTION	179.06	1.83	0.0
54	JUNCTION	178.87	1.71	0.0
55	JUNCTION	177.86	2.26	0.0
56	JUNCTION	177.79	2.12	0.0
57	JUNCTION	179.17	1.97	0.0
58	JUNCTION	179.80	2.40	0.0
59	JUNCTION	183.47	1.73	0.0
60	JUNCTION	178.27	1.90	0.0
61	JUNCTION	178.42	1.90	0.0
63	JUNCTION	178.72	1.76	0.0
64	JUNCTION	179.12	2.01	0.0
CB1	JUNCTION	183.90	1.25	0.0
CB12	JUNCTION	179.02	1.25	0.0
CB14	JUNCTION	179.22	1.25	0.0
CB17	JUNCTION	179.59	1.25	0.0
CB19	JUNCTION	179.74	1.25	0.0
CB2	JUNCTION	179.18	1.25	0.0
CB21	JUNCTION	179.77	1.25	0.0
CB23	JUNCTION	179.61	1.25	0.0
CB25	JUNCTION	179.41	1.25	0.0
CB28	JUNCTION	179.35	1.25	0.0
CB3	JUNCTION	180.90	1.25	0.0
CB31	JUNCTION	179.60	1.25	0.0
CB33	JUNCTION	179.80	1.25	0.0
CB39	JUNCTION	178.83	1.25	0.0
CB42	JUNCTION	178.74	1.25	0.0
CB43	JUNCTION	179.84	1.25	0.0
CB44	JUNCTION	179.86	1.25	0.0
CB5	JUNCTION	178.89	1.25	0.0
CB7	JUNCTION	178.88	1.25	0.0
CBMH8	JUNCTION	178.82	1.75	0.0
DCB15	JUNCTION	179.28	1.25	0.0
DCB26	JUNCTION	179.22	1.25	0.0
DCB27	JUNCTION	179.22	1.25	0.0
DCB37	JUNCTION	178.61	1.25	0.0
DCB40	JUNCTION	178.76	1.25	0.0
MDMH1	JUNCTION	180.92	5.84	0.0
MDMH2	JUNCTION	179.76	5.54	0.0
MDMH3	JUNCTION	177.75	1.86	0.0
OGS	JUNCTION	177.78	2.22	0.0
RYCB1	JUNCTION	180.03	1.60	0.0
RYCB2	JUNCTION	179.43	1.65	0.0
RYCB3	JUNCTION	179.67	1.86	0.0
RYCB4	JUNCTION	178.86	1.25	0.0
RYCB5	JUNCTION	178.85	1.26	0.0
RYCB6	JUNCTION	178.50	1.55	0.0
RYCB7	JUNCTION	178.51	1.44	0.0
RYCB8	JUNCTION	180.32	2.12	0.0
RYCB9	JUNCTION	181.81	1.55	0.0
STMH1	JUNCTION	176.80	2.58	0.0
STMH10	JUNCTION	178.12	2.16	0.0
STMH11	JUNCTION	178.32	1.89	0.0
STMH12	JUNCTION	178.47	1.91	0.0
STMH13	JUNCTION	178.65	1.82	0.0
STMH14	JUNCTION	178.81	1.80	0.0
STMH15	JUNCTION	178.03	2.06	0.0
STMH16	JUNCTION	179.48	1.88	0.0
STMH17	JUNCTION	178.70	1.95	0.0
STMH18	JUNCTION	179.26	1.80	0.0
STMH19	JUNCTION	178.52	2.07	0.0
STMH2	JUNCTION	183.83	1.75	0.0
STMH20	JUNCTION	178.66	2.17	0.0
STMH21	JUNCTION	179.16	2.07	0.0
STMH22	JUNCTION	178.59	1.98	0.0
STMH23	JUNCTION	178.83	1.95	0.0
STMH3	JUNCTION	179.04	2.18	0.0
STMH4	JUNCTION	177.81	2.17	0.0
STMH5	JUNCTION	177.89	2.21	0.0
STMH6	JUNCTION	177.94	2.13	0.0
STMH7	JUNCTION	178.30	2.23	0.0
STMH9	JUNCTION	181.06	2.61	0.0
O1	OUTFALL	176.73	0.00	0.0
O2	OUTFALL	176.73	0.00	0.0
SWM_Pond_Outfall	OUTFALL	178.90	0.00	0.0
U201_Outfall	OUTFALL	177.71	0.68	0.0
U202_Outfall	OUTFALL	183.25	0.00	0.0
A211_Storage	STORAGE	180.57	0.45	0.0
RYCB1_Storage	STORAGE	181.63	0.45	0.0
RYCB2_Storage	STORAGE	181.08	0.38	0.0
RYCB3_Storage	STORAGE	181.53	0.45	0.0
RYCB4_Storage	STORAGE	180.11	0.45	0.0
RYCB5_Storage	STORAGE	180.11	0.45	0.0
RYCB6_Storage	STORAGE	180.05	0.27	0.0
RYCB7_Storage	STORAGE	179.95	0.39	0.0

RYCB8_Storage	STORAGE	182.44	0.45	0.0
RYCB9_Storage	STORAGE	183.36	0.13	0.0
S12	STORAGE	181.05	0.30	0.0
S13	STORAGE	180.85	0.30	0.0
S19	STORAGE	180.99	0.30	0.0
S20	STORAGE	180.84	0.30	0.0
S21	STORAGE	180.53	0.30	0.0
S22	STORAGE	180.43	0.29	0.0
S23	STORAGE	180.14	0.29	0.0
S26	STORAGE	180.47	0.30	0.0
S27	STORAGE	180.27	0.30	0.0
S30	STORAGE	185.15	0.30	0.0
S31	STORAGE	182.15	0.30	0.0
S32	STORAGE	181.09	0.30	0.0
S7	STORAGE	181.11	0.30	0.0
S8	STORAGE	181.02	0.30	0.0
S9	STORAGE	180.86	0.30	0.0
StreetA_Storage	STORAGE	180.47	0.30	0.0
StreetB_Storage1	STORAGE	180.01	0.29	0.0
StreetB_Storage2	STORAGE	179.86	0.29	0.0
SWM_Pond	STORAGE	176.83	1.52	0.0

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
4	RYCB6	STMH11	CONDUIT	22.4	0.8036	0.0130
C1	MDMH1	MDMH2	CONDUIT	13.7	8.4977	0.0130
C10	43	STMH22	CONDUIT	11.1	0.8116	0.0130
C11	STMH22	STMH7	CONDUIT	15.2	1.9082	0.0130
C12	CBMH8	STMH7	CONDUIT	50.5	1.0298	0.0130
C13	RYCB9	STMH21	CONDUIT	43.8	6.0613	0.0130
C14	STMH21	64	CONDUIT	14.9	0.2676	0.0130
C15	64	STMH3	CONDUIT	27.2	0.2947	0.0130
C16	RYCB8	STMH3	CONDUIT	65.0	1.9696	0.0130
C17	STMH3	46	CONDUIT	30.6	0.3919	0.0130
C18	46	47	CONDUIT	29.7	0.4040	0.0130
C19	47	STMH20	CONDUIT	14.4	0.9736	0.0130
C2	MDMH2	MDMH3	CONDUIT	172.8	1.1633	0.0130
C20	RYCB3	STMH20	CONDUIT	59.7	1.6920	0.0130
C21	STMH20	45	CONDUIT	26.4	0.3029	0.0130
C22	45	STMH19	CONDUIT	18.5	0.3245	0.0130
C23	STMH19	44	CONDUIT	21.1	0.2848	0.0130
C24	44	STMH7	CONDUIT	3.6	4.4120	0.0130
C25	STMH7	48	CONDUIT	6.3	0.3180	0.0130
C26	48	0	CONDUIT	45.5	0.3076	0.0130
C27	RYCB4	0	CONDUIT	5.5	13.2045	0.0130
C28	RYCB5	0	CONDUIT	5.5	13.0180	0.0130
C29	0	STMH6	CONDUIT	50.4	0.3968	0.0130
C3	MDMH3	U201_Outfall	CONDUIT	6.0	0.6667	0.0130
C30	STMH18	52	CONDUIT	2.8	0.7169	0.0130
C31	52	53	CONDUIT	30.5	0.5909	0.0130
C32	53	54	CONDUIT	32.9	0.5772	0.0130
C33	54	STMH17	CONDUIT	12.7	1.3355	0.0130
C34	STMH17	51	CONDUIT	10.7	1.0243	0.0130
C35	51	STMH10	CONDUIT	42.3	1.1122	0.0130
C36	RYCB7	STMH10	CONDUIT	32.5	1.2001	0.0130
C37	STMH10	50	CONDUIT	16.8	0.2971	0.0130
C38	50	STMH15	CONDUIT	18.1	0.2214	0.0130
C39	STMH15	49	CONDUIT	10.3	0.2921	0.0130
C4	RYCB1	STMH16	CONDUIT	44.9	1.2250	0.0130
C40	49	STMH6	CONDUIT	2.1	2.8180	0.0130
C41	STMH6	STMH5	CONDUIT	9.8	0.5102	0.0130
C42	STMH5	55	CONDUIT	30.7	0.0978	0.0130
C43	55	STMH4	CONDUIT	24.2	0.2063	0.0130
C44	STMH4	56	CONDUIT	18.5	0.1082	0.0130
C45	56	OGS	CONDUIT	10.7	0.0933	0.0130
C46	STMH14	63	CONDUIT	15.1	0.5956	0.0130
C47	63	STMH13	CONDUIT	8.2	0.8547	0.0130
C48	STMH13	STMH12	CONDUIT	18.2	0.9891	0.0130
C49	STMH12	61	CONDUIT	11.4	0.4371	0.0130
C5	STMH16	42	CONDUIT	16.8	0.7729	0.0130
C50	61	STMH11	CONDUIT	22.0	0.4546	0.0130
C51	STMH11	60	CONDUIT	10.4	0.4794	0.0130
C52	60	4	CONDUIT	23.5	0.4248	0.0130
C53	STMH2	59	CONDUIT	7.5	4.8249	0.0130
C54	59	STMH9	CONDUIT	32.3	7.4752	0.0130
C55	STMH9	58	CONDUIT	45.7	2.7594	0.0130
C56	58	57	CONDUIT	23.0	2.7437	0.0130
C57	57	OGS	CONDUIT	48.8	2.8524	0.0130
C58	OGS	SWM_Pond	CONDUIT	54.1	1.7563	0.0130
C59	4	OGS	CONDUIT	14.8	2.6307	0.0130

C6	42	41	CONDUIT	40.5	0.7406	0.0130
C60	SWM_Pond	STMH1	CONDUIT	8.7	0.3448	0.0130
C62	CB33	42	CONDUIT	5.5	8.2093	0.0130
C63	CB31	41	CONDUIT	5.5	10.0504	0.0130
C64	CB28	43	CONDUIT	5.5	12.2732	0.0130
C65	CB44	64	CONDUIT	5.5	13.5780	0.0130
C66	CB21	46	CONDUIT	5.5	15.6425	0.0130
C67	CB23	47	CONDUIT	5.5	14.8896	0.0130
C68	CB25	45	CONDUIT	5.5	15.2657	0.0130
C69	DCB27	44	CONDUIT	5.5	13.9520	0.0130
C7	41	STMH23	CONDUIT	18.5	1.1912	0.0130
C70	DCB26	48	CONDUIT	5.5	17.3461	0.0130
C71	CB19	52	CONDUIT	5.5	9.1287	0.0130
C72	CB17	53	CONDUIT	5.5	9.6814	0.0130
C73	DCB15	54	CONDUIT	5.5	7.4753	0.0130
C74	CB2	51	CONDUIT	5.5	10.7895	0.0130
C75	CB5	50	CONDUIT	5.5	15.0776	0.0130
C76	DCB40	49	CONDUIT	5.5	13.9520	0.0130
C77	CB39	55	CONDUIT	5.5	17.9172	0.0130
C78	DCB37	56	CONDUIT	5.5	15.0776	0.0130
C79	CB14	63	CONDUIT	5.5	9.1287	0.0130
C8	RYCB2	STMH23	CONDUIT	46.0	1.3045	0.0130
C80	CB12	61	CONDUIT	5.5	10.9746	0.0130
C81	CB7	60	CONDUIT	5.5	11.1598	0.0130
C82	CB42	4	CONDUIT	5.5	10.4197	0.0130
C83	CB1	59	CONDUIT	5.5	7.8422	0.0130
C84	CB3	58	CONDUIT	5.5	20.4124	0.0130
C85	CB43	57	CONDUIT	5.5	12.2732	0.0130
C9	STMH23	43	CONDUIT	29.6	0.5066	0.0130
1	RYCB1_Storage	RYCB1	ORIFICE			
100	S27	CB12	ORIFICE			
119	RYCB4_Storage	RYCB5	ORIFICE			
12	StreetB_Storage2	CB42	ORIFICE			
120	RYCB5_Storage	RYCB4	ORIFICE			
13	StreetB_Storage2	CB39	ORIFICE			
14	StreetB_Storage2	CB7	ORIFICE			
151	S26	CB14	ORIFICE			
3	StreetA_Storage	DCB27	ORIFICE			
37	S12	CB33	ORIFICE			
38	RYCB2_Storage	RYCB2	ORIFICE			
39	RYCB3_Storage	RYCB3	ORIFICE			
40	RYCB8_Storage	RYCB8	ORIFICE			
41	RYCB9_Storage	RYCB9	ORIFICE			
42	RYCB7_Storage	RYCB7	ORIFICE			
43	A211_Storage	CBMH8	ORIFICE			
5	RYCB6_Storage	RYCB6	ORIFICE			
6	StreetA_Storage	CB25	ORIFICE			
7	StreetA_Storage	DCB26	ORIFICE			
8	StreetA_Storage	CB28	ORIFICE			
80	S13	CB31	ORIFICE			
85	S9	CB23	ORIFICE			
86	S8	CB21	ORIFICE			
87	S7	CB44	ORIFICE			
88	S19	CB19	ORIFICE			
89	S20	CB17	ORIFICE			
90	S30	CB1	ORIFICE			
91	S31	CB3	ORIFICE			
92	S32	CB43	ORIFICE			
94	StreetB_Storage2	DCB37	ORIFICE			
96	StreetB_Storage1	DCB40	ORIFICE			
97	S22	CB2	ORIFICE			
98	S23	CB5	ORIFICE			
99	S21	DCB15	ORIFICE			
Or1	STMH1	O1	ORIFICE			
Or2	STMH1	O2	ORIFICE			
10	S13	StreetA_Storage	WEIR			
18	S27	StreetB_Storage2	WEIR			
19	S32	StreetB_Storage2	WEIR			
9	S9	StreetA_Storage	WEIR			
A211_Weir	A211_Storage	StreetA_Storage	WEIR			
RYCB1_Weir	RYCB1_Storage	RYCB2_Storage	WEIR			
RYCB2_Weir	RYCB2_Storage	A211_Storage	WEIR			
RYCB3_Weir	RYCB3_Storage	A211_Storage	WEIR			
RYCB4_Weir	RYCB4_Storage	StreetB_Storage1	WEIR			
RYCB5_Weir	RYCB5_Storage	StreetB_Storage1	WEIR			
RYCB6_Weir	RYCB6_Storage	StreetB_Storage2	WEIR			
RYCB7_Weir	RYCB7_Storage	RYCB6_Storage	WEIR			
RYCB8_Weir	RYCB8_Storage	RYCB3_Storage	WEIR			
RYCB9_Weir	RYCB9_Storage	RYCB8_Storage	WEIR			
StreetA_Weir	StreetA_Storage	RYCB4_Storage	WEIR			
StreetB_Weir1	StreetB_Storage1	StreetB_Storage2	WEIR			
StreetB_Weir2	StreetB_Storage2	SWM_Pond	WEIR			
SWM_Pond_Weir	SWM_Pond	SWM_Pond_Outfall	WEIR			
W17	S19	S20	WEIR			

W18	S20	S21	WEIR
W19	S21	S22	WEIR
W20	S22	S23	WEIR
W21	S23	StreetB_Storage1	WEIR
W27	S26	S27	WEIR
W30	S30	S31	WEIR
W31	S31	S32	WEIR
W6	S12	S13	WEIR
W8	S7	S8	WEIR
W9	S8	S9	WEIR

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C1	CIRCULAR	0.45	0.16	0.11	0.45	1	0.83
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	0.26
C11	CIRCULAR	0.45	0.16	0.11	0.45	1	0.39
C12	CIRCULAR	0.45	0.16	0.11	0.45	1	0.29
C13	CIRCULAR	0.30	0.07	0.07	0.30	1	0.24
C14	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C15	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C16	CIRCULAR	0.30	0.07	0.07	0.30	1	0.14
C17	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.18
C19	CIRCULAR	0.45	0.16	0.11	0.45	1	0.28
C2	CIRCULAR	0.60	0.28	0.15	0.60	1	0.66
C20	CIRCULAR	0.38	0.11	0.09	0.38	1	0.23
C21	CIRCULAR	0.53	0.22	0.13	0.53	1	0.24
C22	CIRCULAR	0.53	0.22	0.13	0.53	1	0.25
C23	CIRCULAR	0.53	0.22	0.13	0.53	1	0.23
C24	CIRCULAR	0.53	0.22	0.13	0.53	1	0.90
C25	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C26	CIRCULAR	0.68	0.36	0.17	0.68	1	0.47
C27	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C28	CIRCULAR	0.25	0.05	0.06	0.25	1	0.21
C29	CIRCULAR	0.68	0.36	0.17	0.68	1	0.53
C3	CIRCULAR	0.68	0.36	0.17	0.68	1	0.69
C30	CIRCULAR	0.30	0.07	0.07	0.30	1	0.08
C31	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C32	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C33	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C34	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C35	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C36	CIRCULAR	0.25	0.05	0.06	0.25	1	0.07
C37	CIRCULAR	0.45	0.16	0.11	0.45	1	0.16
C38	CIRCULAR	0.45	0.16	0.11	0.45	1	0.13
C39	CIRCULAR	0.45	0.16	0.11	0.45	1	0.15
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C40	CIRCULAR	0.45	0.16	0.11	0.45	1	0.48
C41	CIRCULAR	0.90	0.64	0.23	0.90	1	1.29
C42	CIRCULAR	0.90	0.64	0.23	0.90	1	0.57
C43	CIRCULAR	0.90	0.64	0.23	0.90	1	0.82
C44	CIRCULAR	0.90	0.64	0.23	0.90	1	0.60
C45	CIRCULAR	0.90	0.64	0.23	0.90	1	0.55
C46	CIRCULAR	0.30	0.07	0.07	0.30	1	0.07
C47	CIRCULAR	0.30	0.07	0.07	0.30	1	0.09
C48	CIRCULAR	0.30	0.07	0.07	0.30	1	0.10
C49	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C5	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C50	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C51	CIRCULAR	0.38	0.11	0.09	0.38	1	0.12
C52	CIRCULAR	0.38	0.11	0.09	0.38	1	0.11
C53	CIRCULAR	0.25	0.05	0.06	0.25	1	0.13
C54	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C55	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C56	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C57	CIRCULAR	0.25	0.05	0.06	0.25	1	0.10
C58	CIRCULAR	1.05	0.87	0.26	1.05	1	3.62
C59	CIRCULAR	0.38	0.11	0.09	0.38	1	0.28
C6	CIRCULAR	0.38	0.11	0.09	0.38	1	0.15
C60	CIRCULAR	0.68	0.36	0.17	0.68	1	0.49
C62	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C63	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C64	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C65	CIRCULAR	0.20	0.03	0.05	0.20	1	0.12
C66	CIRCULAR	0.25	0.05	0.06	0.25	1	0.24
C67	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C68	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C69	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22

C7	CIRCULAR	0.38	0.11	0.09	0.38	1	0.19
C70	CIRCULAR	0.25	0.05	0.06	0.25	1	0.25
C71	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C72	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C73	CIRCULAR	0.25	0.05	0.06	0.25	1	0.16
C74	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C75	CIRCULAR	0.20	0.03	0.05	0.20	1	0.13
C76	CIRCULAR	0.25	0.05	0.06	0.25	1	0.22
C77	CIRCULAR	0.20	0.03	0.05	0.20	1	0.14
C78	CIRCULAR	0.25	0.05	0.06	0.25	1	0.23
C79	CIRCULAR	0.20	0.03	0.05	0.20	1	0.10
C8	CIRCULAR	0.30	0.07	0.07	0.30	1	0.11
C80	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C81	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C82	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C83	CIRCULAR	0.20	0.03	0.05	0.20	1	0.09
C84	CIRCULAR	0.20	0.03	0.05	0.20	1	0.15
C85	CIRCULAR	0.20	0.03	0.05	0.20	1	0.11
C9	CIRCULAR	0.45	0.16	0.11	0.45	1	0.20

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 CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 12/11/2020 00:00:00
Ending Date 12/11/2020 03:00:00
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 30.00 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.001500 m

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	4.001	61.251
Evaporation Loss	0.000	0.000
Infiltration Loss	2.106	32.246
Surface Runoff	1.042	15.952
Final Storage	0.855	13.093
Continuity Error (%)	-0.066	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	1.039	10.395
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.623	6.232
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.420	4.205
Continuity Error (%)	-0.401	

Highest Continuity Errors

Node S8 (-80.27%)
Node S13 (-64.25%)
Node S9 (-37.42%)
Node CB31 (-10.32%)
Node CB33 (-9.47%)

Time-Step Critical Elements

Link C40 (80.50%)
Link C24 (6.25%)
Link C78 (2.91%)
Link C71 (2.45%)
Link C45 (2.17%)

Highest Flow Instability Indexes

Link C45 (18)
Link C40 (16)
Link C41 (13)
Link C39 (12)
Link C44 (12)

Routing Time Step Summary

Minimum Time Step : 0.50 sec
Average Time Step : 0.78 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 3.05
Percent Not Converging : 11.40
Time Step Frequencies :
30.000 - 13.228 sec : 0.04 %
13.228 - 5.833 sec : 0.00 %
5.833 - 2.572 sec : 0.24 %
2.572 - 1.134 sec : 12.04 %
1.134 - 0.500 sec : 87.68 %

Subcatchment Runoff Summary

Table with 11 columns: 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. Rows include subcatchments A201 through U201.

 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
0	JUNCTION	0.37	1.77	179.91	0 01:11	1.75
4	JUNCTION	0.08	0.18	178.35	0 01:10	0.17
41	JUNCTION	0.11	5.82	184.87	0 01:09	1.49
42	JUNCTION	0.09	1.98	181.33	0 01:10	1.20
43	JUNCTION	0.19	1.86	180.54	0 01:10	1.81
44	JUNCTION	0.25	1.96	180.42	0 01:11	1.92
45	JUNCTION	0.25	2.07	180.65	0 01:10	1.90
46	JUNCTION	0.20	6.38	185.30	0 01:09	1.65
47	JUNCTION	0.19	2.79	181.59	0 01:09	1.74
48	JUNCTION	0.41	2.08	180.36	0 01:11	2.05
49	JUNCTION	0.37	1.41	179.41	0 01:10	1.29
50	JUNCTION	0.33	1.63	179.70	0 01:10	1.55
51	JUNCTION	0.21	1.86	180.45	0 01:10	1.85
52	JUNCTION	0.24	1.81	181.05	0 01:10	1.80
53	JUNCTION	0.24	1.91	180.97	0 01:10	1.90
54	JUNCTION	0.20	1.87	180.74	0 01:10	1.86
55	JUNCTION	0.46	1.46	179.32	0 01:21	1.08
56	JUNCTION	0.47	1.40	179.19	0 01:15	0.86
57	JUNCTION	0.00	0.00	179.17	0 00:00	0.00
58	JUNCTION	0.00	0.00	179.80	0 00:00	0.00
59	JUNCTION	0.00	0.00	183.47	0 00:00	0.00
60	JUNCTION	0.02	0.21	178.48	0 01:10	0.17
61	JUNCTION	0.00	0.09	178.51	0 01:11	0.09
63	JUNCTION	0.00	0.00	178.72	0 00:00	0.00
64	JUNCTION	0.12	3.75	182.87	0 01:10	1.47
CB1	JUNCTION	0.00	0.00	183.90	0 00:00	0.00
CB12	JUNCTION	0.00	0.00	179.02	0 00:00	0.00
CB14	JUNCTION	0.00	0.00	179.22	0 00:00	0.00
CB17	JUNCTION	0.09	1.44	181.03	0 01:10	1.43
CB19	JUNCTION	0.18	1.43	181.17	0 01:10	1.42
CB2	JUNCTION	0.06	1.28	180.46	0 01:10	1.28
CB21	JUNCTION	0.02	1.29	181.06	0 01:10	0.80
CB23	JUNCTION	0.03	1.30	180.91	0 01:10	0.93
CB25	JUNCTION	0.04	1.27	180.68	0 01:10	1.09
CB28	JUNCTION	0.05	1.30	180.65	0 01:12	1.29
CB3	JUNCTION	0.00	0.00	180.90	0 00:00	0.00
CB31	JUNCTION	0.04	1.32	180.92	0 01:10	0.94
CB33	JUNCTION	0.03	1.31	181.11	0 01:10	0.75
CB39	JUNCTION	0.00	0.26	179.09	0 01:15	0.20
CB42	JUNCTION	0.00	0.10	178.84	0 01:12	0.09
CB43	JUNCTION	0.00	0.00	179.84	0 00:00	0.00
CB44	JUNCTION	0.02	1.31	181.17	0 01:10	0.72
CB5	JUNCTION	0.04	1.38	180.27	0 01:12	1.38
CB7	JUNCTION	0.00	0.00	178.88	0 00:00	0.00
CBMH8	JUNCTION	0.23	1.84	180.66	0 01:11	1.83
DCB15	JUNCTION	0.08	1.46	180.74	0 01:10	1.46
DCB26	JUNCTION	0.13	1.38	180.60	0 01:12	1.37
DCB27	JUNCTION	0.14	1.38	180.60	0 01:11	1.37
DCB37	JUNCTION	0.10	1.27	179.88	0 01:11	1.27
DCB40	JUNCTION	0.08	1.27	180.03	0 01:11	1.27
MDMH1	JUNCTION	0.00	0.00	180.92	0 00:00	0.00
MDMH2	JUNCTION	0.00	0.00	179.76	0 00:00	0.00
MDMH3	JUNCTION	0.00	0.00	177.75	0 00:00	0.00
OGS	JUNCTION	0.39	0.56	178.34	0 01:14	0.55
RYCB1	JUNCTION	0.06	1.61	181.64	0 01:10	0.63
RYCB2	JUNCTION	0.17	1.76	181.19	0 01:16	1.75
RYCB3	JUNCTION	0.08	1.94	181.61	0 01:10	1.04
RYCB4	JUNCTION	0.05	1.06	179.92	0 01:15	1.04
RYCB5	JUNCTION	0.07	1.43	180.28	0 01:12	1.43
RYCB6	JUNCTION	0.00	0.21	178.71	0 01:09	0.19
RYCB7	JUNCTION	0.13	1.75	180.26	0 01:10	1.74
RYCB8	JUNCTION	0.10	0.57	180.89	0 01:11	0.55
RYCB9	JUNCTION	0.03	0.04	181.85	0 01:25	0.04
STMH1	JUNCTION	1.04	1.41	178.21	0 02:37	1.41
STMH10	JUNCTION	0.30	1.66	179.78	0 01:10	1.59
STMH11	JUNCTION	0.00	0.18	178.50	0 01:10	0.17
STMH12	JUNCTION	0.00	0.04	178.51	0 01:11	0.03
STMH13	JUNCTION	0.00	0.00	178.65	0 00:00	0.00
STMH14	JUNCTION	0.00	0.00	178.81	0 00:00	0.00
STMH15	JUNCTION	0.35	1.48	179.51	0 01:10	1.38
STMH16	JUNCTION	0.09	2.82	182.30	0 01:10	1.08
STMH17	JUNCTION	0.21	1.88	180.58	0 01:10	1.87

STMH18	JUNCTION	0.22	1.79	181.05	0	01:10	1.78
STMH19	JUNCTION	0.26	2.00	180.52	0	01:10	1.91
STMH2	JUNCTION	0.00	0.00	183.83	0	00:00	0.00
STMH20	JUNCTION	0.25	2.34	181.00	0	01:09	1.86
STMH21	JUNCTION	0.11	3.23	182.39	0	01:10	1.42
STMH22	JUNCTION	0.19	1.88	180.47	0	01:10	1.84
STMH23	JUNCTION	0.19	4.14	182.97	0	01:09	1.71
STMH3	JUNCTION	0.19	2.69	181.73	0	01:09	1.56
STMH4	JUNCTION	0.48	1.37	179.18	0	01:15	0.97
STMH5	JUNCTION	0.47	1.38	179.27	0	01:15	1.25
STMH6	JUNCTION	0.43	1.40	179.34	0	01:10	1.26
STMH7	JUNCTION	0.40	2.10	180.40	0	01:11	2.07
STMH9	JUNCTION	0.00	0.00	181.06	0	00:00	0.00
O1	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
O2	OUTFALL	0.00	0.00	176.73	0	00:00	0.00
SWM_Pond_Outfall	OUTFALL	0.00	0.00	178.90	0	00:00	0.00
U201_Outfall	OUTFALL	0.00	0.00	177.71	0	00:00	0.00
U202_Outfall	OUTFALL	0.00	0.00	183.25	0	00:00	0.00
A211_Storage	STORAGE	0.06	0.22	180.79	0	01:10	0.22
RYCB1_Storage	STORAGE	0.01	0.04	181.67	0	01:10	0.03
RYCB2_Storage	STORAGE	0.03	0.20	181.28	0	01:16	0.20
RYCB3_Storage	STORAGE	0.02	0.11	181.64	0	01:10	0.09
RYCB4_Storage	STORAGE	0.01	0.29	180.40	0	01:12	0.29
RYCB5_Storage	STORAGE	0.00	0.00	180.11	0	00:00	0.00
RYCB6_Storage	STORAGE	0.00	0.06	180.11	0	01:10	0.06
RYCB7_Storage	STORAGE	0.02	0.39	180.34	0	01:10	0.39
RYCB8_Storage	STORAGE	0.04	0.06	182.50	0	01:36	0.06
RYCB9_Storage	STORAGE	0.01	0.02	183.38	0	01:25	0.02
S12	STORAGE	0.00	0.02	181.07	0	01:10	0.01
S13	STORAGE	0.00	0.02	180.87	0	01:10	0.00
S19	STORAGE	0.04	0.24	181.23	0	01:10	0.23
S20	STORAGE	0.01	0.23	181.07	0	01:10	0.23
S21	STORAGE	0.01	0.25	180.78	0	01:10	0.25
S22	STORAGE	0.00	0.06	180.49	0	01:10	0.06
S23	STORAGE	0.01	0.23	180.37	0	01:12	0.23
S26	STORAGE	0.00	0.00	180.47	0	00:00	0.00
S27	STORAGE	0.00	0.00	180.27	0	00:00	0.00
S30	STORAGE	0.00	0.00	185.15	0	00:00	0.00
S31	STORAGE	0.00	0.00	182.15	0	00:00	0.00
S32	STORAGE	0.00	0.00	181.09	0	00:00	0.00
S7	STORAGE	0.00	0.03	181.14	0	01:10	0.00
S8	STORAGE	0.00	0.02	181.04	0	01:10	0.00
S9	STORAGE	0.00	0.01	180.87	0	01:10	0.00
StreetA_Storage	STORAGE	0.05	0.23	180.70	0	01:12	0.23
StreetB_Storage1	STORAGE	0.03	0.15	180.16	0	01:11	0.15
StreetB_Storage2	STORAGE	0.04	0.18	180.04	0	01:12	0.18
SWM_Pond	STORAGE	1.09	1.50	178.33	0	02:37	1.50

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
0	JUNCTION	0.000	1.007	0 01:17	0	2.77	0.181
4	JUNCTION	0.000	0.090	0 01:10	0	0.0319	2.296
41	JUNCTION	0.000	0.196	0 01:09	0	0.0844	0.156
42	JUNCTION	0.000	0.156	0 01:09	0	0.0787	0.085
43	JUNCTION	0.000	0.207	0 01:16	0	0.416	0.092
44	JUNCTION	0.000	0.304	0 01:11	0	1.01	-0.001
45	JUNCTION	0.000	0.194	0 01:11	0	0.543	0.176
46	JUNCTION	0.000	0.266	0 01:09	0	0.375	0.153
47	JUNCTION	0.000	0.253	0 01:09	0	0.381	0.187
48	JUNCTION	0.000	0.840	0 01:20	0	2.65	0.100
49	JUNCTION	0.000	0.534	0 01:10	0	0.98	-5.860
50	JUNCTION	0.000	0.334	0 01:09	0	0.563	0.266
51	JUNCTION	0.000	0.153	0 01:08	0	0.39	0.088
52	JUNCTION	0.000	0.126	0 01:06	0	0.323	0.090
53	JUNCTION	0.000	0.148	0 01:07	0	0.357	0.154
54	JUNCTION	0.000	0.148	0 01:07	0	0.381	0.066
55	JUNCTION	0.000	1.518	0 01:11	0	3.65	0.256
56	JUNCTION	0.000	1.806	0 01:12	0	4.09	-0.248
57	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
58	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
59	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
60	JUNCTION	0.000	0.053	0 01:10	0	0.00997	2.830
61	JUNCTION	0.000	0.010	0 01:10	0	0.000576	3.895
63	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 ltr
64	JUNCTION	0.000	0.245	0 01:10	0	0.056	0.414

CB1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB12	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB17	JUNCTION	0.000	0.070	0	01:07	0	0.0355	0.077	
CB19	JUNCTION	0.000	0.129	0	01:06	0	0.322	-0.007	
CB2	JUNCTION	0.000	0.033	0	01:08	0	0.00991	-0.645	
CB21	JUNCTION	0.000	0.146	0	01:09	0	0.00137	-0.661	
CB23	JUNCTION	0.000	0.048	0	01:10	0	0.00139	3.338	
CB25	JUNCTION	0.000	0.033	0	01:12	0	0.00854	-1.040	
CB28	JUNCTION	0.000	0.069	0	01:10	0	0.0312	-0.010	
CB3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB31	JUNCTION	0.000	0.070	0	01:09	0	0.00103	-9.357	
CB33	JUNCTION	0.000	0.059	0	01:10	0	0.00147	-8.647	
CB39	JUNCTION	0.000	0.023	0	01:15	0	0.00146	0.920	
CB42	JUNCTION	0.000	0.049	0	01:12	0	0.0129	0.000	
CB43	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CB44	JUNCTION	0.000	0.120	0	01:10	0	0.00127	1.929	
CB5	JUNCTION	0.000	0.122	0	01:15	0	0.0556	0.119	
CB7	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
CBMH8	JUNCTION	0.000	0.326	0	01:09	0	0.768	0.125	
DCB15	JUNCTION	0.000	0.055	0	01:18	0	0.0246	-0.357	
DCB26	JUNCTION	0.000	0.250	0	01:09	0	0.487	0.012	
DCB27	JUNCTION	0.000	0.249	0	01:09	0	0.48	0.052	
DCB37	JUNCTION	0.000	0.288	0	01:12	0	0.454	0.023	
DCB40	JUNCTION	0.000	0.223	0	01:11	0	0.275	-0.016	
MDMH1	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
MDMH3	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
OGS	JUNCTION	0.000	2.207	0	01:14	0	4.13	0.466	
RYCB1	JUNCTION	0.000	0.077	0	01:10	0	0.0706	-0.068	
RYCB2	JUNCTION	0.000	0.125	0	01:17	0	0.309	0.068	
RYCB3	JUNCTION	0.000	0.125	0	01:10	0	0.159	0.098	
RYCB4	JUNCTION	0.000	0.039	0	01:09	0	0.00117	-1.306	
RYCB5	JUNCTION	0.000	0.184	0	01:09	0	0.118	-0.048	
RYCB6	JUNCTION	0.000	0.067	0	01:10	0	0.00813	-0.530	
RYCB7	JUNCTION	0.000	0.103	0	01:08	0	0.12	-0.039	
RYCB8	JUNCTION	0.000	0.073	0	01:10	0	0.31	0.172	
RYCB9	JUNCTION	0.000	0.012	0	01:25	0	0.0457	0.130	
STMH1	JUNCTION	0.000	0.981	0	02:37	0	6.15	0.469	
STMH10	JUNCTION	0.000	0.250	0	01:08	0	0.509	0.368	
STMH11	JUNCTION	0.000	0.068	0	01:09	0	0.00874	0.376	
STMH12	JUNCTION	0.000	0.003	0	01:11	0	9.83e-05	9.212	
STMH13	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH14	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH15	JUNCTION	0.000	0.334	0	01:09	0	0.566	0.090	
STMH16	JUNCTION	0.000	0.145	0	01:09	0	0.0731	0.016	
STMH17	JUNCTION	0.000	0.146	0	01:08	0	0.38	0.039	
STMH18	JUNCTION	0.000	0.006	0	01:05	0	0.000466	-0.170	
STMH19	JUNCTION	0.000	0.194	0	01:11	0	0.544	0.150	
STMH2	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
STMH20	JUNCTION	0.000	0.240	0	01:08	0	0.537	0.305	
STMH21	JUNCTION	0.000	0.242	0	01:10	0	0.0484	0.144	
STMH22	JUNCTION	0.000	0.207	0	01:16	0	0.415	0.042	
STMH23	JUNCTION	0.000	0.176	0	01:09	0	0.39	0.153	
STMH3	JUNCTION	0.000	0.262	0	01:09	0	0.37	0.428	
STMH4	JUNCTION	0.000	1.519	0	01:11	0	3.64	0.183	
STMH5	JUNCTION	0.000	1.516	0	01:11	0	3.66	0.155	
STMH6	JUNCTION	0.000	1.516	0	01:11	0	3.8	0.152	
STMH7	JUNCTION	0.000	0.702	0	01:11	0	2.17	0.117	
STMH9	JUNCTION	0.000	0.000	0	00:00	0	0	0.000	ltr
O1	OUTFALL	0.000	0.738	0	02:37	0	4.36	0.000	
O2	OUTFALL	0.000	0.243	0	02:37	0	1.76	0.000	
SWM_Pond_Outfall	OUTFALL	0.000	0.000	0	00:00	0	0	0.000	ltr
U201_Outfall	OUTFALL	0.018	0.018	0	01:24	0.072	0.072	0.000	
U202_Outfall	OUTFALL	0.044	0.044	0	01:10	0.038	0.038	0.000	
A211_Storage	STORAGE	0.362	0.672	0	01:10	0.577	0.903	-0.001	
RYCB1_Storage	STORAGE	0.087	0.087	0	01:10	0.212	0.212	0.006	
RYCB2_Storage	STORAGE	0.067	0.120	0	01:18	0.166	0.309	0.007	
RYCB3_Storage	STORAGE	0.339	0.339	0	01:10	0.486	0.486	0.005	
RYCB4_Storage	STORAGE	0.000	0.463	0	01:12	0	0.218	0.007	
RYCB5_Storage	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
RYCB6_Storage	STORAGE	0.000	0.067	0	01:10	0	0.00813	-0.000	
RYCB7_Storage	STORAGE	0.146	0.146	0	01:10	0.129	0.129	0.066	
RYCB8_Storage	STORAGE	0.044	0.064	0	01:36	0.216	0.31	0.011	
RYCB9_Storage	STORAGE	0.035	0.035	0	01:25	0.139	0.139	0.006	
S12	STORAGE	0.000	0.043	0	01:10	0	0.000251	3.152	
S13	STORAGE	0.000	0.068	0	01:10	0	7.14e-05	-39.116	
S19	STORAGE	0.345	0.345	0	01:10	0.446	0.446	0.003	
S20	STORAGE	0.000	0.297	0	01:10	0	0.124	0.006	
S21	STORAGE	0.000	0.264	0	01:10	0	0.0885	0.021	
S22	STORAGE	0.000	0.238	0	01:10	0	0.0647	0.060	
S23	STORAGE	0.000	0.218	0	01:10	0	0.0555	0.487	
S26	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S27	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr

S30	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S31	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S32	STORAGE	0.000	0.000	0	00:00	0	0	0.000	ltr
S7	STORAGE	0.000	0.041	0	01:10	0	0.000208	-11.924	
S8	STORAGE	0.000	0.024	0	01:10	0	7.35e-05	-44.527	
S9	STORAGE	0.000	0.025	0	01:10	0	7.01e-05	-27.231	
StreetA_Storage	STORAGE	0.800	1.154	0	01:10	1.09	1.22	0.024	
StreetB_Storage1	STORAGE	0.598	0.747	0	01:11	0.746	0.846	0.005	
StreetB_Storage2	STORAGE	0.612	1.064	0	01:11	0.829	1.4	0.013	
SWM_Pond	STORAGE	0.877	3.096	0	01:12	5.25	10.3	0.350	

Node Surcharge Summary

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

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
0	JUNCTION	0.41	1.093	0.222
41	JUNCTION	0.28	5.445	0.000
42	JUNCTION	0.22	1.608	0.000
43	JUNCTION	0.39	1.408	0.112
44	JUNCTION	0.44	1.433	0.102
45	JUNCTION	0.40	1.540	0.085
46	JUNCTION	0.31	5.929	0.000
47	JUNCTION	0.35	2.336	0.000
48	JUNCTION	0.44	1.403	0.122
49	JUNCTION	0.78	0.958	0.662
50	JUNCTION	0.56	1.179	0.491
51	JUNCTION	0.43	1.562	0.028
52	JUNCTION	0.40	1.512	0.000
53	JUNCTION	0.39	1.609	0.000
54	JUNCTION	0.37	1.567	0.000
55	JUNCTION	0.19	0.560	0.800
56	JUNCTION	0.03	0.502	0.718
64	JUNCTION	0.24	3.296	0.000
CB17	JUNCTION	0.25	0.837	0.000
CB19	JUNCTION	0.33	0.829	0.000
CB2	JUNCTION	0.20	0.685	0.000
CB21	JUNCTION	0.08	0.693	0.000
CB23	JUNCTION	0.13	0.695	0.000
CB25	JUNCTION	0.13	0.481	0.000
CB28	JUNCTION	0.17	0.566	0.000
CB31	JUNCTION	0.16	0.717	0.000
CB33	JUNCTION	0.12	0.706	0.000
CB44	JUNCTION	0.03	0.710	0.000
CB5	JUNCTION	0.13	0.784	0.000
CBMH8	JUNCTION	0.32	1.237	0.000
DCB15	JUNCTION	0.24	0.865	0.000
DCB26	JUNCTION	0.24	0.775	0.000
DCB27	JUNCTION	0.24	0.782	0.000
DCB37	JUNCTION	0.14	0.672	0.000
DCB40	JUNCTION	0.13	0.675	0.000
RYCB1	JUNCTION	0.01	1.012	0.000
RYCB2	JUNCTION	0.25	1.157	0.000
RYCB3	JUNCTION	0.12	1.345	0.000
RYCB4	JUNCTION	0.19	0.455	0.195
RYCB5	JUNCTION	0.20	0.835	0.000
RYCB7	JUNCTION	0.22	1.147	0.000
STMH1	JUNCTION	1.65	0.385	1.170
STMH10	JUNCTION	0.51	1.209	0.501
STMH15	JUNCTION	0.59	1.029	0.581
STMH16	JUNCTION	0.20	2.441	0.000
STMH17	JUNCTION	0.42	1.582	0.068
STMH18	JUNCTION	0.40	1.487	0.013
STMH19	JUNCTION	0.42	1.473	0.072
STMH20	JUNCTION	0.37	1.811	0.000
STMH21	JUNCTION	0.22	2.783	0.000
STMH22	JUNCTION	0.42	1.430	0.100
STMH23	JUNCTION	0.33	3.687	0.000
STMH3	JUNCTION	0.27	2.243	0.000
STMH4	JUNCTION	0.14	0.469	0.801
STMH5	JUNCTION	0.22	0.481	0.829
STMH6	JUNCTION	0.21	0.495	0.735
STMH7	JUNCTION	0.44	1.422	0.133

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

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
A211_Storage	0.000	1	0	0	0.000	12	0 01:10	0.645
RYCB1_Storage	0.000	0	0	0	0.000	0	0 01:10	0.089
RYCB2_Storage	0.000	0	0	0	0.000	14	0 01:16	0.125
RYCB3_Storage	0.000	0	0	0	0.000	1	0 01:10	0.352
RYCB4_Storage	0.000	1	0	0	0.001	28	0 01:12	0.466
RYCB5_Storage	0.000	0	0	0	0.000	0	0 00:00	0.000
RYCB6_Storage	0.000	0	0	0	0.000	1	0 01:10	0.067
RYCB7_Storage	0.000	2	0	0	0.002	98	0 01:10	0.145
RYCB8_Storage	0.000	0	0	0	0.000	0	0 01:36	0.064
RYCB9_Storage	0.000	0	0	0	0.000	0	0 01:25	0.035
S12	0.000	0	0	0	0.000	6	0 01:10	0.013
S13	0.000	0	0	0	0.000	4	0 01:10	0.009
S19	0.000	13	0	0	0.002	78	0 01:10	0.346
S20	0.000	3	0	0	0.002	76	0 01:10	0.296
S21	0.000	3	0	0	0.002	85	0 01:10	0.263
S22	0.000	0	0	0	0.001	20	0 01:10	0.238
S23	0.000	1	0	0	0.014	48	0 01:12	0.122
S26	0.000	0	0	0	0.000	0	0 00:00	0.000
S27	0.000	0	0	0	0.000	0	0 00:00	0.000
S30	0.000	0	0	0	0.000	0	0 00:00	0.000
S31	0.000	0	0	0	0.000	0	0 00:00	0.000
S32	0.000	0	0	0	0.000	0	0 00:00	0.000
S7	0.000	0	0	0	0.000	8	0 01:10	0.018
S8	0.000	0	0	0	0.000	4	0 01:10	0.010
S9	0.000	0	0	0	0.000	3	0 01:10	0.007
StreetA_Storage	0.003	2	0	0	0.085	44	0 01:12	0.811
StreetB_Storage1	0.000	0	0	0	0.004	14	0 01:11	0.747
StreetB_Storage2	0.002	1	0	0	0.050	24	0 01:12	0.953
SWM_Pond	2.715	63	0	0	4.202	97	0 02:37	0.981

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
O1	80.87	0.613	0.738	4.359
O2	99.96	0.191	0.243	1.763
SWM_Pond_Outfall	0.00	0.000	0.000	0.000
U201_Outfall	74.30	0.010	0.018	0.072
U202_Outfall	99.97	0.003	0.044	0.038
System	71.02	0.816	0.989	6.232

Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
4	CONDUIT	0.068	0 01:09	1.78	0.78	0.62
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00
C10	CONDUIT	0.207	0 01:16	1.46	0.80	1.00
C11	CONDUIT	0.206	0 01:16	1.30	0.52	1.00
C12	CONDUIT	0.323	0 01:09	2.03	1.12	1.00
C13	CONDUIT	0.012	0 01:25	1.04	0.05	0.57
C14	CONDUIT	0.232	0 01:10	1.77	1.58	1.00
C15	CONDUIT	0.229	0 01:09	1.57	1.48	1.00
C16	CONDUIT	0.064	0 01:36	1.56	0.47	1.00
C17	CONDUIT	0.206	0 01:09	1.48	1.16	1.00
C18	CONDUIT	0.221	0 01:09	1.43	1.22	1.00
C19	CONDUIT	0.219	0 01:09	1.42	0.78	1.00
C2	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

C20	CONDUIT	0.138	0	01:10	1.25	0.61	1.00
C21	CONDUIT	0.173	0	01:11	1.01	0.73	1.00
C22	CONDUIT	0.194	0	01:11	1.04	0.79	1.00
C23	CONDUIT	0.195	0	01:11	1.22	0.85	1.00
C24	CONDUIT	0.336	0	01:07	1.83	0.37	1.00
C25	CONDUIT	0.703	0	01:11	1.97	1.48	1.00
C26	CONDUIT	0.840	0	01:20	2.35	1.80	1.00
C27	CONDUIT	0.039	0	01:09	0.79	0.18	1.00
C28	CONDUIT	0.183	0	01:10	3.73	0.85	1.00
C29	CONDUIT	1.007	0	01:17	2.81	1.90	1.00
C3	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C30	CONDUIT	0.006	0	01:05	0.09	0.08	1.00
C31	CONDUIT	0.126	0	01:06	1.78	1.69	1.00
C32	CONDUIT	0.148	0	01:07	2.10	2.02	1.00
C33	CONDUIT	0.146	0	01:08	2.06	1.31	1.00
C34	CONDUIT	0.146	0	01:08	2.06	1.49	1.00
C35	CONDUIT	0.153	0	01:08	2.17	1.50	1.00
C36	CONDUIT	0.100	0	01:08	2.04	1.54	1.00
C37	CONDUIT	0.250	0	01:08	1.57	1.61	1.00
C38	CONDUIT	0.334	0	01:09	2.10	2.49	1.00
C39	CONDUIT	0.334	0	01:09	2.10	2.16	1.00
C4	CONDUIT	0.049	0	01:10	1.24	0.46	1.00
C40	CONDUIT	0.536	0	01:10	3.37	1.12	1.00
C41	CONDUIT	1.516	0	01:11	2.38	1.17	1.00
C42	CONDUIT	1.515	0	01:11	2.38	2.68	1.00
C43	CONDUIT	1.519	0	01:11	2.39	1.85	1.00
C44	CONDUIT	1.521	0	01:11	2.42	2.55	1.00
C45	CONDUIT	2.169	0	01:14	4.12	3.92	0.80
C46	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C47	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C48	CONDUIT	0.000	0	00:00	0.00	0.00	0.07
C49	CONDUIT	0.003	0	01:11	0.28	0.02	0.16
C5	CONDUIT	0.118	0	01:09	1.18	0.76	1.00
C50	CONDUIT	0.010	0	01:10	0.33	0.08	0.35
C51	CONDUIT	0.053	0	01:10	1.39	0.43	0.52
C52	CONDUIT	0.061	0	01:10	1.14	0.54	0.52
C53	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C54	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C55	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C56	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C57	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C58	CONDUIT	1.904	0	01:11	3.60	0.53	0.76
C59	CONDUIT	0.097	0	01:10	1.12	0.34	0.75
C6	CONDUIT	0.135	0	01:09	1.23	0.90	1.00
C60	CONDUIT	0.981	0	02:37	2.74	1.99	1.00
C62	CONDUIT	0.059	0	01:10	2.54	0.63	1.00
C63	CONDUIT	0.070	0	01:09	4.16	0.67	1.00
C64	CONDUIT	0.066	0	01:10	2.12	0.58	1.00
C65	CONDUIT	0.120	0	01:10	4.51	0.99	1.00
C66	CONDUIT	0.146	0	01:09	4.15	0.62	1.00
C67	CONDUIT	0.048	0	01:10	2.33	0.38	1.00
C68	CONDUIT	0.033	0	01:12	1.57	0.26	1.00
C69	CONDUIT	0.239	0	01:08	4.87	1.08	1.00
C7	CONDUIT	0.176	0	01:09	1.60	0.92	1.00
C70	CONDUIT	0.238	0	01:08	4.85	0.96	1.00
C71	CONDUIT	0.126	0	01:06	4.00	1.27	1.00
C72	CONDUIT	0.068	0	01:07	2.16	0.67	1.00
C73	CONDUIT	0.053	0	01:17	1.08	0.33	1.00
C74	CONDUIT	0.032	0	01:08	1.03	0.30	1.00
C75	CONDUIT	0.120	0	01:16	3.82	0.94	1.00
C76	CONDUIT	0.220	0	01:12	4.48	0.99	1.00
C77	CONDUIT	0.023	0	01:16	0.99	0.17	1.00
C78	CONDUIT	0.286	0	01:12	5.82	1.24	1.00
C79	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C8	CONDUIT	0.122	0	01:17	1.73	1.11	1.00
C80	CONDUIT	0.000	0	00:00	0.00	0.00	0.23
C81	CONDUIT	0.000	0	00:00	0.00	0.00	0.50
C82	CONDUIT	0.049	0	01:12	2.75	0.46	0.63
C83	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C84	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C85	CONDUIT	0.000	0	00:00	0.00	0.00	0.00
C9	CONDUIT	0.156	0	01:10	1.20	0.77	1.00
1	ORIFICE	0.029	0	01:10			
100	ORIFICE	0.000	0	00:00			
119	ORIFICE	0.184	0	01:09			
12	ORIFICE	0.049	0	01:12			
120	ORIFICE	0.000	0	00:00			
13	ORIFICE	0.000	0	00:00			
14	ORIFICE	0.000	0	00:00			
151	ORIFICE	0.000	0	00:00			
3	ORIFICE	0.249	0	01:09			
37	ORIFICE	0.043	0	01:10			
38	ORIFICE	0.125	0	01:17			
39	ORIFICE	0.116	0	01:10			

40	ORIFICE	0.064	0	01:36	
41	ORIFICE	0.012	0	01:25	
42	ORIFICE	0.103	0	01:08	
43	ORIFICE	0.326	0	01:09	
5	ORIFICE	0.067	0	01:10	
6	ORIFICE	0.076	0	01:10	
7	ORIFICE	0.250	0	01:09	
8	ORIFICE	0.069	0	01:10	
80	ORIFICE	0.068	0	01:10	
85	ORIFICE	0.025	0	01:10	
86	ORIFICE	0.024	0	01:10	
87	ORIFICE	0.041	0	01:10	
88	ORIFICE	0.129	0	01:06	
89	ORIFICE	0.070	0	01:07	
90	ORIFICE	0.000	0	00:00	
91	ORIFICE	0.000	0	00:00	
92	ORIFICE	0.000	0	00:00	
94	ORIFICE	0.288	0	01:12	
96	ORIFICE	0.223	0	01:11	
97	ORIFICE	0.033	0	01:08	
98	ORIFICE	0.122	0	01:15	
99	ORIFICE	0.055	0	01:18	
Or1	ORIFICE	0.738	0	02:37	1.00
Or2	ORIFICE	0.243	0	02:37	1.00
10	WEIR	0.000	0	00:00	0.00
18	WEIR	0.000	0	00:00	0.00
19	WEIR	0.000	0	00:00	0.00
9	WEIR	0.000	0	00:00	0.00
A211_Weir	WEIR	0.395	0	01:10	0.84
RYCB1_Weir	WEIR	0.061	0	01:10	0.25
RYCB2_Weir	WEIR	0.000	0	00:00	0.00
RYCB3_Weir	WEIR	0.319	0	01:10	0.71
RYCB4_Weir	WEIR	0.305	0	01:12	0.70
RYCB5_Weir	WEIR	0.000	0	00:00	0.00
RYCB6_Weir	WEIR	0.000	0	00:00	0.00
RYCB7_Weir	WEIR	0.067	0	01:10	0.77
RYCB8_Weir	WEIR	0.000	0	00:00	0.00
RYCB9_Weir	WEIR	0.024	0	01:25	0.13
StreetA_Weir	WEIR	0.463	0	01:12	0.92
StreetB_Weir1	WEIR	0.525	0	01:11	1.00
StreetB_Weir2	WEIR	0.618	0	01:12	1.00
SWM_Pond_Weir	WEIR	0.000	0	00:00	0.00
W17	WEIR	0.297	0	01:10	2.16
W18	WEIR	0.264	0	01:10	1.99
W19	WEIR	0.238	0	01:10	1.86
W20	WEIR	0.218	0	01:10	1.75
W21	WEIR	0.000	0	00:00	0.00
W27	WEIR	0.000	0	00:00	0.00
W30	WEIR	0.000	0	00:00	0.00
W31	WEIR	0.000	0	00:00	0.00
W6	WEIR	0.000	0	00:00	0.00
W8	WEIR	0.000	0	00:00	0.00
W9	WEIR	0.000	0	00:00	0.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	----- Fraction of Time in Flow Class -----								
		Up Dry	Down Dry	Sub Dry	Sup Crit	Time Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
4	1.00	0.27	0.20	0.00	0.52	0.01	0.00	0.00	0.61	0.00
C1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.00	0.00	0.00	0.17	0.83	0.00	0.00	0.42	0.00
C11	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.72	0.00
C12	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.81	0.00
C13	1.00	0.00	0.00	0.00	0.11	0.89	0.00	0.00	0.99	0.00
C14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.29	0.00
C15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.37	0.00
C16	1.00	0.00	0.00	0.00	0.09	0.91	0.00	0.00	0.91	0.00
C17	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.09	0.00
C18	1.00	0.00	0.00	0.00	0.29	0.71	0.00	0.00	0.00	0.00
C19	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.35	0.00
C2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.86	0.00
C21	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.00
C22	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.12	0.00
C23	1.00	0.00	0.01	0.00	0.51	0.48	0.00	0.00	0.12	0.00
C24	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.34	0.00
C25	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.06	0.00
C26	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.00	0.00

C27	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.49	0.00
C28	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.50	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.28	0.00
C3	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C30	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.61	0.39	0.00	0.00	0.45	0.00
C32	1.00	0.00	0.00	0.00	0.12	0.88	0.00	0.00	0.00	0.00
C33	1.00	0.00	0.00	0.00	0.11	0.89	0.00	0.00	0.60	0.00
C34	1.00	0.00	0.00	0.00	0.12	0.87	0.00	0.00	0.46	0.00
C35	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.79	0.00
C36	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.78	0.00
C37	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.09	0.00
C38	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C39	1.00	0.00	0.00	0.00	0.97	0.02	0.00	0.00	0.03	0.00
C4	1.00	0.00	0.00	0.00	0.06	0.94	0.00	0.00	0.78	0.00
C40	1.00	0.00	0.00	0.00	0.97	0.03	0.00	0.00	0.11	0.00
C41	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.10	0.00
C42	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C43	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.06	0.00
C44	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.02	0.00
C45	1.00	0.00	0.00	0.00	0.66	0.34	0.00	0.00	0.05	0.00
C46	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	0.28	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C49	1.00	0.27	0.00	0.00	0.72	0.00	0.00	0.00	0.60	0.00
C5	1.00	0.00	0.00	0.00	0.11	0.88	0.00	0.00	0.67	0.00
C50	1.00	0.27	0.17	0.00	0.56	0.00	0.00	0.00	0.60	0.00
C51	1.00	0.27	0.09	0.00	0.64	0.00	0.00	0.00	0.54	0.00
C52	1.00	0.27	0.00	0.00	0.72	0.00	0.00	0.00	0.16	0.00
C53	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C56	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C57	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C58	1.00	0.00	0.00	0.00	0.92	0.08	0.00	0.00	0.44	0.00
C59	1.00	0.00	0.27	0.00	0.73	0.00	0.00	0.00	0.17	0.00
C6	1.00	0.00	0.00	0.00	0.10	0.89	0.00	0.00	0.03	0.00
C60	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.00	0.00
C62	1.00	0.00	0.83	0.00	0.16	0.00	0.00	0.00	0.54	0.00
C63	1.00	0.01	0.83	0.00	0.16	0.00	0.00	0.00	0.53	0.00
C64	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.52	0.00
C65	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.55	0.00
C66	1.00	0.00	0.90	0.00	0.10	0.00	0.00	0.00	0.55	0.00
C67	1.00	0.00	0.86	0.00	0.13	0.00	0.00	0.00	0.54	0.00
C68	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.53	0.00
C69	1.00	0.00	0.00	0.00	0.08	0.92	0.00	0.00	0.82	0.00
C7	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.83	0.00
C70	1.00	0.00	0.00	0.00	0.65	0.35	0.00	0.00	0.81	0.00
C71	1.00	0.00	0.00	0.00	0.10	0.90	0.00	0.00	0.83	0.00
C72	1.00	0.00	0.79	0.00	0.21	0.00	0.00	0.00	0.52	0.00
C73	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.51	0.00
C74	1.00	0.01	0.81	0.00	0.19	0.00	0.00	0.00	0.52	0.00
C75	1.00	0.00	0.86	0.00	0.14	0.00	0.00	0.00	0.54	0.00
C76	1.00	0.00	0.00	0.00	0.81	0.19	0.00	0.00	0.83	0.00
C77	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.57	0.00
C78	1.00	0.00	0.00	0.00	0.74	0.26	0.00	0.00	0.80	0.00
C79	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.10	0.90	0.00	0.00	0.82	0.00
C80	1.00	0.44	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	0.27	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.27	0.61	0.00	0.09	0.02	0.00	0.00	0.62	0.00
C83	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.24	0.00

 Conduit Surcharge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C10	0.39	0.39	0.42	0.01	0.01
C11	0.42	0.42	0.63	0.01	0.01
C12	0.38	0.38	0.63	0.02	0.02
C13	0.01	0.01	0.28	0.01	0.01
C14	0.22	0.22	0.24	0.01	0.01
C15	0.24	0.24	0.27	0.01	0.01
C16	0.03	0.03	0.33	0.01	0.01
C17	0.27	0.27	0.31	0.01	0.01

C18	0.31	0.31	0.35	0.01	0.01
C19	0.35	0.35	0.40	0.01	0.01
C20	0.17	0.17	0.43	0.01	0.01
C21	0.37	0.37	0.40	0.01	0.01
C22	0.40	0.40	0.42	0.01	0.01
C23	0.42	0.42	0.43	0.01	0.01
C24	0.43	0.43	0.54	0.01	0.01
C25	0.44	0.44	0.44	0.40	0.39
C26	0.41	0.44	0.41	0.52	0.41
C27	0.26	0.26	1.86	0.01	0.01
C28	0.26	0.26	1.89	0.01	0.01
C29	0.40	0.41	0.40	0.46	0.39
C30	0.40	0.40	0.40	0.01	0.01
C31	0.39	0.40	0.39	0.21	0.16
C32	0.37	0.39	0.37	0.45	0.37
C33	0.37	0.37	0.42	0.14	0.15
C34	0.42	0.42	0.43	0.31	0.31
C35	0.43	0.43	0.75	0.30	0.30
C36	0.35	0.35	0.90	0.13	0.13
C37	0.51	0.51	0.56	0.24	0.24
C38	0.56	0.56	0.59	0.27	0.27
C39	0.59	0.59	0.67	0.24	0.24
C4	0.14	0.14	0.21	0.01	0.01
C40	0.63	0.67	0.81	0.10	0.10
C41	0.21	0.21	0.22	0.13	0.13
C42	0.19	0.22	0.19	0.54	0.18
C43	0.14	0.19	0.14	0.30	0.13
C44	0.01	0.14	0.01	0.51	0.01
C45	0.01	0.01	0.01	0.58	0.01
C5	0.20	0.20	0.22	0.01	0.01
C58	0.01	0.01	1.65	0.01	0.01
C59	0.01	0.01	1.47	0.01	0.01
C6	0.22	0.22	0.28	0.01	0.01
C60	1.82	1.82	1.83	1.77	1.77
C62	0.19	0.19	0.26	0.01	0.01
C63	0.21	0.21	0.34	0.01	0.01
C64	0.24	0.24	0.47	0.01	0.01
C65	0.17	0.17	0.33	0.01	0.01
C66	0.17	0.17	0.39	0.01	0.01
C67	0.20	0.20	0.43	0.01	0.01
C68	0.22	0.22	1.86	0.01	0.01
C69	0.32	0.32	0.65	0.01	0.01
C7	0.28	0.28	0.36	0.01	0.01
C70	0.31	0.31	1.81	0.01	0.01
C71	0.38	0.38	0.56	0.06	0.06
C72	0.31	0.31	0.51	0.01	0.01
C73	0.30	0.30	0.40	0.01	0.01
C74	0.28	0.28	0.47	0.01	0.01
C75	0.17	0.17	1.86	0.01	0.01
C76	0.19	0.19	1.68	0.01	0.01
C77	0.01	0.01	1.85	0.01	0.01
C78	0.18	0.18	2.17	0.11	0.11
C8	0.31	0.31	0.39	0.12	0.12
C9	0.33	0.33	0.39	0.01	0.01

Analysis begun on: Thu Dec 15 11:52:13 2022
Analysis ended on: Thu Dec 15 11:52:15 2022
Total elapsed time: 00:00:02